Federal Energy Regulatory Commission

Office of Energy Projects

FERC/EIS-0314F **July 2022**

Regional Energy Access Expansion Project

FINAL ENVIRONMENTAL IMPACT STATEMENT

Transcontinental Gas Pipe Line Company, LLC Docket No. CP21-94-000

Abstract:

The staff of the Federal Energy Regulatory Commission (Commission) prepared a final environmental impact statement (EIS) for the Regional Energy Access Expansion (Project) proposed by Transcontinental Gas Pipe Line Company, LLC (Transco) in Pennsylvania, New Jersey, and Maryland. The Project would involve construction and operation of 22.2 miles of 30-inch-diameter lateral pipeline and 13.8 miles of 42-inch-diameter loop pipeline in Pennsylvania; one new compressor station in New Jersey; modifications to five existing compressor stations in Pennsylvania and New Jersey; modifications to existing pipeline tie-ins, valves, regulators, and meter and regulating stations in Pennsylvania, New Jersey, and Maryland; the addition of ancillary facilities such as regulation controls, valves, cathodic protection, communication facilities, and pig launchers and receivers in Pennsylvania; and abandonment and replacement of certain existing compression facilities. Additionally, Transco proposes to use temporary access roads and staging areas to support construction activities and would establish new permanent access roads to support operation of the new facilities. Construction and operation of the Project would provide about 829 million standard cubic feet of natural gas per day to multiple delivery points along Transco's existing system in Pennsylvania, New Jersey, and Maryland. Commission staff conclude that construction and operation of the Project, with the mitigation measures recommended in the EIS, would result in some adverse environmental impacts; however, with the exception of climate change impacts, those impacts would not be significant. Climate change impacts are not characterized in the EIS as significant or insignificant.

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OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 2
Transcontinental Gas Pipe Line Company, LLC
Regional Energy Access Expansion
Docket No. CP21-94-000

TO THE INTERESTED PARTY:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared a final environmental impact statement (EIS) for the Regional Energy Access Expansion (Project), proposed by Transcontinental Gas Pipe Line Company, LLC (Transco) in the above-referenced docket. Transco requests authorization to construct and operate approximately 36.0 miles of pipeline loop[1] and one new compressor station, abandon and replace certain existing compression facilities, and modify existing compressor stations and facilities in Pennsylvania and New Jersey to provide about 829 million standard cubic feet of natural gas per day to multiple delivery points along Transco's existing system in Pennsylvania, New Jersey, and Maryland, providing customers with enhanced access to Marcellus and Utica Shale natural gas supplies.

The final EIS assesses the potential environmental effects of the construction and operation of the Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the proposed Project, with the mitigation measures recommended in the EIS, would result in some adverse environmental impacts; however, with the exception of climate change impacts, those impacts would not be significant. Construction and operation of the Project would increase the atmospheric concentration of greenhouse gases (GHG), in combination with past, current, and future emissions from all other sources globally and would contribute incrementally to future climate change impacts. The EIS does not characterize the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct climate change significance determinations going forward.

The U.S. Environmental Protection Agency and U.S. Army Corps of Engineers participated as cooperating agencies in the preparation of the EIS. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected

[1] A pipeline loop is a segment of pipe constructed parallel to an existing pipeline to increase capacity.

by the proposal and participate in the NEPA analysis. The EIS is intended to fulfill the cooperating federal agencies' NEPA obligations, as applicable, and to support subsequent conclusions and decisions made by the cooperating agencies. Although cooperating agencies provide input to the conclusions and recommendations presented in the final EIS, the agencies may present their own conclusions and recommendations in any applicable Records of Decision for the Project.

The final EIS addresses the potential environmental effects of the construction and operation of the following Project facilities:

- installation of 22.2 miles of 30-inch-diameter pipeline loop in Luzerne County, Pennsylvania (Regional Energy Lateral);

- installation of 13.8 miles of 42-inch-diameter pipeline loop in Monroe County, Pennsylvania (Effort Loop);

- installation of the new electric-motor driven Compressor Station 201 (9,000 nominal horsepower [hp] at International Organization of Standardization [ISO] conditions) in Gloucester County, New Jersey);

- installation of two gas turbine driven compressor units (31,800 nominal hp at ISO conditions) at existing Compressor Station 505 in Somerset County, New Jersey to accommodate the abandonment and replacement of approximately 16,000 hp from eight existing internal combustion engine-driven compressor units and increase the certificated station compression by 15,800 hp;

- installation of a gas turbine compressor unit (63,742 nominal hp at ISO conditions) and modifications to three existing compressors at existing Compressor Station 515 in Luzerne County, Pennsylvania to accommodate the abandonment and replacement of approximately 17,000 hp from five existing gas-fired reciprocating engine driven compressors and increase the certificated station compression by 46,742 hp;

- uprate and rewheel two existing electric motor-driven compressor units at existing Compressor Station 195 in York County, Pennsylvania to increase the certificated station compression by 5,000 hp and accommodate the abandonment of two existing gas-fired reciprocating engine driven compressors, which total approximately 8,000 hp;

- installation of piping modifications at existing Compressor Station 200 in Chester County, Pennsylvania to support south flow of natural gas;
- uprate one existing electric motor-driven compressor unit at existing Compressor Station 207 in Middlesex County, New Jersey to increase the certificated station compression by 4,100 hp;
- modifications at existing compressor stations, meter stations, interconnects, and ancillary facilities in Pennsylvania, New Jersey, and Maryland; and
- installation of ancillary facilities such as mainline valves, communication facilities, and pig launchers[2] and receivers.

The Commission mailed a copy of the *Notice of Availability* of the final EIS to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; and newspapers and libraries in the Project area. The final EIS is only available in electronic format. It may be viewed and downloaded from the FERC's website (www.ferc.gov), on the natural gas environmental documents page (https://www.ferc.gov/industries-data/natural-gas/environment/environmental-documents). In addition, the final EIS may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://elibrary.ferc.gov/eLibrary/search) select "General Search" and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP21-94). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at FercOnlineSupport@ferc.gov or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659.

The final EIS is not a decision document. It presents Commission staff's independent analysis of the environmental issues for the Commission to consider when addressing the merits of all issues in this proceeding.

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using the eLibrary link. The eLibrary link also provides access to the texts of all formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription that allows you to keep track of all formal issuances and submittals in specific dockets. This can

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[2] A "pig" is a tool that the pipeline company inserts into and pushes through the pipeline for cleaning the pipeline, conducting internal inspections, or other purposes.

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Regional Energy Access Expansion Project

Final Environmental Impact Statement

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TECHNICAL ACRONYMS AND ABBREVIATIONS

°C	degrees Celsius
°F	degrees Fahrenheit
ACHP	Advisory Council on Historic Preservation
Agreement	Paris Climate Agreement
APE	area of potential effects
AQCR	Air quality control regions
ATON	Aid to Navigation Plan
ATV	all-terrain vehicles
ATWS	additional temporary workspace
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
bgs	below ground surface
BMPs	best management practices
CAA	Clean Air Act
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
CWA	Clean Water Act
CZMA	Coastal Zone Management Act
dBA	decibels on the A-weighted scale
Direct Pipe Plan	Direct Pipe Monitoring, Inadvertent Return Response, and Contingency Plan
DO	dissolved oxygen
DOE	U.S. Department of Energy
DOI	U.S. Department of the Interior
DOT	U.S. Department of Transportation
DRBC	Delaware River Basin Commission
DRN	Delaware Riverkeepers Network
Dth/d	dekatherms per day
EA	Environmental Assessment
ECP	Environmental Compliance Plan
EI	Environmental Inspector
EIA	U.S. Energy Information Administration
EIS	Environmental Impact Statement
EIS NOI	*Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review*
EPA	U.S. Environmental Protection Agency
EPAct	Energy Policy Act of 2005
ER	Electrical Resistivity

ESA	Endangered Species Act
FEMA	Federal Emergency Management Agency
FERC or Commission	Federal Energy Regulatory Commission
FR	*Federal Register*
FWS	U.S. Fish and Wildlife Service
g	gravity
GHG	greenhouse gas
gpm	gallons per minute
GWP	global warming potential
HAPs	hazardous air pollutants
HCA	high consequence areas
hp	horsepower
HUC	hydrologic unit code
IBAs	Important Bird Areas
IPCC	Intergovernmental Panel on Climate Change
IWG	Interagency Working Group
JCP&L	Jersey Central Power & Light Company
L_{dn}	day-night sound level
L_{eq}	equivalent sound level
LNG	liquefied natural gas
LWCF	Land and Water Conservation Fund
M&R	meter and regulating
MAOP	maximum allowable operating pressure
Maryland FCA	Maryland State Forest Conservation Act
MASW	Multichannel Analysis of Surface Wave
MBTA	Migratory Bird Treaty Act
MCA	moderate consequence areas
MDNR	Maryland Department of Natural Resources
Memorandum	Memorandum of Understanding on Natural Gas Transportation Facilities
mg/l	milligrams per liter
MLVs	mainline valves
MOU	*Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of the Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds*
MP	mileposts
MW	megawatts
N_2O	nitrous oxide
NAA	Nonattainment Area
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NGA	Natural Gas Act

NHD	National Hydrography Dataset
NHPA	National Historic Preservation Act
NJDEP	New Jersey Department of Environmental Protection
NJGS	New Jersey Geological Survey
NJISST	New Jersey Invasive Species Strike Team
NOA	*Notice of Application*
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Planned Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Virtual Scoping Sessions*
NO_x	nitrogen oxides
NPDES	National Pollutant Discharge Elimination System
NPS	National Park Service
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSAs	noise-sensitive areas
NSF/ANSI	NSF International/American National Standards Institute
NSPS	New Source Performance Standards
NSR	New Source Review
NWI	National Wetland Inventory
OEP	Office of Energy Projects
OSHA	U.S. Department of Labor, Occupational Safety and Health Administration
OTR	Ozone Transport Region
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PDA	Pennsylvania Department of Agriculture
PEM	Palustrine emergent
PFAS	poly and/or perfluoroalkyls
PFBC	Pennsylvania Fish and Boat Commission
PFO	Palustrine forested
PGA	peak ground acceleration
PGC	Pennsylvania Game Commission
PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan	Upland Erosion Control, Revegetation, and Maintenance Plan
PM_{10}	inhalable particulate matter with an aerodynamic diameter less than or equal to 10 microns
$PM_{2.5}$	inhalable particulate matter with an aerodynamic diameter less than or equal to 2.5 microns
PNDI	Pennsylvania Natural Diversity Inventory
POW	Palustrine open water
PPL	PPL Electric Utilities
PRM aquifer system	Potomac Formation, Raritan Formation, and Magothy Formations
Procedures	Wetland and Waterbody Construction and Mitigation Procedures
Promising Practices	*Promising Practices for EJ Methodologies in NEPA Reviews*
PSD	Prevention of Significant Deterioration

PSE&G	Public Service Electric and Gas
psig	pounds per square inch gauge
PSS	Palustrine scrub-shrub
PSU	Pennsylvania State University
RCPs	Residential Construction Plans
REAE Project or Project	Regional Energy Access Expansion
RHA	Rivers and Harbors Act
SCC	social cost of carbon
SC-GHG	social costs of greenhouse gases
Secretary	Secretary of the Commission
SFHAs	Special Flood Hazard Areas
SHPO	State Historic Preservation Officer
SMP	Subsidence Monitoring and Mitigation Plan
SO_2	sulfur dioxide
Solvay	Solvay Solexis/Solvay Specialty Polymer USA
SSA	Sole Source Aquifer
SSURGO	Soil Survey Geographic Database
SWPPP	Stormwater Pollution Prevention Plan
tpy	tons per year
Transco	Transcontinental Gas Pipe Line Company, LLC
Transco's Spill Plan	Construction Spill Prevention and Response Procedures for Oil and Hazardous Materials
U.S.C.	United States Code
UDCP	Unanticipated Discovery of Contamination Plan
USACE	U.S. Army Corps of Engineers
USDA	U.S. Department of Agriculture
USGCRP	U.S. Global Change Research Program
USGS	U.S. Geological Survey
VOC	volatile organic compounds
WHPA	Wellhead Protection Area
WQC	Water Quality Certification

EXECUTIVE SUMMARY

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared this final Environmental Impact Statement (EIS) to fulfill requirements of the National Environmental Policy Act of 1969 (NEPA) and the Commission's implementing regulations under Title 18 of the Code of Federal Regulations Part 380 (18 CFR 380). This EIS assesses the potential environmental impacts that could result from constructing and operating the Regional Energy Access Expansion (REAE Project or Project).

On March 26, 2021, Transcontinental Gas Pipe Line Company, LLC (Transco) filed an application with the FERC in Docket No. CP21-94-000 pursuant to section 7 (b) and 7(c) of the Natural Gas Act (NGA) and Part 157 of the Commission's regulations to construct, own, and operate natural gas pipeline facilities that would expand Transco's existing interstate natural gas transmission system in Pennsylvania, New Jersey, and Maryland and to abandon and replace certain existing compression facilities.

The FERC is the federal agency responsible for authorizing interstate natural gas transmission facilities under the NGA and is the lead federal agency responsible for preparing this EIS. The U.S. Environmental Protection Agency (EPA) and U.S. Army Corps of Engineers (USACE) are cooperating agencies assisting in the preparation of the EIS because they have jurisdiction by law or special expertise with respect to environmental resources and impacts associated with Transco's proposal.

PROPOSED ACTION

The REAE Project would involve the construction and operation of 22.2 miles of 30-inch-diameter lateral pipeline and 13.8 miles of 42-inch-diameter loop[1] pipeline in Pennsylvania; one new compressor station in New Jersey; modifications to five existing compressor stations in Pennsylvania and New Jersey; modifications to existing pipeline tie-ins, valves, regulators, and meter and regulating (M&R) stations[2] in Pennsylvania, New Jersey, and Maryland; the addition of ancillary facilities such as regulation controls, valves,[3] cathodic protection, communication facilities, and pig[4] launchers and receivers in Pennsylvania; and abandonment and replacement of certain existing compression facilities. The REAE Project would allow Transco to provide an incremental 829,400 dekatherms per day (Dth/d) of year-round firm transportation capacity from the Marcellus Shale production area in northeastern Pennsylvania to delivery points in New Jersey, Pennsylvania, and Maryland.

According to Transco, the Project would provide enhanced access to Marcellus Shale supplies, support diversification of energy infrastructure along the Atlantic coast, and promote competitive natural gas markets.

Dependent upon Commission approval and receipt of all other necessary permits and approvals, Transco proposes to begin construction the second quarter of 2023 to place the Project facilities into service in the fourth quarter of 2024, following a determination by the Commission that restoration is proceeding satisfactorily.

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1 A pipeline loop is a segment of pipe constructed parallel to an existing pipeline to increase capacity.

2 A meter and regulating station is an aboveground facility that contains the equipment necessary to measure the volume of gas flowing in a pipeline.

3 A valve is an aboveground facility that is capable of controlling the flow of gas in a pipeline.

4 A pipeline pig is a device used to clean or inspect a pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted or retrieved from the pipeline.

PUBLIC INVOLVEMENT

On June 11, 2020, Transco filed a request to implement the Commission's Pre-filing Process for the REAE Project. At that time, Transco was in the preliminary design stage of the Project and no formal application had been filed. The FERC established its Pre-filing Process to encourage early involvement of interested stakeholders, facilitate interagency cooperation, and identify and resolve environmental issues before an application is filed with the FERC and facility locations are formally proposed. The FERC granted Transco's request to use the Pre-filing Process on June 18, 2020 and established pre-filing Docket No. PF20-3-000 for the Project.

In June and July 2020, we[5] participated in three virtual open houses sponsored by Transco and, on July 24, 2020, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Virtual Scoping Sessions* (NOI). The NOI was published in the Federal Register and mailed or emailed to 1,966 entities, including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners; local libraries and newspapers; and other stakeholders who had indicated an interest in the REAE Project. The NOI requested written comments from the public and provided the schedule for the public virtual scoping sessions. We conducted three virtual public scoping sessions and received oral comments on environmental issues from 22 individuals.

On April 9, 2021, the FERC issued a *Notice of Application* announcing that Transco had filed an application with the FERC. The application filing concluded the Pre-filing Process and began the post-application review process for the REAE Project under new Docket Number CP21-94-000.

Upon review of Transco's application and comments received, the Commission staff determined that an EIS, rather than an environmental assessment, should be prepared for the Project. On October 19, 2021, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review* (EIS NOI). The EIS NOI was published in the Federal Register and mailed or emailed to 2,418 entities, including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners; local libraries and newspapers; and other stakeholders who had indicated an interest in the REAE Project. The EIS NOI requested written comments from the public. In total, we received approximately 377 written comment letters during the Pre-filing Process, formal scoping period, and throughout preparation of the draft EIS, including approximately 250 form letters expressing opposition or support for the Project.

The draft EIS was issued on March 2, 2022 and filed with the EPA. The Commission's *Notice of Availability* of the draft EIS was mailed to federal, state, and local government agencies; elected officials; Native American tribes; affected landowners; local libraries and newspapers; intervenors in the FERC's proceeding; and other interested parties (i.e., individuals who provided scoping comments or asked to be on the mailing list). The distribution list for the *Notice of Availability* of the draft EIS was provided in appendix A of the draft EIS. The EPA issued its formal notice indicating that the draft EIS was available for review and comment which was published in the Federal Register on March 11, 2022.[6] The public had 45 days after the date of publication of the EPA's formal notice to comment on the draft EIS either in the form of written comments and/or at public comment sessions conducted via teleconference.

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[5] The pronouns "we," "us," and "our" refer to the environmental staff of the Federal Energy Regulatory Commission's Office of Energy Projects.

[6] 87 Fed. Reg. 14004 (2022).

We held three virtual public comment sessions via teleconference during the draft EIS comment period between March 28 and 30, 2022. The comment sessions provided interested parties with an opportunity to present oral comments on our analysis of the environmental impacts of the Project as described in the draft EIS. A total of 23 people commented at the sessions. In addition, 156 parties submitted a total of 166 letters in response to the draft EIS. Multiple form letters were also submitted in response to the draft EIS. All comments received on the draft EIS related to environmental issues have been addressed in this final EIS. A transcript of each comment session and copies of each written comment are part of the public record for the Project. Our responses to relevant comments are provided in appendix I of this final EIS. A subject index is provided in appendix J. Substantive changes in the final EIS are indicated by vertical bars that appear in the margins. The changes were made both in response to comments received on the draft EIS and as a result of updated information that became available after the issuance of the draft EIS.

PROJECT IMPACTS AND MITIGATION

Construction and operation of the REAE Project would impact the environment. We evaluated the impacts of the Project, taking into consideration Transco's proposed impact avoidance, minimization, and mitigation measures on geology, soils, groundwater, surface water, wetlands, vegetation, wildlife, fisheries, special status species, land use, recreation, visual resources, socioeconomics, environmental justice, cultural resources, air quality, climate change, noise, and safety and reliability. Where necessary, we recommend additional mitigation to minimize or avoid these impacts. Cumulative impacts of the Project with other past, present, and reasonably foreseeable actions in the Project area are also assessed. In section 3 of this EIS, we evaluate alternatives to the Project, including the no-action alternative, the potential use of other natural gas transmission systems in the region, modification alternatives to Transco's existing system, pipeline route alternatives, alternative locations for Compressor Station 201, and the use of electric motor-driven compressors at Compressor Stations 505 and 515.

Based on the public's involvement in the pre-filing and post-application review processes, agency consultations, and our analysis, the major issues associated with the Project are impacts on surface waters, wetlands, vegetation and forests, environmental justice communities, air quality and climate change, and noise. Our analysis of these specific issues is summarized below. Sections 3 and 4 of this EIS include our detailed analysis of Project alternatives and other environmental issues, respectively, and sections 5.1 and 5.2 contain our conclusions and a compilation of our recommended mitigation measures, respectively.

Surface Water

A total of 39 perennial waterbodies, 16 intermittent waterbodies, and 24 ephemeral waterbodies would be crossed by the Project. The Susquehanna River, a major waterbody, would be crossed using the Direct Pipe® method, which would eliminate direct impacts on the waterbody. We reviewed Transco's site-specific crossing plan for the Direct Pipe® crossing of the Susquehanna River and find it acceptable.

Transco proposes to cross the remaining waterbodies using dry-ditch crossing methods (including flume or dam and pump) that involve diverting the flow of water across the construction work area rather than performing instream wet crossings. Transco also proposes to implement the mitigation measures included in its Project-specific *Wetland and Waterbody Construction and Mitigation Procedures* (Procedures) to minimize waterbody impacts. Temporary construction-related impacts at these waterbodies would be limited primarily to short periods of increased turbidity before installation of the pipeline, during the installation of the upstream and downstream dams, and following installation of the pipeline when the dams are pulled and flow is re-established across the restored work area. Following installation of pipelines using dry-ditch crossing methods, stream banks and riparian areas would be re-contoured and stabilized with approved seed mixes.

With implementation of Transco's site-specific Susquehanna River crossing plan, construction plans, and proposed mitigation measures discussed in this EIS, we conclude that impacts on surface waters would be adequately minimized.

Wetlands

Construction of the Project would impact a total of approximately 16.7 acres of wetlands, consisting of 10.7 acres of emergent wetland, 1.4 acres of scrub-shrub wetland, 4.6 acres of forested wetlands, and a fractional amount of open water wetland. Of the 4.6 acres of forested wetland impacts, approximately 2.6 acres are located within the permanent pipeline easement and could be impacted by operation and maintenance of the pipeline, and 1.6 acres are located within the portion of the pipeline right-of-way that would be converted to emergent wetland for vegetation maintenance requirements along the pipeline facilities.

Transco proposes to cross most wetlands via open trench, although some wetlands would be crossed by trenchless boring. To minimize impact on wetlands, Transco proposes to implement the mitigation measures included in its Project-specific Procedures. The primary impact of the Project on wetlands would be the alteration of wetland function and value due to vegetation clearing. Following revegetation, no permanent impact would occur on emergent wetland vegetation in the maintained pipeline right-of-way because these areas naturally consist of, and would remain as, open land and herbaceous communities. In addition, all scrub-shrub wetlands would be allowed to revert to scrub-shrub wetlands in areas that occur beyond the annual 10-foot-wide herbaceous mowing strip centered over the pipeline and within the permanent right-of-way.

The duration of the impact on scrub-shrub and forested wetlands would be longer than that of emergent wetlands. Forested wetlands located outside of the maintained permanent right-of-way would be allowed to revert to forested wetlands after construction. Within the permanent right-of-way, the re-establishment of mature woody vegetation would be precluded by the annual maintenance of a 10-foot-wide herbaceous strip centered over the pipeline and the cutting of woody vegetation within 15 feet of the pipeline centerline. This would result in a permanent conversion of previously forested wetland areas to non-forested wetland areas. The conversion from one vegetation cover type to another could result in changes in wetland functions and values by altering the amount of sunlight or other environmental conditions in the wetland, affecting wildlife habitat. In general, however, it is expected that the affected wetlands would continue to provide important ecological functions such as sediment/toxicant retention, nutrient removal, flood attenuation, groundwater recharge/discharge, and wildlife habitat.

As mitigation design progresses, further coordination with the Pennsylvania Department of Environmental Protection and USACE would be required to incorporate site-specific wetland impact and mitigation requirements.

With the implementation of Transco's Project-specific Procedures, and the proposed mitigation measures discussed in this EIS, significant impacts on wetlands due to construction and operation of the Project are not anticipated.

Vegetation

Construction of the Project would impact 603.1 acres of upland vegetation, of which 306.9 acres (52 percent) consist of open upland vegetation communities, with the remaining 296.2 acres (48 percent) comprised of upland forest. Following construction, areas not needed for operations would be stabilized and restored, including reestablishing contours and revegetating disturbed areas in accordance with Transco's *Upland Erosion, Revegetation and Maintenance Plan* (Plan), local agencies or organizations, or relevant landowner agreements. Operation of the Project would impact 183.1 acres of upland vegetation, comprised of 77.2 acres of open upland and 105.9 acres of upland forest.

During operation and excluding agricultural land, Transco would limit permanent right-of-way mowing to no more than once every 3 years to clearly delineate the right-of-way for pipeline integrity purposes; however, a 10-foot-wide swath centered over the pipelines may be mowed more frequently to facilitate routine patrols and emergency access. In accordance with Transco's Plan, maintenance clearing would not be conducted between April 15 and August 31, to avoid impacts on nesting migratory birds.

To minimize the spread of invasive species, Transco would implement its Invasive Species Management Plan, which outlines methods to prevent, mitigate, and control the spread of noxious and invasive weeds during ground-disturbing activities.

With the implementation of Transco's Plan and Procedures, and Invasive Species Management Plan, we conclude that construction and operation of the REAE Project would not have a significant impact on vegetation.

Environmental Justice

As presented in table 4.7.8-1, 47 block groups out of 104 block groups within the geographic scope of the Project are considered environmental justice communities. Of the 47 block groups, 11[7] block groups within the Project's area of review have a minority population that either exceeds 50 percent or is meaningfully greater than their respective counties. Eleven[8] block groups within the Project's area of review have a low-income population that is equal to or greater than their respective counties. Twenty-five[9] block groups within the Project's area of review have a minority population that exceeds 50 percent or is meaningfully greater than their respective counties and a low-income population that is equal to or greater than its respective county. Project work within the identified environmental justice communities includes the construction and operation of portions of the Regional Energy Lateral and the Effort Loop; construction and operation of the new Compressor Station 201; and modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, and the Lawnside M&R Station. The Mt. Laurel M&R Station is not located within an environmental justice community, but there are environmental justice communities within a 1-mile radius of the facility.

Potential impacts that could affect environmental justice communities may include groundwater, visual, socioeconomic, traffic, and air and noise impacts from construction and operation. Potentially adverse environmental effects on surrounding communities associated with the Project, including environmental justice communities, would be minimized and/or mitigated.

[7] Census Tract 3003.4, Block Group 4; Census Tract 3020, Block Group 2; Census Tract 3021.01, Block Group 1; Census Tract 3021.01, Block Group 2; Census Tract 3022.02, Block Group 1; Census Tract 78.01, Block Group 2; Census Tract 79.08, Block Group 1; Census Tract 79.08, Block Group 2; Census Tract 5002.04, Block Group 1; Census Tract 5002.04, Block Group 3; and Census Tract 6004, Block Group 3.

[8] Census Tract 2112.04, Block Group 4; Census Tract 2116, Block Group 2; Census Tract 3012.03, Block Group 2; Census Tract 240.01, Block Group 3; Census Tract 536.02, Block Group 3; Census Tract 5002.03, Block Group 2; Census Tract 5002.05, Block Group 3; Census Tract 6067, Block Group 3; Census Tract 6072, Block Group 1; Census Tract 6073, Block Group 2; and Census Tract 7040.05, Block Group 1.

[9] Census Tract 71.03, Block Group 2; Census Tract 6002, Block Group 1; Census Tract 6002, Block Group 2; Census Tract 6004, Block Group 1; Census Tract 6004, Block Group 2; Census Tract 6004, Block Group 4; Census Tract 6004, Block Group 5; Census Tract 6008, Block Group 1; Census Tract 6016, Block Group 1; Census Tract 6016, Block Group 2; Census Tract 6016, Block Group 3; Census Tract 6017, Block Group 1; Census Tract 6017, Block Group 2; Census Tract 6018, Block Group 1; Census Tract 6103 Block Group 1; Census Tract 6104 Block Group 1; Census Tract 6104 Block Group 2; Census Tract 6104 Block Group 3; Census Tract 6065, Block Group 1; Census Tract 6065, Block Group 2; Census Tract 6065, Block Group 3; Census Tract 6073, Block Group 4; Census Tract 7004.08, Block Group 1; Census Tract 7004.08, Block Group 2; and Census Tract 6034, Block Group 3.

Approximately 48 groundwater wells located in environmental justice communities are within 150 feet of proposed Project facilities. Construction, including blasting, could physically damage wells or diminish the yield and water quality of wells and springs within 150 feet of construction workspaces. The potential to impact wells and springs would be reduced through implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other best management practices (BMPs) designed to minimize erosion and protect environmental resources. In addition, wells and springs within workspaces would be marked and protected to prevent construction-related damage, and pre- and post-construction testing of well yield and water quality on wells within 150 feet would be conducted with landowner permission. With implementation of these mitigation measures, impacts on environmental justice communities associated with groundwater and well impacts would be less than significant.

Temporary visual impacts would occur during construction of the pipeline and aboveground facilities, including vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. Permanent visual impacts may occur within environmental justice communities along the pipeline right-of-way from periodic vegetation clearing to allow for visual pipeline inspection.

No visual impacts would occur from the modification of Compressor Stations 195, 200, and 207 as the modifications would not require additional operational facility footprint and no ground disturbance is anticipated. Mt. Laurel M&R Station and the Lawnside M&R Station are existing facilities and are not visible from the closest residences in environmental justice communities due to visual screening and proposed changes would occur within the facility fence line. The proposed modifications at Compressor Station 505 and Camden M&R Station are within the existing footprint and perimeter fence and consistent with what presently exists at the facilities. Therefore, we conclude that visual impacts on environmental justice communities from the modifications of Compressor Station 505 and Camden M&R Station would be less than significant.

Compressor Station 201 would result in a permanent change in the viewshed and would result in a permanent impact on the surrounding existing visual character of the Project area, which is an environmental justice community. To further minimize visual impacts to nearby residences, we recommended in section 4.5.7.3 of the draft EIS that Transco file with the Secretary a visual screening plan to minimize visual impacts on residences (including but not limited to noise sensitive areas [NSAs] 1, 2, and 3) near Compressor Station 201. Transco filed the recommended visual screening plan for Compressor Station 201 which we reviewed and find acceptable. In the short term, visual impacts on environmental justice communities due to the addition of Compressor Station 201 would be significant. These impacts would be minimized to the extent possible through the mitigation offered through the tree plantings included in the visual screening plan. With mitigation, once the plantings are established, long term visual impacts on environmental justice communities would be less than significant.

Project impacts on environmental justice populations may include impacts on socioeconomic factors. Constructing the Project would require about 1,441 workers. Transco estimates that 40 percent of its construction workforce would temporarily relocate to the Project area; therefore, the average of 353 non-local workers (peak of 582 non-local workers) workers would temporarily increase the total population of the 11 county Project area by about 0.01 percent. The temporary influx of workers into the environmental justice community could increase the demand for community services, such as housing, police enforcement, and medical care. An influx of workers could also affect economic conditions, and other community infrastructure. No permanent employees are anticipated. Because the additional construction workers would represent a temporary increase, we conclude that socioeconomic impacts on the environmental justice community would be less than significant.

Regarding Project impacts on traffic, the movement of construction personnel, equipment, and materials would result in short-term impacts on roadways, lasting the 13-month duration of construction, and Transco would employ traffic control measures and schedule deliveries to minimize impacts on local traffic. Therefore, traffic impacts on environmental justice communities would be less than significant.

With respect to construction air emissions, exhaust emissions and fugitive dust would result in short-term, localized impacts in the immediate vicinity of construction work areas. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Transco would implement a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements. Operational emission increases from the Project would result from natural gas combustion turbines at Compressor Station 505. Based on the Project compressor station operational air quality modeling results and the mitigation measures proposed by Transco, we conclude that air quality impacts from construction and operation of the Project would not result in a significant impact on local or regional air quality for environmental justice communities.

Regarding noise impacts, construction noise related to Project activities would be temporary. Operation of the above ground facilities and compressor stations, with noise mitigation, would result in an increase in noise levels over ambient by 0.1 to 2.9 decibels. The anticipated noise increases would be below or at the human ear's threshold of perception and below the applicable FERC noise limit criterion at the affected NSAs. With Transco's proposed mitigation measures and our operational noise survey recommendations in section 4.9.3, the Project would not result in significant noise impacts on local residents and the surrounding communities, which include environmental justice communities.

In conclusion, aside from the insignificant impacts associated with modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, the Lawnside M&R Station, and the Mt. Laurel M&R Station, and construction and operation of portions of the Regional Energy Lateral and the Effort Loop, the Project would not have disproportionately high and adverse impacts on environmental justice communities. Impacts associated with construction and operation of Compressor Station 201 would be predominately borne by environmental justice communities and disproportionately high and adverse. Proposed mitigation associated with Compressor Station 201 includes the following:

- implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources;
- marking and protecting springs and wells within workspaces to prevent construction-related damage;
- pre- and post-construction testing of well yield and water quality on wells within 150 feet of the Project;
- arrangements for a temporary water supply in the unlikely event that a well or spring is affected, until the water supply and quality are restored, or otherwise resolved;
- installation of down shielded lighting to minimize visual impacts at night;
- planting evergreen trees along the southern fence line of the facility to provide visual screening;
- implementation of a Traffic Management Plan to minimize Project effects on local traffic and transportation systems in environmental justice communities during construction;

- use of construction equipment and vehicles that comply with EPA mobile and non-road emission regulations,
- use of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations;
- implementation of a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements; and
- use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping.

Air Quality and Climate Change

Construction Impacts

Construction activities include installation of the pipeline and associated aboveground facilities. Construction of the Project would result in intermittent and temporary emissions of criteria pollutants, including fugitive dust. The amount of dust generated during construction would be a function of precipitation, vehicle numbers and types, vehicle speeds, and roadway characteristics. Dust emissions would be greater during dry periods and in areas of fine-textured soils. Construction also results in combustion emissions from diesel- and gasoline-fueled vehicles used in various construction activities. Construction-related emissions on the Project would be temporary and localized and would dissipate with time and distance from areas of active construction. Further, construction emissions along the pipelines would subside once construction is complete. Based on the mitigation measures outlined in Transco's Fugitive Dust Control Plan and the commitment to obtain the applicable air permits and adhere to air quality regulations, and the temporary nature of pipeline construction, we conclude that construction of the Project would not have a significant impact on regional air quality.

Operational Impacts

Operational emission increases from the Project would result from proposed natural gas combustion turbines at Compressor Stations 505 and 515. Transco's Compressor Stations 201, 207, and 195 would involve installing or uprating of electric-driven compression and, therefore, the additional compression would not generate combustion-related emissions. Aboveground facilities, including the compressor stations, M&R stations, and pig launcher/receiver facilities along with the pipelines, would generate fugitive emissions of natural gas.

Modeling for the Project was performed using air dispersion model AERMOD Version 19191. Transco conducted full National Ambient Air Quality Standards (NAAQS) analyses for Compressor Stations 505 and 515 to determine whether operating emissions would cause a violation of the NAAQS. Transco completed its NAAQS analyses by modeling operating emissions from the compressor stations to determine the maximum ground level concentrations for each pollutant and averaging period, including ambient background concentrations. These predicted results were compared against the NAAQS, and the results indicate that the Project would not contribute to a violation of the corresponding NAAQS.

Air quality impacts from operation of the Projects' Compressor Stations 505 and 515 would be minimized by the use of equipment, emissions controls, and operating practices that meet or exceed industry best management practices. Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be minimized during installation and operation of the Projects' compressor units. The air dispersion modeling analysis for the operation of the facilities described above demonstrates that the Project would be in compliance with the NAAQS.

Construction and operation of the Project would increase the atmospheric concentration of greenhouse gases (GHG) in combination with past, current, and future emissions from all other sources globally and contribute incrementally to future climate change impacts. The construction-related emissions from the Project could potentially increase carbon dioxide equivalents (CO_2e) emissions based on the 2020 U.S. inventory by 0.0083 percent. In subsequent years, Project operations based on the maximum direct GHG emissions scenario and downstream combustion of the natural gas throughput could potentially increase emissions by 0.32 percent based on the national 2020 Inventory. The Project would allow Transco to provide 829,400 Dth/d of incremental firm natural gas transportation capacity that is fully subscribed via long-term, binding precedent agreements with shippers. South Jersey Resources Group, LLC is a Project shipper and its proposed end-use for 46,400 Dth/d from the Project is for power generation at the existing Marcus Hook Energy Center. The remainder of Project shippers are Williams Energy Resources LLC, New Jersey Natural Gas Company, PECO Energy Company, PSEG Power LLC, Baltimore Gas and Electric Company, Elizabethtown Gas Company, and South Jersey Gas Company, all local distribution companies, which would deliver the gas to the various end users located on their respective systems. Ultimately, this EIS is not characterizing the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[10]

Noise

Construction Noise Impacts

Noise would be generated during construction of the pipeline and aboveground facilities for the Project and would vary depending on the number and type of construction equipment at construction sites. Noise levels would be highest in the immediate vicinity of construction activities and would diminish with distance from the work areas. Construction would generally not affect nighttime noise levels as most activity would be limited to 7 a.m. to 7 p.m., Monday through Saturday, except for Direct Pipe® activities, and specific, limited construction activities such as tie-ins and hydrostatic testing. Noise impacts associated with construction would be localized and temporary, and would be mitigated by implementation various measures during construction including positioning equipment so noise propagates away from the nearest NSAs; restricting onsite vehicle idle times; using sound control devices in accordance with manufacturer's recommendations; and preparing the layout of the construction activities with the goal of reducing noise from back-up alarms. Regarding the Direct Pipe® crossing of the Susquehanna River, Transco would reduce noise impacts on the NSA by using on-site equipment as a noise barrier for the pump skids and mud cleaning system. In addition, Transco would perform noise monitoring during the Direct Pipe® crossing of the Susquehanna River and employ additional noise mitigation measures as necessary. As such, we conclude that construction noise impacts would not be significant.

Operational Noise Impacts

Ambient daytime and nighttime noise measurements at the nearest NSAs in addition to new and modified aboveground facilities, including Compressor Stations 195, 201, 207, 505, and 515, were used to estimate the noise that would result from normal operation of the facilities. Modifications at Compressor Station 200 piping would not result in changes to operational noise and no other sources of operational noise are anticipated from this facility. Noise estimates incorporated Transco's proposed noise mitigation

10 Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews, 178 FERC ¶ 61,108 (2022); 178 FERC ¶ 61,197 (2022).

measures, which would include the use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping. Based on modeling, the estimated noise associated with the facilities would range from a decrease in 6.0 decibels (due to abandoned units) on the A-weighted scale (dBA) to an increase in 3.0 dBA at the nearest NSAs, which is below or at the threshold of perception for the human ear (3 dBA). Although Transco's noise levels are below our standard of 55 dBA for the estimated Project impacts, low ambient noise would make noise produced by the compressor stations and pipeline facilities more noticeable.

To verify that Transco's noise estimates are accurate, we recommend that Transco file a noise survey after placing the new and modified compressor stations in service. We further recommend that if a full load condition noise survey is not possible, Transco file an interim survey at the maximum possible horsepower load. If the noise attributable to the operation of all of the equipment at the station under interim or full horsepower load exceeds 55 dBA day-night sound level (L_{dn}) at any nearby NSA, which the EPA has indicated protects the public from indoor and outdoor activity interference, Transco would be required to install additional noise controls to meet the level.

Based on the above discussion, we conclude that operation of aboveground facilities and new and modified compressor stations would not result in significant noise impacts at nearby NSAs.

Alternatives

In accordance with NEPA and FERC policy, we evaluated a range of alternatives. These alternatives include the no-action alternative, the potential use of other natural gas transmission systems in the region, modification alternatives to Transco's existing system, pipeline route alternatives, alternative locations for Compressor Station 201, and the use of electric motor-driven compressors at Compressor Stations 505 and 515. Implementing the no-action alternative would result in no impacts on the environment; however, the Project's goals would not be met. The Commission decision, in its Order, would review the need for the Project. Because the Commission will ultimately determine Project need, and because staff has not identified a significant impact associated with the proposed action, we do not recommend the no-action alternative.

We received numerous comments requesting that we evaluate alternatives to the proposed pipeline routes or the aboveground facility locations. We also received comments requesting additional review of alternatives collocating with existing rights-of-way, especially at the Susquehanna River, review of the installation of electric motor-driven compressors at compressor station locations.

We assessed alternatives utilizing portions of Transco's existing pipeline system as well as two other existing interstate natural gas pipeline systems in the Project area. Our analysis concluded that other existing natural gas transmission systems in the Project area lack the available capacity to meet the purpose of the Project. Modifying these systems could result in impacts similar to those of the proposed Project or would be economically impractical. Additional compression/looping would not offer a significant environmental advantage over the proposed action. We conclude that the use of a system alternative is not preferable to the proposed action.

The entire proposed Effort Loop route is collocated within or adjacent to Transco's existing A, B, and C pipeline corridor. We did not identify any route alternatives that deviate from the proposed pipeline alignment. However, we received a recommendation to evaluate an alternative that would site the proposed Effort Loop pipeline between Transco's existing pipelines to minimize widening of the right-of-way and vegetation cutting. We also received a recommendation that Transco modify the proposed Effort Loop pipeline alignment to the opposite side of the existing rights-of-way at this same location. We requested that Transco evaluate and justify the locations where Transco proposes to install the Effort Loop pipeline adjacent to its existing pipeline system instead of installing the Effort Loop between its existing pipelines, where sufficient separation would allow safe installation, as well as on the opposite side of the existing rights-of-way. Transco provided sufficient justification for the crossovers and proposed Effort Loop alignment and we find the alignment of the pipeline acceptable.

Transco incorporated seven minor route changes along the Regional Energy Lateral into the Project design after the issuance of the draft EIS to avoid interior forest, minimize impacts on proposed residential developments, and to reduce wetland impacts. We have reviewed these route changes and find them to have an equal or lessened environmental effect when compared to the original proposed route and we find them acceptable. We note that one route change involves disturbances to a landowner that was not previously affected by the proposed route and results in construction occurring within 50 feet of the newly affected landowner's home. As the new landowner has approved the route change, we find the route change acceptable.

Based on our evaluations of the remaining alternative routes for the proposed lateral pipeline and loop pipeline, we conclude that the pipeline route alternatives do not offer a significant environmental advantage when compared to the proposed route or would not be economically practical; and therefore, are not preferable to the proposed action. Lastly, we conclude that the alternative Compressor Station 201 aboveground facility locations and electric motor-driven compressor alternatives evaluated do not offer significant environmental advantages when compared to the proposed locations and proposed designs and are not preferable to the proposed action. Therefore, we conclude that the proposed action, as modified by our recommended mitigation measures, is the preferred alternative to meet the Project objectives.

MAJOR CONCLUSIONS

As described in this executive summary and throughout the environmental analysis section of this final EIS, we conclude that construction and operation of the Project would result in some adverse environmental impacts. Most of these impacts would be temporary and occur during construction (e.g., impacts on land use, traffic, and noise). Although individual impacts associated with construction of certain Project components may be predominately borne by environmental justice communities, impacts on environmental justice communities from the Project as a whole would not be disproportionately high and adverse. With implementation of Transco's impact avoidance, minimization, and mitigation measures, as well as their adherence to our recommendations, we conclude that Project effects would be reduced to less-than-significant levels, except for climate change impacts that are not characterized in this EIS as significant or insignificant.

In addition, we recommend additional mitigation measures that Transco should implement to further reduce the environmental impacts that would otherwise result from construction and operation of the Project. We will recommend that these mitigation measures be attached as conditions to any authorization issued by the Commission. These recommended mitigation measures are presented throughout section 4 of the final EIS in bulleted, bold text and are summarized in section 5.2.

1.0 INTRODUCTION

In accordance with the Natural Gas Act (NGA, Title 15 United States Code [U.S.C.] § 717), the Federal Energy Regulatory Commission (FERC or Commission) is responsible for deciding whether to authorize the construction and operation of interstate natural gas transmission facilities. The National Environmental Policy Act (NEPA, 42 U.S.C. § 4321 et seq.) requires that the Commission consider the environmental impacts of a proposed project prior to making a decision. The Commission's natural gas program's environmental staff[11] has prepared this final Environmental Impact Statement (EIS) so that the FERC can comply with NEPA, and to assess the potential environmental impacts that could result from the construction and operation of the Regional Energy Access Expansion (REAE Project or Project).

> The vertical line in the margin identifies text that is new or modified in the final EIS and differs materially from corresponding text in the draft EIS. Changes were made to address comments from the cooperating agencies and other stakeholders on the draft EIS; incorporate updated information provided by Transco regarding the REAE Project after publication of the draft EIS; and incorporate information filed by Transco in response to our recommendations in the draft EIS. As a result, two of the recommendations identified in the draft EIS are no longer applicable to the REAE Project and do not appear in the final EIS. Additionally, two new recommendations have been added to the final EIS.

On March 26, 2021, Transcontinental Gas Pipe Line Company, LLC (Transco) filed an application with the FERC pursuant to sections 7(b) and 7(c) of the NGA, as amended. Transco is seeking authorization to construct, own, operate, and maintain the pipelines, compression, and other aboveground facilities in Pennsylvania, New Jersey, and Maryland and to abandon and replace certain compression facilities. Transco's application was assigned Docket No. CP21-94-000. The Commission issued a *Notice of Application* (NOA) for the Project on April 9, 2021, and the notice appeared in the *Federal Register* (FR) on July 30, 2021.

The REAE Project would involve the construction and operation of 22.2 miles of 30-inch-diameter lateral pipeline and 13.8 miles of 42-inch-diameter loop[12] pipeline in Pennsylvania; one new compressor station in New Jersey; modifications to five existing compressor stations in Pennsylvania and New Jersey; modifications to existing pipeline tie-ins, valves, regulators, and meter and regulating (M&R) stations[13] in Pennsylvania, New Jersey, and Maryland; the addition of ancillary facilities such as regulation controls, valves,[14] cathodic protection, communication facilities, and pig[15] launchers and receivers in Pennsylvania; and abandonment and replacement of certain existing compression facilities. Additionally, Transco proposes to use temporary access roads and staging areas to support construction activities and would establish new permanent access roads to support operation of the new facilities. The Project is described in more detail in section 2.0.

Prior to filing its application, Transco participated in the Commission's Pre-filing Process under Docket No. PF20-3-000.

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11 Commission staff was assisted in the preparation of this EIS by a third-party contractor, Merjent, Inc.

12 A pipeline loop is a segment of pipe constructed parallel to an existing pipeline to increase capacity.

13 A meter and regulating station is an aboveground facility that contains the equipment necessary to measure the volume of gas flowing in a pipeline.

14 A valve is an aboveground facility that is capable of controlling the flow of gas in a pipeline.

15 A pipeline pig is a device used to clean or inspect a pipeline. A pig launcher/receiver is an aboveground facility where pigs are inserted or retrieved from the pipeline.

1.1 PURPOSE AND NEED

The Council on Environmental Quality's (CEQ) regulations for implementing NEPA at Title 40 Code of Federal Regulations (CFR) Part 1502.13 recommends that an EIS should briefly address the underlying purpose and need for a project.[16] As described by Transco, the REAE Project would allow Transco to provide an incremental 829,400 dekatherms per day (Dth/d) of year-round firm transportation capacity from the Marcellus Shale production area in northeastern Pennsylvania to delivery points in New Jersey, Pennsylvania, and Maryland. Transco held open season from March 8, 2019 through May 8, 2019; a supplemental open season from April 28, 2020 to May 28, 2020; a reverse open season from April 24, 2020 to May 25, 2020; and another supplemental open season from March 29, 2021 to April 2, 2021 to affirm and quantify market growth opportunities, which resulted in long-term, binding precedent agreements with eight Local Distribution Companies as shippers for the entire firm transportation capacity of the Project. Transco asserts that the Project would provide enhanced access to Marcellus Shale supplies, support diversification of energy infrastructure along the Atlantic coast, and promote competitive natural gas markets.

We received comments from the U.S. Environmental Protection Agency (EPA) requesting an explanation of what an open season entails and how it relates to or ends in shipper agreements. The EPA also recommends that the EIS establish the current Project demand which justifies the Project need to provide the additional capacity to the system. The open season process has been developed by the Commission to provide transparency to the market concerning potential new capacity, to ensure that new natural gas pipeline capacity is allocated among requesting shippers in a not unduly discriminatory manner, and to assist in the FERC's evaluation of whether a project is correctly sized. An open season can also provide the pipeline company with information regarding market interest that it can utilize to properly size the project. Transco provided a report detailing how it reviewed market growth opportunities for this Project.[17] Market review of a project is beyond the scope of the NEPA review and is a factor that will be assessed by the Commission in any order issued for the Project.

We[18] received comments questioning the need for gas in the delivery area and that other proposed projects might be capable of delivering gas to the same general area. As discussed above, Transco has entered into long-term precedent agreements for the proposed natural gas. Other proposed projects in the area, such as Adelphia Gateway, and Sunoco Mariner East II, have also entered into separate precedent agreements for gas. We evaluate other system alternatives in section 3.3 of this EIS. The need for the Project will be assessed by the Commission in its orders rather than in Commission staff's NEPA analysis.

We also received comments asserting that natural gas transmitted by the Project may be exported overseas as liquefied natural gas (LNG). Whereas various proposals to site LNG liquefaction and export facilities are before the Commission and the U.S. Department of Energy (DOE), the Project is not designed to export natural gas overseas and LNG export is not a component of the purpose and need of the Project. In addition, Transco's responded to our request for information and identified the intended end use of the subscribed natural gas; none of the gas is intended for export outside the U.S.

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[16] On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 FR 43,304), which was effective as of September 14, 2020; however, the NEPA review of this Project was in process at that time and was prepared pursuant to the 1978 regulations.

[17] A study by Levitan & Associates, Inc. (Levitan Study), details market growth opportunities for this Project. See FERC Accession Number. 20220422-5150 included as Attachment 1D to Transco's April 22, 2022 Supplemental Filing.

[18] The pronouns "we," "us," and "our" refer to the environmental staff of the Federal Energy Regulatory Commission's Office of Energy Projects.

1.2 PURPOSE AND SCOPE OF THIS EIS

Our principal purposes in preparing this EIS are to:

- identify and assess the potential direct, indirect, and cumulative impacts on the natural and human environment that would result from construction and operation of the Project;
- describe and evaluate reasonable alternatives to the Project that would avoid or minimize adverse impacts on environmental resources;
- recommend mitigation measures, as necessary, that could be implemented by Transco to reduce impacts on specific environmental resources; and
- encourage and facilitate involvement by the public and interested agencies in the environmental review process.

This EIS addresses topics including geology; soils; groundwater and surface water; wetlands; vegetation; fish and wildlife; threatened, endangered, and other special-status species; land use and recreation; visual resources; socioeconomics (including environmental justice); cultural resources; air quality and noise; climate change; reliability and safety; and cumulative impacts. This EIS describes the affected environment as it currently exists, addresses the environmental consequences of the Project, and compares the Project's potential impacts to those of various alternatives. The EIS also presents our conclusions and recommended mitigation measures.[19]

Our description of the affected environment is based on a combination of data sources, including desktop resources such as scientific literature and regulatory agency reports, information from resource and permitting agencies, scoping comments, and field data collected by Transco and its consultants.

1.2.1 Federal Energy Regulatory Commission

The FERC is an independent federal regulatory agency[20] that regulates the interstate transportation of natural gas, among other industries, in accordance with the NGA, as amended. Pursuant to the Energy Policy Act of 2005 (EPAct) Section 313(b)(1), the FERC is the lead federal agency for the coordination of all applicable federal authorizations. Thus, the FERC is the lead federal agency for preparation of this EIS to comply with NEPA, as described in the CEQ's regulations at 40 CFR 1501.5 and in keeping with the May 2002 Interagency Agreement with other federal agencies.[21] As the lead federal agency, we prepared this EIS to assess the environmental impacts that could result from constructing and operating the Project. This document was prepared in compliance with the requirements of the CEQ's regulations at 40 CFR 1500-1508, and the FERC's regulations implementing NEPA in 18 CFR 380.

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[19] The "recommendations" in the EIS text are not recommendations to Transco (i.e., they are not mere suggestions to the project sponsors). Rather, they are FERC staff's recommendations to the Commission for inclusion as mandatory conditions to any authorization it may issue for the REAE Project. Please see section 5.2 of the EIS for how these conditions would appear in a FERC Order.

[20] The decision makers at the agency are five Commissioners (at full contingent) appointed by the President and confirmed by the Senate. The decisions of the Commission cannot be challenged by the President or Congress, but may be reviewed in federal court.

[21] May 2002 Interagency Agreement on Early Coordination of Required Environmental and Historic Preservation Reviews Conducted in Conjunction With the Issuance of Authorizations to Construct and Operate Interstate Natural Gas Pipelines Certificated by the Federal Energy Regulatory Commission, signed by the FERC, Advisory Council on Historic Preservation, CEQ, U.S. Department of Agriculture, U.S. Department of the Army, U.S. Department of Commerce, U.S. Department of Energy, EPA, U.S. Department of Interior, and U.S. Department of Transportation.

Section 7(b) of the NGA specifies that no natural gas company shall abandon any portion of its facilities subject to the Commission's jurisdiction without the Commission first finding that the abandonment would not negatively affect the present or future public convenience and necessity. Under section 7(c) of the NGA, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate of Public Convenience and Necessity (Certificate) to construct and operate them. The Commission bases its decisions on both economic issues, including need, and environmental impacts.

On March 29, 2021, we sent emails to various federal and state resource agencies that might have an interest in cooperating in the production of the NEPA document for the Project, as defined in 40 CFR 1501.6. The U.S. Army Corps of Engineers (USACE) Baltimore and Philadelphia Districts and the EPA agreed to be cooperating agencies. A cooperating agency has jurisdiction by law over part of a project and/or has special expertise with respect to environmental issues. Cooperating agencies play a role in the environmental analyses of this Project and assist in developing mitigation plans or other measures. They participate in the NEPA process by reviewing the application and related materials, and by reviewing administrative drafts of the overall EIS or the specific portions related to agency permitting or special expertise. As applicable, this EIS is also intended to fulfill the cooperating federal agencies' NEPA obligations (see section 1.2.2 and 1.2.3) and to support subsequent conclusions and decisions made by the Commission and the cooperating agencies.

The Commission will consider the findings contained herein, as well as non-environmental issues, in its review of Transco's application. The identification of environmental impacts related to the construction and operation of the Project, and the mitigation of those impacts, as disclosed in this EIS, would be components of the Commission's decision-making process. The Commission would issue its decision in an Order. If the Project is approved, the Commission would issue a Certificate to Transco. The Commission may accept Transco's application in whole or in part and can attach conditions to the Order that would be enforceable actions to assure that the proper mitigation measures are implemented prior to the Project going into service.

1.2.2 U.S. Army Corps of Engineers

Under Section 404 of the Federal Water Pollution Control Act Amendments (later incorporated into the Clean Water Act [CWA] 33 U.S.C. § 1344), the USACE was given authority over the discharge of dredged or fill materials into the Waters of the United States. The USACE's regulations for permits under Section 10 of the Rivers and Harbors Act (RHA, 33 U.S.C. § 403) can be found at 33 CFR 322, while regulations for permits under Section 404 of the CWA are at 33 CFR 323, and processing of permits is at 33 CFR 325. The Philadelphia District agreed to be a cooperating agency in the preparation of this EIS on May 28, 2021. As a cooperating agency, the USACE may adopt this EIS for the purposes of exercising its regulatory authorities. Transco filed its permit application with the USACE on April 8, 2021.

The District Engineer cannot make a decision on a permit application until the requirements of NEPA are fulfilled. After the publication of an EIS, the USACE authorization can be issued under the Nationwide Permit Program. In communications with FERC staff, representatives of the USACE indicated that individual USACE Districts would not finalize their permit processes for the Project until after the FERC has documented completion of the National Historic Preservation Act (NHPA) Section 106 and Endangered Species Act (ESA) Section 7 consultations. We expect that the Project would be considered by the USACE under its Nationwide Permit Program. However, if it is determined that an Individual Permit with the USACE is required, and once the USACE determines a permit application to be complete, it would issue a public notice. In accordance with EPAct Section 313(d), the USACE would submit or summarize relevant information used in its permit decision, potentially including comments received on its notice, and file this information with the FERC, as the Commission is the keeper of the consolidated record for the proceedings. If an individual permit is required, as an element of its review, the USACE must consider whether the proposed Project represent the least environmentally damaging practicable alternative pursuant to the CWA Section 404(b)(1) guidelines. The term practicable means available and capable of being done after taking into consideration cost, existing technology, and logistics in light of the overall purpose of the Project.

Although this document addresses environmental impacts associated with the Project as it relates to section 404 of the CWA and sections 10 and 14 of the RHA, it does not serve as a public notice for any of the USACE's permits.

1.2.3 U.S. Environmental Protection Agency

The EPA is an independent federal agency responsible for protecting human health and safeguarding the natural environment. The EPA has delegated water quality certification, under section 401 of the CWA, to the jurisdiction of individual state agencies. The EPA may assume section 401 authority if no state program exists, if the state program is not functioning adequately, or at the request of the state. The EPA also oversees the issuance of a National Pollutant Discharge Elimination System (NPDES) permit by the state agency, under section 402 of the CWA, for point-source discharge of water used for hydrostatic testing of pipelines into waterbodies. The EPA also has the authority to review and veto permits issued by the USACE under section 404 of the CWA.

In addition to its authority under the CWA, the EPA also has jurisdictional authority under the Clean Air Act (CAA) to control air pollution by developing and enforcing rules and regulations for all entities that emit air pollutants. Under this authority, the EPA has developed regulations for stationary and mobile sources of air pollution. State and local agencies are required to develop and implement regulations for major and non-major stationary sources of air pollutant that meet these federal requirements. These requirements are submitted to EPA for approval and for incorporation into the State Implementation Plan (*see* 40 CFR 51.160-164). In some cases, where a state air pollution control agency does not have direct authority under an EPA approved State Implementation Plan for a specific regulatory requirement, the state may operate under an EPA delegation of authority. The EPA also established general conformity applicability thresholds that a federal agency can utilize to determine whether a specific action, in a nonattainment or maintenance area, requires a general conformity assessment to ensure that the project's air quality impacts are consistent with the State Implementation Plan.

In addition to its permitting responsibilities, the EPA is required under section 309 of the CAA to review and publicly comment on the environmental impacts of major federal actions including actions that are the subject of draft and final EISs and responsible for implementing certain procedural provisions of the NEPA (e.g., publishing the Notices of Availability of the draft and final EISs in the FR) to establish statutory timeframes for the environmental review process.

1.3 PUBLIC REVIEW AND COMMENT

On June 11, 2020, Transco filed a request to implement the Commission's Pre-filing Process for the REAE Project. At that time, Transco was in the preliminary design stages of the Project and no formal application had been filed. The FERC established its Pre-filing Process to encourage early involvement of interested stakeholders, facilitate interagency cooperation, and identify and resolve environmental issues before an application is filed with the FERC and facility locations are formally proposed. The FERC granted Transco's requests to use the Pre-filing Process on June 18, 2020 and established pre-filing Docket No. PF20-3-000 for the Project. During the Pre-filing Process, we worked with Transco and stakeholders to identify and resolve issues, where possible, prior to Transco's filings of a formal application with FERC. Transco identified multiple route alternatives and alternative sites for its proposed new compressor stations that were considered during design and development of the Project. Transco chose routes near existing rights-of-way where possible and in consideration of stakeholder feedback. For instance, Transco incorporated route variations based on comments received during scoping from the Borough of Laflin and from residences of Laflin, as further discussed in sections 3.4.3 and 3.4.4.

We participated in three virtual open houses sponsored by Transco in June and July 2020 to explain our environmental review process to interested stakeholders.

On July 24, 2020, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Virtual Scoping Sessions* (NOI). The NOI was mailed and/or emailed to approximately 1,966 entities, including affected landowners (as defined in the Commission's regulations); federal, state, and local officials; Native American tribes; agency representatives; environmental and public interest groups; and local libraries and newspapers. We conducted three virtual public scoping sessions to provide an opportunity for agencies and the general public to learn more about the Project and to participate in the environmental analysis by identifying issues to be addressed in the Environmental Assessment (EA). The virtual sessions were held via phone between August 18 to 20, 2020. During the scoping sessions, 22 individuals provided oral comments on the Project.

Between June 30, 2020 and October 13, 2021, the Commission received approximately 115 comment letters. Written comments were submitted by the EPA; New Jersey Department of Environmental Protection (NJDEP), Maryland Department of Natural Resources (MDNR), Baltimore County, Sierra Club, Delaware River Keepers Network, Chester County Pipeline Safety Advisory Board, Pipeline Safety Coalition, Chestnut Hill Township Planning and Zoning, Borough of Laflin, Marcellus Shale Coalition, API Pennsylvania, Pennsylvania Chamber of Business and Industry, Clean Air Council and PennFuture, National Federation of Independent Business in Pennsylvania, Physicians for Social Responsibility (Pennsylvania), Southern New Jersey Development Council, New Jersey Alliance for Action, Food and Water Watch, several local labor and engineering Unions, and 77 other individuals, some of whom commented multiple times. In addition, approximately 250 form letters were submitted between October 8 and October 13, 2021, commenting that an EIS should be prepared for the Project.

On April 9, 2021, the FERC issued a NOA announcing that Transco filed its application with the FERC. Upon review of Transco's application and comments received, the Commission staff determined that an EIS, rather than an EA, should be prepared for the Project. On October 19, 2021, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review* (EIS NOI). The EIS NOI was published in the FR and sent to 2,418 parties, including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners; local libraries and newspapers; and other stakeholders who had indicated an interest in the REAE Project. The EIS NOI requested written comments from the public by November 19, 2021. Twelve comment letters were received in response to the EIS NOI. Written comments were received by EPA, NJDEP, Pennsylvania Chamber of Business and Industry, Delaware River Keepers, and six other individuals.

In total, we received approximately 377 written comment letters during the Pre-filing Process, formal scoping period, and throughout preparation of the draft EIS, including approximately 250 form letters expressing opposition or support for the Project. Table 1.3-1 summarizes the environmental issues and concerns identified by the commentors during the scoping process and identifies the EIS section where each issue is addressed.

TABLE 1.3-1

Issues Raised During Public Scoping for the Regional Energy Access Expansion Project

Issue/Concern	EIS Section Addressing Issue
GENERAL	
Need for Project has not been established; no local benefit of the Project	1.1
Additional consideration of Project need	1.1
General concern regarding environmental impacts of the Project; general statements opposing the Project	1.3
General comments in support of the Project, including the purpose and need for the Project	1.3
Comments that an EIS should be prepared for the Project	1.3
Concerns regarding landowner outreach and ability to comment on the Project; comments that the public participation process was limited before the scoping period; the scoping period should be extended	1.3
Environmental monitoring during construction	2.5
Potential future plans associated with the Project	2.7
GEOLOGY	
Impacts from shallow bedrock or unstable land on the Project	4.1.4, 4.2.4
Identify measures to reduce geological impacts; karst terrain	4.1.4
Impacts from blasting, including on groundwater drinking water supplies	4.1.1.3, 4.3.1.4
Impacts of acid-producing rock on water quality	4.1.4.5
SOILS	
Impacts from sediment runoff, and erosion control measures	4.2
Impacts of trench spoil removal and disposal	4.2
WATER RESOURCES	
Impacts on aquifers and drinking water supplies	4.3.1.4
Impacts on public and private wells, and springs	4.3.1.2
Impacts related to groundwater contamination	4.3.1.3
Impacts on surface waters and wetlands, and habitat fragmentation	4.3.2, 4.3.3
Replacement mitigation for wetland impacts	4.3.3.2
VEGETATION	
Identify revegetation timelines	4.4.2.4
Impacts of noxious and invasive weed species, and measures to reduce impacts	4.4.2.2, 4.4.2.4
Impacts on forested areas and associated surface water impacts	4.3.2.5, 4.4.1.1, 4.4.2.4
Mitigation measures for tree removal, consideration of replacement ratios and native saplings	4.4.2, 4.4.3.1
WILDLIFE	
Impacts on wildlife habitat	4.4.3
SPECIAL STATUS SPECIES	
Impacts on T&E species	4.4.4
Impacts on bald and golden eagles	4.4.4.1
LAND USE, RECREATION, AND VISUAL RESOURCES	
Residential impacts (including septic systems) and concerns regarding eminent domain	4.5.2.4
Impacts on park land	4.5.4
Impacts of unauthorized use of the right-of-way during operations	4.5.2.5
Impacts from hazardous sites in the Project area	4.5.6
Impacts on local zoning, specifically the size of residential lots crossed by the route	4.5.2.4
Consideration of the State Forest Conservation Act and the Roadside Tree Law	4.5.4.5
Financial liability for property damage during construction and operation	4.5.2.4
Visual impacts of aboveground facilities, including on recreational areas	4.5.4, 4.5.7
Visual impacts of tree removal on residential properties	4.5.2.4

TABLE 1.3-1 (cont'd)	
Issues Raised During Public Scoping for the Regional Energy Access Expansion Project	
Issue/Concern	EIS Section Addressing Issue
SOCIOECONOMICS	
Impacts on property values	4.7.7
Comments regarding taxation of property covered by the pipeline easement	4.7.7
Safety impacts on traffic from fenced aboveground facilities that may obstruct drivers' views	4.7.6
Traffic impacts during construction	4.7.6
Impacts on environmental justice populations	4.7.8
CULTURAL RESOURCES	
Impacts on historic properties	4.6
AIR QUALITY AND NOISE	
Air quality impacts during construction, including related to idling equipment	4.8.3
Air emissions and potential health impacts, including from pipeline leaks and compressor stations	4.8.4
Comment that a health risk assessment would be required for the proposed natural gas turbines	4.8.4
Comments related to General Conformity Applicability and Construction Emissions Calculations	4.8.2.5, 4.8.5
Odor impacts from the existing compressor station and potential increase from the compressor station expansion	4.8.4
Noise impacts during construction	4.9.2
Noise and vibration impacts from existing compressor station and potential increase from the compressor station expansion	4.9.1
Noise and vibration impacts on wildlife	4.4.3.2
Noise impacts during operation	4.9.3
RELIABILITY AND SAFETY	
Impacts on public safety and potential for pipeline incidents	4.10
Impacts on nearby residents and notification of pipelines for safety purposes	2.6, 4.10.5
Transco safety record	4.10.3
CUMULATIVE IMPACTS	
Consideration of additional projects for the cumulative impacts analysis	4.11.1
Cumulative impacts associated with existing and proposed connected pipelines, including other Transco projects	4.11.1
Health impacts of gas extraction activities	4.11.1
Potential contamination from nearby industrial facilities	4.11.3.2
Require an audit of emissions from Compressor Station 505 that occurred prior to and following expansions in 1995	4.11.1
ALTERNATIVES	
Additional analysis of compression alternatives, including electric motor-driven compression	3.5.3
Alternative Project designs, including pipeline diameter and aboveground facility locations	3.3.1
Alternative routes to reduce impacts on properties and residences	3.4
Consideration of system alternatives or alternative energy	3.3
Consider renewable energy integration into the proposed compressor stations to supplement the electricity required for electric motor compression	3.5.3
Consideration of a route alternative in Laflin Borough	3.4.3, 3.4.4

The draft EIS was issued on March 2, 2022 and filed with the EPA. The Commission's *Notice of Availability* of the draft EIS was mailed to federal, state, and local government agencies; elected officials; Native American tribes; affected landowners; local libraries and newspapers; intervenors in the FERC's proceeding; and other interested parties (i.e., individuals who provided scoping comments or asked to be on the mailing list). The distribution list for the *Notice of Availability* of the draft EIS was provided in appendix A of the draft EIS. The EPA issued its formal notice indicating that the draft EIS was available for review and comment which was published in the FR on March 11, 2022.[22] The public had 45 days after the date of publication of the EPA's formal notice to comment on the draft EIS either in the form of written comments and/or at public comment sessions conducted via teleconference.

We held three virtual public comment sessions via teleconference during the draft EIS comment period between March 28 and 30, 2022. The comment sessions provided interested parties with an opportunity to present oral comments on our analysis of the environmental impacts of the Project as described in the draft EIS. A total of 23 people commented at the sessions. In addition, 156 parties submitted a total of 166 letters in response to the draft EIS. Multiple form letters were also submitted in response to the draft EIS. All comments received on the draft EIS related to environmental issues have been addressed in this final EIS. A transcript of each comment session and copies of each written comment are part of the public record for the Project. Our responses to relevant comments are provided in appendix I of this final EIS. A subject index is provided in appendix J. Substantive changes in the final EIS are indicated by vertical bars that appear in the margins. The changes were made both in response to comments received on the draft EIS and as a result of updated information that became available after the issuance of the draft EIS.

We received several comments of an administrative nature. There were requests to hold more public scoping meetings, to extend the scoping period, and to create open teleconference scoping meetings so all interested parties have the ability to hear what other commenters state. Scoping periods and scoping meetings are a valuable tool for us to receive comments from the public, but there are additional ways for interested persons to bring their concerns to the attention of the Commission or to hear other comments that FERC has received on the Project. As discussed above, our NOI established a defined scoping period with a concluding date. However, we continued to consider comments received after the close of the scoping period, up until the time we completed our reviews of the application and drafted this EIS. We consider all written comments that are submitted electronically or through the mail outside the scoping period, and these comments, including the comments received orally during scoping meetings, are available for public review on the Commission's website as outlined in the Cover Letter to this EIS.

The Commission's Notice of Availability for this final EIS is being mailed to the agencies, tribes, individuals, and organizations on the distribution list provided in appendix A. The Notice of Availability includes information on how this final EIS may be viewed and downloaded from the FERC website. This final EIS was filed with the EPA for issuance of a formal public Notice of Availability in the Federal Register. In accordance with CEQ's regulations implementing NEPA, no agency decision on a proposed action may be made until 30 days after the EPA publishes a Notice of Availability for this final EIS. However, the CEQ regulations provide an exception to this rule when an agency decision is subject to a formal internal process that allows other agencies or the public to make their views known. In such cases, the agency decision may be made at the same time the notice of this final EIS is published, allowing both periods to run concurrently. Should the Commission issue a Certificate to Transco for the proposed action, it would be subject to a 30-day rehearing period. Therefore, the Commission could issue its decision concurrently with issuance of the final EIS.

1.4 PERMITS, APPROVALS, AND REGULATORY REQUIREMENTS

The FERC and other federal agencies that must make a decision on the REAE Project are required to comply with federal statutes including the CWA, CAA, ESA, Migratory Bird Treaty Act (MBTA), Bald and Golden Eagle Protection Act (BGEPA), and NHPA. Each of these statutes has been considered in the preparation of this EIS. Table 1.4-1 lists the major federal, state, and local permits, approvals, and consultations for construction and operation of the Project. The table also provides the dates, or anticipated

[22] 87 Fed. Reg. 14004 (2022).

dates, when Transco commenced, or anticipates commencing, formal permit and consultation procedures. Transco would be responsible for obtaining all permits and approvals required to construct and operate the Project, regardless of whether or not they appear in this table.

TABLE 1.4-1

Permits, Approvals, and Consultations for the Project [a]

Permitting/Approval Agency	Permit, Approval, or Consultation	Anticipated or Actual File Date	Receipt Date
FEDERAL			
Federal Energy Regulatory Commission	Certificate of Public Convenience and Necessity	March 26, 2021	(Pending)
U.S. Army Corps of Engineers, Baltimore and Philadelphia Districts	Department of the Army permit under section 404 of the Clean Water Act (CWA)	April 8, 2021	(Pending)
U.S. Fish and Wildlife Service, Pennsylvania Ecological Services Field Office	Endangered Species Act, section 7 Consultation; Fish and Wildlife Coordination Act Consultation; Migratory Bird Treaty Act Consultation; Bald and Golden Eagle Protection Act Consultation	February 2020	(Pending)
U.S. Fish and Wildlife Service, New Jersey Ecological Services Field Office	Endangered Species Act, section 7 Consultation; Fish and Wildlife Coordination Act Consultation; Migratory Bird Treaty Act Consultation; Bald and Golden Eagle Protection Act Consultation	July 2020	June 2021
U.S. Fish and Wildlife Service, Maryland Ecological Services Field Office	Endangered Species Act, section 7 Consultation; Fish and Wildlife Coordination Act Consultation; Migratory Bird Treaty Act Consultation; Bald and Golden Eagle Protection Act Consultation	July 2020	July 2020
National Park Service	Consultation for: Captain John Smith Chesapeake National Historic Trail – Susquehanna River Crossing	September 3, 2020; June 9, 2021	August 20, 2021
INTERSTATE AGENCIES			
Susquehanna River Basin Commission, Water Withdrawal Permit Consumptive Use Authorization	Susquehanna River Basin Commission	April 2021	September 28, 2021
PENNSYLVANIA STATE AGENCIES			
Pennsylvania Department of Environmental Protection, Regional Bureaus of Waterways Engineering and Wetlands	CWA 401 Water Quality Certification	March 31, 2021	March 30, 2022
	Chapter 105 Water Obstruction and Encroachment Permit – Pennsylvania Programmatic General Permit (PASGP-5)	April 8, 2021	(Pending)
	Chapter 102 Erosion and Sediment Control Plan Review and Permit (ESCGP-3) for Construction Activities	April 8, 2021	(Pending)
Pennsylvania Department of Environmental Protection, Bureau of Clean Water	CWA section 402 National Pollution Discharge Elimination System – Individual Permit for Hydrostatic Test Water Discharge Permit/Approval	(Anticipates filing in Q2 2022)	(Pending)
Pennsylvania Department of Environmental Protection, Bureau of Air Quality	Air Quality Plan Approval (Minor Modification)	March 9, 2021	December 27, 2021
Pennsylvania Fish and Boat Commission (PFBC)	Consultation (rare aquatic and amphibian species)	January 2020	October 6, 2021; September 7, 2021; May 3, 2022
	Aid to Navigation Plans (if required)	June 2021	June 16, 2021
	Stream Blasting Permit (if required)	(Anticipates filing in Q2 2022)	(Pending)
	Consultation for: PFBC Water Trail Crossing – Susquehanna River	June 9, 2021	August 19, 2021

TABLE 1.4-1 (cont'd)

Permits, Approvals, and Consultations for the Project [a]

Permitting/Approval Agency	Permit, Approval, or Consultation	Anticipated or Actual File Date	Receipt Date
Pennsylvania Department of Conservation and Natural Resources	Consultation (rare plant species)	January 2020	August 23, 2021; May 3, 2022
Pennsylvania Game Commission	Consultation (rare mammalian and avian species)	January 2020	May 4, 2022
Pennsylvania Historical and Museum Commission, State Historic Preservation Office	Section 106, National Historic Preservation Act Consultation	June 2020 March 2022 (Archaeology Addendum 2 and Architecture Addendum 2)	Archaeology: January and July 2021 Historic Architecture: November 15, 2021 March 2022: Architecture Addendum 2 April 21, 2022: Archaeology Addendum 2
NEW JERSEY STATE AGENCIES			
New Jersey Department of Environmental Protection, Division of Land Resource Protection	Freshwater Wetlands Letter of Interpretation	October 2020	August 2021
	Flood Hazard Area Verification Applicability	April 2021	(Pending)
	Flood Hazard Area Applicability Determination for certain Flood Hazard Area Permits by Rule	February 2021	August 2021
New Jersey Department of Environmental Protection, Division of Water Quality, Bureau of Nonpoint Pollution Control	General Permit for Construction Activity, Storm Water (5G3)	(Anticipates filing in Q4 2022)	(Pending)
New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Endangered and Nongame Species Program	Consultation for rare, threatened, and endangered species	July 2020	August 31, 2021
New Jersey Department of Environmental Protection, Division of Parks and Forestry Natural Heritage Program (NHP)	Consultation for rare, threatened, and endangered species	March 2021	August 31, 2021
New Jersey Department of Environmental Protection, Division of Fish and Wildlife, Bureau of Freshwater Fisheries	Consultation for state freshwater fish habitat	July 2020	August 31, 2021
New Jersey Department of Environmental Protection, Historic Preservation Office	Section 106, National Historic Preservation Act Consultation	August 2020	Archaeology: February and July 2021; Architecture: August 13, 2021
New Jersey Department of Environmental Protection, Division of Water Quality, Bureau of Surface Water Permitting	Short-term De Minimis Discharge to Surface Water General Permit (B7)	(Anticipates filing in Q1 2023)	(Pending)
New Jersey Department of Environmental Protection, Division of Water Supply and	Short Term Water Use Permit-by-Rule (BWA-003)/Short Term Water Use Report (BWA-004)	(Anticipates filing in Q3 2022)	(Pending)

TABLE 1.4-1 (cont'd) **Permits, Approvals, and Consultations for the Project [a]**			
Permitting/Approval Agency	Permit, Approval, or Consultation	Anticipated or Actual File Date	Receipt Date
Geoscience, Bureau of Water Allocation and Well Permitting	Short-Term Water Use Permit-by-rule (BWA-003) – for hydrostatic testing activities	(Anticipates filing in Q2 2023)	(Pending)
New Jersey Department of Environmental Protection, Division of Air Quality – Bureau of Stationary Sources	Preconstruction Permit to Construct and Operate (Minor Source)	(Pending)	(Pending)
	Modification to Existing Title V Operating Permit	March 2021	(Pending)
MARYLAND AGENCIES			
Maryland Department of Natural Resources	Consultation for rare, threatened, and endangered species	July 2020	August 2020
Maryland Department of Planning, Maryland Historical Trust	Section 106, National Historic Preservation Act Consultation	August 2020	September 2020
Baltimore County	Grading Permit/Soil Erosion Control Plan Approval	(Anticipates filing in Q2 2022)	(Pending)

[a] Consultations with Native American Groups are summarized in section 4.6.3.

1.4.1 Clean Water Act

The CWA got its legislative start as the Federal Water Pollution Control Act of 1948, but the Act was amended and renamed in 1972. The CWA (33 U.S.C. § 1251 et seq.) establishes the basic structure for regulating discharges of pollutants into the Waters of the United States and regulating quality standards for surface waters. Section 404 of the CWA outlines procedures by which the USACE can issue permits for the discharge of dredged or fill material into Waters of the United States, including wetlands. The EPA also independently reviews Section 404 CWA applications and has veto power for permits issued by the USACE.

The RHA pertains to activities in navigable waters of the United States as well as harbor and river improvements. Section 10 of the RHA prohibits the unauthorized obstruction or alteration of any navigable water of the United States. Construction of any structure or the accomplishments of any other work affecting course, location, condition, or physical capacity of waters of the United States must be authorized by the USACE. The Project would cross one navigable water, the Susquehanna River in Pennsylvania.

The EPA has also delegated Water Quality Certification (WQC) under CWA Section 401 and NPDES permitting under CWA Section 402 to state agencies. The Pennsylvania Department of Environmental Protection (PADEP) is the regulatory authorities delegated with Section 401 certification for the states of Pennsylvania. Transco submitted its Section 401 applications to the PADEP on March 31, 2021 and received its 401 WQC on March 30, 2022. In Pennsylvania, the joint permitting process for federal and state water quality authorizations recognized by the USACE and the PADEP requires Transco to obtain a 401 WQC and a Pennsylvania State Programmatic General Permit in lieu of the Nationwide Permit 12; therefore, Nationwide Permit 12 is not applicable to the Project. All conditions attached to the WQC issued by PADEP, except those that FERC's Director of the Office of Energy Projects, or the Director's designee, identify as waived pursuant to 40 C.F.R. § 121.9, constitute mandatory conditions of the Certificate Order.

There are no proposed wetland impacts in New Jersey; therefore, section 401 certification is not required in New Jersey. Modifications to the Beaver Dam M&R Station in Maryland do not require section 401 authorization.

The NPDES permit program controls stormwater discharges. The EPA has delegated authority to issue NPDES permits to the PADEP and NJDEP. Based on an April 25, 2022 comment by the NJDEP, a NPDES Discharge to Surface Water permit will be needed for any surface water discharge during construction (e.g., dewatering; pipe integrity testing). However, if the discharge is shown to not contain pollutants at levels exceeding applicable standards, Transco would be eligible for a B7 - Short Term De Minimis NJPDES discharge to surface water permit, as indicated in table 1.4-1. Section 4.3 of this EIS discusses impacts on water resources that may be applicable to compliance with the CWA.

1.4.2 Clean Air Act

Congress originally passed the CAA (42 U.S.C. § 85) in 1963, and made major revisions to it in 1970, 1977, and 1990. The primary objective of the CAA, as amended, is to establish federal standards for various pollutants from both stationary and mobile sources, and to provide for the regulation of polluting emissions via state implementation plans. In addition, the CAA was established to prevent significant deterioration (PSD) in areas that meet the NAAQS (attainment or unclassified areas) and to provide for improved air quality in areas that do not meet these federal standards (nonattainment areas). The EPA has delegated the federal PSD permitting process pursuant to the CAA to the NJDEP, Division of Air Quality. The PADEP, Bureau of Air Quality, has direct new source review permitting authority pursuant to their State Implementation Plan and federally approved Title V operating permit program. Section 309 of the CAA directs the EPA to review and comment in writing on environmental impacts associated with all major federal actions. Section 4.11.1 of this EIS has a detailed discussion of air quality issues and applicable regulations.

1.4.3 Endangered Species Act

The Endangered Species Preservation Act of 1966 was amended in 1969, and evolved into the ESA (16 U.S.C. § 1531-1544) in 1973. Section 7 of the ESA states that any project authorized, funded, or conducted by any federal agency (in this case, the FERC) should not "…jeopardize the continued existence of any endangered species or threatened species or result in the destruction or adverse modification of habitat of such species which is determined…to be critical…." As previously stated, the FERC, as the lead federal agency for the Project, is required to consult with the U.S. Fish and Wildlife Service (FWS) to determine whether any federally listed or proposed endangered or threatened species or their designated critical habitats would be affected by the Project. Additional information regarding compliance with the ESA can be found in section 4.7.

1.4.4 Migratory Bird Treaty Act

The MBTA (16 U.S.C. § 703-712) dates back to 1918, but has been amended many times. The MBTA implements various treaties and conventions between the U.S., Mexico, Canada, Japan, and Russia for the protection of migratory birds. Birds protected under the MBTA include all common songbirds, waterfowl, shorebirds, hawks, owls, eagles, ravens, crows, native doves and pigeons, swifts, martins, swallows, and others, including their body parts (feathers, plumes, etc.), nests, and eggs. The MBTA makes it unlawful to pursue, hunt, take, capture, or kill; attempt to take, capture, or kill; possess, offer to or sell, barter, purchase, deliver, or cause to be shipped, exported, imported, transported, carried, or received any migratory bird, part, nest, egg, or product, manufactured or not. This EIS discusses compliance with the MBTA in section 4.6.

1.4.5 Bald and Golden Eagle Protection Act

The BGEPA (16 U.S.C. § 668) was originally passed by Congress in 1940, and amended in 1962 to also protect golden eagles. The 1972 amendment increased penalties for violation of the Act. The 1978 amendment allowed taking of golden eagle nests that interfere with resource development, with permission from the Secretary of the Interior. The BGEPA prohibits taking without a permit, or taking with wanton disregard for the consequences of an activity, any bald or golden eagle or their body parts, nests, chicks, or eggs, which includes collection, molestation, disturbance, or killing. The BGEPA protections include provisions not included in the MBTA, such as the protection of unoccupied nests and a prohibition on disturbing eagles. The BGEPA includes limited exceptions to its prohibitions through a permitting process. This EIS discusses compliance with the BGEPA in section 4.5.

1.4.6 National Historic Preservation Act

Congress passed the NHPA in 1966 (54 U.S.C. § 3001 et seq.), which has been amended multiple times, most recently in 2014. The NHPA created the National Register of Historic Places (NRHP), established the Advisory Council on Historic Preservation (ACHP), and directed states to appoint State Historic Preservation Officers (SHPOs).

Section 101(d)(6) of the NHPA states that properties of religious and cultural importance to an Indian tribe may be determined to be eligible for the NRHP. In meeting our responsibilities under the NHPA, and our tribal trust obligations, the FERC consulted on a government-to-government basis with Indian tribes that may have an interest in the Project and its potential effects on traditional cultural properties. The current status of government-to-government consultations regarding the identification of historic properties in the area of potential effects (APE) that may have religious or cultural significance to Indian tribes is further discussed in section 4.6.

Section 106 of the NHPA requires the FERC to take into account the effects of its undertakings on historic properties, and afford the ACHP an opportunity to comment. Historic properties include prehistoric or historic sites, districts, buildings, structures, objects, or properties of traditional religious or cultural importance that are listed or eligible for listing on the NRHP. In accordance with the regulations for implementing Section 106 at 36 CFR 800, the FERC, as the lead agency, is required to consult with the appropriate SHPOs, interested Indian tribes, and other consulting parties; identify historic properties in the APE; assess project effects on historic properties; and resolve adverse effects. Transco, as a non-federal party, is assisting the FERC in meeting its obligations under Section 106 by preparing the necessary information and analyses as allowed under Part 800.2(a)(3). However, the FERC remains responsible for all final determinations. The status of our compliance with the NHPA is summarized in section 4.10 of this EIS.

2.0 DESCRIPTION OF THE PROPOSED ACTION

2.1 PROPOSED FACILITIES

The REAE Project would involve construction and operation of underground natural gas lateral and loop line pipeline, a new compressor station, and modifications to existing aboveground facilities in Pennsylvania, New Jersey, and Maryland and abandonment and replacement certain existing compression facilities. The Project is shown on figure 2.1-1 and is depicted on U.S. Geological Survey (USGS) topographic base maps in appendix B. Transco also provided aerial photographic base maps, referred to as alignment sheets, depicting the proposed pipeline facilities and associated construction and operation rights-of-way. The alignment sheets can be accessed on our eLibrary at www.ferc.gov.[23] The exact location data of the Project facilities as reviewed by staff is shown on the alignment sheets. Specifically, the Project would include the following facilities:

- Approximately 22.2 miles of 30-inch-diameter pipeline partially collocated with Transco's Leidy Line A from mileposts (MP) 0.00 to 22.32 in Luzerne County, Pennsylvania (Regional Energy Lateral);

- Approximately 13.8 miles of 42-inch-diameter pipeline collocated with Transco's Leidy Line System from MPs 43.72 to 57.50 in Monroe County, Pennsylvania (Effort Loop);

- New electric-motor driven compressor station identified as Compressor Station 201 with 9,000 horsepower (hp) in Gloucester County, New Jersey;

- Addition of two gas-fired turbine driven compressor units with 31,800 hp at existing Compressor Station 505 in Somerset County, New Jersey, to accommodate the abandonment and replacement of approximately 16,000 hp from eight existing internal combustion engine-driven compressor units and increase the certificated station compression by 15,800 hp;

- Addition of two gas-fired turbine driven compressor units with 63,742 hp and modification of three existing compressors at existing Compressor Station 515 in Luzerne County, Pennsylvania to support the Project and to accommodate the abandonment and replacement of approximately 17,000 hp from five existing gas-fired reciprocating engine driven compressors and increase the certificated station compression by 46,742 hp;

- Uprate and rewheel two existing electric motor-driven compressor units at existing Compressor Station 195 in York County, Pennsylvania to increase the certificated station compression by 5,000 hp and accommodate the abandonment of two existing gas-fired reciprocating engine driven compressors, which total approximately 8,000 hp;

- Piping modifications at existing Compressor Station 200 in Chester County, Pennsylvania to support south flow of natural gas;

- Uprate one existing electric motor-driven compressor unit at Compressor Station 207 in Middlesex County, New Jersey to increase the certificated station compression by 4,100 hp;

[23] Transco's alignment sheets can be found under FERC Accession No. 20210326-5274 and are included in Volume 2, which includes 11 Adobe PDF files.

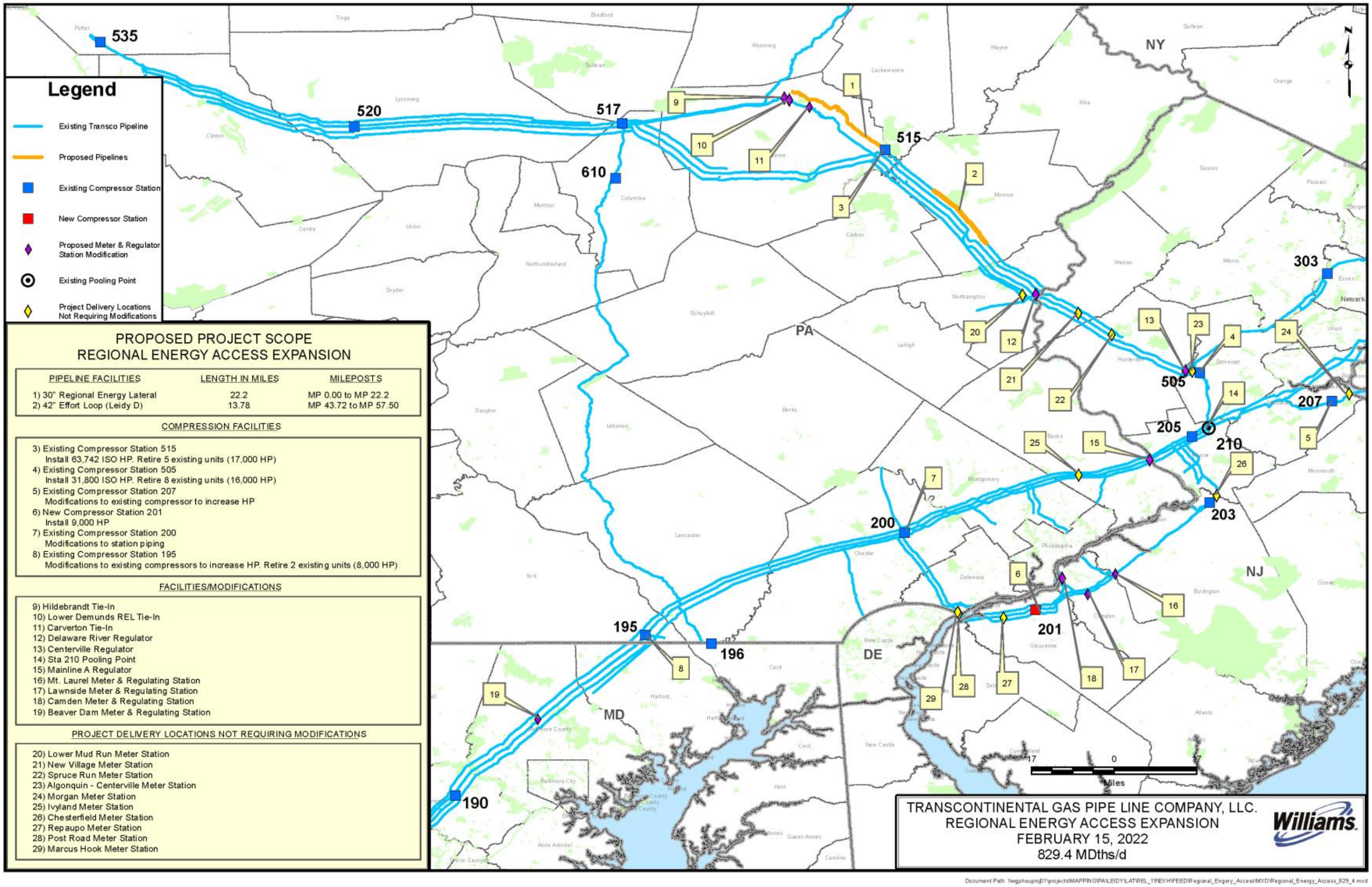

Figure 2.1-1 Project Overview Map

- Modifications to three existing pipeline tie-ins in Pennsylvania (Hildebrandt Tie-in, Lower Demunds REL Tie-in, and Carverton Tie-in);

- Addition of regulation controls at an existing valve setting on Transco's Mainline "A" in Bucks County, Pennsylvania (Mainline A Regulator);

- Modifications at the existing Delaware River Regulator in Northampton County, Pennsylvania;

- Modifications at the existing Centerville Regulator in Somerset County, New Jersey;

- Modifications to the existing valves and piping at the Princeton Junction (Station 210 Pooling Point) in Mercer County, New Jersey;

- Modifications to the Camden M&R Station, Lawnside M&R Station, and Mt. Laurel M&R Station in New Jersey;

- Modifications to the Beaver Dam M&R Station existing delivery meter station in Maryland;

- Contractual changes (no modifications) at 10 existing delivery meter stations in Pennsylvania and New Jersey (Algonquin-Centerville Meter Station, Post Road Meter Station, New Village Meter Station, Spruce Run Meter Station, Marcus Hook Meter Station, Ivyland Meter Station, Repaupo Meter Station, Morgan Meter Station, Lower Mud Run Meter Station, and Chesterfield Meter Station);

- Additional ancillary facilities, such as mainline valves (MLVs), cathodic protection, communication facilities, and internal inspection device (e.g., pig) launchers and receivers in Pennsylvania; and

- Existing, improved, and new access roads and contractor yards/staging areas in Pennsylvania, New Jersey, and Maryland.

Additionally, Transco proposes to use temporary access roads and staging areas to support construction activities and would establish new permanent access roads to support operation of the new facilities. The REAE Project would allow Transco to provide an incremental 829,400 Dth/d of year-round firm transportation capacity from the Marcellus Shale production area in northeastern Pennsylvania to delivery points in New Jersey, Pennsylvania, and Maryland.

2.1.1 Pipeline Facilities

2.1.1.1 Regional Energy Lateral

The Regional Energy Lateral consists of 22.2 miles of 30-inch-diameter pipeline partially collocated with Transco's Leidy Line A in Luzerne County, Pennsylvania. The Regional Energy Lateral would originate at the existing Hildebrandt Tie-in at MP 22.32 and extend to the southeast to it terminus at Transco's existing Compressor Station 515 at MP 0.0. The maximum allowable operating pressure (MAOP) of the Regional Energy Lateral would be 1,480 pounds per square inch gauge (psig). The land requirements for the lateral are summarized in section 2.2. Table 2.2.2-1 identifies where the lateral would be collocated with Transco's Leidy Line A and other rights-of-way.

2.1.1.2 Effort Loop

The Effort Loop consists of 13.8 miles of 42-inch-diameter pipeline collocated entirely with Transco's Leidy Line System in Monroe County, Pennsylvania. The Effort Loop would originate at the proposed MLV 505LD90 at MP 57.5 and extend to the southeast to it terminus at the proposed MLV 505LD81 at MP 43.72. The MAOP of the Effort Loop would be 1,200 psig. The land requirements for the loop pipeline facilities are summarized in section 2.2.

2.1.2 Aboveground Facilities

Transco proposes to construct one new compressor station (Compressor Station 201) in New Jersey; modify five existing compressor stations in Pennsylvania and New Jersey; modify existing pipeline tie-ins, valves, regulators, and M&R stations in Pennsylvania, New Jersey, and Maryland; and the install ancillary facilities such as regulation controls, valves, cathodic protection, communication facilities, and pig launchers and receivers in Pennsylvania. Other minor appurtenant facilities may be installed but are not included in following discussions and tables. Aboveground facilities associated with the REAE Project are described in the sections below.

2.1.2.1 Compressor Stations

Table 2.1.2-1 lists the new and modified compressor stations associated with the Project. Compressor stations utilize engines to maintain pressure within the pipeline to deliver the contracted volumes of natural gas to specific points at specific pressures. Compressors are housed in buildings that are designed to attenuate noise and allow for operation and maintenance activities. Compressor stations also typically include administrative, maintenance, storage, and communications buildings, and can include M&R stations and pig launcher/receiver facilities, as discussed below. Most stations consist of a developed, fenced area within a larger parcel of land that remains undeveloped. The location of the compressor station and amount of compression needed are determined primarily by hydraulic modeling. The general construction and operation procedures for the compressor stations are discussed in sections 2.3.3 and 2.6.2, respectively. Regulatory requirements and impacts on air quality and noise associated with the compressor stations are discussed in section 4.8 and 4.9, respectively.

TABLE 2.1.2-1

Compressor Station Facilities for the Regional Energy Access Expansion Project

Compressor Station Facility	County, State/ Commonwealth	Description
New Compressor Stations		
Compressor Station 201	Gloucester County, NJ	Construct a new 9,000 hp station that would move natural gas downstream to existing M&R Stations. Install one electric-driven compressor unit, outdoor lube cooler, air supply and blower and cooling unit, exhaust ducting, gas aftercooler, blowdown silencers, gas piping, and auxiliary generators. Construct new insulated metal station building and a substation that provide power to the facility. [a]
Compressor Station Modifications		
Compressor Station 505	Somerset County, NJ	Install two new gas-driven compressors with approximately 31,800 hp abandon by removal eight existing compressors with 16,000 hp. A total of 15,800 hp would be added to this station. Station modifications would require additional impervious surfaces and new buildings within the existing footprint of the existing station.
Compressor Station 207	Middlesex County, NJ	Uprate one existing electric-driven compressor unit and increase the station hp from 26,400 hp to 30,500 hp.

TABLE 2.1.2-1 (cont'd) Compressor Station Facilities for the Regional Energy Access Expansion Project		
Compressor Station Facility	County, State/ Commonwealth	Description
Compressor Station 515	Luzerne County, PA	Install two (2) new gas-driven compressors with approximately 63,742 hp. Modify three (3) existing compressors to support new flow. Abandon by removal and replace approximately 17,000 hp from five existing gas-fired reciprocating engine driven compressors to increase the certificated station compression by 46,742 hp. Add mainline valve MLV-515RA10 and associated pig trap.
Compressor Station 195	York County, PA	Uprate and rewheel two (2) existing electric-driven compressor units to increase the existing certificated station hp from 26,000 hp to 31,000 hp and accommodate the abandonment by removal of two existing gas-fired reciprocating engine driven compressors with approximately 8,000 hp of compression.
Compressor Station 200	Chester County, PA	Connect the existing Transco Mainline A to station suction header to support south flow of natural gas.

[a] Additional discussion of the nonjurisdictional powerline that would be installed to provide power to Compressor Station 201 is provided in sections 2.8 and 4.11.

2.1.2.2 M&R Stations and Pipeline Interconnects

M&R stations measure the volume of gas removed from or added to a pipeline system at receipt and delivery interconnects. Most M&R stations consist of a small, graveled area with small building(s) that enclose the measurement equipment. Table 2.1.2-2 lists the existing M&R stations that would be modified or where contractual delivery volumes would be changed.

TABLE 2.1.2-2 M&R Stations for the Regional Energy Access Expansion Project		
Facility	County, State/ Commonwealth	Description
M&R Station Modifications		
Delaware River Regulator	Northampton County, PA	Upsize existing control valves and associated controls, replace annubar meter, and install 24-inch backpressure regulator..
Mainline A Regulator	Bucks County, PA	Add pressure regulation controls to existing valve actuators.
Mt. Laurel M&R Station	Burlington County, NJ	Replace existing orifice meters with ultrasonic meter skid, replace inlet/outlet headers.
Lawnside M&R Station	Camden County, NJ	Upsize existing meter run valves and associated piping, replace existing inlet header and crossover valves.
Camden M&R Station	Camden County, NJ	Replace meter runs to increase capacity.
Centerville Regulator	Somerset County, NJ	Upsize existing control valves and piping and add addition control valve capacity. Add noise attenuation to existing regulator building.
Station 210 Pooling Point	Mercer County, NJ	Add mainline pressure regulation.
Beaver Dam M&R Station	Baltimore County, MD	Replace existing orifice meters, existing flow computer and control system, and relocate gas chromatograph.
M&R Station Contractual Changes		
Lower Mud Run Meter Station	Northampton County, PA	No modifications proposed to facilitate contractual changes.
Post Road Meter Station	Delaware County, PA	No modifications proposed to facilitate contractual changes.
Marcus Hook Meter Station	Delaware County, PA	No modifications proposed to facilitate contractual changes.
Ivyland Meter Station	Bucks County, PA	No modifications proposed to facilitate contractual changes.
Chesterfield Meter Station	Burlington County, NJ	No modifications proposed to facilitate contractual changes.
Repaupo Meter Station	Gloucester County, NJ	No modifications proposed to facilitate contractual changes.
Morgan Meter Station	Middlesex County, NJ	No modifications proposed to facilitate contractual changes.

TABLE 2.1.2-2 (cont'd)		
M&R Stations for the Regional Energy Access Expansion Project		
Facility	County, State/ Commonwealth	Description
New Village Meter Station	Warren County, NJ	No modifications proposed to facilitate contractual changes.
Spruce Run Meter Station	Hunterdon County, NJ	No modifications proposed to facilitate contractual changes.
Algonquin-Centerville Meter Station	Somerset County, NJ	No modifications proposed to facilitate contractual changes.
Interconnect Modifications		
Hildebrandt Tie-In	Luzerne County, PA	Install new tie-in piping, valves, and aboveground piping for annubar meter. Install MLV-515RA40 and associated pig trap.
Lower Demunds REL Tie-In	Luzerne County, PA	Install approximately 400 feet of new 20-inch tie-in piping from the existing Leidy A tie-in site to the new REL tie-in site, valves, and aboveground piping for annubar meter.
Carverton Tie-In	Luzerne County, PA	Install new tie-in piping, valves, and aboveground piping for annubar meter.

2.1.2.3 Valves

MLVs consist of a small system of aboveground and underground piping and valves that control the flow of gas within the pipeline and can also be used to vacate, or blow-off, the gas within a pipeline segment, if necessary. Most MLVs would be installed within the operational rights-of-way of the pipeline facilities or within the footprint of existing MLVs. MLVs can be located at interconnections within a transmission system (i.e., between a mainline pipeline and a loop) and at locations based on the U.S. Department of Transportation (DOT) Class designation of the pipeline; in general, the distance between valves is reduced in areas of higher human population (see section 4.10.3). Table 2.1.2-3 lists the MLVs associated with the Project.

TABLE 2.1.2-3			
Valves for the Regional Energy Access Expansion Project			
Pipeline Segment	County/City, State/ Commonwealth	Milepost	Scope of Work
Regional Energy Lateral			
MLV-515RA10	Luzerne County, PA	0.00	MLV to be installed within the existing footprint of Compressor Station 515. A pig trap will be installed with the MLV.
MLV-515RA20	Luzerne County, PA	7.54	Install a new MLV along the Regional Energy Lateral.
MLV-515RA30	Luzerne County, PA	14.82	Install a new MLV along the Regional Energy Lateral.
MLV-515RA40	Luzerne County, PA	22.32	MLV to be installed within the existing footprint of the Hildebrandt Tie-in. A pig trap will be installed with the MLV.
Effort Loop			
MLV-505LD81	Monroe County, PA	43.72	Remove existing pig trap and tie-in to existing MLV.
MLV-505LD86	Monroe County, PA	49.63	Install a new MLV along the Effort Loop.
MLV-505LD90	Monroe County, PA	57.50	Remove existing pig trap and tie-in to existing MLV.

2.1.2.4 Pig Launchers and Receivers

Pig launchers and receivers are facilities where internal pipeline cleaning and inspection tools, referred to as "pigs," could be inserted or retrieved from the pipeline. Pig launchers/receivers generally consist of a segment of aboveground piping, 20 to 30 feet in length, which ties into the mainline pipeline facilities below the ground surface. All pig launchers and receivers would be installed within the 50-foot-wide operational pipeline right-of-way, or within the compressor station, M&R station facilities, or MLV sites. Table 2.1.2-3 lists the pig launchers and receivers associated with the Project.

2.1.2.5 Cathodic Protection Systems

Cathodic protection systems help prevent corrosion of underground pipeline facilities. These systems typically include a small, aboveground transformer-rectifier unit and an associated anode ground bed located underground. These cathodic protection facilities would be installed perpendicular to the pipeline right-of-way at lengths ranging from 535 to 1,010 feet. Installation of these facilities generally requires a 25-foot-wide workspace to install the cables and wires 30 inches below the ground surface. These facilities are often placed along roadsides or within agricultural fields. Table 2.1.2-4 lists the cathodic protection system facilities associated with Project.

TABLE 2.1.2-4

Cathodic Protection System Facilities for the Regional Energy Access Expansion Project

Pipeline Segment/Facility	County, State/ Commonwealth	Milepost	Scope of Work
Regional Energy Lateral			
Ground Bed 1	Luzerne County, PA	7.5	Install deep anode ground bed at MLV-515RA20.
Ground Bed 2	Luzerne County, PA	15.4	Install 909 feet of remote ground bed.
Ground Bed 3	Luzerne County, PA	19.8	Install deep anode ground bed.
Effort Loop			
Ground Bed 4	Monroe County, PA	43.7	Install 1,806 feet of remote ground bed from MLV-505LD81.

2.1.2.6 Communication Towers and Antennas

Although these auxiliary installations do not require case-specific certificate authority for their construction and operation [see 18 CFR 2.55(a)], we are disclosing the location and potential impacts of these facilities throughout our environmental analysis. Currently, Transco proposes to remove and replace a communication tower at existing Compressor Station 515. The remaining aboveground facilities will use fiber optic communications.

2.2 LAND REQUIREMENTS

Table 2.2-1 summarizes the land requirements for the REAE Project. A more detailed discussion of land use impacts is provided in section 4.5. Collectively, construction of the pipeline and aboveground Project would disturb 791.7 acres of land. Following construction, 231.2 acres of land would be maintained for operation and maintenance of the Project facilities. The remaining 560.2 acres of land disturbed by the Project would be restored and allowed to revert to former use.

TABLE 2.2-1

Land Requirements of the Regional Energy Access Expansion Project

Project/Component [a]	Total Construction (acres) [b]	Total Operation (acres) [c]	Construction Workspace Within Existing Maintained Transco Facilities (acres) [d]
Regional Energy Lateral			
Pipeline	232.7	117.0	35.2
Additional Temporary Workspace (ATWS)	81.2	0.0	12.1
MLV	1.0	1.0	0.0
Cathodic Protection	1.4	1.4	0.2
Access Roads	42.4	0.9	2.2
Staging Areas	12.5	0.0	0.0
Regional Energy Lateral Subtotal	**371.2**	**120.2**	**49.4**
Effort Loop			
Pipeline	162.3	53.5	69.7
ATWS	41.3	0.0	17.5
MLV	2.7	2.7	1.0
Cathodic Protection	0.4	0.4	0.0
Access Roads	3.4	0.4	0.6
Staging Areas	50.1	0.0	0.2
Effort Loop Subtotal	**260.0**	**56.8**	**88.9**
Aboveground Facilities			
Compressor Station 515, Luzerne County, PA	48.0	23.4	19.5
Compressor Station 195, York County, PA	16.4	0.0	15.2
Compressor Station 200, Chester County, PA [e]	20.2	4.9	20.2
Hildebrandt Tie-in, Luzerne County, PA	3.1	0.6	1.7
Lower Demunds REL Tie-in, Luzerne County, PA	1.7	0.8	1.5
Carverton Tie-In, Luzerne County, PA	3.9	0.2	1.5
Delaware River Regulator, Northampton County, PA	8.4	0.0	2.7
Mainline A Regulator, Bucks County, PA	0.5	0.0	0.5
Compressor Station 201, Gloucester, NJ	15.3	15.3	1.5
Compressor Station 505, Somerset, NJ [e]	27.7	8.1	25.5
Compressor Station 207, Middlesex, NJ	5.5	0.0	5.5
Mt. Laurel M&R Station, Burlington, NJ	2.0	0.2	1.0
Lawnside M&R Station, Camden, NJ	0.7	0.1	0.3
Camden M&R Station, Camden, NJ	0.6	0.0	0.5
Centerville Regulator, Somerset, NJ [e]	1.8	0.8	1.8
Station 210 Pooling Point, Mercer, NJ	3.4	0.0	3.4
Beaver Dam M&R Station, Baltimore, MD [f]	1.4	0.0	1.0
Aboveground Facility Subtotal	**160.5**	**54.2**	**103.3**
Project Total	**791.7**	**231.2**	**241.6**

Note: The totals shown in this table may not equal the sum of addends due to rounding.

a The Algonquin-Centerville, Post Road, New Village, Spruce Run, Marcus Hook, Ivyland, Repaupo, Morgan, Lower Mud Run, and Chesterfield Meter Stations can accommodate the contractual changes proposed as part of this Project; no modifications and therefore no workspaces are proposed at these facilities.

b All areas required for construction, including areas that will be identified as permanent right-of-way after Project completion. MLVs are included in the pipeline acreages.

c Facilities denoted as 0.0 acre under Total Operation do not require new or additional operational footprint and are not expected to include new impervious area

d Areas required for construction that are located within Transco's existing maintained pipeline right-of-way and/or facilities.

e New permanent impervious surface may be required to support the modifications to these facilities; however, these modifications are within Transco's existing fenced station.

f Work at Beaver Dam M&R Station will primarily occur within the existing facility buildings. Minimal ground disturbance may occur at the building foundation to complete electrical upgrades.

Although Transco has identified areas where extra workspace or staging areas would be required, additional or alternative areas, as well as minor route alignments, additional access roads, or modification to construction methods could be identified in the future due to changes in site-specific construction requirements, unforeseen conditions in the field, or construction or contractor planning requirements. Transco would be required to file information on each of those areas for FERC review and approval prior to use.

2.2.1 Pipeline Right-of-way

Transco would use a variety of right-of-way configurations to construct and operate the pipeline facilities as presented in table 2.2.1-1. The width of the construction rights-of-way would be reduced to 75 feet in wetland areas where feasible and through other sensitive areas such as waterbodies, sensitive biological areas, and residential lands, as necessary. Transco filed typical cross-section drawings of its temporary construction and permanent rights-of-way (see table 2.3-1).

TABLE 2.2.2-1

Collocation With Other Rights-of-Way for the Regional Energy Access Expansion Project

Pipeline Segment/Collocated Utility	Beginning Milepost	End Milepost	Length (miles)
Regional Energy Lateral			
Leidy Line C	0.00	0.18	0.18
Leidy Line A	0.18	6.48	6.30
PPL Transmission Line	6.74	8.48	1.74
PPL Transmission Line	8.63	8.72	0.09
PPL Transmission Line	9.00	9.09	0.09
Leidy Line A	9.39	10.71	1.32
Leidy Line A	11.44	11.52	0.08
PPL Transmission Line	11.68	11.77	0.09
Sanitary Utility	11.97	12.05	0.098
PPL Transmission Line	13.26	13.74	0.48
PPL Transmission Line	14.85	14.89	0.04
Leidy Line A	15.14	16.80	1.66
Leidy Line A	17.18	17.44	0.26
Leidy Line A	18.96	19.28	0.32
Leidy Line A	19.44	19.87	0.43
Leidy Line A	21.80	21.98	0.18
Leidy Line A	22.20	22.32	0.12
		Regional Energy Lateral Subtotal:	**13.46**
Effort Loop			
Leidy Line A	43.72	43.78	0.06
Both Leidy Line A and Leidy Line B	43.78	44.15	0.37
Leidy Line C	44.15	44.65	0.50
Leidy Line A	44.65	47.58	2.93
Leidy Line C	47.58	48.08	0.50
Leidy Line A	48.08	48.92	0.84
Leidy Line C	48.93	50.02	1.09
Both Leidy Line A and Leidy Line B	50.02	50.52	0.50
Leidy Line A	50.52	50.71	0.19
Both Leidy Line A and Leidy Line B	50.71	51.66	0.95
Leidy Line C	51.66	52.16	0.50
Both Leidy Line A and Leidy Line B	52.16	52.60	0.44
Leidy Line A	52.60	57.50	4.90
		Effort Loop Subtotal:	**13.78**
		Project Total:	**27.33**

For the Regional Energy Lateral, the construction right-of-way in uplands would measure 90 feet in width, with a 30-foot-wide spoil side and a 60-foot-wide working side. In areas where full width topsoil segregation is required, an additional 25 to 75 feet of temporary construction workspace would be needed to provide sufficient space to store topsoil.

For the Effort Loop, the construction right-of-way in uplands would measure 100 feet in width, with a 35-foot-wide spoil side and a 65-foot-wide working side. In areas where full width topsoil segregation is required, an additional 15 to 25 feet of temporary construction workspace would be needed to provide sufficient space to store topsoil.

2.2.2 Collocation with Existing Rights-of-Way

The use, enlargement, or extension of existing rights-of-way over developing a new right-of-way is a means to potentially reduce impacts on resources (often called "collocation"). For linear, utility-type facilities, collocation of a new easement can involve: a) abutting an existing easement; b) partially overlapping or sharing land within an existing easement; or c) siting a facility wholly within an existing easement. Given technical construction and operational constraints, the first two scenarios are far more common. In general, the collocation of new pipeline along existing rights-of-way or other linear corridors that have been previously cleared or used (such as pipelines, power lines, roads, or railroads) may be environmentally preferable to the development of new rights-of-way. For example, impacts on interior forest habitat may be minimized by routing adjacent to or overlapping a disturbed right-of-way rather than clearing a new path in an undisturbed location. Construction-related impacts and adverse cumulative impacts can normally be reduced by use of previously cleared or disturbed rights-of-way; however, in congested or environmentally sensitive areas, it may be advantageous to deviate from an existing right-of-way. Additionally, collocation may be infeasible in some areas due to a lack of or unsuitably oriented existing corridors, engineering and design considerations, or constructability or permitting issues. The Regional Energy Lateral would be collocated with other existing pipeline or powerline rights-of-way for about 60 percent of its length.[24] The Effort Loop is entirely collocated with Transco's existing Leidy Line System. Table 2.2.2-1 lists the locations where the Project would be collocated with other rights-of-way.

2.2.3 Additional Temporary Workspace

In addition to the construction workspaces identified above, additional temporary workspace (ATWS) would typically be required in the following areas:

- adjacent to crossings of roadways, railroads, waterbodies, wetlands, or other utilities;
- construction constraint areas that require special construction techniques, such as direct pipe entry and exit locations;
- direct pipe fabrication areas;
- areas requiring extra trench depth or spoil storage areas;
- certain pipe bend locations;

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[24] In Transco's application, they considered about 5 percent (1.1 miles) of the Regional Energy Lateral to be collocated with the approved PennEast pipeline; however, our analysis reflects that on December 16, 2021, FERC vacated the certificate authorization granted to PennEast for the PennEast Project, including the 2019 Amendment and 2020 Amendment Application. Therefore, any reference to collocation with PennEast has been removed.

- locations with soil stability concerns or side slope construction;
- truck turnarounds or equipment passing lanes; and
- hydrostatic test water withdrawal and discharge locations and water impoundment structures.

Most ATWS for the Project would add 25 feet to the width of construction right-of-way. In total, ATWS for the Regional Energy Lateral and Effort Loop would disturb 81.2 and 41.3 acres of land during construction, respectively. Table C-1 in appendix C identifies where Transco has requested extra workspace, including workspace acreage of impact and the justification for their use.

2.2.4 Pipe/Contractor Yards and Staging Areas

Transco proposes to use two contractor yards (1.2 and 11.3 acres) to construct the Regional Energy Lateral and one contractor yard (50.1 acres) to construct the Effort Loop during construction. The contractor yards would be used for equipment, pipe sections, and construction material and supply storage, as well as temporary field offices, parking, and pipe preparation and preassembly staging areas. The contractor yards would be restored in accordance with Commission and other applicable permit requirements or as requested by the landowner. Yard locations are depicted on the topographic maps in appendix B.

2.2.5 Access Roads

Transco would use existing public and private roads to gain access to the pipeline rights-of-way and aboveground facilities to the fullest extent possible and would also construct and use new access roads where access is needed and roads do not currently exist. Many of the proposed access roads are existing roads that can accommodate construction traffic without modification or improvement. Some access roads, however, are dirt or gravel roads that are not currently suitable for construction traffic. Where necessary, Transco would improve unsuitable dirt and gravel roads through widening and/or grading, gravelling, installing or replacing culverts, or clearing overhanging vegetation or tree limbs. Widening would generally involve increasing the width of the road up to 30 feet. After construction, Transco would remove access road improvements and restore improved roads to their preconstruction condition unless the landowner or land-managing agency requests that the improvements be left in place, or the roads would be utilized as operational access to the pipeline right-of-way or aboveground facilities.

Along the Regional Energy Lateral, 41 existing roads and 10 proposed new roads would be used for site access during construction activities. Of these, 46 would be restored to preconstruction conditions or better after construction use, and 5 would be maintained for operations and maintenance activities. Along the Effort Loop, 12 existing roads and 3 proposed new roads would be used for site access during construction activities. Of these, 12 would be restored to preconstruction conditions or better after construction use, and 3 would be maintained for operations and maintenance activities.

Existing roads would be used to access aboveground facilities during construction or modification activities with the exception of a new access road that would be used to access the new Compressor Station 201 proposed in Gloucester County, New Jersey. This new access road would also be used to permanently access Compressor Station 201 during operation of the facility. Table C-2 in appendix C identifies the temporary and permanent access roads proposed for the Project. Access roads are depicted on the Project location maps provided in appendix B.

2.2.6 Aboveground Facilities

Table 2.2-1 lists the land required for each aboveground facility. Construction and modifications of aboveground facilities would typically include clearing, grading, compacting the site where necessary, pouring concrete foundations, and erecting/installing aboveground equipment, buildings, and piping. Limited direct ground disturbance (e.g., grading and excavation) would be needed to complete the facility modifications. Erosion and sediment controls would be installed around disturbed areas prior to the start of facility construction to minimize the potential for erosion and the potential for impacts on offsite wetlands and waterbodies.

Construction of new Compressor Station 201 would generally involve excavation as necessary to accommodate the concrete foundations for the new compressors and buildings. The compressor station equipment typically would be shipped to the site by truck and stored onsite. The equipment would then be positioned on foundations, leveled, grouted where necessary, and secured with anchor bolts. The buildings would be erected in accordance with industry standards and building codes, as applicable. All components in high-pressure natural gas service would be hydrostatically tested and all controls and safety equipment and systems, emergency shutdown equipment, relief valves, and gas measurement and control equipment would be commissioned prior to being placed in service. The areas disturbed by construction would be graded, restored, and landscaped, including any visual screening measures that are necessary. Graveled areas, paved areas, or areas with aboveground facilities would not be restored. The compressor station would be enclosed by security fence and controlled access gates. Transco plans a fee-simple purchase of the land chosen for construction and operation of the proposed new compressor station.

The proposed modifications at existing compressor stations, M&R stations, regulators, and tie-ins would occur within or adjacent to Transco's existing sites. The modifications at Compressor Station 515 would require additional operational facility footprint. The modifications for Compressor Station 505 would require additional impervious surfaces and new buildings within Transco's existing fenced facility. Compressor Station 200 modifications would require additional impervious surfaces within Transco's existing fenced facility. The modifications for Compressor Stations 207 and 195 would not require additional operational facility footprint and no ground disturbance is anticipated. Out of the 160.5 acres of land disturbed for construction of the aboveground facilities, about 103.6 acres of this total would occur on lands located within Transco's existing maintained pipeline right-of-way and/or existing facilities. Facilities denoted in table 2.2-1 as 0.0 acre under Total Operation do not require new or additional operational footprint and are not expected to include new impervious area. The proposed work at aboveground facility sites would be completed in conjunction with construction of the pipeline facilities.

Construction and operation of the aboveground facilities would temporarily disturb 160.5 acres of land and permanently affect 52.5 acres of land. MLVs would be installed within the operational pipeline rights-of-way. All pig launchers and receivers would be installed within the 50-foot-wide operational pipeline right-of-way; or within the compressor station, M&R station facilities, or MLV sites.

2.3 CONSTRUCTION PROCEDURES

Transco would design, construct, operate, and maintain their respective pipelines and facilities in accordance with DOT regulations under 49 CFR 192 (Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards) and other applicable federal and state/commonwealth regulations. DOT regulations specify pipeline material selection; minimum design requirements; protection from internal, external, and atmospheric corrosion; and qualification procedures for welders and operations personnel, in addition to other design standards. Transco would also comply with the siting and maintenance requirements under 18 CFR 380.15 (Siting and Maintenance Requirements) and other applicable federal and state/commonwealth regulations, including the requirements of the U.S. Department of Labor, Occupational Safety and Health Administration (OSHA). These safety regulations are intended to ensure adequate protection of the public, pipeline workers, contractors, and employees and to prevent natural gas pipeline accidents and failures (see section 4.10).

Transco would also construct, restore, and maintain the Projects according to the measures described in our Upland Erosion Control, Revegetation, and Maintenance Plan (Plan) and Wetland and Waterbody Construction and Mitigation Procedures (Procedures), which are best management practices (BMPs) developed to minimize the environmental impact of construction and operation of interstate natural gas transmission facilities. Transco's Plan and Procedures would incorporate the FERC Plan and Procedures. However, Transco is requesting a right-of-way width greater than 75 feet in specific wetlands based on site-specific conditions, which are evaluated in section 4.3.3. Transco has identified 0.55 mile on the Regional Energy Lateral where ground surfaces would be recontoured after construction, which is discussed in section 4.1.3. Transco has also requested and provided the required site-specific justifications to allow workspaces within 50 feet of waterbodies and wetlands. These are further discussed and evaluated in sections 4.3.2 and 4.3.3, and outlined in table C-3 in appendix C.

Transco provided a series of construction plans describing how it would construct and operate the Project; reduce potential environmental impacts; and restore, monitor, and maintain the construction and operational right-of-way. These plans are identified in table 2.3-1 below and are discussed in more detail throughout the EIS. Transco is preparing its Environmental Compliance Plan (ECP), which would compile these documents into a construction implementation plan.

2.3.1 General Pipeline Construction Procedures

Constructing the pipelines and associated facilities would generally be completed using sequential pipeline construction techniques, which include survey and staking; clearing and grading; trenching; pipe stringing, bending, and welding; lowering-in and backfilling; hydrostatic testing; commissioning; and cleanup and restoration (figure 2.3.1-1). These construction techniques would generally proceed in an assembly line fashion, and construction crews would move down the construction right-of-way as work progresses. Construction at any single point along the pipelines, from surveying and staking to cleanup and restoration, could last from about 3 to 6 weeks or longer depending upon the rate of progress, weather, terrain, and other factors. Specialized construction methods, such as the cut and fill methods used on steep side slopes, the direct pipe method used to cross the Susquehanna River, residential-specific methods, and procedures for crossing of waterbodies and wetlands would also be employed. These specialized construction methods are described in section 2.3.3.

2.3.1.1 Survey and Staking

The first step of construction involves engineering and land survey crews staking the limits of the construction right-of-way, the centerline of the proposed trench, ATWS, and other approved work areas. Property owners would be notified prior to surveying and staking activities. Transco would mark approved access roads using temporary signs or flagging, and the limits of approved disturbance on any access roads requiring widening. Transco would fence off environmentally sensitive areas (e.g., waterbodies and wetlands, special status species habitat, and historic properties) where the construction right-of-way may be constricted. Property markers and old survey monuments would be referenced and marked and replaced during restoration. Typically, land surveying is done using all-terrain vehicles (ATV) and pick-up trucks.

TABLE 2.3-1 **Construction and Restoration Plans for the Regional Energy Access Expansion Project**	
General Plan Name	Location of Plan
Transco's Upland Erosion Control, Revegetation, and Maintenance Plan	Appendix 1D of Transco's Resource Report 1. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Transco's Wetland and Waterbody Construction and Mitigation Procedures	Attachment 1C of Transco's supplemental filing. FERC Accession No. 20220425-5104: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220425-5104
Best Management Practice Figures	Appendix 1C of Transco's Resource Report 1. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Typical Cross-Section Drawings	Attachment 13 of Transco's Response to Environmental Information Request. FERC Accession No. 20210615-5073. https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210615-5073
Winter Construction Plan	Appendix 1E of Transco's Resource Report 1. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Construction Spill Prevention and Response Procedures for Oil and Hazardous Materials	Appendix 2C of Transco's Resource Report 2. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Transco Unanticipated Discovery of Contamination Plan	Attachment 14 of Transco's Response to Environmental Information Request. FERC Accession No. 20210615-5073. https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210615-5073
Direct Pipe Monitoring, Inadvertent Return Response, and Contingency Plan	Attachment 2B of Transco's supplemental filing. FERC Accession No. 20220425-5104: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220425-5104
Invasive Species Management Plan	Attachment 3B 1of 2 of Transco's supplemental filing. FERC Accession No. 20220425-5104: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220425-5104
Migratory Bird Plan	Attachment 3B 2 of 2 of Transco's supplemental filing. FERC Accession No. 20220425-5104: https://elibrary.ferc.gov/eLibrary/filelist?accession_number=20220425-5104
Unanticipated Discovery Plans for Cultural Resources and Human Remains (Pennsylvania, New Jersey, and Maryland)	Appendix 4F of Transco's Resource Report 4. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Unanticipated Discovery Plan for Paleontological Resources	Appendix 6B of Transco's Resource Report 6. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Blasting Plan	Attachment 51 of Transco's Response to Environmental Information Request. FERC Accession No. 20210615-5073. https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210615-5073
Subsidence Monitoring and Mitigation Plan	Attachment 14 of Transco's Response to Environmental Information Request. FERC Accession No. 20210805-5117. https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210805-5117
Traffic Management Plan	Appendix 8B of Transco's Resource Report 8. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274
Fugitive Dust Control Plan	Appendix 9D of Transco's Resource Report 9. FERC Accession No. 20210326-5274: https://elibrary.ferc.gov/eLibrary/filelist?accession_Number=20210326-5274

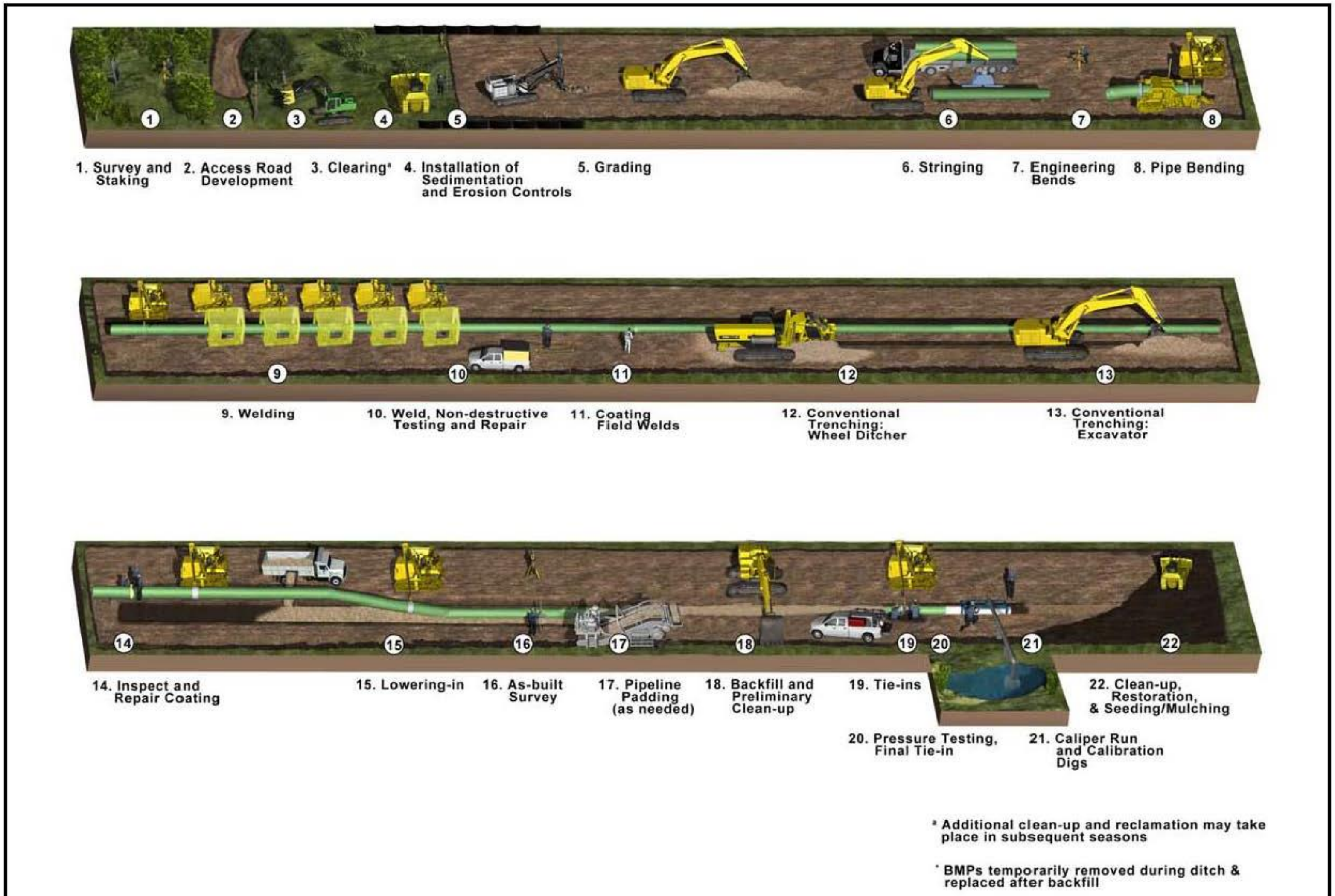


Figure 2.3.1-1
Regional Energy Access Expansion
Typical Pipeline Construction Sequence

2.3.1.2 Clearing and Grading

Prior to beginning ground-disturbing activities, Transco's construction contractors would contact the One-Call system for each state/commonwealth to locate, identify, and flag existing underground utilities to prevent accidental damage during pipeline construction. Once this process is complete, the clearing crew would mobilize to the construction areas. Fences along the rights-of-way would be cut and braced, and temporary gates and fences would be installed to contain livestock, if present. Clearing and grading would remove trees, shrubs, brush, roots, and large rocks from the construction work area and would level the right-of-way surface to allow operation of construction equipment. Vegetation would generally be cut or scraped flush with the surface of the ground, leaving rootstock in place where possible. Cleared vegetation and stumps would either be chipped (except in wetlands) or hauled offsite to a commercial disposal facility.

Grading would be conducted where necessary to provide a reasonably level work surface. More extensive grading would be required in uneven terrain and where the right-of-way traverses steep slopes and side slopes. Transco has indicated that it would separate topsoil from subsoil as outlined in the FERC Plan and Procedures. Typically, topsoil would be segregated from subsoil in non-saturated wetlands, cultivated or rotated croplands, managed pastures, hayfields, residential areas, and in other areas requested by the landowner or land managing agency unless Transco is instructed by a landowner or land managing agency not to do so or Transco imports topsoil in accordance with the FERC Plan. In soils with less than 12 inches of topsoil, the entire topsoil layer would be segregated. During backfilling, subsoil would be returned to the trench first. Topsoil would follow such that spoil would be returned to its original horizon.

Temporary erosion controls would be installed along the construction right-of-way immediately after initial disturbance of the soil and would be maintained throughout construction. Temporary erosion control measures would remain in place until permanent erosion controls are installed or restoration is completed. Transco has committed to employing an Environmental Inspector (EI) during construction to help determine the need for erosion controls and ensure that they are properly installed and maintained. Additional discussion of EI responsibilities is provided in section 2.5.2.

2.3.1.3 Trenching

Soil and bedrock would be removed to create a trench into which the pipeline would be placed. Track-mounted excavator or similar equipment would be used to dig the pipeline trench. When rock is encountered, tractor-mounted mechanical rippers, hydraulic hoe rams, or rock trenchers would be used to fracture the rock prior to excavation. If rock cannot be removed by any of these techniques, blasting may be required to fracture the rock prior to its removal (see section 2.3.1.4).

The trench would be excavated to a depth that would provide sufficient cover over the pipeline in accordance with DOT standards in 49 CFR 192.327 (see section 4.10.3 for detailed depth of cover requirements). Typically, the trench would be deep enough (about 7 feet for the 30-inch-diameter Regional Energy Lateral and about 8 feet deep for the 42-inch-diameter Effort Loop) to provide a minimum of 3 feet of cover over the top of the pipe after backfilling. Excavations could be deeper in certain locations, such as at road, stream, and ridgetop crossings. Less cover would be provided in rocky areas. Additional cover (above DOT standards) could also be negotiated at a landowner's request to accommodate specific land use practices. Additional depth of cover generally requires a wider construction right-of-way (resulting in greater temporary disturbance) to store the additional trench spoil. Spoil material excavated from the trench would be temporarily piled to one side of the right-of-way, adjacent to the trench. Subsoil would not be allowed to mix with the previously stockpiled topsoil.

Dewatering of the pipeline trench may be required in areas with a high water table or after a heavy rain. All trench water would be discharged into well-vegetated upland areas or properly constructed dewatering structures to allow the water to infiltrate back into the ground. If trench dewatering is necessary in or near a waterbody, the removed trench water would be discharged into an energy dissipation/sediment filtration device, such as a geotextile filter bag or straw bale structure located away from the water's edge to prevent heavily silt-laden water from flowing into nearby waterbodies in accordance with the FERC Procedures, construction plans, and all applicable permits. Any contaminated soil or groundwater encountered during grading or excavations would be managed in accordance with the Unanticipated Discovery of Contamination Plan (see table 2.3-1).

2.3.1.4 Rock Removal and Blasting

Blasting would be required in areas where mechanical equipment cannot break up or loosen the bedrock. Transco would implement its general Blasting Plan that was developed in accordance with industry accepted standards, applicable regulations, and permit requirements (see table 2.3-1 and section 4.1.1.3). Transco would adhere to strict safety precautions during blasting and would exercise care to prevent damage to nearby structures, utilities, wells, springs, and other important resources. All blasting activities would be performed in compliance with federal, state/commonwealth, and local codes, ordinances, and permits; manufacturers' prescribed safety procedures; and industry practices. Blasting is discussed in more detail in section 4.1.1.3 of this EIS.

2.3.1.5 Pipe Stringing, Bending, Welding, and Coating

Once the trench is excavated, the next process in conventional pipeline construction is stringing the pipe along the trench. Stringing involves initially hauling the pipe by tractor-trailer, generally in 40-foot lengths (referred to as "joints"), from contractor yards to the construction right-of-way. The pipe would be off-loaded from trucks and placed next to the trench using a sideboom tractor. The pipe would be delivered to the job site with a protective coating of fusion-bonded epoxy or other approved coating that would inhibit corrosion by preventing moisture from coming into direct contact with the steel. Typically, several pipe joints are lined up end-to-end or "strung" to allow for welding into continuous lengths known as strings. Individual joints would be placed on temporary supports or wooden skids and staggered to allow room for work on the exposed ends.

The pipe would be delivered to the contractor yards and work areas in straight sections. Some bending of the pipe would be required to enable the pipeline to follow the natural grade of the trench and direction changes of the right-of-way. Selected joints would be bent by track-mounted hydraulic bending machines as necessary prior to line-up and welding. Manufacturer supplied induction bends and pre-fabricated elbow fittings may be used in certain circumstances as needed. Following stringing and bending, the individual joints of pipe would be aligned and welded together. All welding would be performed according to applicable American National Standards Institute, American Society of Mechanical Engineers, and American Petroleum Institute standards, as well as Transco specifications. Only welders qualified to meet the standards of these organizations would be used during construction. Every completed weld would be examined by a welding inspector to determine its quality using radiographic or other approved methods as outlined in 49 CFR 192. Radiographic examination is a nondestructive method of inspecting the inner structure of welds and determining the presence of defects. Welds that do not meet the regulatory standards and specifications would be repaired or removed.

Once the welds are made, a coating crew would coat the area around the weld with additional epoxy or other coating before the pipeline is lowered into the trench. Prior to application, the coating crew would thoroughly clean the bare pipe with a power wire brush or sandblast machine to remove dirt, mill scale, and other debris. The crew would then apply the coating and allow it to dry.

Special tie-in crews would be used at some locations, such as at waterbody and road crossings, at changes in topography, and at other selected locations as needed. A tie-in is typically a relatively small segment of pipeline specifically used to cross certain features as needed. Once the pipeline segment is installed across the feature, the segment is then welded to the rest of the pipeline.

2.3.1.6 Lowering-In and Backfilling

Before the pipeline is lowered-in, the trench would be inspected to ensure that it is free of rocks and other debris that could damage the pipe or protective coating. In rocky areas or where the trench contains bedrock, padding material such as sandbags or support pillows would be placed in the bottom of the trench to protect the pipeline. A padding machine may be used to ensure that rocks mixed with subsoil do not damage the pipe. The padding would consist of subsoil free from rocks and would surround the pipe along the bottom, both sides, and at the top. Topsoil would not be used as padding material.

Typically, any water that is present in the trench would be removed and pumped to a vegetated upland through an approved filter. The pipeline would then be lowered into the trench by a series of side-boom tractors (tracked vehicles with hoists on one side and counterweights on the other), which would carefully lift the pipeline and place it on the bottom of the trench. After the pipe is lowered into the trench, final tie-in welds would be made and inspected.

Trench breakers (stacked sandbags or polyurethane foam) would then be installed in the trench on slopes at specified intervals to prevent subsurface water movement along the pipeline. The trench would then be backfilled using the excavated material. All suitable material excavated during trenching would be re-deposited into the trench using bladed equipment or backhoes. If rock is excavated from the trench and subsequently used as backfill, it would not be allowed to extend above the soil horizon where it naturally is found. A crown of soil may be left over the trench to compensate for settling. Appropriately spaced breaks may be left in the crown to prevent interference with stormwater runoff. The topsoil is then spread across the graded construction right-of-way when applicable. The soil would be inspected for compaction and scarified, as necessary.

2.3.1.7 Internal Pipe Cleaning and Hydrostatic Testing

After burial, the pipeline would be hydrostatically tested to ensure that the system is capable of withstanding the operating pressure for which it was designed. Hydrostatic testing involves filling the pipeline with water and pressurizing the water in the pipeline for several hours to confirm the pipeline's integrity. The testing would be done in segments according to DOT's specifications in 49 CFR 192. Any leaks would be repaired and the section of pipe retested until the required specifications were met. At the completion of the hydrostatic test, the pressure is removed from the test section and the water is released from the test section. Test water discharges would be completed according to the FERC Procedures, Transco's construction and restoration plans, and other permit requirements. Section 4.3.2.4 provides additional information on hydrostatic testing and water use.

2.3.1.8 Commissioning

Commissioning involves verifying that equipment has been properly installed and is working, verifying that controls and communications systems are functioning, and confirming that the pipeline is ready for service. The pipeline would be prepared for service by purging the pipeline of air and loading it with natural gas. Transco would not be authorized to place the pipeline facilities into service until written permission is received from the Director of the FERC's Office of Energy Projects (OEP).

2.3.1.9 Cleanup and Restoration

Within 20 days of backfilling the trench (10 days in residential areas), all work areas would be graded and restored to preconstruction contours and natural drainage patterns as closely as possible. Permanent slope breakers or diversion berms would be constructed and maintained in accordance with Transco's construction and restoration plans. Fences, sidewalks, driveways, stone walls, and other structures would be restored or repaired as necessary. If seasonal or other weather conditions prevent compliance with these timeframes, temporary erosion controls would be maintained until conditions allow completion of final cleanup.

Topsoil and subsoil would be tested for compaction at regular intervals in agricultural areas disturbed by construction activities, and severely compacted agricultural areas would be plowed. Surplus construction material and debris would be removed from the right-of-way unless the landowner or land-managing agency approves otherwise. Excess rock/stone would be removed from at least the top 12 inches of soils in agricultural and residential areas and, at the landowner's request, in other areas. Transco would remove excess rock/stone such that the size, density, and distribution of rock on the construction right-of-way would be similar to adjacent non-right-of-way areas. Landowners are also at liberty to negotiate certain specific construction requirements and restoration measures directly with Transco.

Restoration activities would be completed in accordance with landowner agreements, permit requirements, and written recommendations on seeding mixes, rates, and dates obtained from the local conservation authority or other duly authorized agency and in accordance with Transco's construction and restoration plans. The right-of-way would be seeded within 6 working days following final grading, weather and soil conditions permitting. Alternative seed mixes specifically requested by the landowner or required by agencies may be used. Any soil disturbance that occurs outside the permanent seeding season or any bare soil left unstabilized by vegetation would be mulched to minimize erosion, in accordance with Transco's construction and restoration plans. Additional discussions of restoration activities are provided in sections 4.2, 4.4.2, and 4.5.

Markers showing the location of the pipeline would be installed along the pipeline rights-of-way according to Transco specifications as well as at fence, road, and railroad crossings to identify the owner of the pipeline and convey emergency information in accordance with applicable governmental regulations, including DOT safety requirements. Special markers providing information and guidance for aerial patrol pilots would also be installed.

Any property damaged during construction would be restored to its original or better condition in accordance with individual landowner agreements. Access road improvements would be removed after construction, and affected roads would be restored to their preconstruction condition unless the landowner or land-managing agency requests that the improvements be left in place.

Following construction, Transco, as well as FERC staff, would conduct follow-up inspections to monitor the restoration and revegetation of all areas disturbed during construction (see section 2.5.4).

2.3.2 Special Pipeline Construction Procedures

Special construction techniques are required when a pipeline is installed across waterbodies, wetlands, roads, foreign utilities, steep slopes, residences, agricultural lands, and other sensitive environmental resources. In general, ATWS adjacent to the construction right-of-way would be used at most of these areas for staging construction, stockpiling spoil, storing materials, maneuvering equipment, and fabricating pipe. General procedures are described below; more specific procedures are further discussed in section 4, as applicable.

2.3.2.1 Waterbody Crossings

Waterbody crossings would be completed in accordance with the measures described in the Transco's Procedures, Transco's ECP, and in accordance with federal, state/commonwealth, and local permits. The waterbodies that would be crossed by the Project and the proposed crossing method for each waterbody crossings are listed in table C-4 in appendix C and discussed in section 4.3.2. ATWS necessary for waterbody crossings would be located a minimum of 50 feet from the waterbody edge, except where adjacent upland consists of actively cultivated or rotated cropland or other disturbed land, or where a site-specific approval for a reduced setback is granted by the FERC, as discussed in section 4.3.2.

The EPA recommended that the EIS describe the BMPs used during construction and post-construction to protect surface waters from erosion and sedimentation. To prevent sedimentation caused by equipment traffic crossing through waterbodies, Transco would install and maintain temporary equipment bridges during construction. Bridges may include clean rock fill over culverts, timber mats supported by flumes, railcar flatbeds, flexi-float apparatuses, or other types of spans. Each bridge would be designed to accommodate normal to high streamflow (storm events) and would be maintained to prevent soil from entering the waterbody and to prevent restriction of flow during the period the bridge is in use. Sediment barriers would be installed immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers would be properly maintained throughout construction and reinstalled as necessary until replaced by permanent erosion controls or restoration of adjacent upland areas is complete and revegetation has stabilized the disturbed areas.

Sediment barriers, such as silt fence and straw bales, would be installed immediately after initial disturbance of the waterbody or adjacent upland. Sediment barriers would be properly maintained throughout construction, until replaced by permanent erosion controls or restoration of adjacent upland areas is complete and revegetation has stabilized the disturbed areas. Trench plugs, consisting of compacted earth of similar low permeability material, or foam, would be installed at the entry and exit points of wetlands and waterbodies to prevent water from the stream or wetland from moving along the trench. After backfilling, streambanks would be re-established to approximate pre-construction contours and stabilized.

The pipeline would be installed using one of the waterbody crossing methods described below. The pipelines would be installed below scour depth (see section 4.3.2) for each waterbody crossed. In most cases, at least 4 feet of cover over the pipeline at waterbody crossings would be maintained; except in consolidated rock, where there would be a minimum of 2 feet of cover. Trench spoil would be placed on the banks above the high-water mark for use during backfilling. In some cases, the pipeline would be coated with concrete for negative buoyancy. Concrete would not be poured or cured along the right-of-way. Any staging areas used to cast concrete would be located away from any waterbodies and enclosed with perimeter erosion and sediment controls to ensure that materials are unable to enter a waterbody. Additionally, should concrete need to be mixed within the staging area, a wash-out pit would be implemented and materials disposed of properly.

The streambed profile would be restored to pre-existing contours and grade conditions to prevent scouring. The stream banks would then be restored as near as practicable to pre-existing conditions and stabilized. Stabilization measures could include seeding, tree planting, installation of erosion control blankets, or installation of riprap materials, as appropriate. Jute thatching or bonded fiber blankets would be installed on banks of waterbodies or road crossings to stabilize seeded areas. Temporary erosion controls would be installed immediately following bank restoration. The waterbody crossing area would be inspected and maintained until restoration of vegetation is complete.

Conventional Open-cut Construction Method

The conventional open-cut construction method involves trench excavation, pipeline installation, and backfilling in a waterbody without controlling or diverting streamflow (i.e., the stream flows through the work area throughout the construction period). This method is currently not proposed for the Project. However, if a waterbody proposed to be crossed by a dry-ditch crossing method is dry or has no discernable flow at the time of construction, the conventional dry open-cut method would be used. Transco would be prepared to suspend conventional open-cut construction at the crossing and switch to one of the dry-crossing methods described below if there is discernible flow. Temporary diversion structures and necessary construction equipment would be on-site at proposed open-cut crossings in case it is necessary to switch to a dry-ditch crossing method. Transco would monitor weather conditions to anticipate the need for using a dry-ditch crossing method.

Flume Construction Method

The flume method is a type of dry-ditch crossing that involves diverting the flow of water across the construction work area through one or more flume pipes placed in the waterbody. The first step in the flume crossing method involves placing a sufficient number of adequately sized flume pipes in the waterbody to accommodate the highest anticipated flow during construction. After placing the pipe in the waterbody, sandbags or equivalent dam diversion structures are placed in the waterbody upstream and downstream of the trench area. These devices serve to dam the stream and divert the water flow through the flume pipes, thereby isolating the water flow from the construction area between the dams. Flume pipes are typically left in place during pipeline installation until trenching under the flumes, pipe installation, and final cleanup of the streambed is complete. Once the pipeline is installed, and the streambed and banks restored, the flume pipes are removed, allowing water flow to return to pre-construction conditions.

Dam and Pump Construction Method

The dam-and-pump method is similar to the flume crossing method except that pumps and hoses are used instead of flumes to move water across the construction work area. Temporary dams are installed across the waterbody on both the upstream and downstream sides of the construction right-of-way, usually using sandbags or plastic sheeting. Pumps are then set up at the upstream dam with the discharge line (or hoses) routed through the construction area to discharge water immediately downstream of the downstream dam. An energy dissipation device is typically used to prevent scouring of the streambed at the discharge location. The pipeline is then installed and the trench backfilled, allowing water flow to be re-established to pre-construction conditions. After backfilling, the dams are removed and the banks restored and stabilized.

2.3.2.2 Trenchless Methods

Trenchless construction methods are those that install the pipeline beneath a waterbody, wetland, road, or other sensitive feature by drilling or tunneling under the feature and without the excavation of an open trench. Each of these trenchless methods is described below.

Conventional Bore Method

Conventional boring consists of creating a tunnel-like shaft for a pipeline to be installed below roads, waterbodies, wetlands, or other sensitive resources without affecting the surface of the resource. Bore pits are excavated on both sides of the resource to the depth of the adjacent trench and graded to match the proposed slope of the pipeline. A boring machine is then used within the bore pit to tunnel under the resource by using a cutting head mounted on an auger. The auger rotates and advances forward as the hole is bored. Once the hole is bored, a pre-fabricated section of pipe is pushed through the borehole. At particularly long crossings, pipe sections may be welded onto the pipe string just before being pushed through. Due to the depth of the bore pit and proximity to water resources, this method may require use of sheet pile to maintain the integrity of the pits and use of well point dewatering systems to avoid flooding of the pits. Borings are usually conducted 24 hours per day and typically require between 2 and 10 days to complete from start to finish.

Direct Pipe® Method

Transco proposes to utilize the Direct Pipe® method to cross the Susquehanna River. The Direct Pipe® method is a trenchless construction method that utilizes specialized tunneling equipment and work crews to install pipeline segments beneath the ground surface, typically to avoid sensitive environmental resources or in constricted construction areas.

The Direct Pipe® method begins by welding and testing a prefabricated segment of pipe at the entry point of bore. Once the pipe is successfully tested, a microtunneling machine and cutterhead are attached to the front of the pipe and a pipe thruster begins advancing the unit into the ground. The microtunneling machine navigates the cutterhead and pipeline along a defined path. The pipeline is carefully monitored during this process to ensure accurate measurement of the pipe's location along the intended pathway. Smaller pipes located inside the pipeline transport drilling fluids to the cutterhead to create a slurry of earthen cuttings that is pumped back to the ground surface to a processing plant which separates the drilling fluid from the earthen cuttings, allowing the drilling fluid to be reused. The drilling fluid is comprised primarily of water, inert solids, and bentonite (a naturally occurring clay mineral). Water for the drilling fluid would be sourced from the Susquehanna River, as discussed in section 4.3.2.4.

Because the bore hole is continuously cased by the prefabricated pipeline segment the risk of a tunnel collapse and bore failure is greatly reduced. Similarly, because the tunnel is cased and the cutting slurry is efficiently returned to the surface through dedicated pipes inside the prefabricated pipeline, the drilling fluid pressure inside the tunnel is significantly reduced, and the potential for an inadvertent release of drilling fluids to the land surface or into the Susquehanna River is greatly reduced. To further minimize the potential for adverse impacts from inadvertent releases, Transco has developed a plan to monitor for, respond to, and clean up inadvertent releases during drilling. Transco's Direct Pipe Monitoring, Inadvertent Return Response, and Contingency Plan (Direct Pipe Plan) will be included in its ECP. We have reviewed Transco's Direct Pipe Plan and find it acceptable.

The design and feasibility of a Direct Pipe® crossing is determined by a number of factors including the surrounding topography; pipeline diameter; availability and orientation of land on which to assemble the pipeline segment; land use constraints; and geotechnical suitability of the subsurface environment. As discussed in section 4.1.5, Transco reviewed historical underground mine records, completed geotechnical borings, and conducted a geophysical survey to determine subsurface conditions along the bore path that could affect the successful completion of the Direct Pipe® crossing. This information was used to design the depth, length, and curvature (i.e., profile) of the drill path; evaluate the potential of an inadvertent release of drilling fluid; and assess the overall feasibility of completing the Direct Pipe® crossing.

Transco's analysis and design plan were filed with their application. We have reviewed the analysis and plan and find them complete, accurate, and adequate in designing the river crossing. Based on the subsurface conditions observed in the geotechnical borings, the geotechnical engineering evaluations, the detailed design analyses, and the development of contingencies to be implemented during the bore, we concur that the proposed Susquehanna River direct pipe crossing has a high likelihood of successful installation, and adequate contingencies are in place to promote a successful crossing of the river or to minimize potential impacts of an inadvertent return or failure of the crossing should either occur.

2.3.2.3 Wetland Crossings

Wetland crossings would be completed in accordance with federal and state/commonwealth permits and follow the measures described in the construction plans. The wetlands that would be crossed are listed in table C-5 in appendix C and are discussed further in section 4.3.3.

Transco would typically use a 75-foot-wide construction right-of-way through wetlands unless site-specific approval for an increased right-of-way width is granted by the FERC and other jurisdictional agencies. ATWS may be required on both sides of wetlands to stage construction equipment, fabricate the pipeline, and store materials. As stated in section 2.3.1.1, we have determined that Transco's request to locate certain ATWS within 50 feet of wetlands and the request for expanded workspace within certain wetlands is acceptable.

Clearing of vegetation in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. Stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline to avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland. A limited amount of stump removal and grading may be conducted in other areas to ensure a safe working environment. During clearing, sediment barriers, such as silt fence and staked straw bales, would be installed and maintained adjacent to wetlands and within temporary extra workspaces as necessary to minimize the potential for sediment runoff. Sediment barriers would be installed across the full width of the construction right-of-way at the base of slopes adjacent to wetland boundaries. Silt fence or straw bales installed across the working side of the right-of-way would be removed during the day when vehicle traffic is present and would be replaced each night. Sediment barriers would also be installed within wetlands along the edge of the right-of-way, where necessary, to minimize the potential for sediment to run off the construction right-of-way and into wetland areas outside the construction work area. If trench dewatering is necessary in wetlands, the trench water would be discharged in stable, vegetated, upland areas and/or filtered through a filter bag or siltation barrier. No heavily silt-laden water would be allowed to flow into a wetland.

Construction equipment working in wetlands would be limited to that which is essential for right-of-way clearing, excavating the trench, fabricating and installing the pipeline, backfilling the trench, and restoring the right-of-way. The method of pipeline construction used in wetlands would depend largely on the stability of the soils at the time of construction. In areas of saturated soils or standing water, low-ground-weight construction equipment and/or timber riprap, prefabricated equipment mats, or terra mats would be used to reduce rutting and the mixing of topsoil and subsoil. In unsaturated wetlands, the top 12 inches of topsoil from the trenchline would be stripped and stored separately from the subsoil. Topsoil segregation generally would not be possible in saturated soils.

Where wetland soils are saturated and/or inundated, the pipeline may be installed using the push-pull technique. The push-pull technique involves stringing and welding the pipeline outside of the wetland and excavating the trench through the wetland using a backhoe supported by equipment mats. The water that seeps into the trench is used as the vehicle to "float" the pipeline into place together with a winch and flotation devices attached to the pipe. After the pipeline is floated into place, the floats are then removed, allowing the pipeline to sink into place. Pipe installed in saturated wetlands is typically coated with concrete or equipped with set-on weights to provide negative buoyancy. After the pipeline sinks to the bottom of the trench, a trackhoe working on equipment mats backfills the trench and completes cleanup.

Prior to backfilling, trench breakers would be installed where necessary to prevent the subsurface drainage of water from wetlands. Where topsoil has been segregated from subsoil, the subsoil would be backfilled first followed by the topsoil. Equipment mats, terra mats, and timber riprap would be removed from wetlands following backfilling.

Where wetlands are located at the base of slopes, permanent interceptor dikes and trench plugs would be installed in upland areas adjacent to the wetland boundary. Temporary sediment barriers would be installed where necessary until revegetation of adjacent upland areas is successful. Once revegetation is successful, sediment barriers would be removed from the right-of-way and disposed of properly.

2.3.2.4 Steep Slopes

About 3.4 miles of the Regional Energy Lateral and 0.5 mile of the Effort Loop are located in areas with slopes greater than 15 percent, and 1.5 miles of the Regional Energy Lateral and 0.2 mile of the Effort Loop are located in areas with slopes greater than 30 percent. In these areas, Transco would install and maintain specific temporary and permanent controls to minimize erosion and sedimentation, which can increase due to clearing, grading, and trenching on steep slopes. During construction, temporary slope and trench breakers consisting of compacted earth, sandbags, or other materials would be installed to reduce runoff velocity and divert water off the construction right-of-way. Temporary trench plugs consisting of compacted earth or similar low-permeability material would be installed at the entry and exit points of wetlands and waterbodies to minimize channeling along the ditch and to maintain subsurface hydrology patterns. Additional types of temporary erosion control such as super silt fence, erosion control matting, and hydro-mulching may be used. Upon installation of the pipeline, permanent trench breakers and plugs consisting of sandbags, gravel, foam, cement, or cement-filled sacks would be installed over and around the pipeline, and permanent slope breakers generally consisting of compacted earth and rock would be installed across the right-of-way during restoration. Surface contours and topsoil would be returned to preconstruction conditions, and revegetation of the right-of-way would commence. Transco would monitor the right-of-way during operation and take measures as necessary to ensure the effectiveness of erosion control and revegetation.

In the steepest areas, Transco may employ a technique called "winching" that involves placing heavy equipment at the top of the slope to serve as an anchor point and then connecting one or more additional pieces of equipment together with a cable. This method provides stability and safety to the equipment operators as work proceeds up and down the steep slope. Transco may also implement the two-tone construction method in areas of steep side slopes. During grading, the upslope side of the right-of-way would be cut, and the material placed on the downslope side to create a safe, level work area. This method could require additional ATWS to accommodate the downslope spoil. After installation of the pipeline, the spoil would be returned to the upslope cut and the overall grade would be restored. Additional steep slope restoration and mitigation measures are described in section 4.1.4.2.

2.3.2.5 Residential Construction

Construction through or near residential areas would be done in a manner that ensures adverse impacts are minimized and cleanup is prompt and thorough. Access to homes would be maintained, except for the brief periods that are needed to lay the new pipeline. Transco would implement measures to minimize construction-related impacts on all residences and other structures located within 50 feet of the construction right-of-way, including: 1) notify landowners at least 7 days before construction is to start; 2) maintain where feasible a minimum distance of 25 feet between a residence and the edge of the construction work area; 3) install safety fence at the edge of the construction right-of-way for a distance of 100 feet on either side of the residence or business establishment; 4) attempt to leave mature trees and landscaping intact within the construction work area unless the trees and landscaping interfere with the installation techniques or present unsafe working conditions; 5) backfill the trench as soon as possible after the pipe is laid or temporarily place steel plates over the trench; 6) complete final cleanup, grading, and installation of permanent erosion control devices within 10 days after backfilling the trench, weather permitting; and 7) restore private property such as fences, gates, driveways, and roads disturbed by pipeline construction to original or better condition upon completion of construction activities.

Transco has generated site-specific Residential Construction Plans (RCPs) for properties that have active structures within 50 feet of the construction workspace (see appendix D). The RCPs are used to inform landowners of precise location of Project workspaces, identify measures to minimize disruption during construction, and to maintain access to the residences. The RCPs are described further in section 4.5.2.4. Affected landowners are encouraged to review the RCPs and provide us with any comments or concerns.

2.3.2.6 Agricultural Areas

Agricultural areas crossed by the Project are identified in section 4.5.2.1. To conserve topsoil, Transco propose to segregate a maximum of 12 inches of topsoil across the full construction right-of-way in all actively cultivated and rotated croplands, pastures, and hayfields and in other areas at the specific request of the landowner or land management agency. Where topsoil is less than 12 inches deep, the actual depth of the topsoil layer would be removed and segregated. The topsoil would be stored in separate rows on the construction right-of-way and replaced to the upper soil layer during backfilling.

In agricultural lands, Transco indicated that rock larger than 4 inches in diameter would be removed from the upper 12 inches of soil to promote vegetation growth. The size, density, and distribution of rock on the construction work area should be similar to adjacent areas not disturbed by construction. Section V.A.3 of the FERC Plan states that rock excavated from the trench may be used to backfill the trench only to the top of the existing bedrock profile. Excess rock would be beneficially reused or recycled if possible. If approved for use as slope stabilization, windrowing, habitat creation or for some other use on the construction work areas approved by FERC, the landowner, and/or applicable regulatory agencies, the material would remain on-site. As a last resort, Transco would dispose of excess rock at an approved landfill or recycling facility.

In areas where irrigation or drainage systems would be crossed, Transco would identify any crossing locations during civil survey. Irrigation and drainage systems would be permanently repaired during backfill and cleanup.

2.3.2.7 Road and Railroad Crossings

Transco would install the pipelines under roads and railroads in accordance with crossing permits and applicable laws and regulations. Railroads would be crossed with a conventional bore. In general, crossings of paved roads would also be conventionally bored, so not to disrupt traffic. The process for constructing a conventional bore crossing under roads is the same as previously described for crossing waterbodies.

Most gravel and dirt roads, driveways, and roads in areas with a high water table would be crossed by the open-cut method, which could require temporary closure of the road and the establishment of detours. Where possible, traffic on open-cut roads would be maintained during construction by the use of steel plates, which would allow at least one lane of the road being crossed to be kept open to traffic except for brief periods when it would be essential to close the road to install the pipeline. Road users would be notified via signage and flagmen. Most open-cut road or trail crossings require only a few days to complete, although resurfacing could require several weeks to allow for soil settlement and compaction. If a paved road is open-cut, any asphalt removed during a road crossing would be disposed of at an approved facility.

2.3.2.8 Foreign Utilities

The pipelines would be constructed across or parallel to numerous utility lines. Prior to construction, Transco's construction contractors would call the One-Call systems in each state/

commonwealth, so that buried utilities may be identified and flagged before ground-disturbing activities. Where the pipeline is installed near a buried utility, Transco would install the pipeline with at least 12 inches of clearance from any other underground structure not associated with the pipeline as required by 49 CFR 192.325. Larger spoil piles may result from greater depth of excavation at foreign utility crossings, and spoil would be stored within ATWS at each crossing. Construction of those crossings would be monitored by Transco and its construction contractor, and sometimes by representatives of the owner/operator of the other utility. Appropriate safety measures would be implemented that meet the standards of OSHA. Table C-6 in appendix C lists the known foreign utilities that would be crossed by the Project.

2.3.2.9 Winter Construction

Transco has developed a Winter Construction Plan to address specialized construction methods and procedures that would be used to protect resources during the winter season (see table 2.3-1). Key elements of the Winter Construction Plan include: 1) snow removal operators will blade no lower than a height sufficient for construction vehicles to safely navigate the right-of-way and will adjust blade height in areas of slope changes so that contact with the ground is minimized to the greatest extent practical; 2) activities in areas requiring topsoil segregation will be halted until soil conditions improve and topsoil segregation requirements can be met; 3) gaps would be left in stockpiled snow piles based on an assessment of drainage patterns to allow water to drain off of the right-of-way during the spring thaw or other warm periods; 4) backfilling and topsoil replacement would be suspended if infeasible due to frozen conditions; 5) snow would not be mixed with spoil during backfilling to the extent practicable; and 6) EIs would determine where additional erosion control devices should be installed to minimize snow melt erosion and would monitor the right-of-way for snow melt issues.

2.3.3 Aboveground Facility Construction

Construction and modification activities at the compressor station sites would include access road construction, erosion control installation, site clearing and grading, installing concrete foundations, erecting metal buildings, and installing compressors, metering facilities, and appurtenances. Initial work at the compressor stations would focus on preparing foundations for the buildings and equipment. Building foundations and pipe trenches would be excavated with standard construction earthmoving equipment. Transco does not anticipate that blasting would be required at compressor sites. Following foundation work, station equipment would be brought to the site and installed using any necessary trailers or cranes for delivery and installation. Compressor station buildings would be constructed while compressor equipment is installed, along with other primary facilities, associated equipment, piping, and electrical systems. Necessary equipment testing and start-up activities would take place on a concurrent basis.

Construction of the other proposed aboveground facilities, including the M&R stations, valves, and pig launchers/receivers, would involve site clearing and grading as needed to establish appropriate contours for the facilities. Piping would be hydrostatically tested prior to being put into service. Safety equipment and controls, including emergency shutdown, relief valves, gas and fire detection, and engine overspeed and vibration protection would be calibrated and tested. Following installation of the equipment, the sites would be graveled, as necessary, and fenced.

2.4 CONSTRUCTION SCHEDULE AND WORKFORCE

Transco proposes to begin construction in the second quarter of 2023 to place the Project facilities into service in the fourth quarter of 2024. Construction of the new pipeline facilities is expected to take about 10 months to complete. Construction and modifications to other aboveground facilities would take between 3 and 13 months to complete. Revegetation and restoration measures would be employed as soon as possible following construction per federal and state permit conditions, and disturbed areas would be stabilized and reclaimed, weather permitting. Transco would monitor the success of revegetation for up to 3 years following construction, or until revegetation is successful.

Construction would generally take place Monday through Saturday during daylight hours, from 7 a.m. to 7 p.m.; however, Transco states that certain activities may extend beyond normal construction hours and into Sunday, as necessary. Activities that may require extended construction hours include preparing for and conducting strength and leak testing of pipeline lateral and loop; final tie-in welds and X-ray of welds; trench dewatering; running pumps for stream crossings; electrical conductor installation into conduit runs and wiring raceways at compressor stations; termination and verification of conductors at compressor stations; and certain pre-commissioning and commissioning activities. Additional activities Transco has identified that may require unplanned construction activity outside of typical work hours include completion of wetland or waterbody crossings that have had unforeseen circumstances; major road crossings; maintenance on construction equipment for operations the following day; heating of concrete when temperatures are below 40 degrees Fahrenheit (°F); idling of equipment in extreme cold weather; and pipeline recompression and blowdown for line outages for the purposes of system tie-ins. The Direct Pipe® crossing of the Susquehanna River may be conducted continuously (24 hours per day) at critical times. If Direct Pipe® activities need to take place outside normal daytime working hours, noise mitigation measures would be implemented as described in section 4.9.2.

The anticipated average workforce required to construct the Regional Energy Lateral and Effort Loop is 311 and 233, respectively. Peak workforce would range between 441 to 491 workers. Workforce required to construct or modify the aboveground compressor station facilities ranges from 10 to 100 employees, with a peak workforce of 130 at Compressor Station 201. Additional information about workforce is provided in section 4.7.1 of this EIS.

2.5 ENVIRONMENTAL COMPLIANCE AND MONITORING

2.5.1 Coordination and Training

Transco would incorporate the construction, mitigation, and restoration measures identified in their permit applications and supplemental filings as well as additional requirements of federal, state/ commonwealth, and local agencies into their construction drawings and specifications. Transco would also provide copies of applicable environmental permits, construction drawings, and specifications to their construction contractors. Transco would implement an environmental training program for the construction contractors tailored to the proposed Project and its construction requirements. The program would be designed to ensure that:

- qualified environmental training personnel provide thorough and focused training sessions throughout Project construction regarding the environmental requirements applicable to the trainees' activities;
- all individuals receive environmental training before they begin work on any construction workspaces; and
- adequate training records are kept.

2.5.2 Environmental Inspection

Transco would employ a Chief Inspector for the Regional Energy Lateral and the Effort Loop. The Chief Inspectors would be assisted by craft inspectors and an environmental compliance manager. Additionally, Transco would employ EIs that would be trained in, and responsible to ensure that construction of Project complies with the construction procedures and mitigation measures identified in Transco's application, the FERC Certificate, other environmental permits and approvals, and environmental requirements in landowner easement agreements. EIs would have peer status with all of Transco's other construction inspectors, have the authority to stop activities that violate the conditions of the FERC Certificate, other permits, or landowner requirements, and have the authority to order the appropriate corrective actions. The FERC staff acknowledges that the role of EIs is to ensure the Project is constructed in accordance with the requirements imposed by FERC and other regulatory agencies. However, the EI's role should not be mistaken for FERC abdicating its inspection authority to Transco. The purpose of the EI is to ensure applicants are cognizant of and taking matters of compliance seriously. Therefore, to ensure the Project would be constructed in compliance with the FERC's and other regulatory agencies' requirements, FERC would conduct its own independent monitoring and inspection of the Project as discussed in section 2.5.3.

At a minimum, an EI would be responsible for:

- maintaining status reports and training records;
- verifying that the limits of authorized construction work areas and locations of access roads are properly marked before clearing;
- verifying the location of signs and highly visible flagging marking the boundaries of sensitive resource areas, waterbodies, wetlands, or areas with special requirements along the construction work area;
- identifying erosion/sediment control and stabilization needs in all areas;
- locating dewatering structures and slope breakers to ensure they would not direct water into sensitive areas such as known cultural resource sites or sensitive species habitat or violate permit requirements;
- verifying that trench dewatering activities do not result in the deposition of sand, silt, and/or sediment near the point of discharge in a wetland or waterbody. If such deposition is occurring, the EI would stop the dewatering activity and take corrective action to prevent a reoccurrence;
- advising the Chief Inspector when conditions (such as wet weather) make it advisable to restrict construction activities to avoid excessive soil rutting;
- approving imported soils; if proposed;
- verifying that the soil is certified free of noxious weeds and soil pests;
- determining the need for and ensuring that erosion controls are properly installed to prevent sediment flow into wetlands, waterbodies, sensitive areas, and onto roads;
- inspecting and ensuring the maintenance and repair of temporary erosion control measures;
- ensuring restoration of contours and topsoil;
- identifying, documenting, and overseeing corrective actions as necessary to bring an activity back into compliance; and

- keeping records of compliance with conditions of all environmental permits and approvals during active construction and restoration.

The FERC would receive regular construction status reports filed by Transco, conduct periodic field inspections during construction and restoration, and would have the authority to stop any activity that violates an environmental condition of the FERC Certificate.

2.5.3 Post-Approval Variance Process

The pipeline alignment and work areas identified in this EIS should be sufficient for construction and operation (including maintenance) of the Project. However, minor route realignments and other workspace refinements sometimes continue past the Project planning phase and into the construction phase. These changes could involve minor route realignments, shifting or adding new extra workspaces or staging areas, adding or improving additional access roads, or modifications to construction methods. We have developed a variance procedure for assessing impacts on those areas that have not been evaluated in this EIS and for approving or denying their use following any Certificate issuance. In general, biological and cultural resources surveys were conducted using a survey corridor larger than that necessary to construct the facilities. Where survey approvals were denied, Transco would complete the required surveys following a Certificate issuance. If Transco request to shift an existing workspace or require a new extra workspace subsequent to issuance of a Certificate, these areas would typically (but not always) be within the previously surveyed area. Such requests would be reviewed using a variance request process.

A variance request for route realignments or extra workspace locations along with a copy of the survey results would be documented and forwarded to the FERC in the form of a "variance request" in compliance with recommended condition number 5 in section 5.2 of this EIS. Typically, no further resource agency consultation would be required if the requested change is within previously surveyed areas, within authorized rights-of-way, and no sensitive environmental resources would be affected. The procedures used for assessing impacts on work areas outside the survey corridor and for approving their use are similar to those described above, except that additional surveys, analyses, and resource agency consultations would be performed to assess the extent of any impacts on biological, cultural, and other sensitive resources and to identify any avoidance, minimization, and mitigation measures necessary. All variance requests and their approval status would be documented according to the FERC's compliance monitoring program as described above. Any variance activity by Transco and subsequent FERC action would be available on the FERC's eLibrary webpage under the docket number for the Project (CP21-94-000).

2.5.4 Post-Construction Monitoring

After construction, Transco would conduct follow-up inspections of all disturbed upland areas, at a minimum, after the first and second growing seasons to determine the success of restoration, and would continue monitoring areas until revegetation thresholds are met, temporary erosion control devices are removed, and restoration is deemed successful. Restoration of upland areas would be considered successful if the right-of-way vegetation is visually successful in density and cover of non-nuisance vegetation, surface conditions are similar to adjacent undisturbed lands, construction debris is removed, and proper drainage has been restored. For at least 2 years following construction, Transco would submit quarterly reports to the FERC that document any problems identified during the inspections or by landowners, and describe the corrective actions taken to remedy those problems. We would also conduct periodic restoration inspections until restoration is deemed complete. Additionally, Transco would perform monitoring for invasive plant species following construction. The monitoring period for invasive species and other resource areas would be extended as needed or as required by permits or regulatory agencies.

In accordance with the Procedures, Transco would monitor the success of wetland revegetation annually for the first 3 years (or as required by permit) after construction or until wetland restoration is successful. Wetland revegetation would be considered successful when the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent undisturbed wetland areas or as compared to documented, pre-project conditions. In accordance with the FERC Procedures, if revegetation is not successful at the end of 3 years, Transco would develop and implement (in consultation with a professional wetland ecologist) a plan to actively revegetate and restore the wetland with native wetland herbaceous and/or woody plant species.

After construction, the FERC and/or other agencies would continue to conduct oversight inspection and monitoring to assess the success of restoration. If it is determined that the success of any of the restoration activities are not adequate at the end of the respective timeframes, Transco would be required to extend their post-construction monitoring programs and implement corrective actions as deemed necessary.

We recognize that during and after construction, unforeseen issues or complaints may develop that were not addressed during the environmental proceedings at the Commission, and it is important that landowners have an avenue to contact Transco's representatives. Should the Project be approved, we are interested in ensuring that landowner issues and complaints received during and after construction are resolved in a timely and efficient manner. Resolution of landowner issues and complaints are discussed further in section 4.5.2.4.

2.6 OPERATION AND MAINTENANCE

The pipeline and aboveground facilities would be operated and maintained in accordance with DOT regulations in 49 CFR 192, the Commission's guidance at 18 CFR 380.15, and the maintenance provisions of the FERC Plan and Procedures. Transco would also maintain a liaison with the appropriate fire, police, and public officials. Communications with these parties would include the potential hazards associated with the Transco's facilities located in their service area and prevention measures undertaken; the types of emergencies that may occur on or near the new pipeline facilities; the purpose of pipeline markers and the information contained on them; pipeline location information; recognition of and response to pipeline emergencies; and procedures to contact Transco for more information.

2.6.1 Pipeline Facility Operation and Maintenance

As required by 49 CFR 192.615, Transco would establish an operation and maintenance plan and an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. As a part of pipeline operations and maintenance, Transco would conduct regular patrols of the pipeline right-of-way. The patrol program would include periodic aerial and ground patrols of the pipeline facilities to survey surface conditions on and adjacent to the pipeline right-of-way for evidence of leaks, unauthorized excavation activities, erosion and wash-out areas, areas of sparse vegetation, damage to permanent erosion control devices, exposed pipe, missing markers and signs, new residential developments, and other conditions that might affect the safety or operation of the pipeline. The cathodic protection system would also be inspected periodically to ensure that it is functioning properly. Transco's management staff would be notified by its inspectors of any conditions that need attention and corrective measures would be performed as needed. In addition, pigs would be regularly sent through the pipeline to check for corrosion and irregularities in accordance with DOT requirements. Transco would be required to keep detailed records of all inspections and supplement the corrosion protection system as necessary to meet the requirements of 49 CFR 192.

In addition to the survey, inspection, and repair activities described above, operation of the pipeline would include maintenance of the pipeline right-of-way. The right-of-way would be allowed to revegetate after restoration; however, larger shrubs and brush may be periodically removed near the pipeline. The frequency of the vegetation maintenance would depend upon the vegetation growth rate. Transco has indicated that they would not need to maintain vegetation (i.e., mow) within the permanent right-of-way in most land uses types. However, in accordance with the construction and restoration plans, routine vegetation maintenance clearing of the permanent right-of-way is allowed but would not be done more frequently than every 3 years. To facilitate periodic corrosion and leak surveys, a corridor not exceeding 10 feet in width centered on the pipeline may be maintained more frequently in an herbaceous state. Routine vegetation maintenance clearing would be conducted during approved seasonal timeframes. Vegetation management and right-of-way maintenance is discussed further in sections 4.3.3, 4.4.2, and 4.5.

2.6.2 Aboveground Facility Operation and Maintenance

Transco would continue to operate and maintain the modified and new compressor stations in accordance with the DOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) requirements and standard procedures designed to ensure the integrity and safe operation of the facilities and to maintain firm natural gas transportation service. Standard operations at compressor stations include such activities as the calibration, maintenance, and inspection of equipment; the monitoring of pressure, temperature, and vibration data; and traditional landscape maintenance such as mowing and the application of fertilizer. Standard operations also include the periodic checking of safety and emergency equipment and cathodic protection systems.

Transco would link its aboveground facilities to its data software network systems, which would continuously monitor gas pressure, temperature, and volume at specific locations along the pipeline. These systems would be continuously monitored from gas control centers. The systems would provide information to the control center operators and have threshold and alarm values set such that warnings are provided to the operators if critical parameters are exceeded. In the event of a drop in pressure within a pipeline, the gas control center would be immediately alerted and could stop the gas flow to the problem area by selectively isolating sections of the pipeline via valves until inspections are completed to determine the cause of the problem and complete repairs.

2.7 FUTURE PLANS AND ABANDONMENT

Transco stated that it has no plans at this time to either expand or abandon the proposed facilities. If at some point in the future, any of the Project facilities approved in this proceeding were proposed to be abandoned, Transco would have to seek specific authorization from the FERC for that action and the public would have the opportunity to comment on the applicant's abandonment proposal.

2.8 NONJURISDICTIONAL FACILITIES

Under section 7 of the NGA, the FERC is required to consider, as part of its decision to authorize interstate natural gas facilities, all factors bearing on the public convenience and necessity. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of the Commission. As such, FERC has no authority or jurisdiction over the siting, permitting, licensing, construction, or operation of these facilities. These "non-jurisdictional" facilities may be integral to the need for the proposed facilities (e.g., a power plant at the end of a FERC-jurisdictional pipeline) or they may be merely associated as minor, non-integral components of the jurisdictional facilities that would be constructed and operated as a result of the Certification of the proposed.

Operation of Compressor Station 201 would require the installation of an electric powerline to provide the required 10.1 megawatts of power for the proposed electric motor-driven compressor unit. The local utility company, Public Service Electric and Gas, has confirmed that the power can be supplied along existing powerline easements, but existing poles may need to be replaced or upgraded to accommodate the new transmission line.

Modifications to Compressor Stations 505 and 515 would also require modification to the existing power supply to the stations. Because these compressor stations would be in areas currently serviced by electric power, we do not anticipate the need for any new aboveground powerline or communication facilities for the compressor stations. The electric power and communication lines required at the compressor stations would extend from existing lines to the compressor station properties and therefore, the impacts of these powerlines are accounted for in the impacts described for each of these compressor stations and have been incorporated into the overall impacts discussed throughout this EIS.

3.0 ALTERNATIVES

3.1 INTRODUCTION

As required by NEPA and Commission policy, we identified and evaluated reasonable alternatives to the Project to determine whether the implementation of an alternative would be environmentally preferable to the proposed action. A reasonable alternative would meet the Project's purpose and would be technically and economically feasible and practical. We evaluated the No Action Alternative, system alternatives, pipeline route alternatives, route variations, and compressor engine type alternatives. An alternative would be environmental preferable if it offers a significant environmental advantage over the proposed action.

To ensure a consistent environmental comparison and to normalize the comparison factors, we generally use desktop sources of information (e.g., publicly available data, geographic information system data, aerial imagery). Where appropriate, we also use site-specific information (e.g., field surveys or detailed designs). Our environmental evaluation considers quantitative data (e.g., acreage or mileage) and uses common comparative factors such as total length, amount of collocation, and land requirements. In recognition of the competing interests and the different nature of impacts that sometimes exist (i.e., impacts on the natural environment versus impacts on the human environment), we also consider other factors that are relevant to a particular alternative and discount or eliminate factors that are not relevant or may have less weight or significance.

We generally consider an alternative to be preferable to a proposed action using three evaluation criteria, as discussed in greater detail below. These criteria include:

1. the alternative meets the stated purpose of the project;
2. is technically and economically feasible and practical; and
3. offers a significant environmental advantage over a proposed action.

The alternatives were reviewed against the evaluation criteria in the sequence presented above. The first consideration for including an alternative in our analysis is whether or not it could satisfy the stated purpose of the Project. A preferable alternative must meet the stated purpose of the Project, which is to provide 829,400 Dth/d of firm natural gas transportation capacity from the Marcellus Shale production areas in northeastern Pennsylvania to multiple delivery points specified by the Project's customers. A preferable alternative also would need to provide service within a reasonably similar timeframe, which is providing natural gas by the fourth quarter of 2024. It is important to recognize that not all conceivable alternatives can meet the Project's purpose, and an alternative that does not meet the Project's purpose cannot be considered a viable alternative.

Many alternatives are technically and economically feasible but not practical. Technically practical alternatives, with exceptions, would generally require the use of common construction methods. An alternative that would require the use of a new, unique, or experimental construction method may not be technically practical because the required technology is not available or is unproven. Economically practical alternatives would result in an action that generally maintains the price competitive nature of the proposed action. Generally, we do not consider the cost of an alternative as a critical factor unless the added cost to design, permit, and construct the alternative would render a project economically impractical. Alternatives that would not meet the Project's purpose or were not technically/economically feasible or practical were not brought forward to the next level of review.

Determining if an alternative provides a significant environmental advantage requires a comparison of the impacts on each resource as well as an analysis of impacts on resources that are not common to the alternatives being considered. The determination must then balance the overall impacts and all other relevant considerations. In comparing the impact between resources, we also considered the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners.

Using the evaluation criteria discussed above, each alternative was considered to the point where it was clear that the alternative was either not reasonable, would result in greater environmental impacts that could not be readily mitigated, offered no significant environmental advantages over the proposed Project, or could not meet the Project's purpose. Alternatives that appeared to result in less than or similar levels of environmental impact were reviewed in greater detail. The following sections discuss and analyze alternatives that warranted further review and provide sufficient detail to explain why they were eliminated from further consideration or are recommended for adoption into the Project.

3.1.1 Public Comments

In evaluating alternatives, we considered and addressed, as appropriate, several comments provided to the Commission about possible alternatives. Many of these comments requested that we evaluate alternatives to the proposed pipeline routes or the aboveground facility locations. The Delaware Riverkeepers Network (DRN) requested additional review of alternatives collocating with existing rights-of-way, especially at the Susquehanna River. The NJDEP and others requested review of the installation of electric motor-driven compressors at compressor station locations. In response to these comments, we required Transco to provide additional environmental information and requested they assess the feasibility of certain alternatives as proposed by the commentors. These efforts, along with Transco's continued assessment of their Project, resulted in numerous re-routings and facility design changes, which are summarized in the following sections. The alternatives and variations already incorporated by Transco into their proposed routes are included as part of our environmental analysis in section 4.0. Our review of additional pipeline routing and aboveground facility location/compression alternatives are presented below in sections 3.4 and 3.5, respectively.

The EPA provided general comments recommending alternatives that avoid interior forests and large wetland complexes. The EPA also suggested that the EIS discuss whether nearby existing or proposed pipelines can be utilized or collocated to avoid and reduce impact and requested review of differing pipeline diameters and aboveground facility locations. Section 3.3 includes our review of the use of other pipelines and pipe diameters, and aboveground facility alternatives are included in section 3.5. As discussed in section 2.2.2 of this EIS, Transco's Regional Energy Lateral and Effort Loop would be collocated with existing rights-of-way for about 60 percent and 100 percent of the total length, respectively, and overlap existing rights-of-way where feasible. This minimizes the impact on interior forests and also prevents new corridors from being established. While the lateral pipeline was proposed to be collocated with the PennEast Pipeline Project in various locations, the certificate authorization for the PennEast Project has been vacated; therefore, any analysis including potential benefits from the proposed collocation with the PennEast Project has been removed. The aboveground facilities also generally avoid wetland impacts and forest impacts, and we did not find any portion of the Project that we believe would need to be realigned or relocated due to the extent of forested or wetland impacts.

We received comments on the draft EIS recommending additional analyses of alternatives, including the no-action alternative and non-gas energy alternatives, construction alternative measures (such as horizontal directional drilling crossings), and other routing alternatives. We have clarified our analysis of the no action alternative and will not complete additional analysis of non-gas alternatives for the reasons already stated in section 3.2. We received a comment on the draft EIS that while the draft EIS evaluates environmental impacts and effects on landowners from the alternatives, it does not specifically analyze differential environmental justice impacts. The final EIS has been revised to include this information in the analysis.

We received a comment on the draft EIS from the DRN recommending collocation of the Effort Loop between MPs 43.72 and 47.5, however, the Effort Loop is already proposed to be collocation for its entirety. Therefore, we did not identify routes for the Effort Loop that would deviate from Leidy Line A between these mileposts as suggested by the commentor. In the comments on the draft EIS, the DRN also suggested collocation of the Regional Energy Lateral with existing corridors between MPs 17.5 and 21.5. We note that alternatives between MPs 17.5 and 21.5 were previously analyzed in the draft EIS in sections 3.4.6 (alternative 6) and 3.4.8 (alternative 9) and identifies conflicts with a state park and residential congestion as concerns with collocating along the existing Leidy A Line. The DRN also suggested collocation of the Regional Energy Lateral with existing corridors between MPs 10.5 and 14.5, which was analyzed in the draft EIS is section 3.4.5 (alternatives 4 and 5) and identifies conflicts with residential congestion as concerns with collocating along the existing Leidy A Line. We continue to conclude that collocation at these locations may not be feasible and that the proposed route is acceptable.

3.2 NO-ACTION ALTERNATIVE

The Commission has two courses of action in processing applications under section 7 of the NGA: 1) deny the requested actions (the no-action alternative); or 2) grant the Certificate, with or without conditions. If the no-action alternative is selected by the Commission, the proposed facilities would not be constructed, and the short- and long-term environmental impacts from the Project would not occur. In addition, if the no-action alternative is selected, the stated purpose of the Project would not be met, and the proposed transportation of natural gas supply to Pennsylvania, New Jersey, and Maryland markets would not occur. We have prepared this EIS to inform the Commission and stakeholders about the expected impacts that would occur if the Project were constructed and operated. As indicated in this EIS, staff has not identified a significant impact associated with the proposed action. The Commission will ultimately determine the Project need and could choose the no-action alternative.

The EPA recommends FERC should consider and evaluate non-gas energy alternatives as well as other non-project alternatives that satisfy the need for the Project under the No-Action Alternative. We note that the Project purpose is to transport natural gas from northeastern Pennsylvania to local distribution company customer delivery points in New Jersey, Pennsylvania, and Maryland. FERC is tasked with authorizing infrastructure to be used for the transportation of natural gas, not the consumption of natural gas. The consumption of natural gas for activities such as building heating and electricity generation may be the proposed action of the downstream entities; however, alternatives that do not also facilitate the transportation of natural gas cannot be a function surrogate. Therefore, we have not identified any non-gas energy alternatives or other non-project alternatives that satisfy the need for the Project. As these do not meet the purpose of the Project and are not a reasonable or practicable alternative to the proposed action, they are not considered further in this analysis.

3.3 SYSTEM ALTERNATIVES

System alternatives would use existing, modified, or proposed pipeline systems to meet the purpose and need of the Project. Although modifications or additions to existing or proposed pipeline systems may be required, implementation of a system alternative would deem it unnecessary to construct all or part of the Project; for example, if adding pipeline on one part of the system could negate the need for new compression, or if in-trench replacement could be used instead of looping. Such modifications or additions could result in environmental impacts that are less than, similar to, or greater than those associated with construction and operation of the Project.

A viable system alternative to the Project would have to provide sufficient pipeline capacity to transport an additional 829,400 Dth/d of firm natural gas transportation capacity to the delivery points specified by the precedent agreements signed by Transco within a timeframe reasonably similar to the proposed REAE Project. Additionally, the system alternative must be technically and economically practical and offer a significant environmental advantage over the proposed Project. Our analysis of system alternatives includes an examination of existing and proposed natural gas transportation systems that currently serve or eventually would serve the markets targeted by the Project.

3.3.1 Existing Transco Systems

Transco owns and operates its Leidy Line system, Marcus Hook Lateral, Trenton Woodbury Lateral, and the Transco Mainline system within the Project area. Transco stated that its existing systems do not have any available unsubscribed capacity to service the volume of gas that would be provided for the Project.

We evaluated direct replacement of the 22.2-mile-long section of Transco's Leidy Line A (associated with the Regional Energy Lateral) and the 13.8-mile-long section of Transco's Leidy Line System (associated with the Effort Loop) with installing larger diameter pipe in the same trench to accommodate the delivery capacity of both the existing pipeline and proposed pipelines. This alternative could minimize new land impacts, new pipeline corridors, and expansion of Transco's existing pipeline corridor. However, the combine and replace in place option is not economically practical because it would interrupt Transco's existing gas delivery commitments. We conclude the replacement system alternative would not be preferrable. An alternative to decrease the proposed diameter of the Project pipelines could potentially require less workspace for the trench and spoil handling, however workspace design is driven more so by the size of standard construction equipment rather than the size of the pipe. The workspace required for safe equipment operation and movement would not be appreciably affected by reducing the pipe diameter, therefore a decrease in pipe diameter would have minimal effect on the required workspace acreages while potentially adversely affecting Project capacity.

Transco also evaluated a loop-intensive design and a compression-intensive design to provide additional capacity to its existing pipeline system. A loop-intensive design would require the construction and operation of several miles of pipeline to allow for a greater volume of gas to be transported through the pipeline system with the same amount of compression provided by the existing compressor station(s). The general types of construction and operational impacts that could result from a loop-intensive project in the Project area are represented throughout this EIS, along with the BMPs and mitigation that Transco would implement to minimize those impacts. Similarly, the construction and operational impacts of a compression-intensive project are represented in section 4.11 of this EIS. Transco's proposed action in front of the Commission includes a combination of additional compression and looping across the Project area to achieve the Project's delivery needs. While redesigning the Project to favor more compression or looping would likely still meet the purpose and delivery needs of the Project, we do not believe that favoring looping or compression would result in a significant environmental advantage over the proposed Project, and would merely transfer impacts from one set of resources to another set of resources. Therefore, we eliminated the loop-intensive and compression-intensive alternatives from further consideration.

3.3.2 Other Existing Pipeline Systems

There are two other existing interstate natural gas pipeline systems operated by Columbia Gas Transmission, LLC and Texas Eastern Transmission, LP in the Project area. However, these systems are either not connected to the supply area or to the delivery area and would not be capable of transporting the proposed volume of natural gas without expanding their systems or building new facilities, which could result in environmental impacts that are at least equal to or likely greater than the proposed Project, and which would not likely be constructed to meet Transco's schedule. No other companies' existing systems were identified that could meet (or be feasibly adjusted to meet) the purpose and need for the Project.

Therefore, we conclude that use of other existing pipeline systems is not a practicable alternative for the Project.

3.4 PIPELINE ROUTE ALTERNATIVES

We considered route alternatives to determine whether their implementation would be preferable to the proposed pipeline routing for the Project. Route alternatives typically deviate from the proposed pipeline alignment to avoid or reduce construction impacts on an identified landowner, land-management agency, and/or environmental resources, but the origination and end points generally remain the same as the proposed pipeline alignment. Each alternative route discussed below provides the rationale for considering the alternative and compares potential impacts on the resources affected by each route.

Effort Loop

The entire Effort Loop route is collocated within or adjacent to Transco's existing A, B, and C pipeline corridor. We did not identify any route alternatives that deviate from the proposed pipeline alignment. However, we received a recommendation to evaluate an alternative that would site the proposed Effort Loop pipeline between Transco's existing pipelines through The Birches West neighborhood to minimize widening of the right-of-way and vegetation cutting in the area.

In the area of The Birches West neighborhood of concern to the commentor, between MPs 50.52 and 50.71, Transco's proposed Effort Loop would be installed adjacent to Transco's pipeline system and offset 25 feet from Transco's existing Leidy Line A pipeline. Upstream and downstream of this pipeline segment, the proposed Effort Loop is located between Transco's existing Leidy Line A and Line B pipelines, and the proposed workspace required to install the Effort Loop would mostly remain within Transco's existing maintained pipeline right-of-way. Installation of the pipeline segment outside Transco's existing pipeline right-of-way would impact 1.95 acres of forest outside the maintained right-of-way and move the Project's workspace 75 to 100 feet closer to the residences of The Birches West neighborhood.

Installation of a pipeline between two active pipelines requires special construction procedures to prevent damage to the existing lines, such as using timber mats over the active pipelines to dissipate equipment weight. Transco states the pipeline crossover and placement of the Effort Loop pipeline outside the existing right-of-way is required to minimize safety concerns associated with operating heavy equipment on timber mat travel lanes on steep slopes. Slopes between MPs 50.52 and 50.71 range between 15 and 18 percent. We agree that these slopes draw concern regarding the safe operation of equipment and believe Transco would not propose the crossover of its pipeline, which requires additional safety risks, construction time, pipeline bends, and easements, unless the crossover was warranted. Therefore, we conclude that although the crossover would result in an additional 1.95 acres of forested impact outside Transco existing right-of-way and move the proposed Effort Loop closer to residences, Transco has provided adequate justification that the crossover is necessary for construction safety purposes including the safety of equipment operators and the safe operation of heavy equipment over two active pipelines.

In an environmental information request issued to Transco on December 1, 2021, we requested that Transco evaluate and justify the locations where Transco proposes to install the Effort Loop pipeline adjacent to its existing pipeline system instead of installing the Effort Loop between its existing pipelines, where sufficient separation would allow safe installation. Transco's December 10, 2021 response to our request provided sufficient justification for the crossovers and we find the alignment of the pipeline acceptable.

In response to the draft EIS, we also received a recommendation that Transco modify the proposed Effort Loop pipeline alignment to the opposite side of the existing rights-of-way at this same location, between MPs 50.52 and 50.71, away from the Birches West neighborhood. Transco indicated that locating the proposed Effort Loop on the other side of the right-of-way would require a larger workspace to safely complete the crossover, resulting in additional workspace encroaching to within 35 feet of the residence at MP 50.52. Crossing to the other side would also shift the pipeline alignment to within 68 feet of the residence on the opposite side at MP 50.6, approximately 100 feet closer than the proposed route is to the commentor's residence. Based on our review, we find that this alternative would not provide a significant environmental advantage, and we do not recommend that it be incorporated as part of the Project.

Regional Energy Lateral

3.4.1 Regional Energy Lateral Alternative 1

Alternative 1 was considered by Transco in its application to avoid State Game Land #91. Beginning at approximate MP 2.0, the alternative is located west of the proposed route, and rejoins the proposed route at approximate MP 5.0. Alternative 1 is depicted on figure 3.4.1-1 and impacts from the route alternative as compared to the corresponding segment of the proposed route are presented in table 3.4.1-1.

TABLE 3.4.1-1

Analysis of the Regional Energy Lateral Alternative 1

Features	Proposed Route	Regional Energy Lateral Alternative 1
Length (total miles)	3.0	3.8
Length Adjacent to Existing Pipeline Right-of-Way (miles)	3.0	0.0
Total Length Collocated (miles)	3.0	0.0
Pipeline Construction Requirements (acres)	32.8	41.6
Pipeline Operation Requirements (acres)	9.0	23.1
State Lands Crossed (number/miles)	1/2.8	0/0.0
Forested Land Crossed (miles)	2.6	3.7
Forested Land Construction Impacts (acres)	28.1	40.3
Forested Land Operation Impacts (acres)	7.7	22.4
Streams Crossed (number)	5	3
Total Wetland Crossed (miles)	0.2	<0.1
Road Crossings (number)	2	1
Environmental Justice Communities (number of block groups)	0	0

The proposed route is collocated with the existing Leidy system in its entirety, whereas the alternative would result in 3.8 miles of new pipeline right-of-way, is 0.8 mile longer than the corresponding segment of the proposed route, and would result in greater land impacts. Although the proposed route would cross two more waterbodies, cross 2.8 miles of state land, and cross slightly more wetland, we believe the alternative appears to have more negative environmental impacts than the proposed route. Additionally, the Pennsylvania Game Commission (PGC) has communicated to Transco that it does not have concerns with the proposed route that is adjacent to existing Transco Leidy Line System. Both routes cross Pennsylvania Bike Route L. Based on our review, we find that the Regional Energy Lateral Alternative 1 would not provide a significant environmental advantage, and we do not recommend that it be incorporated as part of the Project.

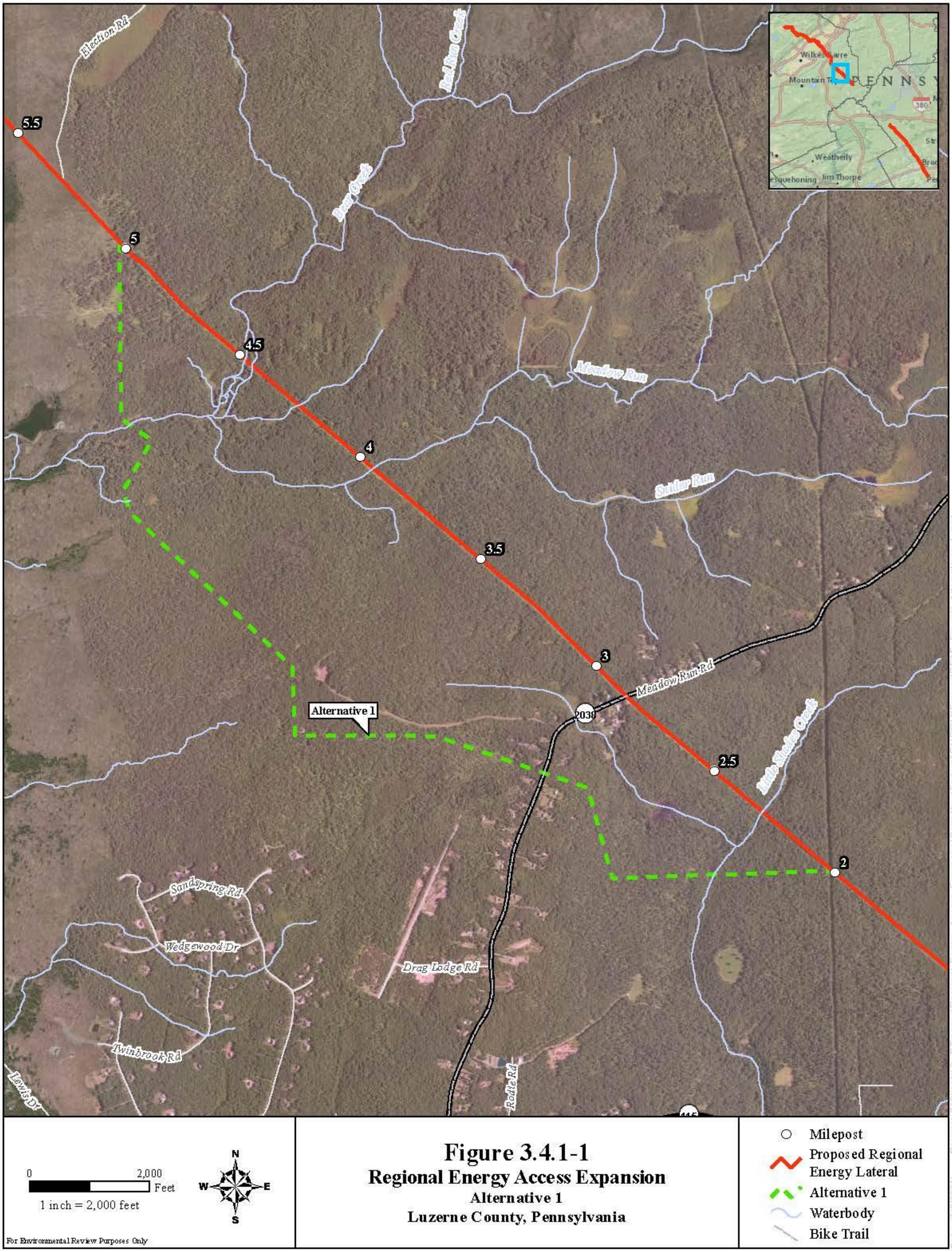


Figure 3.4.1-1
Regional Energy Access Expansion
Alternative 1
Luzerne County, Pennsylvania

3.4.2 Regional Energy Lateral Alternative 2A

Alternative 2A represents a route segment previously filed by Transco as the proposed lateral route. The corresponding segment of the currently proposed route was adopted to avoid the Pinchot State Forest and address landowner concerns. Beginning at approximate MP 6.5, the alternative deviates to the west of the proposed route and mostly follows Transco's Leidy Line System, whereas the proposed lateral route mostly follows an existing powerline corridor. The alternative and proposed routes rejoin at MP 9.4. Alternative 2A is depicted on figure 3.4.2-1 and impacts from the route alternative as compared to the corresponding segment of the proposed route are presented in table 3.4.2-1.

TABLE 3.4.2-1

Analysis of the Regional Energy Lateral Alternative 2A

Features	Proposed Route	Regional Energy Lateral Alternative 2A
Length (total miles)	3.0	2.8
Length Collocated with Existing Pipelines or Powerlines (miles)	2.0	2.1
Pipeline Construction Requirements (acres)	31.0	30.2
Pipeline Operation Requirements (acres)	17.0	16.7
State Lands Crossed (number/miles)	1/0.2	1/0.3
Forested Land Crossed (miles)	2.9	2.4
Forested Land Construction Impacts (acres)	29.9	26.9
Forested Land Operation Impacts (acres)	16.6	14.9
Environmental Justice Communities (number of block groups)	0	0

The most notable difference between the alternative and the corresponding segment of the proposed route is the crossing of state lands. The proposed route crosses 0.2 mile of the State Game Land #91 and the alternative route crosses 0.3 mile of the Pinchot State Forest. The proposed route was also developed to address a landowner concern. Based on our review, we find that the Regional Energy Lateral Alternative 2A would not provide a significant environmental advantage, and we do not recommend that it be incorporated as part of the Project.

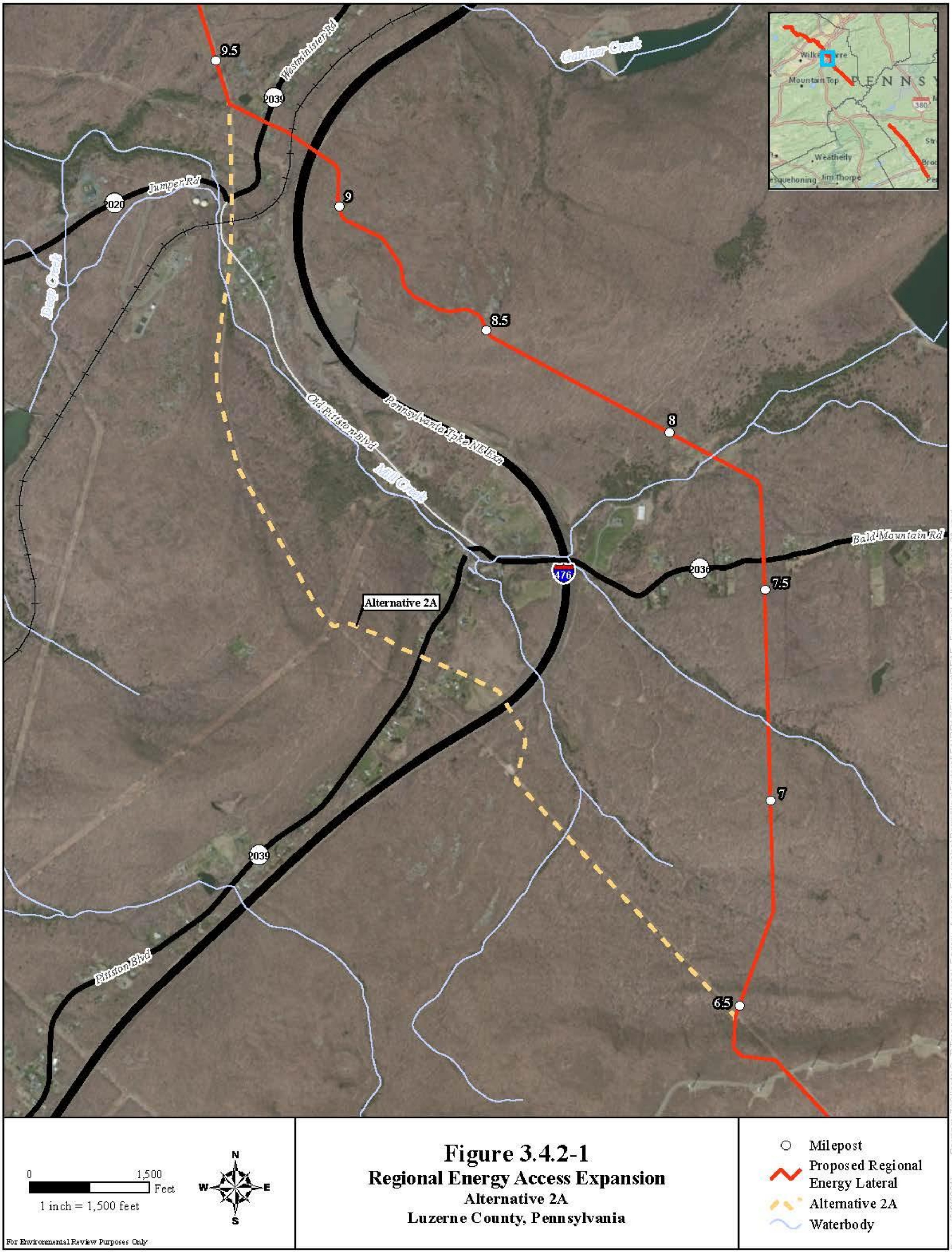


Figure 3.4.2-1
Regional Energy Access Expansion
Alternative 2A
Luzerne County, Pennsylvania

3.4.3 Regional Energy Lateral Alternatives 11A and 11B

Alternative 11B represents a route segment previously filed by Transco as the proposed lateral route. Based on landowner comments, the Borough of Laflin recommended a new route for the lateral. The Borough of Laflin recommended Alternative 11A to minimize visual impacts on landowners along the route within the Borough of Laflin. While Alternative 11A would minimize visual impacts on landowners, the route would cross steep side slopes and increase forest impacts. To minimize side slope construction, forest impacts, and the visual impacts on landowners along Alternative 11B, Transco revised Alternative 11B and moved the route further to the west, which is currently Transco's proposed lateral route. Alternatives 11A and 11B are depicted on figure 3.4.3-1 and impacts from the route alternatives as compared to the corresponding segment of the proposed route are presented in tables 3.4.3-1 and 3.4.3-2.

TABLE 3.4.3-1

Analysis of the Regional Energy Lateral Alternative 11A

Features	Proposed Route	Regional Energy Lateral Alternative 11A
Length (total miles)	0.7	0.8
Length Adjacent to Existing Pipeline Right-of-Way (miles)	0.0	0.2
Pipeline Construction Requirements (acres)	7.9	9.1
Pipeline Operation Requirements (acres)	4.4	5.0
Forested Land Crossed (miles)	0.5	0.6
Forested Land Construction Impacts (acres)	5.5	6.4
Forested Land Operation Impacts (acres)	3.0	3.6
Residences within 50 feet of the construction workspace	7	8
Total Wetland Crossed (miles)	<0.01	0.0
Road Crossings (number)	1	2
Steep Slopes Crossed (30 degrees or greater) (miles)	0.1	0.1
Side Slope Construction (miles)	0.3	0.2
Environmental Justice Communities (number of block groups)	0	0

TABLE 3.4.3-2

Analysis of the Regional Energy Lateral Alternative 11B

Features	Proposed Route	Regional Energy Lateral Alternative 11B
Length (total miles)	0.4	0.5
Length Adjacent to Existing Pipeline Right-of-Way (miles)	0.0	0.2
Pipeline Construction Requirements (acres)	4.7	5.7
Pipeline Operation Requirements (acres)	2.7	3.1
Forested Land Crossed (miles)	0.4	0.3
Forested Land Construction Impacts (acres)	4.3	3.4
Forested Land Operation Impacts (acres)	2.4	1.8
Residences within 50 feet of the construction workspace	4	8
Total Wetland Crossed (miles)	<0.01	0.0
Road Crossings (number)	0	1
Steep Slopes Crossed (30 degrees or greater) (miles)	0.0	<0.1
Side Slope Construction (miles)	0.2	<0.1
Environmental Justice Communities (number of block groups)	0	0

Figure 3.4.3-1
Regional Energy Access Expansion
Alternatives 11A, 11B, 12A, and 12B
Luzerne County, Pennsylvania

We find that the proposed route results in less severe side slope construction and would reduce visual impacts on landowners when compared to Alternatives 11A and 11B. However, because the proposed route would cross Creek Side Laflin Municipal Park and temporarily impact the public's use of the park, **we recommend that**:

- **As part of its Implementation Plan, Transco should file with the Secretary, for review and written approval by the Director of OEP, or the Director's designee, a *Laflin Municipal Park Restoration Plan* that is developed in conjunction with the Borough of Laflin and describes the measures and timeframes that Transco would implement to restore the park and ballfield to existing or better use conditions.**

3.4.4 Regional Energy Lateral Alternatives 12A and 12B

Similar to Alternatives 11A and 11B, the Borough of Laflin recommended a route alternative for the lateral. Alternative 12B represents a route segment previously filed by Transco as the proposed lateral route. Alternative 12A was recommended by the Borough of Laflin to minimize visual impacts on landowners along the previously filed Alternative 12B lateral route. While Alternative 12A would minimize visual impacts on landowners along Alternative 12B, Transco identified a route that would further reduce visual impacts on landowners, minimize forest impacts, and reduce the number of pipe bends that were proposed in Alternative 12A. Transco revised Alternative 12A and moved the route further to the west, which is currently Transco's proposed lateral route. Alternative 12A and 12B are depicted on figure 3.4.3-1 and impacts from the route alternatives as compared to the corresponding segment of the proposed route are presented in tables 3.4.4-1 and 3.4.4-2.

TABLE 3.4.4-1

Analysis of the Regional Energy Lateral Alternative 12A

Features	Proposed Route	Regional Energy Lateral Alternative 12A
Length (total miles)	0.1	0.2
Pipeline Construction Requirements (acres)	1.4	1.9
Pipeline Operation Requirements (acres)	0.8	1.0
Forested Land Crossed (miles)	0.1	<0.1
Forested Land Construction Impacts (acres)	0.5	0.6
Forested Land Operation Impacts (acres)	0.3	0.3
Environmental Justice Communities (number of block groups	0	0

TABLE 3.4.4-2 **Analysis of the Regional Energy Lateral Alternative 12B**		
Features	Proposed Route	Regional Energy Lateral Alternative 12B
Length (total miles)	0.3	0.3
Length Adjacent to Existing Pipeline Right-of-Way (miles)	0.0	0.1
Pipeline Construction Requirements (acres)	2.7	3.4
Pipeline Operation Requirements (acres)	1.4	1.9
Forested Land Crossed (miles)	0.1	0.1
Forested Land Construction Impacts (acres)	0.8	0.9
Forested Land Operation Impacts (acres)	0.4	0.5
Residences within 50 feet of the construction workspace	3	2
Total Wetland Crossed (miles)	<0.01	0.0
Road Crossings (number)	1	2
Steep Slopes Crossed (30 degrees or greater) (miles)	0.1	0.0
Side Slope Construction (miles)	0.1	<0.1
Environmental Justice Communities (number of block groups	0	0

We find that the proposed route results in less construction and operational impacts when compared to Alternatives 12A and 12B. We also conclude that our previous condition, which requires Transco to file a *Laflin Municipal Park Restoration Plan,* would further minimize impacts of the proposed route. Therefore, we do not recommend that Alternatives 12A and 12B be incorporated as part of the Project.

3.4.5 Regional Energy Lateral Alternatives 4 and 5

Residential development that has occurred adjacent to the Leidy A Line south of the Susquehanna River makes collocation with the existing Transco system infeasible. Transco identified three feasible route options through this area. The currently proposed route and Alternatives 4 and 5 are depicted on figure 3.4.5-1 and impacts from the alternative routes as compared to the corresponding segment of the proposed route are presented in tables 3.4.5-1 and 3.4.5-2.

Alternative 4 deviates from the proposed pipeline route at MP 11.5, crosses the Susquehanna River about 0.7 mile southwest of the proposed crossing site, and rejoins the proposed pipeline at MP 14.7. Alternative 4 is 0.8 mile shorter; doubles the amount of collocation with rights-of-way; reduces construction and operational impacts by 20 percent; crosses fewer landfill, quarry, and mining operations; crosses four fewer roads; and has less steep slope areas than the corresponding segment of the proposed route. The proposed route has seven fewer residences within 50 feet of the construction workspace and has one less railroad crossing. Alternative 4 would cross a detention pond and utilities that have recently been installed along the alternative route.

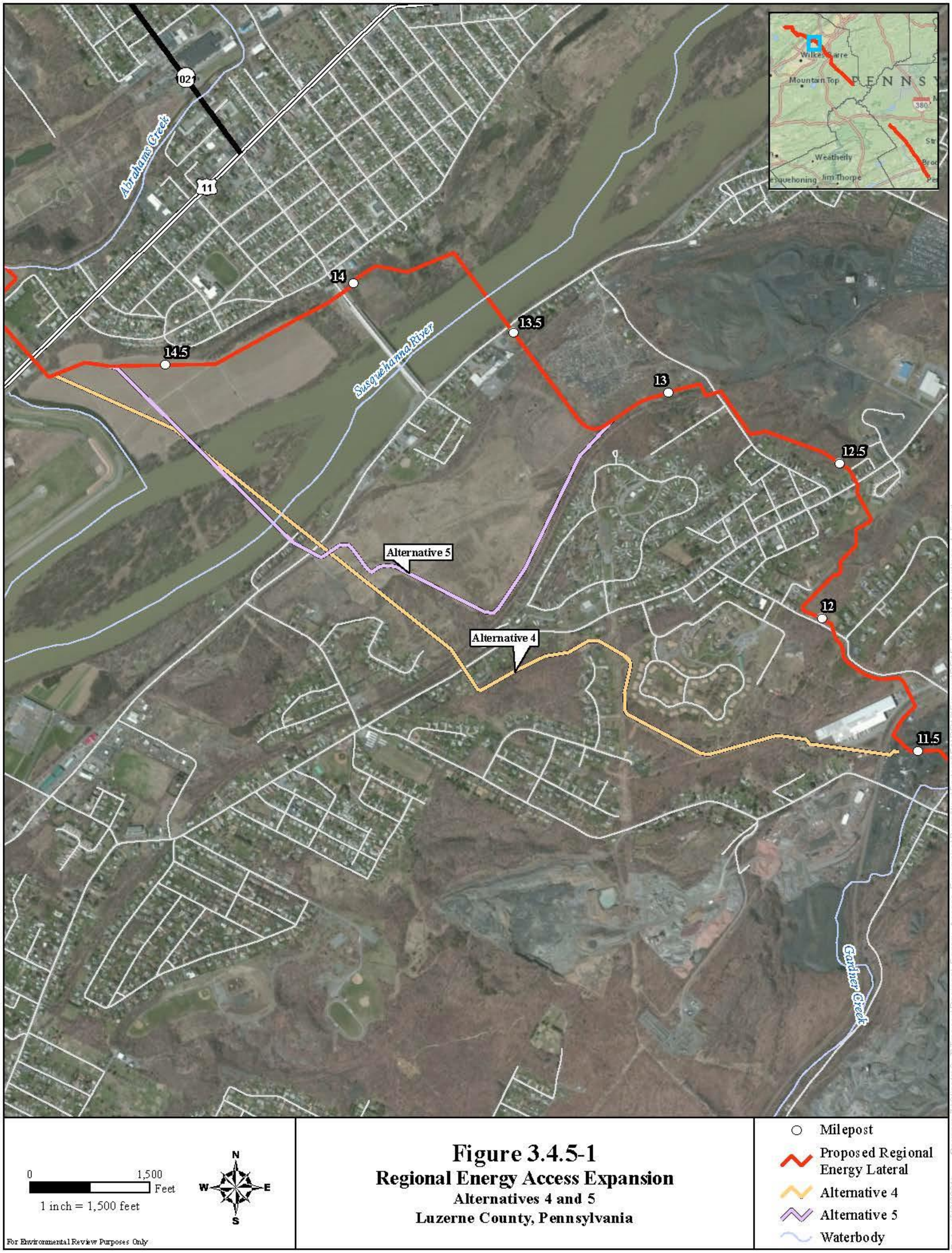


Figure 3.4.5-1
Regional Energy Access Expansion
Alternatives 4 and 5
Luzerne County, Pennsylvania

TABLE 3.4.5-1 **Analysis of the Regional Energy Lateral Alternative 4**		
Features	Proposed Route	Regional Energy Lateral Alternative 4
Length (total miles)	3.2	2.5
Length Collocated with Existing Pipelines or Powerlines (miles)	0.8	1.5
Pipeline Construction Requirements (acres)	34.1	27.3
Pipeline Operation Requirements (acres)	19.0	15.1
State Lands Crossed (number/miles)	1/0.2	1/0.3
Forested Land Crossed (miles)	1.1	0.5
Forested Land Construction Impacts (acres)	11.2	5.7
Forested Land Operation Impacts (acres)	6.4	3.2
Agricultural Land Crossed (miles)	0.6	0.4
Agricultural Land Construction Impacts (acres)	6.9	3.8
Agricultural Land Operation Impacts (acres)	3.8	2.1
Residences within 50 feet of the construction workspace	9	16
Landfills, quarries, and other mining operations within 0.25-mile (number)	19	13
Total Wetland Crossed (miles)	0.0	<0.1
Road Crossings (number)	7	3
Railroad Crossings (number)	2	3
Steep Slopes Crossed (30 degrees or greater) (miles)	0.3	0.1
Side Slope Construction (miles)	0.3	0.0
Environmental Justice Communities (number of block groups	0	0

TABLE 3.4.5-2 **Analysis of the Regional Energy Lateral Alternative 5**		
Features	Proposed Route	Regional Energy Lateral Alternative 5
Length (total miles)	1.5	1.7
Length Collocated with Existing Pipelines or Powerlines (miles)	0.0	0.5
Pipeline Construction Requirements (acres)	15.4	18.7
Pipeline Operation Requirements (acres)	8.7	10.4
Forested Land Crossed (miles)	0.4	0.4
Forested Land Construction Impacts (acres)	3.5	4.7
Forested Land Operation Impacts (acres)	2.1	2.6
Agricultural Land Crossed (miles)	0.5	0.5
Agricultural Land Construction Impacts (acres)	5.6	4.9
Agricultural Land Operation Impacts (acres)	3.2	2.8
Residences within 50 feet of the construction workspace	3	6
Landfills, quarries, and other mining operations within 0.25-mile (number)	9	8
Total Wetland Crossed (miles)	0.0	<0.1
Road Crossings (number)	2	3
Railroad Crossings (number)	1	1
Steep Slopes Crossed (30 degrees or greater) (miles)	0.1	0.0
Side Slope Construction (miles)	0.0	0.1
Environmental Justice Communities (number of block groups	0	0

Alternative 5 deviates from the proposed pipeline route at MP 13.2, crosses the Susquehanna River about 0.7 mile southwest of the proposed crossing site, and rejoins the proposed pipeline at MP 14.6. Alternative 5 is 0.2 mile longer but is adjacent to a powerline right-of-way for 0.5 mile while the proposed route is not collocated with any road or utility rights-of-way. Alternative 5 would increases construction and operational impacts by 18 percent; result in 25 percent more tree clearing; cross three more residences within 50 feet of the construction workspace; cross one less landfill, quarry, and mining operation; and cross one additional road than the corresponding segment of the proposed route.

The most notable difference between the proposed and alternative routes is the crossing method proposed for the Susquehanna River. Transco would implement the Direct Pipe® trenchless crossing of the Susquehanna River along the proposed route and a dry, open cut crossing of the river along Alternatives 4 and 5 due to abandoned mines in the area making a trenchless construction method infeasible. Transco dismissed Alternatives 4 and 5 stating the trenchless method of crossing the Susquehanna River is favorable to the dry, open cut crossing method proposed in Alternatives 4 and 5; however, we note that the Commission approved a dry, open cut crossing of the Susquehanna River for the PennEast Project (which since has been cancelled and the certificate vacated) and two other pipeline projects successfully crossed the Susquehanna River in this area using a dry, open cut crossing method. Therefore, we do not believe the alternatives should be dismissed based on the crossing of the Susquehanna River.

In comparing relevant resource impacts, we do not believe that Alternative 5 provides a significant environmental advantage over the corresponding segment of the proposed pipeline due to the increased construction impacts and proximity to existing residences; therefore, we do not recommend it be incorporated into the Project design.

Alternative 4 provides an advantage over the corresponding segment of the proposed pipeline in all resources considered with the exception of the number of residences within 50 feet of the construction workspace. We note that a slight route adjustment of Alternative 4 on the south side of the Susquehanna River could distance the route from some of the residences that are within 50 feet of the construction workspace and potentially avoid the detention pond that were recently constructed in this area. As stated above, we find the dry, open cut crossing of the Susquehanna River an acceptable crossing method for the Project, but acknowledge the trenchless Direct Pipe® crossing would eliminate crossing impacts when compared to the dry, open cut crossing method proposed along Alternative 4. When considering the environmental effects of the proposed route and Alternative 4, we conclude that both routes are technically and economically feasible, and neither route holds a significant environmental advantage over the other. Therefore, we find the proposed route to be acceptable.

3.4.6 Regional Energy Lateral Alternative 6

Alternative 6 is a 1.1-mile-long alternative that follows Transco's existing Leidy A Line. The primary purpose for evaluating route alternatives in this area is the presence of Frances Slocum State Park. Transco's proposed lateral route would avoid the state park while Alternative 6 would cross approximately 870 feet of the state park. Alternative 6 is depicted on figure 3.4.6-1 and impacts from the route alternative as compared to the corresponding segment of the proposed route are presented in table 3.4.6-1.

Alternative 6 is 0.4 mile shorter and collocates entirely along the existing Transco Leidy A Line. The proposed lateral route does not collocate with an existing cleared right-of-way. The shorter pipeline length and the increased collocation of the Alternative 6 route would result in about 30 percent less construction land impacts than the corresponding segment of the proposed lateral route.

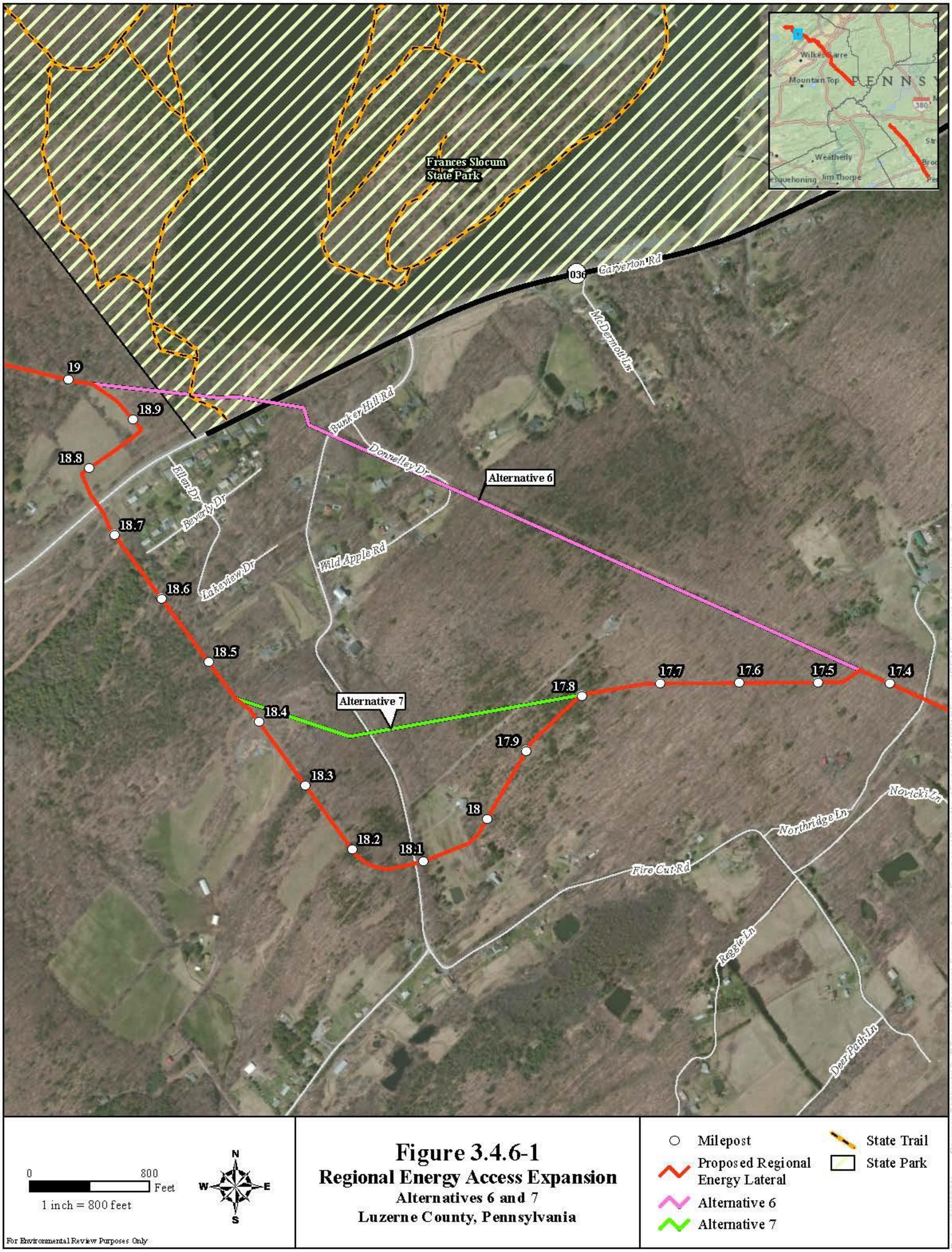


Figure 3.4.6-1
Regional Energy Access Expansion
Alternatives 6 and 7
Luzerne County, Pennsylvania

TABLE 3.4.6-1

Analysis of the Regional Energy Lateral Alternative 6

Features	Proposed Route	Regional Energy Lateral Alternative 6
Length (total miles)	1.5	1.1
Length Collocated with Existing Pipelines or Powerlines (miles)	0.0	1.1
Pipeline Construction Requirements (acres)	16.6	11.7
Pipeline Operation Requirements (acres)	9.0	6.5
State Lands Crossed (number/miles)	0/0.0	1/0.1
Forested Land Crossed (miles)	1.3	0.8
Forested Land Construction Impacts (acres)	14.3	9.2
Forested Land Operation Impacts (acres)	8.0	5.0
Agricultural Land Crossed (miles)	0.1	0.0
Agricultural Land Construction Impacts (acres)	1.1	0.1
Agricultural Land Operation Impacts (acres)	0.6	<0.1
Residences within 50 feet of the construction workspace	1	3
Total Wetland Crossed (miles)	0.0	<0.1
Road Crossings (number)	2	3
Steep Slopes Crossed (30 degrees or greater) (miles)	0.2	0.1
Side Slope Construction (miles)	0.1	0.0
Environmental Justice Communities (number of block groups	0	0

The construction methods and potential land impacts associated with the Calverton Road crossing were considered in our analysis. Along the proposed lateral route, a marginal hill is present on the west side of the road crossing. Along the Alternative 6 route, a wetland is present on the west side of the road crossing. The presence of each of these features has their own unique road bore construction considerations. The presence of a hill would require a larger and deeper excavation and a larger workspace to store the excavation material. The presence of a wetland would likely require significant bore hole dewatering due to the likely presence of saturated ground conditions. Saturated soils may also require a larger excavation to ensure safe working conditions in the bore hole, which could increase the amount of workspace required to store the excavation material. While the presence of the hill and wetland would increase the complexity of the road crossing on the proposed and alternative route, these types of construction issues are frequently encountered during pipeline construction and do not make either route technically infeasible.

The most notable factor in evaluating the two route options is the crossing of the Frances Slocum State Park, managed by the Pennsylvania Department of Conservation and Natural Resources (PADCNR). Alternative 6 would cross approximately 870 feet of the state park, including a segment of the park's Maconaquah Hiking Trail. The proposed route and workspace are about 150 feet south of the park boundary. Temporary closure of the hiking trail would be required during construction of the alternative pipeline. Because the affected trail segment is at the terminus of the park's trail system and is not a looped segment of trail, park users that enter the trail system from the park's visitor center and parking area can simply turn around and continue using the trail system. Trail users that enter the park from the Maconaquah Hiking Trail access point would not be able to enter the park from that access point while the trail is closed. Incorporation of Alternative 6 into the Project design would require additional coordination and authorization from the park, but we believe there is sufficient time for this to occur and meet the Project's in-service timeframe. Transco indicated that the PADCNR prefers that the state park be avoided.

As described above, both the proposed route and alternative route meet the purpose and need of the Project and are technically and economically feasible. In comparing relevant resource impacts, Alternative 6 is 30 percent shorter than the proposed route and is entirely collocated along the existing Leidy pipeline system, reduces forest and agricultural impacts, and crosses less steep terrain. The alternative is within 50 feet of three residences while the proposed route is within 50 feet of one residence. The alternative would cross a portion of the Frances Slocum State Park and require the temporary closure of a hiking trail while the proposed route would avoid the park. All factors considered, we find the preferred route acceptable.

3.4.7 Regional Energy Lateral Alternative 8

Alternative 8, depicted on figure 3.4.7-1, was considered to minimize construction through a residential area. Alternative 8 would deviate from the proposed lateral route at MP 19.1, travel northeast around a residential area, and rejoin the proposed lateral route at MP 20.2. About 0.35 mile of the alternative would cross the southern portion of Frances Slocum State Park. The corresponding segment of the proposed lateral would be routed through the residential area along the Transco's existing Leidy A Line for most of the route; 0.3 mile of the proposed route would create a new pipeline corridor through forest land. Because the proposed route would be constructed adjacent to the existing Leidy A Line, construction through the residential area is achievable, and creation of a new pipeline corridor through the Frances Slocum State Park would be avoided, we do not believe Alternative 8 would provide a significant environmental advantage, and we do not recommend that it be incorporated as part of the Project.

3.4.8 Regional Energy Lateral Alternative 9

Alternative 9 was developed to avoid a small but dense residential area that has developed around a portion of the existing Leidy A Line, making collocation along the existing pipeline infeasible. The alternative would deviate from the proposed lateral pipeline at MP 19.9, follow Transco's existing Leidy A Line for 0.45 mile, turn north and rejoin the proposed lateral pipeline at MP 21.3. These route options are depicted on figure 3.4.8-1 and impacts from the alternative route as compared to the corresponding segment of the proposed route are presented in table 3.4.8-1.

TABLE 3.4.8-1

Analysis of the Regional Energy Lateral Alternative 9

Features	Proposed Route	Regional Energy Lateral Alternative 9
Length (total miles)	1.4	1.2
Length Collocated with Existing Road or Pipeline (miles)	0.06	0.45
Pipeline Construction Requirements (acres)	15.0	13.5
Pipeline Operation Requirements (acres)	8.3	7.5
State Lands Crossed (number/miles)	1/0.2	1/0.3
Forested Land Crossed (miles)	1.0	0.8
Agricultural Land Crossed (miles)	0.1	0.3
Residences within 50 feet of the construction workspace	0	1
Road Crossings (number)	4	2
Environmental Justice Communities (number of block groups)	0	0

Alternative 9 is 0.2 mile shorter; increases collocation with existing pipeline corridors, reduces construction and operational impacts, crosses less forest land and more agricultural land, and crosses two fewer roads than the corresponding segment of the proposed route. The proposed route requires less construction near residences. Based on our review, we believe that Alternative 9 may provide a minor environmental advantage over the proposed route; however, because Transco's negotiations with landowners suggests the proposed route would have fewer impacts on landowners, we find the proposed route acceptable.

Figure 3.4.7-1
Regional Energy Access Expansion
Alternative 8
Luzerne County, Pennsylvania

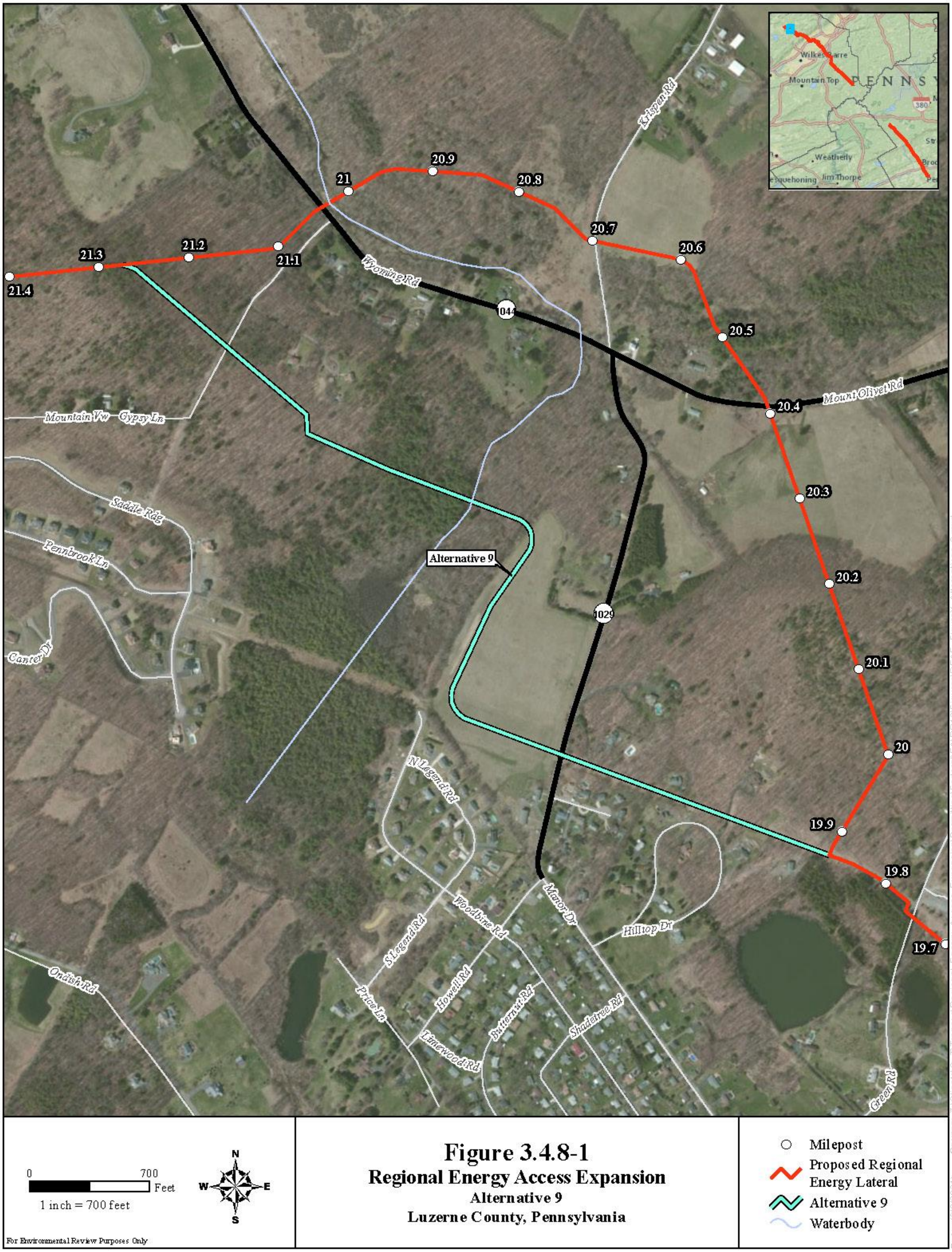


Figure 3.4.8-1
Regional Energy Access Expansion
Alternative 9
Luzerne County, Pennsylvania

3.4.9 Route Variations and Adjustments

Transco adopted minor route variations and small adjustments into the Project design throughout FERC's Pre-filing process. Many of these route adjustments were adopted without a detailed alternatives analysis because the basis for the adjustment was intuitive and practical (e.g., a slight shift in the centerline to avoid a wetland; agency preferences; landowner preferences; and survey findings). Table 3.4.9-1 identifies where route adjustments have been incorporated into the proposed route and the rationale for adopting the new route.

TABLE 3.4.9-1

Route Adjustments Incorporated into the Regional Energy Access Expansion

Approximate Mileposts	Rationale
1.1 – 1.9	Adjustment at the request of the landowner to avoid future activities on the property. The previous route is identified as Regional Energy Lateral Alternative 16.
9.0 – 10.5	Adjustment to minimize impacts on the landowner. The previous route is identified as Regional Energy Lateral Alternative 2B.
10.5 – 11.5	Adjustment to avoid a portion of an active quarry. The previous route is identified as Regional Energy Lateral Alternative 17.
11.5 – 11.6	Adjustment to avoid a non-potable water well. The previous route is identified as Regional Energy Lateral Alternative 18.
11.5 – 11.9	Adjustment at the request of the landowner. The previous route is identified as Regional Energy Lateral Alternative 19.
11.9 – 12.0	Adjustment at the request of the landowner to increase distance from existing developments on the property. The previous route is identified as Regional Energy Lateral Alternative 13.
12.0 – 12.3	Adjustment at the request of the landowner to allow for future development on the property. The previous route is identified as Regional Energy Lateral Alternative 14.
17.8 – 18.4	Adjustment at the request of the landowner. The previous route is identified as Regional Energy Lateral Alternative 7.
19.3 – 19.4	Adjustment at the request of the landowner to avoid impacts on residential areas. The previous route is identified as Regional Energy Lateral Alternative 15.

3.4.10 Route Changes After Draft EIS Issuance

Transco incorporated seven minor route changes along the Regional Energy Lateral into the Project design after the issuance of the draft EIS. Table 3.4.10-1 summarizes the route changes and provides Transco's rationale for the changes. Appendix E provides figures that illustrate the route change and new Project workspace in comparison to the route and workspace reviewed in the draft EIS. We have reviewed these route changes and find them to have an equal or lessened environmental effect when compared to the original proposed route and we find them acceptable. The following discussion provides our analysis of each route change.

TABLE 3.4.10-1

Route Changes After Draft EIS Issuance

Route Change	Approximate Mileposts	Rationale
MOC-REL-0243	6.2 – 6.5	Adjustment to shift the alignment and workspace approximately 330 feet northeast to avoid interior forest fragmentation.
MOC-REL-0231	13.1 – 13.3	Adjustment to shift the alignment and workspace approximately 100 feet north to minimize impacts to the landowners proposed development.
MOC-REL-0233	14.9 – 15.0	Adjustment to shift the alignment and workspace approximately 100 feet north to accommodate for a potential development.
MOC-REL-0240	16.8 – 16.8	Adjustment to shift the centerline 7 feet to accommodate the interconnect piping foundation.
MOC-REL-0251	17.9 – 18.2	Adjustment to shift the alignment and workspace approximately 400 feet north to accommodate landowners plans for their home.
MOC-REL-0262	18.4 – 18.8	Adjustment to shift the alignment and workspace approximately 40 feet northeast to move the centerline closer to the property line and reduce wetland crossing lengths.
MOC-REL-0227	20.8 – 21.1	Adjustment to shift the alignment and workspace approximately 230 feet south to minimize wetland impacts.

Transco incorporated a route change from MPs 6.2 to 6.5 to avoid interior forest fragmentation by increasing the amount of the pipeline route that is parallel or adjacent to an existing right-of-way. The route change would affect 0.3 acre of additional forest habitat compared to the original route. However, the forest affected would be an expansion of an existing right-of-way rather than a new corridor. Therefore, we find this route change acceptable. Transco incorporated a route change from MPs 13.1 to 13.3 to minimize impacts to the landowner's proposed development, resulting in a minor reduction in the length of the segment, and we find this route change acceptable.

Transco incorporated a route change from MPs 14.9 to 15.0 to accommodate for a potential development, resulting in a minor reduction in workspace requirements while locating the workspace slightly closer to an existing affected residence. This route change, while closer to an existing residence, would not adversely affect the adjacent residence and would avoid the restrictions for development on the property. Therefore, we find the route acceptable. The adjustment proposed at MP 16.8 would be minor and necessary to accommodate the interconnect piping foundation and would be inconsequential.

Transco incorporated a route change from MPs 17.9 to 18.2 along the Regional Energy Lateral to accommodate for landowner plans for their home. The route change would affect 0.3 acre of additional forest and result in a new residence being located with 50 feet of the construction workspace. We note that this route change involves disturbances to a landowner that was not previously affected by the proposed route and results in construction occurring within 50 feet of the newly affected landowner's home. In comparing the impact between resources, we consider the degree of impact anticipated on each resource. Ultimately, an alternative that results in equal or minor advantages in terms of environmental impact would not compel us to shift the impacts from the current set of landowners to a new set of landowners. In this case, if the original route would permanently encumber the property to the extent that the landowner would be incapable of building or expanding the home, then this could outweigh the mostly temporary construction impacts affecting the newly affected landowner. On balancing of the impacts associated with this route change, we conclude that both routes are technically feasible, and neither route holds a significant environmental advantage over the other, except in the view of the landowners affected. The newly affected landowner has agreed to the proposed route change on their property; therefore, we find this route change acceptable.

Transco incorporated a route change from MPs 18.4 and 18.8 for a centerline alignment to reduce wetland impacts. The route change would result in an increase of less than 0.1 acre of forest impacts, and a decrease of less than 0.1 acre in wetland impacts. The route change would also result in construction occurring within 50 feet of an existing residence. On balancing of the impacts associated with this route change, we conclude that both routes are technically feasible, and neither route holds a significant environmental advantage over the other. As such, the route change is acceptable.

Transco incorporated a route change from MPs 20.8 and 21.1 for a centerline alignment to reduce wetland impacts. The route change would result in minor decreases (less than 0.1 acre) in impacts to forest and wetlands. Therefore, we find this route change acceptable.

3.5 ABOVEGROUND FACILITY ALTERNATIVES

3.5.1 Compressor Station Site Alternatives

Compressor station and aboveground facility siting is often constrained by several factors, including pipeline hydraulics and DOT regulations. That is, an otherwise seemingly ideal site based on land use or other environmental factors might not be located within the necessary engineering and hydraulic parameters of the pipeline system. Also, any compressor station constructed to increase pressure or deliverability on an existing pipeline system would need to be sited along (or nearby) the existing pipeline facilities to avoid the need for additional connecting (suction/discharge) pipelines. Consideration is also given to environmental impacts associated with accessing each site, construction requirements, noise sensitive areas, sensitive resources, contamination, and the reasonable availability of sites sufficiently large (i.e., greater than 40 acres) to provide a buffer from adjoining properties.

Regarding site selection, although section 7(h) of the NGA grants the Certificate holder the right to exercise eminent domain, we believe it is generally preferable for a site to be reasonably obtained from the current landowners (e.g., by purchase, lease, or restrictive easement) in order to minimize the use of eminent domain to secure land for aboveground facilities where possible, as such facilities are permanent and would restrict future aboveground land uses for landowners. Our evaluation of site alternatives takes these factors into consideration.

We did not evaluate alternative locations for M&R stations because the locations of those facilities are largely determined by interconnections with other pipeline systems and delivery points, and the facilities have a relatively small footprint. Similarly, the locations of proposed MLVs are based in part on PHMSA regulations, and MLVs and other appurtenant aboveground facilities generally occupy only a small footprint within existing or proposed pipeline rights-of-way. Additionally, we did not receive suggested alternatives from stakeholders concerning the siting of these facilities. Given these factors, we are not providing an evaluation of alternative meter stations or MLV sites.

Transco's Compressor Stations 515 and 505 are existing compressor stations that would be expanded primarily within existing Transco-owned parcels. Compressor Stations 195 and 207 are not expanding any physical assets. Proposed modifications would be limited to changes within the existing building and would have not footprint impact at the sites. We have determined that the modifications and proposed expansions of compressor stations would not result in significant environmental impacts, and we did not receive any comments on or objections to the proposed location of these expansions; thus, we are not evaluating site alternatives for compressor station modifications. Our analysis of compressor station alternatives is limited to site alternatives for new Compressor Station 201 and to design alternatives such as electric versus gas compression.

3.5.2 Compressor Station 201 Site Alternatives

Four site options were evaluated for Compressor Station 201. The general location of the alternative sites in relation to the proposed compressor station location is shown on figure 3.5.2-1, and a summary of comparative factors for the four site options is provided in table 3.5.2-1.

TABLE 3.5.2-1

Comparison of Compressor Station 201 Site Alternatives

Features	Mantua Grove Road Site (Proposed Site)	Democrat Road Site [a]	Swedesboro Avenue Site [a]	Tomlin Road Site [a]
Parcel size (acres)	31.1	57.5	60.5	18.1
Parcel ownership	Private	Private	Private	Private
Parcel available for purchase	Available	Unavailable	Unavailable	Unknown
Current zoning classification	Light manufacturing	Industrial	Business park and conservation area	Business park and conservation area
Current land use	Agricultural land, one residence	Agricultural land	Agricultural land, one farmstead	Agricultural land
Temporary construction workspace (acres)	15.3	15.1	11.7	12.4
Permanent footprint (acres)	15.3	15.1	11.7	12.4
Permanent impacts in 150-foot wetland transition area (acres)	0.0	0.1	2.3	2.6
Permanent impacts within FEMA Floodplain (acres)	0.0	0.0	0.5	0.1
Permanent impacts within prime farmland (acres)	11.0	7.1	11.7	0.0
Number of residences within 0.5-mile	413	38	30	33
Number of residences within 200 feet	2	0	2	2
Distance to nearest NSA (feet)	139	357	91	95
Environmental Justice Communities (number of block groups) within 1-mile	4	2	3	3

[a] Construction workspace, permanent footprint, access roads, and piping requirements are based on conceptual layout plans. Construction workspace is inclusive of permanent footprint.

According to Transco, all four site options meet the engineering and hydraulic siting criteria of the Project. As indicated in table 3.5.2-1, the four sites would have similar workspace requirements and land use impacts, and all permanent facility footprints would be sited in agricultural land. Although the Democrat Road, Swedesboro Avenue, and Tomlin Road alternative sites could impact wetland and/or floodplain, we believe the compressor stations could be designed and sited to avoid impacts on these resources; therefore, we have eliminated these factors from consideration.

Regarding potential environmental justice community impacts, the proposed Mantua Grove Road and Democrat Road sites are within minority block groups and the Swedesboro Avenue and Tomlin Road sites are within low-income block groups. Four block groups (two minority and two low-income) for the proposed Mantua Grove Road site; two block groups (one minority and one low-income) for the Democrat Road Site; and three block groups (one minority and two low-income) for the Swedesboro Avenue and Tomlin Road sites are within a 1-mile radius of the site alternatives. Based on the location of the sites and the proposed use of electric-driven compression, we do not believe selection of any site alternative would result in a greater impact on environmental justice communities when compared to the other site alternatives.

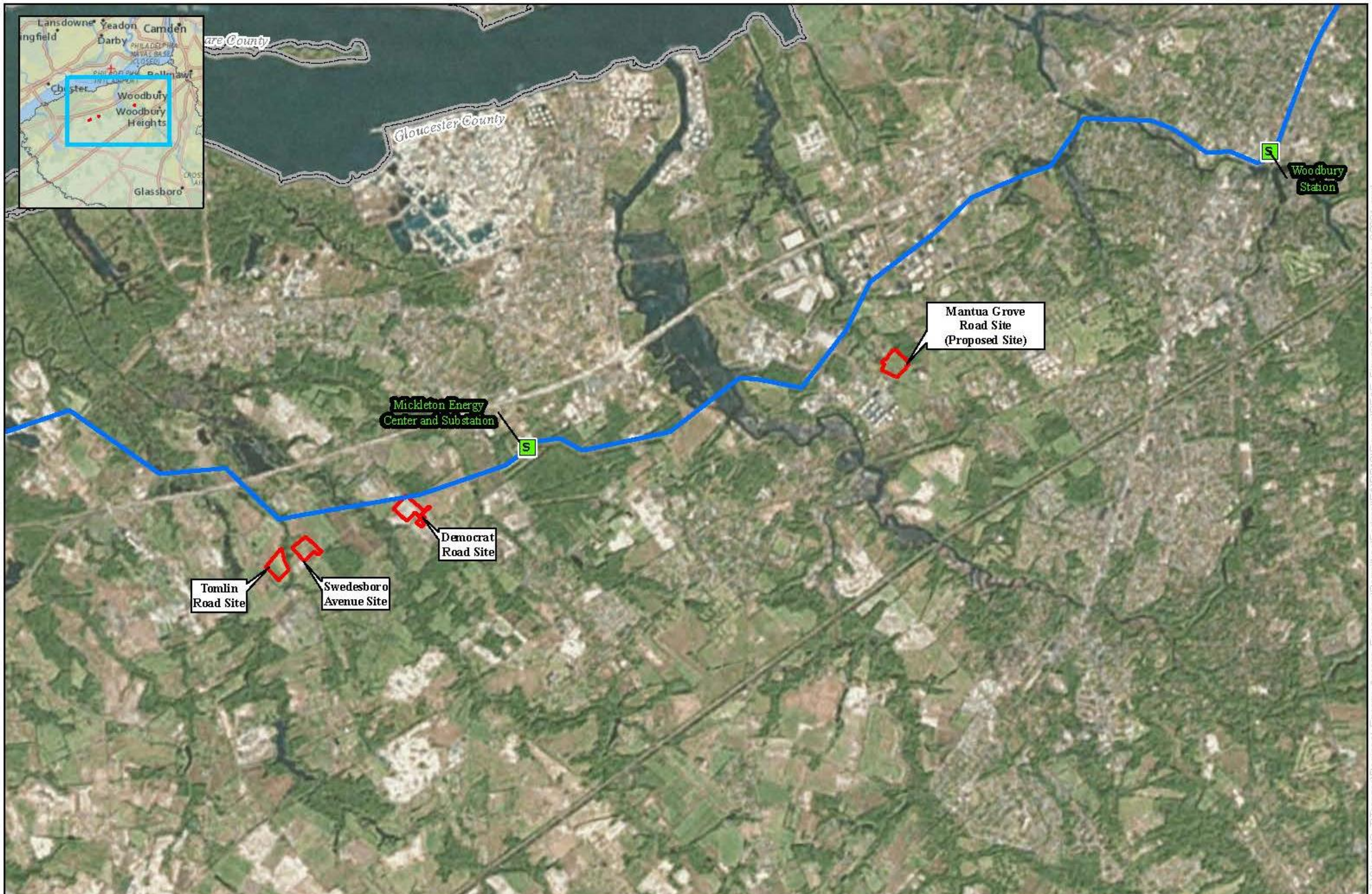


Figure 3.5.2-1
Regional Energy Access Expansion
Compressor Station 201 Site Alternatives
Gloucester County, New Jersey

The most notable difference between the sites is the number of nearby residences. The proposed Mantua Grove Road Site has 413 residences within 0.5 mile of the site, while the Democrat Road, Swedesboro Avenue, and Tomlin Road sites have 38, 30, and 33 residences within 0.5 mile of the sites, respectively. Transco has committed to using an electric motor-driven compressor, which will eliminate air emission concerns and reduce noise emissions during operation of the station. In addition, we evaluated the landscape surrounding of the Mantua Grove Road Site to determine whether any natural or artificial noise buffering is present and if other noise generating facilities are present in the area. The site is bordered by forest to the north; commercial business and a self-storage facility to the east; a solar farm, the Woodbury Junction Tank Farm, and Mantua Grove Road to the south; and a mix of wooded areas and residences to the west. Based on these factors and as discussed in section 4.8.4 and 4.9.3, we have determined that use of electric motor-driven compression at this site would minimize *local* air quality impacts and noise to insignificant levels.

Because Transco has committed to using an electric motor-driven compressor at the proposed Compressor Station 201 (Mantua Grove Road Site), we assume an electric motor-driven compressor would be used at the other compressor station site alternatives. We evaluated the electric power that must be brought to each site to power a compressor station. Transco has coordinated with Public Service Electric and Gas (PSE&G) and confirmed that it could provide the required 10.1 megawatts (MW) of power for electric motor-driven compression at the proposed Mantua Grove Road Site and infrastructure upgrades could be completed in time to meet the Project schedule. PSE&G would provide electric service from its existing Woodbury Station (3.1 miles northeast of the site) and would proposes a loop configuration for redundancy, so individual north and south transmission routes would be required. However, both transmission routes would be installed within existing PSE&G rights-of-way; therefore, no new easements would be required. Existing power poles may need to be replaced or upgraded to accommodate the additional transmission line, but co-location within the existing transmission corridor would minimize environmental and landowner impacts.

We assume power to the Democrat Road, Swedesboro Avenue, and Tomlin Road alternative sites could also be provided by PSE&G's Woodbury Station, but an additional 3.5 to 4.5 miles of infrastructure upgrades or new transmission corridor would be required. An additional power option to the alternative sites may exist from the existing Mickleton Energy Center and substation, which is 0.9, 1.7, and 1.9 miles northeast of the Democrat Road, Swedesboro Avenue, and Tomlin Road alternative sites, respectively. An existing high-voltage powerline right-of-way from the substation passes near each alternative site, and this corridor could be used to provide power to the alternative sites, and therefore, minimize impacts on existing resources and landowners. Based on the factors above, power infrastructure to any of the site alternatives can mostly be completed within existing powerline easements, would not significantly affect resources or landowners, and is not a deciding factor in our alternative site analysis.

Upon review of the environmental and technical factors above, we could not conclude that any of alternative site options provided a significant environmental advantage over the proposed location. We also note that the proposed site is the only site option that is currently available for purchase. For these reasons, we do not recommend the site alternatives are further considered.

3.5.3 Electric Motor-Driven Compression Alternatives

We received comments regarding the use of electric-driven compressors in lieu of gas-fired compressors at compressor stations sites. Specifically, commentors noted that operation of gas-fired compressors has greater local air, noise, and health concerns than electric-driven compressors, and installation of gas-fired compressors versus electric-driven compressors violates Executive Order 14008[25] and Executive Order 13990.[26] Transco has elected to install electric motor-driven compressor units at Compressor Station 201. Therefore, our evaluation focuses on whether the proposed compression facilities at Compressor Stations 505 and 515 could be powered with electric-driven compressors in lieu of gas-fired compressors.

To operate Compressor Stations 505 and 515 with electric-driven compressors, additional electric transmission line and substation infrastructure must be installed to connect the facilities into the regional transmission grid. The installation of these facilities would generally increase the Project's environmental impacts and impact landowners not currently affected by the proposed Project, as discussed below.

3.5.3.1 Compressor Station 505

At Compressor Station 505, the PSE&G Neshanic Station is 0.8 mile northwest of the compressor station and two transmission corridors are present to the west and north, along with the existing Leidy pipeline system right-of-way (see figure 3.5.3-1). Transco requested that Jersey Central Power & Light Company (JCP&L) complete a thorough review of the feasibility of installing the infrastructure required to supply the power needed to support electric motor-driven compression at Compressor Station 505. JCP&L indicated that it was unable to provide the required 27 MW connection from any existing JCP&L substations in the vicinity of Compressor Station 505. JCP&L also indicated to Transco that, while a connection to an existing PSE&G substation located west of Compressor Station 505 could potentially supply the necessary power to Compressor Station 505, this option would not avoid outages and was determined to be infeasible for several reasons, most notably the inability to site the required interconnecting substation as well as impacts to wetlands, waterbodies, and preserved lands.

3.5.3.2 Compressor Station 515

At Compressor Station 515, an existing substation is 3.3 miles southeast of the compressor station and a transmission corridor is present, along with the existing Leidy pipeline system right-of-way (see figure 3.5.3-2). Compressor Station 515 is located within the service area of PPL Electric Utilities (PPL) and would require 50 MW of power for electric motor-driven compression. Transco contacted PPL to evaluate the feasibility of installing the infrastructure required to supply power needed to support electric motor-driven compression at Compressor Station 515. PPL's analysis showed that the required 50 MW supply could be supported by installing a 3.4-mile-long 230 kilovolt feed from the PPL's existing substation (located approximately 2.5 miles southeast of Compressor Station 515). Transco conducted an analysis of PPL's proposed route to evaluate estimated workspace and environmental impacts associated with electric infrastructure for Compressor Station 515.

PPL's proposed route would parallel existing utility rights-of-way and Transco's existing pipeline corridor crossing a total of six parcels, three of which are Commonwealth of Pennsylvania parcels. Two of the Commonwealth of Pennsylvania parcels are State Game Land #91 located east and southeast of the station. State Game Land #91 would be crossed by the new electric line for 2.3 miles and contains FWS National Wetland Inventory (NWI) wetlands and USGS National Hydrography Dataset (NHD) streams. While the line would mostly parallel existing corridors, it is estimated that 19.6 acres of tree clearing would be required for the length of the PPL route. Based on desktop review, one forested wetland that would require mitigation and one stream would be crossed on State Game Land #91 by the electric line. In addition

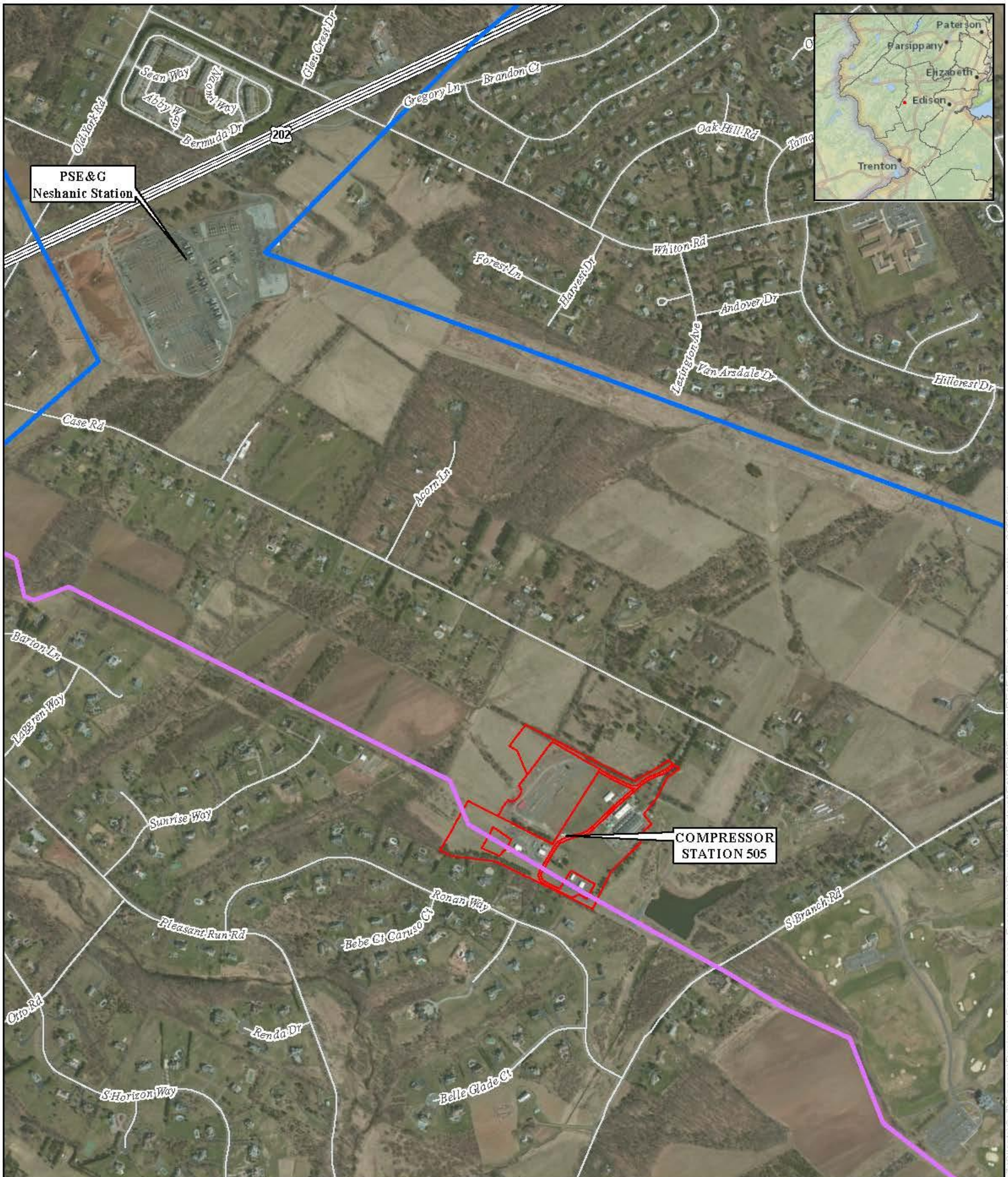
[25] Executive Order 14008 is available online at: https://www.federalregister.gov/documents/2021/02/01/2021-02177/tackling-the-climate-crisis-at-home-and-abroad.

[26] Executive Order 13990 is available online at: https://www.federalregister.gov/documents/2021/01/25/2021-01765/protecting-public-health-and-the-environment-and-restoring-science-to-tackle-the-climate-crisis.

to the new power feed, Transco would need to construct a substation adjacent to the north side of the existing compressor station which would require an additional 1.1 acres of tree clearing.

The proximity of these electric facilities and the presence of existing pipeline and powerline right-of-way would minimize the impact of installing new or modified electric infrastructure to the compressor stations. However, Transco has stated that power service may be temporarily disrupted while the new electric infrastructure is connected to the power grid, the increased electric usage could affect summer and winter peak electric demands, and use of electric-driven compressors does not allow operational flexibility of Transco's system. Transco indicated that natural gas turbine-driven compression at Compressor Station 515 is highly preferable for system reliability, operational flexibility, and to balance the horsepower across the system. Compressor Station 515 is one of the main stations moving gas along Transco's Leidy Line. Consequently, in the event of a regional utility power outage, a significant amount of this compression would be unavailable. Transco indicated that this would hinder the ability of the Transco system to make deliveries along Transco's Leidy Line. Transco also indicated that installing natural gas-powered compression at Compressor Station 515 maintains system reliability through fuel diversity.

Transco's proposal to the Commission involves the replacement of the existing compressor units at Compressor Stations 505 and 515. Assuming sufficient power could be provided to these stations, installing electric-driven compressors in lieu of gas-fired compressors would still meet the purpose and need of the Project and would be technically and economically feasible. Installing electric power infrastructure to the compressor stations would result in additional environmental impacts and affect landowners along the infrastructure installations and/or upgrades. However, the reduced air and noise emissions from an electric-driven compression facility would reduce operational impacts on these same landowners and other landowners in the area. While installing electric-driven compression at these facilities could have an overall long-term environmental advantage over gas compression, Transco states it may affect system reliability and operational flexibility.



0 1,000 Feet
1 inch = 1,000 feet
N W E S
For Environmental Review Purposes Only

Figure 3.5.3-1
Regional Energy Access Expansion
Compressor Station 505 Compression Alternatives
Luzerne County, Pennsylvania

Existing Powerline Rights-of-Way
Existing Pipeline Rights-of-Way
Compressor Station 505

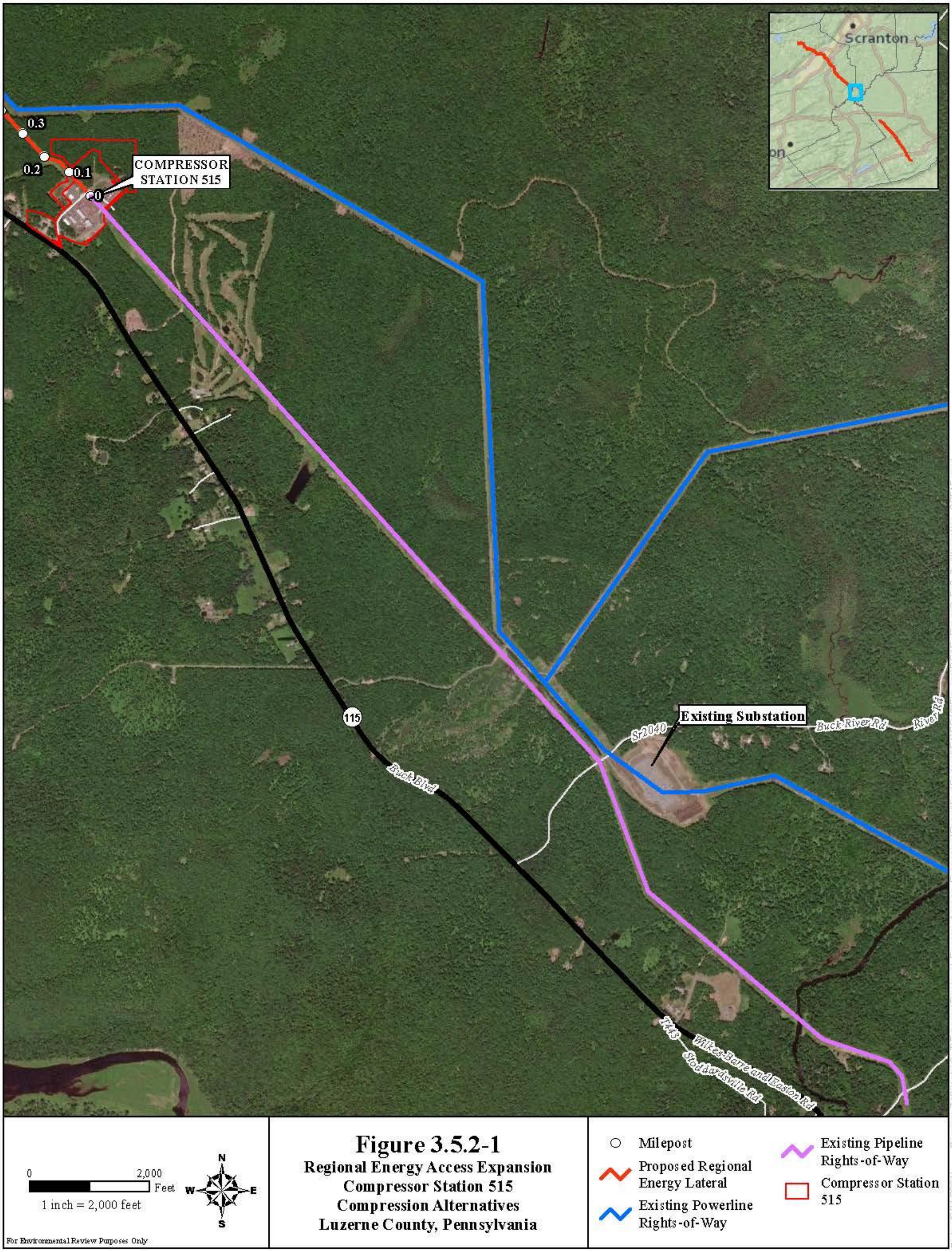


Figure 3.5.2-1
Regional Energy Access Expansion
Compressor Station 515
Compression Alternatives
Luzerne County, Pennsylvania

Executive Order 14008, as it relates to the Project, states the Federal Government must drive assessment, disclosure, and mitigation of climate pollution and climate-related risks and combat the climate crisis with bold, progressive action that combines the full capacity of the Federal Government with efforts from every level of government and every sector of our economy, and ultimately work towards net-zero global emissions by mid-century or before. Executive Order 13990, as it relates to the Project, directs the heads of the relevant agencies to consider new rules that would suspend, revise, or rescind specific regulations enacted or proposed during the Trump administration regarding emissions standards, methane emissions standards, and appliance and building efficiency standards to ensure that such standards cut pollution. Replacing the gas-fired compressor units with electric-driven compression would eliminate emissions from the compressor stations but would increase the power demand from the regional electric transmission grid which could result in similar emissions from power generating stations as that of the gas-fired compressor units. We note that comparisons between gas-fired compressor emissions and electric grid-sourced emissions are complicated because there would be differences in the contributing fossil fuel-fired generating stations: they may use gas, oil, or coal for fuel; they would have different plant configurations (simple cycle or combined cycle power generation); and the power plants would likely have different emission control and scrubber systems. Furthermore, power that is supplied to the electric grid would likely be sourced to some degree from solar or wind facilities which would reduce the carbon footprint in power generation. Considering these factors, we cannot with certainty determine whether replacing gas-fired compressors with electric-driven compressors would achieve a reduction in greenhouse gas (GHG) emissions in the near-term. However, if the electric transmission grid is increasingly sourced by carbon-neutral sources, over the operation lifespan of compressor stations, the use of electric-driven compressors may align with the requirements and goals set forth in Executive Order 14008 and Executive Order 13990 and facilitate the reduction of GHGs, whereas gas-fired compressors may not.

In summary, Compressor Stations 505 and 515 are currently operated by gas-fired compressors. Under Transco's proposal, the existing compressors would be replaced with more efficient gas-fired compressors, along with the addition of new gas-fired compression. The operational emissions from these modifications would comply with state and federal noise and air emission standards. The replacement of gas-fired compressors with electric-driven compressors would reduce operational air and noise emissions from the compressor stations, but would require new electric power infrastructure to connect the compressor stations to the regional electric transmission grid, which would result in new environmental and landowner impacts. While the reduced air and noise emissions from electric-driven compressors may provide an overall long-term environmental advantage over gas compression, we cannot demonstrate that the advantages are significant. Furthermore, the electric-driven compressors may not be technically practical given Transco's stated design considerations for operational flexibility. Based on these considerations, we do not recommend electric-driven compression as the preferred alternative.

3.6 ALTERNATIVES CONCLUSION

We considered alternatives to Transco's proposal and conclude that no system, route, or other alternative would provide a significant environmental advantage over the Project as proposed. Therefore, we conclude that the proposed Project, with our recommended mitigation measures, is the preferred alternative to meet the Project objectives.

4.0 ENVIRONMENTAL ANALYSIS

The following sections discuss the Project's potential impacts on environmental resources. Our description of the affected environment is based on a combination of data sources, including desktop resources such as scientific literature and regulatory agency reports, information from resource and permitting agencies, scoping comments, and field data collected by Transco and its consultants that was provided in its application and in response to information requests from our staff.

The environmental consequences of constructing and operating the Project would vary in duration and significance. Four levels of impact duration were considered: temporary, short-term, long-term, and permanent. Temporary impacts generally occur during construction with the resource returning to preconstruction condition almost immediately afterward or within the next full growing season. Short-term impacts could continue between 1 to 3 years following construction, and up to 5 years for intermediate impacts leading to fully successful recovery. Impacts were considered long-term if the resource would require more than 5 years to recover. A permanent impact could occur as a result of any activity that modifies a resource to the extent that it would not return to preconstruction conditions during the life of the Project which is expected to be a minimum of 50 years. When determining the significance of an impact(s), we consider the duration of the impact; the geographic, biological, and/or social context in which the impact would occur; and the magnitude and intensity of the impact. The duration, context, and magnitude of impacts vary by resource and therefore significance varies accordingly. Lastly, our analysis considers impacts on resources collectively without discerning the specific categories (e.g., direct, indirect, primary, and secondary).

Our impacts conclusions and determinations of significance are based on the successful restoration of affected lands. The restoration of affected lands is a process, dependent on a number of factors, and may be accomplished relatively quickly (1 to 2 growing seasons) or may require several years to complete. Restoration of affected lands can be adversely affected by weather conditions such as drought or abnormal rainfall, landowner actions (e.g., physical changes to land use, cattle grazing), and/or third-party actions including non-project use/activities. If initial restoration activities are unsuccessful, affected lands may exhibit uneven grades, ponding, rill erosion, inconsistent revegetation, and/or other adverse conditions that are not consistent with preconstruction conditions. Some of these restoration issues may require additional attention by the applicant or may resolve themselves through normal land use practices and/or natural processes. Ineffective restoration may result in unexpected impacts and the prolonging of impacts described in the following analyses. It is our expectation that if initial restoration activities are unsuccessful, Transco, in consultation with the affected landowner and consistent with our environmental compliance monitoring and reporting requirements, would continue to assess, take action, and implement measures to ensure the eventual restoration of the affected resources.

The EPA has assessed indicators of climate change and summarizes this information in its *Climate Change Indicators in the United States*.[27] Included in the summary is a conclusion that a larger percentage of "heavy precipitation" events, in recent years, have come in the form of intense single-day events.[28] "Heavy precipitation," which refers to instances during which the amount of rain (or snow) experienced in a location substantially exceeds what is normal, and intense single-day events can increase the risk and intensity of project-related impacts on the environment. Based on our experience regulating the construction of interstate natural gas transmission pipeline projects, "heavy precipitation" and intense

[27] EPA (2021) Climate Change Indicators: Heavy Precipitation. Accessed September 2021. https://www.epa.gov/climate-indicators/climate-change-indicators-heavy-precipitation#tab-2.

[28] The prevalence of extreme single-day precipitation events remained fairly steady between 1910 and the 1980s but has risen substantially since then. Over the entire period from 1910 to 2020, the portion of the country experiencing extreme single-day precipitation events increased at a rate of about half a percentage point per decade.

single-day events are not wholly uncommon, especially for projects in which construction spans several months, and it is reasonable to expect that one or more of these events may occur during a project's construction. Predicting these and other extreme weather events (hurricanes and tropical storms) is difficult; however, should an extreme weather event occur ("heavy precipitation" or an intense single-day event), project workspaces could become inundated, spoil piles could experience some erosion, and erosion control devices could be overwhelmed. Individually or collectively, these actions may result in off-right-of-way impacts and would likely increase rates of erosion, turbidity, and sedimentation. These impacts could in turn affect soil/slope stability, water quality, aquatic wildlife, and other environmental resources. In addition, extreme 1-day precipitation events may lengthen the amount of time required to adequately restore the construction right-of-way. If off-right-of-way impacts occur, Transco would need to request additional approvals from FERC and affected landowner to access these off-right-of-way areas to remediate the erosion and clean-up the sedimentation.

The impacts of an extreme weather event(s) must be assessed and addressed in a timely manner by the company so as to avoid further impacts on the environment. Should a project proponent fail to address these impacts in a timely fashion, the project would be out of compliance with the requirements contained within the FERC Plan. Specifically, the Plan requires that project proponents inspect and ensure the maintenance of temporary erosion control measures within 24 hours of each 0.5 inch of rainfall. The Plan then requires that the repair of all ineffective temporary erosion control measures occurs within 24 hours of identification, or as soon as conditions allow. Still, it should be noted that these measures ensure that once an incident occurs, it will be remediated. The occurrence of an incident involving off-right-of-way sediment transport is more likely now than in the past based on the increase in extreme 1-day weather events and should be expected in regions that may experience these events, including the Project area.

In the following sections, we address direct and indirect effects collectively, by resource. The analysis contained in this EIS is based upon Transco's application and supplemental filings, and our experience with the construction and operation of natural gas transmission infrastructure. Additionally, if the Project is approved and proceeds, it is not uncommon for a project proponent to request minor modifications (e.g., minor changes in workspace configurations). These changes are often identified by a project proponent once on-the-ground implementation of work is initiated. Any Project modifications would be subject to review and approval by FERC and any other applicable permitting/authorizing agencies with jurisdiction.

4.1 GEOLOGIC RESOURCES

This section describes the geologic setting, mineral resources, geologic hazards, and paleontological resources associated with the Project; the measures that Transco would implement to minimize impacts on geologic resources during construction and operation of the Project; and any Staff recommendations to further avoid or minimize impacts on geologic resources.

As described in section 2.1, the modifications associated with the Project would generally be limited to grading and shallow excavation (typically not anticipated to exceed 8 feet) in small areas at existing facilities. The use of associated access roads and staging areas would involve surficial grading. The proposed modifications, access roads, and staging areas would be constructed, restored, and maintained in accordance with Transco's Plan and Procedures and other Project-specific plans which are designed to avoid and minimize impacts on environmental resources (see table 2.3-1). As discussed throughout this EIS, we have reviewed Transco's plans and find them acceptable. Due to the limited nature and extent of construction and with implementation of the above-referenced plans, the proposed modifications and use of access roads and staging areas would not result in a significant impact on geologic resources. Therefore, the remainder of this section focuses on the geologic setting, mineral resources, geologic hazards, and paleontological resources associated with only the Regional Energy Lateral, Effort Loop, and Compressor Station 201.

4.1.1 Geologic Setting

4.1.1.1 Regional Physiography and Geology

The Regional Energy Lateral is within the Glaciated Pocono Plateau section of the Appalachian Plateau physiographic province (MPs 0.0 to 6.0), the Anthracite Valley section of the Ridge and Valley physiographic province (MPs 6.0 to 18.7), and the Glaciated Low Plateau section of the Appalachian Plateau physiographic province (MPs 18.7 to 22.3). The Effort Loop is within the Blue Mountain section of the Ridge and Valley physiographic province (MPs 43.7 to 51.9) and the Glaciated Pocono Plateau section of the Appalachian Plateau physiographic province (MPs 51.9 to 57.5) (PADCNR, 2000a). Compressor Station 201 is within the Lowland and Intermediate Upland section of the Atlantic Coastal Plain physiographic province. Table 4.1.1-1 summarizes the landforms, underlying rock type, and geologic structure associated with the physiographic provinces and sections crossed by the Project, and USGS maps included in appendix B depict the topography near the Project.

The entire Regional Energy Lateral and the Effort Loop between MPs 51.9 and 57.5 would traverse areas with low to moderate local relief (101 to 600 feet) whereas the Effort Loop would traverse areas with moderate to high local relief (301 to 1,000 feet) between MPs 43.7 and 51.9. Surface elevations crossed by the pipelines range from approximately 1,000 to 1,900 feet above mean sea level. Compressor Station 201 is in an area of very low local relief (0 to 100 feet), with surface elevations at the site ranging from approximately 45 to 60 feet above mean sea level.

4.1.1.2 Surficial Geology

As indicated in table 4.1.1-1, the Regional Energy Lateral and Effort Loop cross some areas that were affected by two periods of glaciation between 17,000 and 198,000 years ago. Unconsolidated surficial deposits crossed by the pipelines consist of very thin to moderately thick sandy, silty, and clayey glacial till, which cover between 10 percent and 75 percent of the ground surface, as well as deposits of residuum, colluvium, and alluvium (PADCNR, 1989; 1997). Residuum is derived from the weathering of the underlying sedimentary bedrock, colluvium is a poorly sorted hillside deposit that has been transported downslope by gravity-driven processes, and alluvium consists of well- to poorly stratified clay, silt, sand, and gravel deposited on valley bottoms by flowing water.

Transco conducted a geotechnical investigation of the Compressor Station 201 site consisting of 17 test borings to depths of 25 to 71 feet below ground surface (bgs). All the borings encountered unconsolidated medium to fine quartz sand from the surface to depths of 9 to 26 feet bgs, underlain by up to 54 feet of sandy clay below which was a clayey fine sand unit that extended to the terminal depth of the borings.

TABLE 4.1.1-1

Physiography and Geology of the Regional Energy Access Expansion

Physiographic Province	Physiographic Section	Dominant Landform	Local Relief	Underlying Rock Type	Geologic Structure	Drainage Pattern	Project Facilities within Province/Section
Appalachian Plateaus	Glaciated Pocono Plateau	Broad, undulatory upland surface having dissected margin	Low to moderate	Sandstone, siltstone, shale, and some conglomerate.	Beds having low north dip; some small folds	Deranged	Regional Energy Lateral MPs 0.0 – 6.0; Effort Loop MPs 51.9 – 57.5
	Glaciated Low Plateau	Rounded hills and valleys	Low to moderate	Sandstone, siltstone, and shale	Low-amplitude folds	Dendritic	Regional Energy Lateral MPs 18.7 – 22.3
Ridge and Valley	Anthracite Valley	Narrow to wide, canoe-shaped valley having irregular to linear hills; valley enclosed by steep-sloped mountain rim	Low to moderate	Sandstone, siltstone, conglomerate, and anthracite	Broad, doubly-plunging syncline; faults and smaller folds	Trellis and parallel	Regional Energy Lateral MPs 6.0 – 18.7
	Blue Mountain	Linear ridge to south and valley to north; valley widens eastward and includes low ridges and shallow valleys	Moderate to high	Sandstone, siltstone, and shale; some limestone and conglomerate	South limb of broad fold to southwest; small folds north of Blue Mountain	Trellis	Effort Loop MPs 43.7 – 51.9
Atlantic Coastal Plain	Lowland and Intermediate Upland	Flat upper terrace surface cut by shallow valleys; Delaware River floodplain	Very low	Unconsolidated to poorly consolidated sand and gravel	Unconsolidated deposits underlain by complexly folded and faulted rocks	Dendritic	Compressor Station 201

[a] Local relief: 0 to 100 feet, very low; 101 to 300 feet, low; 301 to 600 feet, moderate; 601 to 1,000 feet, high; >1,000 feet, very high.

Sources: PADCNR, 2000a; New Jersey Geological Survey, 2006.

4.1.1.3 Bedrock Geology

Maps depicting the bedrock formations underlying the Project facilities were filed by Transco on March 26, 2021.[29] Mapped bedrock formations underlying the Regional Energy Lateral are predominantly comprised of conglomerate, sandstone, siltstone, and shale, with some coal and limestone seams (PADCNR, 2021a). The shallowest bedrock formations underlying the Effort Loop are predominantly comprised of conglomerate, sandstone, siltstone, and shale, with some limestone seams (PADCNR, 2021a). Bedrock crossed by the proposed pipelines has been significantly folded and faulted, with bedding ranging from nearly flat to steeply dipping and overturned.

The Compressor Station 201 site is mapped as being underlain by approximately 400 feet of unconsolidated to semi-consolidated sand, silt, and clay that unconformably overlie metamorphic bedrock, which is predominately schist (New Jersey Geological Survey [NJGS], 2004). Bedrock was not encountered in any of the test borings that Transco completed at the site.

Blasting

U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS) soils datasets (see section 4.2) indicate that approximately 8.8 miles (39 percent) of the Regional Energy Lateral and 11.5 miles (83 percent) of the Effort Loop cross areas where bedrock is estimated to be within 5 feet of the land surface. Sedimentary bedrock could be encountered in these areas based on trench depths of 7 to 8 feet for the pipeline facilities. Transco would probe the ditch line to determine the actual depth and hardness of bedrock immediately prior to excavation of the trench.

Transco would first attempt to utilize mechanical means such as ripping to remove bedrock. If mechanical methods are unsuccessful, blasting would be conducted in accordance with Transco's general Blasting Plan (see table 2.3-1). Blasting would be conducted by licensed professionals in compliance with applicable local, state, and federal regulations and permits governing the use of explosives. Mitigation measures, including vibration monitoring and the use of mats to control fly rock, would be implemented to avoid or minimize impacts on nearby structures. Landowners within 200 feet and local government bodies would be notified at least 72 hours in advance of blasting activities. Pre- and post-blast inspections would also be conducted of aboveground structures, wells, and springs within 150 feet of the blast site with landowner permission. We have reviewed Transco's general Blasting Plan and find it acceptable. Transco would also require that the blasting contractor prepare a detailed, site-specific plan for each event for approval by Transco. Potential impacts of blasting on wells/springs, surface waterbodies, and protected species are discussed in sections 4.3.1.5, 4.3.2.5, and 4.4.4 respectively.

4.1.2 Mineral Resources

Active and historical mineral resource facilities within 0.25 mile of the Regional Energy Lateral and Effort Loop consist of sand and gravel pits, rock quarries, historic surface and underground coal mines, coal processing facilities, and coal mine spoil areas (USGS, 2013; PADEP, 2020a; PADEP, 2020b) (see table C-7 in appendix C). There are no active or inactive oil or natural gas wells within 0.25 mile of the proposed pipelines (PADEP, 2021) or Compressor Station 201 (NJDEP, 2017), and no active or historical mineral extraction operations were identified within 0.25 mile of Compressor Station 201 (USGS, 2013; NJDEP, 2019a; NJDEP, 2019b).

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[29] Geologic maps depicting bedrock formations underlying the Project can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession No. 20210326-5274. The maps are included as Appendix 6A of Resource Report 6.

Anthracite coal has been extracted from four areas in eastern Pennsylvania (referred to as the Northern, Eastern, Southern, and Western Fields) since the late 1700s, with production peaking in 1917. Underground coal mining in the region largely ceased after the Knox Mine accident in 1959, when an underground mine below the Susquehanna River illegally advanced too close to the riverbed, causing the river to flow in when the mine roof collapsed. The breach occurred approximately 3,500 feet northeast of the proposed Regional Energy Lateral crossing of the Susquehanna River. The subsurface geology and feasibility of this crossing are discussed in detail in section 4.1.5; geologic hazards associated with historic mines are discussed in section 4.1.3.

The Regional Energy Lateral would cross the Northern Field from approximate MPs 8.5 to 16.3. There are no active aboveground or underground coal mines in the Northern Field (Anthracite Heritage Museum, 2021). However, between MPs 9.5 and 16.2, the Regional Energy Lateral would cross 15 underground coal mines, including 1 which is associated with a surficial coal refuse pile and 2 which are classified as "suspected subsidence prone" areas, as well as 6 surface coal mines (including a mine spoil area). The Regional Energy Lateral would also cross historic/reclaimed gravel quarries at approximate MPs 8.4 and 15.4. Table C-7 in appendix C details mineral resources within 0.25 mile of the Project area.

4.1.3 Impacts on Mineral Resources and Mitigation

The Regional Energy Lateral would not cross any active aboveground or underground mines, pits, or quarries but would cross one active coal refuse processing facility between MPs 11.4 and 11.5 (the Silverbrook Anthracite Laflin Bank). Transco confirmed with the landowner that no active mining or direct extraction of coal is taking place at the Silverbrook Anthracite Laflin Bank. Transco would work with the landowner to schedule the proposed crossing to minimize disturbance to anthracite processing activities. Potential Project impacts on existing commercial and industrial facilities are further discussed in section 4.5.2.3.

The Regional Energy Lateral would also cross seven historic aboveground coal mines or coal refuse areas and two former quarries that have been restored. Transco would restore all areas disturbed by construction in accordance with its Project-specific Plan and Procedures, including previously mined and restored areas. Applicable measures in the Plan and Procedures include, among others, avoiding and minimizing erosion and runoff and reestablishing vegetation. Transco would also return the ground surface to pre-construction contours to the extent practicable except for seven segments totaling approximately 0.55 mile where some abandoned strip mine pits and spoil piles would be recontoured to reduce bank instability caused by steep slopes and to allow for maintenance of the right-of-way. Transco states that it would develop site-specific plans for these areas as part of the PADEP Erosion and Sediment Control permitting process Based on our review, we have determined that Transco has provided adequate justification for this requested modification to the FERC Plan. Table C-3 in appendix C includes this proposed modification to the FERC Plan. Transco has also committed to working with mine owners/operators should unexpected reclamation issues arise.

Based on the distance to active and historic mineral extraction, construction and operation of the Effort Loop and Compressor Station 201 would not significantly impact availability of or access to mineral resources in the area. Based on the location of the Regional Energy Lateral, which avoids crossing active mines, and Transco's coordination with the owners/operators of other mineral resource-related facilities crossed by the pipeline, we conclude that construction and operation of the Regional Energy Lateral would not significantly impact availability of or access to mineral resources.

4.1.4 Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically are seismic-related, including earthquakes, surface faulting, and soil liquefaction; landslides; or ground subsidence hazards such as karst. The potential to encounter contaminated runoff associated with acid mine drainage is also discussed in this section.

4.1.4.1 Seismic Hazards

The shaking during an earthquake can be expressed in terms of the acceleration as a percent of gravity (g), and seismic risk can be quantified by the motions experienced at the ground surface or by structures during a given earthquake expressed in terms of g. USGS National Seismic Hazard Probability Mapping shows that for the Project area, within a 50-year period, there is a 2 percent probability of an earthquake with an effective peak ground acceleration (PGA) of 2 to 4 percent g, and a 10 percent probability of an earthquake with an effective PGA of 1 to 2 percent g being exceeded (USGS, 2018a). For reference, a PGA of 10 percent g (0.1g) is generally considered the minimum threshold for damage to older structures or structures not constructed to resist earthquakes.

Since 1900, the strongest recorded earthquake within approximately 150 miles of the Regional Energy Lateral, Effort Loop, or Compressor Station 201 was a magnitude 4.6 event that occurred on January 16, 1994, near Reading, Pennsylvania, approximately 55 miles northwest from Compressor Station 201 and 55 miles southwest from the Effort Loop. The USGS indicates that the Regional Energy Lateral, Effort Loop, and Compressor Station 201 areas experienced light shaking and no damage from this event (USGS, 2020b). As such, the potential for a significant, damaging earthquake to occur in the Project area is low.

According to the USGS Quaternary Fault and Fold Database, no Quaternary-age faults would be crossed by the Project (USGS, 2020). Therefore, the risk for ground faulting to damage the Project facilities is low. Soil liquefaction is also a seismic-related phenomenon in which saturated, unconsolidated, granular material loses cohesive strength due to strong, prolonged shaking. Soil and shallow groundwater conditions necessary for liquefaction to occur may exist in the area of the Regional Energy Lateral, the Effort Loop, and Compressor Station 201. However, due to the low potential for strong and prolonged ground shaking in the region, the potential for soil liquefaction to occur is also low.

In summary, the potential for damaging earthquakes, ground faulting, or soil liquefaction occurring in the Project area is low. In addition, modern pipeline systems have not sustained damage during seismic events of less than approximate magnitude 6.8 to 7.0 (O'Rourke and Palmer 1996; USGS, 2018b) and the proposed facilities would be constructed and maintained in accordance with DOT requirements detailed in 49 CFR 192, which are designed to ensure the safe operation of the facilities under the range of expected natural conditions. For these reasons, we conclude that the risk of damage to the proposed facilities from seismic activity is not significant.

4.1.4.2 Landslides

Landslides are the mass movement of rock, debris, or earth down a slope, which can be initiated by natural processes or human activity. Many landslides are caused by a combination of factors including the type of surface and near-surface geologic units involved, heavy precipitation, freeze-thaw cycles, undercutting the base of slopes by streams or human activity, vegetation loss, and earthquakes. Landslides can take many forms but can occur suddenly, as in rock falls, flows, or slumps, or gradually in a process referred to as "creep." The sudden mass movement of material can cause immediate damage to pipelines, roads, buildings, and other infrastructure, whereas creep can damage facilities slowly over time. Areas with steep slopes are particularly susceptible to landslides.

As previously noted, the Compressor Station 201 site and adjoining land exhibit low relief. Therefore, the potential for construction at this site to contribute to landslide hazard or for Compressor Station 201 to be impacted by a landslide is very low.

Transco used Light Detection and Ranging to identify steep slopes that would be crossed by the pipelines. This desktop review identified the following:

- 3.4 miles (15 percent) of the Regional Energy Lateral would cross side slopes and downslopes with greater than 30 percent grade, and 5.7 miles (26 percent) of the pipeline would cross side slopes and downslopes of between 15 and 30 percent grade. Side slopes and downslopes greater than 15 percent grade generally occur along the length of the Regional Energy Lateral, although steep slopes are absent between MPs 0.0 to 0.6.

- 0.8 mile (6 percent) of the Effort Loop would cross side slopes and downslopes with greater than 30 percent grade, and 6.8 miles (49 percent) of the pipeline would cross side slopes and downslopes of between 15 and 30 percent grade. Side slopes and downslopes greater than 15 percent grade generally occur along the length of the Effort Loop, although steep slopes are absent between MPs 52.8 to 57.5.

Transco further assessed the pipeline routes for landslide hazard by utilizing hillshade imagery to visually identify typical morphologic features commonly associated with landslides such as scarps, hummocky topography, and bulging slope toes; conducting a pedestrian survey of the routes for visible evidence of historic landslides; reviewing public data for springs and seeps near the proposed routes; and reviewing soils maps to identify colluvial soils that may be more susceptible to landslides. Based on this additional desktop and field review, Transco identified the following areas with increased landslide susceptibility:

- The Regional Energy Lateral would cross 25 slopes totaling 0.9 mile (4 percent) that may be more susceptible to landslides, including one 0.1-mile-long segment of greater than 40 percent grade. These slopes occur in segments ranging from 0.01 to 0.1 mile long between MPs 2.5 and 20.8.

- The Effort Loop would cross 16 slopes totaling 1.6 miles (13 percent) that may be more susceptible to landslides, including three 0.1-mile-long segments of greater than 40 percent grade. These slopes occur in segments ranging from 0.02 to 0.2 mile long between MPs 44.2 and 56.1.

Transco would utilize special construction methods on steep slopes including the winch method and two-tone method (see section 2.8.1.4). Transco would also implement BMPs detailed in its Plan and Procedures to control water and minimize erosion in the right-of-way and to enhance restoration on steep slopes. These BMPs would include the use of temporary and permanent trench breakers during construction and operation of the pipelines; grading the workspace after pipeline installation; conducting topsoil segregation and seeding; and monitoring steep slopes within 24 hours of a rainfall event. Transco states that implementation of these measures would be based on its experience in the region and with Pennsylvania Erosion and Sediment Control Guidelines (PADEP, 2012). Appropriate regulatory agencies, including the PADEP, would review Transco's construction mitigation plans prior to construction.

Transco would also employ an experienced geohazard inspector during construction in landslide prone areas and would implement additional, site-specific BMPs if warranted, such as installing additional subsurface drainage in the right-of-way, utilizing competent trench backfill, using riprap embedment termini, or removing material and installing measures to support the pipeline. During operation, Transco would conduct annual field patrols of slopes exceeding 33 percent grade and would monitor slopes where site-specific BMPs were employed every 3 months for the first 2 years, and then annually thereafter. Transco would take mitigative measures to maintain the stability of the right-of-way if indications of slope failure are observed.

We conclude that with Transco's implementation of the above construction, restoration, and monitoring measures, Project construction and operation would not significantly contribute to or be impacted by landslide hazards.

4.1.4.3 Ground Subsidence

Ground subsidence, involving the localized or regional lowering of the ground surface, may be caused by karst dissolution, sediment compaction due to oil and natural gas and/or groundwater extraction, and the occurrence of underground mines. Regional subsidence associated with fluid extraction can increase the risk of flooding in low-lying coastal areas over time, whereas localized subsidence associated with underground mining or karst geology can more suddenly damage infrastructure, buildings, and other surface improvements.

As previously described, no significant oil or natural gas production has occurred in New Jersey, including in the area of Compressor Station 201. Groundwater pumping has resulted in lowering of the ground surface in southern New Jersey by approximately 1 inch every 20 years (Sun, et. al., 1999). Considering the surface elevation of 45 to 60 feet amsl at Compressor Station 201 and the very gradual lowering of the ground surface, regional subsidence associated with groundwater extraction in southern New Jersey would not significantly increase the risk of flooding at Compressor Station 201.

Several commenters expressed concern regarding the potential for karst conditions to impact the proposed facilities. Karst refers to various surface and subsurface features formed by the dissolution of carbonate bedrock such as limestone and dolomite. The most common karst features are sinkholes, which can damage overlying pipelines, roads, buildings, and other improvements, particularly if they form suddenly. The Pennsylvania Geological Survey does not identify any karst features within 10 miles of the proposed Regional Energy Lateral or Effort Loop (PADCNR, 2021b) and the Compressor Station 201 site is not underlain by geologic deposits that are conducive to karst formation (see section 4.1.1.3). While some facility modifications (Compressor Station 200, Lawnside M&R Station, and Beaver Dam M&R Station) are in susceptible karst areas, work in these areas would involve shallow excavations and Transco stated that no previous karst occurrences have been reported at these facilities. Therefore, we conclude that Project activities are unlikely to encounter existing karst and would not significantly contribute to karst development.

Regional subsidence associated with oil, natural gas, or groundwater extraction is not identified as a significant geologic hazard in Pennsylvania (PADCNR, 2022) and, therefore, would not be expected to impact the proposed pipelines. However, as discussed in section 4.1.2, the Regional Energy Lateral would cross an area of historic coal mining between approximate MPs 9.5 and 16.2. Surface strip mining was typically used to extract coal in linear seams to depths of up to approximately 100 feet. Underground mining was conducted to depths of up to approximately 700 feet using the room and pillar method to extract coal from deeper seams. As mining progressed within a coal seam, coal would be intentionally left in-place to support the roof and overburden, resulting in a honeycomb pattern of rooms and pillars. In some cases, as mining concluded, the rooms would be backfilled to provide roof support and the coal pillars then removed. Underground mining in the region effectively ended in 1959, but the interconnected series of historic tunnels, shafts, slopes, and gangways still present a risk of subsidence in the region.

Transco evaluated the potential to encounter underground mine workings during construction of the Regional Energy Lateral (AECOM, 2021). The primary conclusions of these studies include the following:

- As discussed in section 4.1.5, the Direct Pipe® crossing of the Susquehanna River would be within unconsolidated alluvium for its entire length and approximately 170 feet above the nearest known former underground coal mine.

- Transco notes that underground room and pillar mine workings rarely extended to the surface. As a result, it is unlikely that open, underground mine workings would be encountered during construction as the trench depth for the Regional Energy Lateral would be approximately 8 feet.

- Transco placed up to 39 feet of fill in areas that had been strip mined during construction of the A Line in 1959. The potential to encounter strip mine workings would be low in areas where the Regional Energy Lateral is collocated with the A Line (see table 2.2.2-1).

- While many factors can influence the ability of overlying bedrock and overburden to support underground workings, a rock cover thickness that is three times the mined vein thickness is sufficient to mitigate mine working stability during pipeline construction.

Based on these studies and literature review, Transco categorized the potential for ground subsidence into low, moderate, and high relative risk based primarily on the thickness and quality of bedrock cover over the mine workings. Low risk areas are undermined areas where the depth to the mine and the anticipated bedrock thickness and quality would preclude a mine collapse from propagating to the surface; moderate risk areas are undermined areas where a mine collapse could possibly propagate to the surface; and high-risk areas are undermined areas where a mine collapse would likely propagate to the surface. Table 4.1.4-1 summarizes the relative risk of subsidence along the Regional Energy Lateral as determined by Transco.

Transco would implement its Subsidence Monitoring and Mitigation Plan (SMP) and Blasting Plan to address the potential for mine subsidence to impact the Regional Energy Lateral. The Blasting Plan specifically addresses blasting in areas of historic underground mining and specifies blast design, minimum charges, and spacing to limit vibration, thereby reducing the potential to induce subsidence. Transco notes that the pipeline would be capable of spanning a distance of at least 50 feet without subgrade support and that newly formed subsidence features typically exhibit plan dimensions that are much less than 50 feet and can, therefore, be safely spanned by the pipeline. Transco construction and operation personnel would be trained to recognize indications of potential subsidence. If a subsidence feature develops during construction or operation, a work plan would be developed by Transco engineers to address the feature. Transco expects that most small subsidence features could be mitigated through use of controlled backfill, whereas larger features could involve the use of mini-piles or other measures to support the pipeline. Transco would monitor all mitigated features for a period of no less than 6 months to verify that the mitigation was successful. During operation, Transco personnel trained and experienced with visually identifying subsidence features would perform an aerial reconnaissance of the pipeline between MPs 9.6 and 16.3 every 2 weeks, which should allow for the early detection and mitigation of potential subsidence concerns. We conclude that implementation of monitoring and mitigation measures described in Transco's SMP and Blasting Plan would avoid or minimize the risk of potential mine subsidence on the Regional Energy Lateral.

TABLE 4.1.4-1		
Areas of Potential Subsidence Along the Regional Energy Lateral		
Milepost Range	Comment	Risk Ranking [a]
9.64 – 9.72	Less than 50 feet of bedrock cover over Red Ash Seam	High
9.72 – 9.85	50 to 100 feet of bedrock cover over Top Red Ash Seam	Moderate
9.85 – 9.90	Less than 50 feet of bedrock cover over Top Ross Seam	High
10.16 – 10.19	Less than 50 feet of bedrock cover over Top Ross Seam	High
10.28 – 10.30	50 to 100 feet of bedrock cover over Middle Red Ash Seam	Moderate
10.30 – 10.43	I-81 Road Crossing	High
11.11 – 11.32	Less than 50 feet of bedrock cover over Top Red Ash Seam	High
11.32 – 11.37	50 to 100 feet of bedrock cover over Top Red Ash Seam	Moderate
11.52 – 11.73	Less than 50 feet of bedrock cover over Pittson/Marcy Seam	High
11.73 – 11.77	50 to 100 feet of bedrock cover over Pittson Seam	Moderate
11.80 – 11.84	Less than 50 feet of bedrock cover over Bottom Checker Seam	High
11.84 – 11.95	50 to 100 feet of bedrock cover over Bottom Checker Seam	Moderate
11.95 – 11.99	Outcrop of Bottom Checker Seam	High
12.08 – 12.42	Less than 50 feet of bedrock cover over Checker Seam	High
12.42 – 12.48	50 to 100 feet of bedrock cover over Top Checker Seam	Moderate
12.60 – 12.79	Outcrop of Hillman Seam; less than 50 feet of bedrock cover over Diamond Seam	High
12.79 – 12.97	50 to 100 feet of bedrock cover over Hillman Seam	Moderate
13.13 – 13.28	50 to 100 feet of bedrock cover over Hillman Seam	Moderate
13.28 – 13.32	Less than 50 feet of bedrock cover over Hillman Seam	High
13.38 – 13.46	Less than 50 feet of bedrock cover over Checker Seam (fault area)	High
14.51 – 14.65	50 to 100 feet of bedrock cover over Pittson Seam	Moderate
14.88 – 15.49	50 to 100 feet of bedrock cover over Pittson Seam	Moderate
15.49 – 15.54	Less than 50 feet of bedrock cover over Pittson Seam	High
15.54 – 16.11	50 to 100 feet of bedrock cover over Pittson Seam	Moderate
16.11 – 16.20	Outcrop of Top Ross Seam and Pittson Seam Stripping	High
16.22 – 16.23	50 to 100 feet of bedrock cover over Top Ross Seam	Moderate
16.23 – 16.27	Outcrop of Top Ross Seam	High

[a] Low risk areas are undermined areas where a mine collapse would be precluded from propagating to the surface.
Moderate risk areas are undermined areas where a mine collapse could possibly propagate to the surface.
High risk areas are undermined areas where a mine collapse would likely propagate to the surface.

4.1.4.4 Flash Flooding and Scouring

Flash flooding from large rainfall events is common in Pennsylvania due to the topography. Flash flooding, as well as the effects of climate change on the intensity and frequency of storm events, can result in scouring of streambeds, potentially damaging the Effort Loop and Regional Energy Lateral where the pipelines cross waterbodies (see table C-4 in appendix C).

Transco would install the pipelines 4 feet below streambeds to reduce the potential for scour-related damage and would implement the measures in its Project-specific Procedures to stabilize streambanks affected during construction and restore and maintain riparian vegetation during operation. Transco would also inspect the right-of-way, including stream crossings, on a regular basis as described in section 4.10, and would specifically inspect stream crossings after significant rainfall events, such as tropical storms. Signs of stream scour would be remediated as necessary to maintain protection of the pipelines.

By implementing the above construction and restoration methods and monitoring protocols, we conclude that streambed scour would not pose a significant hazard to the pipeline facilities.

4.1.4.5 Acid Producing Rock

Coal and black shale typically contain pyrite, a mineral composed of iron and sulfur. When pyrite is exposed to the atmosphere it weathers, producing sulfuric acid and iron. The sulfuric acid can dissolve other undesirable elements from the rocks, such as aluminum and manganese, and potentially contaminate streams and groundwater with metals and low pH (PADEP, 2018). In every significant case of acidic drainage in Pennsylvania, it is the exposure of iron sulfide minerals (the most common of which is pyrite) to air by dropping the water table or excavating rock, the lack of any inherent buffering substances (mainly calcareous minerals), and the flow of water through the rocks that create acidic drainage (PADCNR, 2006).

The Marcellus, Pottsville, and Llewellyn Formations are the primary bedrock units that contain sulfide minerals in the vicinity of the Effort Loop and Regional Energy Lateral (PADCNR, 2006). Transco determined that the Effort Loop would cross shallow occurrences of the Marcellus Shale between approximate MPs 45.5 and 46.7 and the Regional Energy Lateral would cross approximately 3.1 miles of shallow occurrences of the Pottsville and Llewellyn Formations between approximate MPs 8.9 and 16.7. However, Transco does not anticipate encountering acid-producing bedrock because pyrite is unstable at atmospheric conditions and will weather away; in excavations of less than 30 feet, the risk of acid drainage is generally minimal (PADEP, 2018).

Acid-producing rock would be more likely encountered as rock fragments and boulders mixed within historical coal mine surface spoils (see table C-7 in appendix C). Transco states that acid-producing rock would be suspected if it is observed to consist of black to dark grey shale and coal and that acid-producing soils would be recognized by a change in excavated material, color, staining, or mottling. Acidic drainage would be recognized as yellow, orange, and rusty staining in water and deposits on affected sediment and rocks. The Regional Energy Lateral would cross seven historic aboveground coal mines or coal refuse areas and two former quarries that have been restored. Transco would implement its Unanticipated Discovery of Contamination Plan (UDCP) (see table 2.3-1) if pre-existing contamination is discovered during construction, including acid mine drainage. Transco would restore all areas disturbed by construction in accordance with its Project-specific Plan and Procedures, including previously mined and restored areas. Applicable measures in the Plan and Procedures include, among others, avoiding and minimizing erosion and runoff and reestablishing vegetation. We have reviewed Transco's Plan and Procedures and UDCP and find them acceptable. Transco would also return the ground surface to pre-construction contours to the extent practicable. Transco has also committed to working with mine owners/operators should unexpected reclamation issues arise.

Transco would test suspect acid-producing materials for total sulfur content. If the materials average more than 0.5 percent sulfur they would be managed as follows:

- the extent and exposure time of excavations would be limited;
- topsoil would be stored separately from temporarily stockpiled acid-producing soil;
- acid-producing materials would be stockpiled on level ground to limit its movement;
- acid-producing materials would be covered if exposed for more than 30 days;
- acid-producing materials would be properly disposed of off-site or by mixing the material with a neutralizing agent such as lime and encapsulating it with clay;
- equipment would be cleaned at the end of each day; and

- erosion control would be implemented to limit the movement of acid-producing materials from and around the right-of-way.

The above measures are based on PADEP guidance (PADEP, 2018) and are under review by the PADEP as part of Transco's Erosion and Sediment Control General Permit for Earth Disturbance Associated with Oil and Gas Activities (ESCGP-3). Transco stated that it would file a copy of the PADEP permit approval with the Commission upon receipt. Transco has also incorporated the acid-producing rock procedures in its UDCP, which we find acceptable.

By implementing the above measures, we conclude that handling of acid-producing materials, if necessary, would not result in significant environmental impact in the area.

4.1.5 Direct Pipe® Crossing of the Susquehanna River

As noted in section 2.5.2.2, Transco proposes to utilize the Direct Pipe® method to cross the Susquehanna River.

Transco, through its contractors, conducted geotechnical and geophysical surveys to determine subsurface conditions along the proposed Direct Pipe® path that could affect the successful completion of the crossing. Reports presenting and analyzing the results of the geotechnical and geophysical surveys were prepared by professional engineers and geologists registered to practice in Pennsylvania. The geotechnical study consisted of nine land-based soil borings that extended to depths of 30 to 240 feet bgs and three water-based soil borings that extended to depths of 55 to 60 feet below the Susquehanna River riverbed. Information obtained during installation of the geotechnical soil borings included lithology, blow counts (an indication of hardness and density), groundwater elevation, bedrock surface elevation, and the presence of fractures and voids. The geophysical survey consisted of 12 Electrical Resistivity (ER) imaging profiles, including 2 profiles parallel to the ground-based segments of the Direct Pipe® path on either side of the Susquehanna River and 10 water-based profiles perpendicular to the Direct Pipe® path beneath the river. The geophysical survey also included 49 land-based profiles of the proposed drill path using Multichannel Analysis of Surface Wave (MASW) analysis, a technique used to evaluate ground stiffness. The ER and MASW data were correlated to the geotechnical borings and then used to interpret and extrapolate geologic information between boring locations, including lithologic changes, bedrock surface, and the potential presence of large voids which could be indicative of historic underground coal mine workings. Transco also reviewed historical underground coal mine maps to further evaluate the potential to encounter underground mine workings during construction of the Regional Energy Lateral, including the proposed Direct Pipe® crossing.

Based on the above studies, the Direct Pipe® path would be within unconsolidated sand, silt, clay, and gravel for its entire length and at least 50 feet above the bedrock surface and approximately 170 feet above the nearest known former underground coal mine.

The information obtained in the geotechnical survey was also used to evaluate the potential for hydraulic fracture of the geologic materials surrounding the Direct Pipe® drill path, potentially resulting in an inadvertent release of drilling fluid to the land surface or the Susquehanna River. As noted in section 2.5.2.2, because the drilling fluids would be returned to the surface through dedicated pipes inside the prefabricated pipeline, the drilling fluid pressure inside the borehole would be significantly reduced, thereby greatly reducing the potential for an inadvertent release to occur. The potential for hydraulic fracture to occur was evaluated by a professional engineer registered to practice in Pennsylvania and considered the soil properties from field and laboratory tests, estimates of the hydrostatic water pressures, drilling fluid properties, and assumption of BMP drilling practices. In general, the loss of drilling fluid would occur if the hydraulic pressure exerted during the drilling process exceeds the in-situ formation pressure. The hydraulic fracture analysis indicates that the in-situ formation pressure would be greater than the applied pressure along the entire length of the drill, but that the risk of drilling surface release increases where the soil cover is thin near the land-based entry and exit points. The Direct Pipe® design analysis also identified the potential for surficial settlement of up to 1 inch near the entry and exit areas, and Transco stated that it would monitor for surface settlement during the drilling process.

We reviewed Transco's geotechnical and geophysical surveys and Direct Pipe® Monitoring, Inadvertent Return Response, and Contingency Plan (Direct Pipe Plan), which includes the hydraulic fracture analysis and Direct Pipe® design and construction recommendations, and find them complete, accurate, and adequate in designing the river crossing. Based on the subsurface conditions observed in the geotechnical borings, the geotechnical engineering evaluations, the detailed design analyses, and the development of contingencies to be implemented during the bore, we concur that the proposed Susquehanna River Direct Pipe® crossing has a high likelihood of successful installation and that adequate contingencies are in place to minimize potential impacts of an inadvertent return or failure of the crossing should either occur.

4.1.6 Paleontological Resources

As indicated in section 4.1.1.2, bedrock formations containing fossil resources could be encountered during trenching of the Regional Energy Lateral and Effort Loop. Transco consulted with the curator of the State Museum of Pennsylvania Section of Paleontology and Geology, which identified complete plant fossils and vertebrate fossils as potentially important resources in the area. Documented occurrences of important paleontological resources are designated as Pennsylvania Natural Heritage Fossil Sites; the nearest state-designated fossil site to the pipelines is over 12 miles away (Pennsylvania Natural Heritage Program, 1999; 2006).

Transco would implement its Unanticipated Discovery Plan for Paleontological Resources (see table 2.3-1) if fossil resources were to be uncovered. This plan includes training the EIs, construction contractor, and subcontractors to recognize fossil resources. If fossil resources are discovered, work would be stopped and the EI would be notified of the find. The State Museum of Pennsylvania or Pennsylvania Geological Survey would be contacted to determine the significance of the find and would decide if the specimens should be saved. A plan would be developed in consultation with these agencies if the decision is made to collect and safeguard the find.

As previously noted, construction of Compressor Station 201 would only involve disturbance of unconsolidated sand and silt; therefore, the potential to encounter important paleontological resources is low. Transco's communications with the curator of the New Jersey State Museum indicated that no existing or classic fossil sites would be affected by Project construction in New Jersey.

We conclude that Transco's Unanticipated Discovery Plan for Paleontological Resources would be protective of important paleontological resources if discovered during construction.

4.2 SOILS

Soil characteristics in the Project area were identified and assessed using the NRCS Soil Survey Geographic Database (SSURGO). Soils were evaluated for characteristics that could affect construction or increase the potential for soil related issues during construction and restoration. The soil characteristics evaluated include prime farmland and farmland of statewide importance, compaction-prone soils, highly water and wind erodible soils, rocky soils, soils with shallow bedrock (bedrock within 60 inches of the ground surface) and soils with low revegetation potential. The potential for encountering contaminated soils was also evaluated. Table C-8 in appendix C provides a summary of the of the soils that would be crossed by the proposed pipeline facilities; individual soil characteristics and proposed mitigation measures are discussed in the sections below.

4.2.1 Prime Farmland Soils

Prime farmland is defined as land that has the best combination of physical and chemical characteristics for producing food, feed, fiber, and oilseed crops. Prime farmland typically contains few or no rocks, is permeable to water and air, is not excessively erodible or saturated with water for long periods and is not subject to frequent or prolonged flooding during the growing season. Soils that do not meet the above criteria may be considered prime farmland if the limiting factor is mitigated (e.g., by draining or irrigating).

The NRCS also recognizes unique farmland and farmland of statewide importance, defined as lands other than prime farmland used for production of specific high-value food and fiber crops (e.g., citrus, tree nuts, olives, fruits, vegetables). The methods for defining and listing farmland of statewide importance are determined by the appropriate state agencies, typically in association with local soil conservation districts or other local agencies.

The Project would impact approximately 117.8 acres of prime farmland and 121.4 acres of farmland of statewide importance. Except where land would be permanently converted to industrial use, in areas currently in agricultural use, impacts on prime farmland and farmland of statewide importance would be minimized by implementing Transco's Plan, which include measures to conserve and segregate up to 12 inches of soil, alleviate soil compaction, protect and maintain existing drainage tile and irrigation systems, prevent the introduction of weeds, and retain existing soil productivity, thereby minimizing the potential for long-term impacts on agricultural lands. Of the 117.8 acres of prime farmland soils that would be impacted by the Project, 47.3 acres would be permanently impacted by the construction and operation of aboveground facilities and new access roads. Similarly, of the 121.4 acres of farmland of statewide importance that would be temporarily impacted by the Project, 34.0 acres would be permanently impacted by the construction and operation of aboveground facilities. The acreage of prime farmland and farmland of statewide importance that would be permanently impacted by the Project is negligible when compared to the total acreage of prime farmland and farmland of statewide importance in Luzerne (165,436 acres) and Monroe (85,794 acres) Counties in Pennsylvania; and Gloucester (120,887 acres) and Somerset (122,978 acres) Counties in New Jersey (NRCS, 2020). Therefore, we conclude impacts on the availability of prime farmland would not be significant.

4.2.2 Compaction and Rutting Potential

Soil compaction modifies the structure of soil, and consequently, alters its strength and drainage properties. As a result, soil productivity (and plant growth) rates may be reduced, and natural drainage patterns may be altered. The susceptibility of soils to compaction varies based on moisture content, composition, grain size, and density. The Project would cross approximately 21.0 acres of compaction prone soils.

Topsoil would be segregated in agricultural and residential areas, preventing topsoil mixing and rutting. Soils would be tested (i.e., using a penetrometer) for compaction in agricultural and residential areas disturbed by construction activities and compared to adjacent, similar soils to determine preconstruction conditions. Paraplow or other deep tillage would be used to de-compact agricultural areas; de-compaction would occur prior to the replacement of segregated topsoil. Additional tillage would be conducted on areas that are further compacted during cleanup and restoration activities.

About 13.5 acres of compaction prone soils would be permanently impacted by the construction and operation of aboveground facilities, access roads, or operation of the pipelines. Soils underlying permanent aboveground facility foundations and access roads would be permanently affected by compaction; however, we conclude these effects would be localized and minor, and the overall Project impact would not be significant.

4.2.3 Soil Erosion and Revegetation Potential

Erosion is a natural process where surface soils are worn away, generally resulting from water and wind forces that can be accelerated by human disturbance. Factors that influence the magnitude of erosion include soil texture, soil structure, length and percent of slope, existing vegetative cover, and rainfall. The most erosion-prone soils are generally bare or sparsely vegetated, non-cohesive, fine textured, and on moderate to steep slopes. Susceptibility to wind erosion is influenced by physical soil factors including moisture, texture, calcium carbonate content, and organic matter; and landform and landscape conditions including soil roughness factors, unsheltered distance, and vegetative cover. Off-road equipment can accelerate erosion by sheet or rill flow following exposure of the soil surface. Steep-sloped soils and soil textures prone to detachment (e.g., silty soils with low organic matter), and soils with low permeability would increase the susceptibility of erosion due to off-road use. Construction of the Project would impact approximately 104.1 acres of soils classified as highly erodible by water and 13.3 acres of soils classified as highly erodible by wind.

Transco's Plan outlines mitigation measures that minimize or avoid potential construction impacts that could result in soil erosion. Temporary erosion controls, including interceptor diversions and sediment filter devices such as silt fences, would be installed immediately following land disturbing activities. Transco would inspect these devices on a regular basis and after each rainfall event of 0.5 inch or greater to ensure proper function. Transco would also use dust-control measures as outlined in its Fugitive Dust Control Plan (see table 2.3-1), including routine wetting of work areas, as needed. Temporary erosion controls would be maintained throughout construction and until either completion of restoration or replacement with permanent erosion controls.

The revegetation potential of soils is based on several characteristics including topsoil thickness, soil texture, available water capacity, susceptibility to flooding, and slope. Soils with poor revegetation potential may take longer to restore (i.e., revegetate). This could lead to increased erosion, a reduction in wildlife habitat, and adverse visual impacts. Revegetation would be required on all lands disturbed by the Project. Seeding would not be required on active cultivated cropland unless requested by the landowner; however, revegetation would only be considered successful in cropland after crop growth and vigor are similar to adjacent undisturbed portions of the same field unless otherwise specified in the easement agreement. The Project would impact approximately 167.6 acres of soils with a low revegetation potential.

Transco would implement the measures in Transco's Plan to restore and revegetate disturbed Project areas, such as seeding disturbed areas with agency-approved seed mixes, applying soil modifiers or mulch to ensure seeding success; and conducting follow-up inspections to determine the success of revegetation and address landowner concerns and development of a corrective action plan for areas that are not responding to revegetation. Given these measures, we believe disturbed areas of the Project would be successfully restored. Of the 167.6 acres of soils with a low revegetation potential that would be impacted by the Project, 65.7 acres would be permanently impacted by the construction and operation of aboveground facilities and roads or operation of the pipelines.

Because Transco would return disturbed areas to approximate pre-construction conditions, maintain them in an herbaceous state, or otherwise permanently stabilize Project areas with gravel or pavement, we conclude that Project construction and operation would not result in significant or permanent impacts due to soil erosion or poor revegetation potential.

4.2.4 Rocky Soils and Shallow Depth to Bedrock

Rock fragments may be encountered during grading, trenching, and backfilling. Additionally, in areas with shallow bedrock (bedrock within 60 inches of the ground surface), there is increased potential to introduce rocks into the topsoil during construction activities. The strength and hardness of shallow bedrock encountered during pipeline construction activities would dictate the techniques used for excavation. Mechanical means, such as ripping or conventional excavation would be prioritized for removal of bedrock prior to any bedrock blasting. However, it is anticipated that blasting may be required in some areas, as detailed in section 4.1.1.3. Introducing stones and other rock fragments to surface soil layers may reduce soil moisture-holding capacity, resulting in a reduction of soil productivity.

The Project would impact approximately 285.8 acres of soils with shallow bedrock and 403.4 acres of rocky soils. Transco would remove rock on the construction work area so that the size, density, and distribution in soils is similar to adjacent undisturbed areas and remove excess rock from at least the top 12 inches of soil in all cultivated or rotated cropland, managed pastures, hayfields, and residential areas, as well as other areas at the landowner's request. Excess rock would be placed into slope cuts where practicable, used for rock wall construction across the right-of-way to limit off-road vehicle access, or repurposed into habitat structures (e.g., snake hibernaculum as detailed in section 4.4.4.3), in coordination with appropriate agencies and landowners. Excess rock not used for these purposes would be hauled to an approved disposal location. Therefore, we conclude that Transco would adequately minimize the introduction of rock into surficial soils due to rocky soils or shallow bedrock.

4.2.5 Soil Contamination

The Project could encounter soils that were previously contaminated by other activities or actions, or result in soil contamination through spills and leaks of liquids such as fuels and lubricants. Transco completed a review of relevant databases in Pennsylvania, Maryland, and New Jersey to identify known soil or groundwater contamination sites within 0.25 mile of the Project facilities. No sites were identified within 0.25 mile of Project facilities in Pennsylvania or Maryland. Contaminated sites were identified within 0.25 mile of Compressor Station 201, Camden M&R Station, Lawnside M&R Station, Mt. Laurel M&R Station, and Compressor Station 207 in New Jersey; however, none of these Project facilities were identified as a source of contamination (see section 4.3.1.3 for additional discussions of the New Jersey Project facilities).

In the event that contamination is encountered during construction, Transco would implement the protocols in its UDCP (see table 2.3-1). If contamination is encountered during construction, work in the area would stop, exposure risk would be determined, the appropriate environmental manager or inspector and/or public officials would be notified, the type and extent of the contamination would be determined and documented, and the appropriate remedial actions would be implemented. We have reviewed Transco's UDCP and conclude the plan is acceptable.

Transco has developed its Construction Spill Prevention and Response Procedures for Oil and Hazardous Materials (Transco's Spill Plan) (see table 2.3-1) that specifies cleanup procedures to minimize the potential for soil contamination from spills or leaks of fluid, lubricant, coolant, or solvents. We have reviewed Transco's Spill Plan and conclude the plan is acceptable.

4.3 WATER RESOURCES

This section describes the groundwater resources associated with the Project; the potential impacts that construction and operation of the Project could have on groundwater resources; the measures that Transco would implement to minimize impacts on groundwater resources; and any Staff recommendations to further avoid or minimize impacts on groundwater resources.

4.3.1 Groundwater Resources

An aquifer is a geologic unit of rock or unconsolidated material capable of storing and transmitting water. An aquifer is said to be confined when its hydraulic pressure is greater than atmospheric pressure due to the presence of minimally permeable geologic layers above and below the water-bearing formation, whereas the hydraulic pressure in an unconfined aquifer is equal to the atmospheric pressure. Unconfined aquifers typically occur near the ground surface where the water level can be more rapidly influenced by weather, topography, and surface water features, and water quality can be more readily impacted by land use activities. Bedrock aquifers underlying the proposed pipelines are summarized in table 4.3.1-1.

TABLE 4.3.1-1

Bedrock Aquifers Crossed by the Pipeline Facilities [a]

Facility	Aquifer	Begin MP	End MP	Water Depth (feet below ground surface)	Well Yield (gallons per minute)
Regional Energy Lateral					
	Other rocks [b]	0.03	45	33.7-34.0	20-120
	Valley and Ridge Aquifers	2.8	22.3	33.7 - 34.0	20-120
Effort Loop					
	Valley and Ridge Aquifers	43.7	48.8	9.8 - 10.6	20 – 120
	Other rocks [b]	48.8	57.5	9.8 - 10.6	20-120

[a] Pipeline facilities includes construction right-of-way (temporary and permanent right-of-way), ATWS, temporary access roads, permanent access roads, and contractor yards and contractor staging areas, that will require ground disturbance.

[b] Other rocks aquifers are minor aquifers; they are not principal aquifers or confining units.

Sources: Trapp and Horn, 1997; USGS, 2003; PA Spatial Data Access (PASDA), 2003; USGS 2020a.

The Regional Energy Lateral would cross Luzerne County, where 6 to 20 million gallons of groundwater are used each day, representing 27 percent of the total water used in the county (PADCNR, 1999). The Effort Loop would cross Monroe County, where 6 to 20 million gallons of groundwater are used each day, representing 95 percent of the total water used in the county (PADCNR, 1999). The Regional Energy Lateral and Effort Loop cross bedrock aquifers comprised of sandstone and shale (Pennsylvania State University [PSU], 2016). Groundwater from sandstone units is soft, containing less than 200 milligrams per liter (mg/l) dissolved solids, whereas groundwater from fractured shale units is hard, containing 200 to 250 mg/l dissolved solids (PSU, 2016).

Proposed Compressor Station 201 is underlain by an eastward-thickening wedge of unconsolidated to semi-consolidated sand, silt, and gravel. In descending order, the site is underlain by the Englishtown Formation, the Woodbury Formation, the Merchantville Formation, the Magothy Formation, the Raritan Formation, and the Potomac Formation (NJGS, 2004). The Englishtown Formation is an important source of groundwater in central New Jersey but is less developed in the Compressor Station 201 area due to decreased thickness and yield and the presence of the deeper, more productive Potomac Formation, Raritan Formation, and Magothy Formations which, together, form the PRM aquifer system. The PRM aquifer system provides about 125 million gallons of drinking water per day to communities in Gloucester, Burlington, and Camden Counties (USGS, 1977; NJGS, 1995). The Woodbury and Merchantville Formations largely act as confining units for the PRM aquifer system in the area.

Bedrock aquifers underlying the proposed Project modification workspaces are summarized in table 4.3.1-2.

TABLE 4.3.1-2

Bedrock Aquifers at Existing Aboveground Facilities

Facility	Aquifer	Primary Aquifer Rock Types	Water Depth (feet below ground surface)	Well Yield (gallons per minute)
Compressor Station 505	Piedmont and Blue Ridge Early Mesozoic Basin/Brunswick aquifer	Sandstone, arkose, conglomerate	31.0 – 34.5	>100 – 250
Compressor Station 207	Northern Atlantic Coastal Plain/Potomac-Raritan-Magothy	Sand, silt, gravel	120 – 170	>500
Compressor Station 515	Other rocks [a]	Minor aquifers, confining units	33.7 – 34.0	25 – 210
Compressor Station 200	Piedmont and Blue Ridge carbonate-rock aquifers	Limestone, dolomite, marble	12.4 – 12.7	15 – 500
Compressor Station 195	Piedmont and Blue Ridge crystalline-rock aquifers	Coarse-grained gneiss and schist	19.7 – 20.0	15 – 500
Hildebrandt Tie-in	Valley and Ridge aquifers	Sandstone, locally fractured shale	33.7 – 34.0	25 – 210
Lower Demunds REL Tie-in	Valley and Ridge aquifers	Sandstone, locally fractured shale	33.7 – 34.0	25 – 210
Carverton Tie-In	Valley and Ridge aquifers	Sandstone, locally fractured shale	33.7 – 34.0	25 – 210
Delaware River Regulator	Valley and Ridge carbonate-rock aquifers	Limestone, dolomite	43.2 – 43.8	25 – 210
Mainline A Regulator	Piedmont and Blue Ridge Early Mesozoic Basin	Sandstone, arkose, conglomerate	31.0 – 32.5	15 – 500
Mt. Laurel M&R Station	Northern Atlantic Coastal Plain/ Marshalltown-Wenonah confining unit	Silt, clay, thin sand layers	100 – 130	< 25
Camden M&R Station	Northern Atlantic Coastal Plain/ Potomac-Raritan-Magothy	Sand, silt, gravel	120 – 170	>500
Lawnside M&R Station	Northern Atlantic Coastal Plain/Mt. Laurel-Wenonah aquifer	Sand	120 – 170	>100 – 250
Centerville Regulator	Piedmont and Blue Ridge Early Mesozoic Basin/ Brunswick aquifer	Sandstone, arkose, conglomerate	31.0 – 34.5	>100 – 250
Station 210 Pooling Point	Piedmont and Blue Ridge Early Mesozoic Basin/ Brunswick aquifer	Sandstone, arkose, conglomerate	15 – 30	>100 – 250
Beaver Dam M&R Station	Piedmont and Blue Ridge crystalline-rock aquifers	Coarse-grained gneiss and schist	10 – 27	15 – 500

[a] "Other rocks" aquifers are minor aquifers; they are not principal aquifers or confining units.

Source: Trapp and Horn, 1997; PASDA, 2003; NJDEP, 2020a; NJDEP, 2005; NJDEP, 1998a; USGS 2020a.

Groundwater can also occur in shallow, unconsolidated deposits in the Regional Energy Lateral and Effort Loop area. These shallow aquifers generally occur as glacial outwash deposits which can extend over a large area, or as localized sand and gravel deposits along streams and rivers. The Regional Energy Lateral would cross a sand and gravel aquifer associated with the Susquehanna River from approximate MPs 12.4 to 15.0, and the Effort Loop would cross a sand and gravel aquifer from approximate MPs 45.7

to 47.0. Groundwater from these sources is a locally important source, commonly occurring at depths of 20 to 200 feet with wells typically producing 100 to 1,000 gpm and containing less than 200 mg/l dissolved solids (PSU, 2016). Facility modifications at existing Mainline A Regulator in Bucks County, Pennsylvania overlie a sand and gravel aquifer associated with the Delaware River (Trapp and Horn, 1997). No surficial aquifers systems are crossed by Project facilities in New Jersey (NJDEP, 2020a).

4.3.1.1 Sole Source Aquifers

The EPA defines a Sole Source Aquifer (SSA) as an aquifer that supplies at least 50 percent of drinking water consumed in the area overlying the aquifer, and for which there are no reasonably available alternative drinking water sources should the aquifer become contaminated. None of the proposed facilities in Pennsylvania or Maryland would overlie a SSA.

Compressor Station 201 and proposed modifications at Compressor Station 207, Camden M&R Station, Mt. Laurel M&R Station, and Lawnside M&R Station overlie the New Jersey Coastal Plain SSA, which covers approximately 4,200 square miles including all of southern New Jersey south of a line extending from Trenton, New Jersey, to Raritan Bay (EPA, 2021). Proposed modifications at Compressor Station 505, Centerville Regulator, and Station 210 Pooling Point underlie the Northwest New Jersey SSA, which covers approximately 1,711 square miles in the northwest portion of the state (EPA 2019).

4.3.1.2 Water Supply Wells, Springs, and Well Head Protection Areas

Table C-9 in appendix C lists water supply wells within 150 feet of the Project construction workspaces as identified by publicly available records and in Transco's communications with landowners (PADCNR, 2020; NJDEP, 2020a). All of the identified wells are private; no public water supply wells or springs have been identified within 150 feet of Project workspaces. Transco will continue to consult with landowners regarding the location of wells and springs on their land within 150 feet of the construction workspaces. Further information would be provided if additional wells and/or springs are identified.

Under the Safe Drinking Water Act, states are required to develop and implement a Wellhead Protection Program to identify the surface and subsurface areas contributing to public water supply systems and to assess and prevent contamination of groundwater and surface water through a watershed management approach. A Wellhead Protection Area (WHPA) encompasses the area around a public drinking water supply source through which contaminants are reasonably likely to move toward and reach the water source within varying periods of time.

Transco accessed publicly available information regarding the location of designated WHPAs in Pennsylvania, New Jersey, and Maryland, and consulted with applicable state agencies and public water supply service area providers, who can potentially be involved in local WHPA programs (NJDEP, 2020a; PADEP, 2000; Baltimore County Department of Environmental Protection and Sustainability, 2021). Based on this review, the Camden M&R Station in Camden County, New Jersey, is within a Tier 3 community WHPA, with an estimated 12-year travel time for contaminants to potentially reach the public water supply. The Camden M&R Station is in a highly industrialized area and proposed modifications would occur within existing facilities and not involve any ground disturbance.

4.3.1.3 Existing Groundwater Contamination

As discussed in section 4.5.6, Transco reviewed publicly available federal and state regulatory databases to identify landfills and other documented sources of existing contamination within 0.25 mile of the Project. The results of this review are summarized as follows.

Pipeline Facilities

The Regional Energy Lateral would cross the abandoned Jenkins Township Landfill near MP 13.0. The property is now used by the Township to store salt for winter road maintenance.

Transco reviewed a Preliminary Assessment/Site Investigation completed by the EPA for the site and is consulting with the Jenkins Township Public Works Department regarding construction at the former landfill. No documented pre-existing contamination, groundwater monitoring wells, or remediation systems were identified at the site. Transco stated that it would continue to coordinate with Jenkins Township and would obtain applicable approvals prior to construction if pre-existing waste or contamination is identified. Transco would also file a site-specific construction plan with its Implementation Plan, if required.

The former Washington Avenue Landfill is approximately 0.2 mile from MP 15.7 of the Regional Energy Lateral, near MP 15.7. Based on this distance and the shallow depth of the pipeline trench, the potential to encounter potentially contaminated groundwater associated with the former landfill during pipeline construction is low.

The Effort Loop would cross the access road to the abandoned Chestnut Hill Township Landfill near MP 48.0; however, the former landfill is approximately 800 feet from the workspace. Based on this distance and the shallow depth of the pipeline trench, the potential to encounter potentially contaminated groundwater associated with the former landfill during pipeline construction is low.

Compressor Station 201

The Compressor Station 201 site was not identified as a known source of contamination; however, three sites with documented soil and groundwater contamination were identified within 0.25 mile of the site:

- The Colonial Pipeline Company site, Nalco Chemical Company site, and Transco's West Deptford facility site are all approximately 0.1 mile southwest and across Mantua Grove Road from the proposed Compressor Station 201 site. Regulatory information obtained by Transco indicates that groundwater contamination at the Colonial Pipeline Company and Nalco Chemical Company sites is expected to remain on those properties and that the Transco facility release has obtained regulatory closure. Based on this information, contamination at these facilities is not expected to impact the Compressor Station 201 site.

- The regulatory database review also identified the Solvay Solexis/Solvay Specialty Polymer USA (Solvay) facility as a contaminated site in proximity to the Compressor Station 201 site. The Solvay chemical plant is 1.5 miles north-northwest from the Compressor Station 201 site. However, a plume of contaminated groundwater containing volatile organic compounds (VOCs) and poly and/or perfluoroalkyls (PFAS) extends toward the southeast, toward the Compressor Station 201 site. Transco consulted with Solvay, which acquired the property northwest and adjacent to the Compressor Station 201 site for the purpose of installing groundwater recovery wells and a water treatment system to intercept and mitigate the contaminant plume. Solvay is continuing to delineate the extent of the groundwater plume but expects that the groundwater remediation system will capture 80 to 90 percent of the contamination.

To adequately plan for potential water handling during construction of Compressor Station 201, Transco completed additional groundwater investigations including installation of four groundwater monitoring wells, collection of bi-weekly groundwater level measurements between October 2021 and March 2022, and sampling and testing for VOCs and PFAS. Results of analytical testing indicated that groundwater samples collected at all four monitoring wells exceeded the New Jersey Ground Water Quality Standards for PFAS compounds. There were no exceedances of for VOCs.

In an August 2020 geotechnical investigation completed by Transco at Compressor Station 201 encountered groundwater at depths of 10 to 24 feet bgs. Transco also conducted environmental field screening of soils in the geotechnical borings and did not record indications of contamination. Based on this assessment and depth to groundwater observed during Transco's October 2021 to March 2022 groundwater monitoring events, Transco does not anticipate encountering groundwater during any grading work, including installation of the planned stormwater detention basin. Additionally, bases of foundations are expected to be at least 3 feet higher than groundwater. Based on the above discussion, the potential to encounter contaminated groundwater during excavation and grading at the Compressor Station 201 site appears low. In addition, Transco would not install a groundwater supply well at the site. Should dewatering be necessary, the water would be containerized, characterized, and disposed of at an approved facility that accepts PFAS-contaminated water.

Project Modifications

The Camden M&R Station site was not identified as a known source of contamination; however, four sites with documented soil and groundwater contamination were identified within 0.25 mile of the site:

- The Camden Gas Plant/PSE&G Camden Gas Works, Bantivoglio & Sons Paper Co., Genstar Gypsum Products Co., and Camden Iron & Metal Inc. sites are within 0.1 mile of the Camden M&R Station. As previously noted, the proposed modifications would not involve any ground disturbance. Therefore, Transco would not encounter pre-existing soil or groundwater contamination.

The Lawnside M&R Station site was not identified as a known source of contamination; however, five sites with documented soil and groundwater contamination were identified within 0.25 mile of the site:

- The Clean Machine Dry Cleaning/Clean Machine Dry Cleaner and Laundromat, Getty Service Station/Lawnside, First Student Inc. #11840, First Transit Inc #55812, and Edmund Scientific Co. sites are all within 0.1 mile of the Lawnside M&R Station. Based on groundwater flow direction and/or distance, Transco does not expect to encounter contamination associated with these sites during Project construction.

The Mt. Laurel M&R Station site was not identified as a known source of contamination; however, three sites with documented soil and groundwater contamination were identified within 0.25 mile of the site:

- The Republic Services of NJ, LLC; PBP Enterprises Incorporated; and LifeTime Athletic sites are all within 0.2 mile of the Mt. Laurel M&R Station. Based on remediation status and distance, Transco does not expect to encounter contamination associated with these sites during Project construction.

Compressor Station 207 site was not identified as a known source of contamination; however, four sites with documented soil and groundwater contamination were identified within 0.20 mile of the site:

- The Reclamation Technologies, Inc.; El Dupont de Nemours & Company; Manzo Contracting Incorporated; and Stavola Old Bridge Materials LLC sites are all within 0.2

mile of Compressor Station 207. The proposed modifications at Compressor Station 207 would not involve any ground disturbance. Therefore, Transco would not encounter pre-existing soil or groundwater contamination.

4.3.1.4 Groundwater Impacts and Mitigation

Shallow groundwater resources could be directly impacted if encountered in pipeline trenches or excavations at aboveground facilities. Potential impacts could include increased turbidity, reduced recharge due to compaction, fluctuation of the water level in conjunction with dewatering, and alteration of the flow regime. We expect that these impacts would be localized, temporary, and minor due to the limited vertical extent of excavations and other ground disturbances, localized use of dewatering, and relatively short duration of construction. In areas with permanent aboveground facilities, recharge into aquifers could be reduced if infiltration is reduced; however, based on the limited size of the area that would be impacted with non-permeable surfaces, the impact on aquifer recharge is expected to be very minor. These physical effects would be reduced by implementing measures in Transco's Plan and Procedures that would minimize erosion and sedimentation, reduce compaction, manage dewatering, and restore pre-existing grades and vegetation. Based on the planned depths of excavations and anticipated depth to groundwater, Transco does not expect to encounter groundwater during excavation and grading for Compressor Station 201.

Transco may need to conduct blasting if mechanical techniques are unable to remove bedrock within excavations. Blasting would not impact important deep bedrock aquifers but could increase turbidity and affect hydrologic characteristics of shallow groundwater resources if present in the immediate area of blasting activity. Blasting would be conducted in accordance with Transco's general Blasting Plan, which includes, among other measures, limiting charges to only that needed to remove the bedrock. With implementation of the Blasting Plan, we anticipate that these effects would be localized, temporary, and minor. Construction, including blasting, could also physically damage wells or diminish the yield and water quality of wells and springs within 150 feet of construction workspaces. The potential to impact wells and springs would be further reduced by implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources. In addition, wells and springs within workspaces would be marked and protected to prevent construction-related damage, and pre- and post-construction testing of well yield and water quality adhering to the federal and state sampling and analytical procedures on wells within 150 feet would be conducted with landowner permission. Constituents of well water testing would specific conductivity, temperature, pH, turbidity, nitrates, volatile organic compounds, and total petroleum hydrocarbon. In the unlikely event that a well or spring is affected, Transco would arrange for a temporary water supply until the water supply and quality are restored, or otherwise resolved.

Groundwater resources could also be affected by spills of fuel or other hazardous substances during construction. The risk that a spill poses to groundwater depends largely on the volume and content of the spill, the nature of surficial geologic materials, the depth to groundwater, and whether product recovery and soil cleanup actions are taken. A small spill would pose little risk to a deep bedrock aquifer whereas a large spill would likely impact the quality of shallow groundwater within surficial, unconsolidated deposits. Transco would implement the hazardous substance management processes and spill prevention and response measures detailed in its Spill Plan to minimize the potential impacts associated with hazardous substance spills during construction and operation of the Project. We also expect that Transco would comply with all other applicable regulations regarding the safe storage and use of hazardous substances during Project operation, including at Compressor Station 201 and other aboveground facilities.

The EPA suggests including a discussion on the Project's Stormwater Pollution Prevention Plan (SWPPP), developed in accordance with state regulations for construction activities and maintained onsite throughout construction to prevent the transport of contaminants to groundwater. Under NJDEP regulations, Transco is required to prepare and follow a SWPPP for construction at certain Project facilities in New Jersey, including Compressor Station 201, Compressor Station 505, and the Station 210 Pooling Point. The main components of the SWPPP are a soil erosion and sediment control component and, where applicable, a construction site waste management plan. Table 1.4-1 lists the state and federal permits and approvals for the Project including Chapter 102 Erosion and Sediment Control Plan Review for Construction in Pennsylvania, and General Permit for Construction Activity in New Jersey. In addition, Transco's Plan and Procedures and Spill Plan provide substantial detail of the erosion control and spill prevention and response procedures that would be implemented. Table 2.3-1 identifies the location where Transco's Plan and Procedures and Spill Plan can be found in their entirety.

The potential to encounter pre-existing groundwater contamination during construction of the Project is low. However, should pre-existing contaminated media (soil or groundwater) be encountered, Transco would implement the measures detailed in its Project-specific UDCP. As outlined in the UDCP, the contractor(s) would stop work in the area; restrict access to the site; and notify the chief inspector, an EI, the Operations Manager, the FERC project manager, and an appropriate Transco field environmental safety specialist. The contractor would contain the contaminant and collect samples of the soil or groundwater for analysis. Depending on the results of the analysis, a site-specific plan for completing construction within the contaminated area would be prepared in accordance with applicable environmental regulations and in coordination with appropriate agencies. Contaminated groundwater would not be discharged without state approval and contaminated soils would be characterized and disposed of at a permitted facility in a timely manner and documented with the appropriate agency. Although Transco does not expect to encounter groundwater during construction of Compressor Station 201, should dewatering be necessary, the water would be containerized, characterized, and disposed of at an approved facility, if necessary. By implementing the UDCP, we conclude that pre-existing contamination would be properly managed if encountered during construction.

Transco proposes to install the Regional Energy Lateral beneath the Susquehanna River using the Direct Pipe® method which utilizes drilling fluid comprised primarily of water, inert solids, and bentonite (a naturally occurring clay mineral). Other additives may be included in the drilling fluid to enhance the drilling process and maintain borehole integrity. These additives would be non-petrochemical-based, non-hazardous products that are NSF International/American National Standards Institute (NSF/ANSI) 60 Drinking Water Treatment Chemicals – Health Effects compliant. Transco would work with the FERC and other applicable agencies and would provide a Drilling Fluids Management Plan that discloses the exact mixtures of drilling fluids and additives, including product Safety Data Sheets, prior to construction. As discussed in section 2.3.2.2, the Direct Pipe® method greatly reduces the potential for the loss of drilling fluid to the surrounding environment (referred to as "inadvertent returns"), and the potential impact of inadvertent returns would be further reduced by implementation of Transco's Direct Pipe® Plan, which we reviewed and found acceptable. In addition, as recommended by the PADEP's Trenchless Technology Technical Guidance Document (PADEP, 2019) and in accordance with FERC guidance, Transco expanded its search for public and private water supply wells to within 1,000 feet of the proposed Direct Pipe® crossing and did not identify any wells within this area. Based on the low potential for the Direct Pipe® method to result in a significant loss of drilling fluid, the non-hazardous composition of the drilling fluid, and the lack of nearby water supply wells, we conclude that the Direct Pipe® crossing of the Susquehanna River would not pose a significant risk to groundwater resources.

As summarized above, we conclude that construction and operation of the Project would not result in significant impacts on groundwater quality, groundwater availability, water supply wells, springs, WHPAs, public water supply service areas, or SSAs.

4.3.2 Surface Water Resources

4.3.2.1 Watersheds

The USGS defines watersheds by regions, sub-regions, accounting units, and cataloging units. Each watershed is identified by a unique hydrologic unit code (HUC) consisting of 2 to 14 digits (USGS, 2021a). The REAE Project would cross several major basins (HUC-8) as listed in table 4.3.2-1.

TABLE 4.3.2-1

Major Watersheds Crossed by the Regional Energy Access Expansion Project [a]

Project Facility/Milepost/Facility Name	County / State	Major Watershed (HUC-8)
Regional Energy Lateral		
0.0-6.1	Luzerne County, Pennsylvania	Lehigh
6.1-22.3	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
Effort Loop		
43.8-44.6	Monroe County, Pennsylvania	Lehigh
44.6-47.3	Monroe County, Pennsylvania	Middle Delaware-Mongaup-Brodhead
47.3-48.1	Monroe County, Pennsylvania	Lehigh
48.1-57.5	Monroe County, Pennsylvania	Middle Delaware-Mongaup-Brodhead
New Aboveground Facilities		
Compressor Station 201	Gloucester County, New Jersey	Lower Delaware
MLV-515RA20	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
MLV-515RA30	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
MLV-505LD86	Monroe County, Pennsylvania	Lehigh
Modified Aboveground Facilities		
Compressor Station 505	Somerset County, New Jersey	Raritan
Compressor Station 207	Middlesex County, New Jersey	Raritan
Compressor Station 515	Luzerne County, Pennsylvania	Lehigh
Compressor Station 195	York County, Pennsylvania	Lower Susquehanna
Compressor Station 200	Chester County, Pennsylvania	Schuylkill, Brandywine-Christina
MLV-505LD81	Monroe County, Pennsylvania	Lehigh
MLV-505LD90	Monroe County, Pennsylvania	Lehigh
Hildebrandt Tie-In	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
Lower Demunds REL Tie-In	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
Carverton Tie-In	Luzerne County, Pennsylvania	Upper Susquehanna-Lackawanna
Delaware River Regulator	Northampton County, Pennsylvania	Middle Delaware-Musconetcong
Mainline A Regulator	Bucks County, Pennsylvania	Middle Delaware-Musconetcong
Mt. Laurel M&R Station	Burlington County, New Jersey	Lower Delaware
Lawnside M&R Station	Camden County, New Jersey	Lower Delaware
Camden M&R Station	Camden County, New Jersey	Lower Delaware
Centerville Regulator	Somerset County, New Jersey	South Branch Raritan River
Station 210 Pooling Point	Mercer County, New Jersey	Millstone River
Beaver Dam M&R Station	Baltimore County, Maryland	Middle Gunpowder Falls

[a] Facilities where only contractual changes are proposed are not included in the table.

4.3.2.2 Surface Water Crossings

Based on fields surveys that were completed in 2020 for all Project areas, the Project would cross a total of 39 perennial waterbodies, 16 intermittent waterbodies, and 24 ephemeral waterbodies. The EPA recommended that all aquatic resources surrounding the Project area be identified and characterized, mapped, and delineated. Table C-4 in appendix C lists the waterbodies affected by the Project, including the associated pipeline facility, or workspace and proposed crossing method, as applicable.

Regional Energy Lateral

Transco's Regional Energy Lateral would cross 25 perennial waterbodies, 15 intermittent waterbodies, and 16 ephemeral waterbodies. In addition, access roads associated with the Regional Energy Lateral would cross 10 perennial and 6 ephemeral waterbodies; however, all are existing roads and no road improvements would be required at any of the waterbody crossing. We note that permanent road improvements are proposed along access road AR-LU-001 at MP 22.3 of the Regional Energy Lateral, which crosses a perennial stream. The existing road has a culvert and bridge over the waterbody and Transco has indicated no improvements to the existing culvert and bridge are necessary.

Effort Loop

Transco's Effort Loop would cross four perennial waterbodies, one intermittent waterbody, and one ephemeral waterbody. One ephemeral waterbody is crossed by proposed access roads (AR-MO-006); however, no improvements are proposed along this existing, temporary access road.

Aboveground Facilities

Two existing access roads proposed for use at the Lower Demunds REL Tie-in and the Delaware River Regulator would cross waterbodies; however, no improvements to these roads are proposed and no impacts would be expected at these crossings. No surface waterbodies would be affected by the modifications to the remaining Project-related aboveground facilities, including compressor stations and interconnects.

4.3.2.3 Sensitive Surface Water Crossings

Waterbodies may be considered sensitive for several reasons, including but not limited to:

- waters that do not meet the water quality standards associated with the water's designated beneficial uses or has a presence of contaminated sediments, or have been designated for intensified water quality management and improvement (e.g., impaired waterbodies);
- rivers on or designated to be added to the Nationwide Rivers Inventory or a state river inventory (none are crossed or adjacent to Project);
- waters that have outstanding or exceptional quality, ecological and recreational importance, or are in sensitive and protected watershed areas;
- waterbodies that are crossed less than 3 miles upstream of potable water intake structures (none are crossed or adjacent to the Project); and/or
- waterbodies that contain sensitive fisheries, threatened or endangered species, or critical habitat (refer to sections 4.4.1 for fisheries and 4.4.4 for sensitive species and critical habitats).

Impaired Waterbodies

CWA section 303(d) requires that each state review, establish, and revise water quality standards for all surface waters within each state. State classification systems develop monitoring and migration programs to ensure that water standards are attained as designated. Waters that fail to meet their designated beneficial use are considered as impaired and are listed under a state's 303(d) list of impaired waters.

Two waterbodies crossed by the Regional Energy Lateral are listed as impaired on the Pennsylvania 303 (d) lists: Gardner Creek (MP 10.7) and Susquehanna River (MP 13.6) (PADEP, 2020a; 2020b; 2020c). The Susquehanna River has water quality impairment related to metals and a fish consumption advisory for polychlorinated biphenyls. The proposed pipeline installation method is the trenchless Direct Pipe® crossing method, which would eliminate any potential resuspension of contaminated sediments into the water column. Gardner Creek is listed as impaired for aquatic life due to runoff and storm sewers. Transco proposes to cross Gardner Creek using the dry crossing method and would implement BMPs as described in section 4.3.2.5 to minimize or prevent potential stormwater runoff into the creek.

The Effort Loop does not cross impaired waterbodies and construction and operation of aboveground facilities would not impact impaired waterbodies.

High Quality or Exceptional Quality Waters

Waterbodies or watersheds can also be classified as high quality or exceptional value based on a variety of criteria, including chemistry, biology, and outstanding resources. The Regional Energy Lateral and associated access roads would cross 33 waterbodies classified as high-quality waters. The Effort Loop and associated access roads would cross six waterbodies classified as high-quality waters and two waterbodies classified as exceptional value waters. The DRN expressed concern regarding the impact of climate change on increased waterbody temperatures and degradation to trout streams. The majority of waterbodies crossed by the Project are either naturally reproducing wild trout streams or Class A wild trout streams. Transco would use a variety of methods to cross waterbodies of outstanding or exceptional importance based on crossing lengths, flow regimes, and sensitivities, as described in section 4.3.2.5 and in accordance with federal, state/commonwealth, and local permits. Transco would comply with any monitoring requirements incorporated in its CWA section 401 permits, if required by the permitting agency. Table C-4 in appendix C lists the high quality and exception value waterbodies that would be crossed by the lateral and loop pipelines and the proposed crossing methods that would be implemented during construction.

4.3.2.4 Water Use

As discussed in section 2.3.1.7, Transco would verify the integrity of the pipelines before placing them into service by conducting hydrostatic testing as required by DOT regulations. Transco's estimated hydrostatic test water requirements, potential sources, and discharge locations are listed in table 4.3.2-2.

TABLE 4.3.2-2

Potential Surface Water Sources of Hydrostatic Test Water

Project/Facility	Potential Source	Quantity of Water Required (gallons)	Discharge Location
REGIONAL ENERGY LATERAL			
Test Segment 1 (MPs 0.0 to 13.7)	Susquehanna River	2,717,000	Susquehanna River
Test Segment 2 (MPs 13.7 to 22.3)	Susquehanna River	1,695,000	Susquehanna River
	Regional Energy Lateral Total	**4,412,000**	
EFFORT LOOP [a]			
Test Segment 1 (MPs 43.7 to 49.6)	Municipal Source	2,334,000	Approved disposal facility
Test Segment 2 (MPs 49.6 to 57.5)	Municipal Source	3,104,000	Approved disposal facility
	Effort Loop Total	**5,438,000**	
ABOVEGROUND FACILITY			
Compressor Station 515, Luzerne, PA	Municipal Source	139,277	Approved disposal facility
Compressor Station 200, Chester, PA	Municipal Source	3,289	Well vegetated upland
Hildebrandt Tie-In, Luzerne, PA	Municipal Source	10,000	Well vegetated upland
Lower Demunds REL Tie-In, Luzerne, PA	Municipal Source	20,000	Well vegetated upland
Carverton Tie-In, Luzerne, PA	Municipal Source	10,000	Well vegetated upland
Delaware River Regulator, Northampton, PA	Municipal Source	2,000	Well vegetated upland
Compressor Station 201, Gloucester, NJ	Municipal Source	29,600	Well vegetated upland
Compressor Station 505, Somerset, NJ	Municipal Source	144,926	Well vegetated upland
Mt. Laurel M&R Station, Burlington, NJ	Municipal Source	7,500	Well vegetated upland
Lawnside M&R Station, Camden, NJ	Municipal Source	3,000	Well vegetated upland
Camden M&R Station, Camden, NJ	Municipal Source	4,000	Well vegetated upland
Centerville Regulator, Somerset, NJ	Municipal Source	14,000	Well vegetated upland
Station 210 Pooling Point, Mercer, NJ	Municipal Source	5,000	Well vegetated upland
	Aboveground Facility Total	**392,592**	
	Project Total	**10,242,592**	

[a] Hydrostatic testing of the Effort Loop will recycle test water between test sections due to sufficient workspace to store the water between tests in temporary aboveground lake tanks (MP 49.63).

Withdrawal and discharge of water for hydrostatic testing could result in erosion, increased turbidity in surface waters, changes in water temperature and oxygen levels, or entrainment of aquatic species. These impacts could in turn result in injury or death to aquatic species located in proximity at the time of active withdrawal or discharge. The withdrawal of large volumes of water from surface water sources could also temporarily affect the downstream designated recreational and biological uses of the resource if the diversions constitute a large percentage of the source's total flow or volume.

The test break location of the Regional Energy Lateral is sited at the Susquehanna River, which is the water source for the hydrostatic test of the Regional Energy Lateral. Water withdrawals from the Susquehanna River would be conducted in a manner that would not reduce water flow to a point that would impair flow or impact fish, recreational activities, or public usage. Based on historic river flow data from the Wilkes-Barre gauging station which is 5.2 miles downstream of the proposed crossing of the Susquehanna River (USGS, 2021b), the lowest average monthly flow recorded within the last 20 years was 1,317 cubic feet per second, or 492,202 gpm. Based on Transco's proposed withdrawal rate of 4,000 gpm, we do not anticipate water withdrawals from the Susquehanna River would affect aquatic resources or other rivers uses.

Pump intakes would utilize floating intake structures equipped with 0.25-inch screening to minimize entrainment of aquatic species during withdrawal. The pipeline would consist of new steel pipe that would be free of chemicals or lubricants, and no additives would be used in the hydrostatic test water.

Water withdrawal from the Susquehanna River for the purpose of hydrostatic testing is considered a non-consumptive use, and water would be returned to the river itself. Hydrostatic test water obtained from the Susquehanna River would be discharged back to the river through a weir tank and vertical gravity discharge structures to dissipate discharge energy, and as approved by state regulatory authorities. The Susquehanna River Basin Commission has determined in its September 17, 2021 approval “that no significant adverse impacts are anticipated by the operation of this project as described and conditioned herein, the project is physically feasible, and does not conflict with or adversely affect the Commission’s Comprehensive Plan.” Returning test water back to the Susquehanna River would prevent the transfer of non-native aquatic species between river basins.

Hydrostatic test water for the Effort Loop would be obtained from a municipal source. The test water would be transported from the municipal source to a temporary storage tank constructed near the loop pipeline. Hydrostatic testing water for the Effort Loop would be recycled between the two test sections. This is possible because there is sufficient workspace to store the water between tests in temporary aboveground lake tanks (MP 49.63). After testing of two pipeline segments is complete, the water would be pumped back into the storage tank and hauled to an approved disposal facility.

Water used for testing pipe facilities at aboveground facilities would be obtained from municipal sources. Upon completion of testing, the test water from all aboveground facilities except Compressor Station 515 would be discharged to a well-vegetated upland area through an energy dissipation device and filtration device, and as approved by state regulatory authorities. When discharging to upland areas, Transco would use dewatering structures, in compliance with Transco’s Procedures and applicable federal and state permits. Test water for Compressor Station 515 would be discharged at an approved disposal facility.

At the request of the Delaware River Basin Commission (DRBC), Transco submitted clarifications and corrections related to work within the Delaware River Basin to assist the DRBC in confirming that the Project does not meet any of the thresholds for requiring DRBC approval. On March 16, 2022, Transco clarified that the municipal sources and approved disposal facilities for the Effort Loop and Compressor Station 515 hydrostatic testing water would be located within the Delaware River Basin already subject to DRBC docket(s).

Water for drilling fluids for the Direct Pipe® crossing of the Susquehanna River would be withdrawn from the Susquehanna River approximate to MP 13.74. Transco estimates requiring 500,000 gallons in total for completion of the Direct Pipe®. This assumes a total withdrawal of 40,000 gallons per day at a rate of approximately 500 gallons per minute. Transco has acquired the necessary permits from the Susquehanna River Basin Commission for water withdrawal and confirms it would not rely on a source of water from within the Delaware River Basin. Transco would test the water source for environmental contaminants prior to use and Transco and its drilling contractor would determine the appropriate disposal facilities based on the composition of the drilling materials.

Transco would allocate water for dust suppression purposes from municipal water supplies. Dust suppression efforts would be conducted in compliance with the applicable permits.

By implementing the hydrostatic testing procedures summarized above and in Transco’s Procedures, and by obtaining and complying with required permits, we conclude that impacts on water quality and aquatic species associated with hydrostatic test water withdrawal and discharge would be minor and temporary.

4.3.2.5 General Impacts and Mitigation on Surface Waters

Pipeline construction activities that could potentially affect surface waters include clearing and grading of streambanks, in-stream trenching, blasting, trench dewatering, inadvertent returns from Direct Pipe installation operations, and potential spills or leaks of hazardous materials. Potential effects on surface waters from these activities may include modification of aquatic habitat, increased stormwater runoff and the rate of in-stream sediment loading and erosion; turbidity, decreased dissolved oxygen (DO) concentrations, releases of chemical and nutrient pollutants from sediments, thermal effects, modification of riparian areas, and the introduction of chemical contaminants such as fuel and lubricants.

In-stream construction activities, especially trenching and backfilling of the trench, would temporarily increase the amount of sediment mobilized downstream. The extent of the impact would depend on sediment loads, stream velocity, turbidity, bank composition, and sediment particle size. These factors would determine the density and downstream extent of sediment migration. In-stream construction could also result in the alteration of stream contours. Changes in the stream bottom contours could alter stream dynamics and increase downstream erosion or deposition. Turbidity resulting from resuspension of sediments from in-stream construction and erosion of cleared right-of-way areas could reduce light penetration and photosynthetic oxygen production. In-stream disturbance could also introduce chemical and nutrient pollutants from sediments. Resuspension of deposited organic material and inorganic sediments could cause an increase in biological and chemical use of oxygen, potentially resulting in a decrease of DO concentrations in the affected area. Lower DO concentrations could cause temporary displacement of motile organisms, such as fish, and may kill non-motile organisms within the affected area.

The clearing and grading of streambanks would reduce riparian vegetation and expose soil to erosional forces. The use of heavy equipment for construction could cause compaction of near surface soils, an effect that could result in increased runoff into surface waters in the immediate vicinity of the construction right-of-way. Increased surface runoff could transport sediment from uplands into surface waters, resulting in increased turbidity levels and increased sedimentation rates in the receiving waterbody. The DRN commented that herbicide use in the area could contribute to contamination of water resources from increased surface runoff. Disturbances to stream channels and streambanks could also increase the likelihood of scour after construction. Transco would not use herbicides within 100 feet of wetlands or waterbodies during construction or operation of the pipelines.

EPA recommends in-stream monitoring be conducted up and downstream of impacts to ensure minimal adverse effects to the aquatic resources, particularly the high quality, exceptional value, and impaired waterbodies. As described in section 2.3.2.1, waterbody crossings would be completed in accordance with the measures described in the Transco's Procedures, and in accordance with federal, state/ commonwealth, and local permits. Transco would comply with any monitoring requirements incorporated in its CWA section 401 permits, if required by the permitting agency.

EPA also recommends a restoration plan be developed for temporary impacts to ensure the impacts on aquatic resources are temporary and restored to baseline conditions. If the temporary impacts have lasting adverse effects on the aquatic resources or if there are permanent impacts on and/or conversion of type to these waterbodies, EPA recommends developing a compensatory mitigation plan consistent with the 2008 Compensatory Mitigation for Losses of Aquatic Resources final rule. As described in Transco's Procedures, waterbody restoration measures, all waterbody crossing areas would be inspected and maintained until restoration of vegetation is complete. If during FERC staff inspections, successful waterbody restoration is not yet achieved, additional restoration work may be required to ensure compliance with the required performance standards. In addition, local and state agencies would require successful restoration prior to releasing Transco from the permit conditions under their authorizations. With these monitoring and restoration requirements, we do not anticipate adverse impacts on waterbodies.

The EPA recommends coordination with adjacent states to ensure water quality standards would not be affected by the Project. The northern portion of the Regional Energy Lateral drains to the Susquehanna River, a drainage which spans 160 miles before reaching the State of Maryland. The southern end of the Regional Energy Lateral and all but one waterbody on the Effort Loop drain to the Lehigh River, a drainage which spans 60 miles before reaching the Delaware River and the State of New Jersey. Additionally, most of the waterbodies crossed by the southern end of the Regional Energy Lateral and the Effort Loop drain through the Bear Creek Reservoir and Beltzville Lake Reservoir in Pennsylvania before reaching the State of New Jersey, which would mitigate potential sedimentation and turbidity impacts downstream of the reservoirs. For these reasons, we do not believe there is a potential for water quality impacts in Maryland or New Jersey and coordination with these states is not necessary.

An unnamed tributary to McMichael Creek crosses the Effort Loop and drains to McMichael Creek, the Delaware River, and to the State of New Jersey, a drainage which spans about 20 miles. McMichael Creek is designated as a high quality, naturally reproduction trout stream which affords the unnamed tributary the same designation. The unnamed tributary drains a stormwater detention pond adjacent to the upslope side of the pipeline right-of-way, which is the headwater of the tributary. The tributary travels through a culvert across the pipeline right-of-way and discharges into an excavated drainage ditch approximately 100 feet east of the pipeline right-of-way. The tributary drains into McMichael Creek approximately 2.2 miles downstream of the proposed pipeline crossing. Because of these site-specific conditions, we do not believe the pipeline crossing would affect water quality in tributary, McMichael Creek, or to the Delaware River. Therefore, water quality coordination with the State of New Jersey is not required.

Minor impacts on water resources would include the reduction of shading along riparian areas through the conversion of forested riparian and wetland areas to herbaceous or emergent wetland areas. This reduction in shading would be limited to isolated areas of stream or tributary crossings and would allow for increased light penetration to the stream channel. This could lead to greater light penetration and increased temperatures in the water column during warmer seasons (i.e., late spring and summer) at these isolated locations. Increased light penetration may also enhance aquatic vegetation growth in the channels where the crossing occurred following construction. The DRN expressed concern regarding potential thermal impacts on aquatic resources from a reduction of shading along stream banks. These impacts would largely be limited to smaller streams and tributaries crossed where pre-construction canopy coverage fully encloses the channel. Transco is acquiring necessary federal and state permits and the Chapter 102 permit application addresses thermal impacts. Given that the maximum crossing width of the right-of-way is 50 feet, the small area of channel affected would not present a significant impact on the overall aquatic system. Larger tributaries and rivers would not be as affected by this reduction in canopy cover as most of the channels would already have open channels at the crossing location. See additional discussions regarding thermal impacts on aquatic resources in section 4.4.1.1 of this EIS.

The DRN expressed concern regarding the disruption of riparian buffers along waterbodies. Riparian cover on affected stream banks would be expected to recover over several months to several years. Once construction is complete, streambeds and banks would be quickly restored to preconstruction conditions to the fullest extent practicable. For open-cut crossings, waterbody banks would be stabilized, and temporary sediment barriers would be installed within 24 hours of completing instream construction activities. Adherence to Transco's Procedures would also maximize the potential for regrowth of riparian vegetation, thereby minimizing long-term and permanent impacts associated with lack of shade and cover. In addition, restoration of forested riparian buffers along waterbodies would be completed in accordance with all applicable state and federal permit authorizations. Transco would not use herbicides or pesticides during construction and operation of the Project within 100 feet of a wetland or waterbody unless approved by applicable regulatory agencies. A strip of riparian vegetation at least 25 feet wide adjacent to waterbodies would typically be allowed to revegetate to preconstruction condition over the entire width of the right-of-way, except for a 10-foot-wide strip centered over the pipeline that may be maintained in an herbaceous state. In accordance with Transco's Procedures, trees would not be allowed to grow within 15 feet of the pipeline. In addition, Transco plans to replant forested riparian buffers following construction of the Project, in accordance with permit conditions, to further address these concerns.

Refueling of vehicles and storage of fuel, oil, or other hazardous materials near surface waters could create a potential for contamination. If a spill were to occur, immediate downstream users of the water could experience degradation in water quality. Acute and chronic toxic effects on aquatic organisms could also result from such a spill. Transco's Spill Plan would be implemented to ensure that spill prevention and response protocols are followed to both minimize risk of environmental release and effects in the use of these materials. The Spill Plan includes protective measures for the storage and handling of chemicals and fueling activities during construction within 100 feet from wetlands and waterbodies.

Blasting may be required within surface water crossings that contain shallow bedrock and can cause a short-term increase in sedimentation. As outlined in section 4.1.1.3, about 20.3 miles of the lateral and loop pipelines cross areas with shallow bedrock. Transco would attempt to remove rock using mechanical methods such as ripping or conventional excavation equipment and methods to remove the bedrock, where practicable. However, several shallow bedrock areas are classified as difficult to rip; therefore, blasting in these areas may be required. If blasting in waterbodies is required, impacts such as short-term sedimentation, injury to fish and mussels from the shockwave created by blasting, and permanent alterations of stream channels may occur. Transco has developed a general blasting plan for the Project and would develop site-specific blasting plans for each waterbody crossing where blasting is determined to be necessary. All blasting activity would be performed according to federal and state safety standards and in accordance with Transco's comprehensive Blasting Plan to be implemented by a certified blasting contractor. Transco would obtain blasting permits from appropriate agencies (see section 4.1.6 for additional information about blasting) and would conduct any required in-stream work during the appropriate timing window for warmwater and coldwater fisheries.

Executive Order 11988,[30] *Floodplain Management*, requires each federal agency to ensure that the potential effects of any action it may take in a floodplain are evaluated. The DRN indicated that removal of vegetation along water systems removes the natural armoring that helps prevent accelerated erosion from flood flows. Floodplains that would be crossed by the pipeline could be temporarily affected by vegetation removal, trenching, and spoil piles, except for the direct pipe trenchless crossing of the Susquehanna River. Creation of the trench would temporarily increase the flood retention capacity, but this would be offset by an equal reduction of flood retention capacity associated with the spoil piles, thus the overall flood retention capacity would be unchanged. However, the presence of the spoil piles would temporarily alter surface drainage and could redirect flows within the floodplain area. Floodplains would not be affected by the operation of the pipeline, which would be buried. Seasonal and flash flooding hazards are a potential concern where the pipeline would cross or be near major waterbodies and small watersheds. Although flooding itself does not generally present a risk to pipeline facilities, bank erosion and/or scour could expose the pipeline or cause sections of pipe to become unsupported. All pipeline facilities are required to be designed and constructed in accordance with 49 CFR 192. These regulations include specifications for installing the pipeline at a sufficient depth to avoid possible scour at waterbody crossings. Typically, the trench would be sufficiently deep to provide for a minimum of 5 feet of cover over the pipeline at waterbodies.

Federal Emergency Management Agency (FEMA) Special Flood Hazard Areas (SFHAs) are areas that have a 1 percent annual chance of flood or are referred to as the 100-year flood zone. Flood zones are the channel of a stream plus adjacent floodplain areas that must be kept free of encroachment so that a 100-

[30] Executive Order 11988 is available online at: https://www.archives.gov/federal-register/codification/executive-order/11988.html.

year flood can be carried without substantial increase in flood heights unless it has been demonstrated through hydrologic and hydraulic analyses that the proposed encroachment would not result in any increase in flood levels (FEMA, 2019). Table 4.3.2-3 lists the SFHAs that would be crossed by the Project. No new permanent structures are proposed within FEMA SFHAs.

TABLE 4.3.2-3

Floodplains Crossed by the Regional Energy Access Expansion Project

Facility	MP Start	MP End	Waterbody	Special Flood Hazard Areas (acres)	Floodways (acres)
Regional Energy Lateral	0.4	0.5	UNT to Shades Creek	0.07	0.00
Regional Energy Lateral	1.0	1.1	Shades Creek	0.09	0.00
Regional Energy Lateral	3.9	4.0	Meadow Run	0.11	0.00
Regional Energy Lateral	4.4	4.6	Bear Creek	1.98	0.00
Regional Energy Lateral	7.8	8.0	Mill Creek	0.88	0.00
Regional Energy Lateral	10.6	10.7	Gardner Creek	0.55	0.00
Regional Energy Lateral	10.8	10.9	Gardner Creek	0.04	0.00
Regional Energy Lateral	11.3	11.4	Gardner Creek	0.03	0.00
Regional Energy Lateral	13.4	14.8	Susquehanna River	22.81	8.72
Regional Energy Lateral	15.0	15.4	Abrahams Creek	4.89	0.67
Regional Energy Lateral	15.4	15.7	UNT to Abrahams Creek	3.44	0.00
Regional Energy Lateral	21.0	21.1	UNT to Trout Brook	0.32	0.00
Regional Energy Lateral	21.8	21.9	Trout Brook	0.22	0.00
Effort Loop	49.3	49.5	Sugar Hollow Creek	0.88	0.00
Camden M&R Station [a]	N/A	N/A	Delaware River	0.55	0.00
Mainline A Regulator [b]	N/A	N/A	Dyers Creek	0.03	0.00
Delaware River Regulator [c]	N/A	N/A	Mud Run	0.04	0.00

[a] Transco intends to replace existing buildings at the Camden M&R Station in kind and there are no proposed changes to the fenced area; therefore, no impacts are anticipated to floodplains.

[b] Transco intends to install additional controls to the existing regulator valve and there are no proposed changes to the fenced area; therefore, no impacts are anticipated to floodplains.

[c] A portion of the existing asphalt access road (AR-DELAWARE-002) is intersected by the floodplains; no upgrades to the road are planned; therefore, no impacts are anticipated to floodplains.

The NJDEP requested that Transco pursue a Flood Hazard Area Verification for Compressor Station 505. We also received a comment regarding the potential for flooding of the Raritan River to affect Compressor Station 505. According to FEMA SFHA flood elevations, Compressor Station 505 is 91 feet higher in elevation than the FEMA SFHA flood elevation of Raritan River in this area, and 81 feet higher in elevation than the FEMA SFHA flood elevation of Pleasant Run, a tributary of Raritan River west of Compressor Station 505. Therefore, no flood impacts are anticipated at Compressor Station 505.

On March 16, 2022, Transco clarified that planned activities within the flood hazard area associated with upgrades to a valve at its Mainline A Regulator do not involve the development of one or more structures that alone or in combination with other planned (or existing) structures would result in coverage of a combined total land area in excess of 50,000 square feet within the flood hazard area of the main stem Delaware River or a major tributary.

Where the flume or dam and pump methods are used, temporary construction-related impacts would be limited primarily to short periods of increased turbidity before installation of the pipeline, during the installation of the upstream and downstream dams, and following installation of the pipeline when the dams are pulled and flow is re-established across the restored work area. Following installation of pipelines using dry-ditch crossing methods, stream banks and riparian areas would be re-contoured and stabilized with approved seed mixes.

Transco proposes to cross the Susquehanna River, a major waterbody (i.e., over 100 feet wide), utilizing the Direct Pipe® method. In accordance with the Commission's Procedures, Transco is required to provide a site-specific crossing plan for all major waterbody crossings. We reviewed Transco's Direct Pipe® Plan (see table 2.3-1) and find it acceptable. The plan includes scaled drawings of the waterbody crossing and associated workspace requirements, as well as detailed measures that would be implemented during construction, including but not limited to:

- roles and responsibilities of Direct Pipe® contractor;
- contingencies for installation failures and inadvertent returns;
- agency notification requirements; and
- monitoring and restoration requirements.

Two existing access roads proposed for use at the Lower Demunds REL Tie-in and the Delaware River Regulator would cross waterbodies; however, no improvements to these roads are proposed and no impacts would be expected at these crossings. No surface waterbodies would be affected by the modifications to the remaining Project-related aboveground facilities, including compressor stations and interconnects. During construction, Transco would implement its Procedures, ECP and Spill Plan, which includes such measures as installing temporary erosion control devices that would be monitored by an EI during active construction. Transco would also install permanent erosion control devices at this location to minimize impacts from stormwater. These measures are all designed to prevent sediment flow and possible contaminates from spills from entering waterbodies that may be present adjacent to aboveground facilities.

4.3.2.6 Surface Water Modifications to the FERC Procedures

Section V.B.2.a of the FERC Procedures requires all ATWS to be located at least 50 feet away from the edge of waterbodies, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. Transco has identified a total of 42 areas where ATWS would be required within 50 feet of waterbodies. Table C-3 in appendix C identifies these 42 ATWSs within 50 feet of waterbodies and the justification for the proposed modification to the FERC Procedures. Based on our review, we have determined that Transco has provided adequate justification for the requested ATWSs.

4.3.2.7 Surface Waters Conclusion

Because the waterbody crossings would be completed in accordance with the construction and restoration methods described above, Transco's Procedures, and any site-specific measures that may be required by the USACE and state agencies, we conclude that impacts on waterbodies would be minor and temporary.

4.3.3 Wetlands Resources

Wetlands are areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation adapted for life in saturated soil conditions (USACE, 1987). Wetlands serve several functions including, but not limited to flood control, groundwater recharge, maintenance of biodiversity, wildlife habitat, and maintenance of water quality.

Wetlands in the Project area are regulated at the federal and state levels. At the federal level, the USACE regulates wetlands under section 404 of the CWA and section 10 of the RHA. The EPA shares responsibility to administer and enforce the section 404 program. The USACE delegates wetland activities under section 401 of the CWA to the appropriate state agencies. The designated state agency in Pennsylvania is the PADEP. No wetland impacts would occur in Maryland or New Jersey.

4.3.3.1 Existing Wetland Resources

Transco conducted field wetland delineations using the USACE's Wetlands Delineation Manual (USACE, 1987) and the 2012 Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Eastern Mountains and Piedmont Region (Version 2.0) Regional Supplement. Wetlands were classified as described in Cowardin et al. (1979). The EPA recommended that wetlands surrounding the Project area be identified and characterized, mapped, and delineated. Wetland delineations were completed in 2020 for all Project areas. Table 4.3.3-1 summarizes the wetland types crossed by the Project and table C-5 appendix C details each wetland crossed. The EPA additionally requested the inclusion of a wetland impact map demonstrating the locations and areas affected. Transco's draft Onsite Wetland and Riparian Reforestation Plan includes detailed mapping of each wetland in the Project area and is available for viewing in the Project docket.[31] The basic wetland types that were delineated in the Project area are discussed below.

TABLE 4.3.3-1

Summary of Wetland Impacts Associated with the Regional Energy Access Expansion Project (acres)

	Emergent Wetland		Scrub-shrub Wetland		Forested Wetland		Open Water	
Project/Facility	Con [a]	Op [b]	Con	Op	Con	Op	Con	Op
REGIONAL ENERGY LATERAL								
Pipeline	7.5	4.6	1.2	0.6	3.8	2.2	<0.1	<0.1
Access Roads	0.7	0.0	0.1	0.0	<0.1	0.0	0.0	0.0
EFFORT LOOP								
Pipeline	2.0	1.0	0.2	0.1	0.7	0.4	0.0	0.0
Access Roads	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ABOVEGROUND FACILITIES								
Compressor Station 515	0.5	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Compressor Station 200	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lower Demunds REL Tie-in	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0
Projects Total	**10.7**	**5.7**	**1.4**	**1.4**	**4.6**	**2.6**	**<0.1**	**<0.1**

[a] Con = Construction Impacts. Includes impacts associated with all areas within the construction workspace limits. This includes the total of the existing pipeline right-of-way, new permanent right-of-way, ATWS areas, and contractor/ staging areas.
[b] Op = Operational Impacts. Includes the acreage of wetland within the permanent easement that could be impacted by maintenance activities during operation of the pipeline.
Note: The totals shown in this table may not equal the sum of addends due to rounding.

Emergent Wetlands

Palustrine emergent (PEM) wetlands are characterized by erect, rooted, herbaceous hydrophytes, excluding mosses and lichens (Cowardin et. al., 1979). PEM wetlands include areas commonly referred to as marshes, wet meadows, and beaver flowage communities. The PEM wetland type exists on its own as well as in conjunction with other wetland types, creating a more heterogeneous wetland system. PEM wetlands are often associated with utility rights-of-way, abandoned agricultural areas, and open waterbodies. As presented in table 4.3.3-1, about 10.7 acres of PEM wetlands in total would be affected during construction, while a subset of about 5.7 acres of PEM wetlands is present within the permanent pipeline easement and could be affected during maintenance of the pipeline facilities.

[31] Transco's Onsite Wetland and Riparian Reforestation Plan was filed in the Commission's eLibrary and can be found at accession no. 20211210-5136 as document 003_PUB_Transco_REAE_EIR-3_Attachemnts-(8).pdf.

Scrub-Shrub Wetlands

Palustrine scrub-shrub (PSS) wetland cover type includes areas that are dominated by saplings and shrubs that typically form a low and compact structure less than 20 feet tall (Cowardin et. al., 1979). The structure and composition of the vegetation within this cover type may be influenced by the water regime and, where located within existing rights-of-way, by utility maintenance practices. Most of these communities are seasonally flooded and often saturated to the surface. Many PSS wetlands are associated with emergent wetlands as part of large complexes. These PSS wetlands are also the dominant along existing electric transmission rights-of-way. As presented in table 4.3.3-1, about 1.4 acres of PSS wetlands would be affected during construction and about 1.4 acres of PSS wetlands is present within the permanent pipeline easement and could be affected during maintenance of the pipeline facilities. About 0.1 acre of PSS wetlands would be converted to PEM wetland through operational vegetation maintenance as described in Transco's Procedures.

Forested Wetlands

Palustrine forested (PFO) wetlands are broad-leaved deciduous wetlands, found in association with streams and seeps or as isolated depressions. These wetlands typically occur in areas where the topography is low and flat or along waterbodies. PFO wetland cover types are dominated by trees and shrubs that have developed a tolerance to a seasonal high-water table. In order to be characterized as forested, a wetland must be dominated by trees and shrubs that are at least 6 meters tall (Cowardin et. al., 1979). PFO wetlands typically have a mature tree canopy which, depending upon the species and density, can have a broad range of understory and groundcover community components. As presented in table 4.3.3-1, about 4.6 acres of PFO wetlands would be affected during construction and about 2.6 acres of PFO wetlands is present within the permanent pipeline easement and could be affected during maintenance of the pipeline facilities. About 1.6 acres of PFO wetlands would be converted to PEM wetland through operational vegetation maintenance as described in Transco's Procedures.

Open Water Wetlands

Palustrine open water (POW) wetlands crossed by the Project are characterized by the lack of large stable surfaces for plant and animal attachment due to the depth of water present in the wetland. They include wetlands with at least 25 percent cover of particles smaller than stones and vegetation cover of less than 30 percent. A fractional amount of POW wetland would be affected by construction of the Project.

Exceptional Wetlands

In addition to the classifications used above (Cowardin 1979), the PADEP classifies wetlands as either exception value or other (designations provided in table C-5 in appendix C). Exceptional value wetlands are given special protection in the state of Pennsylvania by the PADEP under Pennsylvania Code Title 25 and include those wetlands that:

- serve as habitat for threatened and endangered species (or are hydrologically connected to or within 0.5 mile of such wetlands);
- are adjacent to a wild trout stream or exceptional value water;
- are along a designated drinking water supply; and
- are within natural or wild areas (e.g., federal and state lands).

4.3.3.2 General Impacts and Mitigation on Wetland Resources

Construction of the Project would impact a total of approximately 16.7 acres of wetlands, consisting of 10.7 acres of emergent wetland, 1.4 acres of scrub-shrub wetland, 4.6 acres of forested wetlands, and a fractional amount of open water wetland. Of the 4.6 acres of forested wetland impacts, approximately 2.6 acres are located within the permanent pipeline easement and could be impacted by operation and maintenance of the pipeline, and 1.6 acres are located within the portion of the pipeline right-of-way that would be converted to emergent wetland for vegetation maintenance requirements along the pipeline facilities.

Transco proposes to cross most wetlands via open trench, although some wetlands would be crossed by trenchless boring as identified in table C-5 in appendix C. Transco would minimize the amount of time that topsoil is segregated and the trench is open to the extent possible. Transco would use timber mats and would assemble the pipeline in upland locations to minimize wetland disturbance. Where trench dewatering is necessary, water would be discharged through an energy-dissipation structure such as a filter bag into a well-vegetated upland area to minimize erosion associated with discharge. Transco would use "push-pull" and/or "float" techniques for crossing wetlands (see section 2.3.2.3) when conditions permit, which is typically when the water table is near the surface and adequate workspace is available on either side of the wetland crossing.

The primary impact of the Project on wetlands would be the alteration of wetland function and value due to vegetation clearing. Construction could also impact water quality within the wetland due to sediment loading or inadvertent spills of fuel or chemicals. The use of heavy equipment within wetlands could also result in the compaction of wetland soils. Other impacts could include hydrology alternations, changes in temperature and light/shade effects, and altered humidity. Impacts on wetlands would be greatest during and immediately following construction. The majority of these effects would be short term in nature and would cease shortly after the wetlands are restored and vegetated. Following revegetation, the wetland would eventually transition back into a community with functionality similar to that of the preconstruction state. In emergent wetlands, the herbaceous vegetation would regenerate quickly (typically within 1 to 3 years).

Following revegetation, no permanent impact would occur on emergent wetland vegetation in the maintained pipeline right-of-way because these areas naturally consist of, and would remain as, open land and herbaceous communities. In addition, all scrub-shrub wetlands would be allowed to revert to scrub-shrub wetlands in areas outside the annual maintenance corridor. Revegetation would be considered successful if the cover of herbaceous and/or woody species is at least 80 percent of the type, density, and distribution of the vegetation in adjacent wetland areas that were not disturbed by construction, as further discussed below.

The duration of the impact on scrub-shrub and forested wetlands would be longer than that of emergent wetlands. Forested wetlands located outside of the maintained permanent right-of-way would be allowed to revert to forested wetlands after construction. Transco currently plans restoration of temporarily impacted wetlands associated with PFO and PSS wetlands with onsite replanting. The vegetative design of the PFO and PSS includes a combination of specific native tree and shrub species selected for different hydrologic regimes and different vegetative cover types throughout the Project. Trees and shrubs selected for the replanting were based on species identified during wetland delineations. In these areas, woody vegetation may take several years to regenerate, resulting in long-term impacts. Permanent impacts on forested and scrub-shrub wetlands within the new permanent right-of-way would be based on its width, where the wetland would be converted to emergent wetland. For the permanent right-of-way, the re-establishment of mature woody vegetation would be precluded by the annual maintenance of a 10-foot-wide herbaceous strip centered over the pipeline and the cutting of woody vegetation within 15 feet of the pipeline centerline. This would result in a permanent conversion of previously forested and scrub-shrub wetland areas to emergent wetland areas. The conversion from one vegetation cover type to another could result in changes in wetland functions and values by altering the amount of sunlight or other environmental conditions in the wetland, affecting wildlife habitat. In general, however, it is expected that the affected wetlands would continue to provide important ecological functions such as sediment/toxicant retention, nutrient removal, flood attenuation, groundwater recharge/discharge, and wildlife habitat.

In general, Transco would minimize wetland impacts by collocating the pipeline facilities with existing utility rights-of-way (approximately 60 percent of Transco's Regional Energy Lateral and 100 percent of the Effort Loop). In addition to the measures identified in crossing methods discussion above, Transco would implement the following measures in its Procedures:

- Clearly mark wetland boundaries and buffers in the field with signs and/or highly visible flagging until construction-related ground disturbing activities are complete;
- Avoid cutting vegetation just above ground level and grind stumps to ground level, leaving existing root systems in place. Immediately remove all cut trees and branches from the wetland and stockpile in an upland area on right-of-way for disposal;
- Locate ATWS at least 50 feet from wetland boundaries except where site-specific conditions warrant otherwise and FERC approval has been obtained;
- Sediment barriers would be installed across the entire construction right-of-way at all waterbody/wetland crossings, where necessary, to prevent the flow of sediments into the waterbody or wetland. Where waterbodies or wetlands are adjacent to the construction right-of-way, sediment barriers would be installed along the edge of the construction right-of-way as necessary to contain spoil and sediment within the construction right-of-way.
- The top 12 inches of topsoil would be segregated from the area disturbed by trenching in wetlands, except in areas where standing water is present or soils are saturated or frozen.
- The trench would be dewatered (either on or off the construction right-of-way) in a manner that would not cause erosion and would not result in heavily silt-laden water flowing into any waterbody or wetland.
- Trench plugs/breakers would be installed at the banks of all waterbodies and at the boundaries of all wetland crossings immediately after trench excavation to prevent diversion of water into upland portions of the pipeline trench and to keep any accumulated trench water out of the waterbody or wetland.
- Implemented measures to ensure that spill prevention and response protocols are followed to both minimize risk of environmental release and effects in the use of these materials, including protective measures for the storage and handling of chemicals and fueling activities during construction within 100 feet from wetlands and waterbodies.
- Vegetation maintenance during operations would be limited in wetlands to a 10-foot-wide herbaceous corridor and the removal of trees and shrubs within 15 feet of the pipeline centerline.

- Prohibit herbicide use within 100 feet of wetlands during construction and operation of the Project unless approved by applicable regulatory agencies.

Wetland restoration would be conducted in accordance with Transco's Procedures and other permit conditions as may be required. Transco would conduct annual post-construction monitoring of all wetlands affected by construction to assess the condition of vegetation and the success of restoration for a period of at least 3 years. In its comments on the draft EIS, EPA recommends that the Project's wetland monitoring plan include that no greater than 5 percent of invasive species be set as a benchmark for success within the restored wetland areas. As indicated in section VI.D.5 of Transco's Procedures, wetland revegetation would be considered successful if the following criteria are satisfied:

- the affected wetland satisfies the current federal definition for a wetland (i.e., soils, hydrology, and vegetation);
- vegetation is at least 80 percent of either the cover documented for the wetland prior to construction, or at least 80 percent of the cover in adjacent wetland areas that were not disturbed by construction;
- if natural rather than active revegetation was used, the plant species composition is consistent with early successional wetland plant communities in the affected ecoregion; and
- invasive species and noxious weeds are absent, unless they are abundant in adjacent areas that were not disturbed by construction.

If after the third year any wetland is not revegetated, Transco would be required to develop and implement a remedial wetland revegetation plan in consultation with a professional wetland ecologist to actively revegetate wetlands. Transco would be required to provide continual annual revegetation reports until revegetation is successful. An annual monitoring report addressing the status of wetland restoration and revegetation would be submitted to the appropriate agencies. Other elements for inclusion in the annual monitoring report would be determined through consultations with USACE and PADEP in conjunction with permit conditions and authorization.

Wetland Mitigation

Transco's consultation with PADEP and USACE regarding wetland mitigation requirements is ongoing. The EPA suggested that permanent wetland impacts may require compensation for lost or reduced wetland function. Wetland mitigation would be determined as part of Transco's joint permit application to the PADEP for a Pennsylvania Water Obstruction and Encroachment Permit and to the USACE for a permit under section 404 of the CWA and section 10 of the RHA. Transco provided its Onsite Wetland and Riparian Reforestation Plan as part of its April 2021 permit application to the USACE and the PADEP.[32] This plan addresses the replanting of trees and shrubs associated with temporarily impacted forested riparian buffers (100 feet or 150 feet from each watercourse for special protection watersheds) and to PFO and PSS wetlands along the pipeline right-of-way, with plantings proposed for outside of the maintained permanent right-of-way. The draft plan is currently under review by both agencies. The final plan would be provided prior to the start of construction.

[32] Transco's Onsite Wetland and Riparian Reforestation Plan was filed in the Commission's eLibrary and can be found at accession no. 20211210-5136 as document 003_PUB_Transco_REAE_EIR-3_Attachemnts-(8).pdf.

Transco is proposing offsite wetland mitigation at two locations, the Perin Site, located in Northampton County within the Delaware River Basin, and the Grajewski Site, located in Luzerne County in the Susquehanna River Basin. Transco proposes to enhance existing wetlands with tree and shrub plantings to mitigate for the functional conversion associated with the Project. Mitigation plans for each site were filed as part of the application submitted to the PADEP on April 8, 2020, and the USACE on May 3, 2020. EPA recommends including the use of mitigation banks in conjunction with the Perin and Grajewski Sites as compensatory mitigation for the Project. The USACE has stated it is coordinating with Transco regarding the use of wetland mitigation banks and a watershed mitigation approach for the Project. Review of the applications, including the mitigation plans, is ongoing by the agencies.

The DRN expressed concern that Transco's tree planting plan for the Perin Site could result in degradation of suitable bog turtle habitat. Transco completed bog turtle surveys at the site in the spring of 2021. The Phase 1 survey identified potentially suitable bog turtle habitat; however, no bog turtles were identified during Phase 2 and 3 surveys completed in April and May 2021. The FWS provided a response on October 6, 2021, indicating that construction and implementation of the proposed Project are *not likely to adversely affect* the bog turtle.

4.3.3.3 Wetland Modifications to the FERC Procedures

Section VI.A.3 of the FERC Procedures requires the width of the construction right-of-way in wetlands to be limited to 75 feet. Transco has identified a total of 13 areas where the width of the construction right-of-way would exceed 75 feet in wetlands. Table C-3 in appendix C identifies these 13 wetlands and the justification for the proposed modification to the FERC Procedures. Based on our review, we have determined that Transco has provided adequate justification for the additional right-of-way widths.

Section VI.B.1.a of the FERC Procedures requires all ATWS to be located at least 50 feet away from the edge of wetlands, except where the adjacent upland consists of cultivated or rotated cropland or other disturbed land. Transco has identified a total of 185 areas where ATWS would be required within 50 feet of wetlands. Table C-3 in appendix C identifies these 185 ATWS within 50 feet of wetlands and the justification for the proposed modification to the FERC Procedures. Based on our review, we have determined that Transco has provided adequate justification for the requested ATWSs.

4.3.3.4 Wetland Resources Conclusion

Permanent impacts on wetlands would include the conversion of forested wetlands to scrub-shrub or emergent wetlands within the maintained permanent pipeline easement. In addition, long-term to permanent impacts on woody vegetation would occur as it may take several decades for the vegetation to reach maturation within the temporary workspace that is cleared for construction. While long-term and permanent effects on wetlands would occur, adherence to Transco's Procedures and conditions of federal permits would ensure that impacts are not significant.

4.4 FISHERIES, VEGETATION, AND WILDLIFE

4.4.1 Fisheries

The PADEP classifies freshwater waterbodies according to water quality and aquatic communities. Under Pennsylvania Code Title 25, Chapter 93, waterbodies in the state are classified as coldwater fishes, warmwater fishes, migratory fishes, and trout stocked. Select waterbodies are further classified as high quality or exceptional value and given special protection. High quality waterbodies exceed levels necessary to support fish, shellfish, wildlife, and recreation. Waterbodies classified as exceptional value are in significant natural areas, provide exceptional ecological significance, or are designated as a "wilderness trout stream." Installation of the Project would include 77 crossings of waterbodies supporting coldwater fisheries, with 39 of those crossings being high quality-designated waterbodies. The Project would cross two exceptional value waterbodies. The Project would also include two crossings of waterbodies supporting warmwater fisheries.

The Pennsylvania Fish and Boat Commission (PFBC) further classifies waterbodies supporting trout populations or providing habitat as Approved Trout Waters, Class A Trout Waters, Special Regulation Areas, Stream Sections that Support Natural Reproduction of Trout, and Wilderness Trout Streams. The Project would include 17 crossings of Class A Wild Trout Streams and 57 crossings of waterbodies with naturally producing wild trout (not trout stocked). As discussed in section 4.3.2.2, all of the waterbodies crossed by access roads (17 of the 79 total crossings) are existing access roads that would be utilized for the Project, and no in-stream work would occur. Table 4.4.1-1 identifies the representative fish species that occur within the waterbodies in Pennsylvania.

TABLE 4.4.1-1

Common Fish Species within the Waterbodies Affected by the Regional Energy Access Expansion Project

Warmwater	Coldwater	Migratory
Common Name (*Scientific Name*)		
Largemouth bass (*Micropterus salmoides)*	Brown trout (*Salmo trutta)*	Striped bass (*Morone saxatilis*)
Smallmouth bass (*Micropterus dolomieu)*	Rainbow trout (*Oncorhynchus mykiss)*	Blueback herring (*Alosa aestivalis)*
Rock Bass (*Ambloplites rupestris)*	Brook trout (*Salvelinus fontinalis)*	Alewife (*Alosa pseudoharengus)*
Channel Catfish (*Ictalurus punctatus)*	Mottled sculpin (*Cottus bairdi*)	American shad (*Alosa sapidissima)*
Muskellunge (*Esox masquinongy)*	Slimy sculpin (*Cottus cognatus*)	American eel (*Anguilla rostrata)*
Chain pickerel (*Esox niger)*		
Bluegill (*Lepomis macrochirus)*		
Pumpkinseed *Lepomis*		
Yellow perch (*Perca flavescens)*		
White perch (*Morone americana)*		

Source: PFBC, n.d..

Table C-4 in appendix C identifies the fishery classifications that apply to each waterbody crossed by the Project. There are no waters designated as Essential Fish Habitat within the vicinity of the Project. Therefore, we conclude that the Project would have no impact on Essential Fish Habitat.

The Project components located in New Jersey and Maryland would not cross any waterbodies, and therefore, are not discussed further in this section.

4.4.1.1 General Impacts and Mitigation

Construction impacts on fishery resources may include direct contact by construction equipment with fish, fish eggs, and other aquatic organisms, including fish prey and forage species; alteration or removal of adjacent riparian vegetation and aquatic habitat cover; introduction of pollutants; and impingement or entrainment of fish and other biota associated with the use of water pumps, including appropriation of hydrostatic test water. Construction could also delay migrating fish from reaching upstream spawning areas or delay downstream movement of juveniles.

We received comments concerning the loss of riparian streamside vegetation and thermal impacts downstream. DRN in its comments on the draft EIS expressed concern that expected increases in water temperature in trout streams associated with climate change could cause further thermal impacts to affected fish populations. Loss of riparian vegetation in forested areas could affect fish populations that may be present downstream of construction activities by reducing shade and cover as well as increasing water temperature. Transco would obtain a Chapter 102 Erosion and Sediment Control Plan Review and Permit (ESCGP-3) for Construction Activities in Pennsylvania, which addresses thermal impacts and utilization of riparian forest buffers. Further, two eastern U.S. studies looking at effects of right-of-way clearing in forested areas on stream temperature found no noticeable changes (Brown et al., 2002; Blais and Simpson, 1997). In the north Oregon Cascades, a study of existing transmission line clearing found no significant downstream temperature changes from the clearings (Tetra Tech, 2013). Modeled worst-case temperature conditions changes for this study estimated about 1.1 °F (median of about 0.4 °F) in the modeled maximum and maximum daily mean temperature across the assumed future clearing of the modeled 22 streams, for an estimated 150-foot-wide clearing (Tetra Tech, 2013). Based on the available information, we conclude that any changes in water temperature related to the proposed right-of-way vegetation clearing at waterbody crossings are likely to be very small and undetectable through measurements, except for possibly the very smallest perennial streams and occasional intermittent flowing streams that may have flow during a hot period. Any temperature changes that may occur would gradually be reduced or eliminated over time as most riparian vegetation, from plantings and natural vegetation regrowth would increase stream shading.

We received a comment concerning impacts to the diversity and structure of benthic invertebrate communities resulting from open cut construction in waterbodies. Sedimentation and increased turbidity can affect the diversity of macroinvertebrate communities downstream of the crossing location. However, these potential effects are expected to be minor and temporary. Studies have shown that complete recolonization of the affected habitats can occur within six months following construction (Lewis et al. 2002). The greatest potential for construction impacts on fishery resources would result from an increase in sediment loading and turbidity within and immediately downstream of the construction work areas, including an inadvertent drilling mud release, downstream scour associated with diverting water around waterbody crossings, or discharge of hydrostatic test water. Increased levels of sedimentation could adversely affect fish eggs and juvenile fish survival, benthic community diversity and health, and spawning habitat. However, as discussed in section 4.3.2.5, Transco would complete all in-stream work during state-specified construction windows, and would also implement other measures outlined in Transco's Procedures to reduce sedimentation and enhance restoration. In addition, Transco proposes to cross Susquehanna River, a major waterbody, utilizing the Direct Pipe® crossing method. In accordance with the FERC Procedures, Transco provided a site-specific crossing plan in its Direct Pipe® Plan (see table 2.3-1) that is discussed further in section 4.3.2.1.

As previously discussed in section 4.3.2.5, no surface waterbodies would be directly affected by construction of aboveground facilities; however, we received comments on the potential for construction of the Compressor Station 201 to impact a tributary to Little Mantua Creek (classified by NJDEP as a FW2-NT/SE2, i.e., freshwater non-trout/estuarine waters), which is approximately 500 feet down gradient of the Compressor Station 201 site. During construction, Transco would implement its Plan and Procedures and Spill Plan, which include such measures as installing temporary erosion control devices that would be monitored by an environmental inspector on a daily basis during active construction. Transco would also install permanent erosion control devices at this facility to minimize impacts from stormwater. These measures are all designed to prevent sediment flow and possible contaminants from spills from entering the tributary to Little Mantua Creek.

Long-term impacts on fishery resources could occur if the adjacent riparian vegetation does not recover. Transco proposes to reduce effects on fishery resources through the use of the various waterbody crossing methods and restoration procedures described in sections 2.3.2.1 and 4.3.2.5 and by minimizing the duration of in-stream work in accordance with Transco's Procedures. Section 4.3.2.4 also describes the procedures Transco would implement during hydrostatic test water withdrawal and discharge to minimize sedimentation and turbidity. Specifically, Transco would screen the intake hoses to avoid the uptake of organic debris and entrapment of aquatic species during water withdrawal. Transco would comply with appropriate agency requirements that consider the protection of fisheries resources on a case-by-case basis. Test water discharged back to the Susquehanna River would comply with regulatory permit conditions and would be controlled to prevent scour and excessive sedimentation.

If conditions are encountered that warrant the use of controlled blasting, Transco would implement its Blasting Plan (see table 2.3-1), which outlines proper precautions to be implemented to minimize potential impacts such as prior notification to landowners, vibration monitoring, water quality testing, and the use of mats to control flyrock. In addition, Transco would acquire the appropriate federal, state, and local permits prior to blasting. We believe these measures would minimize the potential for fishery impacts due to blasting.

Impacts on fisheries would be reduced further by limiting in-stream work to the time periods required by federal and state agencies (see table C-4 in appendix C). For waterbodies that do not have a specific timing restriction or are otherwise authorized by the Commonwealth of Pennsylvania, Transco would adhere to the in-stream construction timing restrictions included in section V.B.1 of its Procedures, which states that as permitted by state agencies, in-stream work, except that required to install or remove equipment bridges, will occur during the following time windows:

a. PA Trout Stocked Waters – June 16 through February 28;
b. PA Wild Trout Waters – January 1 through September 30; and
c. PA Class A Wild Trout Waters – April 2 through September 30.

Transco may request at specific identified locations to perform in-stream work outside of specific state agency windows at individual waterbodies, which would be approved by state agencies prior to construction. We find that implementing these timing restrictions would minimize impacts on fish species in the area of the Project.

We expect streambeds and banks to quickly revert to preconstruction conditions. Transco's commitment to conduct restoration, bank stabilization, and revegetation efforts in accordance with its Procedures, and all applicable state and federal permits, would minimize the potential for erosion from the surrounding landscape. Adherence to Transco's Procedures would also maximize the potential for regrowth of riparian vegetation, thereby minimizing the potential for any long-term impacts associated with lack of shade and cover. All temporary work areas would be restored and allowed to revegetate to original conditions. No long-term impacts are anticipated after restoration of stream bottoms and regrowth of stream bank and aquatic vegetation. If vegetation maintenance during operation would be required along specific streambanks, impacts on fisheries would be minor. By implementing the above measures, we conclude that impacts on fisheries related to the Project would not be significant and would be sufficiently minimized.

4.4.2 Vegetation

Plant communities in the Project area were identified based on field observations conducted in 2019 in addition to interpretation of aerial imagery and other records. Major upland cover types affected by the Project include upland forest and open upland, as summarized in table 4.4.2-1. Table 4.4.2-2 describes the approximate acreage of upland vegetation communities that would be affected by the Project. Wetland vegetation communities that would be affected by the Project are discussed in section 4.3.3.

TABLE 4.4.2-1

Upland Vegetation Cover Types Associated with the Regional Energy Access Expansion Project

Vegetation Community	General Description	Common Species
Upland forest	Mixed Deciduous/Evergreen, Evergreen, Deciduous Hardwood Forest.	Dominant trees observed in this forest type include sugar maple, hemlock, black cherry, black walnut, American beech, birch species, oak species, and pine species.
Open upland	This vegetation community consists of all non-forested, non-wetland habitats, including agricultural lands (which includes pastureland), grassland, shrubland, residential, and existing pipeline right-of-way.	Agriculture lands predominantly used for crop production (e.g., corn, soybean, alfalfa, sunflower), specialty crops (e.g., vineyards, Christmas trees) or pasture/grazing land (fallow fields). In residential areas the existing rights-of-way consist primarily of maintained lawns and a limited amount of scrub-shrub communities. Existing pipeline rights-of-way are mowed on a regular basis to suppress woody plant growth.

Construction of the Project would impact 603.1 acres of upland vegetation, of which 306.9 acres (51 percent) consists of open upland vegetation communities, with the remaining 296.2 acres (49 percent) comprised of upland forest (see table 4.4.2-2). Of the 603.1 acres of upland vegetation affected by construction, 475 acres (79 percent) are associated with construction of the new pipeline facilities. Construction of new Compressor Station 201 would impact 15.3 acres of open upland vegetation, representing 2.5 percent of vegetation affected. Construction at the existing Compressor Station 515 would impact 18.6 acres of upland forest, representing 3.1 percent of vegetation affected. The temporary use of contractor yards would impact 50.9 acres of open upland vegetation and 0.2 acres of upland forest, totaling 8.5 percent of vegetation affected. The construction of access roads would impact 9.0 acres of open upland vegetation and 6.5 acres of upland forest, accounting for 2.9 percent of open upland vegetation and 2.2 percent of upland forest affected by construction.

Operation of the Project would impact 183.1 acres of upland vegetation, comprised of 77.2 acres of open upland and 105.9 acres of upland forest. Operation of the proposed Compressor Station 201 would permanently impact 15.3 acres of open upland, or 8.4 percent of the operational impact of the Project on upland vegetation.

We received comments regarding mitigation for the loss of habitat and recommending that Transco undertake voluntary mitigation for tree loss, with a specific suggestion to replace trees removed with native saplings at a 1:1 ratio. Transco would minimize impacts on upland forest by utilizing existing rights-of-way or previously disturbed, non-forested areas to the extent possible. Specifically, approximately 60 percent of Transco's proposed Regional Energy Lateral and 100 percent of the proposed Effort Loop would be collocated with existing utility rights-of-way. Transco would typically limit the width of new permanent right-of-way to 25 feet and would allow the ATWS to revert to woody vegetation. In addition, the proposed construction rights-of-way would overlap the existing, maintained permanent right-of-way. The new pipelines would be offset 25 feet where it is adjacent to Transco's existing right-of-way. Additionally, as is further discussed in section 4.4.2.4, Transco would develop a Replanting Plan that would include voluntary replanting of trees in forested temporary workspace that is greater than 15 feet from the pipeline centerline, with specific locations pending landowner approval.

TABLE 4.4.2-2

Upland Vegetation Affected by the Project (acres)

State/Facility	Open Upland		Upland Forest		Total	
	Construction	Operation	Construction	Operation	Construction	Operation
PENNSYLVANIA						
Regional Energy Lateral						
Pipeline [a, b]	95.8	30.0	185.3	74.2	281.1	104.2
Cathodic Protection	0.2	0.2	0.6	0.6	0.8	0.8
Access Roads	8.1	0.2	6.3	0.1	14.4	0.3
Contractor Yards [c]	0.8	0.0	0.2	0.0	1.0	0.0
Effort Loop						
Pipeline [a, b]	112.8	24.9	81.1	25.7	193.9	50.6
Cathodic Protection	0.1	0.1	0.2	0.2	0.3	0.3
Access Roads	0.9	0.4	0.2	0.0	1.1	0.4
Contractor Yards [c]	50.1	0.0	0.0	0.0	50.1	0.0
Aboveground Facilities [d]	17.0	6.1	21.3	5.1	38.3	11.2
Pennsylvania Subtotal	285.8	61.9	295.2	105.9	581.0	167.8
NEW JERSEY						
Aboveground Facilities [d]	20.6	15.3	1.0	0.0	21.6	15.3
New Jersey Subtotal	20.6	15.3	1.0	0.0	21.6	15.3
MARYLAND						
Aboveground Facilities [d]	0.5	0.0	0.0	0.0	0.5	0.0
Maryland Subtotal	0.5	0.0	0.0	0.0	0.5	0.0
Project Total	306.9	77.2	296.2	105.9	603.1	183.1

[a] Construction acres include all impacts associated with the pipeline right-of-way and additional temporary workspace. Installation of new mainline valves and modification of existing mainline valves would occur within the temporary construction workspace for the pipeline loops; therefore, no additional temporary impacts on land uses are provided for construction of the valves.

[b] Operation acres include impacts associated with the portion of the new permanent right-of-way located outside of the existing and currently maintained pipeline right-of-way, and the footprint of mainline valves. Following the completion of construction, operation of the valves would result in the permanent conversion of existing land uses to commercial/industrial land use category; operational impacts presented reflect this conversion.

[c] Areas used for contractor yards would be used during construction and would then be allowed to return to pre-construction condition; no operational impacts are anticipated.

[d] Acreage of vegetation impacts for aboveground facilities reflects the workspace both within and outside of the fence line for existing facilities. Operational impacts associated with the footprint of MLVs are included here; construction impacts for MLVs are included in totals for pipeline facilities.

Note: The totals shown in this table may not equal the sum of addends due to rounding.

4.4.2.1 Vegetation Communities of Special Concern

The Effort Loop would be within 0.25 mile of the Delaware State Forest in Pennsylvania; however, no direct or indirect impacts on vegetative resources on state forest land would be anticipated. No other vegetation communities of special concern have been identified.

We received a comment on the docket regarding the proximity of the Project to the Delaware Water Gap and concerns related to forest and water resource impacts. The Delaware Water Gap is a water gap on the border of New Jersey and Pennsylvania where the Delaware River cuts through a large ridge of the Appalachian Mountains. The gap constitutes the southern portion of the Delaware Water Gap National Recreation Area, which is a 40-mile section of the Delaware River and encompasses forested mountains, grassy beaches, and the water gap. The closest Project component (contractor yard CY-MO-001) is located 10.7 miles southwest of the Delaware Water Gap National Recreation Area; therefore, no impacts on the resources associated with this area would occur. No other vegetation communities of special concern have been identified.

We received a comment concerning impacts on mesic till barrens habitat within the Long Pond Nature Preserve. Transco confirmed this area within the Long Pond Nature Preserve is owned by Monroe County and The Nature Conservancy and Transco has secured easements from the owners to cross these parcels for the Project. Further, the PADCNR did not identify the mesic till barrens habitat as a vegetation community of special concern during consultation; however, Transco did consult with PADCNR regarding impacts to these conservation easement properties (see section 4.5.4.5).

4.4.2.2 Noxious Weeds and Other Invasive Plants

Transco obtained lists of noxious and invasive weeds that could be present from the Pennsylvania Department of Agriculture (PDA, n.d.), the PADCNR (n.d.), NJDEP (2004), New Jersey Invasive Species Strike Team (NJISST, 2018), and Maryland Department of Agriculture (2015; n.d.), and conducted field surveys for noxious and invasive weeds.

Transco documented noxious and invasive weeds during field surveys in 2020. The following noxious and/or invasive plant species were found at various locations along the pipeline routes and aboveground facilities sites in Pennsylvania: bull thistle (*Cirsium vulgare*), multiflora rose (*Rosa multiflora*), purple loosestrife (*Lythrum salicaria*), tree-of-heaven (*Ailanthus altissima*), poison hemlock (*Conium maculatum*), mile-a-minute (*Persicaria perfoliata*), Japanese knotweed (*Reynoutria japonica*). The following non-indigenous or invasive plant species were found at various aboveground facilities in New Jersey: Japanese honeysuckle *(Lonicera japonica)*, garlic mustard *(Alliaria petiolate)*, Autumn olive *(Elaeagnus umbellate)*, Russian olive *(Elaegnus angustifolia)*, mugwort *(Artemisia vulgaris)*, Japanese knotweed, Japanese stiltgrass *(Microstegium vimineum)*, reed canarygrass *(Phalaris arundinacea)*, mile-a-minute, multiflora rose, common reed (*Phragmites australis)*, and Oriental bittersweet (*Celastrus orbiculatus)*. No invasive plant species were identified at the Beaver Dam M&R station in Maryland.

We received comments regarding the threat of noxious weeds and exotic plants to groundwater recharge and biodiversity. The commentor recommended a vegetation management plan be prepared to address control of such plant intrusions during construction and operation. In accordance with applicable regulations, Transco has prepared an Invasive Species Management Plan (see table 2.3-1) that outlines measures to prevent, mitigate, and control the spread of noxious and invasive weeds during ground-disturbing activities associated with construction, and includes a monitoring program that would be implemented following construction and restoration. Some of the measures in the plan include:

- providing noxious weed management training to construction and inspection personnel;

- removing soil and vegetation from vehicles and machinery to prevent the transport of noxious weeds to other areas;

- proper disposal of collected soil and plant material;

- monitoring for invasive species following completion of construction after the first and second growing seasons, as applicable; and

- treating weed populations with appropriate methods (e.g., mechanical removal, herbicide application) to prevent their spread.

We have reviewed Transco's Invasive Species Management Plan and find it would minimize the threat of noxious and invasive weeds. In addition, the proposed rights-of-way represent a small area in comparison to the aquifer recharge area and the watershed as a whole; therefore, impacts, if any, on groundwater recharge from invasive species would be negligible. Groundwater resources are further discussed in section 4.3.1.

4.4.2.3 Pollinators

On June 20, 2014, President Barack Obama signed a Presidential Memorandum titled "Creating a Federal Strategy to Promote the Health of Honey Bees and Other Pollinators." According to the memorandum, "there has been a significant loss of pollinators, including honey bees, native bees, birds, bats, and butterflies, from the environment." The memorandum also states that, "given the breadth, severity, and persistence of pollinator losses, it is critical to expand federal efforts and take new steps to reverse pollinator losses and help restore populations to healthy levels." In response to the Presidential Memorandum, the federal Pollinator Health Task Force published a National Strategy to Promote the Health of Honey Bees and Other Pollinators in May 2015. This strategy established a process to increase and improve pollinator habitat.

Pollinator habitat in and adjacent to the Project area can be found in a variety of vegetation types. Common insect pollinators in the Project area include various species of bees, butterflies, and moths. The temporary loss of this habitat could increase the rates of stress, injury, and mortality experienced by honey bees and other pollinators.

Construction of the Project would temporarily impact about 332 acres of pollinator habitat. Transco would incorporate the following measures, included in the Pennsylvania Pollinator Protection Plan, to support foraging habitat for pollinators along the proposed rights-of-way:

- apply herbicides, if needed, in accordance with manufacturer specifications and applicable regulations to reduce spills or overspray;

- develop a revegetation/restoration plan in coordination with landowners and agencies that includes native and pollinator species; and

- implement an invasive species management plan to prevent the spread of invasive and noxious species.

We received a comment on the draft EIS that Transco should survey for globally rare pollinator species. The pollinator species listed by the commentor were not identified during consultations with federal and state resource agencies; however, as discussed above, Transco would implement measures to support pollinators along the proposed rights-of-way. Therefore, we conclude that measures to protect pollinator species have been appropriately incorporated into the Project.

4.4.2.4 General Impacts and Mitigation

Impacts on vegetation resources are classified based on the duration and significance of impacts. Temporary impacts generally occur during construction with vegetation returning to preconstruction conditions almost immediately after construction, whereas short-term impacts are those that require up to 3 years to return to preconstruction conditions. Long-term impacts require more than 3 years to revegetate, but conditions would return to their preconstruction state during the life of a project. Permanent impacts are those that modify vegetation resources to the extent that they would not return to preconstruction conditions during the life of a project.

Pipeline and Ancillary Facilities

The greatest impact on vegetation would be on forested areas because of the length of time required for woody vegetation to revert to its preconstruction condition. Construction in forested lands would remove mature trees in the construction right-of-way. In addition, the canopy overhanging the right-of-way may be trimmed as needed. Trees would be cut into lengths, chipped, and/or removed. The removal of mature trees could also result in secondary impacts such as increased erosion. Incremental fragmentation of upland forest habitat could occur due to the expansion of the existing rights-of-way where the pipelines are not adjacent to existing utilities in forested areas. The loss of forest habitat and the expansion of existing corridors could also decrease the quality of habitat for forest wildlife species, including alteration of habitat resulting from increased light levels into interior forest and a subsequent loss of soil moisture as a result of an expanded right-of-way, as discussed in section 4.4.3.2. Expansion of the existing corridor could also result in an increased opportunity for invasive plants to displace native species. After construction, forested vegetation would be allowed to recover within the construction right-of-way and ATWS; however, the impact in these areas would be long term.

We received a comment recommending that we consider disturbance of forest and forest soil ecosystem services lost as carbon sinks in our calculations and analysis. A carbon sink is any reservoir, natural or otherwise, that accumulates and stores some carbon-containing chemical compound for an indefinite period and thereby lowers the concentration of carbon dioxide (CO_2) from the atmosphere (e.g., plants, soil, the ocean). In forests, carbon is stored in live trees, standing dead trees, downed wood, the forest understory, and soils and can be transferred among these different pools and to the atmosphere. The U.S. Forest Service's Forest Inventory and Analysis program estimates that in the United States, forests and associated harvested wood products uptake the equivalent of more than 14 percent of economy-wide CO_2 emissions each year (U.S. Forest Service, 2021).

Due to the complexities of the natural carbon cycle, it is difficult to accurately quantify emissions (sources) and removals (sinks) from changes in land use and clearing of forested areas. In a natural ecosystem, there are carbon exchanges between the atmosphere and biosphere (carbon flux). In general, the interaction of factors such as climate, soil, and vegetation type influence carbon dynamics and duration of time carbon stays in an ecosystem. The carbon cycle involves many different processes including the uptake of atmospheric carbon by the growth and life processes of vegetation, decomposition of plant mass and dead organic matter (dead wood, leaves, etc.) resulting in release of carbon into the atmosphere, and biological processes that occur belowground in the soils (decomposition and respiration by microorganisms) that also result in release of carbon into the atmosphere. When a disturbance occurs in an ecosystem, such as clearing of the vegetation, these processes can be altered and lead to a change in the carbon flux between the ecosystem and the atmosphere.

Forests

Carbon storage is typically greater within forest land when compared to other lands due to the high amounts of carbon taken up by and stored in woody biomass. Disturbances, such as clearing of trees, can result in CO_2 and other GHG emissions to the atmosphere as the biomass that was removed would either decompose eventually or be burned (see section 4.8.6 for additional discussion of GHG). In 2019, forest land was the largest net sink in the U.S. land sector, with an estimated uptake of 583.3 million metric tonnes carbon dioxide equivalents (CO_2e) and the largest source of emissions was from the conversion of forest land, with estimated emissions of 125.3 million metric tonnes CO_2e (EPA, 2021f). The loss of carbon sink and emissions from forest clearing can be largely offset through regeneration of new forest as the trees use up CO_2 and sequester carbon in their growth. The Project would result in approximately 296 acres of upland forest clearing, but approximately 193 acres of this upland forest would be allowed to naturally regenerate as forest and replace some of the lost carbon sink. Although, this could take several years to decades. About 106 acres would be permanently maintained as grassy or developed areas for operation of the Project, which would result in a loss of a carbon sink. However, grasses take up CO_2 and utilize it to form new growth, including root mass (Zirkle et al., 2011). In this way, grassed areas may serve to provide some level of carbon sink to replace the loss.

To accurately quantify the net loss of carbon sink (the loss of annual carbon uptake), various factors would need to be considered, including, but not limited to, species structure and age of the forest, rate of carbon uptake by specific species, as well as how the area would be maintained post clearing to account for any carbon sink gain (i.e., if it would be revegetated with forest, scrub shrub, or herbaceous vegetation). To quantify the net emissions resulting from the forest clearing, again, many factors would need to be considered including species structure and age of the forest, the specific fate of the wood and belowground root structures to account for varying decomposition timelines and biogeochemical pathways (i.e., burning of the wood), and how the areas would revegetate post clearing to account for the offset. Because specific data are not readily available or known, it is difficult to conduct a meaningful quantitative analysis.

Soils and Forested Wetlands

In general, disturbance of soils can result in carbon emissions and removals, which vary depending on soil composition (mineral vs. organic), level of disturbance, and microclimate factors. Disturbances affect the amount, form and stability of soil organic carbon and the emission of GHGs (CO_2, methane [CH_4], and nitrous oxide [N_2O]) from forest ecosystems (Cai and Chang, 2020). Soil organic carbon stocks can change with disturbance if the net balance between carbon inputs and carbon losses from soil is altered. Inundated soils in PFO wetlands contain a large amount of organic matter that accumulates because decomposition is much slower due to low oxygen levels. The carbon stored in the organic soils will decompose at a quicker rate if the soils are drained, releasing CO_2 to the atmosphere (Armentano and Menges, 1986). Microclimate of the soils, including moisture and temperature, also affect the carbon flux in soils. Studies have shown that rates of decomposition of organic compounds by microorganisms are affected by temperature and moisture (Sierra et al., 2015).

Changes to the moisture content and temperature of the soil would occur during clearing, grading, and excavation, and movement of soils during construction of the Project. Additionally, cleared areas post construction would result in unvegetated areas of bare soils until revegetation is successful, which would take 1 to 3 years. During this time, soils would be subject to different microclimates and stages of revegetation, which could affect decomposition and carbon flux. Transco would implement measures to minimize impacts on soils, as discussed in section 4.2, including stabilization, avoidance of rutting and compaction, topsoil segregation, restoration of contours, and ensuring revegetation is successful. To avoid draining of wetland soils, Transco would install trench plugs at the entrance and exit of the pipeline through wetlands.

The Project would affect 4.6 acres of PFO wetlands, of which about 2.6 acres of PFO wetlands would be permanently converted to PSS or PEM wetlands for operation of the Project. The remaining acres would be allowed to revert back to PFO wetlands, but as stated previously, would take several years to decades to replace the carbon sink. Transco would implement measures in its Procedures to avoid or minimize impacts on forested wetlands, including restoration of contours and drainage patterns and monitoring all wetlands until they are fully restored as discussed in section 4.3.3.2. The disturbance of soils and forested wetlands could result in the release of some GHGs and there would be a net loss in carbon sink due to the permanent conversion of wetlands from PFO to PSS and PEM; however, it is difficult to meaningfully quantify the net effect that would occur due to lack of specific data and the intricacies of biological variables affecting the carbon cycle in soils and wetland ecosystems.

In conclusion, we acknowledge that there would be a net loss in carbon sink as a result of conversion of forested land (upland and PFO wetlands) to areas maintained for operation of the Project. We also note that the Project's impacts on soils may affect the carbon sink/source dynamics in the ecosystem. However, we determined that a meaningful quantitative analysis of the overall net effect is not practical when considering site-specific variables, available data, and the complexities of the natural carbon cycle.

Impacts on cultivated land would include the loss of crop production, likely for an entire growing season. Construction could also impact long-term productivity of agricultural lands by causing soil compaction and increased soil erosion and could introduce or spread invasive plant species. During operation, agricultural production could continue over the areas crossed by the new pipelines except where aboveground facilities have been modified or constructed. Open lands currently dominated by herbaceous growth would revegetate quickly, often within one growing season after seeding, and otherwise typically within 3 years, depending on several factors. Cleared scrub-shrub vegetation communities would likely require 3 to 5 years to regain their woody composition.

In general, impacts on vegetation resources would be minimized by collocating the pipeline facilities with existing rights-of-way, reducing the area affected by construction to include portions of the existing, maintained rights-of-way. Transco would further minimize impacts on upland vegetation by implementing the measures outlined in its Plan, including topsoil segregation and replacement, mitigation of compacted soils, and use of erosion controls. After construction, Transco would seed the affected areas using seed mixes recommended by the local agencies or organizations, or relevant landowner agreements. During operation and excluding agricultural land, Transco would be allowed to mow the permanent right-of-way no more than once every 3 years to clearly delineate the right-of-way for pipeline integrity purposes; however, a 10-foot-wide swath centered over the pipelines may be mowed more frequently to facilitate routine patrols and emergency access. In accordance with Transco's Plan, maintenance clearing would not be conducted between April 15 and August 31, to avoid impacts on nesting migratory birds (see section 4.4.4.1).

Impacts in agricultural areas would be further minimized by implementing measures described in Transco's Plan. As further discussed in section 4.5.2.1, these measures include segregation of topsoil, soil stabilization, soil compaction avoidance, protection of existing drainage tile and irrigation systems, preventing the introduction of weeds, and retaining existing soil productivity. By implementing these measures, most impacts on agricultural lands would be temporary to short-term because these areas are disturbed annually to produce crops and would typically return to their previous condition and use shortly following construction, cleanup, and restoration.

To minimize the spread of invasive species, Transco would implement its Invasive Species Management Plan. This plan outlines methods to prevent, mitigate, and control the spread of noxious and invasive weeds during ground-disturbing activities and are discussed further in section 4.4.2 above.

Aboveground Facilities, Access Roads, and Contractor Yards

Impacts on vegetation at existing and new compressor station sites, access roads, and contractor yards would be similar to those described for the pipeline facilities and would include the removal of existing vegetation, the potential for soil compaction and erosion, and the potential to introduce or spread invasive plant species. In general, impacts on open upland vegetation communities in temporary workspaces would be temporary or short-term, whereas impacts on upland forest in temporary workspaces would be long-term. Within the operational footprint of aboveground facilities, vegetation would be removed and replaced by buildings, other infrastructure, pavement, gravel, or mowed lawn, permanently impacting vegetation resources in these areas. Vegetation would be permanently impacted within the operating rights-of-way of new or modified access roads. Transco would not utilize or maintain the contractor yards after completion of construction. Therefore, most vegetation impacts associated with contractor yards would be temporary or short-term, although the removal of upland forest would be a long-term impact as the previously forested area would take decades to return to preconstruction conditions. Measures Transco would implement to minimize impacts on vegetation resources at aboveground facilities, access roads, and contractor yards would be similar to those it would implement for the pipeline loops, as discussed above.

In summary, construction and operation of the proposed facilities would result in temporary, short-term, long-term, and permanent impacts on open land (including agricultural land) and upland forest vegetation resources. However, we conclude that collocation of the pipeline facilities with existing maintained rights-of-way and implementation of our recommendation and the measures outlined in Transco's Plan and Procedures and Invasive Species Management Plan would adequately minimize impacts on upland vegetation resources and impacts would not be significant.

4.4.3 Wildlife

The Project would cross upland and wetland habitats that support a diversity of wildlife species. Wildlife species are directly dependent on the existing plant communities and occupy areas where suitable cover and/or habitat are present.

4.4.3.1 Existing Wildlife Resources

As described in the sections below, the proposed facilities would cross several distinct upland and wetland vegetation cover types. These include upland forest, open upland (i.e., grasslands, pasture, agricultural land, shrublands, residential areas, and maintained utility rights-of-way), PFO wetlands, PSS wetlands, and PEM wetlands. Each of these cover types provide nesting, cover, and foraging habitat for a variety of wildlife species. Table 4.4.3-1 identifies the terrestrial wildlife species common to these habitats. Other cover types, including open water and developed areas, also provide habitat for wildlife species. Impacts on aquatic resources are described in section 4.4.1.

Upland Forest

The upland forests in the area of the Project provide moderate to high-quality habitat for a variety of mammals, birds, amphibians, reptiles, and invertebrates. As a forest matures, cavity trees become more abundant; overstory trees produce more nuts, acorns, and fruit; and dead wood and leaf litter collect on the ground. Woodpeckers, black-capped chickadees, squirrels, and other small animals nest in cavity trees, and gray squirrels and wild turkey eat the acorns and hickory nuts produced by mature trees. Species as large as black bear and as small as the masked shrew forage for insects in dead wood on the ground, and amphibians such as newts and salamanders thrive in the moist environment created by the closed canopy overhead and the deep leaf litter underfoot. The successional stage of a tract of forest often determines the type of wildlife community found there (PennState Extension, 1997).

TABLE 4.4.3-1

Common Wildlife Species Occurring in Major Habitat Types Traversed by the Regional Energy Access Expansion Project

	Uplands			Wetlands			
Common Name	Upland Forest	Open Upland	Developed	PFO	PEM	PSS	Open Water
MAMMALS							
Black bear	X	--	--	--	--	X	--
Raccoon	X	X	X	X	--	--	--
Striped skunk	X	--	--	X	--	--	--
Gray squirrel	X	X	X	--	--	--	--
Eastern chipmunk	X	--	X	--	--	--	--
Opossum	X	X	X	--	--	X	--
White-tailed deer	X	X	--	X	--	X	--
Eastern cottontail	--	X	X	--	--	X	--
Meadow jumping mouse	--	X	--	--	--	X	--
Meadow vole	--	X	--	--	--	--	--
Woodland vole	X	--	--	--	--	--	--
Masked shrew	--	--	--	--	--	X	
Coyotes	--	X	--	--	--	--	--
Red fox	X	X	--	--	--	X	--
Beaver	--	--	--	X	X	X	X
Muskrat	--	--	--	X	X	X	X
Mink	--	--	--	X	X	X	X
BIRDS							
Song sparrow	X	--	--	X	--	--	--
Swamp sparrow	--	--	--	--	--	X	--
Black-capped chickadee	--	--	--	X	--	--	--
Common yellowthroat	--	--	--	X	X	X	--
Red-winged blackbird	--	--	--	X	X	X	--
Wild turkey	X	X	--	--	--	--	--
Mourning dove	--	X	X	--	--	--	--
Cooper’s hawk	X	--	--	--	--	--	--
Red-tailed hawk	X	--	--	--	--	--	--
Ruffed grouse	X	--	--	--	--	--	--
American robin	X	X	--	X	--	--	--
Wood duck	--	--	--	X	X	--	--
AMPHIBIANS							
Green frog	--	--	--	X	X	--	X
Bullfrog	--	--	--	--	X	--	X
Gray tree frog	X	--	--	X	--	X	--
Wood frog	--	--	--	X	--	X	--
Eastern American toad	X	X	--	--	--	X	--
Northern dusky salamander	--	--	--	X	X	--	X
Redback salamander	X	--	--	X	X	X	X
Spotted salamander	X	--	--	X	X	--	--
Spring peeper	--	--	--	X	X	--	X
Red spotted newt	--	--	--	--	--	--	X
REPTILES							
Northern water snake	--	--	--	X	X	X	X
Painted turtle	--	--	--	X	X	--	X

TABLE 4.4.3-1 (cont'd)							
Common Wildlife Species Occurring in Major Habitat Types Traversed by the Regional Energy Access Expansion Project							
	Uplands			Wetlands			
Common Name	Upland Forest	Open Upland	Developed	PFO	PEM	PSS	Open Water
Spotted turtle	--	--	--	X	X	--	--
Snapping turtle	--	--	--	X	X	--	X
Timber rattlesnake	X	--	--	--	--	--	--
Northern ring neck snake	X	--	--	--	--	--	--
Ribbonsnake	--	--	--	--	--	X	--
Eastern garter snake	--	X	--	X	--	X	--

Sources: PGC, 2021; Pennsylvania Mammal Atlas, n.d.; Pennsylvania Herp Identification Online Guide to Reptiles and Amphibians, 2021; USDA, 2006; ebird, 2021.

Open Upland

This cover type category covers all non-forested upland vegetation, including grasslands, pasture, agricultural land, shrublands, residential areas, and maintained utility rights-of-way. Although row crops generally provide poor to moderate cover habitat, they often provide forage for several species. Pastures also provide grazing habitat for species such as white-tailed deer. Hayfields, small grains, fallow and old fields, pastures, and idled croplands provide nesting habitats for grassland-nesting birds (USDA, 1999). On landscapes where intensive row crop agriculture is the dominant land use, these strip habitats are extremely important for grassland birds and other wildlife. Grassland birds rely on open fields for nesting and foraging. Rights-of-way for utility lines maintained in early successional communities provide valuable nesting and foraging habitats for grassland bird species (USDA, 1999). Grasslands and old fields can be utilized as foraging and denning habitat by mammals and provide nesting and breeding habitat to upland game birds such as pheasants. Shrublands provide sources of food and nesting sites for various birds, as well as cover for invertebrates, reptiles, and amphibians. Open fields and shrub cover provide habitat for small mammal species such as mice, rabbits, and voles, which make them prime hunting grounds for predator species such as foxes, coyotes, and raptors.

Developed Areas

Developed lands in the area of the Project consist of industrial/commercial and road crossings. These types of lands tend to provide minimal habitat for wildlife species. Wildlife diversity is often limited to species that are adapted to human presence and the associated anthropogenic changes to the landscape, such as paved and landscaped areas.

Wetlands

PFO wetlands are dominated by woody vegetation and provide a diverse assemblage of vegetation and an abundance of food and water sources for wildlife. The forested wetland canopy is typically dominated by red maple, which is a highly desirable wildlife browse. Mammals such as mink, muskrat, raccoon, and white-tailed deer use these areas as foraging habitat. Many waterfowl and wading birds use forested wetlands adjacent to scrub-shrub and emergent wetlands for nesting and foraging. Forested wetland communities are also important habitats for reptiles and amphibians, including the American bullfrog, green frog, and various salamander species.

PEM wetlands provide important habitat for waterfowl, muskrats, herons, frogs, and salamanders. Bird species such as red wing blackbird and grey catbird also utilize emergent wetland habitat.

PSS wetlands provide cover for invertebrates, reptiles, and amphibians. Scrub-shrub cover provides habitat for small mammal species such as mice and rabbits, which also makes it prime hunting grounds for predator species.

Open Water

The open water cover type includes the creeks, streams, and rivers crossed by the Project. In addition to the aquatic resources discussed in section 4.4.1, the open water cover type provides important foraging and breeding habitat for various terrestrial species including waterfowl, reptiles, amphibians, and some mammals.

4.4.3.2 General Impacts and Mitigation

We received a comment noting that the EIS should include a discussion of areas that would be impacted by the Project that are an essential functional portion of a species' overall habitat requirements, such as nesting or feeding, and therefore could not or would be very difficult to replace. As is discussed above and in the sections below, the Project would not impact any vegetation communities of special concern, and would not permanently remove any unique habitat types. Given the nature of the species and habitat present, the results of the surveys conducted and agency consultation, and the measures that Transco would implement as part of the Project, impacts on wildlife would not be significant.

Pipeline and Ancillary Facilities

Potential impacts on wildlife from the new pipeline facilities include the temporary displacement of wildlife from the rights-of-way. It is expected that most wildlife, such as birds and larger mammals, would temporarily relocate to adjacent available habitat in response to the noise as construction activities commence. Construction could result in the mortality of less mobile animals such as small rodents, reptiles, amphibians, and invertebrates, which may be unable to escape the immediate construction area. However, displacement impacts would be minor and short term as wildlife would be expected to return and colonize impacted areas once construction is complete.

Construction activities would require clearing of vegetation from the right-of-way, temporarily decreasing the amount of wildlife habitat and reducing protective cover and foraging habitat in the immediate construction area. Depending on the season, construction could also disrupt bird courting or nesting, including destruction of nests, eggs, and chicks within the construction work area. However, habitat loss would be a short-term impact (except along the permanently maintained pipeline rights-of-way) as all habitats would eventually revert to pre-construction conditions in temporary construction workspace and ATWS, thus remaining available for wildlife use and watershed functions would return.

We received comments about forest fragmentation, the creation of microclimates, and impacts on interior forest species, such as black-throated blue warblers, salamanders, and some woodland flowers that require shade, humidity, and tree canopy protection which only deep forest environments can provide. Forest fragmentation occurs when interior forest is broken up and changes through removal of canopy species. Fragmentation generally affects birds through dispersal barriers, absence of suitable microhabitats, small population size, and edge effects (Degraaf and Healy, 1990). Effects on wildlife from fragmentation have been studied most via migratory birds. Edge effects can result in interactions between birds that nest in the interior of forests and species that inhabit surrounding landscape, typically lowering the reproductive success of the interior species. Other evidence suggests that certain mammals, amphibians, reptiles, and plants are also adversely affected by forest fragmentation. Species that require large tracts of unbroken forested land may be forced to seek suitable habitat elsewhere. The loss of forest habitat, expansion of existing corridors, and the creation of open early successional and induced edge habitats could decrease the quality of habitat for forest interior wildlife species in a corridor much wider than the actual cleared right-of-way. The distance an edge effect extends into a woodland is variable, but many studies point to at least 300 feet (Rodewald, 2001; Jones et al., 2000; Ontario Ministry of Natural Resources, 2000; Robbins, 1988; Rosenberg et al., 1999). Edge impacts within this distance could include an increase in light and temperature levels on the forest floor and the subsequent reduction in soil moisture, resulting in habitat that would no longer be suitable for species that require these specific habitat conditions, such as salamanders and amphibians. Habitat alterations could affect the fitness of some species and increase competition both within and between species, possibly resulting in an overall change in the structure of the forest community.

Interior forests were identified by Transco using 2019 aerial imagery of the Project area. Transco delineated forest patches 225 acres or greater crossed by the pipeline facilities, then applied a 300-foot buffer on the forest patch edges to identify areas ("blocks") of interior forest. Based on Transco's analysis, the Project would impact two blocks of interior forest. The Regional Energy Lateral would impact a total of 2.2 acres of an approximately 3,919-acre interior block, and Compressor Station 515 would impact 9.2 acres of an approximately 31.3-acre block of interior forest.

The landscape along the Regional Energy Lateral and Effort Loop is generally fragmented by existing roads, utility rights-of-way, residential and commercial development, pastures, and agriculture. As previously noted in section 4.4.2, 60 percent of Transco's proposed Regional Energy Lateral and 100 percent of the proposed Effort Loop would be collocated with existing utility rights-of-way, which would reduce fragmentation effects. During operation, previously forested habitat (including forested wetlands) would not reestablish within the permanent right-of-way for the pipelines. The principal impact would be a shift in species use from those favoring forest habitat to those using either edge habitat or areas that are more open. It is not likely that the relatively small widening (generally an additional 25 feet) of existing permanently cleared rights-of-way would impede the movement of most forest interior species. The impact of the permanent conversion of forested habitat to non-forested habitat would be minimized by installing most of the proposed loops adjacent to existing rights-of-way, which is maintained in an herbaceous state.

We received a comment recommending that Transco undertake voluntary mitigation for tree loss, with a suggestion to replace trees removed with native saplings at a 1:1 ratio. Transco would develop a Replanting Plan that would include voluntary replanting of trees in forested temporary workspace that is greater than 15 feet from the pipeline centerline, with specific locations pending landowner approval. Transco anticipates replanting at a density of 435 trees per acre and including a variety of native sapling species, such as red maple (*Acer rubrum*), black gum (*Nyssa sylvatica*), pin oak (*Quercus palustris*), silver maple (*Acer saccharinum*), American sycamore (*Platanus occidentalis*), swamp white oak (*Quercus bicolor*), yellow poplar (*Liriodendron tulipifera*), and black cherry (*Prunus serotina*).

The degree of construction-related impacts on wildlife that inhabit wetlands would depend on the species and the time of year of construction. Highly mobile wetland species, such as beavers, mink, muskrat, and birds, would likely vacate the area during construction. Amphibians and reptiles have smaller home ranges and hibernate in soft wetland soil. Some limited mortality to these species could occur; however, the silt-fence barrier erosion control device, erected and maintained to reduce erosion, would also act as an exclusionary device and keep these species, along with small mammals, out of the active work area in wetland areas.

Aboveground Facilities

Like the impacts discussed above for the pipeline activities, construction of new and modifications to existing compressor stations or abandonment of aboveground facilities could result in the mortality of less mobile animals such as small rodents, reptiles, amphibians, and invertebrates unable to escape the immediate construction area. In addition, some wildlife would likely be permanently displaced as a result of habitat conversion to non-vegetated and/or impervious cover (i.e., slab, gravel, aboveground structures) or maintained vegetation (i.e., ornamentals and maintained lawn), and the erection of security fences around the site.

We received comments regarding the effects on wildlife due to noise, light, and heat from operation of the aboveground facilities. The effects of noise on wildlife during construction of Compressor Station 201 would be similar to that described for pipeline construction. During operation, Compressor Station 201 would generate noise on a nearly continuous basis, which could impact nearby wildlife as discussed below.

Effects on wildlife from chronic noise vary by species (Barber et al., 2009; Francis et al., 2011a, 2011b; Francis et al., 2012; Blickley et al., 2012). The number of individual birds present near oil and gas infrastructure has been shown to decline with proximity to the facility, but reproductive success was higher than expected, seemingly due to a proportionate decline in the presence of nest predators (Francis et al., 2011a). In another instance, increased noise levels from oil and gas infrastructure appeared to reduce reproductive success, potentially due to an inability of the females of the species to adequately hear male courtship songs (Habib et al., 2006). Another study concluded that species may be able to adjust to chronic noise by changing their vocalizations in ways that would allow them to be better heard (Francis et al., 2011b). Generally, bat species are able to disperse away from disturbance; however, construction activities can contribute to the loss of roosting and foraging habitat, cause noise and vibration disturbance to hibernating bats, and nighttime lighting can also disturb foraging bats. Section 4.4.4.3 provides a discussion of potential impacts and conservation measures for federal and state-listed bat species that have the potential to occur in the Project area.

Transco would implement various noise mitigation measures at Compressor Station 201, such as using high-density insultation for walls/roof, turbine exhaust silencer system, blowdown silencers, and acoustical pipe insulation for outdoor piping. The noise levels to which wildlife would be exposed beyond the compressor station property boundaries would vary based on the distance from the facility. A full description of the noise impacts associated with operation of Compressor Station 201 is provided in section 4.9.3. Based on Transco's proposed noise mitigation measures and the representative wildlife species near Compressor Station 201, in the years following initial construction, birds and other wildlife would either become habituated to the operational noise associated with the compressor station or move into similar available habitat farther from the noise source. As such, the effects on wildlife due to noise emissions would be minimal and highly localized.

Construction of Compressor Station 201 would require the installation of exterior lighting at the main gates, yards, and all building entry and exit points of the facility. Transco would limit outdoor lighting to the minimum amount they require for security purposes. The lighting would be positioned downward and comply with OSHA standards for lighting.

Construction and operation of the Project would affect local and regional air quality. Ambient air quality is protected by federal and state regulations. Section 4.8.2 summarizes the federal and state air quality regulations that are applicable to the proposed facilities. Air quality impacts from operation of the Projects' compressor stations would be minimized by the use of equipment, emissions controls, and operating practices that meet or exceed BMPs. Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be minimized during installation and operation of the Projects' compressor units.

Further, the effects of heat on wildlife during operation of the Project would be mainly associated with the combustion emissions from the new compressor station stacks. The exhaust stacks would be located within the developed area of the compressor station facility, with the closest stack located approximately 140 feet from the post-construction tree line. While the risk is low, it is possible for birds to enter into the exhaust stream. Due to the industrial nature of the compressor station (increased noise, human activity, and light during nighttime hours) and distance between the exhaust stack and nearest tree line, we conclude that the potential for exhaust from the compressor station to significantly impact wildlife is low.

In May 2018, the PDA issued an Order of Quarantine and Treatment for the spotted lanternfly (a non-native insect) for select counties in Pennsylvania, including Luzerne, Monroe, Northampton, York, and Chester Counties in the Project area. As discussed further in Transco's Invasive Species Management Plan, Transco would adhere to the requirements of the Order of Quarantine and Treatment; including proper cleaning of equipment and providing training to construction and inspection personnel on the signs of invasive insects. Further, Transco would dispose of vegetation removed in areas identified as having invasive insects and/or forest disease in accordance with all applicable regulations, requirements, and/or Orders of Quarantine and would require that construction contractors obtain an operation Permit from the PDA and training from the Pennsylvania University Cooperative Extension to ensure understanding of the quarantine requirements.

Contractor Yards and Access Roads

Areas used for contractor yards and temporary access roads would be affected during construction only, but no operational impacts would occur. As such, impacts on wildlife species at or near contractor yards and temporary access roads would be like those described above for pipeline construction.

As discussed above, some access roads would be retained in their modified condition for future access during operation of the pipelines, which would permanently convert open upland and upland forest to developed lands. Some wildlife could be permanently displaced in these areas due to habitat conversion to non-vegetated and/or impervious cover.

In conclusion, construction and operation of the Project would result in short- and long-term impacts on wildlife and wildlife habitat. These impacts are expected to be minor and not significant given the mobile nature of most wildlife in the area, the availability of similar habitat adjacent to and near the Project, and the compatible nature of the restored right-of-way with species occurring in the area. These impacts would be minimized by collocating the proposed pipelines to a large extent with existing maintained rights-of-way, and by implementing the restoration methods outlined in Transco's Plan.

4.4.4 Protected Species

We received a comment noting that the scope of study for impacts on threatened, endangered, and rare species cannot be limited to the right-of-way. As shown in the following discussions, Transco conducted surveys as requested by the federal and state agencies with jurisdiction over the protected species known to occur in the Project area, following the species-specific survey protocol provided by those agencies and/or using a survey plan reviewed and approved by the appropriate agency.

Migratory Birds

Migratory birds are species that nest in the United States and Canada during the summer and then migrate to and from the tropical regions of Mexico, Central and South America, and the Caribbean for the non-breeding season. Migratory birds are protected under the MBTA (16 U.S.C. 703-711). The MBTA, as amended, prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, or nests unless authorized under a FWS permit. Bald and Golden Eagles are additionally protected under the BGEPA (16 U.S.C. 668-668d). Executive Order 13186 (66 CFR 3853) directs federal agencies to identify where unintentional take is likely to have a measurable negative effect on migratory bird populations and to avoid or minimize adverse impacts on migratory birds through enhanced collaboration with the FWS. The Executive Order states that emphasis should be placed on species of concern, priority habitats, and key risk factors, and that focus should be given to addressing population-level impacts.

On March 30, 2011, the FWS and the Commission entered into a *Memorandum of Understanding Between the Federal Energy Regulatory Commission and the U.S. Department of the Interior United States Fish and Wildlife Service Regarding Implementation of Executive Order 13186, "Responsibilities of Federal Agencies to Protect Migratory Birds"* (MOU) that focuses on avoiding or minimizing adverse impacts on migratory birds and strengthening migratory bird conservation through enhanced collaboration between the two agencies. This voluntary agreement does not waive legal requirements under the MBTA, BGEPA, ESA, NGA, or any other statutes, and does not authorize the take of migratory birds.

A variety of migratory bird species, including songbirds, raptors, and waterfowl utilize the habitat found within the area of the Project. The FWS established Birds of Conservation Concern (BCC) lists for various regions in the country in response to the 1988 amendment to the Fish and Wildlife Conservation Act, which mandated the FWS to identify migratory nongame birds that, without additional conservation actions, were likely to become candidates for listing under the ESA. The BCC lists, updated in 2021, are divided by regions. The Project crosses Bird Conservation Regions 28, 29, and 30; however, due to the limited amount of suitable habitat for BCC in the New Jersey Project area, table 4.4.4-1 below focuses on Bird Conservation Region 28, which addresses the Project facilities in Pennsylvania.

TABLE 4.4.4-1

Bird Conservation Region 28
Birds of Conservation Concern Potentially Occurring within the Project Area

Species	Primary Breeding Habitat
Bicknell's Thrush	Disturbed or stunted mountaintop forests
Black-billed Cuckoo	Dense woodlands and thickets with deciduous and evergreen trees, often near water
Black-capped Chickadee (Appalachian)	Deciduous and mixed deciduous-evergreen forests, especially near forest edges
Bobolink	Tall grasslands, uncut pastures, overgrown fields and meadows, prairies
Canada Warbler	Mixed conifer and deciduous forests with a shrubby understory
Cerulean Warbler	Mature upland oak woods
Chimney Swift	Urban and suburban areas
Chuck-will's-widow	Oak and pine woodlands
Common Nighthawk (Lesser)	Open areas such as gravel bars, forest clearings, coastal sand dunes, or sparsely vegetated grasslands
Eastern Whip-poor-will	Open woodlands
Golden-winged Warbler	Abandoned fields with small saplings
Henslow's Sparrow	Ephemeral grasslands
Kentucky Warbler	Woodland undergrowth
Northern Saw-whet Owl	Woodlands with dense undergrowth of conifers or shrubs
Prairie Warbler	Old fields/pastures with young trees
Prothonotary Warbler	Wooded swamps
Red-headed Woodpecker	Open woodlands with scattered trees
Rusty Blackbird [a]	N/A - Non-breeding
Wood Thrush	Moist, lowland deciduous forest
Yellow-billed Cuckoo (Eastern)	Dense, deciduous woodland stands

[a] This species is non-breeding in the bird conservation regions crossed by the Project.

Important Bird Areas

Important Bird Areas (IBAs) are sites that provide essential habitat for one or more species of bird. IBAs include sites for breeding, wintering, and/or migrating birds. IBAs may cover a few acres or thousands of acres, but usually they are discrete sites that stand out from the surrounding landscape. IBAs may include public or private lands, or both, and they may be protected or unprotected (National Audubon Society, n.d.-a). The FERC and FWS MOU requires that agencies and companies identify measures to protect, restore, and manage, as practicable, IBAs and other significant bird sites that occur on lands impacted by a project.

The Effort Loop would cross approximately 2.1 miles of the Long Pond Preserve IBA from MPs 54.5 to 56.6. The Long Bird Preserve IBA is a 19,586-acre area that is an unusual ecosystem with both wet-adapted and dry-adapted plants and includes the following public lands: The Nature Conservancy's Adams Swamp, Lost Lakes, Long Pond, Long Pond Nature Preserve, and State Game Lands #38 (National Audubon Society, 2021). These public lands are discussed in section 4.5.4 of this EIS. This IBA is a macro-site containing till barrens, northern hardwoods and boreal conifer forests, wetlands, and agricultural fields (PGC, 2014). Bird species found in this area include the northern harrier, northern waterthrush, osprey, ovenbird, alder flycatcher, black-and-white warbler, purple finch, blackburnian warbler, red-breasted nuthatch, blue-headed vireo, scarlet tanager, bobolink, veery, pine warbler, American bittern, prairie warbler, cedar waxwing, white-throated sparrow, eastern towhee, wood duck, golden-winged warbler, great blue heron, magnolia warbler, and Nashville warbler. Construction of the Effort Loop would impact a total of 27 acres of habitat within the Long Pond Preserve IBA, of which 8.8 acres would be permanently impacted (i.e., forest converted to herbaceous cover). The proposed route would be collocated with the existing pipeline corridor to further minimize tree clearing through this habitat.

General Impacts and Mitigation

The potential impacts of the Project on migratory birds, including BCC-listed birds, would include the temporary and permanent loss of habitat associated with the removal of existing vegetation. The greatest potential to impact migratory birds would occur if construction activities such as grading, tree clearing, and construction noise take place during the nesting season. This could result in the destruction of nests and mortality of eggs and young birds that have not yet fledged. Construction would also reduce the amount of habitat available for resources such as foraging and predator protection for migratory birds and would temporarily displace birds into adjacent habitats, which could increase the competition for food and other resources. This in turn could increase stress, susceptibility to predation, and negatively impact reproductive success. The temporary loss of upland forest and forested wetlands associated with the pipeline facilities (see tables 4.3.3-1 and 4.4.2-2) would present a long-term impact for migratory birds that depend on forested land. Noise and other construction activities could affect courtship and breeding activities, including nesting and the rearing of young. Clearing and grading would also temporarily remove nesting and foraging habitat and could destroy occupied nests resulting in the mortality of eggs and young if these activities are done during the nesting season.

Migratory birds, including BCC-listed birds, could also be affected during operations that permanently convert upland forested land and forested wetland to an herbaceous state. The reduction in available forest habitat could result in increased competition, a potential increase in parasitic bird species, edge effects (as discussed in section 4.4.3.2), and ongoing disturbances associated with periodic mowing and other right-of-way maintenance activities.

In addition, potential impacts specific to migratory birds include loss of habitat and injury or disorientation due to artificial illumination. Many migratory birds use natural light from the sun, moon, and stars for navigation. Artificial lighting such as that associated with permanent aboveground facilities or used during 24-hour construction activities can hide natural light sources, having unknown effects on birds at the population level. Fatalities to avian species due to artificial light are well documented. Avian fatalities are associated with attraction to light sources, especially in low light, fog, and when there is a low cloud ceiling (Patterson, 2012).

To avoid or reduce construction-related impacts on migratory birds, Transco has developed a Migratory Bird Plan (see table 2.3-1), which outlines avoidance and minimization measures that Transco would implement, including avoiding clearing activities in key habitat areas for migratory birds from April 1 through July 31 (i.e., breeding window for the BCC species that have the potential to breed in the Project area). Transco considered using a trenchless crossing within the Long Pond Preserve IBA but determined the geology in the area would not support a 12,000-foot horizontal directional drill (HDD) or Direct Pipe® crossing. Transco also evaluated the potential to conduct multiple shorter trenchless crossings but determined the combined workspace and tree clearing that would be required for equipment set up and operation at each entry and exit point would exceed that of the currently proposed workspace. The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. As noted above, Transco would collocate the pipeline route with an existing cleared corridor to the maximum extent possible and avoid tree clearing during the most sensitive part of the nesting bird breeding season and would develop a Replanting Plan that would include voluntary replanting of trees in forested temporary workspace that is greater than 15 feet from the pipeline centerline, pending landowner approval.

Transco would replace/relocate one communication tower at existing Compressor Station 515. Migratory birds are known to collide with towers during migration and could become confused or disoriented by lighting or fly directly into the tower or guy wires during nighttime migrations (FWS, 2021a). Birds may also use the tower to build nests or as perches, which could be impacted by maintenance activities occurring during operation. The FWS has developed Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning to reduce the risk of bird mortality at communication towers (FWS, 2021b). Transco would adopt the following FWS Recommended Best Practices:

- communication towers would be 199 feet or less above ground level;
- utilize free-standing towers, free of guy wires;
- utilize the minimum amount of pilot warning and obstruction avoidance lighting required by the Federal Aviation Administration, which Transco has indicated would consist of a pair of red LED flashing beacons at the mid-point of the tower and a red LED flashing beacon at the top of the tower; and
- security lighting needed for the tower would be down-shielded and motion-activated.

Construction of Compressor Station 201 would require the installation of exterior lighting at the main gates, yards, and all building entry and exit points of the facility. Transco would limit outdoor lighting to the minimum amount they require for security purposes. The lighting would be positioned downward and comply with OSHA standards for lighting.

During operation of the Project, vegetative maintenance clearing would occur outside of the migratory bird nesting season in accordance with the Migratory Bird Plan and in accordance with Transco's Plan. Additionally, the potential loss of nests and adult birds relocating to avoid construction would be an impact of limited duration that would not result in a substantial or long-term change in migration patterns through the area nor constitute a population-level impact, as areas not maintained for operation would be allowed to return to preconstruction conditions. Based on this, the additional mitigation measures that Transco would adopt for the communication towers at Compressor Station 515, and that the new pipeline facilities are largely collocated with existing rights-of-way, we conclude that the Project would not have a significant impact on migratory birds.

4.4.4.1 Bald and Golden Eagle Protection Act

The bald eagle is a large bird of prey whose range covers virtually all of North America. Although no longer federally listed under the ESA, the bald eagle is protected under the BGEPA and the MBTA. The BGEPA and MBTA prohibit killing, selling, or harming eagles or their nests, and the BGEPA also protects eagles from disturbances that may injure them, decrease productivity, or cause nest abandonment.

Optimal roosting, foraging, and breeding habitats for the bald eagle include areas near waterbodies, such as lakes, rivers, and forested wetlands. Bald eagles typically prefer large trees for roosting and nesting. Bald eagles can be sensitive to human activity and disturbance, and they may abandon otherwise suitable habitat if disturbance is persistent (Fraser et al., 1985).

We received comments regarding impacts on nesting bald eagles. The Project was reviewed using the FWS' bald eagle mapping tool to identify known bald eagle nests within 1 mile of the Project facilities in Pennsylvania. No known bald eagle nests were documented within 1 mile of the Project facilities in Pennsylvania. The NJDEP search results identified bald eagle foraging habitat within the immediate vicinity of the Project facilities in New Jersey, but no known nests were identified. Transco would adhere to the recommendations included in the FWS National Bald Eagle Management Guidelines if any bald eagle nests are identified near the Project.

As discussed further in section 4.3.3.2, Transco proposes to utilize two offsite wetland mitigation sites to offset wetland impacts associated with the Project; one located in Northampton County (Perin Mitigation Site) and the other in Luzerne County (Grajewski Mitigation Site). The proposed mitigation plans include enhancement of existing wetlands with tree and shrub plantings. Transco submitted a Pennsylvania Natural Diversity Inventory (PNDI) Environmental Review for the proposed Perin Mitigation Site. The PNDI receipt noted that the site is in proximity to a known bald eagle nest and requested Transco complete the Bald Eagle Project Screening Form and implement the measures identified on the form. Transco completed the Bald Eagle Project Screening Form and committed to the avoidance measures.

4.4.4.2 Federal Threatened and Endangered Species

Federal agencies are required under section 7 of the ESA, as amended, to ensure that any actions authorized, funded, or carried out by the agency would not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of the designated critical habitat of a federally listed species. As the lead federal agency authorizing the Project, FERC is required to consult with the FWS to determine whether federally listed endangered or threatened species or designated critical habitat are found in the vicinity of the Project, and to evaluate the proposed action's potential effects on those species and/or critical habitats.

For actions involving major construction activities with the potential to affect listed species or designated critical habitat, the lead federal agency must report its findings to the FWS in a Biological Assessment for those species that may be affected. If it is determined that the action is likely to adversely affect a listed species, the federal agency must submit a request for formal consultation to comply with section 7 of the ESA. In response, the FWS would issue a Biological Opinion detailing whether the federal action would jeopardize the continued existence of a listed species or result in the destruction or adverse modification of designated critical habitat.

Although proposed and under review species and proposed critical habitat do not receive federal protection through the ESA, we considered the potential effects on these species and habitats so that section 7 consultation could be facilitated in the event one or more of these species become listed before or during Project construction. Should a federally listed, proposed, petitioned, or candidate species be identified during construction that has not been previously identified during field surveys or assessed through consultation, and Project activities could adversely affect the species, Transco would be required to suspend the construction activity and notify the Commission and FWS of the potential affect. The construction activity could not resume until the Commission completes its consultation with the FWS.

Transco, acting as the FERC's non-federal representative for the purpose of complying with section 7 of the ESA (18 CFR § 380.13), initiated informal consultation with the Pennsylvania Field Office of the FWS on February 4, 2020, and the Chesapeake Bay Field Office of the FWS and the New Jersey Ecological Services Field Office of the FWS on July 27, 2020 regarding federally listed threatened or endangered species potentially occurring in or near the Project area. The FWS identified six federally listed threatened or endangered species (Indiana bat, northern long-eared bat, bog turtle, red knot, northeastern bulrush, and swamp pink) known to occur in the Project area. According to the FWS' National Listing Workplan, two additional species under review for federal listing (little brown bat and tricolored bat) are also known to occur in the Project area. Based on the potential listing schedule for these two species and the proposed construction schedule, we considered the potential effects on these species and habitats so that section 7 consultation could be facilitated in the event one or more of these species become listed before or during Project construction. These species, their protection status, and their potential location in the Project area are summarized in table 4.4.4-3 and discussed below.

TABLE 4.4.4-3

Federally Listed Species Known or Potentially Occurring within the Project Area

Common Name *Scientific Name*	Federal Status [a]	Pipeline Facilities Regional Energy Lateral	 Effort Loop	Aboveground Facilities	Determination [b]
Northern long-eared bat *Myotis septentrionalis*	T	X	X	X – PA, NJ	NLAA
Indiana bat *Myotis sodalis*	E	X	X	X – PA, NJ	NLAA
Northeastern bulrush *Scirpus ancistrochaetus*	E	X	X	X – PA	NLAA
Bog turtle *Clemmys muhlenbergii*	T	--	X	X – PA, NJ	NLAA
Red knot *Calidris canutus rufa*	T	--	--	X – NJ	NLAA
Swamp pink *Helonias bullata*	T	--	--	X – NJ	NLAA
Little brown bat *Myotis lucifugus*	Under Review	X	--	X – PA, NJ	N/A
Tricolored bat *Perimyotis subflavus*	Under Review	X	X	X – PA, NJ	N/A

[a] T = Threatened
E = Endangered
[b] NLAA = Not Likely to Adversely Affect
NE = No Effect
N/A = Not Applicable (not yet listed or proposed under the ESA)

In correspondence dated July 29, 2020 the Chesapeake Bay Field Office of the FWS concluded that except for occasional transient individuals, no federally proposed or listed endangered or threatened species are known to exist within the Project area in Maryland and no further section 7 consultation with the FWS is required for the Project activities in Maryland (i.e., the Beaver Dam M&R Station). Thus, consultation for the portion of the Project in Maryland is complete and impacts on federally listed species in Maryland are not discussed further in this section.

In correspondence dated June 4, 2021, the New Jersey Ecological Services Field Office of the FWS concurred with Transco's determination that the Project *may affect, but would not adversely affect* the northern long-eared bat, Indiana bat, swamp pink, and red knot in New Jersey; thus, consultation for the Project components in New Jersey is complete. Our informal section 7 consultation with the Pennsylvania Field Office of the FWS is ongoing. To comply with section 7 of the ESA, we are requesting that the FWS consider this final EIS as our Biological Assessment for the Project and request their concurrence with the determinations herein.

As discussed further in section 4.3.3.2, Transco proposes to utilize two offsite wetland mitigation sites to offset wetland impacts associated with the Project; one located in Northampton County (Perin Mitigation Site) and the other in Luzerne County (Grajewski Mitigation Site). The proposed mitigation plans include enhancement of existing wetlands with tree and shrub plantings. Transco submitted a PNDI Environmental Review for the proposed Perin Mitigation Site. The PNDI receipt requested a bog turtle Phase 1 habitat survey for the Project, and noted that the site is in proximity to a known bald eagle nest and requested Transco complete the Bald Eagle Project Screening Form and implement the measures identified on the form. The bog turtle is discussed in further detail below and the bald eagle is discussed further in section 4.4.4.

Transco submitted a PNDI Environmental Review for the proposed Grajewski Mitigation site on September 25, 2020. The PNDI receipt indicated that impacts on federally listed, proposed, or under review species would not be anticipated.

Northern Long-eared Bat

The northern long-eared bat was federally listed as threatened on May 4, 2015 and is known to or believed to occur in all counties crossed by the Project in Pennsylvania and New Jersey (FWS, 2019). On March 22, 2022 the FWS announced a proposal to reclassify the northern long-eared bat as endangered under the ESA, with a final listing decision expected in November 2022.

The northern long-eared bat is about 3 to 3.7 inches long with a wingspan of 9 to 10 inches, and typically weighs between 0.2 and 0.3 ounce. It is distinguished from other *Myotis* species by its long ears. It eats insects and emerges at dusk to fly primarily through the understory of forest areas, feeding on moths, flies, leafhoppers, caddisflies, and beetles. Northern long-eared bats catch these insects while in flight using echolocation or by using gleaning behavior, catching motionless insects from vegetation and water (Harvey et al., 2011). Northern long-eared bats spend the winter hibernating in caves and abandoned mines. During the summer, northern long-eared bats roost singly or in colonies underneath bark, in cavities, or in crevices of both live trees and snags (dead trees). Males and non-reproductive females may also roost in cooler places, like caves and mines. Northern long-eared bats seem to be flexible in selecting roosts, choosing roost trees based on suitability to retain bark or provide cavities or crevices (FWS, 2015).

The species was federally listed primarily due to the threat of white-nose syndrome, which is causing bats to disappear completely from many hibernation sites. Other threats to the northern long-eared bat include wind energy development and habitat destruction or disturbance (e.g., vandalism to hibernation sites [hibernacula], roost tree removal).

Fragmentation of forested habitat used for foraging or migration by the northern long-eared bat may impact the species. The northern long-eared bat is a forest interior species adapted to cluttered forest environments and the species roosts and forages in closed, intact forest stands (Lausen, 2009). Northern long-eared bats have also been known to forage along forest edges, paths, riparian areas, and ponds and streams (Wisconsin Department of Natural Resources, 2017; Henderson and Broders, 2008). A reduction in the amount of forested habitat available in the general vicinity of roost trees or foraging areas could alter use patterns in an area or preclude use of an area altogether. Even marginally suitable fragmented forest can become important habitat to listed bat species as undisturbed or less fragmented forests become less available (Medlin et al., 2010; Gorresen and Willig, 2004). A forest structure and fragmentation study conducted in Missouri's Ozark forests found that in areas dominated by forest cover, non-forested areas may provide landscape heterogeneity fulfilling some habitat requirement not provided in a fully forested landscape for northern long-eared bats (Yates and Muzika, 2006).

Noise and lights associated with nighttime construction activities (e.g., Direct Pipe®, facility construction) when bats are foraging may affect protected bat species, particularly in areas of limited habitat where bat colonies are already stressed. This disruption may lead to reduced fitness for both adult female bats and their young. Studies have shown that bats can habituate to transient, low intensity, and ongoing airborne sound and human activities. However, significant changes in baseline noise levels in an area can result in temporary to permanent alteration of bat behavior. At low noise levels or farther distances, bats may initially startle, but then habituate to low background noise levels. At closer range and louder noise levels (particularly if accompanied by physical vibrations from heavy machinery and the crashing of falling trees), many bats would probably be startled to the point of flushing from their daytime roosts and in some cases may experience increased predation risk. For projects that continue for multiple days with noise levels greater than levels usually experienced by bats, bats roosting within or close to these areas are likely to shift their focal roosting areas farther away or may temporarily abandon these roosting areas completely. Overall, it is reasonable to assume that some bats may be temporarily disturbed by noise and vibration of construction activities within or directly adjacent to previous roosting habitat. Combined with the loss of forest habitat, a shift in roosting behavior away from newly constructed corridors would be anticipated (Belwood, 2002; FWS, 2007b, 2016b; Hendricks et al., 2004).

In a letter dated June 4, 2021, the New Jersey Field Office of the FWS concurred with Transco's determination that the Project *may affect*, but is *not likely to adversely* affect the northern long-eared bat based on Transco's commitment to restrict tree clearing between April 1 and September 30 in New Jersey.

Based on consultation with the Pennsylvania Field Office of the FWS, Transco conducted acoustic surveys for bats along the pipelines and at aboveground facilities in Pennsylvania where tree clearing was proposed. Acoustic surveys were completed in all survey areas, with the exception of one access road (AR-LU-021). In correspondence dated May 13, 2021, the FWS Pennsylvania Field Office agreed that acoustic surveys at the access road were not required based on the amount of proposed tree clearing (i.e., 0.13 acre) and Transco's commitment to clear trees outside of the northern long-eared bat active season.

Preliminary results of the acoustic surveys indicated potential presence of listed bats in the Project area. In addition, a Phase I hibernacula search was conducted within 0.5 mile of the Regional Energy Lateral (between MPs 8.0 and 17.5) due to the known presence of mines in the area. The hibernacula search resulted in the documentation of 56 potential hibernacula within the survey area. Transco conducted Phase II presence/absence acoustic[33] sampling at 28 of the 56 mine portals in fall 2020. The results of the fall 2020 acoustic surveys indicated probable presence of the northern long-eared bat at three locations. Phase II presence/absence trapping surveys were conducted in fall 2021 at 26 of the 28 unsurveyed mine portals;

[33] A COVID-specific protocol issued by the PGC due to handling of bats not being permitted in 2020.

the remaining 2 mine portals were determined to be flooded and not suitable habitat. The fall 2021 surveys indicated probably presence of northern long-eared bat at one additional location.

Based on the survey results to date and in coordination with the Pennsylvania Field Office of the FWS, Transco has summarized standard measures that would be implemented during construction, restoration, and operation of the Project that would minimize impacts on federally listed bat species.[34] Transco has also developed species-specific conservation measures that would be implemented in areas where survey results detected presence of federally listed bat species.[35] Specifically, Transco would implement the following measures for the northern long-eared bat, which were submitted to the Pennsylvania Field Office of the FWS via correspondence dated April 14, 2022:

- no trees would be cleared within 5 miles of any identified northern long-eared bat hibernacula between April 1 and November 15;
- any tree clearing within 0.25 mile of identified northern long-eared bat hibernacula would be conducted using non-mechanical equipment;
- construction activities involving ground disturbance would not occur within 0.25 mile of any identified northern long-eared bat hibernacula between November 16 and March 31;
- no blasting would be conducted within 0.25 mile of the subsurface limits of identified northern long-eared bat hibernacula; and any blasting located 0.25 mile to 0.5 mile from the hibernacula would occur only between April 1 and November 15; and
- within 3 miles of summer acoustic detection locations, felling of all trees or dead snags greater than 3 inches in diameter at breast height would occur between November 15 and March 31 to avoid impacting roosting bats in the Project area.

In addition, in response to requests made by the Pennsylvania Field Office of the FWS in communication dated April 7, 2022, Transco provided additional information to the FWS regarding geotechnical information based on borings conducted in Spring 2022, additional habitat information for access road AR-LU-021 where Transco has identified the need for tree clearing, conservation plan with finalized measures including time of year restrictions (summarized above) and offsets (portal gating and funding, discussed further below), and tree clearing impact acreages. Transco provided the requested information to the Pennsylvania Field Office of the FWS in correspondence dated April 14, 2022 and May 27, 2022.[36]

In a letter dated May 27, 2022 from Transco to the FWS, Transco proposed to implement the following voluntary bat conservation efforts following construction of the Project:

- Install, replace, or repair gates on up to six mine portals that are connected to active bat hibernacula located along the Regional Energy Lateral, pending landowner authorization.

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[34] Transco's summary of standard bat conservation measures be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20210701-5325.

[35] Transco's Federal and State Bat Restriction Summary Table (dated June 3, 2022) can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20220603-5201.

[36] Transco's April 14, 2022 and May 27, 2022 correspondence can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20220531-5362.

- Coordinate with the PDCNR and PGC to: 1) complete bat surveys (mine portal investigations, spring acoustic surveys, and fall surveys of up to 25 mine portals) on portions of the Mocanaqua Tract within the Pinchot State Forest and portions of the adjacent section of State Game Lands 224, pending landowner authorization; and 2) install or replace gates on up to five mine portals that are connected to active bat hibernacula on these properties.

Transco has indicated that mitigation could also include contribution to the Indiana Bat Mitigation Bank, the amount of which would be determined by the FWS using the tree clearing impact acreages provided by Transco to FWS in correspondence dated April 14, 2022.

Based on currently available data and Transco's proposed conservation measures, the Project *may affect*, but is *not likely to adversely affect* the northern long-eared bat. Consultation with the FWS regarding final Project-specific bat conservation measures and mitigation is ongoing, and this determination may be revised upon receipt of final bat conservations measures and mitigation.

Indiana Bat

The federally endangered Indiana bat is relatively small, with a wingspan of 9 to 11 inches. Indiana bats hibernate during winter in caves or abandoned mines from October through April. For hibernation, they require cool, humid caves with stable temperatures, under 50 °F but above freezing. The hibernacula typically contain large numbers of bats and often have large rooms and vertical or extensive passages.

When active, the Indiana bat roosts in dead trees, dying trees, or live trees with exfoliating bark. During the summer months, most reproductive females occupy roost sites that receive direct sunlight for more than half the day. Roost trees are generally found within canopy gaps in a forest, fence line, or along a wooded edge. Maternity roosts are found in riparian zones, bottomland and floodplain habitats, wooded wetlands, and upland communities. Indiana bats forage in semi-open to closed forested habitats, forest edges, and riparian areas (FWS, 2007).

Threats to the Indiana bat vary during its annual cycle. At hibernacula, threats include modifications to caves, mines, and surrounding areas that change airflow and alter microclimate in the hibernacula. Human disturbance and vandalism pose significant threats during hibernation through direct mortality and by inducing arousal and consequent depletion of fat reserves. White-nose syndrome, a fungal disease, has recently been added as a threat due to the death of millions of hibernating insect-eating bats in 25 states and 5 Canadian provinces since the winter of 2007/2008. Natural catastrophes can also have a significant effect during winter because of the concentration of individuals in relatively few sites. During summer months, possible threats relate to the loss and degradation of forested habitat. Migration pathways and swarming sites may also be affected by habitat loss and degradation.

Given their similar biology, the potential impacts on the Indiana bat would be similar to those described above for the northern long-eared bat.

In a letter dated June 4, 2021, the New Jersey Field Office of the FWS concurred with Transco's determination that that the Project *may affect,* but is *not likely to adversely affect* the Indiana bat, based on Transco's commitment to restrict tree clearing between April 1 and September 30 in New Jersey.

Based on consultation with the Pennsylvania Field Office of the FWS, Transco conducted acoustic surveys for bats along the pipelines and at aboveground facilities in Pennsylvania where tree clearing was proposed. Acoustic surveys were completed in all survey areas during summer 2020, with the exception of one access road (AR-LU-021). In correspondence dated May 13, 2021, the Pennsylvania Field Office of the FWS agreed that acoustic surveys at the access road were not required based on the amount of proposed tree clearing (i.e., 0.13 acre) and Transco's commitment to clear trees outside of the northern long-eared bat active season.

Preliminary results of the acoustic surveys indicated potential presence of listed bats in the Project area. In addition, a Phase I hibernacula search was conducted within 0.5 mile of the Regional Energy Lateral (between MPs 8.0 and 17.5) due to the known presence of mines in the area. The hibernacula search resulted in the documentation of 56 potential hibernacula within the survey area. Transco conducted Phase II presence/absence acoustic[37] sampling at 28 of the 56 mine portals in fall 2020. The results of the fall 2020 acoustic surveys indicated probable presence of the Indiana bat at one location. The PGC conducted an internal survey at the one potential hibernacula on March 18, 2022; no bats were observed during the survey. Phase II presence/absence trapping surveys were conducted in fall 2021 at 26 of the 28 unsurveyed mine portals; the remaining 2 mine portals were determined to be flooded and not suitable habitat. The fall 2021 Phase II presence/absence trapping surveys did not identify presence of Indiana bat. Based on the survey results to date and in coordination with the Pennsylvania Field Office of the FWS, Transco has summarized standard measures that would be implemented during construction, restoration, and operation of the Project that would minimize impacts to federally listed bat species.[38]

Transco has also developed species-specific conservation measures that would be implemented in areas where survey results detected presence of federally listed bat species.[39] Specifically, Transco would implement the following measures for the Indiana bat which were submitted to the Pennsylvania Field Office of the FWS via correspondence dated April 14, 2022:

- no trees would be cleared within 5 miles of any identified Indiana bat hibernacula between April 1 and November 15;
- no ground disturbance activities would occur above the mine workings associated with identified Indiana bat hibernacula; and
- no blasting would be conducted within 0.50 mile of the subsurface limits of identified Indiana bat hibernacula.

In addition, in response to requests made by the Pennsylvania Field Office of the FWS in communication dated April 7, 2022, Transco provided additional information to the FWS regarding geotechnical information based on borings conducted in Spring 2022, additional habitat information for access road AR-LU-021 where Transco has identified the need for tree clearing, conservation plan with finalized measures including time of year restrictions (summarized above) and offsets (portal gating and funding, discussed further below), and tree clearing impact acreages. Transco provided the requested information to the Pennsylvania Field Office of the FWS in correspondence dated April 14, 2022 and May 27, 2022.[40]

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[37] A COVID-specific protocol issued by the PGC due to handling of bats not being permitted in 2020.

[38] Transco's summary of standard bat conservation measures be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20210701-5325.

[39] Transco's Federal and State Bat Restriction Summary Table (dated June 3, 2022) can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 202206031-5201.

[40] Transco's April 14, 2022 and May 27, 2022 correspondence can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20220531-5362.

In a letter dated May 27, 2022, Transco proposed to implement the following voluntary bat conservation efforts following construction of the Project:

- Install, replace, or repair gates on up to six mine portals that are connected to active bat hibernacula located along the Regional Energy Lateral, pending landowner authorization.

- Coordinate with the PDCNR and PGC to: 1) complete bat surveys (mine portal investigations, spring acoustic surveys, and fall surveys of up to 25 mine portals) on portions of the Mocanaqua Tract within the Pinchot State Forest and portions of the adjacent section of State Game Lands 224, pending landowner authorization; and 2) install or replace gates on up to five mine portals that are connected to active bat hibernacula on these properties.

Transco has indicated that mitigation could also include contribution to the Indiana Bat Mitigation Bank, the amount of which would be determined by the FWS using the tree clearing impact acreages provided by Transco to FWS in correspondence dated April 14, 2022.

Based on currently available data and Transco's proposed conservation measures, the Project *may affect*, but is *not likely to adversely affect* the Indiana bat. Consultation with the FWS regarding final Project-specific bat conservation measures and mitigation is ongoing, and this determination may be revised upon receipt of final bat conservations measures and mitigation.

Northeastern Bulrush

The federally endangered northeastern bulrush is an obligate wetland plant found in small wetlands, sinkhole ponds, beaver ponds, or wet depressions with seasonally fluctuating water levels. Northeastern bulrush appears to have adapted to regularly changing water levels, which may have given it an advantage over less tolerant plant species. However, habitat alterations that make a site consistently drier or wetter could make life impossible for northeastern bulrush. Activities such as filling or ditching in a wetland can destroy or degrade this species' habitat and pose a threat (FWS, 2006). Populations of northeastern bulrush are recorded from Quebec south to West Virginia. There are only 50 to 60 known populations of northeastern bulrush throughout its range, with Pennsylvania having the largest number of occurrences (Pennsylvania Natural Heritage Program, n.d.(a)).

Transco's review of the FWS' Environmental Conservation Online System – Information for Planning and Consultation and a letter from FWS dated May 12, 2020, northeastern bulrush could occur in the vicinity of the Regional Energy Lateral, Effort Loop, Compressor Station 515, Hildebrandt Tie-In, Lower Demunds REL Tie-in, Carverton Tie-in, and Delaware River Regulator (Luzerne, Monroe, and Northampton Counties). Therefore, Transco conducted surveys within suitable habitat areas for the northeastern bulrush in Luzerne and Monroe Counties in August 2020; no individuals were identified during surveys. No surveys were conducted in Northampton County due to the absence of suitable habitat (wetlands) in the Project area. Transco provided the Northeastern Bulrush Survey Report to the Pennsylvania Field Office of the FWS on November 25, 2020. Based on the presence of suitable habitat and negative survey results for northeastern bulrush within the Project areas in Luzerne and Monroe Counties, we conclude that the Project in *may affect,* but is *not likely to adversely affect* the northeastern bulrush.

Bog Turtle

The bog turtle is a federally listed threatened species in New Jersey and Pennsylvania. One of the smallest turtles in the world, the adult bog turtle carapace is approximately 3.1 to 4.5 inches long (FWS, n.d.). Bog turtles can be easily identified by their mahogany-colored shell and bright yellow-orange blotches on both sides of the head. Bog turtles live in a mosaic of open, sunny, spring-fed wetlands, and scattered dry areas that provide habitat and shelter for basking, foraging, nesting, and hibernation. Bog turtles are active, feeding, and nesting from April through October, with eggs hatching from late August through September. The species is dormant in the winter, burrowing in logs, mud, or tree roots (FWS, 2010).

The bog turtle occurs in very low numbers in southeastern Pennsylvania and is imperiled or critically imperiled throughout its entire range in North America (Pennsylvania Natural Heritage Program, n.d.(b)). Within Pennsylvania, bog turtles are mainly limited in distribution to portions of 15 southeastern and eastern counties (PFBC, 2011). The greatest threats to the bog turtle are the loss and fragmentation of its habitat. Fragmenting connected wetlands limits the bog turtle's ability to find mates and new habitat, and increases the amount of edge around the wetlands. Increased edge provides habitat for predators and increases the likelihood of invasion by non-native and non-wetland plants. The bog turtle is also illegally collected for market by disreputable pet traders (FWS, 2010). Potential bog turtle habitat is identified by the following three criteria:

- Suitable hydrology is groundwater driven and includes some or all of the following: springs, shallow surface water, persistently saturated soils, subsurface flow, and rivulets.
- Suitable soils, which are the critical criterion, include a bottom substrate of soft muck. The term "muck" does not refer to a technical soil type; it can be soft deep peat or mineral mud.
- Suitable vegetation includes dominant vegetation consisting of low grasses and sedges, possibly a scrub-shrub wetland component, and a relatively open canopy (FWS, 2006).

Construction of the Project within wetland habitats has the potential to impact bog turtles. If present during construction, bog turtles could be directly injured or killed by construction equipment, or disturbed due to the presence of humans and machines in the area. In addition, construction and operation of the Project could alter wetland habitats that support this species.

At the request of and in coordination with the Pennsylvania Field Office of the FWS, Transco completed Phase I bog turtle habitat surveys at Project components located within the known range of the bog turtle. Surveys were completed at the following Project components: between MPs 43.71 and 49.3 along the Effort Loop, Delaware River Regulator, Lower Mud Run Meter Station, Compressor Station 195, and Compressor Station 200. No Phase I surveys were conducted at the Delaware River Regulator, Lower Mud Run Meter Station, and Compressor Station 195 sites due to absence of wetland habitat in those Project areas. The Phase I bog turtle habitat survey identified one potentially suitable wetland along the Effort Loop and no potentially suitable wetlands at Compressor Station 200. Because the one potentially suitable wetland located along the Effort Loop would not be impacted either directly or indirectly by construction, the Pennsylvania Field Office of the FWS agreed in an e-mail dated May 12, 2020 that Phase II presence/ absence surveys were not required.

As noted above and in section 4.3.3.2, Transco proposes to utilize offsite wetland mitigation sites to offset wetland impacts associated with the Project. We received comments noting concern regarding the use of the Perin Mitigation Site with regard to potential degradation of suitable bog turtle habitat. Transco submitted a PNDI Environmental Review for the proposed Perin Mitigation Site. The PNDI receipt requested a bog turtle Phase I habitat survey for the Project, and noted that the site is in proximity to a known bald eagle nest and requested Transco complete the Bald Eagle Project Screening Form and implement the measures identified on the form (see section 4.4.4.1). Transco conducted a Phase I bog turtle habitat survey and identified one suitable bog turtle wetland. Transco then conducted Phase II bog turtle presence/absence and Phase III trapping surveys concurrently at the one suitable bog turtle wetland as well as an additional wetland habitat area. No bog turtles were observed during these surveys. In a letter dated October 6, 2021, the Pennsylvania Field Office of the FWS concluded that based on the information provided and the survey results, that the proposed activities at the Perin Mitigation Site *may affect*, but are *not likely to adversely affect* the bog turtle.

Swamp Pink

The swamp pink is a federally listed threatened plant species in New Jersey. Swamp pink is an obligate wetland species and occurs in a variety of PFO wetlands including swampy forested wetlands bordering meandering streamlets, headwater wetlands, sphagnous Atlantic white-cedar swamps, and spring seepage areas (FWS, 2016). Specific hydrologic requirements of swamp pink limit its occurrence within these wetlands to areas that are perennially saturated, but not inundated, by floodwater. The water table must be at or near the surface, fluctuating only slightly during spring and summer months (FWS, 2016). Groundwater seepage with lateral groundwater movement are common hydrologic characteristics of swamp pink habitat. Swamp pink is a shade-tolerant plant and has been found in wetlands with canopy closure varying between 20 to 100 percent. Sites with minimal canopy closure are less vigorous due in part to competition from other species (FWS, 2016).

The primary threats to swamp pink are the indirect effects of off-site activities and development, such as pollution, introduction of invasive species, and subtle changes in groundwater and surface water hydrology (FWS, 2016). Hydrologic changes include increased sedimentation from off-site construction, groundwater withdrawals or diversion of surface water, reduced infiltration (recharge) of groundwater, increases in erosion, increases in the frequency, duration, and volume of flooding caused by direct discharges to wetlands (such as stormwater outfalls), and increased runoff from upstream development (FWS, 2016).

Transco's review of the FWS' Environmental Conservation Online System – Information for Planning and Consultation identified the swamp pink as a species known to occur in Burlington and Middlesex Counties in New Jersey. In an e-mail dated May 13, 2021, the New Jersey Field Office of the FWS requested that Transco conduct a survey for swamp pink at the proposed Compressor Station 201 site within any suitable forested wetland habitat within and adjacent to the Project area. Transco conducted the survey at the proposed Compressor Station 201 site on May 28, 2021 and identified a small area of suitable swamp pink habitat in the northwest portion of the site; however, Transco's search of this habitat did not identify swamp pink. Transco submitted the survey results to the New Jersey Field Office of the FWS on June 4, 2021. In a letter dated June 4, 2021, the New Jersey Field Office of the FWS concurred with Transco's determination that that the Project is *not likely to adversely affect* the swamp pink based on the lack of habitat at the Mt. Laurel M&R Station, and the locations of historic occurrences in relation to Compressor Station 207 and proposed Compressor Station 201, as well as Transco's negative survey results for swamp pink at Compressor Station 201.

Thus, consultation for the swamp pink is complete.

Red Knot

The red knot is a federally listed threatened and state-listed endangered species in New Jersey. Small numbers of red knots may occur in New Jersey year-round, while large numbers of birds rely on New Jersey's coastal stopover habitats during the spring (mid-May through early June) and fall (late-July through November) migration periods. Smaller numbers of red knots may spend all or part of the winter in New Jersey (FWS, 2021). The red knot breeds in the tundra of the central Canadian Arctic. Some of these robin-sized shorebirds fly more than 9,300 miles from south to north every spring and reverse the trip every autumn, making the red knot one of the longest-distance migrating animals. The spring migration is timed to coincide with the spawning season for the horseshoe crab (*Limulus polyphemus*). Horseshoe crab eggs provide a rich, easily digestible food source for migrating birds. Mussel beds on New Jersey's southern Atlantic coast are also an important food source for migrating red knots.

Threats to the red knot include sea level rise; coastal development; shoreline stabilization; dredging; reduced food availability at stopover areas; disturbance by vehicles, people, dogs, aircraft, and boats; and climate change.

Transco's review of the FWS' Environmental Conservation Online System – Information for Planning and Consultation identified the red knot as a species known to occur in Camden County. In a letter dated June 4, 2021, the New Jersey Field Office of the FWS concurred with Transco's determination that that the Project is *not likely to adversely affect* the red knot based on the lack of suitable habitat at the Camden M&R Station and because the closest sighting of red knot is over 10 miles from the Camden M&R Station.

Thus, consultation for the red knot is complete.

Species Under Review

<u>Little Brown Bat and Tricolored Bat</u> – As noted above, the little brown bat is under review for federal listing and is state-listed as endangered in Pennsylvania. The little brown bat is found statewide in Pennsylvania and is a small to medium sized bat weighing 0.2 to 0.5 ounce and has a wingspan of 9 to 11 inches (PGC, n.d.; FWS, 2019). In October and November, little brown bats leave their summer roosts and move to tunnels, mine shafts, and caves for hibernation. They emerge from hibernation in April and May and females disperse and gather in summer nursery colonies of 10 to 1,000 individuals in attics, barns and other dark, hot retreats. Males are solitary, roosting in hollow trees, under loose bark, behind loose siding and shingles and in rock crevices. Little brown bats return to the same hibernation and summer roost sites year after year (PGC, n.d.).

Primary threats to this species are from white-nose syndrome, which is estimated to have killed at least 1 million little brown bats from 2006 to 2010. The core region where much of the global population of little brown bats occur is now infected with white-nose syndrome. Population declines have also been attributed to pesticides, the loss of roost sites in snags due to deforestation, control measures in nursery colonies, collecting bats for experimentation, and disturbance of individuals during hibernation (FWS, 2019).

As noted above, the tricolored bat is under review for federal listing and is state-listed as endangered in Pennsylvania. The tricolored bat, previously known as the eastern pipistrelle, also is called the pygmy bat because of its small size: length, 2.9 to 3.5 inches; wingspread, 8.1 to 10.1 inches; weight, 0.14 to 0.25 ounce (PGC, n.d.). The tricolored bat is found throughout Pennsylvania, with the exception of the southeastern corner of the state (PGC, n.d.).

Tri-colored bats take wing early in the evening and make short, elliptical flights at treetop level. In summer, they inhabit open woods near water, rock or cliff crevices, buildings and caves. They hibernate from September through April or early May, deep inside caves and away from the openings, in zones where the temperature is about 52 to 55 degrees (PGC, n.d.).

Similar to the northern long-eared bat discussed above, the primary threat to the little brown bat and tricolored bat is also from white-nose syndrome. Potential impacts from the Project on the little brown bat and tricolored bat would be like those described above for the northern long-eared bat.

The little brown bat and tricolored bat were originally identified as potentially occurring in the New Jersey portion of the Project by NJDEP. In coordination with NJDEP, Transco would remove limited landscape trees at Compressor Station 201 and Compressor Station 505 outside of the summer roost season. Therefore, because either no tree clearing would occur at the facilities or limited removal of landscape trees would be conducted outside of the summer roost season, impacts to these species in the New Jersey portion of the Project are not anticipated.

Based on consultation with the Pennsylvania Field Office of the FWS and PGC, Transco conducted acoustic surveys for bats along the pipelines and at aboveground facilities in Pennsylvania where tree clearing was proposed. Acoustic surveys were completed in all survey areas, with the exception of one access road (AR-LU-021). In correspondence dated May 13, 2021, the Pennsylvania Field Office of the FWS agreed that acoustic surveys at the access road were not required based on the amount of proposed tree clearing (i.e., 0.13 acre) and Transco's commitment to clear trees outside of the northern long-eared bat active season.

Preliminary results of the acoustic surveys indicated potential presence of listed bats in the Project area. In addition, a Phase I hibernacula search was conducted within 0.5 mile of the Regional Energy Lateral (between MPs 8.0 and 17.5) due to the known presence of mines in the area. The hibernacula search resulted in the documentation of 56 potential hibernacula within the survey area. Transco conducted Phase II presence/absence acoustic[41] surveys at 28 of the 56 mine portals in fall 2020. The results of the fall 2020 Phase II presence/absence acoustic surveys indicated probable presence of the little brown bat at five locations, and the tricolored bat at two locations. Phase II presence/absence trapping surveys were conducted in fall 2021 at 26 of the 28 unsurveyed mine portals; the remaining 2 mine portals were determined to be flooded and not suitable habitat. The fall 2021 Phase II presence/absence trapping surveys identified the presence of tricolored bat at one location; no little brown bats were identified during the 2021 survey effort.

Based on the survey results to date and in coordination with the Pennsylvania Field Office of the FWS and PGC, Transco has summarized standard measures that would be implemented during construction, restoration, and operation of the Project that would minimize impacts on federally and state-listed bat species.[42] Transco has also developed species-specific conservation measures that would be implemented in areas where survey results detected presence of little brown bat and tricolor bat species.[43] Specifically, Transco would implement the following measures for the little brown bat and tricolored bat which were submitted to the PGC and Pennsylvania Field Office of the FWS via correspondence dated April 14, 2022:

- no trees would be cleared within 0.25 mile of any identified little brown bat or tricolored bat hibernacula between April 1 and November 15, and any tree clearing in those areas would be conducted using non-mechanical equipment;
- construction activities involving ground disturbance would not occur within 0.25 mile of any identified little brown bat or tricolored bat hibernacula between November 16 and March 31;

41 A COVID-specific protocol issued by the PGC due to handling of bats not being permitted in 2020.

42 Transco's summary of standard bat conservation measures be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20210701-5325.

43 Transco's Federal and State Bat Restriction Summary Table (dated June 3, 2022) can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20220603-5201.

- no blasting would be conducted within 0.25 mile of the subsurface limits of identified little brown bat or tricolored bat hibernacula, and any blasting within 0.25 mile to 0.5 mile of identified hibernacula must be conducted between April 1 and November 15.

In addition, specific to the tricolored bat, within 2.5 miles of summer acoustic detection locations, felling of all trees or dead snags greater than 3 inches in diameter at breast height would occur between November 16 and March 31 to avoid impacting roosting bats in the Project area. Transco proposes to conduct 1.2 acres of tree felling at Compressor Station 515. Although Compressor Station 515 falls within the 2.5-mile buffer of a summer acoustic detection location, Transco conducted five summer acoustic surveys with two survey nights for each survey located just outside of the boundary of the station, which resulted in negative acoustic detections for all surveys. In addition, the trees that would be felled are located adjacent to the existing, active compressor station.

In a letter dated May 4, 2022, the PGC determined that, based on Transco's species-specific conservation measures to reduce potential adverse effects on the little brown bat and tricolored bat, no impacts are likely and no further coordination with the PGC is required at this time.

As discussed in the sections above for the federally listed northern long-eared bat and Indiana bat, Transco proposes to install, replace, or repair gates on up to six mine portals that are connected to active bat hibernacula located along the Regional Energy Lateral and Transco has indicated that mitigation could also include contribution to the Indiana Bat Mitigation Bank, the amount of which would be determined by the FWS using the tree clearing impact acreages provided by Transco to FWS in correspondence dated April 14, 2022. Additional mitigation options include portal gating or rock structure installation. Transco's consultation with the FWS regarding final Project-specific bat conservation measures and mitigation is ongoing.

Based on currently available data and Transco's proposed conservation measures, the Project *may affect*, but is *not likely to cause a trend toward federal listing* the little brown bat and tricolored bat. Consultation is ongoing and determinations may be revised upon receipt of final bat conservations measures and mitigation.

Conclusion

Consultation under section 7 of the ESA is not complete. Final mitigation plans for impacts on northern long-eared bat, Indiana bat, little brown bat, and tricolored bat have not been finalized. Therefore, **we recommend that:**

- **Transco shall <u>not begin</u> construction activities <u>until</u>:**

  a. Transco files with the Secretary of the Commission (Secretary) the final bat conservation measures and mitigation, incorporating any additional conservation measures and mitigation developed in coordination with the Pennsylvania Field Office of the FWS;

  b. FERC staff receives comments from the FWS regarding the proposed action;

  c. FERC staff completes formal ESA consultation with the FWS, if required; and

  d. Transco has received written notification from the Director of OEP, or the Director's designee, that construction or use of mitigation may begin.

4.4.4.3 State-Listed Threatened and Endangered Species

Transco consulted with Pennsylvania, New Jersey, and Maryland state resource agencies to identify state-listed species that could potentially occur within the Project area. State-listed species that are also federally listed or under review for federal listing are discussed in section 4.4.4 above and are not discussed further in this section.

A discussion of agency consultation, survey results, and proposed mitigation for state-listed species potentially occurring in the area of the Project is provided below and summarized in table C-10 in appendix C.

We received comments on the draft EIS regarding potential impacts on the wood turtle. Wood turtles (*Glyptemys insculpta*) reside in open oak woodlands near riparian areas and in valley bottoms. The wood turtle is semi-terrestrial and are often found in vegetated floodplains of streams and adjacent forests. They inhabit slow-moving streams or rivers with sandy or silty substrate, often in areas with deep pools and woody debris. Unlike other turtle species that favor either land or water, the wood turtle resides in both aquatic and terrestrial environments. Wood turtle habitats typically contain few roads and are often over 0.5 mile away from developed or populated areas (NJ Division of Fish and Wildlife, 2003).

The wood turtle is not listed as threatened or endangered in Pennsylvania or Maryland. In Pennsylvania, the wood turtle is incorporated into the PGC and PFBC's Wildlife Action Plan for species of greatest conservation need; the conservation goal is to improve the knowledge of distribution and population parameters to establish conservation and management actions. Coordination with relevant agencies in Maryland and Pennsylvania did not identify any action needed for the wood turtle. The wood turtle was listed as threatened in New Jersey in 1979 due to decreases in its abundance and distribution in the state (NJDEP, 2021a). Transco coordinated with the New Jersey Natural Heritage Program and no concerns or mitigations measures regarding wood turtles were recommended. Therefore, we conclude that mitigation measures included to protect wildlife presented in section 4.4.3.2 of this EIS would also protect the wood turtle.

Pennsylvania

Pennsylvania has regulatory requirements for state-listed species, and three agencies are responsible for protecting threatened and endangered species and other sensitive resources: 1) the PGC has jurisdiction over state-listed birds and mammals; 2) the PFBC monitors state-listed fish, reptiles, amphibians, and aquatic organisms; and 3) the PADCNR has jurisdiction over state-listed plants, natural communities, terrestrial invertebrates, and geological features.

Transco's consultations with the PFBC, PADCNR, and PGC regarding review of the Project facilities in Pennsylvania for potential impacts on species and resources of concern identified 14 state-listed threatened, endangered, special concern, or rare species (1 mammal, 1 reptile, 3 mussels, and 9 plants) that may occur in the Project area. During surveys for state-listed plants, two additional plant species not originally identified by the PADCNR were identified in the Project area and therefore are also discussed below. In addition, the PGC identified the federally listed endangered northern long-eared bat as a species of concern; and although not identified during consultation with the PGC, Transco's bat surveys identified the presence of the state-listed little brown bat and tricolored bat, which are both species under review for federal listing. All three of these bat species are discussed in section 4.4.4.2. A summary of surveys and/or proposed mitigation for the remaining species is presented below and summarized in table C-10 in appendix C.

Eastern small-footed bat – The eastern small-footed bat's summer habitat includes caves, mines, hollow trees and under bark, cracks and crevices in rock walls, and ridge-top talus fields (PGC, 2014). Winter habitat for the species includes caves and mines.

As noted above in section 4.4.4.2, based on coordination with the Pennsylvania Field Office of the FWS and the PGC, acoustic surveys were completed in all survey areas (i.e., areas in Pennsylvania where tree clearing would occur), with the exception of one access road (AR-LU-021). In correspondence dated May 10 and May 13, 2021, the PGC and Pennsylvania Field Office of the FWS, respectively, agreed that acoustic surveys at the access road were not required based on the amount of proposed tree clearing (i.e., 0.13 acre) and Transco's commitment to clear trees outside of the northern long-eared bat active season.

Preliminary results of the acoustic survey effort indicated potential presence of the eastern small-footed bat in the Project area.

In addition, based on consultation with PGC, Transco conducted Winter Hibernacula Habitat Assessments and Summer Day Roost Habitat Assessments between MPs 8.0 and 17.5 on the Regional Energy Lateral.

A Phase I hibernacula search was conducted within 0.5 mile of the Regional Energy Lateral (between MPs 8.0 and 17.5) due to the known presence of mines in the area. The hibernacula search resulted in the documentation of 56 potential hibernacula within the survey area. Transco conducted Phase II presence/absence acoustic[44] surveys at 28 of the 56 mine portals in fall 2020. The results of the fall 2020 Phase II presence/absence acoustic surveys indicated probable presence of the eastern small-footed bat at 8 of the 28 portals surveyed. Phase II presence/absence trapping surveys were conducted in fall 2021 at 26 of the 28 unsurveyed mine portals; the remaining 2 mine portals were determined to be flooded and not suitable habitat. The fall 2021 presence/absence trapping surveys identified the presence of the eastern small-footed bat at two additional locations.

Transco conducted habitat assessments within 0.25 mile of Regional Energy Lateral between MPs 8.0 and 17.5 in 2020 and identified 14 sites containing potentially suitable day roost habitat for the eastern small-footed bat. In addition, based on correspondence dated May 20, 2021, PGC requested habitat assessments be conducted within 0.25 mile of all eastern small-footed bat positive acoustic detections from the fall 2020 Phase II presence/absence acoustic survey. This resulted in two locations that were located outside of the area between MPs 8.0 and 17.5. These additional surveys were conducted in June 2021; no additional suitable day roost habitat was identified at these two locations. Transco conducted night vision presence/absence surveys in June/July 2021 at 11 of the 14 potential day roost habitat sites; the remaining 3 sites were not surveyed because they were either outside of the limits of disturbance (resulting from workspace modifications) or the rock habitat was no longer intact or had been removed. No bats were observed occupying any of the 11 potential day roost habitat sites.

Based on the survey results to date and in coordination with the PGC, Transco has summarized standard measures that would be implemented during construction, restoration, and operation of the Project that would minimize impacts on the eastern small-footed bat.[45] Transco has also developed species-specific conservation measures that would be implemented in areas where survey results detected presence of

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44 A COVID-specific protocol issued by the PGC due to handling of bats not being permitted in 2020.

45 Transco's summary of standard bat conservation measures be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20210701-5325.

eastern small-footed bat.[46] Specifically, Transco has developed the following preliminary measures for the eastern small-footed bat which were submitted to the PGC via correspondence dated April 21, 2022:

- no trees would be cleared within 0.25 mile of any identified eastern small-footed bat hibernacula between April 1 and November 15, and any tree clearing in those areas would be conducted using non-mechanical equipment;

- construction activities involving ground disturbance would not occur within 0.25 mile of any identified eastern small-footed bat hibernacula between November 16 and March 31; and

- no blasting would be conducted within 0.25 mile of the subsurface limits of identified eastern small-footed bat hibernacula, and any blasting within 0.25 mile to 0.5 mile of identified hibernacula must be conducted between April 1 and November 15.

In a letter dated May 4, 2022, the PGC determined that, based on Transco's species-specific conservation measures to reduce potential adverse effects on the eastern small-footed bat, no impacts are likely and no further coordination with the PGC is required at this time.

Northern flying squirrel – We received a comment on the draft EIS regarding potential impacts on the northern flying squirrel. The northern flying squirrel (*Glaucomys sabrinus macrotis*) is not state listed in New Jersey or Maryland and is not a species of concern in these states. Coordination with all agencies in New Jersey and Maryland confirmed no action needed for this species. The northern flying squirrel is a state listed endangered species in Pennsylvania and is confirmed to be currently found in seven Pennsylvania counties, Warren, Potter, Wayne, Pike, Monroe, Carbon, and Luzerne. The PGC is the primary agency involved in the protection and conservation of the northern flying squirrel. Per review of PNDI # 702499, the northern flying squirrel was not identified in the Project limits of disturbance and Transco received Project concurrence from PGC on May 4, 2022. No protection or mitigation measures regarding this species were provided. Northern flying squirrels prefer old-growth boreal forests with a heavy coniferous component, moist soils, and lots of downed woody debris. Since appropriate habitat for the northern flying squirrel is not present in the Project area, we conclude that the Project would not adversely affect the northern flying squirrel.

Timber rattlesnake – Timber rattlesnakes inhabit the forested, mountainous regions of Pennsylvania. Their active season is mid-April through mid-October. They prefer upland forested areas where they forage for small mammals (e.g., mice and chipmunks). Talus and/or scree slopes, rocky ledges, outcrops, and boulder fields generally with southerly exposures contain the entrances to over-wintering dens. Dens usually have rocky crevices or other features that provide access to ancestral underground chambers to which the snakes return yearly for hibernation. These sites generally have rocky habitat containing a semi-open canopy nearby that is used by gravid females for gestation (PFBC, 2010). Prior to European settlement, the range of the timber rattlesnake is thought to have spanned most of Pennsylvania, while the current range is restricted to the more rugged, less accessible, and less populated regions of the Commonwealth. Today, timber rattlesnakes occur in forested, mountainous regions that encompass mainly the central and northeast region of Pennsylvania (e.g., Ridge and Valley Province, Laurel Highlands, Allegheny Plateau, and the Pocono Plateau) (PFBC, 2010). The PFBC considers two types of habitat used by timber rattlesnakes as extremely vital and thus refers to them as critical timber rattlesnake habitat (i.e., over-wintering dens and gestation sites). In a letter dated October 6, 2020, the PFBC noted that a portion of the Regional Energy Lateral east of I-476 is in proximity to known critical timber rattlesnake habitat. Therefore, the PFBC

[46] Transco's Federal and State Bat Restriction Summary Table can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 202206031-5201.

recommended that Transco conduct a habitat assessment for timber rattlesnake. Transco completed a Phase I habitat assessment for the timber rattlesnake in summer 2020 between approximate MPs 6.5 and 9.0. Potential denning and gestational habitat for the timber rattlesnake were identified in the survey area during the Phase I Habitat Assessment. As such and per PFBC guidance, Transco conducted a Phase II presence/absence survey within the appropriate survey window for the species in spring 2021, where one potential denning habitat area was confirmed as denning habitat within the proposed limits of disturbance. The survey report was provided to the PFBC on August 5, 2021. Per the recommendation provided by the PFBC in correspondence dated June 8 and June 15, 2021, Transco modified the workspace in the vicinity of the denning habitat and committed to the following measures for the timber rattlesnake in the survey report:

- conduct construction monitoring from April 15 through October 15;
- install orange fencing 300 feet in either direction of the den;
- re-construct rock habitat in areas of gestation only habitat along the edge of the right-of-way during restoration; and
- inform workers not to kill or harass the timber rattlesnakes.

In a letter dated September 7, 2021, the PFBC agreed with the findings of the timber rattlesnake habitat assessment and Transco's proposed measures included in the report, and recommended that Transco implement the following additional measures to safeguard workers and rattlesnakes:

- A PFBC-approved timber rattlesnake biologist who has the proper permits (Scientific Collector's Permit), and the proper skills to handle this venomous species will be on-site prior to and during construction.
- The PFBC-approved timber rattlesnake biologist will be on-site prior to and during construction activities, during the above time frame, to inspect and clear the area (including staging areas and access roads) of timber rattlesnakes and to capture and remove any rattlesnakes that may interfere with work activities.
- Timber rattlesnakes observed on-site are to be measured, sexed, and the habitat characterized where the snake was found. All captured snakes should be released within proximity (under 100 meters) of the capture site if possible. Rattlesnake captures and relocations are to be documented by photographs, habitat descriptions, in addition to being mapped and labeled accordingly. The biologist is to submit a report to the PFBC Natural Diversity Section office following the completion of the Project documenting all of the activity and herpetofauna encountered.
- If erosion control fabric is to be used at this site, materials that are known to reduce the risk of snake entrapment should be selected, such as loosely woven natural fiber ECM. Use of monofilament/plastic netting should be avoided.
- During the construction period, PFBC personnel may communicate with the on-site biologist and may visit the site area periodically to view the progression of the Project and answer any questions or concerns that may arise. For safety purposes, PFBC personnel will register with the on-site manager upon entering the construction area.

Transco has agreed to implement these minimization and mitigation measures. Transco submitted an update to the PFBC on April 21, 2022 regarding some minor route and workspace adjustments, of which all areas were included in previous survey coverage. The PFBC responded on May 3, 2022 and confirmed that its comments regarding potential impacts to rare, candidate, threatened, or endangered species under PFBC jurisdiction, as detailed in its September 7, 2021 letter, remain unchanged.

We received comments on the draft EIS that mitigation measures proposed are not adequate to protect the rattlesnake and that relocation of rattlesnakes is not appropriate. As described above, Transco consulted with the PFBC regarding the timber rattlesnake, conducted a habitat assessment and subsequent species-specific surveys for the timber rattlesnake, reported survey results to the PFBC, and coordinated directly with the PFBC regarding project modifications and minimization and mitigation measures. Therefore, we conclude that Transco's consultations with the PFBC are appropriate for determining suitable minimization and mitigation measures to comply with regulatory requirements for state-listed species such as the timber rattlesnake.

Rare Freshwater Mussels – The state-listed rare elktoe, green floater, and triangle floater mussels are known to occur in the Susquehanna River. We received a comment noting that mussel surveys should be conducted at the Susquehanna River crossing regardless of crossing type due to concerns regarding inadvertent release.

In a letter dated October 6, 2020, and subsequent correspondence dated October 26, 2020 and May 3, 2022, the PFBC indicated that if the Susquehanna River is crossed via HDD, then no impact would be anticipated and no mussel surveys are required for the Project. Transco proposes to cross the Susquehanna River via Direct Pipe® (a trenchless crossing technique); therefore, no impacts on state protected mussels are anticipated. In correspondence dated October 29, 2020, Transco also confirmed with the PFBC that the temporary water intake proposed at the Susquehanna River crossing and a small cable laid across the river bed for monitoring drill progress also would not require that mussel surveys be conducted. Further, in accordance with the FERC Procedures, Transco is required to provide a site-specific crossing plan for all major waterbody crossings. Transco provided a site-specific crossing plan in its Direct Pipe® Plan (see table 2.3-1). The plan also includes detailed measures that would be implemented during construction, including contingencies for installation failures and inadvertent returns. We reviewed the Direct Pipe® Plan and find it acceptable.

Rare Flora – Transco conducted targeted floristic surveys to determine the presence or absence of blunt manna-grass, variable sedge, Collin's sedge, soft-leaved sedge, bog goldenrod, roundleaf serviceberry, white-leaved orchid, screwstem, and lupine. Multiple populations of blunt manna-grass were found within wetlands in the Project area along the Effort Loop; and one population of white-fringed orchid were identified within a wetland along the Effort Loop, but were located outside the limits of disturbance. In addition, although not a target species, populations of showy goldenrod were also found associated with wetlands along the Effort Loop, generally in many of the same areas as the blunt manna-grass; and one population of purple bedstraw was identified within the survey corridor in a wooded upland area along the Regional Energy Lateral, but outside the limits of disturbance.

We received comments indicating concern about the potential removal of blunt manna-grass and white-fringed orchid during Project implementation. In correspondence dated February 16, 2021 and May 3, 2022, the PADCNR requested the following measures be implemented for the Project:

- Purple bedstraw and white-fringed orchid – install orange construction fencing along limits of disturbance to protect populations located outside of the limits of disturbance from accidental impacts, and ensure that Project activities do not indirectly impact these populations via erosion, runoff, or change of hydrology;

- Blunt manna-grass and showy goldenrod – Minimization and mitigation of impact on populations is recommended. Conduct topsoil segregation and natural reseeding, and implement wash racks to reduce the introduction and spread of invasive plant species; and

- Conduct monitoring of these flora populations for 2 to 3 years after Project activities are completed to assess the success of the avoidance, minimization, and mitigation techniques.

Transco has agreed to implement these minimization and mitigation measures. Specific to the blunt manna-grass and showy goldenrod, Transco has reduced workspace in wetland and upland areas to the extent practicable given the space constraints and workspace needed for topsoil segregation, wetland and waterbody crossings, and to ensure safe working conditions.

In a letter dated August 23, 2021, PADCNR concluded no impacts would be anticipated on species and resources under PADCNR's responsibility based on the avoidance, mitigation, and monitoring measures outlined above, with the additional request that yearly monitoring reports be submitted to the PADCNR. In this letter, the PADCNR also provided the following additional recommended actions for the Project:

- Clean boot treads, construction equipment, and vehicles thoroughly (especially the undercarriage and wheels) before they are brought on site.

- Do not transport unsterilized leaves, mulch, compost, or soil to the site from another location.

- Revegetate or cover disturbed soil and soil stockpiles as soon as possible to discourage the germination of invasive plants. Implement proper erosion control practices to stabilize soil and reduce runoff.

- Do not use seed mixes that include invasive species, and use weed-free straw or hay mixes.

- Use habitat appropriate seed mixes. For example, when reseeding along a waterway, utilize a riparian seed mix.

- Use native plants for landscaping, revegetation, and stormwater management. Do not use nonnative invasive species. Reduce the area of lawn and impermeable surfaces to the fullest extent practicable in favor of native gardens or native habitat restoration (e.g., forest, meadow, wetland).

- Report occurrences of invasive species to iMapInvasives, focusing on large infestations and species that are not yet well established in the region or in Pennsylvania.

Transco has agreed to implement these recommended actions. Transco submitted an update to the PADCNR on April 21, 2022 regarding some minor route and workspace adjustments, of which all areas were included in previous survey coverage. The PADCNR responded on May 3, 2022 and concluded no impacts would be anticipated on species and resources under PADCNR's responsibility based on the avoidance, mitigation, and monitoring measures outlined above and provided the following additional recommended best management practices:

- Use clean Project materials (e.g., weed-free straw) or materials native to the worksite to avoid introducing invasive species from contaminated sources.

- Plant forest buffers where trees were historically present along streams, wetlands, and bodies of water. Buffers should be a minimum of 35 feet in width (ideally at least 100 feet in width). Where trees are not appropriate, buffer with native shrubs and herbaceous plants.

- Manage rights-of-way for diverse native plant communities and wildlife (e.g. monarch butterfly). In seed mixes, include wildflowers that have overlapping bloom periods and provide foraging for pollinators throughout the growing season. Avoid blanket herbicide applications; instead, spot-treat undesirable tall woody vegetation and invasive weeds. Where mowing is necessary, reduce frequency to once every few years during the dormant season (i.e., after first frost in late fall and before bird nesting in early spring), leaving some refugia for overwintering wildlife.

We conclude that no impacts would occur on variable sedge, Collin's sedge, soft-leaved sedge, bog goldenrod, roundleaf serviceberry, screwstem, and lupine due to their confirmed absence in the Project area.

New Jersey

Transco's consultations with the NJNHP and NJDEP identified 18 threatened, endangered, special concern, and rare species under NJDEP jurisdiction that may occur near the Project facilities in New Jersey. These species included 6 mammals, 1 reptile, and 11 birds. Of these, the bald eagle is also federally protected under the BGEPA and is discussed above in section 4.4.4.1; the northern long-eared bat is federally listed as threatened and is discussed in section 4.4.4.2 above; and the little brown bat and tricolored bat are under federal review for federal listing and are also discussed in section 4.4.4.2 above. A summary of surveys and/or proposed mitigation for the remaining species is discussed below.

<u>Big Brown Bat/Eastern Small-footed Bat</u> – The NJDEP identified the big brown bat and eastern small-footed bat as potentially occurring at the existing Compressor Station 505/Centerville Regulator, Station 210 Pooling Point, and the Mt. Laurel M&R Station. However, because removal of landscape trees at Compressor Station 201 and Compressor Station 505/Centerville Regulator would be conducted outside of the summer roost season (April 1 to September 30), and no tree removal would occur at Station 210 Pooling Point or Mt. Laurel M&R Station, impacts on these species in the New Jersey portion of the Project are not anticipated.

<u>Bobcat</u> – The NJDEP identified the bobcat as potentially occurring at the Station 210 Pooling Point. Bobcats occupy coniferous and mixed forest habitats. The Project activities associated with the Station 210 Pooling Point would occur within the existing fenced facility and would not require tree clearing. Therefore, impacts on the bobcat are not anticipated.

<u>Eastern Box Turtle</u> – The NJDEP identified the eastern box turtle as potentially occurring at the new Compressor Station 201 site, and at existing Compressor Station 505/Centerville Regulator, and Station 210 Pooling Point. The eastern box turtle is mostly terrestrial, preferring woods and meadows. In hot, dry weather it may be found in muddy areas, shallow pools, under rotten logs, or other decaying vegetation. Although suitable wooded habitat is not present in the New Jersey Project areas, Transco proposes to perform pre-construction surveys of workspaces in meadow habitat to confirm eastern box turtles are not present prior to initiating activities. In correspondence dated July 12, 2021, NJDEP recommended the following measures to minimize impacts on the eastern box turtle:

- If possible, avoid heavy equipment work between April 15 and October 15 to minimize harm to eastern box turtles; and

- If adherence to the timing restriction above for heavy equipment work is not possible, implement the following measures:

- Visually survey Project area each day prior to initiating activities involving heavy equipment;
- Personnel shall monitor throughout the day to ensure turtles do not move into the workspace and relocate any turtles that enter the work area; and
- Transport any injured turtles to a permitted New Jersey turtle wildlife rehabilitator.

In a letter dated July 27, 2021, Transco committed to implementing the above-recommended measures from the NJDEP. In addition, Transco would install perimeter erosion and sediment controls and construction fencing which would further aid in preventing turtles from entering the workspace.

State-listed Birds – The NJNHP and NJDEP identified 10 bird species state-listed as threatened, endangered, or special concern as potentially occurring at various Project components in New Jersey. These 10 species and their habitat requirements are further outlined in table C-10 in appendix C. As previously discussed, the Project facilities in New Jersey are limited to the proposed Compressor Station 201 site (which would be located on agricultural land (96 percent) and residential land (4 percent)), and various other existing aboveground facilities. As such, suitable habitat for state-listed birds in the New Jersey Project area is limited. In areas where removal of landscape trees would be necessary, Transco would conduct tree removal outside of the breeding season for state-listed birds (April 1 to August 31). Further, in correspondence dated July 12, 2021, NJDEP recommended that all grassy areas (including hay) within the proposed workspaces be maintained/mowed to be less than 4 inches in height prior to and throughout the nesting season to avoid the risk of birds nesting in these areas prior to and during Project activities in New Jersey. In a filing dated July 27, 2021, Transco committed to implementing the recommended vegetation maintenance/mowing measures from the NJDEP.

Maryland

Transco consulted with the MDNR regarding the Beaver Dam M&R Station. In a letter dated August 11, 2020, the MDNR indicated that there are no official state or federal records for listed plant or animal species within the Beaver Dam M&R Station workspace. MDNR further concluded that they have no specific concerns regarding potential impacts or recommendations for protection measures.

Conclusion

In general, impacts on state-listed species would typically be similar to those described for other plant and animal species in sections 4.4.4.2. We have determined that, given the nature of the species present, the results of the surveys conducted and agency consultation, and the measures that Transco would implement as part of the Project, impacts on state-sensitive species would be avoided or appropriately minimized, and impacts would not be significant.

4.5 LAND USE, RECREATION, AND VISUAL RESOURCES

4.5.1 Land Use

Land use categories in the Project area were identified based on field observations conducted in 2019 in addition to interpretation of aerial imagery and other records. Based on that review, the land uses consist of forest/woodland, open land, developed land, and agricultural, with smaller amounts categorized as wetlands, residential, and open water. The total acreage to be disturbed for construction of the Project facilities is 792.3 acres, including 522.7 acres for construction of pipeline facilities, 161.2 acres for construction of aboveground facilities, 45.8 acres for access roads, and 62.6 acres for staging areas. Upon completion, Transco would maintain 175.6 acres for the permanent pipeline right-of-way, including 54.6 acres for aboveground facilities, and 1.3 acres for access roads. The remaining 560.9 acres would be restored and allowed to revert to preconstruction uses, with the exception of about 105.9 acres of forest/woodland within the permanent right-of-way, which would be converted to open and developed land. A summary of the land use categories affected by construction and operation of the Project is provided in table 4.5.1-1.

4.5.2 General Impacts

4.5.2.1 Agricultural

Agricultural land includes land associated with active croplands, hayfields, and pasture. Construction of the Project would impact a total of approximately 100.4 acres of agricultural land. Of the 100.4 acres of agricultural land, approximately 26.1 acres would be within the permanent right-of-way or aboveground facility sites for Project operation.

Construction of the Regional Energy Lateral would impact approximately 15.3 acres of agricultural land, including 15.1 acres for construction of pipeline facilities and 0.2 acre for installation of cathodic protection. Upon completion, Transco would retain 5.6 acres for the permanent pipeline right-of-way and 0.2 acre for cathodic protection in agricultural land.

Construction of the Effort Loop would impact approximately 65.3 acres of agricultural land, including 14.9 acres for construction of pipeline facilities, 0.1 acre for cathodic protection, 0.3 acre for access roads, and 50.0 acres for staging areas. Upon completion, Transco would retain 5.5 acres for the permanent pipeline right-of-way and 0.1 acre for cathodic protection in agricultural land.

Construction of new and modification of existing aboveground facilities as part of the Project would impact approximately 3.0 acres of agricultural land in Pennsylvania and 16.8 acres of agricultural land in New Jersey; no agricultural land would be impacted in Maryland. Upon completion, Transco would retain 14.7 acres for new and expanded facilities and access roads in agricultural land in New Jersey; operation of modified existing facilities in Pennsylvania would not impact agricultural land.

Construction workspace for the Regional Energy Lateral would be within 5 feet of an apple orchard in Luzerne County, Pennsylvania near MP 18.9. Construction and operation of the Regional Energy Lateral would not directly impact the apple orchard. The Effort Loop would cross two Christmas tree farms in Monroe County, Pennsylvania between MPs 48.1 and 48.3 and between MPs 48.6 and 48.9, affecting a total of about 4.4 acres during construction. Transco would clear trees within the construction workspace and the owners of the Christmas tree farms would be compensated for damages to the tree crop.[47] After construction is complete, Transco would retain a total of 1.3 acres for its permanent easement, which would be maintained as open, herbaceous land during operation of the pipeline facilities.

In addition, the Effort Loop would cross one organic farm between MPs 49.3 and 49.5 in Monroe County. Transco confirmed with the landowner that this farm has not received organic certification. No other specialty crops, including nurseries, vineyards, orchards, citrus groves, dairies, and aquaculture, or tree farms, would be affected by the Project.

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[47] The Commission does not have the authority to direct the payment of compensation.

TABLE 4.5.1-1

Summary of Land Use Types Affected by Construction and Operation of the Regional Energy Access Expansion Project

	Agricultural		Forest / Woodland		Developed		Residential		Open Land		Wetlands		Open Water		Total	
Facility, County	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.
PENNSYLVANIA																
Regional Energy Lateral																
Pipeline	10.5	5.6	143.4	74.2	10.0	3.9	2.9	0.8	53.0	23.6	10.9	7.3	2.0	1.5	232.7	116.9
ATWS	4.6	0.0	41.9	0.0	7.5	0.0	3.0	0.0	21.8	0.0	1.6	0.0	0.7	0.0	81.1	0.0
New MLV-515RA20	0.0	0.0	0.5	0.5	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.6	0.6
New MLV-515RA30	0.0	0.0	0.1	0.1	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.5
Cathodic Protection	0.2	0.2	0.6	0.6	0.2	0.2	0.0	0.0	0.0	0.0	0.1	0.1	0.3	0.3	1.4	1.4
Access Roads	<0.1	0.0	6.3	0.1	27.2	0.6	0.9	<0.1	7.2	0.2	0.7	0.0	0.1	0.0	42.4	0.9
Staging Areas	0.0	0.0	0.2	0.0	11.5	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	12.5	0.0
Regional Energy Lateral Subtotal	15.3	5.8	193.0	75.5	56.8	5.1	6.8	0.8	82.9	23.9	13.3	7.4	3.1	1.8	371.2	120.3
Effort Loop																
Pipeline	10.5	5.5	71.7	25.7	5.5	1.3	4.2	1.3	67.5	18.1	2.8	1.4	0.1	0.1	162.3	53.4
ATWS	4.4	0.0	9.4	0.0	1.3	0.0	0.7	0.0	25.5	0.0	0.0	0.0	0.0	0.0	41.3	0.0
New MLV-505LD86	0.0	0.0	0.2	0.2	0.0	0.0	0.1	0.1	1.5	1.5	0.0	0.0	0.0	0.0	1.8	1.8
Existing MLV-505LD81 (Tie-in)	0.0	0.0	0.0	0.0	0.3	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Existing MLV-505LD90 (Tie-in)	0.0	0.0	0.0	0.0	0.4	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.4
Cathodic Protection	0.1	0.1	0.2	0.2	0.0	0.0	<0.1	<0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.3
Access Roads	0.3	0.0	0.2	<0.1	2.3	0.0	0.1	0.0	0.5	0.4	0.0	0.0	0.0	0.0	3.4	0.4
Staging Areas	50.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	50.1	0.0
Effort Loop Subtotal	65.3	5.6	81.7	26.1	9.8	2.0	5.2	1.4	95.0	20.0	2.8	1.4	0.1	0.1	259.9	56.6
Aboveground Facilities																
Compressor Station 515, Luzerne Co	1.9	0.0	18.6	3.8	17.4	15.9	0.0	0.0	9.7	3.8	0.6	0.0	0.0	0.0	48.2	23.5
Compressor Station 195, York Co	0.0	0.0	0.0	0.0	16.4	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	16.4	0.0
Compressor Station 200 , Chester Co	0.0	0.0	0.0	0.0	20.2	4.9	0.0	0.0	<0.1	0.0	<0.1	0.0	0.0	0.0	20.3	4.9
Hildebrandt Tie-in, Luzerne Co	0.0	0.0	1.5	0.3	1.0	0.1	0.0	0.0	0.7	0.2	0.0	0.0	0.0	0.0	3.2	0.6
Lower Demunds REL Tie-in, Luzerne Co	0.0	0.0	0.2	0.2	0.8	0.3	0.0	0.0	0.6	0.3	0.1	<0.1	<0.1	0.0	1.7	0.8

TABLE 4.5.1-1 (cont'd)

Summary of Land Use Types Affected by Construction and Operation of the Regional Energy Access Expansion Project

	Agricultural		Forest / Woodland		Developed		Residential		Open Land		Wetlands		Open Water		Total	
Facility, County	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.
Carverton Tie-In, Luzerne Co	0.0	0.0	0.3	<0.1	1.7	0.1	0.0	0.0	1.8	0.1	0.0	0.0	0.0	0.0	3.8	0.2
Delaware River Regulator, Northampton Co	1.1	0.0	0.7	0.0	5.3	0.0	0.0	0.0	1.3	0.0	0.0	0.0	<0.1	0.0	8.4	0.0
Mainline A Regulator, Bucks Co	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0
Aboveground Facility Subtotal	**3.0**	**0.0**	**21.3**	**4.3**	**63.3**	**21.3**	**0.0**	**0.0**	**14.2**	**4.4**	**0.7**	**0.0**	**0.1**	**0.0**	**102.6**	**30.1**
Pennsylvania Total	**83.6**	**11.4**	**296.0**	**105.9**	**129.9**	**28.4**	**12.0**	**2.3**	**192.1**	**48.3**	**16.8**	**8.8**	**3.3**	**1.9**	**733.8**	**207.1**
NEW JERSEY																
Aboveground Facilities																
Compressor Station 201, Gloucester Co	14.7	14.7	0.0	0.0	0.0	0.0	0.6	0.6	<0.1	<0.1	0.0	0.0	0.0	0.0	15.3	15.3
Compressor Station 505, Somerset Co	0.0	0.0	1.0	0.0	23.7	8.1	0.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	27.7	8.1
Compressor Station 207, Middlesex Co	0.0	0.0	0.0	0.0	5.5	0.0	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	5.5	0.0
Mt. Laurel M&R Station, Burlington Co	0.0	0.0	0.0	0.0	2.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.0	0.2
Lawnside M&R Station, Camden Co	0.0	0.0	0.0	0.0	0.7	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.1
Camden M&R Station, Camden Co	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.0
Centerville Regulator, Somerset Co	0.0	0.0	0.0	0.0	1.8	0.8	0.0	0.0	<0.1	0.0	0.0	0.0	0.0	0.0	1.8	0.8
Station 210 Pooling Point, Mercer Co	2.1	0.0	0.0	0.0	1.1	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	3.4	0.0
Aboveground Facilities Subtotal	**16.8**	**14.7**	**1.0**	**0.0**	**35.4**	**9.2**	**0.6**	**0.6**	**3.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**57.1**	**24.5**
New Jersey Total	**16.8**	**14.7**	**1.0**	**0.0**	**35.4**	**9.2**	**0.6**	**0.6**	**3.3**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**57.1**	**24.5**
MARYLAND																
Beaver Dam M&R Station, Baltimore Co	0.0	0.0	0.0	0.0	1.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0	0.0	0.0	1.5	0.0
Maryland Total	**0.0**	**0.0**	**0.0**	**0.0**	**1.0**	**0.0**	**0.0**	**0.0**	**0.5**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**1.5**	**0.0**
Project Total	**100.4**	**26.1**	**297.0**	**105.9**	**166.3**	**37.6**	**12.6**	**2.9**	**195.9**	**48.3**	**16.8**	**8.8**	**3.3**	**1.9**	**792.3**	**231.5**

TABLE 4.5.1-1 (cont'd)

Summary of Land Use Types Affected by Construction and Operation of the Regional Energy Access Expansion Project

	Agricultural		Forest / Woodland		Developed		Residential		Open Land		Wetlands		Open Water		Total	
Facility, County	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.	Con.[a]	Op.

[a] Construction impacts provided for aboveground facilities account for the area within the temporary right-of-way, and where applicable; new permanent right-of-way, access roads, ATWS, and contractor yards and staging areas.

Note: The sum of addends may not total due to rounding.

The construction methods in actively cultivated agricultural land are described in section 2.3.2.6. The effects of construction on agricultural land would generally be minor and short term except where new aboveground facilities are installed. Short-term impacts on agricultural areas would include the temporary loss of standing and row crops within the construction work area and the disruption of farming operations for the growing season during the year of construction; however, it may take a few years to reach production levels experienced prior to construction. To reduce construction impacts, Transco would follow its Plan, which includes employing erosion and sediment control and restoration measures (e.g., soil stabilization, topsoil segregation, compaction avoidance) to minimize and mitigate impacts on agricultural lands. To preserve soil fertility on agricultural lands, Transco would strip topsoil up to 12 inches in depth, keep it segregated from subsoil, and replace it as the surface layer during restoration to preserve soil productivity.

If present, agricultural drain tiles could be damaged during pipeline construction. Transco would work with landowners during the easement negotiation process to identify existing drain tiles that would be crossed by the Regional Energy Lateral and Effort Loop. If damage to existing drain tiles occurs as a result of pipeline construction, Transco would work with the landowner to restore the damaged drain tiles or compensate the landowner for repairs, relocation, reconfiguration, or replacement.

Following restoration, agricultural activities would be allowed to continue over the permanent pipeline right-of-way (with the exception of the tree farm operations discussed above). Agricultural land in the construction area generally would be taken out of production for one growing season while Project facilities are constructed. However, it is possible that saturated or frozen soil conditions could delay topsoil replacement and final grading until conditions allow for proper soil handling and restoration. In addition, some restoration issues within agricultural areas may develop over time after initial restoration (e.g., trench subsidence, revegetation concerns) that may require additional disturbance of the right-of-way by Transco to correct. Problems with topsoil replacement, compaction, subsidence, rocks, and drainage and irrigation systems resulting from construction in active agricultural areas would continue to be monitored and corrected until restoration is successful. Revegetation of agricultural areas would be considered successful when crop growth and vigor are similar to adjacent undisturbed portions of the same field, unless the easement agreement specifies otherwise. Based on these measures, we conclude impacts on agricultural land would be minimized to the extent practicable.

4.5.2.2 Forest/Woodland

Forest/woodland includes upland forest and woodlands, except forested wetlands, which are discussed in section 4.5.2.6.

Construction of the Regional Energy Lateral would impact approximately 193.0 acres of forest/woodland, including 185.3 acres for construction of pipeline facilities, 1.2 acre for construction of ancillary facilities, 6.3 acres for access roads, and 0.2 acre for staging areas. Upon completion, Transco would maintain 74.2 acres for the permanent pipeline right-of-way, 1.2 acre for ancillary facilities, and 0.1 acre for access roads in forest/woodland.

Construction of the Effort Loop would impact approximately 81.7 acres of forest/woodland, including 81.1 acres for construction of pipeline facilities, 0.4 acre for ancillary facilities, and 0.2 acre for access roads. Upon completion, Transco would maintain 25.7 acres for the permanent pipeline right-of-way, 0.4 acre for ancillary facilities, and less than 0.1 acre for access roads in forest/woodland.

Construction of new and modification of existing aboveground facilities as part of the Project would impact approximately 21.3 acres of forest/woodland in Pennsylvania and 1.0 acre of forest/woodland in New Jersey; no forest/woodland would be impacted in Maryland. Upon completion, Transco would maintain 4.3 acres for expanded facilities and access roads in forest/woodland in Pennsylvania; operation of new and modified existing facilities in New Jersey would not impact forest/woodland.

Construction of the Project in forest/woodland areas would require the removal of trees to prepare the construction workspace. However, Transco would minimize forest/woodland impacts by siting the proposed facilities within existing rights-of-way, minimizing the construction workspace, and utilizing open, industrial/commercial, or agricultural land for aboveground facilities or contractor/pipe yards and contractor staging areas to the extent practicable.

Approximately 297.0 acres of forest/woodland would be temporarily impacted by the construction of the Project. Following construction, permanent impacts would occur over the maintained portion of the right-of-way and aboveground facilities where forest/woodland would be converted to open land or developed land. Transco would retain a 25- to 50-foot-wide permanent right-of-way following construction of the pipeline loops, which would be maintained in accordance with Transco's Plan. A total of 101.6 acres of forest/woodland would be maintained in an herbaceous state over the pipeline centerline during operation of the pipelines. The Delaware State Forest would be affected by Project activities in Pennsylvania as discussed further in section 4.5.4.2.

Based on these measures, we conclude that impacts on forest/woodland areas would be minimized to the extent practical and would not be significant.

4.5.2.3 Developed Land

Developed land includes utility stations, roads, commercial, retail facilities, manufacturing or industrial plants, and transportation rights-of-way. Transco's direct impacts on developed land includes impacts within the property lines of existing Transco facilities and existing roads/railroads crossed during construction of the Project. In total, construction of the Project would impact a total of approximately 166.3 acres of developed land. Of the 166.3 acres of developed land, approximately 37.6 acres would be permanently impacted during operation.

Construction of the Regional Energy Lateral would impact approximately 56.8 acres of developed land, including 17.5 acres for construction of pipeline facilities, 0.6 acre for construction of ancillary facilities, 27.2 acres for access roads, and 11.5 acres for staging areas. Upon completion, Transco would maintain 3.9 acres for the permanent pipeline right-of-way, 0.6 acre for ancillary facilities, and 0.6 acre for access roads in developed land.

Construction of the Effort Loop would impact approximately 9.8 acres of developed land, including 6.8 acres for construction of pipeline facilities, 0.7 acre for new ancillary facilities, and 2.3 acres for access roads. Upon completion, Transco would maintain 1.3 acres for the permanent pipeline right-of-way, and 0.7 acre for ancillary facilities in developed land.

Construction of new and modification of existing aboveground facilities as part of the Project would impact approximately 63.3 acres of developed land in Pennsylvania, 35.4 acres of developed land in New Jersey, and 1.0 acre of developed land in Maryland. Upon completion, Transco would maintain new and expanded facilities and access roads impacting 21.3 acres of developed land in Pennsylvania and 9.2 acres of developed land in New Jersey. Operation of the modified Beaver Dam M&R Station in Maryland would not impact developed land.

Developed lands affected by the Project primarily consist of previously disturbed road rights-of-way and existing Transco aboveground facilities. Transco would minimize impacts on industrial/ commercial land uses by coordinating private driveway crossings with business owners to maintain vehicle access. Steel plates would be kept on site at all times to create a temporary platform for access, as necessary. Road surfaces would be restored as soon as practicable so that normal access can resume and developed land uses would be restored to preconstruction conditions, or as specified in landowner agreements.

Roads and railroads that would be crossed by the Regional Energy Lateral and Effort Loop in Pennsylvania are provided in table C-11 in appendix C. Transco would cross roadways that range from maintained private drives and local paved roads to state highways. These roadways would be crossed using conventional road bore or open-cut crossing methods as described in section 2.3.2.7. The bore crossing method allows the roadway to remain in service while the installation process takes place, resulting in little to no disruption to traffic. In the event of an open-cut crossing, impacts on roadways would include short-term traffic congestion and disruption. To minimize these impacts, Transco would consult with local law enforcement and safety officials to develop temporary traffic control plans. Following construction, roadways would be restored to preconstruction conditions. Overall, developed land uses within the permanent right-of-way would return to preconstruction conditions. Twenty-four commercial structures are within 50 feet of the Project (see table C-13 referenced in section 4.5.2.4).

Transco would use 96 access roads during construction of the Project, 82 of which are existing roads and 14 would be constructed for the Project. Of these 96 access roads, 10 would be retained as permanent access roads during operation of the Project. Table C-12 in appendix C lists the access roads that would be used for each of the Project components. The total acres of each land use type that would be impacted by use of access roads for the Project are provided in table 4.5.1-1.

4.5.2.4 Residential

Residential land consists primarily of housing and other dwellings, including residentially zoned areas that have been developed. Residential lands may also overlap with other land use categories such as forest/woodland and open land. Construction methods proposed for residential areas are described in section 2.3.2.5. Construction of the Project would impact a total of approximately 12.6 acres of residential land, of which approximately 2.9 acre would be permanently impacted during operation.

Construction of the Regional Energy Lateral would impact approximately 6.8 acres of residential land, including 5.9 acres for construction of pipeline facilities and 0.9 acre for access roads. Upon completion, Transco would maintain 0.8 acre for the permanent pipeline right-of-way and less than 0.1 acre for access roads in residential land.

Construction of new Compressor Station 201 would impact approximately 0.6 acre of residential land in New Jersey; modifications of existing facilities in New Jersey, Pennsylvania, and Maryland would not impact residential land. Upon completion, Transco would maintain about 0.6 acre of residential land in New Jersey for operation of Compressor Station 201; this would be a conversion of land use type from residential to developed for the life of the Project.

The structures within 50 feet of the construction work area would be most likely to experience the effects of construction and operation of the Project. Transco's construction work would be within 50 feet of 84 residences and 143 other structures. The residences and structures near the Project are summarized in table C-13 in appendix C.

In general, as the distance to the construction work area increases, the impacts on residences decrease. In residential areas, typically the greatest impacts associated with construction and operation of a pipeline are temporary disturbances during construction and the burden of the permanent easement, which would prevent the construction of permanent structures within the permanent right-of-way. Temporary construction impacts on residential areas could include inconvenience caused by noise and dust generated by construction equipment, personnel, trenching of roads or driveways, traffic congestion, removal of aboveground structures such as fences, ground disturbance of lawns, removal of trees, landscaped shrubs, or other vegetation screening between residences and/or adjacent rights-of-way.

In addition, there is potential for damage to existing septic systems or wells and other utilities. We received a comment specifically expressing concern for construction-related impacts on a residential underground septic tank. Transco would consult with the landowners prior to construction to identify any known wells or septic systems on the property and clearly mark the locations. We received an additional comment on the draft EIS indicating a septic system would be affected by construction. Regarding this property, Transco indicated that the septic system is located over 26 feet from the workspace and that the septic drain field is located cross-slope from the construction workspace and would be protected by erosion control devices during construction. Post-construction, proposed waterbars would be installed and maintained in accordance with the final ESCP and sited to direct water away from the septic drain field to avoid any impacts. Transco will implement a Landowner Complaint Resolution Procedure for addressing landowner concerns both during and after construction, which would include responding to concerns regarding septic systems. If any septic systems are damaged, Transco would be responsible for repair or replacement.

Before mobilizing any equipment, Transco would stake the limits of disturbance and the centerline of the pipeline. Transco would utilize special construction methods designed for working in residential areas. These special construction methods are shown on Transco's RCPs (see appendix D), which we have reviewed and found acceptable. However, **we encourage the owners of each of these residences to review the RCP for their property and provide us any comments or concerns.** Transco has provided the RCPs to the landowners for review and would continue to negotiate with landowners during the right-of-way acquisition process concerning impacts on their property. In addition, Transco would implement the following general measures to minimize construction-related impacts on all residences and other structures within 50 feet of the construction right-of-way:

- leave mature trees and landscaping intact within the construction work area, unless the trees or landscaping interfere with the installation techniques or present unsafe working conditions;
- regularly water the construction workspace to control fugitive dust emissions;
- segregate topsoil from subsoil in residential areas;
- secure the trench within residential areas with safety fencing at the end of each day of construction;
- restrict vehicle speeds on the right-of-way in the vicinity of the residences;
- fence the edge of the construction workspace with safety fencing; and
- restore lawn and landscape areas in the construction workspace immediately after cleanup operations, or as specified in landowner agreements, consistent with the requirements of Transco's Plan.

Because Transco's RCPs have identified locations where residences are within 10 feet of construction workspace and Transco has indicated that removal of some outbuildings within Project workspace is planned, to ensure that property owners have adequate input to a construction activity in close proximity to their residence or that may result in the demolition of their outbuilding, **we recommend that**:

- **<u>Prior to construction</u>, Transco should file with the Secretary, for review and written approval by the Director of OEP, or the Director's designee, evidence of landowner concurrence with the site-specific construction plans for construction workspace within 10 feet of a residence and any plans that include outbuilding removal, unless the workspace is part of the existing maintained right-of-way. If Transco is unable to obtain concurrence, Transco should file revised site-specific construction plans that maintain a 10-foot buffer between the residence and the Project workspace and avoid outbuilding removal.**

Transco developed Environmental/Landowner Complaint Resolution Procedures for all landowners potentially impacted by the Project that outline the procedures to follow if there are any environmental or landowner concerns or problems during construction and/or restoration of the right-of-way. We reviewed these procedures and find them acceptable.

We received a comment on the docket regarding requirements in the Sierra View community bylaws that all residential lots must be 1 acre in size. As part of landowner negotiations and background research for the Project, Transco reviewed the community bylaws for the Sierra View community and was not able to confirm the 1-acre lot size requirement. Any easement agreements sought by Transco for the Project would involve leasing the land from the landowner; therefore, the landowner would retain ownership of the entire parcel and the size of the parcel would not be reduced. The commentor also expressed concerns about the removal of trees from the property that provide visual screening between the residence and the existing maintained pipeline right-of-way. In addition, we received a comment on the draft EIS expressing similar concerns about removal of trees that provide visual screening. Tree clearing would be required within the temporary workspace and permanent easement, but in both locations a buffer of trees would remain between the residence and the pipeline right-of-way. Transco would maintain an additional 25 feet of permanent right-of-way in both locations.

We received comments on the docket regarding the use of eminent domain in situations where Transco and landowners are not able to reach an agreement during easement negotiations. If an easement cannot be negotiated with a landowner and the Project has been certificated by the FERC, the company may use the right of eminent domain granted to it under section 7(h) of the NGA and the procedure set forth under the Federal Rules of Civil Procedure (Rule 71A) to obtain the right-of-way and extra workspace areas. The company would still be required to compensate the landowner for the right-of-way and for any damages incurred during construction. However, a court would determine the level of compensation if a Certificate is issued. In either case, the landowner would be compensated for the use of the land.

We received a comment on the docket from a landowner regarding the potential for damage to outbuildings on their property or trees, shrubs, and other vegetation planted on the property with the assistance of Monroe County Conservation Service, PADCNR funding, and USDA/NRCS grant funding. The Effort Loop is collocated with existing Transco pipelines where it crosses this parcel. Land cover within the temporary workspace is forested and tree clearing would be necessary in this area. Transco would compensate landowners for the right-of-way and for any damages incurred during construction; however, the Commission is not a party to easement negotiations or any associated court proceedings and does not direct the payment of compensation. We have included a recommendation above for Transco to obtain landowner concurrence for any structure removals.

4.5.2.5 Open Land

Open land includes existing right-of-way, vacant land, herbaceous and scrub-shrub upland, and non-forested lands. Open land does not include wetlands or open water. In total, construction of the Project would impact a total of approximately 195.9 acres of open land. Of the 195.9 acres of open land, approximately 48.3 acres would be permanently impacted during operation.

Construction of the Regional Energy Lateral would impact approximately 82.9 acres of open land, including 74.8 acres for construction of pipeline facilities, 0.1 acre for construction of ancillary facilities, 7.2 acres for access roads, and 0.8 acre for staging areas. Upon completion, Transco would maintain 23.6 acres for the permanent pipeline right-of-way, 0.1 acre for ancillary facilities, and 0.2 acre for access roads in open land.

Construction of the Effort Loop would impact approximately 95.0 acres of open land, including 93.0 acres for construction of pipeline facilities, 1.5 acres for new ancillary facilities, and 0.5 acre for access roads. Upon completion, Transco would maintain 18.1 acres for the permanent pipeline right-of-way, 1.5 acres for ancillary facilities, and 0.4 acre for access roads in open land.

Construction of new and modification of existing aboveground facilities as part of the Project would impact approximately 14.2 acres of open land in Pennsylvania, 3.3 acres of open land in New Jersey, and 0.5 acre of open land in Maryland. Upon completion, Transco would maintain 4.4 acres for modified facilities in open land in Pennsylvania; operation of new and modified existing facilities and access roads in New Jersey and modified facilities in Maryland would not impact open land.

The majority of the open land that would be impacted by the Project is associated with Transco's existing utility rights-of-way or other utility rights-of-way currently maintained as open land. Temporary impacts on open land are expected during grading, trenching, backfilling, and restoration; however, Transco's use of their Plan would minimize impacts. Routine vegetation maintenance would be conducted by mowing, cutting, or clearing. Within 1 to 5 years following construction, most open land uses would return to preconstruction conditions. In total, approximately 49.0 acres of open land would be permanently converted to developed land for the aboveground facilities and access roads.

We received comments on the docket and in response to the draft EIS regarding unauthorized use of the open, maintained right-of-way for trash disposal and unauthorized use by trespassers and ATV users during operation of the Project. Easements acquired by Transco are not exclusive easements and landowners retain the right to enter and use the property during operation, with certain restrictions (e.g., limits to structure placement in or near the right-of-way). Transco typically does not limit surface access along its right-of-way unless asked to do so by a landowner due to concerns about unauthorized use. Land access is generally the responsibility of the landowner who still retains rights to limit access to their property. Transco has offered to install gates or fencing to limit access for one landowner; the landowner declined. Transco is working with this landowner to find an agreeable solution to limit unauthorized use of the open, maintained right-of-way.

4.5.2.6 Wetlands

Wetlands include field-delineated wetlands as well as forested wetlands. Construction of the Project would impact a total of approximately 16.8 acres of wetlands. Of the 16.8 acres of wetland impacts, approximately 8.8 acres would be permanently impacted during operation. Information about wetland classifications and a detailed discussion about impacts on wetlands is provided in section 4.3.3.

Construction of the Regional Energy Lateral would impact approximately 13.3 acres of wetlands, including 12.5 acres for construction of pipeline facilities, 0.1 acre for installation of cathodic protection, and 0.7 acre for access roads. Upon completion, Transco would maintain 7.3 acres for the permanent pipeline right-of-way and 0.1 acre for cathodic protection in wetlands.

Construction of the Effort Loop would impact approximately 2.8 acres of wetlands for construction of pipeline facilities. Upon completion, Transco would maintain 1.4 acres for the permanent pipeline right-of-way in wetlands.

Modification of existing aboveground facilities as part of the Project would impact approximately 0.7 acre of wetlands in Pennsylvania; no wetlands would be impacted in New Jersey or Maryland from construction of new or modifications to existing aboveground facilities. Upon completion, operation of modified existing facilities in Pennsylvania would not impact wetlands.

The temporary impacts related to construction would be minimized by implementing the special wetland construction techniques described in sections 2.3.2.3 and 4.3.3.2, which include the measures in Transco's Procedures. Impacts on wetlands are described in detail in section 4.3.3.2

4.5.2.7 Open Water

The open water classification includes waterbody crossings that are visible on aerial photography and field delineated waterbodies. Construction of the Project would impact a total of approximately 3.3 acres of open water. Of the 3.3 acres of open water, approximately 1.9 acres would be permanently maintained as right-of-way but would not result in operational impacts on the waterbodies.

Construction of the Regional Energy Lateral would impact approximately 3.1 acres of open water, including 2.7 acres for construction of pipeline facilities, 0.3 acre for installation of cathodic protection, and 0.1 acre for access roads. Upon completion, Transco would retain easements totaling 1.5 acres for the permanent pipeline right-of-way and 0.3 acre for cathodic protection in open water. Upon completion, Transco would not maintain permanent pipeline right-of-way across open water.

Construction of the Effort Loop would impact approximately 0.1 acre of open water for construction of pipeline facilities. Upon completion, Transco would retain easements of 0.1 acre for the permanent pipeline right-of-way in open water. Upon completion, Transco would not maintain permanent pipeline right-of-way across open water.

Modification of existing aboveground facilities as part of the Project would impact approximately 0.1 acre of open water in Pennsylvania; no open water would be impacted in New Jersey or Maryland from construction of new or modifications to existing aboveground facilities. Upon completion, operation of modified existing facilities in Pennsylvania would not impact open water.

The temporary impacts related to construction would be minimized by implementing the special waterbody construction techniques described in sections 2.3.2 and 4.3.2.5 in addition to the measures in Transco's Procedures. Operation of the pipeline facilities would not impact waterbodies and use would continue as before construction.

4.5.3 Planned Developments

Transco contacted local planning officials in the affected municipalities to identify planned residential or commercial developments crossed by or within 0.25 mile of the Project. Transco received correspondence from the agencies that no commercial or residential developments would be crossed by the Project. However, the following planned commercial and residential developments were identified within 0.25 mile of the Project.

Near MP 11.2 in Luzerne County, Pennsylvania the Regional Energy Lateral would be about 0.1 mile east of ongoing infrastructure, milling, and paving along Maple Wood Drive. Maple Wood Drive is within an existing housing development and would not be used by construction personnel for Project access. No impacts on ongoing road work along Maple Wood Drive are anticipated.

Near MP 11.1 in Luzerne County, Pennsylvania the Regional Energy Lateral would be about 0.1 mile southwest of proposed residential structure on Market Street. The Regional Energy Lateral would not cross Market Street nor would this street be used by construction personnel for Project access. No impacts on construction of the proposed residence are anticipated.

Compressor Station 200 is within 0.2 mile of the planned Bacton Hill Expansion, which will include widening of a surface parking area and installation of a private fueling station and outdoor storage area. No impacts on the planned Bacton Hill Expansion are anticipated from the proposed modifications to Compressor Station 200.

Compressor Station 201 would be 0.2 mile west of a planned parking lot and stormwater detention basin along Nolte Drive in Gloucester, New Jersey. No impacts on the planned work along Nolte Drive are anticipated from construction or operation of Compressor Station 201.

4.5.4 Public Land, Recreation, and Special Interest Areas

Transco would affect the recreation and special land use areas listed in table C-14 in appendix C. Collectively, the Project would impact a total of about 112 acres of recreational and special interest areas during construction. With the exception of the proposed modifications to the existing Beaver Dam M&R Station, no permanent impacts from aboveground facilities would occur on recreational or special interest areas. Transco would not impact any wilderness areas or national wildlife refuges, Native American reservations, national parks, national historic landmarks, Conservation Reserve Program or Enhancement Program, Wetland Reserve Program, Farm and Ranch Lands Protection Program, Clean and Green Program, Agricultural Security Areas, flood control levees, or national landmarks.

4.5.4.1 National Trails

The Regional Energy Lateral would cross two National Trails in Luzerne County, Pennsylvania: The Captain John Smith Chesapeake National Historic Trail and the Susquehanna River Water Trail – North Branch, a National Recreation Trail. In addition, modifications at the Mainline A Regulator in Bucks County, Pennsylvania would be within 0.25 mile of the Delaware River Water Trail, a National Recreation Trail. No National Trails would be crossed by or within 0.25 mile of the Project in New Jersey or Maryland.

Captain John Smith Chesapeake National Historic Trail and the Susquehanna River Water Trail – North Branch

The Captain John Smith Chesapeake National Historic Trail was the first designated national water trail in the U.S. and stretches across about 3,000 miles of Chesapeake Bay and its tributaries in Virginia, Maryland, Delaware, Pennsylvania, New York, and the District of Columbia (Susquehanna National Heritage Area, n.d.; Chesapeake Conservancy, 2021). The water trail received designation as a National Historic Trail in 2006 and was extended in 2012 to include the entire Susquehanna River south of Cooperstown, New York (Susquehanna National Heritage Area, n.d.).

The Susquehanna River Water Trail – North Branch stretches along 181 miles in Pennsylvania and was designated as a National Recreation Trail by the National Park Service (NPS) in 2009. The water trail is managed by PFBC with funding support from the PADCNR as part of the Pennsylvania Water Trail System (Endless Mountains Heritage Region, 2021). The PFBC designates Water Trail Sponsors to assist with management of water trails; management of the Susquehanna River Water Trail – North Branch is designated to the Endless Mountains Heritage Region and the Susquehanna Greenway Partnership (PFBC, n.d.). The goal of the PADCNR Water Trail Designation is to restore and conserve natural resources along the water trails while encouraging recreational use (PADCNR, 2021c).

The Regional Energy Lateral would cross the Captain John Smith Chesapeake National Historic Trail and the Susquehanna River Water Trail – North Branch between MPs 13.5 and 13.7; these trails both follow the Susquehanna River and would be crossed at the same time. Transco plans to complete this crossing using the Direct Pipe® method, which is a trenchless technique described in section 2.3.2.2. Use of the Direct Pipe® method would avoid direct impacts on the water trails and minimize the need for vegetation clearing along the margins of the Susquehanna River. Indirect impacts such as increases in noise and dust during construction of the Regional Energy Lateral could occur, but would be reduced by the presence of forested riparian areas along the margins of the Susquehanna River, which would reduce potential noise impacts and provide screening for recreational users of the trails. Transco would implement the measures outlined its Fugitive Dust Control Plan to minimize impacts from fugitive dust during construction (refer to section 4.8.3 for additional details regarding fugitive dust control measures). Indirect impacts at the crossing of the Captain John Smith Chesapeake National Historic Trail and the Susquehanna River Water Trail – North Branch would be temporary and would resolve with the completion of construction.

Transco consulted with the NPS regarding the planned crossing of the Susquehanna River Water Trail and the Captain John Smith Chesapeake National Historic Trail. The NPS expressed concerns about previously undiscovered archaeological sites that could be present along the margins of the river and recommended consultation with the Haudenosaunee Confederacy. The NPS also requested additional information about potential viewshed and auditory impacts associated with the Direct Pipe® crossing. Transco responded to the NPS requests and noted that installation of the pipeline lateral at this crossing would occur between the third and fourth quarters of 2022 and would last approximately 2 to 3 months. Noise modeling conducted for the crossing indicates that noise levels will remain below the sound level criteria of 55 A-weighted scale (dBA). Auditory and viewshed impacts on public use of the trail would be minor and limited to the time that trail users are passing by the Direct Pipe® crossing. Transco has committed to monitoring sound levels during construction and implementing noise mitigation measures during construction, as needed. The NPS responded to Transco’s proposed mitigation measures for minimizing auditory and visual disturbance to recreational users of the trail and stated that the measures address the agency’s concerns. Additional information about potential noise impacts during construction of the Project are provided in section 4.9. Information regarding Tribal consultation and archaeological investigations for the Project is discussed in section 4.6, including consultation with the following Tribes associated with the Haudenosaunee Confederacy: Cayuga Nation; Oneida Indian Nation; Oneida Tribe of Indians of Wisconsin; Onondaga Nation of New York; Seneca Nation of Indians; Seneca-Cayuga Tribe of Oklahoma; St. Regis Mohawk Tribe; Tonawanda Seneca Nation; and Tuscarora Nation.

Transco submitted an Aid to Navigation Plan (ATON) to the PFBC for the proposed Direct Pipe® crossing of the Susquehanna River that describes the trenchless construction methods that will be used for the river crossing and outlines the measures Transco will implement during construction to ensure the safety of all watercraft during active construction. Prior to the start of construction, Transco proposes to install signage on both sides of the river 200 feet upstream and downstream of the crossing. The signage will direct boaters away from the water withdrawal and discharge structures and discourage stopping or anchoring within the work zone. Transco will also install “Boats Keep Out” buoys every 75 feet beginning 100 to 200 feet upstream, downstream, and to the east of the water intake location. The buoys and all signage will be removed following successful completion of the crossing. The PFBC approved Transco’s ATON and noted that a PFBC-277 Application to Install Floating Structures/Private Aids to Navigation must be submitted prior to installation of the buoys. The PFBC further noted that the Bureau of Law Enforcement may inspect the crossing at any time during active construction.

Delaware River Water Trail

The Delaware River Water Trail stretches along about 250 miles between Hancock, New York and Trenton, New Jersey/Morrisville, Pennsylvania and is designated as a National Recreation Trail and a National Wild and Scenic River (Delaware River Greenway Partnership, 2016; Delaware River Water Trail, n.d.). The water trail is managed by PFBC with funding support from PADCNR as part of the Pennsylvania Water Trail System. The existing Mainline A Regulator in Bucks County is less than 0.1 mile from the Delaware River Water Trail. No direct impacts on the water trail are anticipated as a result of construction or operation of the proposed modifications to the existing Mainline A Regulator. Indirect impacts related to increases in noise and dust during construction could occur but would be minor and limited to the period of active construction. Following completion of the proposed modifications at this facility, indirect impacts would cease. Furthermore, forested land between the facility and the water trail would help to minimize potential increases in noise and dust and provide visual screening for recreational users of the water trail.

4.5.4.2 State Forest

The Project would not directly impact state forest land in Pennsylvania, but the Effort Loop would be within 0.25 mile of the Delaware State Forest. No state forest land would be crossed or within 0.25 mile of the Project in New Jersey or Maryland.

Delaware State Forest

The Delaware State Forest in Monroe County, Pennsylvania consists of approximately 83,519 acres in Monroe, Pike, Northampton, and Carbon Counties, Pennsylvania (PADCNR, 2021). The forest is named for the Delaware River and contains remote glacial lakes and bogs with abundant plant life, wildlife, and scenic views. Public recreational opportunities within the forest include hunting, fishing, horseback riding, hiking, cross-country skiing, and snowmobiling. The resources and ecosystem of the forest is also actively managed by PADCNR, Bureau of Forestry through timber harvests, deer enclosure fences, natural gas drilling sites, prescribed fires, and gypsy moth spraying (PADCNR, 2021a).

The Effort Loop would be less than 0.2 mile from the Delaware State Forest between MPs 54.0 and 54.6 and within 0.1 mile of the forest between MPs 55.4 and 56.6. The Effort Loop would not cross the Delaware State Forest and no direct impacts on public use of the forest or on resource and ecosystem management initiatives would occur as a result of the construction or operation of the pipeline loop. Indirect impacts such as increases in noise and dust during construction of the Effort Loop could occur, but would be minimal due to the presence of forested areas and State Route 115 between the Effort Loop and the state forest, which would screen visual impacts and reduce potential noise impacts. These indirect impacts would be temporary and would resolve with the completion of construction.

4.5.4.3 State Parks

The Project would not directly impact state parks in Pennsylvania, but the Regional Energy Lateral would be within 0.25 mile of the Frances Slocum State Park, and the existing Mainline A Regulator is less than 0.1 mile from the Delaware Canal State Park. No state parks would be crossed or within 0.25 mile of the Project in New Jersey or Maryland.

Frances Slocum State Park

Frances Slocum State Park in Luzerne County, Pennsylvania consists of approximately 1,035 acres and includes a 165-acre horseshoe-shaped lake of the same name that is a popular location for boating and fishing (PADCNR, 2021b). The state park is managed by PADCNR and is open year-round offering access to public recreation activities such as hiking, fishing, biking, picnicking, boating, swimming, and camping. The state park also contains the Patrick J. Solano Environmental Education Center, which offers curriculum-based environmental education programs and teacher workshops for schools in the area. The Regional Energy Lateral would be within 0.1 mile of the state park between MPs 18.9 and 20.0. The Regional Energy Lateral would not cross the Frances Slocum State Park and no direct impacts on public use of the park would occur as a result of construction or operation of the Regional Energy Lateral. Indirect impacts such as increases in noise and dust during construction of the Regional Energy Lateral could occur, but would be minimal due to the presence of forested areas between the lateral and the state park, which would screen visual impacts and reduce potential noise impacts. These indirect impacts would be temporary and would resolve with the completion of construction.

Delaware Canal State Park

Delaware Canal State Park runs between Easton and Bristol, Pennsylvania and includes a 59-mile towpath along the Delaware Canal, a 50-acre pond, and passes 11 river islands as it travels along the Delaware River (PADCNR, 2021). The park is managed by PADCNR and provides public recreation opportunities for biking, hiking, fishing, and picnicking. The park also offers a variety of environmental, recreational, and historical programs including curriculum-based education programs for local schools.

Mainline A Regulator is less than 0.1 mile from Delaware Canal State Park in Bucks County, Pennsylvania. Mainline A Regulator is an existing facility and no direct impacts on the park would occur as a result of the modifications proposed by Transco. Indirect impacts such as increases in noise and dust could occur during construction at the Mainline A Regulator, but these impacts would be minor and temporary and would resolve with the completion of construction. The area between the facility and the park consists of clusters of trees and some residential properties, which would provide some screening and further minimize indirect impacts.

4.5.4.4 State Game Lands

State Game Lands in Pennsylvania are managed by the PGC to preserve wildlife habitat and to promote recreational uses such as hunting and trapping (PGC, 2021). Game hunting seasons in Pennsylvania generally extend from September through December, with some game seasons open in April and May (e.g., spring gobblers) (Pennsylvania Pressroom, 2021). Trapping seasons in Pennsylvania generally extend from October through the winter months, depending on the species. State Game Lands also provide opportunities for public recreation activities such as shooting ranges, horseback riding, biking, and snowmobiling.

State Game Lands #091 consists of 21,137 acres of in Luzerne and Lackawanna Counties and is comprised of undulating forested terrain with dry slopes in upland areas and swampy, poorly drained low-lying areas (PGC, 2015). Whitetail deer, black bear, ruffed grouse, squirrel, and wild turkey are the most common game species for hunting on State Game Lands #091, and raccoon, coyote, and beaver are the most common species for trapping in this area. The Regional Energy Lateral would cross State Game Lands #091 in Luzerne County for 2.8 miles between approximate MPs 2.0 and 4.9, affecting 46.5 acres during construction. The use of temporary access roads AR-LU-030.1, AR-LU-029, AR-LU-035, and AR-LU-036 in this same area would further affect 9.3 acres of State Game Lands #091 during construction of the Regional Energy Lateral. Land cover where the Regional Energy Lateral crosses State Game Lands #091 is a mix of forested land, open land, and maintained pipeline and other utility line rights-of-way. Land cover along the proposed access roads is predominantly open land, with some smaller pockets of forested land.

The Regional Energy Lateral also would cross State Game Lands #091 for 0.2 mile between approximate MPs 7.6 and 7.8, affecting 2.4 acres during construction. This portion of State Game Lands #091 is also a Land and Water Conservation Fund (LWCF) easement; LWCF easements are discussed in section 4.5.4.5. Land cover in this area is a mix of forested land, open land, and maintained pipeline and other utility line rights-of-way.

In addition to the crossings noted above, the beginning of the Regional Energy Lateral (between MPs 0.0 and 0.7) and Compressor Station 515 would be within 0.1 mile of State Game Lands #091. While indirect impacts such as construction noise and dust may occur, these impacts will be temporary and limited to the construction phase of the Project. Land cover surrounding Compressor Station 515 and the beginning of Regional Energy Lateral is forested land, which would provide some screening and minimize the indirect impacts during construction.

Where the Regional Energy Lateral crosses State Game Lands #091, the pipeline lateral would be collocated with Transco's existing pipeline right-of-way as well as other utility rights-of-way (e.g., electric transmission lines). Public access for recreational activities is available via numerous public roads within State Game Lands #091 and construction or operation of the Regional Energy Lateral would not limit public access.

Construction of the Regional Energy Lateral would temporarily affect about 49.0 acres of State Game Lands #091. In addition, Transco would use four temporary access roads during construction that would affect 9.3 acres within State Game Lands #091. The access roads would be used to access the right-of-way during construction.

The expansion of the Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact recreational use of State Game Lands #091. Impacts on recreational use of State Game Lands #091 could include temporary increases in noise and dust during construction as well as temporary traffic delays in the area when equipment is transported. Also, hunters and other recreational users within 0.25 mile of the Project could experience temporary disruptions and views of construction equipment and personnel.

During operation, Transco would retain an additional 25 feet of permanent right-of-way adjacent to its existing mainline right-of-way through the area resulting in a total of 17.9 acres of new permanent impact on State Game Lands #091. Temporary access roads used during construction of the Regional Energy Lateral would be restored following the completion of construction and no permanent impacts from these facilities are anticipated.

State Game Lands #129 consists of 3,702 acres in Monroe and Carbon Counties, Pennsylvania and is comprised of rolling, forested terrain (PGC, 2016). Deer, squirrel, bear, and grouse are the primary game species for hunting on State Game Lands #129. The Effort Loop would be within 0.1 mile of State Game Lands #129 between MPs 56.6 and 57.2; no direct impacts on State Game Lands #129 from construction or operation of the Effort Loop would occur. Indirect impacts from increases in noise and dust during construction could occur but would be minor and temporary. The area between the Effort Loop and State Game Lands #129 is forested, which would provide natural screening during construction and reduce the potential for visual and auditory impacts during recreational use of State Game Lands #129. Indirect impacts on State Game Lands #129 would resolve when construction of the Effort Loop is complete.

Transco is coordinating with the PGC as part of the process to obtain a Right-of-Way Permit for the planned Regional Energy Lateral crossing of State Game Lands #091. The PGC has requested the following mitigation measures for this crossing:

- Transco would mark the limits of disturbance for all construction workspaces within State Game Lands #091 prior to the start of construction.

- PGC would provide Transco with its preferred seed mix for use during restoration of the temporary workspaces on State Game Lands #091.

- Transco would use biodegradable erosion control blankets or hydroseeding.

- Transco would plant trees and shrubs within the temporary construction workspaces during restoration. PGC would provide Transco with a list of preferred species to be used.

- Transco would construct two permanent vehicular stream crossing bridges; PGC would provide Transco with the specifications for the bridges.

- Transco would leave its temporary construction entrance at Meadow Run Road for use as a permanent minimum use driveway after construction is complete. Transco is reviewing the proposal in coordination with Pennsylvania Department of Transportation.

Construction of the Regional Energy Lateral is proposed to begin in the second quarter of 2023 and end in the fourth quarter of 2024. Construction during this period could overlap with hunting season in the State Game Lands in the third and fourth quarters of 2023, spring of 2024, and third and fourth quarters of 2024. However, Transco would not restrict access to hunter-access points during construction and operation of the Regional Energy Lateral and would post signs at the entrance to the hunter-access point to notify users about construction activities.

4.5.4.5 Conservation Easements

Pennsylvania

Federal Emergency Management Agency

FEMA is the federal agency responsible for coordinating the federal government's preparation for and response to disasters (FEMA, 2020). Through its Hazard Mitigation Assistance Program, FEMA works with communities to acquire, or buy out, properties in flood-prone areas and help to communities to maintain these areas as open space (FEMA, n.d.). Properties are then either demolished or relocated to an area that is outside of the flood zone. Funding for the program is managed at the state level and participation in the program is voluntary.

The Regional Energy Lateral would cross an unnamed floodplain open space easement in Jenkins Township, Luzerne County between MPs 13.4 and 13.4, affecting 1.2 acres during construction. The unnamed floodplain open space easement is on the south side of the Susquehanna River and Transco proposes to cross the river and this easement using the Direct Pipe® method. Transco would clear vegetation within ATWS in this area to allow for the safe operation of equipment, which would be a temporary direct impact on the floodplain easement. Indirect impacts, including increases in noise and dust, could occur during construction at this crossing, but would be temporary and minor and would resolve with the completion of construction. Temporary indirect impacts during construction would not affect the nature and use of this area as open space or the enrollment of this parcel in the FEMA buyout program.

Land and Water Conservation Fund

The LWCF is a federal program that supports federal, state, and local conservation efforts for natural areas, water resources, cultural heritage, and public recreation opportunities through strategic agency partnerships, land acquisitions, and grants (U.S. Department of the Interior (DOI), n.d.). Federal agencies that receive LWCF funding to support their land and resource management initiatives include the NPS, Bureau of Land Management, FWS, and the U.S. Forest Service. LWCF funding is also awarded to state, local, and Tribal communities through grants that are used to establish community green spaces, protect historic and cultural sites, enhance public access to water resources, and conserve natural landscapes for public use and enjoyment. In some instances, participating state and local agencies partner with landowners to establish voluntary conservation easements on private property.

The use of LWCF funding to establish parks, conservation easements, or other natural areas restricts development or use of these lands for any purpose other than public recreation is considered a conversion of use and is prohibited without prior approval from the NPS pursuant to section 6(f)(3) of the LWCF Act (NPS-DOI, 2008). For a conversion of use to be reviewed by NPS, the State LWCF Liaison Officer must submit a written request for review to NPS on behalf of the project sponsor. The NPS will consider whether a request conforms to the prerequisites set forth in 36 CFR 59. Underground utility easements that do not affect recreational use of an area and that restore the area to its original surface conditions may not trigger a conversion of use review, if the NPS determines that certain criteria are met (NPS-DOI, 2008). The criteria most applicable to the Project are the completion of all necessary coordination with federal agencies with jurisdiction over the project and a completed environmental review as a part of another federal action. The NPS will review the proposal received from the State LWCF Liaison Officer after all environmental review requirements have been met for the other federal action.

The Regional Energy Lateral would cross two parcels with LWCF funding that are managed by PADCNR in Luzerne County, Pennsylvania: Spadi Park/Greenfield Park, and one parcel of State Game Lands #091. The Effort Loop would cross one parcel with LWCF funding that is managed by PADCNR in Monroe County, Pennsylvania: Route 715 Chestnuthill Township Park. A discussion of potential Project impacts on these parcels is provided in sections 4.5.4.4 and 4.5.4.7.

Transco would coordinate with the PADCNR to develop the materials required by NPS to evaluate whether a conversion of use review would be required for these crossings.

North Branch Land Trust Easement

The North Branch Land Trust is a non-profit organization founded in 1993 to help preserve natural landscapes throughout eight counties in northeastern Pennsylvania: Bradford, Susquehanna, Sullivan, Wyoming, Lackawanna, Wayne, Luzerne, and Columbia (North Branch Land Trust, 2021). The organization focuses its conservation efforts on watersheds along the North Branch of the Susquehanna River and to date has protected over 20,000 acres of land through landowner donation and fundraising to purchase properties.

The North Branch Land Trust owns the 3,500-acre Bear Creek Camp Conservation Area in Luzerne County, Pennsylvania. This property is also subject to a PADCNR-held conservation easement and includes a summer camp (Bear Creek Camp) and is open to the public for passive recreation. The Regional Energy Lateral would cross the conservation area between MPs 4.9 and 5.9; Regional Energy Lateral would be collocated with Transco's existing pipeline right-of-way where it crosses the conservation area. Construction of the Regional Energy Lateral would temporarily affect about 13.0 acres of the conservation area.

The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact recreational use of the conservation area. Indirect impacts on recreational use of the conservation area could include temporary increases in noise and dust during construction. Also, recreational users within 0.25 mile of the Project could experience temporary disruptions and views of construction equipment and personnel. Indirect impacts would be temporary and would resolve when construction is complete.

During operation, Transco would retain an additional 50 feet of permanent right-of-way adjacent to its existing mainline right-of-way through the area resulting in a total of 5.8 acres of new permanent impact on the Bear Creek Camp Conservation Area.

As noted in Transco's application, the PADCNR has deferred coordination for the Regional Energy Lateral crossing to the North Branch Land Trust. Transco would coordinate with the North Branch Land Trust to develop measures to minimize disturbance to recreational users of the area, including posting signs at centrally located or designated facilities within the conservation area to notify users of the recreational area about the timing and location of planned construction activities. Construction of the Regional Energy Lateral is proposed to begin in the second quarter of 2023 and end in the fourth quarter of 2024. Construction during this period could overlap with recreational use of the conservation area during the summer of 2023 and 2024.

Bald Mountain Preserve/Natural Trust Lands

Bald Mountain Preserve is a 385-acre nature preserve in Luzerne County, Pennsylvania (Natural Lands, 2021). The nature preserve was purchased by the Natural Lands Trust in 2013 to be maintained as an open natural area that is open to the public for passive recreation. Natural Trust Lands is a non-profit organization that seeks to preserve open space and natural areas in eastern Pennsylvania and southern New Jersey through either purchasing the land or establishing a conservation easement on the property. In both cases, the goal is to maintain the land as open natural space and limit development.

The Regional Energy Lateral would cross the Bald Mountain Preserve between MPs 6.6 and 7.3. The Regional Energy Lateral would be collocated with Transco's existing pipeline right-of-way and an existing transmission line right-of-way where it crosses the nature preserve and construction of the Regional Energy Lateral would temporarily affect about 8.0 acres. The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact recreational use of the nature preserve. Indirect impacts on recreational use of the nature preserve could include temporary increases in noise and dust during construction. Also, recreational users within 0.25 mile of the Project could experience temporary disruptions and views of construction equipment and personnel. Indirect impacts would be temporary and would resolve when construction is complete.

During operation, Transco would retain an additional 50 feet of permanent right-of-way adjacent to its existing right-of-way through the area resulting in a total of 4.0 acres of new permanent impact on the Bald Mountain Preserve.

Transco would coordinate with the Natural Land Trust to develop measures to minimize disturbance to recreational users of the area, including posting signs at centrally located or designated facilities within the preserve to notify users of the recreational area about the timing and location of planned construction activities. Construction of the Regional Energy Lateral is proposed to begin in the second quarter of 2023 and end in the fourth quarter of 2023. Construction during this period could overlap with recreational use of the conservation area during the summer of 2023 and 2024.

<u>The Nature Conservancy</u>

The Nature Conservancy is a non-profit organization that seeks to preserve natural open spaces through land purchases, conservation easements, and various advocacy initiatives (The Nature Conservancy, 2021). The Nature Conservancy owns and manages a property in Monroe County, Pennsylvania that would be crossed by the Effort Loop between approximate MPs 56.5 and 56.9. This property is directly adjacent to the Long Pond Preserve and a property owned by Monroe County that is managed by The Nature Conservancy. Land cover on the property consists of forested land and open, maintained, herbaceous land associated with Transco's existing right-of-way.

The Effort Loop would be collocated with Transco's existing pipeline right-of-way where it crosses the property and construction of the pipeline loop would temporarily affect about 5.3 acres. The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact recreational use of the property. Indirect impacts on recreational use of the property could include temporary increases in noise and dust during construction. Also, recreational users within 0.25 mile of the Project could experience temporary disruptions and views of construction equipment and personnel. Indirect impacts would be temporary and would resolve when construction is complete. During operation, Transco would retain an additional 50 feet of permanent right-of-way adjacent to its existing right-of-way through the area resulting in a total of 2.2 acres of new permanent impact on the property.

Another property that is owned by Monroe County and managed by The Nature Conservancy and PADCNR would be crossed by the Effort Loop between MPs 55.7 and 56.5. The Monroe County property is directly adjacent to the Long Pond Preserve and the property owned and managed by The Nature Conservancy, that is described above. Land cover where the Effort Loop would cross the Monroe County property is forested land and open, maintained, herbaceous land associated with Transco's existing right-of-way. The Effort Loop would be collocated with Transco's existing pipeline right-of-way where it crosses the Monroe County property and construction of the pipeline loop would temporarily affect about 10.1 acres.

The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact recreational use of the Monroe County property. Indirect impacts on recreational use of the property could include temporary increases in noise and dust during construction. Also, recreational users within 0.25 mile of the Project could experience temporary disruptions and views of construction equipment and personnel. Indirect impacts would be temporary and would resolve when construction is complete. During operation, Transco would retain an additional 50 feet of permanent right-of-way adjacent to its existing right-of-way through the area resulting in a total of 5.1 acres of new permanent impact on the Monroe County property.

The Bethlehem Authority is a political corporate body that was formed pursuant to the Pennsylvania Municipal Authority Act of 1935 (Bethlehem Authority, 2021). Oversight of the Bethlehem Authority is comprised of a Board appointed by the Mayor and City Council of Bethlehem. The Bethlehem Authority represents the financial arm of the city's water system and also manages over 22,000 acres of watershed lands in Carbon and Monroe Counties. The Bethlehem Authority owns property located northwest of the intersection of State Road 115 and Kuhenbeaker Road that would be crossed by the Effort Loop between MPs 53.9 and 54.9 in Tunkhannock Township, Monroe County, Pennsylvania. The

Bethlehem Authority granted a conservation easement and management of the property to the Nature Conservancy in 2011 and the property is managed by The Nature Conservancy and PADCNR.

The Effort Loop would be collocated with Transco's existing pipeline right-of-way where it crosses the Bethlehem Authority property and construction of the pipeline loop would temporarily affect about 10.3 acres. The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest land along the existing right-of-way to open, maintained, herbaceous lands. Beyond the conservation easement on this property, it does not appear to be open for public recreation. During operation, Transco would retain an additional 50 feet of permanent right-of-way adjacent to its existing right-of-way through the area resulting in a total of 5.4 acres of new permanent impact on the property.

Transco would coordinate with The Nature Conservancy and Monroe County to develop measures to minimize disturbance to recreational users of these properties, and to ensure that expansion of the existing Transco right-of-way does not conflict with the provisions of the conservation easements. Measure that Transco would implement to minimize disturbance to recreational users of the properties includes posting signage to notify users of the properties about the timing and location of planned construction activities. Construction of the Regional Energy Lateral is proposed to begin in the second quarter of 2023 and end in the fourth quarter of 2024. Construction during this period could overlap with recreational use of the Nature Conservancy and Monroe County properties.

Chestnuthill Township Conservation Easement

Chestnuthill Township holds two easements that would be crossed by the Effort Loop between MPs 45.0 and 45.3 and MPs 45.2 and 45.3 in Monroe County, Pennsylvania. The Effort Loop would be collocated with Transco's existing pipeline right-of-way where it crosses the easements and construction of the pipeline loop would temporarily affect about 1.9 and 0.8 acres of the easements, respectively. The expansion of Transco's existing permanent right-of-way would result in the conversion of some of the forest edges to open, maintained, herbaceous lands. Conversion of forest edges along the existing permanent right-of-way to open, herbaceous land would not be expected to impact use of the property. Indirect impacts could include temporary increases in noise and dust during construction; such impacts would be temporary and would resolve when construction is complete. During operation, Transco would retain an additional 25 feet of permanent right-of-way adjacent to its existing right-of-way through one of the two easements resulting in a total of 0.2 acre of new permanent impact. No permanent right-of-way would be retained on the other Chestnuthill Township easement.

Easement Consultations

We received comments from the DRN on the draft EIS regarding the status of consultation with federal, state, and private agencies with jurisdiction over conservation easements and information about specific mitigation requirements that are negotiated for these resources. Transco's coordination with several of these agencies or organizations is ongoing. FERC staff do not have a role in the easement negotiation process.

New Jersey

Green Acres Program

New Jersey created the Green Acres Program in 1961 to address the state's growing recreation and conservation requirements (New Jersey.gov, 2020). The goal of the Green Acres Program is to work with public and non-profit partners to create a network of open spaces and recreational resources for public use and enjoyment. The regulations for the program and for Green Acres properties are provided in Title 7, Chapter 36 of the New Jersey Administrative Code. No publicly or privately held Green Acres Program properties would be crossed by Project. However, Compressor Station 201 would be within 0.1 mile of Metropolitan Avenue Park in West Deptford Township and existing Station 210 Pooling Point is within 0.1 mile of Mountain Lakes Open Space Area, within 0.2 mile of Farm View Fields, and located on Transco's existing easement within Coventry Farm, all of which are Green Acres Program properties. Discussions of these properties are provided separately in section 4.5.4.7.

We received a comment on the draft EIS from the NJDEP requesting to be notified if any temporary work areas encroach on Green Acres parkland, as loss of natural resources and recreational facilities would need to be addressed and may require compensation. In addition, due to the proximity of several encumbered properties to the Project area, NJDEP requested to be notified of any changes in alignment/ location. If changes to Project design affect any additional Green Acres encumbered properties, Transco would be required to consult with the agency.

West Deptford Township Open Space/Detention Basin

A parcel owned by West Deptford Township and maintained as open space with a stormwater detention basin would be within 0.1 mile of new Compressor Station 201 in Gloucester County, New Jersey. The parcel is adjacent to a senior housing development on the east side of Grove Road. The area between the new compressor station and the parcel is a mix of forested land and commercial development. Construction and operation of Compressor Station 201 would not directly impact the West Deptford Township parcel. While the parcel is maintained as open space by the township, there is no indication that the parcel is open to the public for recreational use.

Preserved Farmland, New Jersey Farmland Preservation Easement

The New Jersey Farmland Preservation Program is administered by the State Agriculture Development Committee and seeks to preserve agricultural land throughout New Jersey through sale or donation of property or landowner adoption of a voluntary conservation easement that restricts development (New Jersey.gov, n.d.). Modification to existing Compressor Station 505 would be within 0.1 mile of a parcel enrolled in the New Jersey Farmland Preservation Program in Somerset County, New Jersey. Construction and operation of the modifications proposed at Compressor Station 505 would not directly impact the easement. Indirect impacts from increases in noise and dust during construction would not impact use of the easement or affect landowner participation in the program. Indirect impacts would resolve when construction is complete.

Maryland

Protected Lands – Reforestation Planting Area; Maryland Protected Lands – Forest Conservation Act easement

We received a comment on the docket requesting consideration of the Maryland State Forest Conservation Act (Maryland FCA) and the Roadside Tree Law and whether the proposed modifications to the existing Beaver Dam M&R Station would conflict with these programs.

The Maryland FCA of 1991 was enacted to protect and preserve forest resources within the state by making the identification and protection of forested land and other sensitive areas a part of the site planning process for proposed developments (MDNR, n.d.[a]). The MDNR administers the Maryland FCA in partnership with local agencies that are responsible for implementation. The Maryland FCA applies to developments requiring an application for a subdivision, grading permit, or sediment control permit of one acre of greater; such developments are required to develop a Forest Conservation Plan. The proposed modifications to the existing Beaver Dam M&R Station would affect 1.4 acres during construction; however, 1 acre of this total is developed land located within the fenceline of the existing meter station and ground disturbance would be limited to approximately 0.4 acre of open land. Because the area of ground disturbance is less than 1 acre and consists of open land, the Maryland FCA would not apply to the Project.

The Maryland Roadside Tree Law was enacted in 1914 to protect roadside trees throughout the state and ensure they are maintained in a manner that is consistent with an efficient and dependent public utility system (MDNR, n.d.[b]). The MDNR enforces the Roadside Tree Law and requires a Tree Care Permit for any trimming, care, planting, or removal of trees within or partially within a public road right-of-way. Work performed without a Tree Care Permit is subject to fines or more severe penalties. Construction and operation of the modifications to the Beaver Dam M&R Station would not require removal, planting, or trimming of trees within the public road right-of-way. Therefore, the Roadside Tree Law does not apply to the Project.

4.5.4.6 Trails and Bicycle Routes

The Project would cross one bicycle route and be within 0.25 mile of another trail in Pennsylvania. No trails or bicycle routes would be crossed or within 0.25 mile of the Project in New Jersey or Maryland.

Pennsylvania

<u>BicyclePA Route L</u>

The PADCNR manages and maintains a system of public recreation trails throughout Pennsylvania. The BicyclePA Route L is a 229-mile-long trail that runs between Susquehanna County and Chester County (PADCNR, n.d.). BicyclePA Route L follows Meadow Run Road in the area of the Project and would be crossed by the Regional Energy Lateral between MPs 2.8 and 2.9 in Luzerne County. Transco would cross BicyclePA Route L and Meadow Run Road using open-cut construction methods. Use of the open-cut method would be a direct impact on the trail and require closure of the trail during construction. Indirect impacts such as increases in noise and dust during construction would be noticeable to recreational users of trail. After construction is complete at the trail crossing, Transco would retore the trail and recreational use of the trail would continue during operation of the Regional Energy Lateral. Direct and indirect impacts would be temporary and would resolve with the completion of construction.

Transco would follow the measures outlined in its Traffic Management Plan during construction to maintain safety and accessibility (see table 2.3-1) and post appropriate signage the trailhead or other locations notifying users that a portion of the trail is closed for the duration of the construction activities and refer them to the PADCNR's website for alternative trail options.

<u>Luzerne County Levee Trail</u>

The Luzerne County Levee Trail, also referred to as the Susquehanna River Commons, is a 12-mile-long paved path that runs parallel to the Susquehanna River (Susquehanna Greenway, n.d.). Public recreational use of the trail includes biking, running, walking, and inline skating. The Regional Energy Lateral would not cross the trail but would be within 0.1 mile of this resource at MP 14.9 in Luzerne County. No direct impacts on recreational use of the trail are anticipated. Indirect impacts such as increases in noise and dust during construction could be noticeable to recreational users of trail. The area between the Luzerne County Levee Trail and the Regional Energy Lateral consists of riparian trees and agricultural field and an unnamed tributary to the Susquehanna River. Indirect impacts would be temporary and minor and would resolve with the completion of construction.

West Side Trail

The West Side Trial is a paved recreation trail that parallels Wyoming Avenue in Wyoming Borough, Luzerne County, Pennsylvania. The PADCNR has an interest in the trail and noted this during correspondence with Transco. The Regional Energy Lateral would cross the West Side Trail and Wyoming Avenue near MP 14.8. Transco would cross the trail and roadway using the conventional bore technique and no direct impacts on the trail or recreational use of the trail are anticipated. Indirect impacts on recreational users of the trail would likely occur from increases in noise and dust during construction; these impacts would be temporary and would resolve when construction is complete. Operation of the Regional Energy Lateral would not impact recreational use of the trail.

4.5.4.7 Local Parks

Pennsylvania

Laflin Borough Park

Laflin Borough Park is a local park owned and managed by Laflin Borough in Luzerne County, Pennsylvania. The park includes a shelter, playground equipment, basketball court, and open space. The Regional Energy Lateral would be within 0.25 mile of Laflin Borough Park near MP 11.3 but would not directly impact the park. Indirect impacts such as increases in noise and dust during construction could occur, but it may not be noticeable to users of the park due to the residential area and scattered trees that are present between the Regional Energy Lateral and the park. Any indirect impacts on public use of the park would be temporary and would resolve when construction is complete.

Laflin Creekside Community Playground

Laflin Creekside Community Playground is a local park owned and managed by Laflin Borough in Luzerne County, Pennsylvania. The park includes playground equipment, soccer fields, baseball diamonds, and spectator seating. The Regional Energy Lateral would cross Laflin Creekside Community Playground between MPs 11.2 and 11.4 affecting about 1.5 acres during construction. The Regional Energy Lateral would not be collocated with the existing Transco pipeline in this area. Construction of the Regional Energy Lateral through the park will require closure of the soccer fields and baseball diamonds for about 6 to 12 months. Transco would install safety fencing along the perimeter of the workspace to restrict public access during construction. We conclude that the safety fencing along with our condition in section 3.4.3, which requires Transco to file a *Laflin Municipal Park Restoration Plan,* would further minimize impacts of construction of the Regional Energy Lateral on the park.

Spadi Park/Greenfield Park

Spadi Park/Greenfield Park is a local park owned and managed by Jenkins Township in Luzerne County, Pennsylvania. The park is also a LWCF Property (refer to section 4.5.4.5). Spadi Park/Greenfield Park includes basketball courts, a baseball field, soccer fields, and a parking area. The Greater Pittston Stoners Soccer League practices at the park, and other community events are also held within the park (Discover NEPA, 2021). The Regional Energy Lateral would cross the park between MPs 12.2 and 12.5 affecting 3.2 acres during construction. The Regional Energy Lateral would not be collocated with the existing Transco pipeline in this area. The park is bordered by a wooded area on the south and residential areas to the north, east, and west. Some tree clearing would be required in the southern edge of the park, but a small area of trees would remain between the Regional Energy Lateral and the park. After crossing through the wooded area, the Regional Energy Lateral follows the tree line and eventually crosses the open area that contains the soccer fields and baseball diamond.

Construction of the Regional Energy Lateral through the park would require closure of the soccer fields and baseball diamond for about 6 to 12 months. Transco would install safety fencing along the perimeter of the workspace to restrict public access during construction. After construction of the Regional Energy Lateral is complete, Transco would restore the workspaces within the park and recreational use of the park would be allowed to continue. The permanent right-of-way within Spadi Park/Greenfield Park would be 1.4 acres.

As described in section 4.5.4.5, because Spadi Park/Greenfield Park is encumbered by LWCF funding, Transco must coordinate with the State LWCF Liaison Officer and the NPS to determine whether crossing of the park conforms to the prerequisites set forth in 36 CFR 59 or if the action constitutes a conversion of use. Underground utility easements that do not affect recreational use of an area and that restore the area to its original surface conditions may not trigger a conversion of use review, if the NPS determines that certain criteria are met (NPS-DOI, 2008).

Butler Street Park

Butler Street Park is owned and managed by Wyoming Borough in Luzerne County, Pennsylvania (Wyoming Borough, 2021). The park includes a basketball court and open space for public recreation. The Regional Energy Lateral is within 0.2 mile of the park between MPs 14.1 and 14.2 but would not directly impact the park. The area between Butler Street Park and the Regional Energy Lateral is a residential area and, as such, indirect impacts from increased noise or dust during construction are unlikely to be noticeable to visitors to the park.

Charles Flack Memorial Park/Field

Charles Flack Memorial Field is owned and managed by Wyoming Borough in Luzerne County, Pennsylvania (Wyoming Borough, 2021). The park includes baseball diamonds, outbuildings, and spectator seating. The Regional Energy Lateral would be within 0.1 mile of the sports field. Construction and operation of the Regional Energy Lateral would not have a direct impact on public use of field, but indirect impacts such as increases in noise and dust would be noticeable to visitors during construction. Indirect impacts would be minor and temporary and would resolve with the completion of construction.

Route 715 Chestnuthill Township Park

Route 715 Chestnuthill Township Park is owned and managed by Chestnuthill Township in Monroe County, Pennsylvania. The park includes playgrounds, walking trails, gazebo, basketball courts, open space, and a parking lot for visitors (Chestnuthill Township, 2019). The park is also a LWCF Property (refer to section 4.5.4.5).

The Effort Loop would cross Route 715 Chestnuthill Township Park between approximate MPs 46.7 and 46.8 affecting 0.8 acre during construction. The Effort Loop is collocated with an existing Transco pipeline where it crosses the park. Land cover at this crossing is a mix of forested land and open, maintained pipeline right-of-way. The area where the Effort Loop crosses the park is separated from the playground and other park facilities by forested land and closure of the park during construction would not necessary. Tree clearing would be required during construction and after Transco installs the pipeline loop the permanent right-of-way would be maintained as open land during operation (about 0.3 acre). Indirect impacts from increases in noise and dust during construction could occur, but the forested area between the loop crossing and the main recreational area of the park would provide screening which would mitigate their effect on visitors to the park. Indirect impacts would be minor to negligible and after construction is complete, indirect impacts would cease.

As described in section 4.5.4.5, because Route 715 Chestnuthill Township Park is encumbered by LWCF funding, Transco must coordinate with the State LWCF Liaison Officer and the NPS to determine whether crossing of the park conforms to the prerequisites set forth in 36 CFR 59 or if the action constitutes a conversion of use. Underground utility easements that do not affect recreational use of an area and that restore the area to its original surface conditions may not trigger a conversion of use review, if the NPS determines that certain criteria are met (NPS-DOI, 2008).

Chestnuthill Township Park

Chestnuthill Township Park is owned and managed by Chestnuthill Township in Monroe County, Pennsylvania. This park is on the west side of Hillcrest Road and directly adjacent to the Chestnuthill Township Recycling Center/Transfer Station and the western edge of West End Regional Park, which is also owned and managed by Chestnuthill Township (described below).

The Effort Loop would cross Chestnuthill Township Park between approximate MPs 47.9 and 48.2 affecting 2.5 acres during construction. The Effort Loop is collocated with an existing Transco pipeline where it crosses the park. Land cover at this crossing is a mix of forested land and open, maintained pipeline right-of-way. Tree clearing would be required during construction and after Transco installs the pipeline loop the permanent right-of-way would be maintained as open land during operation (about 0.2 acre). Indirect impacts from increases in noise and dust during construction could occur, but the forested area between the loop crossing and the main area of the park would provide screening which would mitigate their effect on visitors to the park. Indirect impacts would be minor to negligible and after construction is complete, indirect impacts would cease.

West End Regional Park

West End Regional Park is owned and managed by Chestnuthill Township in Monroe County, Pennsylvania (Chestnuthill Township, 2019). The park includes a system of trails for hiking and biking and open space. The Effort Loop would be within less than 0.1 mile of the park between MPs 48.0 and 48.3, but no direct impacts on the park are anticipated. The area between the Effort Loop and the park consists of Hillcrest Drive and forested land. Indirect impacts from increases in noise and dust during construction could occur, but the forested area between the loop crossing and the main recreational area of the park would provide screening which would mitigate their effect on visitors to the park. Indirect impacts would be minor to negligible and after construction is complete, indirect impacts would cease.

New Jersey

Metropolitan Avenue Park, Gloucester County.

Metropolitan Avenue Park is owned and managed by West Deptford Township in Gloucester County, New Jersey. The park includes nine soccer fields, six softball fields, three basketball courts, a skate park, a tot lot, and a walking track (West Deptford Township, n.d.). This park is also a Green Acres Program easement. Compressor Station 201 would be within 0.1 mile of the park (see section 4.5.4.5). The area between the park and the compressor station consists of forested land and a limited number of commercial properties. Construction and operation of Compressor Station 201 would not directly impact Metropolitan Avenue Park or recreational use of the park. Indirect impacts such as increases in noise and dust could occur during construction of the facility, but the forested land between the compressor station and the park would likely minimize these impacts. Indirect impacts would be temporary and would resolve when construction is complete.

Neshanic Valley Golf Course, Somerset County

Neshanic Valley Golf Course includes three nine-hole golf courses in Somerset County, New Jersey (Neshanic Valley Golf, 2021). Additional amenities include a bar and grill and the golf course regularly hosts golf outings and other special events throughout the year. Existing Compressor Station 505 is within 0.2 mile of the Neshanic Valley Golf Course. The area between the compressor station and the golf course consists of forested land and residential properties. Modifications to the existing compressor station would not directly impact the golf course or public use of the golf course for recreation. Indirect impacts such as increases in noise and dust during construction would be temporary and the existing vegetation and residences between Compressor Station 505 and the golf course would provide screening that would minimize the likelihood that such effects would be noticeable to golf course visitors.

Clare Street Park, Camden County

Clare Street Park is a municipal park that is owned and managed by the City of Camden in Camden County, New Jersey (NJ Map, n.d.). The park is less than 0.5 acre in size and does not have any amenities. The existing Camden M&R Station is within 0.2 mile of the park. The area between the existing facility and the park is a mix of commercial and residential properties. Modifications to the existing Camden M&R Station would not directly impact the park or recreational use of the park. Indirect impacts from increases in noise and dust during construction would be temporary and are unlikely to be noticeable to recreational users of the park due to the amount of urban development present between the existing facility and the park.

Mountain Lakes Open Space Area, Mercer County

Mountain Lakes Open Space Area is a 400-acre public park owned by the City of Princeton in Mercer County, New Jersey (New Jersey Trails, 2012). The park consists of five sections: The Billy Johnson Mountain Lakes Preserve, Mountain Lakes North, John Witherspoon Woods, the Tusculum fields, and Community Park North. Privately owned Coventry Farm is directly adjacent to the west side of Mountain Lakes Open Space Area and privately owned Tusculum estate is directly adjacent to the east side of the park. The existing Station 210 Pooling Point is less than 0.1 mile from the Billy Johnson Mountain Lakes Preserve and Mountain Lakes North; the other three sections of the park are not within 0.25 of the Station 210 Pooling Point. The Billy Johnson Mountain Lakes Preserve was a 76-acre private estate that was acquired by the city in 1987 with financial assistance from the Friends of Princeton Open Space; this property is also a Green Acres Program easement (see section 4.5.4.5). The City of Princeton owns the property, but the Friends of Princeton Open Space hold the conservation easement and maintain the recreation trails within the preserve. Palmer Lake (a man-made lake) is situated in the center of the preserve and the John Witherspoon Woods and James Sayen hiking trails and a paved bike path cross through the preserve.

Modifications to the Station 210 Pooling Point would not directly impact the Billy Johnson Mountain Lakes Preserve or Mountain Lakes North. The area between the facility and these areas is a mix of forested land and open space. Indirect impacts from increases in noise and dust during construction may be noticeable to recreational users of the hiking trails within the preserve and Mountain Lakes North, but these impacts would be temporary and expected to resolve when construction is complete. The forested areas between the facility and the hiking trails would help to reduce impacts related to increases in noise and dust but would not be expected to fully mitigate these effects.

Coventry Farm and Farm View Fields, Mercer County

Coventry Farm is a privately owned farm in Mercer County near Princeton, New Jersey. In 2002, with financial assistance from private donors and the Green Acres Program, Friends of Princeton Open

Space, Delaware and Raritan Greenway, Mercer County, and Princeton Township and Borough purchased the 160-acre property (Friends of Princeton Open Space, n.d.; D&R Greenway Land Trust, Inc., 2011). One hundred acres was placed under conservation easement to be maintained as open space and agricultural use (Coventry Farm), 28 acres was added to the Mountain Lakes Open Space Area, 22 acres was purchased by Princeton Township for the creation of Farm View Fields, and 11 acres was purchased by Princeton Day School for educational use and open space (D&R Greenway Land Trust, Inc., 2011).

The existing Station 210 Pooling Point facility is located on an easement within the Coventry Farm property that was negotiated between Transco and the private landowner prior to 2002. Transco's easement, therefore, pre-dates the Green Acres Program conservation easement and any associated development restrictions. The work necessary to complete modifications to the Station 210 Pooling Point facility would be confined to the Transco easement and no additional easement would be required to complete the work. For this reason, no additional approvals from the Green Acres Program would be required for this work.

We received comments on the draft EIS (accession no. 20220425-5495) asking for verification that Transco's easement on the Coventry Farm property allows Transco to complete the proposed modifications to the Station 210 Pooling Point. We requested additional verification from Transco that the proposed modifications are allowed under its existing easement agreement. In response, Transco provided a copy of it June 26, 2001 Deed of Conservation and Agricultural Easement in favor of Delaware and Raritan Greenway, Inc., which verifies that Transco has the rights necessary to complete modifications to this facility.[48]

The Station 210 Pooling Point is within 0.2 mile of Farm View Fields which is adjacent to Coventry Farm, on the west side of Great Road. Farm View Fields is owned and managed by Princeton Township and includes soccer fields, baseball diamonds, spectator seating, walking paths, a gazebo, a playground, and a parking area. Modifications to the Station 210 Pooling Point facility would not directly impact Farm View Fields or interfere with use of the area for public recreation. The area between the facility and Farm View Fields consists of Great Road, a small wooded area, and agricultural fields and outbuildings associated with Coventry Farm. Indirect impacts from increases in noise and dust during construction could be noticeable to recreational users of Farm View Fields, but these impacts would be temporary and would end when construction is complete. The forested areas between the facility and Farm View Fields would help to minimize impacts related to increases in noise and dust.

Maryland

Oregon Ridge Park, Baltimore County

Oregon Ridge Park is a 1,043-acre park that is owned and managed by the Baltimore County Department of Recreation and Parks in Baltimore County, Maryland (Baltimore County, 2020). The park is open to the public year-round and includes hiking trails, a playground, a fitness area, and the Oregon Ridge Nature Center. The existing Beaver Dam M&R Station is located within Oregon Ridge Park, near the entrance to the Oregon Ridge Nature Center and playground parking lot. Transco holds an easement for the meter station facility but would require 0.9 acre of temporary workspace outside of the existing easement to complete the planned modifications to this facility. Land cover surrounding the existing facility is a mix of open and developed land; within the ATWS is open land.

Modification of the existing Beaver Dam M&R Station is proposed to begin in the second quarter of 2023 and end in the third quarter of 2024. Construction during this period would overlap with use of the Oregon Ridge Nature Center during the period of construction. However, Transco would not restrict access

48 See FERC accession no. 20220516-5243.

to visitors during construction or operation of the meter station and would post signs at the entrance to the nature center to notify users about construction activities.

<u>Hayfields Country Club, Baltimore County</u>

Hayfields County Club is a privately held, member-based country club in Baltimore County, Maryland (Hayfields, 2017). The country club includes a golf course, pro shop, clubhouse, pool, and the Redwood Grill. The country club hosts various golf outings during the warmer months and the clubhouse is available for rental for weddings and other private events. The county club also hosts Camp Hayfields, an annual summer camp for children.

The existing Beaver Dam M&R Station is within 0.2 mile of Hayfields Country Club. Modifications to the existing meter station would not directly impact the country club or affect visitor access during construction or operation. The area between the facility and the country club consists of Beaver Dam Road, some forested land, open space, residences, Shawan Road, and a shelterbelt of trees along the edge of the country club. Indirect impacts from increases in noise and dust during construction may be noticeable to country club visitors when they are playing the southernmost holes of the golf course, but these impacts would be minimized by the forested land and residences between the facility and the golf course. Indirect impacts would be temporary and would resolve when construction is complete.

4.5.5 Coastal Zone Management Act

The Coastal Zone Management Act (CZMA) of 1972 was enacted to, "preserve, protect, develop, and where possible, to restore or enhance the resources of the nation's coastal zone" (National Oceanic and Atmospheric Administration, 2021).

Based on review of the Pennsylvania Coastal Zone Management program and coastal zone map, the Project falls outside the geographical boundaries of the Pennsylvania Coastal Zones (PADEP, 2021). Based on review of the New Jersey Coastal Zone Management Program, the Project is not located in the Coastal Area Facility Review Act areas (NJDEP, 2021b). Therefore, the portion of the Project in Pennsylvania and New Jersey is not subject to coastal zone consistency review.

The Beaver Dam M&R Station is located within the Maryland Coastal Zone (MDNR, n.d.). Transco consulted with the Maryland Department of Environment's Wetland and Waterways Program and in a letter dated December 1, 2020 the agency confirmed that a Coastal Consistency Determination is not required for the proposed modifications to the existing Beaver Dam M&R Station (Maryland Department of the Environment, 2021).

4.5.6 Hazardous Waste

Transco reviewed publicly available federal and state regulatory databases including the EPA's Cleanups in My Community database (EPA, 2016), and data layers available through PADEP (PADEP, 2021a; 2021b; and n.d.), NJDEP (NJDEP, 2019), and Maryland Department of Information Technology (n.d.) to identify known and potential contamination near the Project. Table 4.5.6-1 lists landfills and contaminated sites within 0.25 mile of the Project.

TABLE 4.5.6-1

Landfills and Contaminated Sites Within 0.25 Mile of the Regional Energy Access Expansion Project

State/County/Facility [a]	Site Name	Location: Nearest Milepost	Location: Distance from Centerline (miles)	Location: Direction from Workspace	Status
PENNSYLVANIA					
Regional Energy Lateral, Luzerne County	Jenkins Township Landfill	13.0	Crossed	NA	Abandoned
	Washington Avenue Landfill	15.7	0.2	Northeast	Inactive
Effort Loop, Monroe County	Chestnuthill Township Landfill	48.0	Crossed	NA	Abandoned
	Jacob Warner Farm	49.4	0.1	East	Active
NEW JERSEY					
Compressor Station 201, Gloucester County	Colonial Pipeline Co., Brownfield Site	NA	<0.1	South	Active
	Amoco Service Station, LUST	NA	<0.1	Northeast	Remediated, No Longer Extant
	Transcontinental Gas Pipeline West Deptford Facility, Brownfield Site	NA	0.2	West/ Southwest	Terminated/ closed
	Nalco Chemical Co. Inc, Brownfield Site	NA	0.2	West/ Southwest	Closed
Camden M&R Station	N. Bantivoglio & Sons, Brownfield Site	NA	<0.1	East	Remediated

[a] Only Project facilities that would be located within 0.25 mile of a landfill or hazardous materials site are included in this table.

Notes:

NA = Not applicable

LUST = Leaking underground storage tank

Based on Transco's review, the Project would not cross Superfund sites. The Regional Energy Lateral would cross the Jenkins Township Landfill near MP 13.0. The Jenkins Township Landfill is no longer used as a landfill by the township but is used for municipal storage and storage of salt for winter road maintenance. Furthermore, the Jenkins Township Landfill is not listed on the PADEP's list of municipal waste landfills or resource recovery facilities lists. The Effort Loop would cross the entrance to the abandoned Chestnuthill Township Landfill near MP 48.0. Transco consulted with Chestnuthill Township regarding the crossing and confirmed that the portion of the abandoned landfill that would be crossed by the pipeline loop does not contain historic or active waste management facilities. Chestnuthill Township currently uses the property for its recycling and composting operations, and the portion of the property used for these operations would be 0.2 mile west of the Effort Loop crossing. Transco would work with Jenkins Township and Chestnuthill Township to maintain access to the properties during construction of the Project. No other landfills or contaminated sites are crossed by Project facilities.

Transco developed a UDCP, which includes measures that would be implemented in the event contaminated media is encountered during construction (see table 2.3-1). We have reviewed this plan and find it acceptable.

4.5.7 Visual Resources

4.5.7.1 Pipeline Facilities

Visual resources along the Project pipeline routes are a function of geology, climate, and historical process, and include topographic relief, vegetation, water, wildlife, land use, and human uses and development. Visual impacts associated with the pipeline construction rights-of-way and ATWS would include the removal of existing vegetation and the exposure of bare soils, as well as earthwork and grading scars associated with heavy equipment tracks, trenching, blasting (if required), rock formation alteration or removal, and machinery and tool storage. Other visual effects could result from the removal of large individual trees that have intrinsic aesthetic value, the removal or alteration of vegetation that may currently provide a visual barrier, or landform changes that introduce contrasts in visual scale, spatial characteristics, form, line, color, or texture.

Visual impacts are typically greatest where pipeline routes parallel or cross roads and may be seen by passing motorists, and on residences where vegetation used for visual screening of existing utility rights-of-way or for ornamental value would be removed. The duration of visual impacts would depend on the type of vegetation that is cleared or altered. The impact of vegetation clearing would be shortest in areas consisting of short grasses and scrub-shrub vegetation and in agricultural crop and pasture lands, where the re-establishment of vegetation following construction would be relatively fast (generally less than 3 years). The impact would be greater in forest/woodland, which would take 30 to 50 years to regenerate mature trees. The greatest potential visual impact in forest/woodland would result from the removal of large specimen trees, which would take longer than other vegetation types to regenerate and would be prevented from re-establishing within the permanent right-of-way. The timing of restoration for vegetation is discussed in section 4.4.2.4. Although stretches of forest/woodland are present along the proposed routes, a majority of the lateral and loop pipelines would be installed within or parallel to existing rights-of-way. These existing rights-of-way are maintained periodically to remain as non-forested land. As a result, along a majority of the Project, visual resources have been previously affected by other activities.

Because the Project would expand existing rights-of-way in most areas, the visual impact on motorists who observe road crossings would be minor. About 60 percent of the Regional Energy Lateral and 100 percent of the Effort Loop would be within or adjacent to existing rights-of-way. Construction within or adjacent to existing rights-of-way reduces the severity of impacts on visual resources because it minimizes vegetation clearing for the construction work areas and permanent right-of-way and also minimizes new fragmentation of vegetation and habitat.

After construction, disturbed areas would be restored and returned to preconstruction conditions in compliance with federal, state, and local permits; landowner agreements; Transco's Plan; and applicable right-of-way requirements, with the exception of aboveground facility sites that are discussed further below.

4.5.7.2 Aboveground Facilities

Aboveground facilities associated with the Project could alter existing visual resources in two ways: (1) construction activity and equipment may temporarily alter the viewshed; and (2) aboveground facilities would represent permanent alterations to the viewshed. Construction of new aboveground facilities would result in temporary visual impacts including increased numbers of construction personnel, equipment, and materials, removal of vegetation cover, and disturbance of soil. Construction impacts would generally cease following the completion of construction and restoration.

Following construction, new aboveground facilities would be the most visible components of the Project and would result in long-term to permanent impacts on visual resources. The extent of these visual impacts depends on factors such as quality of the viewshed, the degree of alteration of that view, the sensitivity or concern of potential viewers, the remoteness of the location, and the number of viewpoints from which the facility would be seen.

4.5.7.3 New Aboveground Facilities

Compressor Station 201

Compressor Station 201 would be constructed along Mantua Grove Road about 0.2 mile northwest of the intersection of Mantua Grove Road and Grove Road in Gloucester County, New Jersey. Current land use at the site is agricultural production. The site is directly adjacent to Mantua Grove Road, with residences on the south side, forested land on the north and west sides, and a row of trees and a commercial property on the east side. Land use near the site is a mix of commercial and residential properties.

Compressor Station 201 would be visible to commuters along Mantua Grove Road and Grove Road and from the residences and commercial property that are on the south and east sides of the site. One residential property would be crossed by the access road into the compressor station site; the residence is 75 feet south of the operational footprint of the facility. Transco has an agreement with the landowner to purchase the property for Compressor Station 201 and, as part of this agreement, Transco would be allowed to demolish this existing residence during construction of the facility. Two additional residences would be within 100 to 200 feet of the compressor station property boundary. The new compressor station would not be visible from adjacent properties on the north and west sides of the site during the growing season due to dense forested areas in these directions. However, during the winter months the facility may be visible at adjacent properties on the north and west sides due to loss of seasonal vegetation.

Construction of Compressor Station 201 would result in a permanent change in the viewshed and would add an additional industrial element to a currently mixed residential and commercial setting. The compressor station would be enclosed by a security fence and controlled access gates. Transco would install exterior lighting at the main gates, yards, and all building entry and exit points of the facility. Transco would limit outdoor lighting to the minimum amount they require for security purposes. The lighting would be positioned downward and comply with OSHA standards for lighting, which would minimize visibility at adjacent residences. Transco would plant evergreen trees along the southern fence line of the facility to provide visual screening from Mantua Grove Road and Grove Road. Compressor Station 201 would be visible to residences to the south and west of the facility.

Transco provided two visual simulations of the proposed compressor station from the intersection of Mantua Grove Road and Grove Road where the facility has the potential to be visible; one with turbine powered facilities and one with electric powered facilities. In both scenarios, the vegetation buffer that would be installed by Transco during restoration would partially screen the new Compressor Station 201 from commuters along Mantua Grove Road and Grove Road, but the facility would still be visible.

The implementation of visual buffers (i.e., additional and existing vegetation) around the east, west, and south ends of the facility would reduce the visual impacts on nearby residences. However, the draft EIS indicated that it was unclear what measures would be taken to minimize visual impacts on residences to the southwest of the facility, including NSA 1, discussed in section 4.9.3 of the draft EIS. We recommended in the draft EIS that Transco file with the Secretary a visual screening plan to minimize visual impacts on residences (including but not limited to NSAs 1, 2, and 3) near Compressor Station 201. At a minimum, the plan should include a photoalignment of the Compressor Station 201 facility that provides the location of perimeter fencing and buildings, vegetative plantings to provide a visual buffer, and visual simulations from each residence (in winter and with full foliage). Transco provided a Planting Plan that describes the vegetative screening that would be installed around the perimeter of Compressor Station 201 and updated visual simulation drawings for NSAs 1, 2, and 3 that show how the vegetative screening would appear in winter and with full foliage.

As shown in the simulations, existing vegetation at NSAs 2 and 3 provide significant visual screening in leaf-off conditions and no additional vegetative screening is proposed by Transco. Transco proposes to plant arborvitaes as detailed in the Planting Plan to provide visual screening from NSA 1. Arborvitaes are an evergreen species; therefore leaf-off conditions were not provided. Additionally, arborvitaes generally have a growth rate of more than 2 feet per year until established; therefore, Transco also provided a 5-year growth simulation. Transco filed the recommended visual screening plan for Compressor Station 201 which we reviewed and find acceptable. Visual impacts would be minimized to the extent possible through the mitigation offered through the tree plantings included in the visual screening plan. In the short term, impacts due to the addition of Compressor Station 201 would be significant. Long term visual impacts, once the plantings are established, would be less than significant. The visual simulation drawings for NSAs 1, 2, and 3 are provided in appendix F.

Mainline Valve Sites

Construction of the two new MLV sites for the Regional Energy Lateral and one new MLV site for the Effort Loop would occur within existing Transco right-of-way and adjacent land. The modifications would be consistent with the existing facilities in the viewshed and, therefore, we conclude that impacts on visual resources at the MLV sites would be minimal.

4.5.7.4 Existing Aboveground Facilities

Pennsylvania

The modifications proposed by Transco for Compressor Stations 195 and 200, the Hildebrandt Tie-in, Lower Demunds REL Tie-in, Carverton Tie-in, Delaware River Regulator, and Mainline Regulator A would occur within the property lines at already developed facilities and no new or expanded operational footprint outside of the existing fencelines would be required. Because the modifications would be within the existing fencelines and the proposed modifications would be similar to the existing facility, visual impacts from construction and operation of the facilities would be minimal. No permanent changes to the current visual landscape would occur from modifications to the existing compressor stations and other facilities.

Existing Compressor Station 515 is located on the north side of Buck Boulevard in Luzerne County, Pennsylvania. The facility is surrounded by forested land on all sides, with smaller areas of maintained open land associated with Transco's existing right-of-way on the southeast and northwest sides of the facility and a paved parking area on the south side between the facility and Buck Boulevard. The nearest residences to Compressor Station 515 are about 300 feet southwest of the facility fenceline on the opposite side of SR115. Modifications to Compressor Station 515 would require additional operational footprint beyond the existing fenceline of the facility on the northern portion of the site. Transco would expand the existing security fence to encompass the proposed modifications during operation. Transco would also install additional exterior lighting for the new compressor station components. The lighting would be positioned downward and comply with OSHA standards for lighting, which would minimize visibility at adjacent residences. The new compressor station equipment would be similar in nature to the existing facility and would be installed on the north side of the existing facility, away from Buck Boulevard. The new communications tower would be 150 feet in height, which is 200 feet lower than the existing 350-foot tower. The proposed modifications may be visible to commuters on Buck Boulevard during construction, but these impacts would be temporary and expected to resolve with the completion of construction. During operation, the existing forested areas surrounding Compressor Station 515 would screen the facility from commuters along Buck Boulevard and we conclude that no significant long-term impacts would occur.

New Jersey

The modifications proposed by Transco for Compressor Stations 505 and 207, the Mt. Laurel M&R Station, Camden M&R Station, and Centerville Regulator would occur within the property lines at the already developed facilities and no new or expanded operational footprint outside of the existing fencelines would be required. Because the modifications would be within the existing fencelines and the proposed modifications would be similar to the existing facility, visual impacts from operation of the facility would be minimal. No permanent changes to the current visual landscape would occur from modifications to the existing compressor station.

Station 210 Pooling Point is located within an existing Transco easement on Coventry Farm in Mercer County, New Jersey. The nearest residence is about 800 feet north of the facility. Proposed modifications for the facility include the addition of mainline pressure regulation facilities, but no expansion of the existing facility footprint is proposed. Construction of the proposed modifications would be visible to visitors to Coventry Farm, but the visual impacts would be temporary and would resolve when construction is complete. The proposed modifications would be similar in nature to the existing facility components; therefore, we conclude that long-term or permanent visual impacts are not anticipated.

Maryland

The existing Beaver Dam M&R Station is located along Beaver Dam Road, near the entrance to the Oregon Ridge Nature Center and playground parking lot (see section 4.5.4.7). The area between the facility and the Oregon Ridge Nature Center and playground parking lot is open land. Transco has planted ornamental trees and installed opaque perimeter fencing around the facility to provide screening. Modifications to the existing meter station would not require an expansion of the facility's operational footprint. Transco would use ATWS outside of the existing fenceline of the meter station during construction and would clear trees and other vegetation within the workspace. Construction of the proposed modifications would be visible to commuters along Beaver Dam Road and to visitors to the Oregon Ridge Nature Center. We conclude that these visual impacts would be temporary and would resolve with the completion of construction resulting in no additional long-term or permanent visual impact on commuters or visitors to the nature center.

We received comments requesting additional vegetative screening at the Beaver Dam M&R Station. As noted above, Transco would remove existing ornamental trees within the ATWS to allow for safe operation of equipment during construction. During restoration, Transco proposes to replace these ornamental trees with new plantings that are similar in size to the existing vegetation and at a greater frequency than currently exists to provide additional vegetative screening.

4.6 CULTURAL RESOURCES

Section 106 of the NHPA, as amended, requires FERC to take into account the effect of its undertakings on properties listed, or eligible for listing, on the National Register of Historic Places (NRHP), and to afford the Advisory Council on Historic Preservation an opportunity to comment. Transco, as a non-federal party, is assisting FERC in meeting our obligations under section 106 by providing data, analyses, and recommendations in accordance with 36 CFR 800.2(a)(3) and FERC's regulations at 18 CFR 380.12(f).

4.6.1 Survey Results

4.6.1.1 Pennsylvania

Regional Energy Lateral and Associated Aboveground Facilities

Transco completed the archaeological survey for the Regional Energy Lateral APE, which is considered the pipeline corridor, ancillary facilities, access roads, contractor yards, new and modified compressor stations, and ATWS and presented the results in its initial and two addendum Phase I archaeological investigations reports. Ten new or previously recorded archaeological sites were identified within the direct APE. Seven previously recorded or new sites (36LU/54, 36LU0353, 36LU0354, 36LU0125, 36LU0328, 36LU0337, and 36LU0318) are recommended as not eligible for listing on the NRHP and no further work is recommended. One previously recoded site (36LU0121) that was previously unevaluated for eligibility for listing on the NRHP was not relocated within the current APE, and no further work is recommended. One site (36LU0352) is recommended as potentially eligble for listing on the NRHP. This site would be avoided by the proposed Project workspace; in addition, Transco prepared an avoidance plan for this site that includes installation of fencing and signage to avoid impacts on the site during construction. The remaining site (36LU0311) was previously determined eligible for listing on the NRHP. The Project design would avoid impacts on the portion of this site crossed by the route; in addition, Transco prepared an avoidance plan for this site that includes installation of fencing and signage to avoid impacts on the site during construction. In letters dated January 5, 2021, July 8, 2021, and April 21, 2022, the Pennsylvania Historical and Museum Commission, which serves as the Pennsylvania State Historic Preservation Officer (SHPO), commented on the initial and addendum reports, respectively, that the Project facilities in Pennsylvania would have no effect on historic resources and no further work was recommended. We concur.

Effort Loop and Associated Aboveground Facilities

Transco completed the archaeological survey for the Effort Loop APE which is considered the pipeline corridor, ancillary facilities, access roads, contractor yards, modified compressor stations, and ATWS and presented the results in its initial and addendum Phase I archaeological investigations reports. Two previously recorded archaeological sites (36MR0085 and 36MR0087) that were previously determined as not eligible for listing on the NRHP were not relocated within the current APE, and no further work is recommended. In letters dated January 5, 2021 and July 8, 2021, the Pennsylvania SHPO commented on the initial and addendum reports, respectively, that the Project facilities in Pennsylvania would have no effect on historic resources and no further work was recommended. We concur.

Architectural and Historical Resources Surveys

Transco completed the historic architectural survey for the facilities in Pennsylvania and presented the results in its initial and two addendum Architectural and historical resources investigation reports. The Project APE for the historic architectural survey included the same Project workspaces as the archaeological survey APE, and a maximum area extending in a 0.5-mile radius from proposed aboveground facilities and areas of proposed tree clearing. A total of 101 properties were recorded. Ninety-five properties were recommended not eligible for listing on the NRHP and no further work is recommended. The Pennsylvania SHPO commented that additional information was needed for three of these properties, which Transco provided in letters dated June 10, 2021 and August 26, 2021. Three resources are listed on the NRHP, two properties were previously determined eligible for listing by the Pennsylvania SHPO, and one property is recommended as eligible. Transco evaluated potential impacts on these six properties and recommended that there would be no adverse effects on these resources based on current Project design. In letters dated

November 15, 2021 and March 29, 2022, the Pennsylvania SHPO commented that the Project would have no adverse effect on above-ground historic properties. We concur.

4.6.1.2 New Jersey

Aboveground Facilities

Transco completed the background research and archaeological survey of the APE for the new and modified compressor stations and associated access roads and temporary workspace in New Jersey and presented the results in its initial and addendum Phase I archaeological investigations reports. In letters dated February 5, 2021 and July 21, 2021 the New Jersey SHPO commented on the initial and addendum reports, respectively, that the Project facilities in New Jersey would have no effect on historic resources and no further work was recommended. We concur.

Architectural and Historical Resources Surveys

Transco completed the historic architectural survey for the facilities in New Jersey and presented the results in its initial and addendum Architectural and historical resources investigation reports. The Project APE for the historic architectural survey included the same Project workspaces as the archaeological survey APE, and a maximum area extending in a 0.5-mile radius from proposed aboveground facilities and areas of proposed tree clearing. A total of 27 properties were recorded. Twenty-two properties were recommended not eligible for listing on the NRHP and no further work is recommended. Three resources are listed on the NRHP, one property was previously determined eligible for listing by the New Jersey SHPO, and one property was previously recommended as eligible. Transco evaluated potential impacts on these five properties and recommended that there would be no adverse effects on these resources based on current Project design. The New Jersey SHPO commented that additional information was needed for four properties, which Transco provided in a letter dated June 10, 2021. In a letter dated August 13, 2021, the New Jersey SHPO commented that the Project would have no adverse effect on historic properties. We concur.

4.6.1.3 Maryland

In a letter dated August 27, 2020, Transco consulted with the Maryland SHPO regarding the need for survey at the Beaver Dam M&R Station. On September 10, 2020, the Maryland SHPO commented that the Project would have no adverse effect on historic resources. We concur.

4.6.2 Unanticipated Discoveries Plan

Transco developed a separate Unanticipated Discovery Plan for Cultural Resources and Human Remains for Pennsylvania, New Jersey, and Maryland (see table 2.3-1) to address the protocols to be implemented in the event cultural resources or human remains are encountered during construction, and submitted them to FERC and the SHPOs. The plans provide procedures to notify the appropriate parties, including Native American Tribes, in the event of a discovery. In a letter dated December 7, 2020, Transco provided the Pennsylvania plan to the Pennsylvania SHPO who found the plan to be acceptable in correspondence dated January 5, 2021. In a letter dated January 6, 2021, Transco provided the New Jersey plan to the New Jersey SHPO. The New Jersey SHPO requested minor revisions in correspondence dated February 5, 2021, requesting a revision to the listed New Jersey SHPO contact person. Transco submitted a revised draft of the Unanticipated Discovery Plan on March 26, 2021.[49] In a letter dated August 13, 2021,

[49] The updated Unanticipated Discovery Plan for Cultural Resources and Human Remains Plan can be found on the FERC's eLibrary (https://elibrary.ferc.gov/eLibrary/search) by selecting "Accession" under Search on a Reference Number and entering Accession no. 20210326-5274.

the New Jersey SHPO commented that the Project would have no adverse effect on historic properties and indicated that no further work is necessary. In a letter dated December 7, 2020, Transco provided the Maryland plan to the Maryland SHPO; the Maryland SHPO found the plan to be acceptable in correspondence dated December 8, 2020. We also requested minor revisions to the plans during the Pre-filing Process. Transco provided revised plans in its application, which we find acceptable.

4.6.3 Native American Consultations

Transco contacted 15 federally recognized Native American Tribes regarding the Project on June 5, 2020 and June 8, 2020 (via hard copy and email, respectively), providing a Project description and mapping. The letters requested any information or concerns regarding places of traditional or cultural significance. Follow-up phone calls to Tribes that had not yet responded were made in August 2020, to confirm delivery of initial consultation letters and to identify any Tribal concerns with the proposed Project. The Tribes that Commission staff contacted included the Absentee-Shawnee Tribe of Indians of Oklahoma; Cayuga Nation; Delaware Nation; Delaware Tribe of Indians; Eastern Shawnee Tribe of Oklahoma; Oneida Indian Nation; Oneida Tribe of Indians of Wisconsin; Onondaga Nation of New York; Seneca Nation of Indians; Seneca-Cayuga Tribe of Oklahoma; Shawnee Tribe; Stockbridge-Munsee Community Band of the Mohican Indians; St. Regis Mohawk Tribe; Tonawanda Seneca Nation; and Tuscarora Nation. On November 19, 2020, we sent letters to the same 15 Tribes.

In an email to Transco dated June 10, 2020, the Seneca Nation of Indians requested consulting party status on the Project. Transco followed up in a letter dated April 26, 2021 to inform the Seneca Nation of Indians that Transco filed its application with the FERC and Transco provided a status of the cultural resources surveys and review. FERC attempted to initiate consultation with the Seneca Nation of Indians on July 24, 2020, November 19, 2020, and April 9, 2021, but has received no response in return.

In a telephone call with Transco on August 28, 2020, the Oneida Indian Nation responded with no objections.

In a letter dated March 8, 2022, the Eastern Shawnee Tribe of Oklahoma commented that the Project would not affect or endanger known sites of interest to the Tribe, and requested that in the event of unanticipated discoveries of archaeological sites or objects during construction it be immediately informed of the find and that ground-disturbing activities stop until the Tribe and state agencies are consulted. In addition, the Tribe commented that any future changes to the Project would require additional consultation. No other responses have been received.

At the recommendation of the New Jersey SHPO, Transco sent letters dated January 11, 2021 to three New Jersey state-recognized Tribal organizations (Nanticoke Lenni-Lenape Indians, Powhatan Renape Nation, and Ramapough Lenape Indian Nation) describing the Project and inviting coordination. No responses have been received.

We sent our NOI and EIS NOI to these same New Jersey state-recognized tribes. No comments have been received in response to our NOI or EIS NOI.

4.6.4 Compliance with the National Historic Preservation Act

In compliance with section 106 of the NHPA, FERC contacted 15 federally recognized Native American Tribes and three New Jersey state-recognized Tribal organizations. All historic and architectural surveys have been completed in the Project area. In a final letter dated April 21, 2022, the Pennsylvania SHPO commented that the Project would have no adverse effect on historic properties. In a letter dated August 13, 2021, the New Jersey SHPO commented that the Project would have no adverse effect on historic properties. On September 10, 2020, the Maryland SHPO commented that the Project would have no adverse effect on historic resources. Therefore, FERC has completed its compliance requirements with section 106 of the NHPA for the proposed Project.

4.7 SOCIOECONOMICS

The potential socioeconomic effects of construction and operation of the Project include changes in population levels or local demographics, increased employment opportunities, increased demand for housing and public services, tourism and transportation impacts, and an increase in government revenue associated with sales, payroll, and property taxes. Additionally, section 4.7.8 provides an analysis of environmental justice for the Project in accordance with CEQ's *Environmental Justice Guidance Under the National Environmental Policy Act* (1997) and EPA's *Promising Practices for EJ Methodologies in NEPA Reviews.*

The socioeconomic study area considered for this analysis includes the counties traversed by the Project facilities. The Regional Energy Lateral would traverse portions of Luzerne County, Pennsylvania. The Effort Loop would traverse portions of Monroe County, Pennsylvania. The new Compressor Station 201 would be in Gloucester County, New Jersey. Modifications to compressor stations would occur in Somerset (Compressor Station 505) and Middlesex (Compressor Station 207) Counties, New Jersey; and Luzerne (Compressor Station 515), York (Compressor Station 195), and Chester (Compressor Station 200) Counties, Pennsylvania. Additionally, other aboveground and ancillary facilities are proposed in Monroe, Luzerne, Northampton, Delaware, and Bucks Counties, Pennsylvania; Burlington, Camden, Gloucester, Middlesex, Warren, Hunterdon, Somerset, and Mercer Counties, New Jersey; and Baltimore County, Maryland.

Construction of the Project would have temporary and localized impacts on the socioeconomic conditions in the area of the Project due to the limited construction period and distribution of workforce. The various components of the Project would require 3 to 13 months to complete.

4.7.1 Population and Employment

Table 4.7.1-1 provides a summary of selected demographic and socioeconomic conditions by county for the Project. Construction of the Project would temporarily increase the population in the area of the Project. Table 4.7.1-2 lists the size of the estimated construction workforce for the Project. Transco estimates that approximately 1,441 total workers would be used to construct the Project. Peak construction is estimated to occur from fall 2023 to the end of 2024, when work would be ongoing on multiple pipeline facility locations and compressor stations. Transco estimates that 40 percent of its construction workforce would temporarily relocate to the Project area; therefore, it is anticipated that an average of 353 non-local workers (peak of 582 non-local workers) would relocate to the Project area for the duration of construction activities. Transco anticipates no new full-time equivalent jobs for operation of Project facilities.

TABLE 4.7.1-1

Existing Socioeconomic Conditions in the Regional Energy Access Expansion Project Area

State/Commonwealth/County	Population [a]	Per Capita Income (dollars) [a]	Civilian Labor Force [b]	Unemployment (%) [b]	Top Three Employment Sectors [b, c]
Pennsylvania	**12,702,868**	**$34,352**	**6,546,834**	**5.3%**	**E, M, R**
Regional Energy Lateral/MLV-515RA20/MLV-515RA30/Compressor Station 515/Hildebrandt Tie-In/Lower Demunds REL Tie-In/ Carverton Tie-In					
Luzerne	320,918	$28,972	161,143	5.8%	E, M, R
Effort Loop / MLV -505LD86 / MLV-505LD81 / MLV-505LD90					
Monroe	169,842	$29,662	85,955	6.5%	E, R, A
Compressor Station 195					
York	434,972	$32,623	235,079	4.4%	E, M, R
Compressor Station 200					
Chester	498,886	$50,927	284,638	4.0%	E, P, M
Delaware River Regulator					
Northampton	297,735	$35,270	157,957	4.8%	E, M, R
Mainline A Regulator					
Bucks	625,249	$45,849	345,926	4.1	E, P, R
New Jersey	**8,791,978**	**$42,745**	**4,680,584**	**5.5%**	**E, P, R**
Compressor Station 201					
Gloucester	288,288	$39,337	158,077	5.5%	E, R, P
Compressor Station 505/Centerville Regulator					
Somerset	323,444	$55,828	182,116	4.6%	E, P, M
Compressor Station 207					
Middlesex	809,858	$39,599	429,048	5.2%	E, P, R
Mt. Laurel M&R Station					
Burlington	448,734	$43,187	237,077	5.7%	E, P, R
Lawnside M&R Station/Camden M&R Station					
Camden	513,657	$35,958	267,471	6.6%	E, R, P
Station 210 Pooling Point					
Mercer	366,513	$43,086	191,988	6.1%	E, P, R
Maryland	**5,773,552**	**$42,122**	**3,246,226**	**4.5%**	**E, P, Pu**
Beaver Dam M&R Station					
Baltimore	805,029	$40,105	444,225	4.8%	E, P, R

[a] U.S. Census Bureau, 2021a.

[b] U.S. Census Bureau, 2021b.

[c] Industries are defined under the 2012 North American Industry Classification System and abbreviated as follows: A = Arts, entertainment, and recreation, and accommodation and food services, E = Educational, Health and Social Services; M = Manufacturing; P = Professional, Scientific, Management, Administrative, and Waste Management Services; Pu = Public Administration; and R = Retail Trade.

TABLE 4.7.1-2

Estimated Workforce and Duration of Regional Energy Access Expansion Project Construction

Facility	County, State/ Commonwealth	Duration (months)	Peak Workforce	Average Workforce
Pipeline Facilities [a]				
Regional Energy Lateral	Luzerne, PA	10	491	311
Effort Loop	Monroe, PA	10	441	233
Aboveground Facilities				
Compressor Station 201	Gloucester, NJ	13	130	100
Compressor Station 505	Somerset, NJ	13	120	90
Compressor Station 195	York, PA	8	25	15
Compressor Station 200	Chester, PA	7	25	15
Compressor Station 515	Luzerne, PA	13	120	90
Compressor Station 207	Middlesex, NJ	3	10	10
Hildebrandt Tie-In/Lower Demunds REL Tie- In/ Carverton Tie-In	Luzerne, PA	7	30	8
Delaware River Regulator	Bucks, PA	7	4	1
Mt. Laurel M&R Station/Lawnside M&R Station/ Camden M&R Station/Station 210 Pooling Point	Burlington, Camden, and Mercer, NJ	7	30	8
Centerville Regulator	Somerset, NJ	[b]	[b]	[b]
Beaver Dam M&R Station	Baltimore, MD	2	15	2

[a] MLV construction will be completed by a tie-in crew which is accounted for in the pipeline workforce.
[b] Workforce for the facility is accounted for within the Compressor Station 505 estimates.

One individual (Barbara Cuthbert) commented on the inconsistencies in information provided for estimated use of local labor. Transco revised Resource Report 5 to clarify that local labor is considered labor workforce coming from Pennsylvania and New Jersey.

Population impacts resulting from construction of the Project are expected to be temporary and, given the existing populations of the counties in the Project area, minor. The effect on the population would be equal to the average of 353 non-local workers (peak of 582 non-local workers). At peak construction, this addition would represent a 0.01 percent increase in the population of the Project area. Pipeline construction is transitory, of a short duration, and most non-local workers would not travel with their families to the Project area, thus minimizing temporary impacts on the local populations. Based on the populations of the counties in the Project area, in the event some construction workers and their families do temporarily relocate to the area, the increase in population would not be significant. In addition, any temporary increase in population would be distributed throughout the study area and would not have a permanent impact on any one population. Transco estimates that at peak construction, 864 construction workers would be local hires. This would result in a negligible and temporary reduction in the unemployment rates in the Project area for the duration of construction. Because no new permanent employees would be hired for operation of the Project's facilities, permanent or long-term impacts on population are expected to be negligible.

A brief decrease in the unemployment rates in the Project area could occur as a result of hiring local workers for construction. The influx of non-local construction workers may increase demand for goods and services in the Project areas and therefore may generate increased work opportunities in these local industries. Due to the anticipated small size of the construction workforce in the area of the Project compared to the existing population and workforce, impacts on population and employment during construction of the Project is expected to be short-term and minor. Due to the lack number of permanent employees hired for operation of the Project's facilities, permanent or long-term impacts on employment are expected to be negligible.

4.7.2 Economy and Tax Revenue

Table 4.7.1-1 provides a summary of economic and employment conditions in the Project area. The estimated per capita income in the Project area ranges from $28,972 in Luzerne County, Pennsylvania to $50,927 in Chester County, Pennsylvania. The unemployment rates in the Project area range from 4.0 percent in Chester County, Pennsylvania to 6.6 percent in Camden County, New Jersey. The unemployment rate is 6.5 percent for the state of Pennsylvania, 5.5 percent or the state of New Jersey, and 4.5 percent for the state of Maryland. The top three industries in the counties crossed by the Project are education, health, and social services, followed by retail trade and professional, scientific, management, administrative, and waste management services.

Transco estimates that payroll spending would be approximately $168.0 million during construction, of which about $100.2 million would go to the local construction workforce. Transco estimates that during construction, $2.8 million of a total of $153.9 million would be spent locally (in the states where Project facilities would be located) on the purchase of materials and equipment during construction.

The increase in economic activity resulting from spending during construction would result in a temporary, positive economic impact in the area of the Project. Overall, the Project would result in beneficial economic effects on the state and local economies by creating a short-term stimulus to the affected areas through payroll expenditures, local purchases of consumables and Project-specific materials, and sales tax.

Transco stated that operation of the Project would not require any permanent jobs. Due to the absence of employees hired for operation of the Project's facilities, no permanent impacts on the local economy and employment are expected.

Construction and operation of the Project would result in increased tax revenues to the Commonwealth of Pennsylvania and State of New Jersey, Luzerne County and Monroe County, Pennsylvania and Gloucester County, New Jersey, and other local taxing authorities. Construction activities would result in additional state and local tax revenues related to retail sales and payroll. Non-local construction workers would spend money locally on housing, transportation, food, and entertainment. Transco estimates that construction activities associated with the Project would generate approximately $7.5 million in state tax revenue and $1.6 million in local tax revenue in Pennsylvania and approximately $3.0 million in state tax revenue and $1.5 million in local tax revenue in New Jersey.

Construction activities would increase tax revenue in the states and counties crossed by the Project. Expenditures on material and equipment by construction would also generate additional tax revenues, which would have a minor, temporary, and positive impact on local and state economies. Due to the absence of new permanent staff required for operation of the Project, long-term beneficial impacts on state and local taxes are not anticipated.

4.7.3 Housing

Housing statistics for the Project are provided in table 4.7.3-1.

TABLE 4.7.3-1

Available Housing in the Regional Energy Access Expansion Project Area

State/Commonwealth/ County	Total Housing Units [a]	Rental Vacancy Rate (%) [a]	Vacant Housing Units [a]	Hotels and Motels [b]	Campgrounds/RV Parks [b]
Pennsylvania	**5,693,314**	**5.4%**	**640,208**	**--**	**--**
Luzerne	150,090	5.4%	21,430	27	9
Monroe	81,485	6.1%	24,387	21	24
York	184,135	4.6%	11,714	33	5
Chester	200,402	4.7%	9,422	35	4
Northampton	123,159	5.3%	8,974	39	10
Bucks	250,552	4.2%	11,722	50	8
New Jersey	**3,616,614**	**4.8%**	**384,740**	**--**	**--**
Gloucester	113,485	5.1%	8,577	--	--
Somerset	126,717	4.0%	8,524	88 [c]	25 [c]
Burlington	179,414	4.7%	13,023	94 [c]	14 [c]
Camden	206,078	5.4%	18,695	--	--
Mercer	144,855	4.3%	14,919	--	--
Middlesex	301,544	3.7%	16,561	204 [c]	5 [c]
Maryland	**2,448,422**	**6.0%**	**243,218**	**--**	**--**
Baltimore	337,052	6.9%	23,533	47	4

[a] U.S. Census Bureau, 2021c.

[b] Visit Luzerne County, 2021; Pocono Mountain Visitors Bureau, 2021; Explore York, 2021; Chester County Conferences & Visitors Bureau, 2021; Discover Lehigh Valley, 2021; Visit Bucks County, 2021; Visit New Jersey, 2021; Baltimore County Tourism and Promotion, 2021.

[c] NJ visitors bureau information provided by region. The Delaware River Region encompasses Burlington, Camden, Gloucester, Mercer, and Salem Counties. The Gateway Region encompasses Bergen, Essex, Hudson, Middlesex, and Union Counties. The Skylands Region encompasses Hunterdon, Morris, Somerset, Sussex, and Warren Counties.

Note: Inventory of hotels, motels, campgrounds, and RV parks was collected at county-level only.

Housing vacancy rates in the vicinity of the Project are lowest in Middlesex County, New Jersey (3.7 percent) and highest in Baltimore County, Maryland (6.9 percent). A total of 638 hotels and motels, 108 campgrounds and RV parks, and 191,481 vacant housing units are available in the Project area. Transco estimates construction activities would require an average of 883 workers and a maximum of 1,441 workers at any one time over the course of a 2- to 13-month period, and approximately 40 percent of the total workforce would temporarily relocate to the Project area. Based on the availability of local rental properties, hotels/motels, campgrounds, and RV parks, the increased demand for short-term housing from non-local construction workers during construction would be temporary and minor. No permanent workforce is required for operation of the facilities proposed for the Project; therefore, long-term effects on housing are also not anticipated.

The influx of 582 non-local construction workers at peak construction to the Project study area would result in a minor, temporary increase in the demand for rental housing and/or hotel/motel rooms and campground sites. The Project could have a short-term, positive impact on the area rental industry through increased demand and higher rates of occupancy; however, no significant impacts on local housing markets are expected. Increased demand in the Project study area could benefit the proprietors of the local motels, hotels, and other rental units through increased revenue; however, it could increase competition (and cost) for short-term housing and could decrease housing availability for tourists, recreationalists, and local renters or residents. While some construction activity would be conducted during the peak tourism season, demand is not expected to exceed the available number of hotels, motels, and campground units; therefore, we do not anticipate any significant impacts on housing.

4.7.4 Public Services

A range of public services and facilities are available in the Project area. Services and facilities include hospitals, full-service law enforcement, paid and volunteer fire departments, and public schools. Table 4.7.4-1 provides an overview of select public services available for the counties crossed by the Project.

TABLE 4.7.4-1

Public Services in the Regional Energy Access Expansion Project Area [a]

State/Commonwealth/ County	Hospitals	Nearest Distance to Project (miles)	Fire and Rescue Units	Nearest Distance to Project (miles)	Law Enforcement Agencies [b]	Nearest Distance to Project (miles)
Pennsylvania						
Luzerne	3	1.3	82	0.2	41	0.3
Monroe	2	8.2	17	1.2	22	6.8
York	3	12.3	66	2.0	21	12.3
Chester	5	4.4	44	1.6	46	2.2
Northampton	3	4.3	45	5.3	27	1.3
Bucks	5	5.9	72	5.3	42	4.9
New Jersey						
Gloucester	2	2.9	61	1.4	25	1.6
Somerset	1	6.2	50	1.5	20	7.5
Burlington	3	2.3	76	1.7	34	3.7
Camden	5	0.7	60	0.6	34	0.5
Mercer	4	10.8	41	6.1	12	13.4
Middlesex	6	6.7	74	2.8	26	2.7
Maryland						
Baltimore County	5	4.9	116	3.4	4	1.5

[a] Pennsylvania Department of Health, 2021; State of New Jersey Department of Health, 2021; Maryland Manual On-Line, 2021; FireDepartment.net, 2021a-m; USACOPS, 2021a-m.

[b] Includes county sheriff's office.

The non-local workforce would be relatively small compared to the current populations in areas affected by the Project, and no major impacts on the availability of public services are anticipated. As indicated in table 4.7.4-1, there are multiple local fire departments, police departments, and medical facilities near each piece of the Project that could handle emergencies should they arise. Due to the relatively small number of workers required for the Project and the unlikelihood that they may bring families with children to the area for a short construction period, we do not anticipate an impact on local schools. In addition, any temporary increase in population would be distributed throughout the general area of the Project and would not have a permanent impact on public services in any one location.

Temporary increased demand on local public services may occur including the need for local police to direct traffic during construction and for local emergency services to respond to emergencies associated with Project construction and associated temporary increase in population. Fire departments may have to respond to Project-related fires or other emergencies associated with the temporary increase in population, and medical services may be necessary for workforce personnel illnesses or injuries. Transco would work with local law enforcement, fire departments, and emergency medical services prior to construction to coordinate for effective emergency response.

4.7.5 Tourism

Tourism opportunities in the Project area include federal, state, and local interest areas. Tourism opportunities include historic sites and museums, food and drink, outdoor recreation opportunities, and water based recreational activities. Recreation and special interest areas are discussed in detail in section 4.5.4.

Travel-related spending supports local economies near the proposed Project. Table 4.7.5-1 provides an overview of the economic impacts of travel-related spending in the counties crossed by the Project.

TABLE 4.7.5-1

Economic Impact of Tourism in the Counties Crossed by the Regional Energy Access Expansion Project

State/ Commonwealth/ County	Visitor Spending ($ million)	Tourism-Generated Employment	Tourism-Generated Labor Income ($ million)	State and Local Taxes ($ million)
Pennsylvania				
Luzerne County	1,015.7	7,259	498.1	101.0
Monroe County	2,509.2	14,749	1,039.5	236.6
York County	1,041.6	8,108	504.0	102.6
Chester County	865.2	8,015	586.1	102.5
Northampton County	1,089.1	7,925	688.5	121.0
Bucks County	913.8	9,614	640.8	109.6
New Jersey				
Gloucester County	528.7	5,658	N/A	68.8
Somerset County	1,256.0	11,360	N/A	173.8
Burlington County	1,675.5	16,456	N/A	187.3
Camden County	936.8	9,473	N/A	120.0
Mercer County	1,443.9	13,362	N/A	173.1
Middlesex County	2,526.0	23,943	NA	319.8

[a] Tourism Economics 2019a and 2019b.

[b] County level data for Baltimore County, MD is not available.

The influx of an average of approximately 353 non-local construction workers would be limited to the 13 month duration of construction. As stated previously, the demand for temporary housing by non-local workers is not expected to exceed the available number of rental units, hotels, motels, and campgrounds in the Project area, but accommodations in the Project area could experience some minor limited availability during peak tourism season.

As detailed in section 4.5.4, Transco has proposed general mitigation measures for recreation and special interest areas that would be affected by the Project (e.g., public notification protocols), and provided site-specific crossing plans completed in consultation with the applicable land management agency.

Based on Transco's proposed measures to reduce impacts on recreational areas, thereby reducing impacts on the tourism industry, the Project would not result in significant or adverse impacts on recreational or special interest areas in the Project area. Given the short timeframe for construction, the Project would result in minor, temporary impacts to tourism in the Project area.

4.7.6 Traffic and Transportation

The local road and highway systems in the general area of the Project consist of interstate highways, U.S. highways, state highways, secondary state highways, county roads, and private roads. Table 4.7.6-1 identifies the primary access routes and average daily traffic counts.

TABLE 4.7.6-1

Estimated Average Daily Trips During Construction for the Regional Energy Access Expansion Project Components

Project Component	Primary Route	Estimated Average Daily Trips During Construction
	SR 309	600
	SR 0011	300
Regional Energy Lateral/Effort Loop	SR 1021	180
	SR 0315	320
	SR 0209	360
New Aboveground Facilities		
Compressor Station 201	Mantua Grove Road	350
Modified Aboveground Facilities		
Compressor Station 505	Case Road	350
Compressor Station 207	Old Water Works Road	100
Compressor Station 515	SR 115	300
Compressor Station 195	SR 851	100
Compressor Station 200	N Bacton Hill Road	100
Hildebrandt Tie-In	Hildebrandt Road	100
Lower Demunds REL Tie-In	Lower Demunds Road	100
Carverton Tie-In	Firecut Road	100
Delaware River Regulator	Lower Mud Run Road	100
Mainline A Regulator	River Road	100
Mt. Laurel M&R Station	Church Road/Century Parkway	50/50
Lawnside M&R Station	E Atlantic Avenue	100
Camden M&R Station	S 2nd Street	100
Centerville Regulator	Case Road	100
Station 210 Pooling Point	Great Road	100
Beaver Dam M&R Station	Beaver Dam Road	100

We received a comment regarding impacts on existing roads and on traffic from construction of the Project. Construction of the Project could result in minor, short-term impacts along some roads and highways due to the movement and delivery of equipment, materials, and workers. It is estimated that there would be a maximum of 2,156 trips per day along each of the transportation routes during the peak of construction.

Daily commuting of the construction workforce to the general area of the Project could temporarily affect traffic. Transco anticipates construction crews would travel outside of peak travel times, limiting some effect on local commuters. Transco would provide shuttle busses from construction activities to off-site locations and encourage workers to carpool.

In order to minimize the amount of traffic on local roads, Transco would use multilane highways for the transportation of heavy equipment and large deliveries of materials. Additionally, Transco would transport equipment and materials along the right-of-way in order to minimize traffic on public roads in the Project area.

We received a comment from Baltimore County regarding potential safety impacts from obstructed lines of sight for traffic caused by existing fencing at the Beaver Dam M&R Station. Transco responded that it does not own or operate the Beaver Dam M&R Station. Transco would be replacing existing meters and flow controls primarily within the existing facility buildings and would not disturb the existing fence during the construction of the Project.

To maintain safe conditions, Transco would use flaggers and signs, and minimize the amount of heavy traffic during peak travel times. Additionally, Transco would acquire necessary permits for construction-related impacts on roadways and would repair all roads to preconstruction conditions or better after construction activities have been completed.

Workers commuting to and from the Project worksites every day would result in a short-term, temporary increase in traffic during construction. In addition to the construction workforce, the delivery of construction equipment and materials to the Project could temporarily congest existing transportation networks. Traffic associated with the delivery of materials and equipment to the Project's sites would result in short-term, temporary increases in traffic and traffic congestion on the roads near the Project's facilities for the duration of construction.

Construction activities would result in temporary and minor effects on local transportation infrastructure and vehicle traffic, including disruptions from increased transportation of construction equipment, materials, and workforce; disruptions from construction of pipeline facilities at or across existing roads; and damage to local roads caused by heavy machinery and materials. To minimize and mitigate potential impacts on vehicle traffic and emergency services, Transco has developed a Traffic Management Plan (see table 2.3-1). Commute times for workers traveling to and from the site would generally occur outside of peak traffic hours to minimize increases in traffic congestion. Since operation of the Project would not require new permanent personnel, permanent impacts on transportation infrastructure and traffic are not expected.

4.7.7 Property Values and Nearby Structures

We received comments regarding potential adverse effects of the Project on property values. While there is recently published literature indicating that there is no identifiable or consistent link between the presence of natural gas pipeline easements or compressor stations and residential property values (Diskin et al., 2011), valuation is subjective and is generally not considered in appraisals. Potential impacts on the land values depend on multiple factors, including the size of the disturbance area, the values of affected and adjacent properties, presence of other industrial facilities or pipelines, and the extent of development or other aspects of current land use. The effect of a pipeline right-of-way on property value is typically a damage-related issue that would be negotiated during the right-of-way acquisition process, which is designed to provide fair compensation to the landowner for the right to use the property for pipeline construction and operation. Appraisal methods used to value land are usually based on objective characteristics of the property and any improvements, whereas subjective valuation is generally not considered in appraisals and a potential purchaser may decide to purchase land based on his or her planned land use. For example, a potential industrial purchaser might prefer having a pipeline onsite for a potential energy source, or a farmer looking for grazing or tillable land may or may not find it objectionable. If the presence of a pipeline renders a planned use infeasible, it is possible that a potential purchaser would decide not to purchase the property; however, each potential purchaser has different criteria and differing capabilities to purchase land.

A study, *Pipeline Impact Study: Study of a Williams Natural Gas Pipeline on Residential Real Estate: Saddle Ridge Subdivision, Dallas Township, Luzerne County, Pennsylvania* prepared by the firm of Allen, Williford and Seale, Inc., assessed the impact on the sale price of undeveloped lots and single-family residences that have a natural gas transmission line easement on the property (Allen, Williford and Seale, Inc., 2014). The report compared units in a subdivision in Luzerne County that had an existing natural gas transmission line within it. Differences between the sale prices of undeveloped lots and houses with the pipeline easement and those that did not have an easement were analyzed. The report found that, when the sales prices of the encumbered residences were compared with the sales prices of the unencumbered residences, there was no indication that the pipeline easement had any effect on the sales prices of homes in Saddle Ridge. Likewise, when the sales prices of encumbered lots were compared with the sales prices of unencumbered lots, the study showed the difference in price were due to the reduction in lot size associated with the easement area. We note that 60 percent of Transco's proposed Regional Energy Lateral and 100 percent of the proposed Effort Loop would be collocated with existing utility rights-of-way, indicating that many of these properties currently include easements.

For our analysis of the Constitution Pipeline and Wright Interconnect Projects (Docket Nos. CP13-499-000 and CP13-502-000) in Pennsylvania and New York, several appraisers were contacted about the potential impacts on property values due to the presence of a natural gas pipeline (FERC, 2014). One appraiser, who teaches seminars for appraisers and realtors that include discussions of mineral rights and pipeline easements, provided information on the subject. According to the appraiser, "the empirical evidence indicates no difference in value attributable to the existence of the pipeline easement." The appraiser further noted that he was not aware of appraisers adjusting the appraiser reports for the existence of a pipeline easement. He stated that the large number of variables that impact home values make it difficult to determine the incremental effect that any one variable may have on a home's value. Regardless, it is possible that the perceived safety issues or the limitations on land use within the permanent easement could reduce the number of potential buyers for a property, which may extend the number of days a property is on the market.

In 2016, the Interstate Natural Gas Association of America released a study conducted by Integra Reality Resources that analyzed the impacts on property values from several FERC-jurisdictional natural gas transmission lines sited throughout the country. Case studies were analyzed from Ohio, Virginia, New Jersey, Pennsylvania, and Mississippi. The investigation focused on single-family homes and townhomes, and looked at sales prices over several years. In all case studies, sale prices were adjusted for square footage, and a linear regression model was run to determine correlations between home prices and proximity to pipeline easements. Integra Reality Resources found there were no statistically significant differences between prices paid within a same subdivision for houses adjacent to a pipeline easement and houses farther away (Integra Reality Resources, 2016).

We also examined the impact the presence of a natural gas compressor station had on residential property values. Staff identified a recent study that assessed the effects of natural gas pipeline compressor stations on property values prepared for National Fuel. The study assesses the impacts on property values in neighborhoods surrounding compressor stations in seven locations in New York state. Sales data over the previous 15 years were evaluated, and assessors from six of the seven areas were interviewed. The study found no quantifiable evidence of a discernable effect on property values or appreciation rates of properties within 0.5 mile of compressor stations. The study, which notes the general lack of sales data for analysis, identified the following commonalities among the seven areas: the compressor stations were sited on large land parcels and set back from the road, natural and constructed buffers were utilized, and compressor station sites were generally in rural areas removed from higher density development (Griebner, 2015).

While the studies cited above are from geographically different areas and are generally in rural areas with a mix of residential and industrial/commercial property, we recognize they do not have a direct applicability to the Project given the location of the studies compared to the Project. However, we are not aware of any studies that would provide a more direct comparison to the Project. We acknowledge that it is reasonable to expect that property values may be impacted differently based on the setting and inherent characteristics of each property. However, we find no conclusive evidence indicating that the Project would have a significant negative impact on property values.

Based on the research we have reviewed, we find no conclusive evidence indicating that natural gas pipeline easements or compressor stations would have a significant negative impact on property values, although this is not to say that any one property may or may not experience an impact on property value for either the short or long term. Impacts on residential land are discussed in detail in section 4.5.2.4.

4.7.8 Environmental Justice

According to the EPA, "Environmental Justice is the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Fair treatment means that no group of people should bear a disproportionate share of the negative environmental consequences resulting from industrial, governmental, and commercial operations or policies (EPA, 2021g). Meaningful involvement means:

1. people have an appropriate opportunity to participate in decisions about a proposed activity that will affect their environment and/or health;
2. the public's contributions can influence the regulatory agency's decision;
3. community concerns will be considered in the decision-making process; and
4. decision makers will seek out and facilitate the involvement of those potentially affected (EPA, 2021g).

In conducting NEPA reviews of proposed natural gas projects, the Commission follows the instruction of Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low Income Populations*, which directs federal agencies to identify and address the "disproportionately high and adverse human health or environmental effects" of their actions on minority and low-income populations (i.e., environmental justice communities).[50] Executive Order 14008, *Tackling the Climate Crisis at Home and Abroad,* also directs agencies to develop "programs, policies, and activities to address the disproportionately high and adverse human health, environmental, climate-related, and other cumulative impacts on disadvantaged communities, as well as the accompanying economic challenges of such impacts."[51] The term "environmental justice community" includes disadvantaged communities that have been historically marginalized and overburdened by pollution.[52] Environmental justice communities include, but may not be limited to minority populations, low-income populations, or indigenous peoples.[53]

Commission staff used the Federal Interagency Working Group on Environmental Justice and NEPA Committee's publication, *Promising Practices for EJ Methodologies in NEPA Reviews* (*Promising Practices*) (EPA, 2016), which provides methodologies for conducting environmental justice analyses throughout the NEPA process for this Project. Commission staff's use of these methodologies is described throughout this section.

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50 Exec. Order No. 12,898, 59 Fed. Reg. 7629, at 7629, 7632 (Feb. 11, 1994).

51 Exec. Order No. 14,008, 86 Fed. Reg. 7619, at 7629 (Jan. 27, 2021).

52 Id.

53 *See* EPA, *EJ 2020 Glossary* (Aug. 2, 2019), https://www.epa.gov/environmentaljustice/ej-2020-glossary.

EPA encouraged FERC to use EJSCREEN, which is EPA's environmental justice mapping and screening tool, and/or the most recent American Community Survey from the U.S. Census Bureau (i.e., 2015-2019) to determine the presence of minority and low-income populations. Commission staff used EJSCREEN as an initial step to gather information regarding minority and/or low-income populations; potential environmental quality issues; environmental and demographic indicators; and other important factors.

4.7.8.1 Meaningful Engagement and Public Involvement

The Council on Environmental Quality's (CEQ) *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ, 1997) and *Promising Practices* recommend that Federal agencies provide opportunities for effective community participation in the NEPA process, including identifying potential effects and mitigation measures in consultation with affected communities and improving the accessibility of public meetings, crucial documents, and notices.[54] They also recommend using adaptive approaches to overcome linguistic, institutional, cultural, economic, historical, or other potential barriers to effective participation in the decision-making processes of Federal agencies. In addition, Section 8 of Executive Order 13985, *Advancing Racial Equity and Support for Underserved Communities Through the Federal Government*, strongly encourages independent agencies to "consult with members of communities that have been historically underrepresented in the Federal Government and underserved by, or subject to discrimination in, federal policies and programs."

In 2021, the Commission established the Office of Public Participation (OPP) to support meaningful public engagement and participation in Commission proceedings. OPP provides members of the public, including environmental justice communities, with assistance in FERC proceedings—including navigating Commission processes and activities relating to the Project. For assistance with interventions, comments, requests for rehearing, or other filings, and for information about any applicable deadlines for such filings, members of the public are encouraged to contact OPP directly at 202-502-6595 or OPP@ferc.gov for further information.

As discussed in section 1.3 of this EIS, there have been many opportunities for public involvement during the Commission's environmental review process. On June 11, 2020, Transco filed a request to implement the Commission's Pre-filing Process for the REAE Project. At that time, Transco was in the preliminary design stages of the Project and no formal application had been filed. The FERC established its Pre-filing Process to encourage early involvement of interested stakeholders, facilitate interagency cooperation, and identify and resolve environmental issues before an application is filed with the FERC and facility locations are formally proposed. The FERC granted Transco's requests to use the Pre-filing Process on June 18, 2020 and established pre-filing Docket No. PF20-3-000 for the Project. During the Pre-filing Process, we worked with Transco and stakeholders to identify and resolve issues, where possible, prior to Transco's filings of a formal application with FERC.

On July 24, 2020, we issued a *Notice of Intent to Prepare an Environmental Assessment for the Planned Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Notice of Public Virtual Scoping Sessions* (NOI). The NOI was mailed and/or emailed to approximately 1,966 entities, including affected landowners (as defined in the Commission's regulations); federal, state, and local officials; Native American Tribes; agency representatives; environmental and public interest groups; and local libraries and newspapers. We conducted three virtual public scoping sessions to provide an opportunity for agencies and the general public to learn more about the Project and to participate in the

[54] 1997 CEQ Guidance at 4.

environmental analysis by identifying issues to be addressed in the Environmental Assessment (EA). The virtual sessions were held via phone between August 18 to 20, 2020.

On April 9, 2021, the FERC issued a NOA announcing that Transco filed its application with the FERC. Upon review of Transco's application and comments received, the Commission staff determined that an EIS, rather than an EA, should be prepared for the Project. On October 19, 2021, the FERC issued a *Notice of Intent to Prepare an Environmental Impact Statement for the Proposed Regional Energy Access Expansion Project, Request for Comments on Environmental Issues, and Schedule for Environmental Review* (EIS NOI). The EIS NOI was published in the FR and sent to 2,418 parties, including federal, state, and local agencies; elected officials; environmental and public interest groups; Native American Tribes; potentially affected landowners; local libraries and newspapers; and other stakeholders who had indicated an interest in the REAE Project.

The administrative record for this proceeding is available to the public on FERC's e-library website (https://elibrary.ferc.gov/eLibrary/search) and interested parties may comment about the Project, either in writing or electronically.

We recognize that not everyone has internet access or is capable of filing electronic comments. For this reason, each notice was physically mailed to all parties (i.e., landowners and abutters, federal, state, and local government representatives and agencies; local libraries; newspapers; elected officials; Native American Tribes; and other interested parties) on the environmental mailing list. Further, Commission staff has consistently emphasized in public meetings that all comments, whether spoken or delivered in person at meetings, mailed in, or submitted electronically, receive equal weight by FERC staff for consideration in the EIS. In addition, Transco sent copies of its application in hard copy and/or digital format to local libraries in the Project area.

In addition to the notices that FERC mailed to landowners and other stakeholders throughout the environmental review process, Transco stated it initiated a public and stakeholder outreach program in November 2019 to enhance the involvement of potential stakeholders in the Project area. According to Transco, the Project-wide outreach program included: open house announcement and schedule, which was mailed to affected parties, including all affected landowners and other municipality and county leaders; newspaper advertisements of open houses placed in newspapers of general circulation in the Project area; open houses held virtually and in the county of each major Project component; newspaper advertisements, which will be placed in those same publications prior to commencement of construction; notifications to businesses potentially affected by construction; designation of a point of contact for stakeholder contacts; a Project toll-free telephone number for public inquiries; and a Project website with periodic updates of relevant information.

Transco held in-person and virtual informational open house in June and July 2020. The open house was designed to inform the public about the Project, enable the public to view maps of the Project, and provide the public the opportunity to ask questions about the Project. According to Transco, the open house schedule was mailed to all affected parties, and newspaper advertisements of the open houses were placed in newspapers of general circulation in the Project area. Fifty-nine people attended the three in person open houses and 27 people attended the virtual open houses. FERC staff participated in three virtual open houses sponsored by Transco in June and July 2020 to explain our environmental review process to interested stakeholders.

Transco's stakeholder outreach program would continue to inform the public and agencies through a Project website, phone number, written correspondence (including letters and newsletters), and through public notices about various construction-related activities (including pre-construction meetings, permit requirements, construction schedules, and environmental inspection procedures) as well as through reporting commitments and requirements, and environmental measures to address issues [i.e., noncompliances and landowner complaints]). Transco also uses digital media platforms to market educational Project information. Transco would continue to maintain relationships and communication with stakeholders after the in-service date.

EPA recommended Transco start an environmental justice working group. Transco engaged with organizations that support low-income and minority communities to extend access to communities that may not be reachable through traditional means. Transco is partnering with the Community Action Association of Pennsylvania to improve communication with low-income communities. Project materials, in English and Spanish, were placed in community gathering centers and local venues including discount or grocery stores, minority-owned businesses, and faith-based institutions. The Project website was translated into Spanish and Transco continues to use an interpreter as needed.

We received environmental justice-related comments from the EPA and Delaware Riverkeeper Network (DRN). EPA recommended that Commission staff use EJSCREEN to consider impacts of the proposed Project on vulnerable communities (see section 4.7.8 above). Alongside EPA's comment that FERC use visual aids to demonstrate the cumulative impacts on environmental justice communities relative to Project facilities, Commission staff also include visual aids for environmental justice community identification. Figures 4.7.8-1 through 4.7.8-8 below provide a geographic representation of potential environmental justice communities relative to the location of the Project and figure 4.11.1-1 summarizes the present and reasonably foreseeable projects or actions that occur within the geographic scope for cumulative impacts. EPA also commented that communities with environmental justice concerns should be engaged where regional impacts on different resource areas may occur and that a community outreach effort discussion should be part of the EIS (this is addressed above in this section and section 1.3). EPA further commented that the EIS should consider and disclose impacts on communities with environmental justice concerns from this Project considering impacts from past, present, and reasonably foreseeable planned actions (see cumulative impacts discussion in section 4.7.8.3 below). EPA also recommends FERC consider whether communities may already be experiencing existing pollution and social/health burdens and how the proposed action may potentially result in disproportionate impacts in that context. EPA also recommended that Commission staff consider climate change impacts of the proposed Project on environmental justice communities (see air impacts discussion in 4.7.8.3 below).

Additionally, EPA recommended that the final EIS summarize or provide references to any community comments and concerns regarding the Project's impacts. No comments were received specifically from individuals identifying as members of environmental justice communities. All comments received on the docket, including those related to environmental justice concerns, have been addressed throughout this EIS.

DRN commented that the Commission must ensure that environmental justice communities are informed and aware of the Project and evaluate whether the Project contributes to a disproportionately harmful environmental burden. DRN commented that FERC should engage communities affected by the Project, including those who do not have internet access and residents that rent their homes (public involvement activities are described above and in section 1.3). DRN requested information regarding the number of attendees at the Transco sponsored open houses (see discussion above). DRN also commented that FERC should review how environmental and health effects are distributed amongst environmental justice communities for this Project, as well as cumulatively and historically (see discussion in section 4.7.8.3 below). Furthermore, Barbara Cuthbert included New Jersey Department of Environmental Protection maps of overburdened communities that are within ten miles of Compressor Station 505 in her comments.

4.7.8.2 Identification of Environmental Justice Communities

According to the CEQ's *Environmental Justice Guidance Under the National Environmental Policy Act* (CEQ 1997) and *Promising Practices*, minority populations are those groups that include: American Indian or Alaskan Native; Asian or Pacific Islander; Black, not of Hispanic origin; or Hispanic. Following the recommendations set forth in *Promising Practices*, FERC uses the **50 percent** and the **meaningfully greater analysis** methods to identify minority populations. Using this methodology, minority populations are defined in this EIS where either: (a) the aggregate minority population of the block groups in the affected area exceeds 50 percent; or (b) the aggregate minority population in the block group affected is 10 percent higher than the aggregate minority population percentage in the county. The guidance also directs low-income populations to be identified based on the annual statistical poverty thresholds from the U.S. Census Bureau. Using *Promising Practices'* **low-income threshold criteria** method, low-income populations are identified as block groups where the percent of low-income population in the identified block group is equal to or greater than that of the county.

According to the current U.S. Census Bureau information, minority and low-income populations exist within the Project area, as discussed further below. Table 4.7.8-1 identifies the minority populations by race and ethnicity and low-income populations within the states of Pennsylvania and New Jersey. Table 4.7.8-1 identifies the minority populations (by race and ethnicity) and low-income populations within New Jersey Pennsylvania, and Maryland; the counties affected by the Project (Chester, Luzerne, Monroe, Philadelphia, and York Counties in Pennsylvania; Burlington, Camden, Middlesex, Somerset, and Gloucester Counties in New Jersey; and Baltimore County in Maryland), and U.S. Census block groups[55] crossed by the pipeline facilities and within 1 mile of the proposed aboveground Project facilities.

We received a comment from the Institute for Policy Integrity at New York University School of Law regarding the appropriateness of a 1-mile radius to identify environmental justice communities around aboveground facilities. We have determined that a 1-mile radius around the proposed aboveground facilities is the appropriate unit of geographic analysis for assessing impacts for this Project on environmental justice communities. A 1-mile radius is sufficiently broad considering the likely concentration of construction activities, noise, visual, and traffic impacts proximal to the aboveground facilities, and operational emissions. Additionally, to evaluate the air quality impacts of operational emissions from the compressor stations, Transco performed air quality modeling analyses for Compressor Stations 505 and 515. The new compressor at Compressor Station 201 would be electric-driven and, therefore, no modeling was conducted for this station. Transco completed its NAAQS analyses by modeling operating emissions from the compressor stations to determine the maximum ground level concentrations for each pollutant and averaging period, added ambient background concentrations. These predicted results were compared against the NAAQS as shown in table 4.8.5-2. As indicated in the table, the radius of significant impact for all modeled pollutants was less than 1 mile.[56] Therefore, we find that the 1-mile radius considered is adequate.

To ensure we are using the most recent available data, we use 2019 U.S. Census American Community Survey data (i.e., the U.S. Census American Community Survey File# B17017 and File# B03002) for the race, ethnicity, and poverty data at the block group level. Figures 4.7.8-1 through 4.7.8-8

[55] Block groups are statistical divisions of census tracts that generally contain between 600 and 3,000 people (U.S. Census Bureau, 2019).

[56] EPA designates emission levels for criteria pollutants that if exceeded by a source, could cause or contribute to an exceedance of the NAAQS. These levels are conservative to ensure the protection of air quality and, if predicted, would trigger additional analyses to include ambient conditions. The term used for these designated emission concentrations are the significant impact levels, or SILs. The SILs are based on standard deviation confidence intervals to represent the inherent variability in pollutant concentrations, as determined by the national monitoring network. For the purposes of our analysis, an exceedance of a SIL concentration indicates that the impact may be significant; however, we would only conclude significance if further analysis determines that the emissions would lead to an exceedance of the NAAQS.

provide a geographic representation of potential environmental justice communities relative to the location of the Project.

As presented in table 4.7.8-1, 47 block groups out of 104 block groups within the geographic scope of the Project are considered environmental justice communities. Of the 47 block groups, 11[57] block groups within the Project's area of review have a minority population that either exceeds 50 percent or is meaningfully greater than their respective counties. Eleven[58] block groups within the Project's area of review have a low-income population that is equal to or greater than their respective counties. Twenty-five[59] block groups within the Project's area of review have a minority population that exceeds 50 percent or is meaningfully greater than their respective counties and a low-income population that is equal to or greater than its respective county.

For the Regional Energy Lateral, 2 block groups (based on the low-income threshold) out of 13 are considered environmental justice block groups; for the Effort Loop, 2 block groups (1 based on the minority threshold and 1 based on the low-income threshold) out of 8 block groups are considered environmental justice block groups**;** for Compressor Station 195, 1 block group (based on the low-income threshold) out of 3 block groups are considered environmental justice block groups; for Compressor Station 200, 4 block groups (based on the minority threshold) out of 4 block groups are considered environmental justice block groups; for Compressor Station 207, 4 block groups (3 based on the minority threshold and 1 based on both the low income and minority threshold) out of 9 block groups are considered environmental justice block groups; for Compressor Station 505, 1 block group (based on the low-income threshold) out of 4 block groups is considered environmental justice block groups; for Compressor Station 201 4 block groups (2 based on the minority threshold and 2 based on the low-income threshold) out of 8 block groups are considered environmental justice block groups; for the Camden Meter Station, 18 block groups (1 based on the minority threshold and 17 based on both the minority and low income thresholds) out of 22 block groups are considered environmental justice block groups; for the Lawnside Meter Station 7 block groups (3 based on the low income threshold and 4 based on both the low income and minority thresholds) out of 19 block groups are considered environmental justice block groups; and for the Mt. Laurel Meter Station 4 block groups (1 based on the low income threshold and 3 based on both the minority and low income thresholds) out of 9 block groups are considered environmental justice block groups. Both Compressor Station 515 and the Beaver Sam Meter Station were not in proximity to an environmental justice group.

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57 Census Tract 3003.4, Block Group 4; Census Tract 3020, Block Group 2; Census Tract 3021.01, Block Group 1; Census Tract 3021.01, Block Group 2; Census Tract 3022.02, Block Group 1; Census Tract 78.01, Block Group 2; Census Tract 79.08, Block Group 1; Census Tract 79.08, Block Group 2; Census Tract 5002.04, Block Group 1; Census Tract 5002.04, Block Group 3; and Census Tract 6004, Block Group 3.

58 Census Tract 2112.04, Block Group 4; Census Tract 2116, Block Group 2; Census Tract 3012.03, Block Group 2; Census Tract 240.01, Block Group 3; Census Tract 536.02, Block Group 3; Census Tract 5002.03, Block Group 2; Census Tract 5002.05, Block Group 3; Census Tract 6067, Block Group 3; Census Tract 6072, Block Group 1; Census Tract 6073, Block Group 2; and Census Tract 7040.05, Block Group 1.

59 Census Tract 71.03, Block Group 2; Census Tract 6002, Block Group 1; Census Tract 6002, Block Group 2; Census Tract 6004, Block Group 1; Census Tract 6004, Block Group 2; Census Tract 6004, Block Group 4; Census Tract 6004, Block Group 5; Census Tract 6008, Block Group 1; Census Tract 6016, Block Group 1; Census Tract 6016, Block Group 2; Census Tract 6016, Block Group 3; Census Tract 6017, Block Group 1; Census Tract 6017, Block Group 2; Census Tract 6018, Block Group 1; Census Tract 6103 Block Group 1; Census Tract 6104 Block Group 1; Census Tract 6104 Block Group 2; Census Tract 6104 Block Group 3; Census Tract 6065, Block Group 1; Census Tract 6065, Block Group 2; Census Tract 6065, Block Group 3; Census Tract 6073, Block Group 4; Census Tract 7004.08, Block Group 1; Census Tract 7004.08, Block Group 2; and Census Tract 6034, Block Group 3.

TABLE 4.7.8-1

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
MARYLAND	6,018,848	50.9	29.4	0.2	6.2	0.0	0.3	12.9	10.1	49.1	8.9
NEW JERSEY	8,878,503	55.4	12.7	0.1	9.4	0.0	0.4	1.8	20.2	44.6	10.0
PENNSYLVANIA	12,791,530	76.4	10.7	0.1	3.4	0.0	0.2	1.9	7.3	23.6	12.1
Regional Energy Lateral											
Luzerne County, PA	317,663	81.5	3.7	0.1	1.2	0.0	0.0	1.4	11.9	18.5	13.7
Census Tract 2112.04, Block Group 1	1,099	94.9	0.0	1.6	0.0	0.0	0.0	0.7	2.7	5.1	10.9
Census Tract 2112.04, Block Group 4	2,075	98.3	0.3	0.0	0.0	0.0	0.0	0.0	1.3	1.7	**15.1**
Census Tract 2114, Block Group 6	1,439	92.1	0.0	0.5	4.1	0.0	0.0	0.0	3.3	7.9	4.9
Census Tract 2115, Block Group 2	835	91.7	7.2	0.0	0.0	0.0	0.0	1.1	0.0	8.3	7.4
Census Tract 2115, Block Group 3	984	94.5	1.8	0.0	0.0	0.0	0.0	0.0	3.7	5.5	9.0
Census Tract 2116, Block Group 2	955	91.9	0.7	0.7	0.0	1.0	0.0	0.0	5.5	8.1	**20.9**
Census Tract 2116, Block Group 3	1,398	99.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6	6.9
Census Tract 2117.01, Block Group 1	1,424	97.2	0.0	1.1	0.2	0.0	0.0	0.0	1.5	2.8	2.7
Census Tract 2117.01, Block Group 2	1,631	87.6	6.1	0.0	0.0	0.0	0.0	0.0	6.3	12.4	10.6

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 2117.01, Block Group 3	2,228	97.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	12.3
Census Tract 2117.02, Block Group 1	1,513	97.9	0.9	0.1	0.7	0.0	0.0	0.0	0.3	2.1	4.8
Census Tract 2118, Block Group 1	979	96.5	1.5	0.0	1.1	0.0	0.0	0.0	0.8	3.5	12.7
Census Tract 2153, Block Group 4	2,193	96.0	0.1	0.0	2.1	0.0	0.0	0.7	1.1	4.0	9.0
Effort Loop											
Monroe County, PA	168,032	66.1	13.5	0.1	2.3	0.0	0.2	1.9	15.9	33.9	10.6
Census Tract 3003.4, Block Group 3	732	86.9	9.4	3.7	0.0	0.0	0.0	0.0	0.0	13.1	7.4
Census Tract 3003.4, Block Group 4	2,737	52.7	32.9	0.0	5.6	0.0	0.0	1.4	7.4	**47.3**	10.2
Census Tract 3012.02, Block Group 2	2,158	89.9	4.2	0.0	0.0	0.0	0.0	0.6	5.4	10.1	4.4
Census Tract 3012.02, Block Group 3	1,394	91.8	1.4	1.4	0.0	0.0	0.0	0.0	5.5	8.2	9.0
Census Tract 3012.03, Block Group 2	1,926	74.4	0.0	0.0	9.8	0.0	0.0	0.5	15.4	25.6	**20.2**
Census Tract 3012.05, Block Group 1	3,256	87.8	3.6	0.0	0.0	0.0	0.0	0.4	8.1	12.2	6.9

TABLE 4.7.8-1 (cont'd) **Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area**											
	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
State/County/ Tract and Block Group	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 3012.05, Block Group 2	931	74.1	19.3	0.0	0.0	0.0	0.0	0.0	6.6	25.9	0.0
Census Tract 3012.05, Block Group 3	3,646	70.4	9.6	0.0	3.6	0.0	0.0	0.9	15.6	29.6	1.1
Compressor Station 195											
York County, PA	445,565	83.4	5.4	0.1	1.5	0.0	0.2	1.9	7.5	16.6	8.9
Census Tract 237.22, Block Group 2	1,595	98.4	0.0	0.0	1.0	0.0	0.0	0.6	0.0	1.6	5.1
Census Tract 240.01, Block Group 2	2,121	95.7	2.2	1.5	0.0	0.0	0.0	0.0	0.7	4.3	4.6
Census Tract 240.01, Block Group 3 [c]	802	100.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	**16.6**
Compressor Station 200											
Chester County, PA	519,560	79.4	5.6	0.1	5.5	0.0	0.1	1.9	7.4	20.6	6.3
Census Tract 3020, Block Group 2	3,947	76.2	6.7	0.0	12.4	0.0	0.0	2.6	2.1	**23.8**	3.0
Census Tract 3021.01, Block Group 1	2,649	66.1	0.0	0.0	27.9	0.0	0.0	2.6	3.4	**33.9**	0.0
Census Tract 3021.01, Block Group 2 [c]	4,671	65.3	7.0	0.0	17.6	0.0	0.0	0.5	9.7	**34.7**	1.3
Census Tract 3022.02, Block Group 1	2,266	59.3	10.4	0.0	19.9	0.0	0.0	0.8	9.6	**40.7**	5.8

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Compressor Station 515											
Luzerne County, PA	317,663	81.5	3.7	0.1	1.2	0.0	0.0	1.4	11.9	18.5	13.7
Census Tract 2153, Block Group 4 [c]	2,193	96.0	0.1	0.0	2.1	0.0	0.0	0.7	1.1	4.0	9.0
Compressor Station 207											
Middlesex County, NJ	825,920	43.1	9.5	0.1	23.9	0.0	0.3	1.8	21.2	56.9	8.6
Census Tract 71.03, Block Group 2	2,039	37.4	33.9	0.0	16.7	0.0	0.0	0.0	12.0	**62.6**	**13.2**
Census Tract 73.01, Block Group 2	2,257	61.9	3.0	0.0	9.7	0.0	0.0	0.9	24.4	38.1	3.9
Census Tract 78.01, Block Group 2 [c]	1,069	48.7	1.1	0.0	25.4	0.0	0.0	1.7	23.0	**51.3**	3.8
Census Tract 79.05, Block Group 1	1,254	56.1	2.5	0.0	14.0	0.0	0.0	7.8	19.5	43.9	7.0
Census Tract 79.05, Block Group 2	1,089	75.6	0.0	0.0	8.2	0.0	0.0	2.2	14.0	24.4	7.0
Census Tract 79.07, Block Group 1	1,366	89.6	1.0	0.0	4.0	0.0	0.0	0.0	5.4	10.4	0.0
Census Tract 79.07, Block Group 2	1,764	54.6	4.0	0.7	24.3	0.0	0.0	0.6	15.7	45.4	6.4
Census Tract 79.08, Block Group 1	2,951	24.7	23.0	0.0	32.0	0.0	0.0	1.8	18.5	**75.3**	6.4

TABLE 4.7.8-1 (cont'd)

Minority[a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 79.08, Block Group 2	2,540	18.0	25.0	0.0	19.7	0.0	0.0	0.0	37.3	**82.0**	1.4
Compressor Station 505											
Somerset County, NJ	329,838	56.3	9.2	0.1	17.6	0.0	0.4	1.7	14.7	43.7	5.5
Census Tract 536.02, Block Group 1	2,744	84.7	4.2	0.0	6.2	0.0	0.0	0.0	4.9	15.3	2.2
Census Tract 536.02, Block Group 2	1,702	76.4	0.0	0.0	17.3	0.0	0.0	0.0	6.3	23.6	3.8
Census Tract 536.02, Block Group 3[c]	1,645	83.2	3.7	0.0	13.1	0.0	0.0	0.0	0.0	16.8	**5.5**
Census Tract 537.07, Block Group 1	1,397	85.0	1.3	0.0	10.1	0.0	0.0	0.9	2.7	15.0	0.0
Compressor Station 201											
Gloucester County, NJ	291,165	78.5	9.8	0.1	3.1	0.0	0.1	2.3	6.2	21.5	7.3
Census Tract 5002.03, Block Group 1	1,950	92.8	3.7	0.0	0.0	0.0	0.0	0.0	3.5	7.2	4.8
Census Tract 5002.03, Block Group 2	1,487	95.4	4.6	0.0	0.0	0.0	0.0	0.0	0.0	4.6	**10.1**
Census Tract 5002.03, Block Group 3	765	89.9	8.4	0.0	1.7	0.0	0.0	0.0	0.0	10.1	6.3
Census Tract 5002.04, Block Group 1[c]	4,163	70.6	10.2	0.0	8.0	0.0	0.0	5.4	5.9	**29.4**	1.9

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 5002.04, Block Group 3	489	40.9	31.7	0.0	0.0	0.0	0.0	3.3	4.1	**59.1**	6.2
Census Tract 5002.05, Block Group 3	1,872	93.0	1.9	0.0	0.0	0.0	0.0	4.0	1.2	7.0	**7.5**
Census Tract 5006, Block Group 3	4,514	79.4	12.2	0.0	5.8	0.0	0.0	2.5	0.1	20.6	3.3
Census Tract 5006, Block Group 4	1,486	79.6	3.0	0.0	0.6	1.5	0.0	0.0	15.3	20.4	3.3
Beaver Dam Meter Station											
Baltimore County, MD	828,018	57.3	28.5	0.2	6.0	0.0	0.2	2.3	5.4	42.7	8.7
Census Tract 4082, Block Group 1	942	90.6	1.5	0.0	3.7	0.0	0.0	3.4	0.8	9.4	1.7
Census Tract 4083.04, Block Group 2 [d]	825	56.8	0.0	0.0	35.4	0.0	0.0	3.5	4.2	42.3	0.0
Census Tract 4083.04, Block Group 3	1,249	97.8	0.0	0.0	0.0	0.0	0.0	0.0	2.2	2.2	3.1
Census Tract 4084, Block Group 1	1,074	84.2	4.8	0.0	6.4	0.0	0.7	1.6	2.3	15.8	7.7
Camden Meter Station											
Philadelphia County, PA	1,579,075	34.5	40.8	0.2	7.2	0.0	0.4	2.2	14.7	65.5	22.9
Census Tract 17, Block Group 1	1,258	78.2	13.8	0.0	0.0	0.0	0.0	3.8	4.2	21.8	2.4
Census Tract 25, Block Group 2	851	88.1	0.9	0.0	7.1	0.0	0.0	0.0	3.9	11.9	4.9

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 366, Block Group 1	2,604	64.8	5.3	0.0	11.5	0.0	0.0	6.3	12.2	35.2	6.2
Census Tract 9807, Block Group 1	0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Camden County, NJ	506,738	56.7	18.3	0.1	5.7	0.0	0.4	2.1	16.8	43.3	12.4
Census Tract 6002, Block Group 1	1,116	0.0	55.7	0.0	0.0	0.0	0.0	0.0	44.3	**100.0**	**40.9**
Census Tract 6002, Block Group 2	969	2.1	67.7	0.0	0.0	0.0	2.5	5.4	22.4	**97.9**	**16.5**
Census Tract 6004, Block Group 1	1,047	0.0	49.7	0.0	0.0	0.0	0.0	0.0	50.3	**100.0**	**39.0**
Census Tract 6004, Block Group 2	481	2.3	71.1	0.0	0.0	0.0	0.0	1.0	24.9	**97.7**	**62.0**
Census Tract 6004, Block Group 3	277	0.0	38.6	0.0	0.0	0.0	0.0	0.0	61.4	**100.0**	0.0
Census Tract 6004, Block Group 4	796	0.0	36.8	0.0	0.5	0.0	0.0	0.0	62.7	**100.0**	**56.3**
Census Tract 6004, Block Group 5	850	11.4	24.5	0.0	7.6	0.0	0.0	0.0	56.5	**88.6**	**49.8**
Census Tract 6008, Block Group 1	945	2.3	54.4	0.0	0.0	0.0	0.0	0.0	43.3	**97.7**	**46.0**
Census Tract 6016, Block Group 1	1,046	1.7	39.3	0.0	1.9	0.0	0.0	2.0	55.1	**98.3**	**49.1**

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 6016, Block Group 2	941	0.9	76.6	6.8	0.0	0.0	0.0	0.0	15.7	**99.1**	**28.1**
Census Tract 6016, Block Group 3	657	5.6	64.8	0.0	0.0	0.0	0.0	13.1	16.4	**94.4**	**40.9**
Census Tract 6017, Block Group 1	1,902	1.4	55.2	0.0	0.0	0.0	1.5	0.8	41.1	**98.6**	**44.9**
Census Tract 6017, Block Group 2	953	3.7	51.8	0.0	0.0	0.0	0.0	15.5	29.0	**96.3**	**45.0**
Census Tract 6018, Block Group 1	1,082	5.7	40.9	0.0	5.0	0.0	0.0	0.0	48.4	**94.3**	**41.5**
Census Tract 6103 Block Group 1 [d]	1,881	26.2	44.7	0.0	4.9	0.0	0.0	2.7	21.6	**73.8**	**36.7**
Census Tract 6104 Block Group 1	2,162	9.9	44.3	0.0	7.9	0.0	0.0	4.4	33.6	**90.1**	**30.4**
Census Tract 6104 Block Group 2	1,816	18.4	47.6	0.0	0.5	0.0	0.0	1.6	31.8	**81.6**	**52.2**
Census Tract 6104 Block Group 3	1,014	6.2	59.1	0.0	0.0	0.0	0.0	2.8	32.0	**93.8**	**48.5**
Lawnside Meter Station											
Camden County, NJ	506,738	56.7	18.3	0.1	5.7	0.0	0.4	2.1	16.8	43.3	12.4
Census Tract 6059, Block Group 1	1,284	85.7	0.0	0.0	4.3	0.0	0.0	5.9	4.1	14.3	0.7

TABLE 4.7.8-1 (cont'd)

Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 6059, Block Group 2	1,490	94.3	0.2	0.0	0.0	0.0	0.0	0.0	5.5	5.7	8.7
Census Tract 6060, Block Group 2	1,050	96.0	2.8	0.0	0.7	0.0	0.0	0.0	0.6	4.0	7.8
Census Tract 6064, Block Group 1	1,026	92.0	0.0	0.0	1.4	0.0	0.0	0.0	6.6	8.0	0.0
Census Tract 6065, Block Group 1 [d]	403	7.2	69.2	0.0	0.0	0.0	0.0	7.9	15.6	**92.8**	**32.3**
Census Tract 6065, Block Group 2	1,176	5.8	88.0	0.0	0.0	0.0	1.7	4.0	0.5	**94.2**	**19.2**
Census Tract 6065, Block Group 3	1,306	4.7	77.0	0.0	1.1	0.0	0.0	2.8	14.3	**95.3**	**19.5**
Census Tract 6066, Block Group 1	2,412	93.7	0.0	0.0	0.3	0.0	0.2	1.1	4.7	6.3	5.7
Census Tract 6067, Block Group 1	684	83.5	0.0	0.0	0.0	0.0	0.0	0.0	16.5	16.5	0.0
Census Tract 6067, Block Group 2	831	93.3	0.0	0.0	2.0	0.0	0.0	4.7	0.0	6.7	0.0
Census Tract 6067, Block Group 3	546	86.3	0.0	0.0	11.2	0.0	0.0	2.6	0.0	13.7	**14.6**
Census Tract 6067, Block Group 4	2,243	82.1	8.9	0.0	0.0	0.0	0.0	4.2	4.8	17.9	6.8
Census Tract 6068, Block Group 1	1,433	82.7	2.0	0.0	0.0	0.0	0.0	1.0	14.2	17.3	9.4

TABLE 4.7.8-1 (cont'd) **Minority [a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area**											
State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 6072, Block Group 1	1,723	72.2	9.3	0.0	6.0	0.0	0.0	0.8	11.7	27.8	**13.4**
Census Tract 6073, Block Group 1	1,304	80.2	9.7	0.0	3.5	0.0	0.0	0.6	5.9	19.8	2.3
Census Tract 6073, Block Group 2	1,240	66.9	2.8	0.0	4.1	0.0	0.0	2.4	23.8	33.1	**16.8**
Census Tract 6073, Block Group 3	1,163	68.4	24.1	0.0	6.5	0.0	0.0	0.9	0.0	31.6	0.0
Census Tract 6073, Block Group 4	565	28.3	49.4	0.0	1.9	0.0	0.0	0.5	19.8	**71.7**	**12.9**
Census Tract 6082.06, Block Group 1	1,598	75.5	16.2	0.4	0.0	0.0	0.4	2.9	4.5	24.5	7.6
Mt. Laurel Meter Station											
Burlington County, NJ	445,702	67.4	16.0	0.0	5.0	0.0	0.3	3.1	8.0	32.6	5.8
Census Tract 7004.08, Block Group 1	1,382	40.4	11.6	0.0	26.8	0.0	0.0	5.6	15.6	**59.6**	**8.6**
Census Tract 7004.08, Block Group 2	847	50.5	24.2	0.0	6.0	0.0	4.1	7.8	7.3	**49.5**	**15.6**
Census Tract 7005.01, Block Group 2	2,189	81.6	9.3	0.0	1.3	0.0	0.0	2.6	5.2	18.4	4.4
Census Tract 7029.05, Block Group 1	1,931	90.9	1.2	0.0	3.3	0.0	1.0	2.4	1.1	9.1	2.9

TABLE 4.7.8-1 (cont'd)

Minority[a] Populations by Race and Ethnicity and Low-Income Populations in the Project Area

State/County/ Tract and Block Group	RACE AND ETHNICITY COLUMNS										LOW-INCOME COLUMN
	Total Population	White Alone Not Hispanic (%)	African American (%)	Native American/Alaska Native (%)	Asian (%)	Native Hawaiian & Other Pacific Islander (%)	Some Other Race (%)	Two or more races (%)	Hispanic or Latino (%)	Total Minority (%)[b]	Below Poverty Level (%)[b]
Census Tract 7029.06, Block Group 1[d]	1,995	76.0	4.6	0.0	6.9	0.0	0.0	2.5	10.0	24.0	0.8
Census Tract 7040.05, Block Group 1	1,553	81.1	5.8	0.0	10.0	0.0	0.5	0.0	2.6	18.9	**7.8**
Camden County, NJ	506,738	56.7	18.3	0.1	5.7	0.0	0.4	2.1	16.8	43.3	12.4
Census Tract 6034, Block Group 1	1,568	58.9	9.6	0.0	22.6	0.0	0.0	0.0	8.9	41.1	2.1
Census Tract 6034, Block Group 3	2,260	38.0	27.9	0.0	29.1	0.0	0.0	0.2	4.9	**62.0**	**17.7**
Census Tract 6035.01, Block Group 1	2,843	75.1	0.7	0.0	16.3	0.0	0.0	1.1	6.8	24.9	5.3

a "Minority" refers to people who reported their ethnicity and race as something other than non-Hispanic White.
b Minority or low-income populations exceeding the established thresholds are indicated in red, bold type and blue shading.
c Indicates block group where relevant compressor station is/would be located.
d Indicates block group where relevant meter station is/would be located.

Sources: U.S. Census, 2019d; 2019e.

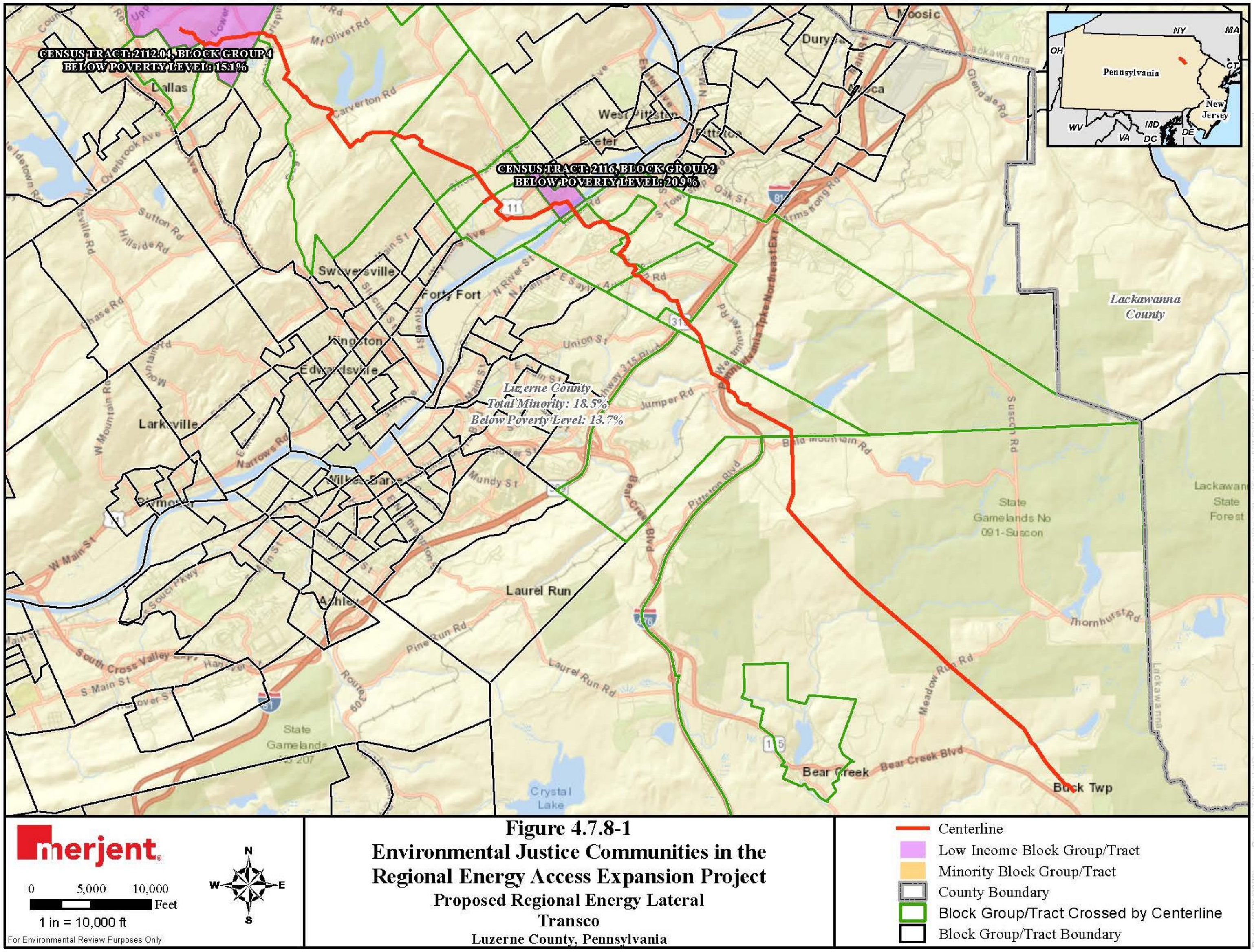
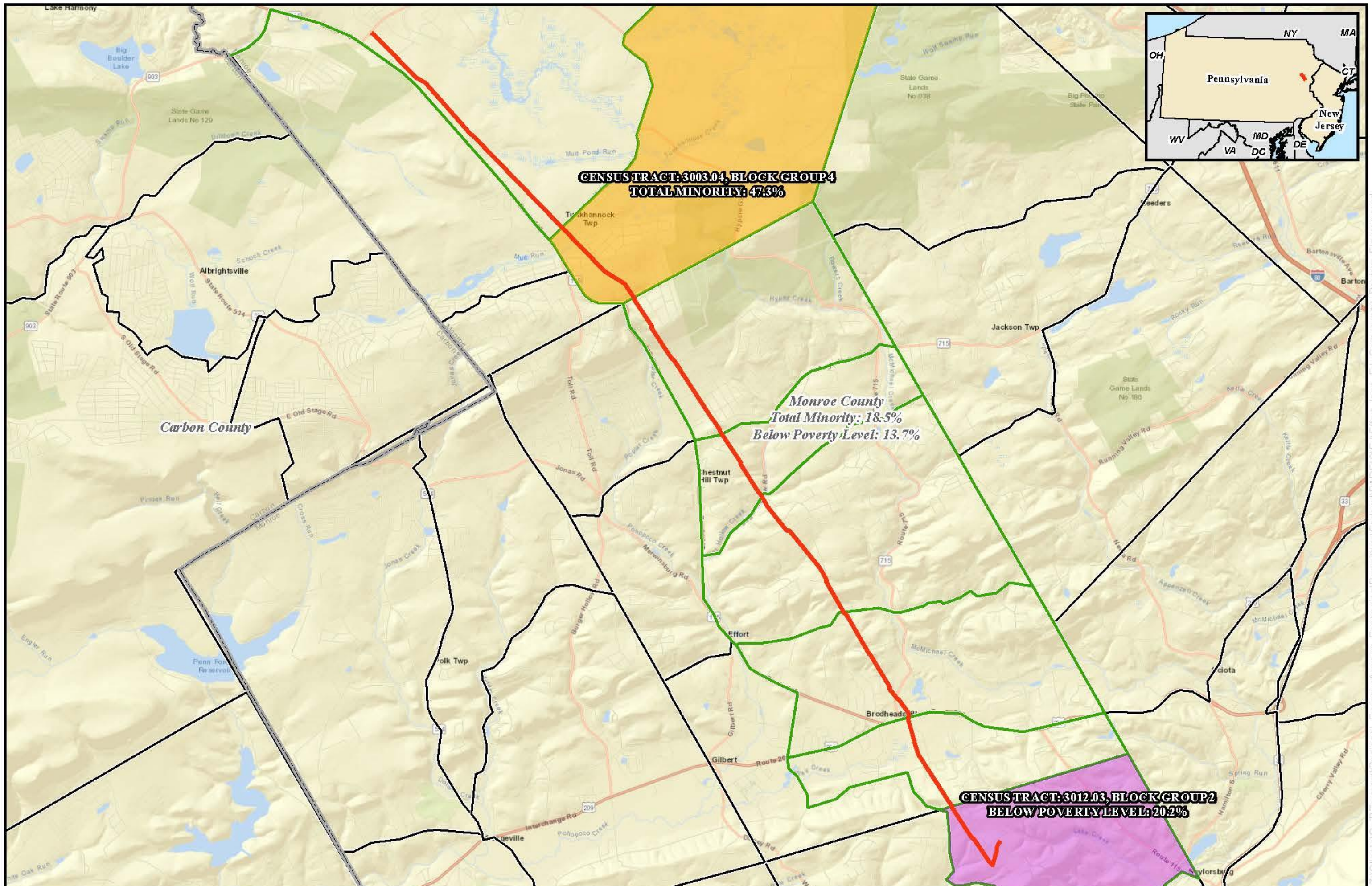


Figure 4.7.8-1
Environmental Justice Communities in the Regional Energy Access Expansion Project
Proposed Regional Energy Lateral
Transco
Luzerne County, Pennsylvania



merjent

0 4,500 9,000 Feet

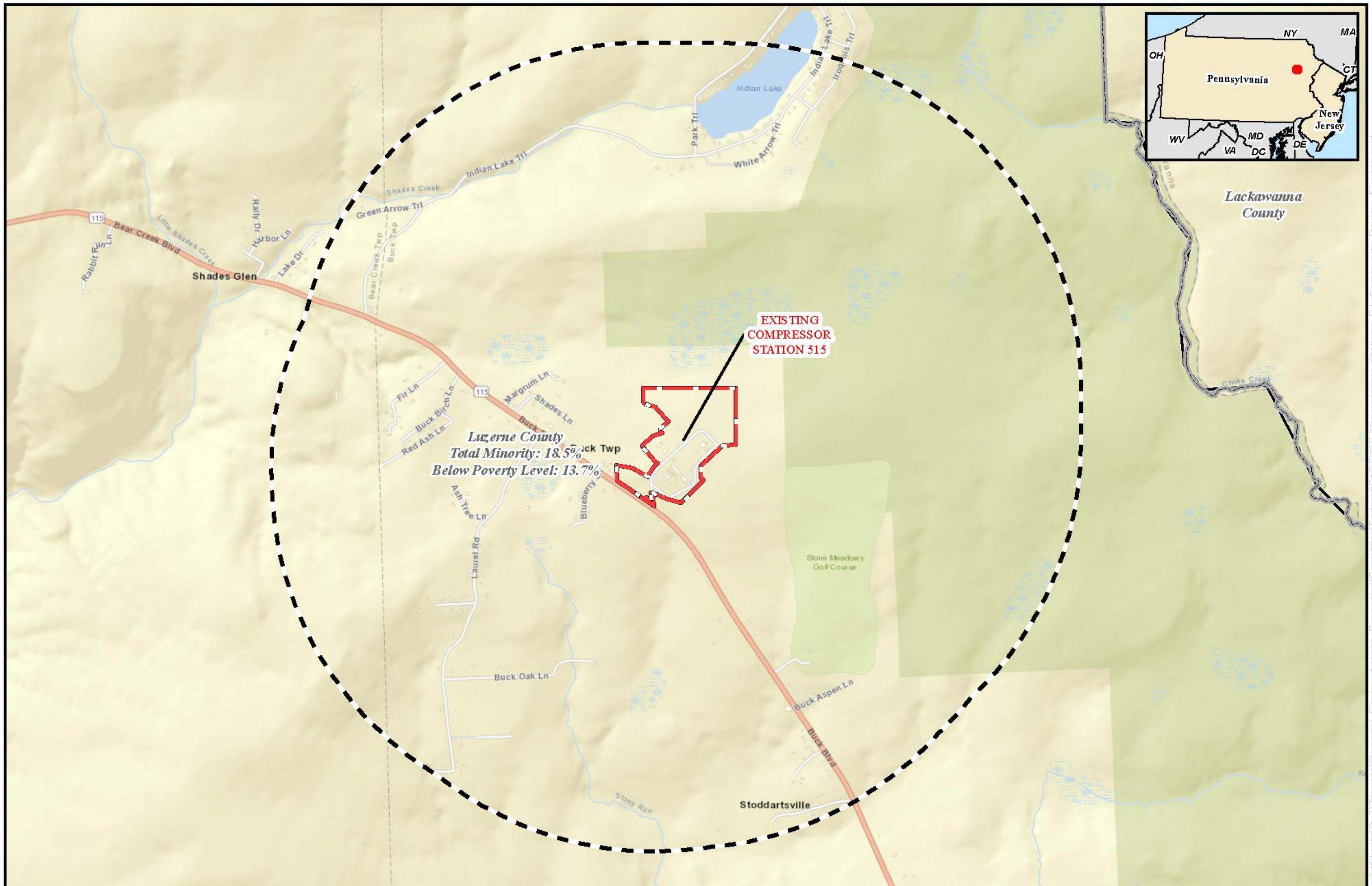
1 in = 9,000 ft

For Environmental Review Purposes Only

N W E S

Figure 4.7.8-2
Environmental Justice Communities in the Regional Energy Access Expansion Project
Proposed Effort Loop
Transco
Monroe County, Pennsylvania

- Centerline
- Low Income Block Group/Tract
- Minority Block Group/Tract
- County Boundary
- Block Group/Tract Crossed by Centerline
- Block Group/Tract Boundary



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0 1,000 2,000 Feet

1 in = 2,000 ft

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N W E S

Figure 4.7.8-3
Environmental Justice Communities in the Regional Energy Access Expansion Project
Existing Compressor Station 515
Transco
Luzerne County, Pennsylvania

Compressor Station
1-mile Compressor Station Buffer
Low Income Block Group/Tract
Minority Block Group/Tract
Low Income and Minority Block Group/Tract
County Boundary
Block Group/Tract Boundary

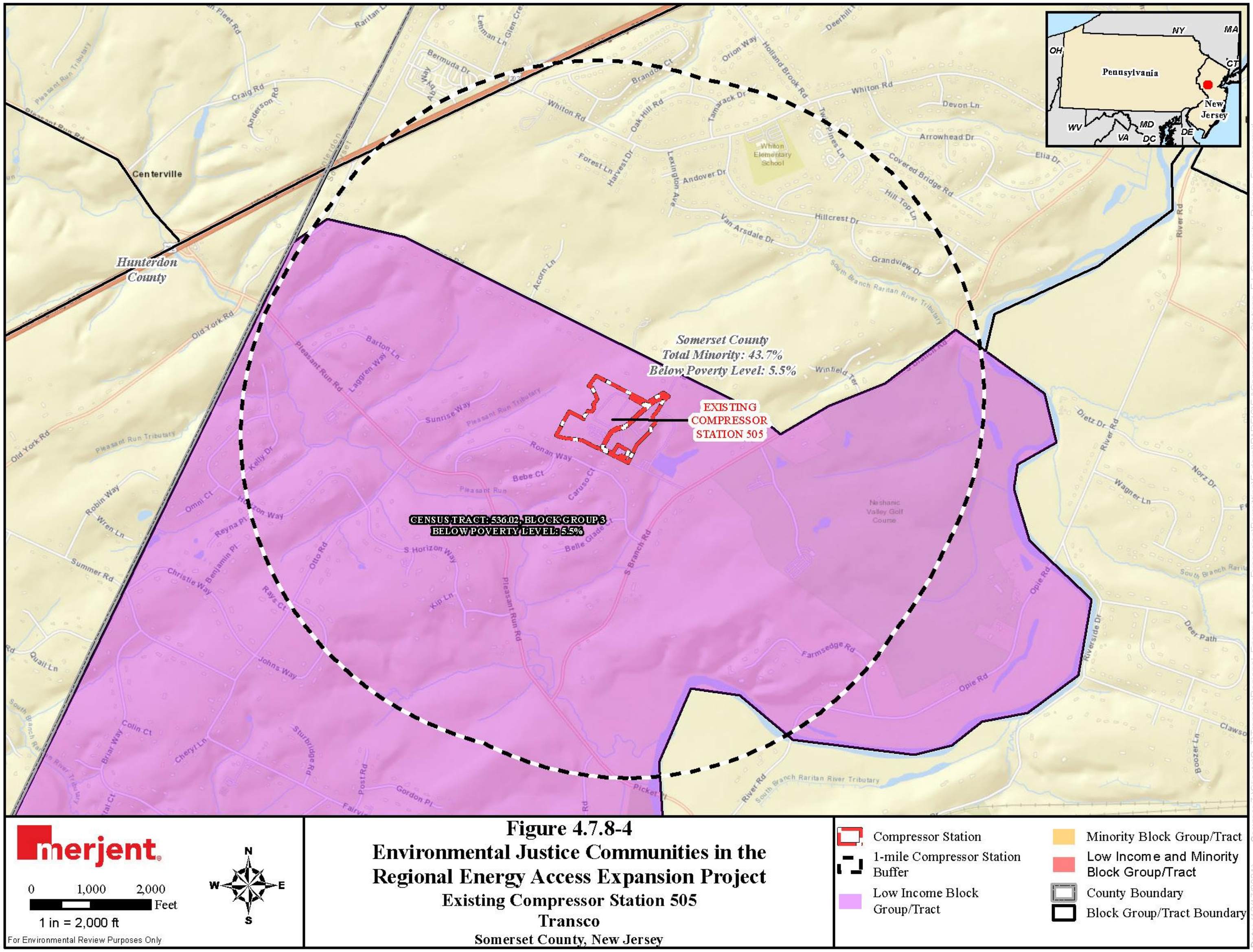


Figure 4.7.8-4
Environmental Justice Communities in the Regional Energy Access Expansion Project
Existing Compressor Station 505
Transco
Somerset County, New Jersey

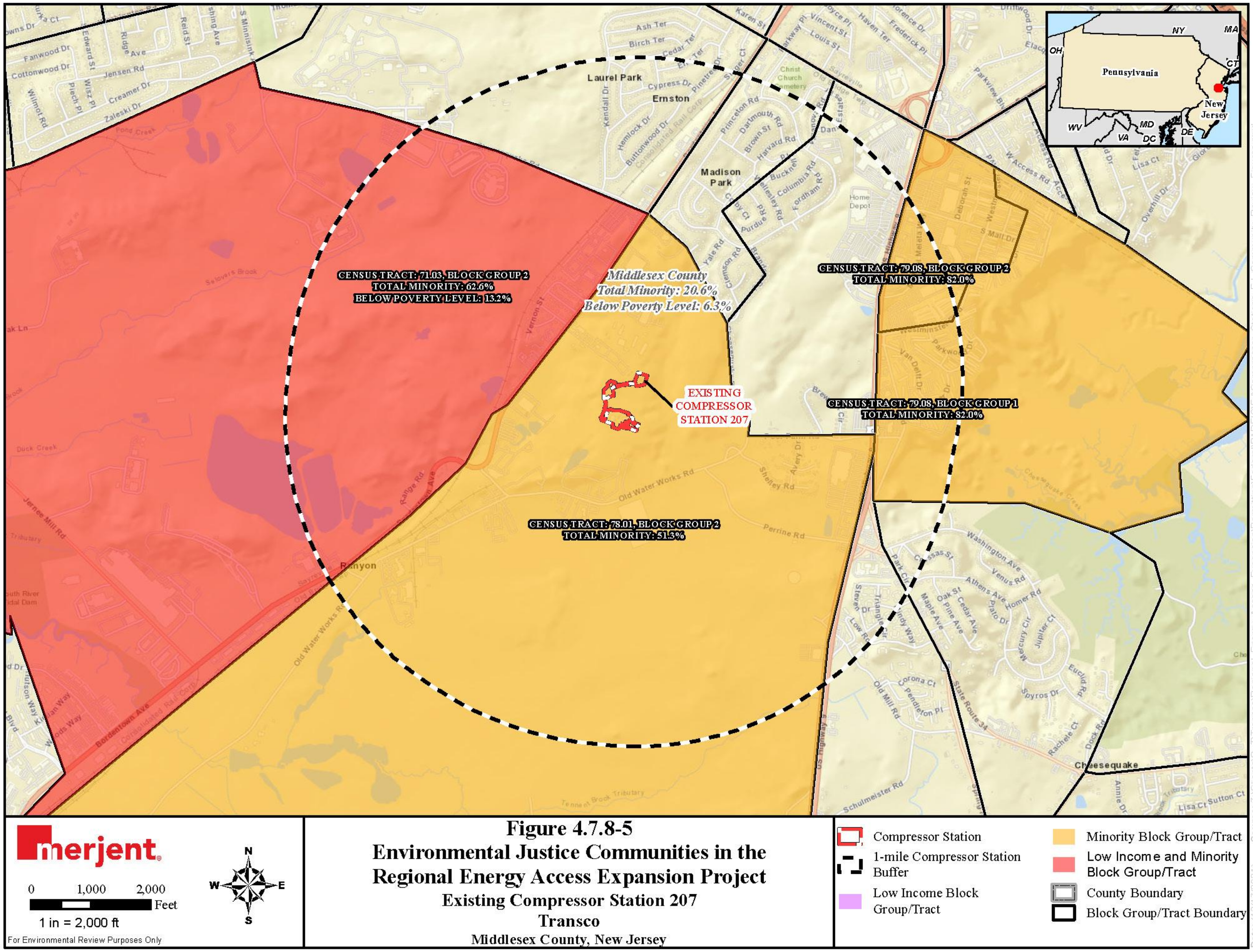
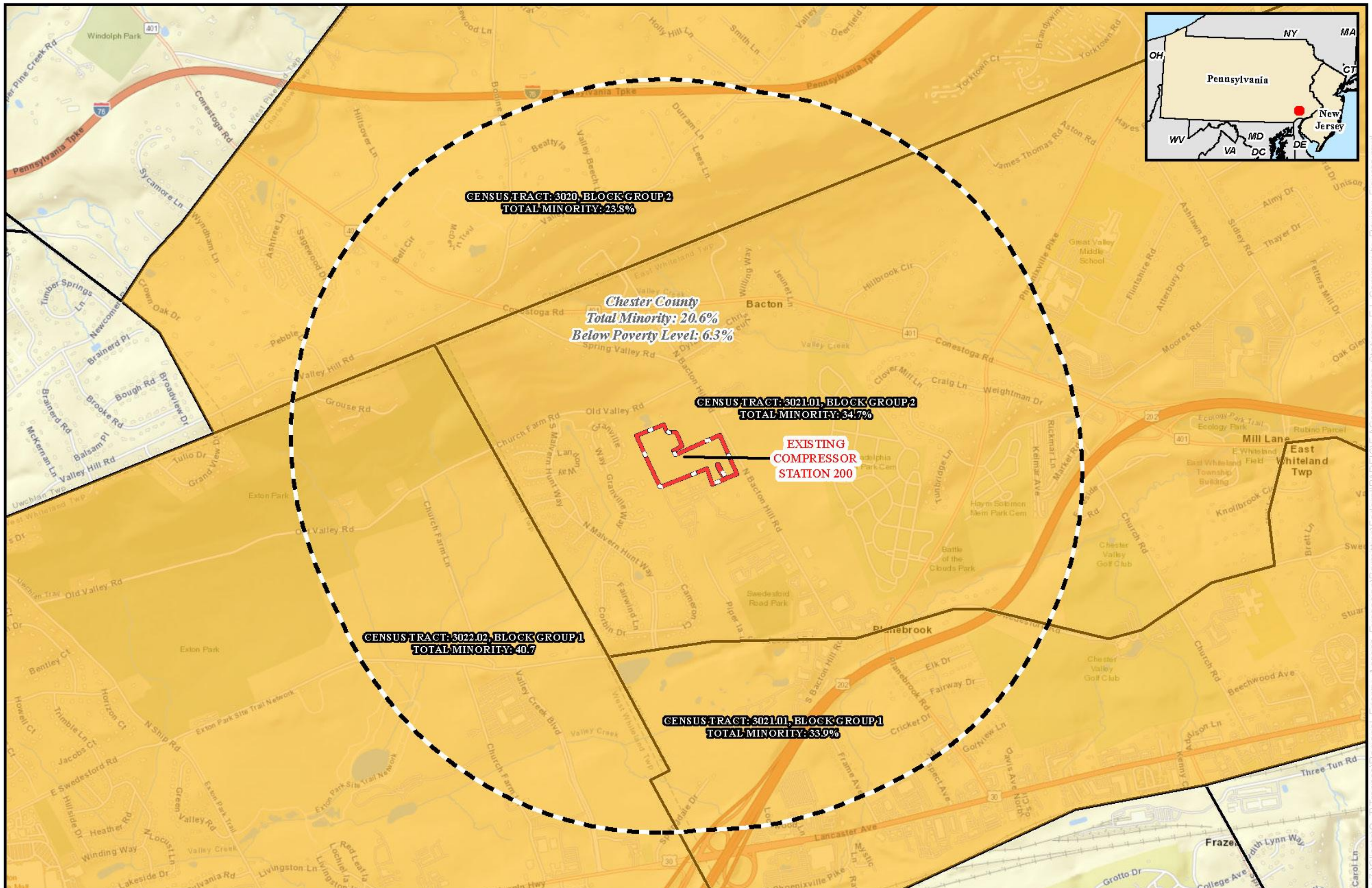


Figure 4.7.8-5
Environmental Justice Communities in the Regional Energy Access Expansion Project
Existing Compressor Station 207
Transco
Middlesex County, New Jersey



merjent

0 1,000 2,000 Feet

1 in = 2,000 ft

For Environmental Review Purposes Only

Figure 4.7.8-6
Environmental Justice Communities in the Regional Energy Access Expansion Project
Existing Compressor Station 200
Transco
Chester County, Pennsylvania

Compressor Station
1-mile Compressor Station Buffer
Low Income Block Group/Tract
Minority Block Group/Tract
Low Income and Minority Block Group/Tract
County Boundary
Block Group/Tract Boundary

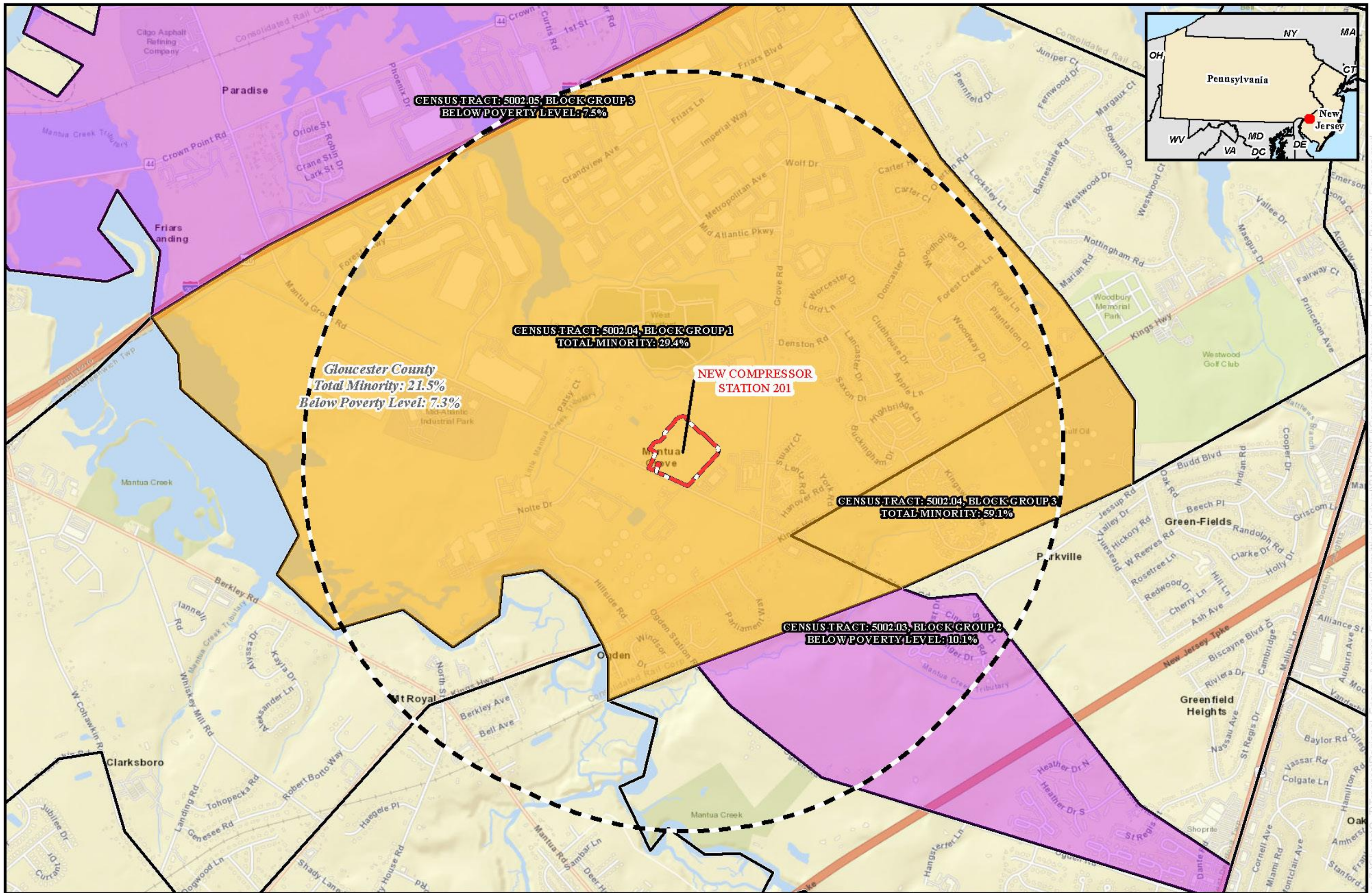
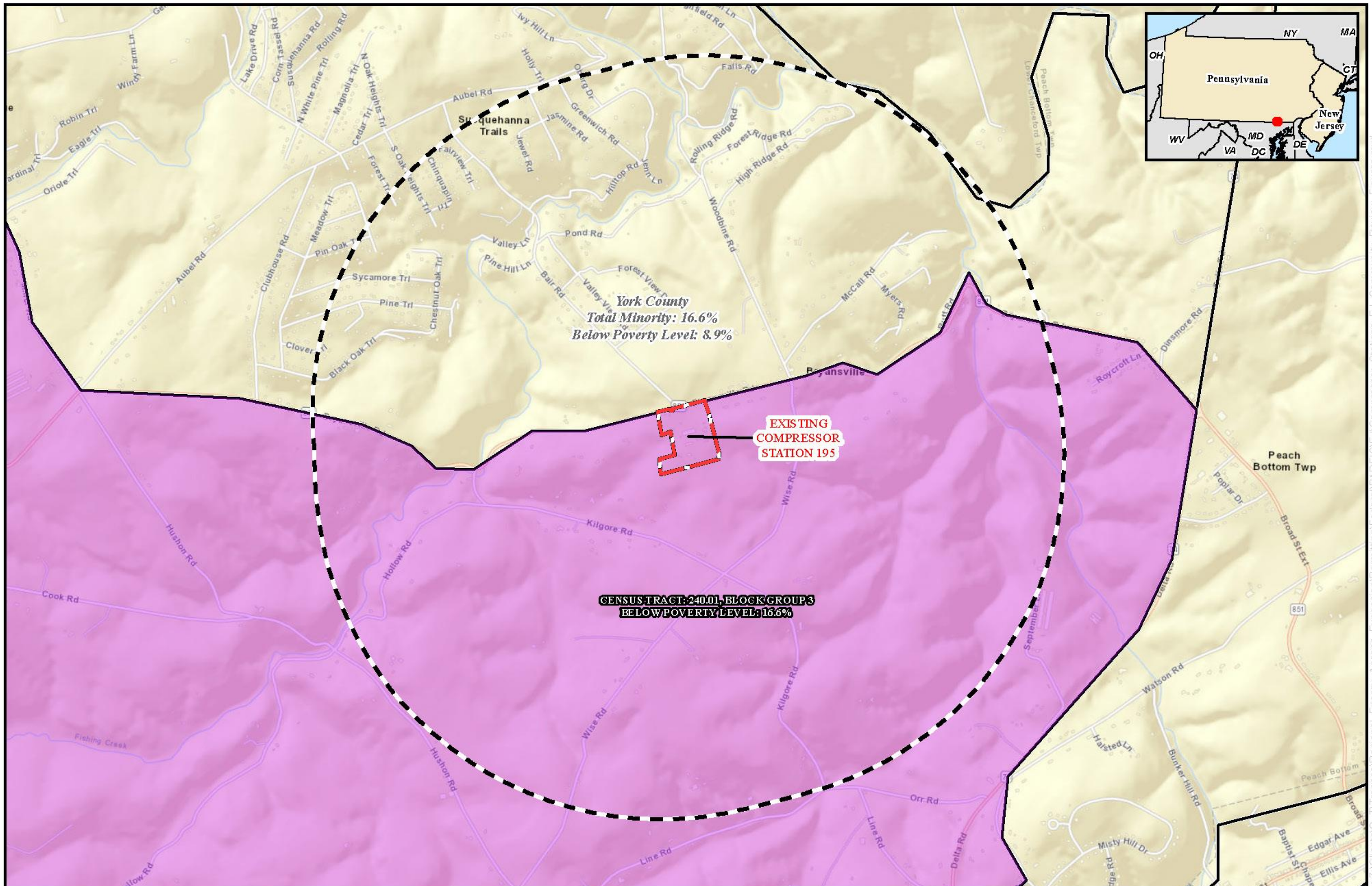


Figure 4.7.8-7
Environmental Justice Communities in the Regional Energy Access Expansion Project
New Compressor Station 201
Transco
Gloucester County, New Jersey



merjent

0 1,000 2,000 Feet

1 in = 2,000 ft

For Environmental Review Purposes Only

Figure 4.7.8-8
Environmental Justice Communities in the Regional Energy Access Expansion Project
Existing Compressor Station 195
Transco
York County, Pennsylvania

Compressor Station
1-mile Compressor Station Buffer
Low Income Block Group/Tract
Minority Block Group/Tract
Low Income and Minority Block Group/Tract
County Boundary
Block Group/Tract Boundary

4.7.8.3 Impacts on Environmental Justice Communities

As previously described, *Promising Practices* provides methodologies for conducting environmental justice analyses. Issues considered in the evaluation of environmental justice include human health or environmental hazards; the natural physical environment; and associated social, economic, and cultural factors. Consistent with *Promising Practices* and our understanding of Executive Order 12898, we reviewed the Project to determine if its resulting impacts would be disproportionately high and adverse on minority and low-income populations and also whether impacts would be significant.[60] We received a comment regarding identifying the comparison group to which we compared the communities with environmental justice concerns in determining that the impacts would not result in disproportionately high or adverse impacts. All block groups within the Project's geographic scope make up the comparison group to which environmental justice block groups were compared to determine if impacts are disproportionately high and adverse.

Project work within the identified environmental justice communities includes the construction and operation of portions of the Regional Energy Lateral and the Effort Loop; construction and operation of the new Compressor Station 201; and modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, and the Lawnside M&R Station. The Mt. Laurel M&R Station is not located within an environmental justice community, but there are environmental justice communities within a 1-mile radius of the facility. As previously stated, our area of analysis consisted of a 1-mile radius around the aboveground Project facilities and block groups crossed by the Pipeline. As previously stated, DRN commented that FERC should review how environmental and health effects are distributed amongst environmental justice communities for this Project. This is discussed throughout this section. Impacts on the natural and human environment from construction and operation of Project facilities are identified and discussed throughout this document. Factors that could affect environmental justice communities include groundwater impacts (see section 4.3.1), visual impacts (see section 4.5.7), socioeconomic impacts (see section 4.7), traffic impacts (see section 4.7.6), and air and noise impacts from construction and operation (see section 4.8 and 4.9). Potentially adverse environmental effects on surrounding communities associated with the Project, including environmental justice communities, would be minimized and/or mitigated.

In general, the magnitude and intensity of the aforementioned impacts would be greater for individuals and residences closest to the Project's facilities and would diminish with distance. These impacts are addressed in greater detail in the associated sections of this EIS. Environmental justice concerns are not present for other resource areas such as geology, wetlands, wildlife, or cultural resources due to the minimal overall impact the Project would have on these resources.

Groundwater Resources

Construction, including blasting, could physically damage wells or diminish the yield and water quality of wells and springs within 150 feet of construction workspaces. Approximately 48 wells within 150 feet of Project facilities are located in environmental justice communities: 3 wells are within 150 feet of the Regional Energy lateral; 32 wells are within 150 feet of the Effort Loop; 2 wells are within 150 feet of Compressor Station 201; 9 wells are within 150 feet of Compressor Station 505; and 2 wells are within 150 feet of Compressor Station 195. The potential to impact wells and springs would be reduced through implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources. In addition, wells and springs within workspaces would be marked and protected to prevent construction-related damage, and pre- and post-construction

[60] See Promising Practices at 33 (stating that "an agency may determine that impacts are disproportionately high and adverse, but not significant within the meaning of NEPA" and in other circumstances "an agency may determine that an impact is both disproportionately high and adverse and significant within the meaning of NEPA").

testing of well yield and water quality on wells within 150 feet would be conducted with landowner permission. In the unlikely event that a well or spring is affected, Transco would arrange for a temporary water supply until the water supply and quality are restored, or otherwise resolved. With implementation of these mitigation measures, impacts on environmental justice communities associated with groundwater and well impacts would be less than significant. Groundwater impacts are more fully addressed in section 4.3.1.

Visual Resources

Temporary visual impacts would occur during construction of the pipeline and aboveground facilities, including vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. Permanent visual impacts may occur along the pipeline right-of-way from periodic vegetation clearing to allow for visual pipeline inspection.

Visual impacts would occur due to the operation of Compressor Station 201. Compressor Station 201, located in an identified environmental justice block group (Census Tract 5002.04, Block Group 1), would be constructed in an existing agricultural production area directly adjacent to Mantua Grove Road, with residences on the southwest side, forested land on the north and west sides, and a row of trees and a commercial property on the east side. Compressor Station 201 would not be visible from visual receptors to the west and north due to substantial existing visual screening (i.e., trees) on the borders of the property. The compressor station would be partially visible from the commercial property to the east due to the presence of a row of trees. The compressor station would be fully visible from Mantua Grove Road to the south. In addition, the three closest residences[61] (located 100 to 300 feet to the southwest of the compressor station property fence line) would experience significant visual impacts from the construction and operation of Compressor Station 201. All three of these residences are located in an identified environmental justice block group (Census Tract 5002.04, Block Group 1). To mitigate visual impacts to these residences and users of Mantua Grove Road, Transco would install down shielded lighting to minimize impacts at night and plant evergreen trees along the southern fence line of the facility to provide visual screening. Compressor Station 201 would result in a permanent change in the viewshed and would result in a permanent impact on the surrounding existing visual character of the Project area, which is an environmental justice community. To further minimize visual impacts on nearby residences, we recommended in the draft EIS that Transco file with the Secretary a visual screening plan to minimize visual impacts on residences (including but not limited to NSAs 1, 2, and 3) near Compressor Station 201. Transco provided a Planting Plan that describes the vegetative screening that would be installed around the perimeter of Compressor Station 201 and updated visual simulation drawings for NSAs 1, 2, and 3 that show how the vegetative screening would appear in winter and with full foliage. We have reviewed Transco's visual screening plan for Compressor Station 201 and find it to be acceptable. Visual impacts would be minimized to the extent possible through the mitigation offered through the tree plantings included in the visual screening plan. In the short term, visual impacts on environmental justice communities due to the addition of Compressor Station 201 would be significant. Long term visual impacts on environmental justice communities, once the plantings are established, would be less than significant. The visual simulation figures of Compressor Station 201 are provided in appendix F.

Minimal visual impacts would occur from the modification of Compressor Station 505. Station modifications would include adding new buildings within the footprint and a perimeter fence at the existing station. These additions would be visible and consistent with the scale of the existing buildings at the

[61] We note there is one residence 75 feet south of the operational footprint of the facility. However, Transco indicated it has an agreement in place with the landowner to purchase the land required for operation of Compressor Station 201 and the agreement allows Transco to determine the use of the residence located on the Compressor Station 201 site, up to and including demolition during construction of the Project. As such, we have not considered this residence in the visual impacts analysis.

station. The nearest residences, which are located in an environmental justice community, are located 240 feet southwest of the Compressor Station 505 facility. Trees currently provide visual screening along the southern property line of Compressor Station 505 except during winter months. No additional or new visual screening is proposed. Visual impacts on environmental justice communities from modification of Compressor Station 505 would be less than significant.

No visual impacts would occur from the modification of Compressor Stations 195, 200, and 207. The modifications for Compressor Stations 195, 200, and 207 would not require additional operational facility footprint and no ground disturbance is anticipated. Although visible to nearby residences, which are located within environmental justice communities, during winter months, no changes are proposed outside of the existing compressor station buildings. Therefore, no modifications would be visible and no visual impacts on environmental justice communities would occur during operation of the facilities.

Minimal visual impacts would occur from the modification of Camden M&R Station. Modifications include the replacement of meter runs to increase capacity. Although these changes may be visible from the closest residence, which is located in an environmental justice community, these minor changes would occur within the existing facility footprint. Changes would be consistent with the existing infrastructure and would not involve any new buildings. Therefore, visual impacts on environmental justice communities from modifications of the Camden M&R Station would be less than significant. Mt. Laurel M&R Station and the Lawnside M&R Station are existing facilities and are not visible from the closest residences in environmental justice communities due to visual screening. Proposed changes would occur within the facility fence line. Therefore, no visual impacts on environmental justice communities are anticipated from these facility modifications. Overall, visual impacts on environmental justice communities would be less than significant. However, visual impacts on residences adjacent to Compressor Station 201, which are located in an environmental justice community, may be significant. Visual impacts are more fully addressed in section 4.5.7.

Socioeconomics

Project impacts on environmental justice populations may include impacts on socioeconomic factors. Constructing the Project would require about 1,441 workers. Transco estimates that 40 percent of its construction workforce would temporarily relocate to the Project area; therefore, the average of 353 non-local workers (peak of 582 non-local workers) workers would increase the population of the 11 county Project area total by about 0.01 percent. The temporary flux of workers into environmental justice communities could increase the demand for community services, such as housing, police enforcement, and medical care. An influx of workers could also affect economic conditions by having beneficial impacts on employment and local tax revenue. Socioeconomic impacts on the environmental justice community would be less than significant. Socioeconomic impacts are more fully addressed throughout section 4.7.

Traffic

Potential impacts on the environmental justice communities during construction of the Project may also include traffic delays. There would be a temporary increase in use of area roads by heavy construction equipment and associated trucks and vehicles. Area residents may be affected by minor traffic delays during construction of the Project (the addition of an average ranging from approximately 100 to 350 trips [maximum] per day per Project depending on the Project component on nearby roadways). Increased use of these roads would result in a higher volume of traffic, increased commute times, and greater risk of vehicle accidents. These impacts would adversely affect local residents residing in environmental justice communities. However, these impacts would be limited to periods of active construction over the course of a 13-month construction period. Further, given that Transco does not anticipate any new permanent employees following construction, our analysis determined that operating the Project would not substantially increase traffic on local roads. In addition, Transco's Traffic Management Plan would be implemented to minimize Project effects on local traffic and transportation systems during construction. Because traffic would only increase temporarily during construction, traffic impacts on environmental justice communities would be less than significant. Project transportation needs and impacts are more fully addressed above.

Air Quality

Construction air emissions from the Project, when considered with current background concentrations, would be below the NAAQS, which are designated to protect public health. Construction emissions would occur over the duration of construction activity and would be emitted at different times throughout the Project area. Construction emissions in the form of particulate matter (e.g., dust) would occur, and construction emissions from equipment exhaust would result in short-term, localized impacts in the immediate vicinity of construction work areas, particularly Compressor Station 201. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Transco would implement a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements.

Operational emission increases from the Project would result from natural gas combustion turbines at Compressor Station 505. Transco's Compressor Stations 201, 207, and 195 would involve installing or uprating of electric-driven compression; therefore, the additional compression would not generate combustion-related emissions. Transco's Compressor Station 200 would involve connecting an existing line to a suction header, and the connection would not generate combustion-related emissions. To evaluate the air quality impacts of operational emissions from the Compressor Station 505, Transco performed air quality modeling analyses. Results of the facility air quality impacts were combined with background pollutant concentrations estimated using ambient monitoring data for the region and compared to the NAAQS. Results of the cumulative air quality modeling showed that the facilities would not cause or significantly contribute to an exceedance of the NAAQS and would not result in a significant impact on air quality in the region. Therefore, the Project would not have significant adverse air quality impacts on low-income or minority populations. Although the Project and each compressor station would be in compliance with the NAAQS and the NAAQS are designated to protect sensitive populations, we acknowledge that NAAQS attainment alone may not assure there is no localized harm to such populations due to Project emissions of VOCs, hazardous air pollutants (HAPs) as well as issues, such as the presence of non-Project related pollution sources, local health risk factors, disease prevalence, and access (or lack thereof) to adequate care.

We received environmental justice-related comments that the Commission's conclusion that pollutant levels below the NAAQS do not cause adverse impacts is unsupported by the relevant guidance documents and inconsistent with the scientific and regulatory treatment of NAAQS. The EPA has established the NAAQS for "criteria pollutants" to protect human health and welfare. The NAAQS include primary standards that are designed to protect human health, including the health of "sensitive" individuals such as children, the elderly, and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including visibility, vegetation, animal species, economic interests, and other concerns not related to human health. There are no national air quality standards for HAPs, but their emissions are limited through permit thresholds and technology standards. VOCs react with nitrogen oxides (NO_x), to form ozone (O_3), which is another criteria air pollutant, and therefore considered in NAAQS analysis. The EPA, as required by law, periodically reviews the NAAQS standards to ensure they provide adequate health and environmental protection and updates the standards as necessary. The adequacy of the NAAQS is out of scope for this final EIS. Air quality impacts are discussed in more detail within section 4.8.

We received environmental justice-related comments recommending that Commission staff consider climate change impacts of the proposed Project on environmental justice communities including an evaluation of impacts from the Project's GHG emissions and whether climate change may increase the vulnerability of these communities. Construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources (including those discussed in section 4.11) and would contribute incrementally to future climate change impacts. While the climate change impacts taken individually may be manageable for certain communities, the impacts of compounded extreme events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) may exacerbate preexisting community vulnerabilities and have a cumulative adverse impact on environmental justice communities. This EIS is not characterizing the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[62] GHG impacts are more fully addressed in section 4.8.6.

Noise

Noise levels above ambient conditions attributable to construction activities would vary over time and would depend upon the nature of the construction activity, the number and type of equipment operating, and the distance between sources and receptors. The launching area of the Direct Pipe® crossing to the Susquehanna River is located in an identified environmental justice block group (Census Tract 2116, Block Group 2). The closest NSA (residence) to the launching area of the Direct Pipe® crossing of the Susquehanna River is about 550 feet northwest and is located within and environmental justice community. The human ear's threshold of perception for noise change is considered to be 3 dBA. Construction noise related to Direct Pipe® Project activities would increase noise levels over ambient by approximately 1.7 decibels at the NSA nearest the launching area, which would not be perceptible at the closest residence. The increase would be temporary, lasting the duration of construction, approximately 3 to 4 weeks.

The Project would include an increase in noise levels at aboveground facilities, including the new Compressor Station 201; and modified Compressor Stations 195, 200, 207, and 505, the Mt. Laurel M&R Station, Camden M&R Station, and the Lawnside M&R Station during both construction and operation. The closest NSAs (residences) range from 300 to 1,900 feet from the noise source for these aboveground facilities (see table 4.9.3-1). Construction noise related to Project activities would be temporary, lasting the duration of construction, approximately 13 months.

Operation of the aboveground facilities and compressor stations, with noise mitigation, would result in an increase in noise levels over ambient by 0.1 to 2.9 decibels. Therefore, there would be no perceptible increase at the closest NSA at any of the facilities located within environmental justice communities. All increases are estimated to be below the applicable FERC criterion at the affected NSAs. The noise mitigation measures for the compressor stations would include the use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping. With Transco's proposed mitigation measures and our recommendations in section 4.9.3, the Project would not result in significant noise impacts on local residents and the surrounding communities, which include environmental justice communities. Noise impacts are more fully addressed in section 4.9.

[62] See Order on Draft Policy Statements, 178 FERC ¶ 61,197 (2022).

Cumulative

The EPA recommends we evaluate the cumulative impacts of the proposed Project on environmental justice communities. Specifically, the EPA suggests that the EIS should consider impacts from past, present, and reasonably foreseeable planned actions and consider whether communities may be experiencing existing pollution and social/health burdens and how the proposed Project may potentially result in a disproportionate impact in that context. Additionally, DRN commented FERC should review how environmental and health effects are distributed amongst environmental justice communities for this Project, as well as cumulatively and historically. Cumulative impacts to environmental justice communities are discussed in detail in section 4.11.

4.7.8.4 Determination of Disproportionately High and Adverse Impacts on Environmental Justice Communities

In conclusion, as highlighted in table 4.7.8-1, 47 block groups out of 104 block groups within the geographic scope of the Project are considered environmental justice communities.[63] As previously stated, Project work within the identified environmental justice communities includes the construction and operation of portions of the Regional Energy Lateral and the Effort Loop; construction and operation of the new Compressor Station 201; and modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, and the Lawnside M&R Station. The Mt. Laurel M&R Station is not located within an environmental justice community, but there are environmental justice communities within a 1-mile radius of the facility. Minimal Project impacts would be associated with modifications to existing facilities and include temporary impacts associated with traffic, air quality and construction noise. Minor, permanent impacts on visual resources and air quality would occur for Compressor Station 505. Minor, permanent impacts on visual resources are also expected for the Camden M&R Station. Aside from the insignificant impacts associated with the modification of these facilities, the Project would not have disproportionately high and adverse impacts on environmental justice communities.

The Regional Energy Lateral and the Effort Loop involve construction of a new pipeline and work at Compressor Station 201 involves construction of an aboveground facility. For the Regional Energy Lateral, 2 block groups out of 13 are considered environmental justice block groups; and for the Effort Loop, 2 block groups out of 8 block groups are considered environmental justice block groups. Therefore, impacts associated with these pipeline components would not be predominately borne by environmental justice communities. In addition, impacts associated with construction and operation of the pipeline would be less than significant.

Impacts from construction and operation of Compressor Station 201 on environmental justice communities would be predominately borne by an environmental justice community. In the short term, visual impacts on environmental justice communities due to the addition of Compressor Station 201 would

[63] For the Regional Energy Lateral, 2 block groups (based on the low-income threshold) out of 13 are considered environmental justice block groups; for the Effort Loop, 2 block groups (1 based on the minority threshold and 1 based on the low-income threshold) out of 8 block groups are considered environmental justice block groups; for Compressor Station 195, 1 block group (based on the low-income threshold) out of 3 block groups are considered environmental justice block groups; for Compressor Station 200, 4 block groups (based on the minority threshold) out of 4 block groups are considered environmental justice block groups; for Compressor Station 207, 4 block groups (3 based on the minority threshold and 1 based on both the low income and minority threshold) out of 9 block groups are considered environmental justice block groups; for Compressor Station 505, 1 block group (based on the low-income threshold) out of 4 block groups is considered environmental justice block groups; for Compressor Station 201, 4 block groups (2 based on the minority threshold and 2 based on the low-income threshold) out of 8 block groups are considered environmental justice block groups; for the Camden Meter Station, 18 block groups (1 based on the minority threshold and 17 based on both the minority and low income thresholds) out of 22 block groups are considered environmental justice block groups; for the Lawnside Meter Station 7 block groups (3 based on the low income threshold and 4 based on both the low income and minority thresholds) out of 19 block groups are considered environmental justice block groups; and for the Mt. Laurel Meter Station 4 block groups (1 based on the low income threshold and 3 based on both the minority and low income thresholds) out of 9 block groups are considered environmental justice block groups.

be significant. Once the plantings associated with mitigation are established, long term visual impacts on environmental justice communities would be less than significant. Therefore, impacts on environmental justice communities from this Project component would be disproportionately high and adverse.

In conclusion, aside from the insignificant impacts associated with modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, the Lawnside M&R Station, and the Mt. Laurel M&R Station and construction and operation of portions of the Regional Energy Lateral and the Effort Loop, the Project would not have disproportionately high and adverse impacts on environmental justice communities. Impacts associated with construction and operation of Compressor Station 201 would be predominately borne by environmental justice communities and disproportionately high and adverse. Proposed mitigation associated with Compressor Station 201 includes the following:

- implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources;
- marking and protecting springs and wells within workspaces to prevent construction-related damage;
- pre- and post-construction testing of well yield and water quality on wells within 150 feet of the Project;
- arrangements for a temporary water supply in the unlikely event that a well or spring is affected, until the water supply and quality are restored, or otherwise resolved;
- installation of down shielded lighting to minimize visual impacts at night;
- planting evergreen trees along the southern fence line of the facility to provide visual screening;
- implementation of a Traffic Management Plan to minimize Project effects on local traffic and transportation systems in environmental justice communities during construction;
- use of construction equipment and vehicles that comply with EPA mobile and non-road emission regulations,
- use of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations;
- implementation of a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements; and
- use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping.

4.8 AIR QUALITY

4.8.1 Existing Air Quality

4.8.1.1 Ambient Air Quality Standards

Construction and operation of the Project would affect local and regional air quality. Ambient air quality is protected by federal and state regulations. This section summarizes federal and state air quality regulations that are applicable to the proposed facilities. This section also characterizes the existing air quality and describes potential impacts the facilities may have on air quality regionally and locally.

The term air quality refers to relative concentrations of pollutants in the ambient air. Combustion of fossil fuels, such as natural gas, produces criteria air pollutants. The EPA has established the NAAQS for "criteria pollutants" to protect human health and welfare (EPA, 2021d). These criteria pollutants are ground-level O_3, carbon monoxide (CO), NO_x, sulfur dioxide (SO_2), fine particulate matter (i.e., inhalable particulate matter with an aerodynamic diameter less than or equal to 10 microns [PM_{10}] and less than or equal to 2.5 microns [$PM_{2.5}$]), and airborne lead. Ozone is not emitted into the atmosphere from an emissions source but develops as a result of a chemical reaction between NO_x and VOC in the presence of sunlight; therefore, NO_x and VOCs are often referred to as O_3 precursors and are regulated to control the potential for O_3 formation. The NAAQS include primary standards that are designed to protect human health, including the health of "sensitive" individuals such as children, the elderly, and those with chronic respiratory problems. The NAAQS also include secondary standards designed to protect public welfare, including visibility, vegetation, animal species, economic interests, and other concerns not related to human health. Combustion of fossil fuels also produces VOCs, a large group of organic chemicals that have a high vapor pressure at room temperature, and NO_x. VOCs react with NO_x, typically on warm summer days, to form O_3, which is another criteria air pollutant. Other byproducts of combustion are GHG and HAPs. HAPs are chemicals known to cause cancer and other serious health impacts. Other pollutants, not produced by combustion, are fugitive dust and fugitive emissions. There are no national air quality standards for HAPs, but their emissions are limited through permit thresholds and technology standards.

The EPA has defined air pollution to include the mix of six long-lived and directly emitted GHGs (CO_2, CH_4, N_2O, hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride). The EPA found that the current and projected concentrations of the six GHGs in the atmosphere threaten the public health and welfare of current and future generations through climate change. GHG, including CO_2, CH_4, N_2O, hydrofluorocarbons, and perfluorocarbons, are naturally occurring pollutants in the atmosphere and products of human activities, including burning fossil fuels. These gases are the integral components of the atmosphere's greenhouse effect that warms the earth's surface and moderate day/night temperature variation. In general, the most abundant GHGs are water vapor, CO_2, CH_4, N_2O, and O_3. GHG produced by fossil-fuel combustion are CO_2, CH_4, and N_2O. GHGs are non-toxic and non-hazardous at normal ambient concentrations. As with any fossil fuel-fired project or activity, the Project would contribute to GHG emissions. Emissions of GHGs are quantified and regulated in units of CO_2e. The CO_2e unit of measure takes into account the global warming potential (GWP) of each GHG over a specified timeframe. The GWP is a ratio relative to CO_2 that is based on the particular GHG's ability to absorb solar radiation as well its residence time within the atmosphere. Thus, CO_2 has a GWP of 1, CH_4 has a GWP of 25, and N_2O has a GWP of 298 on a 100-year timescale. To obtain the CO_2e quantity, the mass of the particular compound is multiplied by the corresponding GWP, the product of which is the CO_2e for that compound. The CO_2e value for each of the GHG compounds is summed to obtain the total CO_2e GHG emissions. There are no NAAQS or other significance thresholds for GHGs.

4.8.1.2 Existing Air Quality and Attainment Status

Air quality control regions (AQCR) are areas established by the EPA and local agencies for air quality planning purposes, which are managed through State Implementation Plans that describe how the NAAQS would be achieved and maintained. The AQCRs are intra- and interstate regions, such as large metropolitan areas, where improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR or smaller portion within an AQCR (such as a county or multiple counties) is designated, based on compliance with the NAAQS, as "attainment," "unclassifiable," "maintenance," or "nonattainment" on a pollutant-by-pollutant basis. Areas in compliance, or below the NAAQS, are designated as attainment, while areas not in compliance, or above the NAAQS, are designated as nonattainment. Areas that were previously designated as nonattainment and have since demonstrated compliance with the NAAQS are designated as maintenance. Areas without sufficient data available are designated as unclassifiable and are treated as attainment areas.

The Project spans five AQCRs and includes six counties located in Pennsylvania, six counties in New Jersey, and one county in Maryland. Table 4.8.1-1 summarizes the attainment status designations for the Project area.

TABLE 4.8.1-1

Air Quality Control Regions and NAAQS Attainment Status for Project Counties

State	County	Facility	AQCR	Attainment Status
NJ	Middlesex	Compressor Station 207	NJ-NY-CT Interstate	Serious for 2008 Ozone Standard Moderate for 2015 Ozone Standard Maintenance for 1997 Ozone Standard [a] Maintenance for 2006 PM$_{2.5}$ Standard
NJ	Somerset	Compressor Station 505		
PA	Bucks		Metropolitan Philadelphia Interstate	Marginal for 2008 and 2015 Ozone Standards Moderate for 2006 PM$_{2.5}$ Standard Maintenance for 1997 Ozone Standard [a]
PA	Chester	Compressor Station 200		
NJ	Gloucester	Compressor Station 201		Marginal for 2008 and 2015 Ozone Standards Maintenance for 2006 PM$_{2.5}$ Standard Maintenance for 1997 Ozone Standard [a]
NJ	Mercer			
NJ	Camden			Marginal for 2008 and 2015 Ozone Standards Maintenance for 2006 PM$_{2.5}$ Standard Maintenance for 1971 CO Standard Maintenance for 1997 Ozone Standard [a]
NJ	Burlington			Marginal for 2008 and 2015 Ozone Standards Maintenance for 2006 PM$_{2.5}$ Standard Maintenance for 1997 Ozone Standard [a]
MD	Baltimore		Metropolitan Baltimore Interstate	Moderate for 2008 Ozone Standard Marginal for 2015 Ozone Standard Maintenance for 1997 Ozone Standard [a]
PA	Luzerne	Compressor Station 515	NE PA-Upper Delaware Valley Interstate	Maintenance for 1997 Ozone Standard [a]
PA	Monroe			
PA	Northampton			Marginal for 2008 Oxone Standard Moderate for 2006 PM$_{2.5}$ Standard Maintenance for 1997 Ozone Standard [a]
PA	York	Compressor Station 195	South Central PA Interstate	Moderate for 2006 PM$_{2.5}$ Standard Maintenance for 1997 Ozone Standard [a]

[a] While the 1997 ozone NAAQS has been revoked, the South Coast II decision1 means that any areas that were in nonattainment for this standard remain as maintenance areas for 20 years.

The EPA as well as state and local agencies have established a network of ambient air quality monitoring stations to measure and track the background concentrations of criteria pollutants across the United States. To characterize the existing ambient air quality for the Projects, available data were gathered from air quality monitoring stations that are nearest to the Project's sources of operational emissions. The most recent validated data from these monitoring sites are presented in table 4.8.1-2, which compares the monitored data with the appropriate NAAQS standard for each criteria pollutant (EPA, 2021e).

TABLE 4.8.1-2 **Ambient Air Quality Concentrations Representative of the Project Area**									
Project/Facility/ Pollutant	Averaging Period	Rank	2017	2018	2019	3-year average	Units	Monitor Number [a]	NAAQS
Compressor Station 201									
SO_2	1-Hour	99%	25.1	14.4	15.4	18.3	µg/m^3	42-101-0055	196
SO_2	3-Hour	2nd	5.6	4.7	5.6	5.6	µg/m^3	34-007-0002	1,300
PM_{10}	24-Hour	2nd	43.0	33.0	44.0	40.0	µg/m^3	34-007-0009	150
$PM_{2.5}$	24-Hour	98%	21.7	15.9	21.5	21.7	µg/m^3	34-015-0002	35
$PM_{2.5}$	Annual	Mean	7.95	7.01	7.15	7.9	µg/m^3	34-015-0002	12
NO_2	Annual	Average	82.8	71.5	75.2	77.1	µg/m^3	42-045-0002	100
NO_2	1-Hour	98%	18.2	14.8	14.3	15.0	µg/m^3	42-045-0002	188
CO	8-Hour	2nd	2062.1	1374.7	1718.4	1374.7	µg/m^3	34-007-0002	40,000
CO	1-Hour	2nd	2291.2	1603.8	1947.5	1947.5	µg/m^3	34-007-0002	10,000
O_3	8-Hour	4th	143.3	151.2	133.5	141.3	µg/m^3	34-015-0002	137
Compressor Station 505									
SO_2	1-Hour	99%	7.9	7.9	7.9	7.9	µg/m^3	34-027-3001	196
SO_2	3-Hour	2$_{nd}$	6.0	6.8	7.9	6.8	µg/m^3	34-027-3001	1,300
PM_{10}	24-Hour	2nd	29.0	40.0	31.0	31.0	µg/m^3	42-077-0004	150
$PM_{2.5}$	24-Hour	98%	17.5	19.1	19.2	19.0	µg/m^3	34-019-0001	35
$PM_{2.5}$	Annual	Mean	8.04	7.93	7.78	7.9	µg/m^3	34-019-0001	12
NO_2	Annual	Average	5.6	5.6	5.6	5.6	µg/m^3	34-027-3001	100
NO_2	1-Hour	98%	62.1	58.3	48.2	56.4	µg/m^3	34-027-3001	188
CO	1-Hour	2nd	2634.9	3207.7	2520.3	2520.3	µg/m^3	34-039-0003	40,000
CO	8-Hour	2nd	2062.1	3207.7	2176.6	2176.6	µg/m^3	34-039-0003	10,000
O_3	8-Hour	4th	141.3	141.3	129.6	137.4	µg/m^3	34-019-0001	137
Compressor Station 515									
SO_2	1-Hour	99%	7.9	7.9	7.9	7.9	µg/m^3	42-079-1101	196
SO_2	3-Hour	2nd	6.0	15.7	13.1	13.1	µg/m^3	42-079-1101	1,300
PM_{10}	24-Hour	2nd	27.0	32.0	26.0	32.0	µg/m^3	42-079-1101	150
$PM_{2.5}$	24-Hour	98%	17.1	20.0	16.7	18.0	µg/m^3	42-069-2006	35
$PM_{2.5}$	Annual	Mean	8.6	8.3	65	7.8	µg/m^3	42-069-2006	12
NO_2	Annual	Average	16.9	13.2	11.3	13.8	µg/m^3	42-095-0025	100
NO_2	1-Hour	98%	67.7	64.0	62.1	64.0	µg/m^3	42-095-0025	188
CO	8-Hour	2nd	801.9	1145.6	916.5	1145.6	µg/m^3	42-069-2006	40,000
CO	1-Hour	2nd	916.5	1489.3	1145.6	1489.3	µg/m^3	42-069-2006	10,000
O_3	8-Hour	4th	117.8	131.5	115.8	121.7	µg/m^3	42-079-1101	137

4.8.2 Permitting/Regulatory Requirements

The CAA is the basic federal statute governing air pollution in the United States. The provisions of the CAA that are potentially relevant to the Projects include the items discussed below.

4.8.2.1 New Source Review/Prevention of Significant Deterioration

New Source Review (NSR) is a preconstruction permitting program designed to protect air quality when air pollutant emissions are increased either through the modification of existing sources or through the construction of a new source of air pollution. There are three basic categories of NSR permitting: PSD, Nonattainment NSR, and Minor Source NSR. In areas with good air quality, NSR ensures that the new emissions do not degrade the air quality, which is achieved through the implementation of the PSD permitting program. In addition, NSR ensures that any large, new, or modified industrial source uses air pollution control technology. Projects for which pollutants are not subject to PSD or Nonattainment NSR may be subject to minor source NSR, which is the minor source permitting process for the state or local jurisdictional agency.

The PADEP and NJDEP have been delegated authority by the EPA and administer the NSR and PSD program in Pennsylvania and New Jersey, respectively. The Project NSR permitting status is as follows:

- Compressor Station 201 is a proposed new facility. Based on projected emissions in section 4.8.4, only minor NSR permitting will apply.

- Compressor Station 505 is an existing major NSR facility. Based on projected emissions and the netting evaluation in section 4.8.4, only minor NSR permitting will apply.

- Compressor Station 207 is an existing minor NSR facility. Based on projected emissions in section 4.8.4, NSR pre-construction authorization will not apply.

- Compressor Station 515 is an existing major NSR facility. Based on projected emissions and the netting evaluation in section 4.8.4, only minor NSR permitting will apply.

- Compressor Station 195 is an existing major NSR facility. Based on projected emissions in section 4.8.4, NSR pre-construction authorization will not apply.

- Compressor Station 200 is an existing major NSR facility. Based on projected emissions in section 4.8.4, NSR pre-construction authorization will not apply.

Transco has filed a permit application for Compressor Station 515 with the PADEP and Compressor Station 201 and Compressor Station 505 with the NJDEP. Transco would obtain all necessary permits prior to construction.

4.8.2.2 Title V Operating Permit

Title V of the CAA requires states to establish an air operating permit program. If a facility's potential to emit is equal to or greater than the criteria pollutant or HAP thresholds, the facility is considered a major source. The major source threshold level for an air emission source is 100 tons per year (tpy) for criteria pollutants and 10 tpy of any single HAP or 25 tpy of all HAPs in aggregate. The PADEP and NJDEP have been delegated authority to implement and enforce air quality requirements pursuant to their EPA approved State Implementation Plans and title V operating permitting program. The Title V permitting requirements resulting from the Project are as follows:

- Compressor Station 201 is a proposed new facility in New Jersey. Based on projected emissions in section 4.8.4, the facility would not trigger Title V permitting.

- Compressor Station 505 is an existing source subject to Title V permitting in New Jersey. The Project would not change Title V permitting status.

- Compressor Station 207 not currently subject to Title V permitting in New Jersey. Based on projected emissions in section 4.8.4, the Project would not change the Title V permitting status.

- Compressor Station 515 is an existing source subject to Title V permitting in Pennsylvania. The Project would not change Title V permitting status.

- Compressor Station 195 is an existing source subject to Title V permitting in Pennsylvania. Based on projected emission reductions in section 4.8.4, the modified facility would no longer trigger Title V permitting.

- Compressor Station 200 is an existing source subject to Title V permitting Pennsylvania. The Project would not change Title V permitting status.

4.8.2.3 New Source Performance Standards

The EPA promulgates New Source Performance Standards (NSPS), codified in 40 CFR 60, that require new, modified, or reconstructed sources to control emissions as specified in the applicable source category provisions. Any source that is subject to provisions under an NSPS subpart is also subject to the general monitoring, reporting, and record keeping provisions of NSPS Subpart A (*General Provisions*), except as noted in the applicable subpart. This section outlines the applicability of NSPS subparts for the Projects facilities.

Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*, applies to stationary combustion turbines with a maximum heat input equal to or greater than 10 million British thermal units per hour, that were constructed, modified, or reconstructed after February 18, 2005. NSPS Subpart KKKK regulates emissions of NO_x and SO_2. The proposed new turbines associated with Transco's Compressor Stations 515 and 505 would be subject to NSPS Subpart KKKK. The new and modified turbines must meet the applicable emission limits and operational requirements, as well as record keeping and reporting requirements of this subpart.

Subpart JJJJ, *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines*, applies to manufacturers and owner/operators of spark ignition internal combustion engines manufactured after the applicability date stated in the rule for the particular type and size engine. Transco proposes to install two new emergency use engines at Compressor Station 515 and one new emergency use engine at Compressor Stations 201 and 505, which would be subject to NSPS Subpart JJJJ. Subpart JJJJ limits non-emergency operation of emergency engines to 100 hours per year to allow for maintenance, readiness, and non-emergency activities. The new and modified natural gas-fired engines subject to this rule must meet the applicable emission limits and operational requirements, as well as record keeping and reporting requirements of this subpart.

Subpart OOOOa, *Standards of Performance for Crude Oil and Natural Gas Production, Transmission and Distribution*, establishes emission standards and compliance schedules for the control of VOCs and SO_2, which would apply to the collection of fugitive emissions components at Transco's Compressor Station 515, Compressor Station 201 and Compressor Station 505.

4.8.2.4 National Emissions Standards for Hazardous Air Pollutants

The CAA Amendments established a list of 189 HAPs resulting in the promulgation of NESHAP for Source Categories. The NESHAPs, codified in 40 CFR 61 and 63, regulate the emissions of HAPs from new and existing stationary sources by setting emission limits, monitoring, testing, recordkeeping, and notification requirements. Any source that is subject to a subpart of 40 CFR 61 or 63 would also be subject to the general provisions of Subpart A (*General Provisions)*, unless otherwise noted in the applicable subpart. This section outlines the applicability of NESHAP subparts for the Projects facilities.

Subpart YYYY (*National Emissions Standards for Hazardous Air Pollutants for Stationary Combustion Turbines*) would apply to Compressor Stations 505 and 515. As existing major sources of

HAP emissions, the facilities would be subject to the initial notification requirements for the proposed combustion turbines.

Subpart ZZZZ (*National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines*) would apply to the emergency fire pump engines and emergency electrical power generators associated with Transco's Compressor Stations 201 505, and 515. These units would be subject to all applicable Subpart ZZZZ monitoring, recordkeeping, and reporting requirements, and/or would comply with NESHAPs Subpart ZZZZ by complying with NSPS Subpart JJJJ requirements.

4.8.2.5 General Conformity

The General Conformity Rule is codified in 40 CFR 93, Subpart B and was developed to ensure that federal actions in nonattainment and maintenance areas do not impede states' attainment of the NAAQS. A conformity determination must be conducted by the lead federal agency if a federal action's construction and operation activities are likely to result in generating direct and indirect emissions that would exceed the conformity applicability threshold level of the pollutant(s) for which a county is designated as nonattainment or maintenance. Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to new violations of the NAAQS in any area;
- increase the frequency or severity of any existing violation of any NAAQS; or
- delay timely attainment of any NAAQS or interim emission reductions.

The General Conformity Rule entails both an applicability analysis and a subsequent conformity determination, if applicable. According to the conformity regulations, emissions from sources that are subject to any Nonattainment NSR or PSD permitting/licensing (major or minor) are exempt and are deemed to have conformed. A General Conformity Determination must be completed when the total direct and indirect emissions of a project would equal or exceed the specified pollutant thresholds shown in Table 4.8.2-1 on a calendar year basis for each nonattainment or maintenance area.

As discussed previously, portions of the Project are in nonattainment or maintenance areas; therefore, general conformity requirements do apply. General conformity must be analyzed for construction emissions in non-attainment maintenance areas as well as operational emissions not subject to major or minor NSR permitting. Ongoing operational emissions from the Projects that are not subject to NSR permitting are limited to minor fugitive releases that would not exceed general conformity applicability thresholds. Detailed construction emissions for the Project are presented in section 4.8.3 (see table 4.8.3-1). As shown, construction emissions would not exceed the general conformity applicability thresholds for a single calendar year. Therefore, a general conformity determination is not required.

TABLE 4.8.2-1 **General Conformity De minimums Thresholds**	
Pollutant/Area Description	Tons/Yr
Ozone (VOCs or NO_x)	
Serious Nonattainment Areas (NAAs)	50
Severe NAAs	25
Extreme NAAs	10
Other Ozone NAAs Outside an Ozone Transport Region (OTR)	100
Ozone (NO_x)	
Marginal and Moderate NAAs Inside an OTR	100
Maintenance	100
Ozone (VOC)	
Marginal and Moderate NAAs Inside an OTR	50
Maintenance Inside an OTR	50
Maintenance Outside an OTR	100
CO (All NAAs and Maintenance Areas)	100
SO_2 or NO_x (All NAAs and Maintenance Areas)	100
PM_{10}	
Moderate NAAs	100
Serious NAAs	70
$PM_{2.5}$ (Direct $PM_{2.5}$, SO_2, NO_x, VOC, and Ammonia)	
Moderate NAAs	100
Serious NAAs	70
All Maintenance Areas	100
Lead (All NAAs and Maintenance Areas)	25

4.8.2.6 Greenhouse Gas Reporting Rule

The EPA established the final Mandatory Greenhouse Gas Reporting Rule, requiring the reporting of operational GHG emissions from applicable sources that emit greater than or equal to 25,000 metric tons of GHGs (as CO_2e) in 1 year. Recent additions to the Reporting Rule effective for calendar year 2016 require reporting of GHG emissions generated during operation of natural gas pipeline transmission systems, including blowdown emissions, equipment leaks, and vent emissions at compressor stations, as well as blowdown emissions between compressor stations.

Compressor Stations 200, 505, and 515 are currently subject to GHG reporting based on actual emission. Compressor Stations 195 and 201 have the potential to exceed the 25,000-metric-tpy reporting threshold once the Project is operational; however, once the two existing gas-fired reciprocating engine driven compressors are retired, there will be no GHG as only the electric motor-driven compressor units would be remaining. Compressor Station 207 is not currently subject to GHG reporting and it is not anticipated that the reporting status of the facility would be affected by the Project. Transco would monitor the actual operational emissions and comply with the GHG reporting requirements as applicable.

4.8.2.7 State Air Quality Requirements

In addition to federal regulations, each state has its own regulations that the Project components would need to comply with during construction and operation.

New Jersey

The air quality permitting program in New Jersey is implemented by the NJDEP. New Jersey had full delegation from the EPA for air permitting programs, and the air permit regulations are codified in New Jersey Administrative Code, Title 7, Chapter 27.

Pennsylvania

Pennsylvania has its own regulations that the Project would need to comply with during construction and operation. Air pollution control regulations are promulgated in Pennsylvania Administrative Code Title 25, Chapters 121 through 145. Pennsylvania has full delegation from the EPA for all air permitting programs.

Maryland

Maryland air quality control requirements are codified in the Code of Maryland Air Regulations under Title 26. The existing Beaver Dam M&R Station is the only stationary source being modified in the State of Maryland and would be exempt from NSR permitting procedures.

4.8.3 Construction Emissions

Construction of the Project would result in intermittent and temporary emissions of criteria pollutants. These emissions generally include fugitive dust (PM_{10} and $PM_{2.5}$) generated from soil-disturbing activities, such as earthmoving and wind erosion of disturbed areas, and vehicle traffic during construction. The amount of dust generated during construction would be a function of precipitation, vehicle numbers and types, vehicle speeds, and roadway characteristics. Dust emissions would be greater during dry periods and in areas of fine-textured soils.

Construction also results in combustion emissions from diesel- and gasoline-fueled vehicles used in various construction activities. Combustion-related emissions would include NO_x, CO, VOC, SO_2, PM, small amounts of HAPs, and GHGs.

Construction-related emission estimates are based on typical diesel-fueled construction equipment, hours of operation, and vehicle miles traveled by the construction equipment and supporting vehicles for each construction spread. Combustion emissions from on-road vehicles (e.g., delivery and material removal vehicles) and non-road construction equipment operation were estimated using the EPA Motor Vehicle Emission Simulator model, which estimates emissions for on-road and non-road vehicles and equipment based on the anticipated types of non-road equipment and their associated levels of use. HAP emissions and fugitive particulate emissions of PM_{10} and $PM_{2.5}$ were calculated using the EPA's Compilation of Air Pollutant Emission Factors (AP-42) recommended emission factors for heavy construction equipment, combined with estimates of the extent and duration of active surface disturbance during construction. Fugitive emissions from soil pile wind erosion were calculated using the EPA's Fugitive Dust Background Document and Technical Information Document For Best Available Control Measures (EPA, 2021f). GHG emissions were estimated from non-road construction equipment using factors from the EPA's Emission Factors for Greenhouse Gas Inventories (EPA, 2021g). HAP emissions from non-road construction equipment were estimated using EPA AP-42 factors. Construction emissions for the Project are presented in table 4.8.3-1.

TABLE 4.8.3-1

Construction Emissions Summary for the Regional Energy Access Expansion Project

AQCR/Facility	County/State	Emissions (tons) Criteria Pollutants VOC	CO	NO_x	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	Total for All HAPs
AQCR NJ-NY-CT Interstate									
Compressor Station 207	Middlesex, NJ	0.002	0.06	0.01	0.23	0.06	2.43E-5	7.21	3.64E-4
Compressor Station 505	Somerset, NJ	0.78	17.52	5.52	7.41	2.28	0.01	3,094.36	0.32
Centerville Regulator Facility	Somerset, NJ	0.13	2.13	1.20	1.75	0.54	1.87E-3	627.42	0.6
AQCR Metropolitan Philadelphia Interstate									
Mainline “A” Regulator	Bucks, PA	0.03	0.53	0.24	0.17	0.05	2.82E-4	92.36	0.01
Compressor Station 200	Chester, PA	0.09	2.49	0.63	1.10	0.32	1.17E-3	399.02	0.04
Compressor Station 201	Gloucester, NJ	1.02	22.20	8.23	10.75	3.17	0.01	4,605.65	0.43
Station 210 Pooling Point	Mercer, NJ	0.23	6.14	1.66	2.57	0.83	2.92E-3	983.09	0.09
Camden Delivery M&R Station	Camden, NJ	0.12	2.99	0.85	1.24	0.38	1.34E-3	444.45	0.05
Lawnside Delivery M&R Station	Camden, NJ	0.17	4.35	1.22	1.87	0.57	1.97E-3	642.74	0.07
Mt. Laurel Delivery M&R Station	Burlington, NJ	0.20	5.65	1.44	2.02	0.59	2.47E-3	823.69	0.08
AQCR Metropolitan Baltimore Interstate									
Bever Dam M&R Station	Baltimore, MD	0.04	0.57	0.28	0.25	0.07	3.78E-04	125.70	0.02
AQCR Northeast Pennsylvania – Upper Delaware Valley Interstate									
Regional Energy Access Lateral	Luzerne, PA	3.00	36.62	37.90	51.81	17.86	0.06	19,367.04	1.38
Compressor Station 515	Luzerne, PA	0.78	17.53	5.52	7.54	2.31	0.01	3,095.17	0.32
Hildebrandt Tie-In	Luzerne, PA	0.10	2.50	0.73	0.96	0.31	1.15E-3	379.93	0.04
Lower Demunds REL Tie-In	Luzerne, PA	0.10	2.50	0.73	0.95	0.31	1.15E-3	379.93	0.04
Carverton Tie-In	Luzerne, PA	0.38	9.75	2.73	4.20	1.41	4.69E-3	1,576.24	0.16
Effort Loop	Monroe, PA	1.78	25.49	19.12	34.89	11.09	0.03	10,929.31	0.79
Delaware River Regulatory Facility	Northampton, PA	0.11	1.84	0.94	0.99	0.28	1.29E-3	422.32	0.05
AQCR South Central PA Interstate									
Compressor Station 195	York, PA	0.002	0.07	0.01	0.23	0.06	2.47E-5	7.31	3.73E-4

The EPA requires manufacturers of on- and off-road engines to certify their products to engine emission standards based on the year of manufacture. For diesel engines, the emission standards have been phased in over the past two decades in four steps, referred to as Tier 1 to Tier 4. To mitigate exhaust emissions during construction, each engine must comply with the emission standards throughout its life, equipment would be operated on an as-needed basis. In 2010, the EPA required the sulfur concentration in diesel fuels be lowered from historical concentration of 500 parts per million to 15 parts per million (ultra-low sulfur diesel fuel), which allows diesel engines to meet current Tier 4 emission requirements. Transco would satisfy the applicable requirements of 40 CFR 80 Subpart I by using low-sulfur diesel fuel in non-road construction equipment.

Construction-related emissions on the Project would be temporary and localized and would dissipate with time and distance from areas of active construction. Further, construction emissions along the pipelines would subside once construction is complete. Based on the mitigation measures outlined in Transco's Fugitive Dust Control Plan (see table 2.3-1), which we reviewed and find acceptable, and the commitment to obtain the applicable air permits and adhere to air quality regulations, and the temporary nature of pipeline construction, we conclude that construction of the Project would not have a significant impact on regional air quality.

4.8.4 Operational Emissions

Operational emission increases from the Project would result from natural gas combustion turbines at Compressor Stations 505 and 515. Transco's Compressor Stations 201, 207, and 195 would involve installing or uprating of electric-driven compression and, therefore, the additional compression would not generate combustion-related emissions. Aboveground facilities, including the compressor stations, M&R stations, and pig launcher/receiver facilities along with the pipelines, would generate fugitive emissions of natural gas. Compressor station combustion sources include turbines, emergency engines, and heaters; and fugitive emissions could result from miscellaneous small storage tanks, truck loading, piping components, blowdown events, and pigging operations.

Air pollutant emissions from operation of the proposed new and modified compressor stations were calculated using emissions factors from vendor data, the EPA's AP-42, and 40 CFR 98. Fugitive gas emissions were estimated using gas compositions provided by National Fuel and Transco. Emissions from pig launching and receiving events at the compressor stations are included in the facility blowdown emissions. The potentials to emit from the compressor stations and pipeline operation are summarized in table C-15 in appendix C. The EPA commented on inclusion of emergency generator at Compressor Station 201 in the facility's operational emissions. An emergency generator is included and potential emissions are accounted for in table C-15.

4.8.5 Air Modeling of Compressor Stations

To evaluate the air quality impacts of operational emissions from the compressor stations, Transco performed air quality modeling analyses for Compressor Stations 505 and 515. The new compressor at Compressor Station 201 would be electric-driven and, therefore, no modeling was conducted for this station. We find this to be appropriate as those emissions are negligible and only would occur during emergency needs. Background pollutant concentrations were estimated using existing ambient monitoring data for the region. Data were obtained for representative air quality monitoring stations to characterize the background air quality for each compressor station and are presented in table 4.8.1-1, above. The background monitors were determined based on proximity and general representativeness of the monitoring sites to each of the aboveground facilities.

Modeling for the Project was performed using air dispersion model AERMOD Version 19191. Transco conducted full NAAQS analyses at each gas-fired compressor station, to determine whether operating emissions of SO_2, NO_2, CO, PM_{10}, or $PM_{2.5}$ would cause a violation of the NAAQS. The modeling parameters for the Project is presented in table 4.8.5-1.

TABLE 4.8.5-1 **Compressor Station Modeling Parameters**									
		Stack Data				Pollutant Emission Rate (lb/hr)			
Project/Facility	Source ID	Height (m)	Exit Diameter (m)	Exit Velocity (m/s)	Temp (°K)	NO_x	CO	$PM_{2.5}/PM_{10}$	SO_2
Compressor Station 505	MLU-09 Gas Turbine	15.24	3.10	13.01	732.04	0.292	0.059	0.144	0.065
	MLU-10 Gas Turbine	15.24	3.10	13.01	732.04	0.292	0.059	0.144	0.065
	BLR1 Boiler	5.79	0.38	6.62	505.40	0.049	0.115	0.006	0.0003
Compressor Station 515	MLU-09 Gas Turbine	15.0	3.10	20.41	699.26	9.61	0.650	0.207	0.106
	MLU-Gas Turbine 10	15.0	3.10	20.41	699.26	9.61	0.650	0.207	0.106
	AUX-03	6.27	0.36	34.91	873.71	0.100	0.150	0.050	0.008
	AUX-04	6.27	0.36	34.91	873.71	0.100	0.150	0.050	0.008
	MU6 Solar Mars 100	12.80	2.69	13.53	779.26	1.491	1.814	0.113	0.058
	MU7 Solar Mars 100	13.00	2.66	18.12	734.26	0.954	0.968	0.105	0.054
	MU8 Solar Mars 100	14.63	2.66	17.22	734.82	0.91	0.074	0.11	0.047
	BLR1 Boiler	5.49	0.30	11.37	505.93	0.054	0.045	0.004	0.0003

Transco completed its NAAQS analyses by modeling operating emissions from the compressor stations to determine the maximum ground level concentrations for each pollutant and averaging period, added ambient background concentrations. These predicted results were compared against the NAAQS as shown in table 4.8.5-2.

TABLE 4.8.5-2 **Summary of NAAQS Full Impact Analysis**						
Facility/Pollutant	Averaging Period	Model Concentration (µg/m^3)	Background Monitored Concentration (µg/m^3)	Total Concentration (µg/m^3)	NAAQS (µg/m^3)	Radius of Significant Impact (km)
COMPRESSOR STATION 505						
NO_2	1-hour	22.35	56.4	78.75	188	0.204
	Annual	1.14	5.6	6.74	100	-
SO_2	1-hour	1.50	7.9	9.40	196	-
	3-hour	2.41	7.9	10.31	1,300	-
CO	1-hour	68.92	2,520	2,589	40,000	-
	8-hour	33.17	2,176	2,209	10,000	-
$PM_{2.5}$	24 hour	0.75	19.0	19.75	35	0.204
	Annual	0.16	7.9	8.06	12	-
PM_{10}	24-hour	1.41	31.0	32.41	150	-
COMPRESSOR STATION 515						
NO_2	1-hour	19.11	56.4	75.51	188	0.648
	Annual	1.87	5.6	7.47	100	-
SO_2	1-hour	1.16	7.9	9.06	196	-
	3-hour	1.17	13.1	14.27	1,300	-
CO	1-hour	24.42	2,520	2,544	40,000	-
	8-hour	18.91	2,176	2,195	10,000	-
$PM_{2.5}$	24 hour	1.32	19.0	20.32	35	0.789
	Annual	0.34	7.9	8.24	12	0.789
PM_{10}	24-hour	1.77	31.0	32.77	150	-

Air quality impacts from operation of the Projects' compressor stations would be minimized by the use of equipment, emissions controls, and operating practices that meet or exceed industry standards to minimize emissions and compliance with federal and state emission thresholds (see table 4.8.5-3). Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be minimized during installation and operation of the Projects' compressor units.

TABLE 4.8.5-3

Operational Emissions from the Project

Project/Facility	NO_X	CO	SO_2	VOC	PM/PM_{10}/ $PM_{2.5}$	CO_2e	Total for All HAPs
	(tons per year)						
Compressor Station 201 – Gloucester County, NJ							
Compressor Station 201 Subtotal	0.33	0.66	0.79	2.08E-03	5.44E-05	2,237.75	0.06
Compressor Station 505 – Somerset County, NJ							
Compressor Station 505 Site-Wide Emissions	20.47	22.03	2.74	6.32	6.34	95,102	0.46
Compressor Station 515 – Luzerne County, PA							
Compressor Station 515 Site-Wide Emissions	196.80	314.40	14.02	50.57	30.57	511,413	12.24
Regional Energy Lateral							
Pipeline Blowdown	-	-	-	0.11	-	502.36	0.02
Pipeline Fugitives	-	-	-	0.01	-	6.71	0.01
Effort Loop							
Pipeline Blowdown	-	-	-	0.07	-	310.88	0.01
Pipeline Fugitives	-	-	-	0.01	-	4.15	0.01
M&R Stations							
Pipeline Blowdown	-	-	-	0.92	-	4,273.35	0.16
Pipeline Fugitives	-	-	-	0.08	-	363.03	0.01
Total Pipeline and M&R Station Emissions	**-**	**-**	**-**	**1.17**	**-**	**5,460.47**	**0.20**
Project Total Maximum Potential Emissions	**217.60**	**337.09**	**17.55**	**59.26**	**36.91**	**619,674**	**13.18**

The air dispersion modeling analysis for the operation of the facilities described above demonstrates that the Project would be in compliance with the NAAQS. We conclude that operation of the Projects would not have significant impacts on local or regional air quality.

The EPA commented that Transco implement best practices to reduce emissions during constructions and operations, such as options that explore diesel controls, and cleaner fuel (ultra-low sulfur diesel) and construction practices for on-road and off-road equipment, including implementation of diesel particulate filters, diesel oxidation catalysts, or Tier 4 rated equipment. As stated above, Transco would utilize low-sulfur diesel fuel in non-road construction equipment, which allows diesel engines to meet current Tier 4 emission requirements.

The NJDEP commented that a General Conformity Applicability Analysis, and possibly a Conformity Determination, will be necessary and that the nonattainment classifications that are in effect at the time of the General Conformity applicability analysis and determination for all standards and nonattainment areas must be used for the establishment of de minimis levels. As discussed, portions of the Project are in nonattainment or maintenance areas; therefore, general conformity requirements do apply. Table 4.8.2-1 details general conformity thresholds applicable to Project activities. Detailed construction emissions for the Project show construction emissions would not exceed the general conformity applicability thresholds, and ongoing operational emissions from the Projects are limited to minor fugitive releases that would not exceed general conformity applicability thresholds. Therefore, a general conformity determination is not required.

The NJDEP provided comments proposing actions to reduce exhaust emissions for the Project. As discussed above, Transco would implement measures during construction activities, including using low-sulfur diesel fuel and limiting of equipment idling.

4.8.6 Climate Change

Climate change is the variation in the Earth's climate (including temperature, precipitation, humidity, wind, and other meteorological variables) over time.[64] Climate change is driven by accumulation of GHGs in the atmosphere due to the increased consumption of fossil fuels (e.g., coal, petroleum, and natural gas) since the early beginnings of the industrial age and accelerating in the mid- to late-20th century.[65] The GHGs produced by fossil-fuel combustion are carbon dioxide, methane, and nitrous oxide.

In 2017 and 2018, the U.S. Global Change Research Program (USGCRP)[66] issued its Climate Science Special Report: Fourth National Climate Assessment, Volumes I and II.[67] This report and the recently released report by the Intergovernmental Panel on Climate Change (IPCC), Climate Change 2021: The Physical Science Basis, state that climate change has resulted in a wide range of impacts across every region of the country and the globe. Those impacts extend beyond atmospheric climate change alone and include changes to water resources, agriculture, ecosystems, human health, and ocean systems.[68] According to the Fourth Assessment Report, the United States and the world are warming; global sea level is rising and oceans are acidifying; and certain weather events are becoming more frequent and more severe.[69] These impacts have accelerated throughout the end of the 20th and into the 21st century.[70]

GHG emissions do not result in proportional local and immediate impacts; it is the combined concentration in the atmosphere that affects the global climate system. These are fundamentally global impacts that feedback to local and regional climate change impacts. Thus, the geographic scope for analysis of GHG emissions is global, rather than local or regional. For example, a project 1 mile away emitting 1 ton of GHGs would contribute to climate change in a similar manner as a project 2,000 miles distant also emitting 1 ton of GHGs.

Climate change is a global concern; however, for this analysis, we will focus on the existing and potential climate change impacts in the general Project area. The USGCRP's Fourth Assessment Report

64 Interim Policy Statement, 178 FERC ¶ 61,108 at P 6.

65 Intergovernmental Panel On Climate Change, United Nations, *Summary for Policymakers* of Climate Change 2021: The Physical Science Basis (Valerie Masson-Delmotte et al. eds.) (2021), https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_SPM.pdf (IPCC Report) at SPM-5. Other forces contribute to climate change, such as agriculture, forest clearing, and other anthropogenically driven sources.

66 The U.S. Global Change Research Program is the leading U.S. scientific body on climate change. It comprises representatives from 13 federal departments and agencies and issues reports every 4 years that describe the state of the science relating to climate change and the effects of climate change on different regions of the United States and on various societal and environmental sectors, such as water resources, agriculture, energy use, and human health.

67 U.S. Global Change Research Program, Climate Science Special Report, Fourth National Climate Assessment | VOLUME I (Donald J. Wuebbles et al. eds) (2017), https://science2017.globalchange.gov/downloads/CSSR2017_FullReport.pdf (USGCRP Report Volume I); U.S. Global Change Research Program, Fourth National Climate Assessment, Volume II Impacts, Risks, And Adaptation In The United States (David Reidmiller et al. eds.) (2018), https://nca2018.globalchange.gov/downloads/NCA4_2018_FullReport.pdf (USGCRP Report Volume II).

68 IPCC Report at SPM-5 to SPM-10.

69 USGCRP Report Volume II at 73-75.

70 *See, e.g.*, USGCRP Report Volume II at 99 (describing accelerating flooding rates in Atlantic and Gulf Coast cities).

notes the following observations of environmental impacts are attributed to climate change in the Northeast region:[71]

- increases in annual average temperatures across the Northeast range from less than 1 °F (0.6 degrees Celsius (°C)) in West Virginia to about 3 °F (1.7 °C) or more in New England since 1901;

- from 1958 to 2016, the northeast experienced a 55 percent increase in the amount of precipitation falling in heavy events (the greatest increase in the nation) and 5 to 20 percent increase in average winter precipitation;

- warming during the winter–spring transition has led to earlier snowmelt-related runoff in areas of the Northeast with substantial snowpack; and

- ocean and coastal ecosystems are being affected by large changes in a variety of climate-related environmental conditions.

The USGCRP's Fourth Assessment Report[72] notes the following projections of climate change impacts in the Northeast region with a high or very high level of confidence:[73]

- precipitation in the Northeast is projected to be about 1 inch greater for December through April by end of century (2070–2100) under the higher scenario;

- temperatures are projected to increase by 5.1 °F by the 2090s under the worst case scenario (continually increasing emissions) and would increase by 4.0 °F if emissions were decreased;

- by the middle of the century, the freeze-free period across much of the Northeast is expected to lengthen by as much as 2 weeks under the lower scenario and by 2 to 3 weeks under the higher scenario. By the end of the century, the freeze-free period is expected to increase by at least 3 weeks over most of the region;

- higher than average sea level rise along the Northeastern coast will occur due to land subsidence; and

- much of the infrastructure in the Northeast, including drainage and sewer systems, flood and storm protection assets, transportation systems, and power supply, is nearing the end of its planned life expectancy; climate-related disruptions will only exacerbate existing issues with aging infrastructure.

It should be noted that while the impacts described above taken individually may be manageable for certain communities, the impacts of compound events (such as simultaneous heat and drought, wildfires

[71] USGCRP Report Volume I and II.

[72] USGCRP Report Volume II.

[73] The report authors assessed current scientific understanding of climate change based on available scientific literature. Each "Key Finding" listed in the report is accompanied by a confidence statement indicating the consistency of evidence or the consistency of model projections. A high level of confidence results from "moderate evidence (several sources, some consistency, methods vary and/or documentation limited, etc.), medium consensus." A very high level of confidence results from "strong evidence (established theory, multiple sources, consistent results, well documented and accepted methods, etc.), high consensus." https://science2017.globalchange.gov/chapter/front-matter-guide/.

associated with hot and dry conditions, or flooding associated with high precipitation on top of saturated soils) can be greater than the sum of the parts.[74]

GHG emissions associated with construction and operation of the Project were identified and quantified in sections 4.8.3 and 4.8.4 and appendix C of the EIS. Emissions of GHGs are typically expressed in terms of CO_2e.[75] Construction of the Project may result in emissions of up to about 48,013 tons (43,548 metric tons) of CO_2e over the duration of construction (see table 4.8.3-1). Operation of the new emission sources would result in emissions of up to 619,674 tons (562,044 metric tpy) of CO_2e (see table C-15 in appendix C). These estimates for operational emissions are based on the increased horsepower resulting from the new Project facilities and assuming 100 percent utilization, where the proposed facilities are operated at maximum capacity for 365 days/year, 24 hours/day and include fugitive emissions. Additionally, the estimate includes reductions from abandoned units, fugitive emissions from compressor station equipment, piping, and ancillary facilities. Regarding downstream GHG emissions, the Project would generate 829,400 Dth/d of natural gas that would be added to Transco's pipeline system. South Jersey Resources, LLC's proposed end-use for 46,400 Dth/d of their capacity is for power generation at the existing Marcus Hook Energy Center. The remainder would be delivered to New Jersey Natural Gas, PECO Energy Company, PSEG Power LLC, Baltimore Gas and Electric, Elizabethtown Gas, and South Jersey Gas Company, all local distribution companies, which would deliver the gas to the various end users located on their respective systems. Combustion of the 829,400 Dth/d of gas would result in 16.02 million metric tpy of CO_2e emissions.[76] We note that this CO_2e estimate represents an upper bound amount of end-use combustion that could result from the Project's incremental throughput of natural gas. Transco did not submit a projected utilization rate for the Project, thus this estimate assumes that the maximum capacity is transported 365 days per year.

Construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past, current, and future emissions from all other sources globally and would contribute incrementally to future climate change impacts. In order to assess impacts on climate change associated with the Project, Commission staff considered whether it could identify discrete physical impacts resulting from the Project's GHG emissions or compare the Project's GHG emissions to established targets established to combat climate change.

To date, Commission staff have not identified a methodology to attribute discrete, quantifiable, physical effects on the environment resulting from the Project's incremental contribution to GHGs. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Project's contribution to climate change through any objective analysis of physical impact attributable to the Project. Additionally, Commission staff have not been able to find an established threshold for determining the Project's significance when compared to established GHG reduction targets at the state or federal level. Ultimately, this EIS is not characterizing the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[77] However, as we have done in prior NEPA analyses, we disclose the Project's GHG emissions in comparison to national and state GHG emission inventories.

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[74] USGCRP Report Volume II.

[75] GHG gases are converted to CO2e by means of the GWP; the measure of a particular GHG's ability to absorb solar radiation; and its residence time within the atmosphere, consistent with the USEPA's established method for reporting GHG emissions for air permitting requirements that allows a consistent comparison with federal regulatory requirements.

[76] The downstream CO_2e values are slightly different for cubic feet per day versus dekatherms per day. To ensure consistency between projects, dekatherms will be used in the analysis here.

[77] Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews, 178 FERC ¶ 61,108 (2022); 178 FERC ¶ 61,197 (2022).

In order to provide context of the Project emissions on a national level, we compare the Project's GHG emissions to the total GHG emissions of the United States as a whole. At a national level, 5,222.4 million metric tons of CO_2e were emitted in 2020 (inclusive of CO_2e sources and sinks) (EPA, 2021h). Construction emissions from the Project could potentially increase CO_2e emissions based on the national 2020 levels by 0.0083 percent; in subsequent years, the Project operations including downstream emissions could potentially increase emissions nationally by 0.32 percent.

In order to provide context of the Project emissions on a state level, we compare the Project's GHG emissions to the Delaware, Maryland, New Jersey, New York, and Pennsylvania GHG inventories for their respective construction and operational volumes. At the state level, Delaware, Maryland, New Jersey, New York, and Pennsylvania energy related CO2 emissions in 2019 were 13.6, 56.9, 100.8, 169, and 218.7 million metric tons, respectively.

Based on the Project aboveground facility locations and identified end users, Project downstream emissions could potentially increase CO_2e emissions based on Delaware 2019 levels by 4 percent. Project construction could potentially increase CO_2e emissions based on Maryland 2019 levels by 0.002 percent; in subsequent years, Project operation and downstream emissions could potentially increase emissions by 1.8 percent. Project construction could potentially increase CO_2e emissions based on New Jersey 2019 levels by 0.01 percent; in subsequent years, Project operation and downstream emissions could potentially increase emissions by 11.8 percent. Project downstream emissions could potentially increase CO_2e emissions based on New York 2019 levels by 0.3 percent. Project construction could potentially increase CO_2e emissions based on Pennsylvania 2019 levels by 0.02 percent; in subsequent years, Project operation and downstream emissions could potentially increase emissions by 1.2 percent.

We also typically compare a project's operational emissions in the context of state GHG reduction goals.[78] The State of Delaware has targets to reduce GHG emissions 30 percent below 2008 levels by 2030. Direct GHG emissions from downstream end use would represent 5 percent of Delaware's 2030 projected GHG emission levels, assuming the reductions from 2008 levels summarized above.[79]

The state of Maryland has established reduction targets to reduce GHG emissions 40 percent below 2006 levels by 2030. Direct GHG emissions from the downstream end use would represent 2.2 percent of Maryland's 2030 projected GHG emission levels, assuming the reductions from 2006 levels summarized above.[80]

New York has targets to reduce GHG emissions 40 percent below 1990 levels by 2030 and no less than 85 percent below 1990 levels by 2050. Direct GHG emissions from the downstream end use would represent 0.4 percent and 1.6 percent of New York's 2030 and 2050 projected GHG emission levels, assuming the reductions from 2005 levels summarized above.[81]

New Jersey has targets to reduce GHG emissions to 80 percent below 2006 levels by 2050. Direct GHG emissions from the operation of the Project and downstream end use would represent 47.8 percent New Jersey's 2050 GHG emission levels, assuming the reductions from 2006 levels summarized above.[82]

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[78] We reviewed the U.S. State Greenhouse Emission Targets site for individual state requirements at: https://www.c2es.org/document/greenhouse-gas-emissions-targets/.

[79] We consider the 2030 GHG emission target to be 11.06 million metric tons (assuming a 30 percent reduction).

[80] We consider the 2030 GHG emission target to be 46.92 million metric tons (assuming a 40 percent reduction).

[81] We consider the 2030 and 2050 GHG emission target to be 124.4 and 31.1 million metric tons (assuming a 40 percent and 85 percent reduction, respectively).

[82] We consider the 2050 GHG emission target to be 24.6 million metric tons (assuming a 80 percent reduction).

Pennsylvania has targets to reduce GHG emissions 26 percent below 2005 levels by 2025 and 80 percent below 2005 levels by 2050. Direct GHG emissions from the operation of the Project and downstream end use would represent 1 percent and 3.9 percent of Pennsylvania's 2025 and 2050 projected GHG emission levels, assuming the reductions from 2005 levels summarized above.[83]

4.8.6.1 Response to Comments on Climate Change

EPA recommends the EIS include a discussion of how possible climate change impacts and the associated long-term risks to the Project have been addressed, and that FERC consider climate adaptation and resilience, including measures to mitigate the ongoing and long-term risks posed by climate change in relation to the siting of natural gas facilities. EPA recommends the EIS includes measures to be taken to ensure resilience/adaptation to protect the infrastructure investment from the effects of climate change. Transco evaluated acute and chronic physical risks, including those associated with climate change, as part of its annual strategic risk assessment process, which relates to all of its projects, including REAE. Many climate models indicate that climate change is likely to result in rising sea levels and more frequent rain events, increase the frequency and severity of weather events such as hurricanes, and exacerbate flooding. Transco indicated that it calculates the redundancy needed in its compression systems based on historic weather patterns and maintenance activities and has enhanced operations as necessary to prevent service interruptions due to these acute weather events and protect the pipeline system. EPA recommends Transco incorporate future climate projections in addition to historical trends.

While these climate-related changes have the potential to damage the physical assets, particularly in low-lying or flood prone areas along the coasts and waterbodies, Transco has indicated that it designs its facilities and regularly evaluates and manages the integrity of its assets to mitigate these chronic climate-related risks. For example, Transco designs its pipelines with buoyancy control through wetlands and buries pipelines with a minimum of 4 feet of cover underneath stream beds to minimize potential for exposure or damage from scouring during flash floods. Transco has implemented an Integrity Management Plan, which involves regular monitoring of its right-of-way for any indication of hazards to its assets from third parties and natural causes like scour, landslides, or subsidence. Transco indicated that other measures it has taken to protect Project facilities from the effects of climate change include designing compressor station buildings to withstand 120-mile per hour wind loads and 50 pounds per square foot ground snow load and siting the proposed Compressor Station 201 outside of areas vulnerable to sea level rise.

We listed some of the existing and potential long-term impacts within the Project area. We acknowledge the Fourth National Climate Assessment and included several existing and predicted impacts on the Northeast region. There are myriad of impacts that could occur in the Northeast region due to climate change; our summary of certain impacts is not meant to be a comprehensive listing. We recommend that for further information on impact on the Northeast, the Fourth National Climate Assessment as well as the IPCC's recently released Sixth Assessment Report should be consulted. We reiterate that while certain discrete climate impacts may be manageable for communities, a greater risk is from multiple climate change impacts. Current climate change resilience measures or planning may not account for these compound risks.

DRN states FERC must acknowledge its role in locking in GHG emissions through the approval of natural gas infrastructure. We note this comment and conclude here that construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources and would contribute cumulatively to climate change.

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83 We consider the 2025 and 2050 GHG emission target to be 208.4 and 56.3 million metric tons (assuming a 26 percent and 80 percent reduction, respectively).

The EPA, Food and Water Watch, and DRN state that FERC must address upstream GHG emissions in the EIS. EPA reaffirmed with these comments on the draft EIS. We reiterate, the specific source of natural gas to be transported by the Project is currently unknown and would likely change throughout the Project's operation. As the Commission has previously concluded in numerous natural gas infrastructure proceedings, the environmental effects resulting from natural gas production are likely neither caused by a proposed project nor are they reasonably foreseeable consequences of its approval of a project, as contemplated by CEQ regulations.[84] To date, the Commission has not found upstream emissions to be an effect of any proposed project, primarily because of the following unknown factors: the location of the supply source; whether transported gas would come from new or existing production; and whether there would be any potential associated development activities, and if so, its location.[85] However, the Commission will continue to determine, on a case-by-case basis, whether GHG emissions from upstream production activities are a reasonably foreseeable and causally connected result of a proposed project.

The EPA recommends omitting comparisons to state GHG reduction goals, replacing it with a qualitative discussion disclosing the increasing conflict over time between continued GHG emissions and GHG emission reduction policy, and recommends FERC consider ongoing and projected regional and local climate change and ensure robust climate resilience/adaption planning in the Project design. EPA also recommends that FERC thoroughly discuss the role of the Project in the context of national, state, and regional policies to achieve science-based GHG reduction goals, and evaluate and disclose whether a project that increases fossil fuel consumption can be consistent with the energy use changes necessary to achieve those goals. Food and Water Watch state that the Commission must consider how state laws undercut Transco's arguments that additional infrastructure is necessary to meet demand that is required to be reduced by state law, and that the Commission's EIS should examine this Project's compliance with the requirements within New Jersey's Global Warming Response Act, which calls for the reduction in greenhouse gas emissions to 1990 levels by 2020 with further reductions to 80 percent below 2006 levels by 2050. We note that on January 20, 2021, President Biden issued the Executive Order on Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis (EO 13990); and on January 27, 2021, he issued the Executive Order on Tackling the Climate Crisis at Home and Abroad (EO 14008). Amongst other objectives, the Executive Orders call for a net-zero emission economy and a carbon free electricity sector. In addition, on January 20, 2021, President Biden announced that the United States will rejoin the Paris Climate Agreement (Agreement), enabling the United States to be a party to the Agreement on February 19, 2021. The Agreement aims to limit global warming to well below 2 °C, and preferably to 1.5 °C, compared to preindustrial levels.[86] On April 20, 2021, the United States set a U.S. economy-wide target of reducing net GHG emissions by 50 to 52 percent below 2005 levels by 2030.[87] The Commission has stated in recent orders that it is unable to determine how individual projects will affect international, national, or statewide GHG emissions reduction targets or whether a project's GHG emissions comply with those goals or laws.[88] Additionally, as the Commission has stated in recent orders that the

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[84] Birckhead v. FERC, 925 F.3d 510, 516-17 (D.C. Cir. 2019) (Birckhead). See, e.g., Double E Pipeline, LLC, 173 FERC 61,074 at P 97 (2020), Central New York Oil and Gas Co., LLC, 137 FERC ¶ 61,121, at PP 81-101 (2011), order on reh'g, 138 FERC ¶ 61,104, at PP 33-49 (2012), petition for review dismissed sub nom. Coal. for Responsible Growth v. FERC, 485 F. App'x. 472,474-75 (2d Cir. 2012) (unpublished opinion); see also Adelphia Gateway, LLC, 169 FERC ¶ 61,220 at P 243, order on reh'g, 171 FERC ¶ 61,049 at P 89.

[85] *See also Birckhead*, 925 F.3d at 517 (finding the Commission appropriately did not consider upstream emissions a project effect because the record did not contain any information establishing a causal relationship between the proposed project and upstream development).

[86] United Nations Framework Convention on Climate Change. 2021. The Paris Agreement: What is the Paris Agreement? Available online at: https://unfccc.int/process-and-meetings/the-parisagreement/theparisagreement. Accessed October 2021.

[87] The United States of America Nationally Determined Contribution. 2021. Available online at: https://www4.unfccc.int/sites/ndcstaging/PublishedDocuments/United%20States%20of%20America%20First/United%20States%20NDC%20April%2021%202021%20Final.pdf. Accessed May 2021.

[88] *See* Order Issuing Certificates and Approving Abandonment, 178 FERC ¶ 61,199 (2022) at P89; and Order Issuing Certificate, 178 FERC ¶ 61,198 (2022) at P48.

comparisons provide additional context in considering a project's potential impact on climate change. Accordingly, we have included those comparisons in our NEPA analysis.

The EPA, reaffirmed in their comments on the draft EIS, and Food and Water Watch recommend the EIS estimate and analyze potential downstream GHG emissions to fully disclose the estimated direct and indirect emissions. Potential downstream emissions are detailed in the analysis above.

Food and Water Watch further commented that when reviewing air quality impacts of the Project, the Commission must consider more than the impacts on immediate air quality surrounding compressor stations and pipeline infrastructure. When reviewing downstream emissions and growth-inducing effects, the Commission should consider the downstream area's attainment of NAAQS. We conclude that inconsistency of local distribution demand would make analysis of potential downstream impacts at the NAAQS level unreliable.

The EPA, reaffirmed in their comments on the draft EIS, commented that the Commission should consider mitigation measures for the Project's GHG emissions, particularly because we cannot conclude that those emissions are insignificant. At this time, Transco has not indicated any additional mitigation for GHG emissions. We note GHG mitigation is a pending policy decision at the time of this EIS publication and its resolution is beyond the scope of staff's NEPA review in this proceeding.

Commentors made reference to lack of GHG emission significance determination in the draft EIS. Ultimately, this EIS is not characterizing the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[89]

We received comments that FERC should consider the environmental impacts of the additional greenhouse gas emissions. We provide a discussion on climate change that includes relevant information from the USGCRP's Fourth Assessment Report for the Project area in the previous section of the EIS. Concerning how climate change impacts and associated long-term risks to the Project are addressed, as stated above, to date, staff have not identified a methodology to attribute discrete, quantifiable, physical effects on the environment to the Project's incremental contribution to GHGs. We have looked at atmospheric modeling used by the EPA, National Aeronautics and Space Administration, the IPCC, and others, and we found that these models are not reasonable for Project-level analysis for a number of reasons. We could not identify a reliable, less complex model for this task and thus staff could not determine specific localized or regional physical impacts from GHG emissions from the Project. Without the ability to determine discrete resource impacts, Commission staff are unable to assess the Project's contribution to climate change through any objective analysis of physical impact attributable to the Project.

4.8.6.2 Response to Comments on Social Cost of Carbon

The EPA, Food and Water Watch, and DRN recommended that FERC use estimates of the social costs of greenhouse gases (SC-GHG) to disclose and consider the climate damages from net changes in direct and indirect GHG emissions resulting from the proposed Project. We include a disclosure of the social cost of GHGs (also referred to as the "social cost of carbon" [SCC]) to assess climate impacts generated by each additional metric ton of GHGs emitted or saved by the Project. We note there is pending litigation challenging federal agencies' use of the Interagency Working Group (IWG) on Social Cost of

[89] *Consideration of Greenhouse Gas Emissions in Natural Gas Infrastructure Project Reviews*, 178 FERC ¶ 61,108 (2022); 178FERC ¶ 61,197 (2022).

Greenhouse Gases' interim values for calculating the social cost of GHGs.[90] In addition, the CEQ noted that it is working with representatives on the GHG IWG to develop additional guidance regarding the application of the SCC tool in federal decision-making processes, including in NEPA analyses.[91] The Commission has not determined which, if any, modifications are needed to render the SCC tool useful for project-level analyses.[92]

As both EPA and CEQ participate in the IWG, Commission staff used the methods and values contained in the IWG's current draft guidance but note that different values will result from the use of other methods.[93] The downstream emissions estimate used to calculate the social cost of GHGs is based on combustion of the upper-bound Project capacity in the multiple phase with a project maximum of the 829,400 Dth/d starting in 2024. However, the actual emissions associated with downstream use of natural gas transported by the Project would depend upon utilization of the pipeline facilities. Once construction is complete, the Project's emissions would be at a constant rate throughout the life of the Project. Construction emissions would take place between 2023 and 2024.

Accordingly, Commission staff calculated the social cost of carbon dioxide, nitrous oxide, and methane. For the analysis, staff assumed discount rates of 5 percent, 3 percent, and 2.5 percent,[94] assumed the Project will begin service in 2024, and that the Project's emissions will be at a constant rate throughout a 20-year period, assumed to be the life of the Project for purposes of the SC-GHG calculation. Noting these assumptions, the emissions from operation of this Project is calculated to result in a total social cost of GHGs equal to \$4 billion, \$15 billion, and \$23 billion, respectively (all in 2020 dollars).[95] Using the 95th percentile of the social cost of GHGs using the 3 percent discount rate,[96] the total social cost of GHGs from the Project is calculated to be \$46 billion (in 2020 dollars).

4.9 NOISE

The Project would result in temporary increases of noise through the short-term construction activities. The ambient sound level of a region is defined by the total noise generated within the specific environment and is comprised of natural and man-made sounds. At any location, both the magnitude and frequency of environmental noise may vary considerably over the course of a day, as well as seasonally. This variation is caused in part by changing weather conditions and the effect of seasonal vegetation cover.

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90 Missouri v. Biden, 8th Cir. No. 21-3013; Louisiana v. Biden, No. 21-cv-1074-JDC-KK (W.D. La). On February 11, 2022, the U.S. District Court for the Western District of Louisiana issued a preliminary injunction limiting federal agencies' employment of estimates of the social costs of GHGs and use of the IWG's interim estimates. On March 16, 2022, the U.S. Court of Appeals for the Fifth Circuit issued a stay of the district court's preliminary injunction, finding among other things that the federal agency defendants' continued use of the interim estimates was lawful. Louisiana v. Biden, No. 22-30087 (5th Cir. Mar. 16, 2022)

91 Council on Environmental Quality's May 27, 2021 Comments filed in Docket No. PL18-1-000, at 2.

92 See Order Issuing Certificates and Approving Abandonment, 178 FERC ¶ 61,199 (2022) at fn 141.

93 *Technical Support Document: Social Cost of Carbon, Methane, and Nitrous Oxide Interim Estimates under Executive Order 13990*, Interagency Working Group on Social Cost of Greenhouse Gases, United States Government, February 2021 (IWG Interim Estimates Technical Support Document).

94 IWG Interim Estimates Technical Support Document at 24. To quantify the potential damages associated with estimated emissions, the IWG methodology applies consumption discount rates to estimated emissions costs. The IWG's discount rates are a function of the rate of economic growth where higher growth scenarios lead to higher discount rates. For example, IWG's method includes the 2.5 percent discount rate to address the concern that interest rates are highly uncertain over time; the 3 percent value to be consistent with OMB circular A-4 (2003) and the real rate of return on 10-year Treasury Securities from the prior 30 years (1973 through 2002); and the 5 percent discount rate to represent the possibility that climate-related damages may be positively correlated with market returns. Thus, higher discount rates further discount future impacts based on estimated economic growth. Values based on lower discount rates are consistent with studies of discounting approaches relevant for intergenerational analysis. Id. at 18-19, 23-24.

95 The IWG draft guidance identifies costs in 2020 dollars. Id. at 5 (Table ES-1).

96 This value represents "higher-than-expected economic impacts from climate change further out in the tails of the [social cost of CO2] distribution." Id. at 11. In other words, it represents a higher impact scenario with a lower probability of occurring.

The Project would also result in permanent (ongoing) noise impacts associated with operation of the aboveground facilities.

4.9.1 Regulations

Two measurements are used to relate the time-varying quality of environmental noise to its known effects on people including the equivalent sound level (L_{eq}) and the L_{dn}. The L_{eq} is a sound level over a specific time period corresponding to the same sound energy as measured for an instantaneous sound level assuming it is a constant noise source. The L_{dn} considers the time of day and duration the noise is encountered since sound levels are perceived differently, depending on the length of exposure and time of day.

In 1974, the EPA published its *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. This document provides information for state and local governments to use in developing their own ambient noise standards. The EPA has indicated that a L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. The FERC has adopted this criterion and used it to evaluate the potential noise impacts from the Project at pre-existing NSAs such as schools, hospitals, and residences. At locations where existing ambient noise exceeds the 55-dBA threshold, Commission guidelines require project-related noise increase to be below 10 dBA at any NSA. In addition, Commission regulations state that operation of project facilities may not result in any perceptible increase in vibration at any NSA.

Specifically, in calculation of the L_{dn}, late night to early morning (10:00 p.m. to 7:00 a.m.) noise exposures are increased by 10 dBA to account for people's greater sensitivity to sound during nighttime hours. Due to the 10 dBA nighttime penalty added prior to calculation of the L_{dn}, for a facility to meet the 55 dBA L_{dn} limit established by the EPA to protect the public from indoor and outdoor activity interference, a facility must be designed such that the constant 24-hour noise level does not exceed a L_{eq} of 48.6 dBA at any NSA. The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. The human ear's threshold of perception for a noticeable change in loudness is about 3 dBA, whereas a 5 dBA change is clearly noticeable, and a 10 dBA change is perceived as either twice or half as loud.

4.9.1.1 State and Local Noise Regulations

Pennsylvania

There are no Pennsylvania state noise regulations that would apply to the Project.

Existing Compressor Station 515 is in Buck Township, Luzerne County. The Luzerne County Zoning Ordinance has qualitative nuisance regulations in place to prevent nuisance type noise and vibrations. Compressor Station 195 is in Peach Bottom Township, York County. Section 390(a) of the Peach Bottom Zoning Ordinance lists maximum permitted sound pressure levels. These are equivalent 55 dBA and would be met by complying with the federal sound requirements.

New Jersey

The NJDEP promulgated noise regulations to control noise from stationary commercial and industrial sources in 1974, pursuant to the Noise Control Act of 1971, New Jersey Statutes Annotated 13:1G-1 et seq. Within the noise regulations, there are established sound level standards of 50 decibels during nighttime (10:00 p.m. to 7:00 a.m.) and 65 decibels during daytime. Counties and municipalities in the state of New Jersey may adopt their own noise ordinances that are at least as stringent as New Jersey's state noise regulations.

Compressor Station 201 is in West Deptford Township, Gloucester County; the township has adapted a non-quantitative ordinance under Township Code Chapter 112: Noise and Nuisance Control allowing excavation, demolition, construction, repair, and alteration work to be completed during the hours of 7:00 a.m. to 8:00 p.m. Compressor Station 505 is located in Branchburg Township, Somerset County, which has adapted a noise ordinance under the Township Municipal Code Chapter BH7B/Noise Ordinance. A qualitative ordinance under Chapter 3-9.2 prohibits noise that can be heard between the hours of 8:00 p.m. and 7:00 a.m. at the property line.

Compressor Station 207 is located in Old Bridge Township, Middlesex County with the nearest NSAs located in the neighboring Borough of Sayreville. Old Bridge Township has an ordinance under the Township Land Development Ordinance in Section 4.a., which states that development cannot result in continuous airborne sound levels of 50 dBA outside of the subject property. The Borough of Sayreville Police Regulations under Chapter V, Section 5.3 prohibits noise that can be heard at a residential property from exceeding 50 dBA between the hours of 10:00 p.m. and 7:00 a.m.

4.9.2 Construction Noise Impacts and Mitigation

Noise would be generated during construction of the pipeline and aboveground facilities for the Project. Noise levels would be highest in the immediate vicinity of construction activities and would diminish with distance from the work areas. These impacts would be localized and temporary. The changing number and type of construction equipment at construction sites would result in varying levels of noise. Construction activities associated with the Project would be performed with standard heavy equipment such as track-excavators, backhoes, cranes, bulldozers, dump trucks, and boring equipment. Noise would also be generated by trucks and other light vehicles traveling in and near areas under construction. Construction would generally not affect nighttime noise levels as most activity would be limited to 7 a.m. to 7 p.m., Monday through Saturday, except for Direct Pipe® activities, and specific, limited construction activities such as tie-ins and hydrostatic testing.

Surface topography, vegetation cover, wind, and weather conditions also affect the distance that construction-related noise extends from a work area. Tall, dense vegetation and rolling topography typically attenuates noise when compared to less vegetated, open land. For the Project, the most prevalent sound source during construction would typically be the internal combustion engines used to power the construction equipment. In order to mitigate construction noise, the following work practices and measures would be implemented by the companies during construction:

- Transco would inform nearby residents of the Project and the upcoming construction activities and respond to and investigate concerns.

- Transco's contractors would position equipment so noise propagates away from the nearest NSAs and position non-noise generating equipment between the drilling operation and the nearby NSAs, where possible, to provide shielding.

- Transco would restrict onsite vehicle idle time while in the construction area for all equipment and vehicles that are not using their engines to operate a loading, unloading, or processing device (e.g., concrete mixing trucks) or are otherwise required for the proper operation of the engine.

- Contractors would be required to use sound control devices no less effective than those provided by the manufacturer and to maintain equipment in accordance with manufacturer's recommendations. No equipment would have un-muffled exhausts.

- When possible, Transco would use construction equipment specifically designed for low noise emissions (e.g., generators with noise enclosures).

- Transco would prepare the layout of the construction activities with the goal of reducing noise from back-up alarms (alarms that signal vehicle travel in reverse).

Construction of the aboveground facilities would consist of earth work (e.g., site grading, clearing, grubbing, trenching operations) and construction of the site foundations and equipment. Construction of the pipeline loops would be performed with standard heavy-duty construction equipment, such as trucks, backhoes, excavators, loaders, and cranes. Noise from pipeline construction would be limited to short durations over a period of 3 to 4 weeks at any one location. Blasting is not anticipated on this Project.

Direct Pipe® Crossing

Transco proposes to use the Direct Pipe® method to cross the Susquehanna River. The Direct Pipe® activities would generate continuous noise at entry and exit points and could last 3 to 4 weeks depending on the length of the drill and the hardness of the substrate.

Typical noise-generating equipment used at the Direct Pipe® entry sites would include:

- drill rig (i.e., pipe thruster) and engine-driven hydraulic power unit powered by an enclosed generator;

- engine-driven mud pump(s) and engine-driven generator set(s);

- drilling fluid cleaning system with engine-driven generator, and drilling fluid engine-driven pumps;

- mobile equipment including a crane, backhoe, front loader and/or side boom, forklift, trucks, welding machines;

- frac tanks; and

- engine-driven lights.

Noise associated with the Direct Pipe® exit site could result from use of the following equipment:

- backhoe, side boom, and/or truck(s);
- engine-driven generator set and engine driven pump; and
- engine-driven lights.

Transco completed an acoustical assessment of cumulative noise impacts from the proposed Direct Pipe® crossing of the Susquehanna River. Table 4.9.2-1 lists the ambient and estimated unmitigated noise levels anticipated at NSAs based on trenchless crossing activities.

TABLE 4.9.2-1

Estimated Noise Levels for Trenchless Crossing of the Susquehanna River [a]

Crossing Site	Type of NSA	Distance and Direction	Ambient (L_{dn}, dBA)	Unmitigated (dBA) DP Noise Level	Unmitigated (dBA) DP + Ambient (L_{dn})	With Mitigation (dBA) DP Noise Level	With Mitigation (dBA) DP + Ambient (L_{dn})	Increase Above Ambient
Launching NSA #1	Residence	600 ft NW	54.3	56.4	58.5	50.6	55.8	1.5
Launching NSA #2	Residence	625 ft WNW	54.3	57.0	58.9	51.2	56.0	1.7
Receiving NSA #1	Residence	550 ft NE	46.9	53.4	54.3	-	-	7.4

[a] Existing sound level at the NSA from measured ambient sound data and estimated noise impacts reported in the "Results of Pre-Construction Sound Survey and Revised Acoustical Assessment" report prepared February 11, 2022 by Hoover & Keith Inc.

DP = Direct Pipe®

As shown in table 4.9.2-1, the unmitigated Direct Pipe® noise levels for the launching site could exceed the 55 dBA L_{dn} at the NSAs, which are residences. Transco commits to reduce noise impacts on the NSAs to below 55 dBA L_{dn}. Noise mitigation measures employed at the launching site would provide noise reduction equal to or greater than installation of a temporary sound barrier (16 feet high) with three sides around the engine driven pump skids, and a noise barrier (16 feet high) around any unenclosed engine-driven generator.

Transco would perform noise monitoring during trenching activities at both the launching and receiving site and employ additional noise mitigation measures as necessary.

Compressor Station and Pipeline Construction

In general, construction activities would take place during daylight hours from 7 a.m. to 7 p.m., Monday through Saturday. However, certain activities may require extended construction hours, including preparation for performance of strength and leak testing of pipeline segments; final tie-in welds and x-rays; electrical conductor installation into conduit runs and wiring raceways (compressor stations); terminations and verifications of conductors (compressor stations); and certain pre-commissioning and commissioning activities.

Construction noise for the Project would be short-term and temporary. Based on Transco's proposed mitigation measures, we conclude that construction noise resulting from the Project would not be significant.

4.9.3 Operational Noise Impacts and Mitigation

The Project would include new and modified aboveground facilities, including Compressor Stations 195, 201, 207, 505, and 515. Modifications at Compressor Station 200 piping would not result in changes to operational noise and no other sources of operational noise are anticipated for this facility. Transco conducted ambient sound surveys and acoustical analysis for the nearest NSAs in addition to these facilities. Table 4.9.3-1 summarizes the estimated operational noise impacts at the nearest NSAs during operation of the Project.

TABLE 4.9.3-1

Estimated Noise Impacts for the Regional Energy Access Expansion Project

Facility or Project/Nearest NSAs	Distance and Direction from Facility	Projects Acoustic Impact (dBA)			
		Measured Ambient (L_{dn})	Estimated Projects Impact (L_{dn})	Total Ambient + Projects (L_{dn})	Increase Above Existing
Compressor Station 201					
NSA #1 (Residence)	600 feet SW	60.7	51.0	61.1	0.4
NSA #2 (Residence)	700 feet WNW	50.5	50.3	53.4	2.9
NSA #3 (Residence)	1,500 feet ENE	57.9	45.3	58.1	0.2
Compressor Station 505					
NSA #1 (Residence)	950 feet S	51.0	50.0	53.5	2.5
NSA #2 (Residence)	1,100 feet NNE	48.8	48.3	51.6	2.8
NSA #3 (Residence)	1,200 feet NW	48.1	47.4	51.2	2.4
NSA #4 (Residence)	1,450 feet E	48.8	45.2	49.9	1.8
Compressor Station 207					
NSA #1 (Residence)	1,700 feet WNW	52.7	-[a]	52.8	0.1
NSA #2 (Residence)	1,850 feet NW	49.7	-[a]	49.9	0.2
NSA #3 (Residence)	1,900 feet ESE	49.2	-[a]	49.4	0.2
Compressor Station 515					
NSA #1 (Residence)	1,500 feet SSE	54.6	45.1	51.2	-3.4
NSA #2 (Residence)	800 feet SW	59.2	49.0	54.5	-4.7
NSA #3 (Residence)	870 feet W	59.9	49.4	53.9	-6.0
Compressor Station 195					
NSA #1 (Residence)	500 feet ENE	50.7	-[a]	51.5	0.8
NSA #2 (Residence)	900 feet W	44.9	-[a]	45.7	0.8
NSA #3 (Residence)	1,400 feet SSW	45.8	-[a]	46.6	0.8
Hildebrandt Tie-In					
NSA #1 (Residence)	1,200 feet S	45.0	40.0	46.2	1.2
NSA #2 (Residence)	1,200 feet NW	50.0	40.0	50.4	0.4
Lower Demunds REL Tie-In					
NSA #1 (Residence)	950 feet SSW	45.0	45.0	48.0	3.0
NSA #2 (Residence)	1,550 feet SE	50.0	35.0	50.2	0.2
Carverton Tie-In					
NSA #1 (Residence)	1,450 feet W	45.0	30.0	45.2	0.2
Delaware River Regulator					
NSA #1 (Residence)	750 feet SE	45.0	42.0	46.8	1.8
Mainline A Regulator					
NSA #1 (Residence)	100 feet N	45.0	40.0	46.2	1.2
NSA #2 (Residence)	350 feet S	45.0	40.0	46.2	1.2
Mt. Laurel M&R Station					
NSA #1 (Motel)	650 feet N	60.0	50.0	60.4	0.4
NSA #2 (Motel)	750 feet E	65.0	45.0	65.0	0.0
Lawnside M&R Station					
NSA #1 (Residence)	300 feet NE	60.0	50.0	60.4	0.4
NSA #2 (Residence)	600 feet SSE	65.0	45.0	65.0	0.0
Camden M&R Station					
NSA #1 (Residence)	400 feet SE	60.0	50.0	60.4	0.4
NSA #2 (Residence)	450 feet SSE	60.0	50.0	60.4	0.4
Station 210 Pooling Point					
NSA #1 (Residence)	800 feet N	45.0	42.0	46.8	1.8
NSA #2 (Residence)	1,000 feet W	45.0	40.0	46.2	1.2

TABLE 4.9.3-1 (cont'd) **Estimated Noise Impacts for the Regional Energy Access Expansion Project**					
		Projects Acoustic Impact (dBA)			
Facility or Project/Nearest NSAs	Distance and Direction from Facility	Measured Ambient (L_{dn})	Estimated Projects Impact (L_{dn})	Total Ambient + Projects (L_{dn})	Increase Above Existing
Beaver Dam M&R Station					
NSA #1 (Park)	500 feet W	45.0	45.0	48.0	3.0
NSA #2 (Residence)	950 feet E	45.0	40.0	46.2	1.2

[a] Predicted sound level contribution for the facility calculated based off the increase in station horsepower capacity of the Project.

The noticeable noise increase threshold for the human ear is 3 dB; 5 dB is a clearly noticeable increase in noise, and an increase of 10 dB is perceived to be a doubling of noise. Although Transco's noise levels are below our standard of 55 dBA for the estimated Project impacts, low ambient noise would make noise produced by the compressor stations and pipeline facilities more noticeable. Transco commits to ensuring noise attributable to the facility would not exceed 55 dBA L_{dn} at the NSAs. The noise mitigation measures for the Project would include the use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping.

To verify the accuracy of Transco's noise estimates and ensure that noise levels due to operation of the Compressor Station 201 would not significantly impact nearby NSAs, **we recommend that:**

- **Transco should file a noise survey with the Secretary <u>no later than 60 days</u> after placing the new Compressor Station 201 in service. If full load condition noise surveys are not possible, Transco should provide an interim survey at the maximum possible horsepower load and provide the full load survey <u>within 6 months</u>. If the noise attributable to the operation of Compressor Station 201 under interim or full horsepower load conditions exceeds a L_{dn} of 55 dBA at any nearby NSAs, Transco should file a report on what changes are needed and install additional noise controls to meet that level <u>within 1 year</u> of the facility's in-service date. Transco should confirm compliance with the L_{dn} of 55 dBA requirements by filing a second noise survey with the Secretary <u>no later than 60 days</u> after it installs the additional noise controls.**

In addition, to ensure that noise levels due to operation of the modified Compressor Stations 195, 207, 505, and 515 do not significantly impact nearby NSAs, **we recommend that:**

- **Transco should file noise surveys with the Secretary <u>no later than 60 days</u> after placing in service the authorized unit(s) and uprates at Compressor Stations 195, 207, 505, and 515. If full load condition noise surveys are not possible, Transco should provide an interim survey at the maximum possible horsepower load and provide the full load survey <u>within 6 months</u>. If the noise attributable to operation of the modified stations under interim or full horsepower load conditions exceeds a L_{dn} of 55 dBA at any nearby NSAs, Transco shall file a report on what changes are needed and install additional noise controls to meet that level <u>within 1 year</u> of the in-service date. Transco shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a**

second noise survey with the Secretary <u>no later than 60 days</u> after it installs the additional noise controls.

Based on the proposed mitigation measures and our recommendations, we conclude that the noise attributable to operation of the Project would not cause a significant impact.

4.10 RELIABILITY AND SAFETY

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture.

Methane, the primary component of natural gas, is colorless, odorless, and tasteless. Methane is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000 °F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive; however, it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. Methane is buoyant at atmospheric temperatures and disperses rapidly in air.

4.10.1 Safety Standards

The DOT is mandated to provide pipeline safety under 49 U.S.C. Chapter 601. The DOT's PHMSA administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. PHMSA develops safety regulations and other approaches to risk management that ensure safety in the design, construction, testing, operation, maintenance, and emergency response of pipeline facilities. Many of the regulations are written as performance standards that set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

Section 5(a) of the Natural Gas Pipeline Safety Act provides for a state agency to assume all aspects of the safety program for intrastate facilities by adoption and enforcing the federal standards, while section 5(b) permits a state agency that does not qualify under section 5(a) to perform certain inspection and monitoring functions. A state may also act as the DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions. Pennsylvania is authorized by PHMSA under 5(a) to assume all aspects of the safety program for intrastate, but not interstate, facilities.

The DOT pipeline standards are published in 49 CFR Parts 190-199. Part 192 specifically addresses natural gas pipeline safety issues. Under a Memorandum of Understanding on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the DOT and FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of FERC's regulations require that an applicant certify that it would design, install, inspect, test, construct, operate, replace, and maintain the facility for which a Certificate is requested in accordance with federal safety standards and plans for maintenance and inspection. Alternatively, an applicant must certify that it has been granted a waiver of the requirements of the safety standards by the DOT in accordance with section 3(e) of the Natural Gas Pipeline Safety Act. FERC accepts this certification and does not impose additional safety standards. If the Commission becomes aware of an existing or potential safety problem, there is a provision in the Memorandum to promptly alert the DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee, which determines if proposed safety regulations are reasonable, feasible, and practicable.

4.10.2 Project Design Requirements

The pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification, minimum design requirements, and protection from internal, external, and atmospheric corrosion.

Safety guidelines for the design and construction of compressor stations are established in 49 CFR 192 in addition to pipeline safety standards. Part 192.163 requires the location of each main compressor building at a compressor station to be on a property under the control of the operator. The station must also be far enough away from adjacent property, not under control of the operator, to minimize the possibility of fire spreading to the compressor building from structures on adjacent properties. Part 192.163 also requires each building at a compressor station site be made of specific building materials and to have at least two separate and unobstructed exits. The station must be in an enclosed fenced area and must have at least two gates to provide a safe exit during emergency.

The compressor station safety systems for the Project would be engineered with automated control systems to ensure the stations and pipeline pressures are maintained within safe limits and would include several additional over-pressure protection systems that provide an additional layer of safety to back-up the primary controls. The stations would also have an automated emergency system that would shut down the station to prevent an incident should an abnormal operating condition occur, and, if appropriate, would evacuate the gas from the station piping at a safe location.

4.10.3 Pipeline Safety

In addition to the requirements reviewed above, the DOT also defines area classifications, based on population density in the vicinity of the pipeline, and specifies more rigorous safety requirements for populated areas. The class location unit is an area that extends 220 yards on either side of the centerline of any continuous 1-mile length of pipeline. The four area classifications are defined below:

Class 1 — Location with 10 or fewer buildings intended for human occupancy.

Class 2 — Location with more than 10 but less than 46 buildings intended for human occupancy.

Class 3 — Location with 46 or more buildings intended for human occupancy or where the pipeline lies within 100 yards of any building, or small well-defined outside area occupied by 20 or more people on at least 5 days a week for 10 weeks in any 12-month period.

Class 4 — Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas require higher safety factors in pipeline design, testing, and operation. For instance, pipelines constructed on land in Class 1 locations must be installed with a minimum depth of cover of 30 inches in normal soil and 18 inches in consolidated rock. Class 2, 3, and 4 locations, as well as drainage ditches of public roads and railroad crossings, require a minimum cover of 36 inches in normal soil and 24 inches in consolidated rock.

Class locations also specify the maximum distance between sectionalizing block valves (e.g., 10.0 miles in Class 1; 7.5 miles in Class 2; 4.0 miles in Class 3; and 2.5 miles in Class 4). Pipe wall thickness and pipeline design pressures, hydrostatic test pressures, MAOP, inspection and testing of welds, and frequency of pipeline patrols and leak surveys must also conform to higher standards in more populated areas.

The Project would be constructed through Class 1, 2, and 3 areas as summarized in table 4.10.3-1. Transco would design, test, and operate sections of its pipeline by their designated pipeline class locations, in accordance with 49 CFR 192, Subpart G. Through the life of the pipelines and aboveground facilities, changes in population density near the proposed facilities would be monitored to document that the new facilities would continue to meet the appropriate design criteria and safety standards where class locations change in accordance with 49 CFR 192, Subpart L, Sections 192.609 and 192.611. When changes in population density occur, Transco would modify the pipeline to comply with DOT requirements by replacing sections of pipe, reducing the operating pressure in the line, or taking other similar safety measures.

TABLE 4.10.3-1

Class Locations of Pipeline Facilities

Facility/Begin MP	End MP	Class Designation
Regional Energy Lateral		
0.00	2.74	1
2.74	3.03	2
3.03	6.23	1
M-0243 0.00	M-0243 0.21	1
6.48	10.20	1
10.20	10.24	3
10.24	10.60	1
10.60	13.15	3
M-0231 0.00	M-0231 0.09	3
13.26	13.38	1
13.38	13.62	3
13.62	13.73	1
13.73	14.89	3
M-0233 0.00	M-0233 0.13	3
15.02	15.23	3
15.23	15.66	1
15.66	16.02	3
16.02	16.80	1
M-0240 0.00	M-0240 0.02	1
16.82	17.88	1
17.88	17.93	2
M-0251 MP 0.00	M-0251 MP 0.24	2
18.19	18.36	1
18.36	18.42	3
M-0262 MP 0.00	M-0262 MP 0.34	3
18.76	18.95	3
18.95	19.19	1
19.19	20.05	3
20.05	20.17	1

TABLE 4.10.3-1 (cont'd)		
Class Locations of Pipeline Facilities		
Facility/Begin MP	End MP	Class Designation
20.17	20.20	3
20.20	20.34	1
20.34	20.78	2
M-0277 MP 0.00	M-0277 MP 0.26	2
21.06	21.29	2
21.29	21.38	1
21.38	21.97	2
21.97	22.32	1
Effort Loop		
43.72	47.96	3
47.96	48.29	2
48.29	48.42	1
48.42	48.69	2
48.69	48.82	1
48.82	49.13	2
49.13	49.80	3
49.80	49.88	1
49.88	54.31	3
54.31	54.76	1
54.76	55.02	2
55.02	55.11	1
55.11	55.34	2
55.34	57.38	1
57.38	57.50	2
M-0053 MP 0.00	M-0053 MP 0.03	2
57.49	57.50	2

The DOT's Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contains all the elements described in 49 CFR 192.911 and address the risks on each transmission pipeline segment. The rule establishes an integrity management program which applies to all high consequence areas (HCA).

The DOT has published rules that define HCAs where a natural gas pipeline accident could do considerable harm to people and their property and requires an integrity management program to minimize the potential for an accident. This definition satisfies, in part, the Congressional mandate for the DOT to prescribe standards that establish criteria for identifying each gas pipeline facility in a high-density population area.

The HCAs may be defined in one of two ways. In the first method, an HCA includes:

- current Class 3 and 4 locations;
- any area in Class 1 or 2 where the potential impact radius[97] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle;[98] or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.[99]

In the second method, an HCA includes any area within a potential impact circle that contains:

- 20 or more buildings intended for human occupancy; or
- an identified site.

Once a pipeline operator has determined the HCAs along its pipeline and for its facilities, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The DOT regulations specify the requirements for the integrity management plan at 49 CFR 192.911.

Table 4.10.3-2 identifies the HCAs crossed by the Project pipelines. The pipeline integrity management rule for HCAs requires inspection of the pipeline HCAs every 7 years.

On October 1, 2019 the PHMSA issued new regulations modifying and expanding the standard pipeline safety standards under 49 CFR Parts 191 and 192. These regulations, in part, established: new standards for in-line inspections; requirements for newly established moderate consequence areas (MCA); explicitly requires consideration of seismicity and geotechnical risks in its integrity management plan for the pipeline; new regulations on pipeline patrol frequency for HCAs, MCAs, and grandfathered pipelines; a policy to reconfirm MAOP for certain pipelines; installation of pressure relief for pig launcher/receivers; and report exceedances of MAOP to PHMSA. These regulations went into effect on July 1, 2020.

We received comments asserting that Transco has a poor safety record, thereby increasing the public safety risk of the REAE Project. As discussed above in section 4.10.2, our regulations require applicants to certify that projects under our jurisdiction would be designed, constructed, and operated in accordance with DOT specifications, which are specifically designed to protect pipeline operators and the public. The FERC accepts this certification and does not impose additional safety standards. The Commission reviews each project on its own merits and has siting authority for interstate natural gas infrastructure. PHMSA would be notified of and investigate all pipeline incidents and take any necessary action. Although this information is not relevant to the Commission's review of the REAE Project, pipeline operator compliance and incident history is publicly available on the PHMSA website at www.phmsa.dot.gov/pipeline.

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97 The potential impact radius is calculated as the product of 0.69 and the square root of: the Maximum Allowable Operating Pressure of the pipeline in psig multiplied by the square of the pipeline diameter in inches.

98 The potential impact circle is a circle of radius equal to the potential impact radius.

99 An identified site is an outside area or open structure that is occupied by 20 or more persons on at least 50 days in any 12-month period; a building that is occupied by 20 or more persons on at least 5 days a week for any 10 weeks in any 12-month period; or a facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate.

TABLE 4.10.3-2 **HCAs Crossed by Pipeline Facilities**			
Begin MP	End MP	HCA Type	Comments
Regional Energy Lateral			
10.55	10.60	HCA – 20+ habitation structures within potential impact radius	
10.60	13.15	Class 3 per Structures within Sliding Mile	High Occupancy Business - Market Street within Class 3 span
M-0231 MP 0.00	M-0231 MP 0.09	Class 3 per Structures within Sliding Mile	
13.26	13.26	Class 3 per Structures within Sliding Mile	
13.62	13.73	HCA – 20+ habitation structures within potential impact radius	
M-0233 MP 0.00	M-0233 MP 0.13	Class 3 per Structures within Sliding Mile	
15.02	15.23	Class 3 per Structures within Sliding Mile	10th St Elementary School within Class 3 Span
15.55	15.66	HCA – 20+ habitation structures within potential impact radius	
15.66	16.02	Class 3 per Structures within Sliding Mile	
16.02	16.09	HCA – 20+ habitation structures within potential impact radius	
18.36	18.42	Class 3 per Structures within Sliding Mile	
M-0262 MP 0.00	M-0262 MP 0.34	Class 3 per Structures within Sliding Mile	
18.76	18.95	Class 3 per Structures within Sliding Mile	
18.95	19.04	HCA – 20+ habitation structures within potential impact radius	
19.19	20.05	Class 3 per Structures within Sliding Mile	
20.17	20.20	Class 3 per Structures within Sliding Mile	
Effort Loop			
43.72	47.85	Class 3 per Structures within Sliding Mile	
47.85	47.96	Class 3 per Structures within Sliding Mile	
45.93	45.93	Identified Site	High Occupancy Funeral Home within Class 3 span
45.94	45.94	Identified Site	High Occupancy Business within Class 3 span
45.96	45.96	Identified Site	High Occupancy Health Club within Class 3 span
49.13	49.16	Class 3 per Structures within Sliding Mile	
49.16	49.80	Class 3 per Structures within Sliding Mile	
49.88	54.31	Class 3 per Structures within Sliding Mile	

4.10.4 Aboveground Facilities

Parts 192.731 through 192.736 of 49 CFR establish safety guidelines for inspection, testing, and monitoring at compressor stations. Transco would be required to inspect the facilities at least once per calendar year, at intervals not exceeding 15 months. Inspections would ensure that the facilities and pipeline system are in good mechanical condition, set to control or relieve at the correct pressure consistent with the pressure limits in Part 192.201(a), and are properly installed and protected from dirt, liquids, or other conditions that might prevent proper operation.

Part 192.163 of 49 CFR requires that each compressor station have an emergency shutdown system that must meet several specifications. The proposed compressor stations would be equipped with automatic detection and emergency shutdown systems, including:

- flame detection that uses ultraviolet sensors;
- gas detection for detecting low concentrations of natural gas;
- emergency shutdowns to isolate the gas piping, stop equipment, and safely vent station gas; and
- individual unit shutdown systems in case of mechanical or electrical failure of a compressor unit system or component.

Transco has committed to constructing all compressor stations, interconnects, mainline valves, and M&R stations to meet or exceed the specified requirements.

4.10.5 Emergencies

Under 49 CFR 192.615, each pipeline operator must establish an emergency plan that includes procedures to minimize the hazards in a natural gas pipeline emergency. Transco would develop and implement an Emergency Response Plan that would be used for its system. Key elements of the plan would include procedures for the following:

- receiving, identifying, and classifying emergency events, gas leakage, fires, explosions, and natural disasters;
- establishing and maintaining communications with local fire, police, and public officials, and coordinating emergency response;
- emergency system shutdown and safe restoration of service;
- making personnel, equipment, tools, and materials available at the scene of an emergency; and
- protecting people first and then property, and making them safe from actual or potential hazards.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency and to coordinate mutual assistance. Operators must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Transco would provide the appropriate training to local emergency service personnel before the Project is placed in service.

Transco would establish site-specific emergency procedures for the Project that would ensure, but are not limited to, the prompt and effective response to facility emergencies, annual training for appropriate operating personnel to effectively respond to an emergency, and establishing and maintaining communication with local fire, police, and other public officials. Transco would implement its existing

Public Awareness and Damage Prevention Program and provide access to its 24-hour emergency response capabilities including an emergency-only phone number.

4.10.6 Pipeline Accident Data

The DOT requires all operators of natural gas transmission pipelines to notify the National Response Center at the earliest practicable moment following the discovery of an incident and to submit a report within 30 days to PHMSA. Significant incidents are defined as any leaks that:

- cause death or personal injury requiring hospitalization; or
- involve property damage of more than $50,000, in 1984 dollars.[100]

During the 20-year period from 2001 through 2020, a total of 1,421 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide (PHMSA, 2021). Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 4.10.6-1 provides a distribution of the causal factors as well as the number of each incidents by cause.

TABLE 4.10.6-1

Natural Gas Transmission Pipeline Significant Incidents by Cause (2001-2020)

Cause		Number of Incidents [a]	Percentage
Pipeline material, weld, or equipment failure		466	32.8
Corrosion		321	22.6
Excavation		185	13.0
Natural force damage		160	11.3
All other causes [c]		119	8.4
Outside Force [b]		103	7.2
Incorrect operation		67	4.7
	Total	**1,421**	**100**

[a] All data gathered from PHMSA Significant Incident files, June 2021.
[b] Fire, explosion, vehicle damage, previous damage, intentional damage.
[c] Miscellaneous causes or other unknown causes.
Source: U.S. Department of Transportation, 2021. https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends.

The dominant causes of pipeline incidents are pipeline material, weld, or equipment failure and corrosion, which constitute approximately 55.4 percent of all significant incidents. The pipelines included in the data set in table 4.10.6-1 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, since corrosion and pipeline stress/strain are time-dependent processes. The use of both an external protective coating and a cathodic protection system,[101] required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

[100] $50,000 in April 1984 dollars is approximately $134,795 as of November 2021 (U.S. Bureau of Labor Statistics, 2021).

[101] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline through the use of an induced current or a sacrificial anode (like zinc) that corrodes at a faster rate to reduce corrosion.

Excavation, natural forces, and miscellaneous other causes are the next three most significant causes of pipeline incidents, totaling approximately 32.7 percent of significant pipeline incidents. These result from earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and miscellaneous or other unknown causes. Older pipelines have a higher frequency of outside force incidents, in part because their location may be less well known and less well marked as compared to newer pipelines. In addition, older pipelines contain a disproportionate number of smaller-diameter pipelines; which have a greater rate of outside forces incidents. Small-diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in One-Call public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The One-Call program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts. Transco would use the state One-Call system for utility line locations prior to excavation.

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 4.10.6-2 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other categories. Furthermore, the fatality rate is much lower than the fatalities from natural hazards such as lightning, tornados, or floods.

TABLE 4.10.6-2

Nationwide Accidental Fatalities by Cause

Type of Accident [a]	Annual Number of Deaths
All unintentional deaths	167,127
Poisoning	62,399
Motor vehicle	39,404
Falls	37,455
Pedestrian-vehicle crash [b]	6,205
Drowning	3,710
Fire, smoke inhalation, burns	2,972
Floods [c]	88
Tornado [c]	68
Hurricane [c]	45
Lightning [c]	41
Natural gas distribution lines [d]	9
Natural gas transmission pipelines [d]	2

[a] All data, unless otherwise noted, reflects 2018 statistics from: Murphy et al., 2021. https://www.cdc.gov/nchs/data/nvsr/nvsr69/nvsr69-13-508.pdf.

[b] National Highway Traffic Safety Administration 2019 data, Accessed June 9, 2021 https://cdan.nhtsa.gov/tsftables/National%20Statistics.pdf.

[c] Accident data presented for floods, tornados, lightning, and hurricanes represent the 30 year average of accidental deaths between 1990 and 2019 (National Oceanic and Atmospheric Administration, 2021).

[d] Accident data presented for natural gas distribution lines and transmission pipelines represent the 20-year average between 2001 and 2020 (U.S. Department of Transportation, 2021. Pipeline and Hazardous Materials Safety Administration, Pipeline Incident 20 Year Trends; Available at: https://www.phmsa.dot.gov/data-and-statistics/pipeline/pipeline-incident-20-year-trends. Accessed 6/9/2021.)

The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation.

The Project would represent a minimum increase in risk to the nearby public and we are confident that with adherence to the DOT Minimum Federal Safety Standards in 49 CFR Part 192 as well as regular monitoring and testing of the pipeline and aboveground facilities, the Project would be constructed and operated safely.

4.11 CUMULATIVE IMPACTS

In accordance with NEPA[102] and FERC policy, we evaluated the potential for cumulative impacts of the REAE Project when combined with other projects or actions in the area. Cumulative impacts represent the incremental effects of a proposed action when added to impacts associated with past, present, or reasonably foreseeable future projects, regardless of what agency or person undertakes such other actions. Although the individual impact of each separate project may be minor, the additive or synergistic effects of multiple projects could be significant. Consistent with CEQ guidelines, we have aggregated past actions that shaped today's landscape into our discussion of the affected environment in section 4. Therefore, this section focuses on present and reasonably foreseeable future actions that might contribute to cumulative effects.

This cumulative impacts analysis uses an approach consistent with the methodology set forth in relevant guidance (CEQ, 1997, 2005; EPA, 1999). Under these guidelines, inclusion of actions within the analysis is based on identifying commonalities between the impacts that would result from the Project and the impacts likely to be associated with other potential projects.

The geographic scope for each resource is unique and is generally more localized for somewhat stationary resources such as geological and soil resources; more expansive for resources with a large geographic area, such as visual impacts and air emissions; and based on jurisdictional boundaries for resources such as socioeconomics and public lands. We evaluated cumulative impacts from a geographical perspective recognizing that the proximity of other actions to the Project is a major predictor of whether cumulative impacts would occur. In general, the closer another action is to the Project, the greater the potential for cumulative impacts. Table 4.11-1 summarizes the resource-specific geographic boundaries considered in this analysis and the justification for each. Actions occurring outside these geographical boundaries were generally not evaluated because their potential to contribute to a cumulative impact diminishes with increasing distance from the Project.

To avoid unnecessary discussions of insignificant impacts and projects, and to adequately address and accomplish the purposes of this analysis, the cumulative impacts analysis for the Project was conducted using the following guidelines.

Projects and activities included in this analysis are generally those of comparable magnitude or nature of impact as the Project and impact the same resources as the Project. This would include other utility projects of a similar linear nature. For the most part, this is possible when other projects are within the same general location as the Project (i.e., within one or more of the cumulative impacts geographic scopes listed in table 4.11-1). The effects of more distant projects generally are not assessed because their impacts would typically diminish with distance and, thus, would not significantly contribute to impacts in the area of the Project. Certain exceptions may be made where a resource is regionally or nationally rare or unique and where concern for a cumulative impact is substantial. For example, an exception is air quality,

[102] On July 16, 2020, CEQ issued a final rule, Update to the Regulations Implementing the Procedural Provisions of the National Environmental Policy Act (Final Rule, 85 Fed. Reg. 43,304), which was effective as of September 14, 2020; however, the NEPA review of this project was in process at that time and was prepared pursuant to the 1978 regulations.

which can affect larger areas; thus, the geographic scope for air quality is larger than that of other resources (see table 4.11-1 and the associated discussion regarding resource-specific geographic scopes). Per EPA guidelines, project-specific analyses are usually conducted on the scale of counties, forest management units, or installation boundaries, whereas cumulative effects analysis should be conducted on the scale of human communities, landscapes, watersheds, or airsheds. As discussed in section 2.8, impacts associated with the non-jurisdictional facilities associated with the Project have been incorporated into the overall impacts of the Project, and therefore the cumulative effects of these activities are already captured in the environmental analysis in section 4 and not discussed further in the analyses below.

TABLE 4.11-1

Geographic Scope by Resource for Cumulative Impacts Associated with the Regional Energy Access Expansion Project

Resource	Geographic Scope	Justification for Geographic Scope
Geology and Soils	Construction workspaces and immediately adjacent areas	Impacts on soils and surficial geology would be highly localized and are not expected to extend much beyond the area of direct disturbance associated with the Project.
Groundwater, Surface Water, Wetlands, Aquatic Resources	HUC-12 watersheds	Watersheds are natural, well-defined boundaries for surface water flow, and commonly contribute to the recharge of groundwater resources. Impacts on groundwater, surface water resources, wetlands, and aquatic resources could reasonably extend throughout a HUC-12 watershed (i.e., a detailed hydrologic unit that can accept surface water directly from upstream drainage areas and indirectly from associated surface areas such as remnant, noncontributing, and diversions to form a drainage area with single or multiple outlet points, as could the related impacts on aquatic resources and fisheries).
Vegetation, Wildlife, Special Status Species	HUC-12 watersheds	Consideration of impacts within a HUC-12 watershed sufficiently accounts for impacts on vegetation and wildlife (including special status species) that would be directly affected by construction activities and for indirect impacts such as changes in habitat availability and displacement of transient species.
Land Use	Within 1 mile of construction workspace	Impacts on general land uses, including public recreational areas, would be restricted to the construction workspaces and the adjacent landscape up to 1 mile where indirect impacts could occur.
Visual Resources	Within 0.25 mile of pipelines and 0.5 mile of aboveground facilities	Assessing the impact based on the viewshed allows for the impact to be considered with any other feature that could have an effect on visual resources.
Socioeconomics	Counties where Project activities are proposed	The geographic scope of potential impact for socioeconomics was considered to include the counties affected by the Projects where most workers would be expected to reside during construction and operation of the Project. Affected counties would experience the greatest impacts associated with employment, housing, public services, transportation, traffic, property values, economy and taxes.
Environmental Justice	Block groups affected by the project.	The geographic scope of potential impacts for environmental justice includes all block groups affected by the Project.
Cultural Resources	APE, which typically includes overlapping impacts within the Project's footprint (direct) and within 0.25 mile of aboveground facilities (indirect)	The impact area for direct effects (physical) includes areas subject to ground disturbance, while indirect effects (visual or audible) include aboveground ancillary facilities or other project elements that are visible from historic properties in which the setting contributes to their NRHP eligibility.
Air Quality – Construction [a]	Within 0.25 mile of all active construction (pipeline, road crossing, aboveground facilities)	Air emissions during construction would be limited to vehicle and construction equipment emissions and dust, and would be localized to the Projects' active construction work areas and areas adjacent to these active work areas.

TABLE 4.11-1 (cont'd)		
Geographic Scope by Resource for Cumulative Impacts Associated with the Regional Energy Access Expansion Project		
Resource	Geographic Scope	Justification for Geographic Scope
Air Quality – Operation [a]	50 kilometers (about 31.1 miles) from aboveground compression facilities	We adopted the distance used by the EPA for cumulative modeling of large PSD sources during permitting (40 CFR 51, appendix W), which is a 50-kilometer radius. Impacts on air quality beyond 50 kilometers (31.1 miles) would be *de minimis*.
Noise – Construction	NSAs within 0.25 mile of any construction and within 0.5 mile of compressor stations and HDD/Direct Pipe activities	Areas in the immediate proximity of pipeline or aboveground facility construction activities would have the potential to be affected by construction noise. NSAs within 0.5 mile of an HDD/Direct Pipe could be cumulatively affected if other projects had a concurrent impact on the NSA.
Noise – Operation	NSAs within 1 mile of a noise-emitting permanent aboveground facility	Noise from the Projects' permanent aboveground facilities could result in cumulative noise impacts on NSAs within 1 mile.

[a] We note that GHGs do not have a localized geographic scope. GHG emissions from the Project combined with projects all over the planet lead to increased CO_2, methane, and other GHG concentrations in the atmosphere.

The timeframe within which another planned, proposed, or ongoing project occurs could also result in a cumulative impact relative to the Project depending on whether the impacts are temporary, short term, long term, or permanent. Once the effects cease, there is no longer a cumulative effect associated with the Project. As discussed in the preceding environmental analysis, most of the Project's impacts are temporary or short-term. Notable exceptions are forest clearing, operational noise and air emissions, as well as land use conversion for aboveground facilities, which are either long term or permanent. Impacts from older projects (completed 5 or more years ago) are considered to have been mitigated over time, with the disturbed environment having become part of the baseline character of the region described in the affected environment for each resource. As such, we have considered the impacts associated with past projects that have resulted in permanent impacts on a resource or were constructed less than 5 years ago and are currently being restored.

We have also considered how concurrent (present) and reasonably foreseeable future projects would contribute further to the cumulative impact of the Project. The potential for cumulative impacts associated with the Project would be greatest during the construction phase for the pipelines and throughout construction and operation of the aboveground facilities. The potential long-term cumulative impacts associated with the operation of the Project and other actions (i.e., cumulative impacts extending well beyond the period of construction of a project) such as effects related to forest loss, noise and air emissions from the aboveground facilities, and the conversion of land from one type to another. For these resources, we expanded the temporal range of our cumulative impact analysis.

Both positive cumulative impacts (i.e., new jobs and tax revenues) and negative cumulative impacts (i.e., contribution to ongoing air emissions) were identified in the analysis. Where we determined that a potential for cumulative impacts exist, we quantified the impacts to the extent practicable. However, in some cases the potential impacts can only be described qualitatively. This is particularly the case for projects in the planning stages, which may be contingent on economic conditions, availability of financing, and/or the issuance of permits, or projects for which there is a lack of available information.

4.11.1 Projects and Activities Considered

Our cumulative impacts analysis looks at the potential impacts of other actions as described in relevant guidance. NEPA requires reasonable forecasting, but an agency is not required to engage in speculative analysis or to do the impractical, if not enough information is available to permit meaningful consideration. The scope of the cumulative impact assessment depends in part on the availability of information about other projects. For this assessment, other projects were identified from information provided by Transco; field reconnaissance; online research; FERC staff's knowledge of other planned, pending, and ongoing jurisdictional natural gas projects; communications with federal, state, and local agencies; and via comments received during the public scoping period. Cumulative impacts were typically derived from our approximation of project boundaries as interpreted from publicly available project descriptions, maps, and aerial photography.

Table C-16 in appendix C and figure 4.11.1-1 summarize the present and reasonably foreseeable projects or actions that occur within the geographic scope of each resource area as defined in table 4.11-1.

4.11.2 Cumulative Impacts of FERC-Jurisdictional Projects

Table 4.11.2-1 lists the general environmental impacts associated with FERC-regulated projects within the cumulative geographic scope area. Cumulative impacts were derived from FERC-issued environmental documents (i.e., EIS or EA) or applicant-prepared reports provided as part of the application or pre-filing materials, which can be quantified. The impacts listed reflect those associated with the entire project and not just those associated with impacts within the cumulative impacts area (e.g., HUC-12 watershed).

TABLE 4.11.2-1

Environmental Impacts Associated With FERC-Regulated Projects within the Geographic Scope Area [a]

	Impacts (acres) – Soils, Vegetation, Land Use		Prime Farmland Impacts – Permanent (acres)	Number of Waterbodies Crossed	Wetland Impacts (acres)		Forest Impacts (acres)		No. of Likely to Adversely Affect Species
Project Name	Con.	Op.			Temp.	Perm.	Temp.	Perm.	
Transco Atlantic Sunrise Project	3,741.0	1,235.4	84.3	388	46.3	8.3	1,043.2	425.8	0
Transco Leidy South Project	196.7	20.0	26.3	19	5.7	0.6	61.1	14.5	0
PennEast Pipeline Project	1,588.4	788.3	351.3	269	35.8	19.9	220.6	63.6	5
Adelphia Gateway	46.7	21.5	5.3	2	0.8	0.1	3.4	1.4	0

[a] Quantitative data are approximate and based on information presented in a FERC-issued EIS or EA.

The identified FERC-jurisdictional projects would be constructed and maintained in accordance with general measures similar to those that are described throughout section 4 of this EIS. Our additional recommended mitigation measures for each project, as applicable, and other construction, operation, and mitigation measures that may be required by federal, state, or local permitting authorities (see table 1.4-1), would further reduce the potential for cumulative impacts.

Most cumulative impacts with the other FERC-jurisdictional projects would likely be limited to the areas where construction and operational pipeline rights-of-way overlap. The fact that certain resources, such as soils, were previously disturbed and are just re-impacted (not additive), or the impact has ceased to exist, often result in minimal to no cumulative impact. For additional aboveground facilities at existing facilities, the impacts are often re-impacting the same resources, or the resource has already been impacted. The exception would be visual, air, and noise impacts, which could cumulatively be impacted with additional facilities.

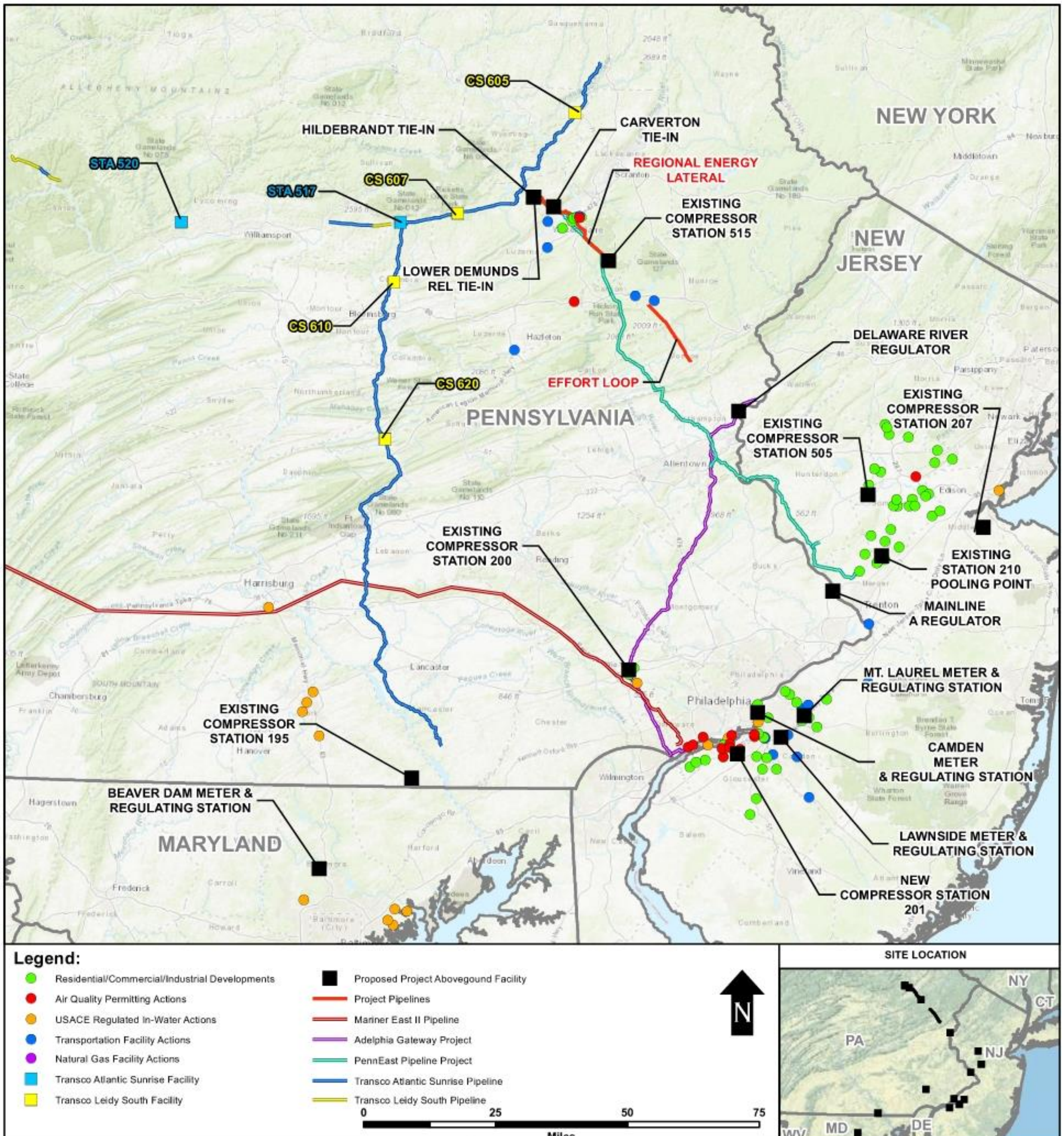

Figure 4.11.1-1
Regional Energy Access Expansion Project
Actions Considered in Cumulative Impacts Analysis

The PennEast Project was the only FERC-regulated project that was expected to overlap with the proposed REAE Project. However, on December 16, 2021, FERC vacated the certificate authorization granted to PennEast for the PennEast Project, including the 2019 Amendment and 2020 Amendment Application. Therefore, the PennEast Project would not be constructed and would not have a cumulative impact in association with the proposed Project.

Figure 4.11.1-1 depicts the Adelphia Gateway Project overlapping with the existing Delaware River Regulator in Northampton County, Pennsylvania. The Adelphia Gateway pipeline depicted on figure 4.11.1-1 is an existing pipeline that was purchased as part of the project, and no new construction or operational impacts would occur where these facilities overlap.

4.11.3 Potential Cumulative Impacts by Resource

The following sections address the potential cumulative impacts on specific environmental resources from the Project and the other projects identified within the cumulative geographic scope area. As requested by commentors, we have included all current and reasonably foreseeable projects proposed by Transco in the geographic scope area in our analysis.

4.11.3.1 Geology and Soils

The primary cumulative impacts on current geologic and soils conditions include the installation of aboveground facilities and impervious surfaces and construction activities such as clearing, grading, trench excavation, blasting, and backfilling. Drilling and boring activities could also physically alter geologic materials along a very narrow or discrete subsurface path. Alterations in surficial geology and soil conditions could result in or create a future landslide; however, the risk associated with landslides is low in geographic scope area, and these effects would be largely localized to disturbed and adjacent areas. Transco does not anticipate that any blasting would be required for the construction of the pipeline facilities and, following construction, would restore topographic contours along the pipeline rights-of-way to preconstruction conditions.

Cumulative impacts on soil and geologic resources from pipeline or other linear utility projects, and ongoing natural gas development in the region (i.e., natural gas wells), would be similar to that described in sections 2.3 and 2.6. Most impacts would be incremental, but repeated impacts would occur when activities are within the same work areas but at different timeframes. Repeated impacts may not be considered cumulative if the soils from the earlier projects are restored to pre-construction conditions prior to the disturbance of the next project.

We note that FERC-regulated projects would implement FERC's Plan and Procedures to protect soil resources and minimize incremental impacts on soils. Other utility projects that require soil and/or stormwater management plans by local or state regulatory agencies would also implement procedures to protect soil resources. These measures might include the installation of erosion and sedimentation control devices during and after construction and ensuring proper restoration and revegetation of disturbed areas. As a result, most pipeline and utility project-related impacts on soils would be temporary to short term and minor.

The installation of aboveground facilities and impervious surfaces would have the largest and most notable cumulative impact on soils. The residential, commercial, and industrial developments; road construction and widening projects; and parking lot installations that are listed in table C-16 in appendix C, as well as the impacts associated with the Project's proposed permanent facilities; has resulted in significant landscape development and is a primary factor in route selection for the project (i.e., the avoidance of developed areas). However, most projects are outside the geographic scope of the analysis. As such, construction and operation of the Project and the other projects in the geographic scope area would continue to contribute to cumulative impacts on geologic and soil resources.

4.11.3.2 Groundwater

Several projects from table C-16 in appendix C share the same geographic scope areas with the proposed Project and would have similar impacts to those described in section 4.3.1. The most likely cumulative impacts on groundwater are turbidity caused by the shallow excavations, reduced groundwater recharge caused by the installation of impervious structures, and the appropriation of groundwater for construction or operational activities. The Project's impact on groundwater resources would likely be much more localized due to the limited horizontal and vertical extent of construction, the limited use of blasting, the temporary appropriation of groundwater, and implementation of various plans to limit erosion and sedimentation, reduce compaction, restore pre-existing grades and vegetation, protect nearby water supply wells and springs, and prevent and minimize fuel and hazardous materials spills. The impacts from the Project would be further reduced by implementing measures in Transco's Plan and Procedures that minimize erosion and sedimentation, reduce compaction, and restore pre-existing grades and vegetation; as well as by measures in Transco's Spill Plan that would be implemented to prevent and respond to spills.

Most of the projects included in table C-16 in appendix C that are near the Project either have or would be required to obtain water use and discharge permits, implement erosion and sediment controls, and adhere to various Spill Plans as mandated by federal and state agencies, as appropriate. Natural gas wells in Pennsylvania must also be sited at least 500 feet from water wells, 1,000 feet from a water supply extraction point, and 300 feet from a spring. These setbacks provide an increased degree of protection for public and private water supplies. All FERC-regulated projects would mitigate for potential contamination of wells due to accidental spills or leaks of hazardous materials associated with vehicle refueling, vehicle maintenance, and storage of construction materials by adhering to FERC's Plan and Procedures and project-specific plans, which include spill prevention and containment measures to minimize potential impacts on groundwater resources. For these reasons, we anticipate that the Project would only contribute to minor and temporary cumulative impacts on groundwater. However, when combine with other projects, the incremental increase in impervious surface and water withdrawals would have only a minor cumulative impact on groundwater and aquifer recharge and volume.

We received comment from the DRN that construction and operation of Compressor Station 201 could exacerbate contamination cause by the Solvay Site in West Deptford, New Jersey. The Solvay Site is located 1.5 miles to the north of the proposed Compressor Station 201 site and contamination includes chlorinated fluorocarbon and polyvinylidene fluoride. There are two areas of the Solvay Site where groundwater contamination is present. The dredge spoils area at the north edge of the site had unconfined groundwater that generally flows northerly and easterly toward the Delaware River, away from the proposed Compressor Station 201 site. The VOC area in the southern portion of the Solvay Site has groundwater flow generally towards the south-southeast towards the proposed Compressor Station 201 site (EPA, 2003). Due to the Solvay Site's distance from the proposed compressor station, it is unlikely that contaminated groundwater would be encountered during construction of the site, or any alternative compressor station site described in section 3.5.2. However, should contaminated media (i.e., soil or groundwater) be encountered during construction, Transco would implement its Unanticipated Discovery of Contamination Plan. As outlined in the plan, the contractor(s) would stop work in the area; restrict access to the site; and notify the chief inspector, an EI, the Operations Manager, the FERC project manager, and an appropriate Transco field environmental safety specialist. The contractor would contain the contaminant and collect samples of the soil or groundwater for analysis. Depending on the results of the analysis, a site-specific plan for completing construction within the contaminated area would be prepared in accordance with applicable environmental regulations and in coordination with the appropriate agency(ies). Contaminated groundwater would not be discharged without state approval and contaminated soils would be characterized and disposed of properly at a permitted facility in a timely manner and documented with the appropriate agency(ies). We conclude that construction and operation of Compressor Station 201 would not exacerbate contamination cause by the Solvay Site.

4.11.3.3Surface Water

Several projects from table C-16 in appendix C are within the cumulative geographic area for surface waters. Cumulative impacts on surface waters from projects and actions identified in table C-16 in appendix C would dissipate the farther they occur from the Project.

Construction of the Project and other projects in the cumulative impacts area could have direct and indirect impacts on surface water quality and flow, as well as on fish and other organisms that inhabit affected waters. These impacts could include increased sedimentation, turbidity, decreased dissolved oxygen, impaired flow, releases of chemicals and nutrient pollutants, reduced riparian cover, thermal changes, modification of habitat, and fish injury or mortality. In addition, DRN in its comments on the draft EIS expressed concern that expected increases in water temperature in trout streams associated with climate change could cause further thermal impacts to affected fish populations. Most impacts, such as increased turbidity, would individually result in temporary to short-term impacts because they would return to baseline levels over a period of days or weeks following construction. Long-term impacts would include sedimentation that remains in the river system and the loss or alteration of riparian habitat. The Project and other FERC-regulated pipeline projects would, for the most part, cross waterbodies with dry-ditch crossing methods in compliance with the FERC Procedures, including installation of erosion controls to prevent sedimentation and elevated turbidity, and would not contribute to the historic degradation of waterbodies in the region.

Increased sedimentation and turbidity resulting from potential run-off from the adjacent construction workspace and use of access roads would be minimized through implementation of erosion control measures at the edges of the workspace and access roads. As other projects in the area complete construction activities, the impacts from sedimentation and turbidity would cease and restoration activities would ensure bank vegetation resumes, per appropriate permit requirements, lessening the potential for long-term effects on waterbodies. Therefore, after active construction has ended, most of the impacts on waterbodies have already ceased to exist with projects that are in restoration. Other projects (e.g., wells, road improvement) would likely be required to install and maintain BMPs required by federal, state, and local permitting authorities to minimize impacts on waterbodies. Other projects crossing Waters of the United States would also need to comply with USACE requirements. Therefore, most of the impacts on waterbodies are expected to be of short duration and/or permittable under regulations implemented by the USACE.

Hydrostatic testing of the pipeline facilities and at the compressor stations would require the use of approximately 4.4 million gallons of water from the Susquehanna River. Transco would follow federal, state, and local permit requirements with regard to water withdrawal and discharge and ensure that adequate flows are maintained. It is our assumption that other projects would also need to follow federal, state, and local permit requirements, including maintenance of adequate flows, preventing a significant cumulative water use impact.

Once active construction is completed, the short-term impacts from other projects in the area would dissipate, however, the long-term impacts from potential sedimentation and loss of riparian habitat could contribute to cumulative impacts. Given that most waterbodies in the geographic scope would be affected at different times than the proposed project, many of the other project include the maintenance of existing structures in waterbodies, and most impacts from the other projects would either be mitigated via state and federal permitting requirements, such as the installation of BMPs, or cease to continue to impact the waterbodies (impacts are not within the same temporal scope), we conclude that construction and operation of the Projects and other projects in the area would not result in significant cumulative impacts on surface water resources, fish, and other aquatic resources in the area.

4.11.3.4Wetlands

The Project's effects on wetlands are described in section 4.3.3. Construction of the Project would impact a total of approximately 16.7 acres of wetlands, consisting of 10.7 acres of emergent wetland, 1.4 acres of scrub-shrub wetland, 4.6 acres of forested wetlands, and a fractional amount of open water wetland. Of the 4.6 acres of forested wetland impacts, approximately 2.6 acres are located within the permanent pipeline easement and could be impacted by operation and maintenance of the pipeline, and 1.6 acres are located within the portion of the pipeline right-of-way that would be converted to emergent wetland for vegetation maintenance requirements along the pipeline facilities.

We estimate that the projects in table C-16 in appendix C would affect numerous wetlands within the same watersheds as the proposed Project. Table 4.11.2-1 identifies the wetland impacts that would result from FERC-regulated project. We were unable to find quantitative data for the extent of impacts on wetlands from non-FERC regulated projects (e.g., wells, USACE projects, road improvement projects, development projects). Most construction-related impacts on wetlands range from temporary to permanent, depending on the proposed action/facility and type of wetland impacted. For example, impacts on palustrine emergent wetlands from pipeline construction would be temporary because they would return to original emergent function and value shortly after construction; impacts on palustrine scrub-shrub wetlands from pipeline construction would be short to long term because they would take 3 to 5 years to return to original scrub-shrub function and value; and impacts on palustrine forested wetlands from pipeline construction would be long term because trees would take from 3 to 50 years or longer to become reestablished, and trees would not be allowed to become reestablished directly over the pipeline. There would also be a permanent loss of some wetland habitat where aboveground facilities or roads would be placed and operated.

Most oil and gas well projects are expected to avoid direct wetland impacts because their facilities are at discrete locations (versus long linear features), are small (e.g., 3.5 acres), and relatively flexible in placement (not dependent on connecting to another existing facility). USACE regulated in-water activities are by nature likely to impact wetlands and open water resources and would result in temporary and permanent wetland impacts. Road projects and residential and industrial development projects are expected to result in temporary and permanent wetland impacts because of their linear nature and inflexible construction limits. Indirect wetland impacts could result from these projects due to storm runoff from disturbed areas during construction.

Wetlands are broadly regulated under the CWA, and avoidance, minimization, compensation, and/or replacement would be required by the USACE for most impacts. Transco, as well as the proponents of the other projects in the watersheds as the Project, would need to obtain or have already obtained applicable permits from the USACE and/or the PADEP. Accordingly, as part of the permitting and approval process, Transco and the other project proponents would prepare wetland mitigation plans and provide compensatory mitigation for non-exempt wetland impacts. Transco is coordinating with the USACE to determine whether compensation for wetland impacts are required for the Project. Lastly, each of the FERC-regulated projects would minimize impacts on non-farmed wetlands by implementing the measures in our Plan and Procedures (or variations that provide equal or greater protection), and we anticipate that the majority of the FERC-jurisdictional projects' wetland impacts within the same watershed as the Project are either no longer ongoing (i.e., the wetland has already been restored) or have been appropriately mitigated.

Based on the expected wetland mitigation, compliance with Transco's Procedures, the Project's anticipated mitigation for wetland losses, and the fact that other FERC-jurisdictional project impacts on wetlands have already occurred and those impacts are trending back towards a restored status, the Project when combined with other projects in the cumulative impacts area would not have substantial impact on wetlands and the contribution to cumulative effects would be limited and minor.

4.11.3.5Vegetation and Wildlife

Project activities such as clearing, grading, and installation of impervious surfaces (e.g., compression station pads, access roads) would remove vegetation, alter wildlife habitat, fragment habitat, displace wildlife, and result in other potential secondary effects, such as increased population stress, predation, and the establishment or spread of invasive species. These effects would be greatest where the other projects are constructed within the same timeframe and areas as the Project, as described in section 4.11.1. However, even construction that does not overlap temporally can have cumulative effects, as it takes time for vegetation/habitat to return to a preconstruction state, especially forested habitats that could take up to 50 years or longer to become reestablished and would not be allowed to become reestablished directly over the pipeline. If areas that were previously disturbed by the FERC-jurisdictional projects were or are restored to preconstruction vegetation type/habitat before construction begins on the Projects, we would not anticipate any additive cumulative impacts.

Based on available information, operation of the Project and other FERC-regulated actions in the cumulative impacts area would permanently affect 2,065 acres of land (see table 4.11.2-1). The overall footprint of FERC-regulated actions, in combination with the other identified projects within the cumulative impact area, would result in the disturbance of thousands of acres of wildlife habitat including forested habitat that would either recover over the long-term in temporary workspaces or would be converted to herbaceous or shrub-scrub habitat in the permanent rights-of-way. The addition of new linear rights-of-way or the widening of existing rights-of-way would increase habitat fragmentation and edge effects, which are permanent effects that result from vegetation maintenance along utility rights-of-way. A number of existing utility rights-of-way, along with other planned projects, would contribute to these cumulative impacts. This would reduce habitat available to species that prefer deep forests, while increasing habitat for species that prefer open areas and edge habitat. Other projects in the cumulative impacts area such as road improvements and development projects would increase vegetation removal and have cumulative direct and secondary impacts on wildlife.

Most projects would presumably restore areas temporarily disturbed by construction, thereby minimizing some permanent impacts on wildlife and wildlife habitat. However, most of the projects in the cumulative affects area would result in permanent land development or operational maintenance clearing; therefore, impacts would be permanent and cumulative. The overall magnitude of this impact on vegetation and wildlife habitat relative to the total amount of vegetated land within the affected cumulative impact area is minor; however, we acknowledge that this is a snapshot in time and when past projects are considered, the cumulative impact on vegetation in the cumulative impacts area is significant.

Invasive species often flourish in areas where vegetation has been disturbed. Other projects that are adjacent to or cross the Project could potentially lead to a greater spread of invasive vegetation. Transco have developed project-specific invasive plant species control plans in coordination with the appropriate regulatory agencies to minimize the Project's contribution to invasive species infestations. Other FERC-regulated pipeline projects in the cumulative impacts area also have similar plans to manage the spread of invasive species.

Cumulative impacts on vegetation and wildlife resulting from the Project and other projects would be considered minor to moderate, and when past projects are considered, significant. Impacts would be moderate where the pipelines or roads would create a new cleared and maintained rights-of-way and development projects clear larger expanses of land adjacent to or outside urban settings where wildlife would be more abundant.

4.11.3.6Special Status Species

The ESA prohibits the take of any threatened and endangered species except under federal permit or take statement. A federal permit or take statement is issued only if individual and cumulative impacts on a listed species are not significant. As such, the other federal projects in the cumulative impacts area are required to comply with section 7 of the ESA to ensure construction and operation of the facility would not jeopardize the continued existence of federally listed species. Non-federal projects are also required to adhere to section 10 of the ESA, although the FWS has a different mechanism for evaluating and minimizing impacts.

As discussed in section 4.4.4.3, we have determined that the Project would have *no effect* on one federally listed species or their critical habitat, and *would not adversely affect* five federally listed species and/or their designated critical habitats. These determinations are based on consultations with the FWS and commitments from Transco to adopt species-specific avoidance or conservation measures recommended by the FWS. As such, no additional mitigation is proposed, and the Project would not contribute to significant cumulative impacts on these species. Similar ESA consultations and conservation have been completed for the other FERC-regulated pipeline projects in the cumulative impacts area.

Protection of threatened, endangered, and other special status species is part of the various state permitting processes or resource reviews for projects, such as well development, USACE projects, road improvements, and development projects. As such, cumulative impacts on such species have been specifically considered and reduced or eliminated through conservation and mitigation measures identified during those relevant processes and consultations.

4.11.3.7Land Use, Visual Resources, and Recreation

The construction and operation of the Project and other past, present, and reasonably foreseeable actions would require the temporary and permanent use of land, which would result in temporary and permanent impact/conversion of land use. Similar to vegetation (see section 4.11.3.5), cumulative impacts on land uses from the Project and other projects in the cumulative impacts area could occur from construction activities such as clearing, grading, and construction of buildings, structures, and/or impervious surfaces (e.g., building pads, access roads). The duration of impacts on land use would depend on the type of land cover affected and the rate at which the land can be restored to its preconstruction use and condition after construction. Pipeline project impacts on residential land, commercial/industrial land, and open water would be temporary because they would return to their preconstruction uses and conditions almost immediately after construction. Pipeline project impacts on agricultural land, open lands and emergent wetlands would be short to long term because those areas likely would require 1 to 5 years to regain preconstruction use and composition. Pipeline project impacts on forest/woodland and forested wetlands would be long term or permanent because trees could take up to 50 years or longer to become reestablished and would not be allowed to become reestablished in directly over the pipeline. Construction of the FERC-regulated projects (Atlantic Sunrise, Leidy South, and Adelphia Gateway) would temporarily affect 1,328 acres of forest land and permanently affect 505 acres of forest land as a result of maintaining the operational pipeline rights-of-way. Most of the projects in the cumulative affects area include new buildings, structures, and/or impervious surfaces, when combined with new pipeline easements, would permanently change the underlying land use on thousands of acres of land. As stated previously, the Project area has been development in many areas and is a primary factor in route selection for the project (i.e., the avoidance of developed areas).

The Project's facilities would add incrementally to the cumulative visual impacts through the clearing of vegetation and installation of aboveground facilities, but the overall contribution would be relatively minor given the majority of the Project's facilities as well as the other FERC-regulated pipeline projects in the cumulative impacts area would be buried (i.e., the pipeline) and adjacent to existing rights-of-way. About 60 percent of the Regional Energy Lateral and 100 percent of the Effort Loop would be within or adjacent to existing rights-of-way, or where other rights-of-way easements exist. Collocation with existing utility or transportation corridors would contribute to widening existing corridors but would have fewer visual impacts than creating a new corridor. The corridors would be revegetated, thereby limiting the duration of many of the visual impacts associated with construction.

The primary long-term cumulative visual effects of the Project and other projects in the cumulative impacts area would be the new structures or new permanent roads through the landscape. The Project includes modifications to several existing aboveground pipeline facilities and the addition of facilities adjacent to existing pipeline facilities, where visual impacts would be incremental and minor. The additional of Compressor Station 201 would have the most notable structural visual impact on the Project. The station would be constructed and operated in an urban setting adjacent to a tank farm, solar field, and residential and commercial developments. The commonality of development in the area may lessen the visual impact of this facility on the public but affirms the magnitude of development that has already impacted the landscape in this area. Some projects would provide a positive cumulative impact such as road projects that improve transportation and residential development which provides better housing opportunities for the community.

Cumulative impacts on land use, visual resources, and recreation from the projects and actions identified in table C-16 in appendix C would dissipate the farther they occur from the Project.

The Project crosses or is within 0.25-mile of several recreational and special interest areas (refer to table C-14 in appendix C). The overall magnitude of these impacts is related to the land use and vegetation types affected, but overall the impacts would be minor as most land use and vegetation types would be allowed to revert to preconstruction conditions, with the exception of forest land within the operational right-of-way or at aboveground facilities, as discussed in section 4.11.3.5 and above. Access to recreational and special interest areas could temporarily be restricted to the public during active construction of the projects. No permanent impacts from aboveground facilities would occur on recreational or special interest areas. Most recreational impacts from projects that have already be constructed and are undergoing restoration or have been restored would be expected to have returned to preconstruction conditions by the time construction of the Project begins, resulting in minimal to no cumulative impacts. Therefore, any contribution to cumulative impacts on recreation would be negligible as a result of construction and operation of the Project when combined with other projects and actions in the cumulative impacts area.

4.11.3.8 Cultural Resources

The projects in table C-16 in appendix C that are within the cumulative impacts area for cultural resources include those that overlap the Project's workspace or, for indirect effects, are closely adjacent. Those that are defined as federal actions (e.g., all FERC-regulated projects) would have to adhere to section 106 of the NHPA and include mitigation measures designed to avoid or minimize additional impacts on cultural resources. Where impacts on significant cultural resources are unavoidable, mitigation (e.g., recovery of data, curation of materials) would take place before construction. Non-federal actions would need to comply with any mitigation measures required by the state.

Cultural resources surveys have been completed for the Project and the Project would not adversely affect historic properties. Transco has developed Project-specific plans to address unanticipated discoveries of cultural resources and human remains during construction for the proposed Project; similar plans have been prepared by the project proponents of the other FERC-regulated projects. Given the state and federal laws and regulations that protect cultural resources mentioned previously, it is not likely that there would be significant cumulative impacts on historic properties resulting from the Project when considering the other projects in the cumulative impacts area.

4.11.3.9Socioeconomics

Although the timing of many of these projects in table C-16 in appendix C are unknown, impacts on population and employment, demand for housing and public services, transportation, and government revenue from sales and payroll taxes would generally be temporary and primarily limited to the period of construction. These impacts would increase if more than one project is built at the same time. Most of the projects in the cumulative impacts area are small and would utilize local workforce, which would not alter housing, transportation, and public service demands. With the exception of Compressor Stations 201, 505, and 515, modifications at existing above ground facilities would be brief and require a small workforce, and no noticeable socioeconomic effect would be noticed within these counties.

If a larger road project were to occur at the same time and general location as the Project, an influx of construction workers could temporarily strain housing and increase the demands on some public services, such as police, fire, and medical services. The increase in construction workforce would also spike employment levels (assuming a percentage of the local population is utilized) and the local economy and would have a beneficial, short-term impact on employment, local goods and service providers, and state and local governments in the form of sales tax revenues.

Construction of the Projects could result in temporary impacts on road traffic in some areas and could contribute to cumulative traffic impacts if other projects are scheduled to take place at the same time and in the same area. As previously mentioned, the Transco Atlantic Sunrise Project has already been constructed. The Adelphia Gateway Project is currently being constructed and would likely be completed prior to the start of the proposed Project. If both projects occur at the same time, road use in Luzerne County would be cumulatively affected throughout construction.

Transco would use the local road and highway network to access the construction right-of-way, to the extent practicable. It is likely the other projects listed in table C-16 in appendix C would also use existing public roads. Increased use of local roadways from multiple projects could accelerate degradation of roadways and require early replacement of road surfaces. Transco and the other project sponsors in the geographic scope of influence would be required to adhere to local road permit requirements (which may have provisions for road damage repairs or compensation) and road weight restrictions. Therefore, the Project when combined with the other projects in the cumulative impacts area would not contribute to any long-term cumulative impact on the transportation infrastructure because only a small number of new permanent employees would be required to operate the Project. However, the residential, commercial, and industrial development projects in the cumulative impact area will have an incremental and cumulative impact on transportation needs in the area. The number of road improvement projects listed in table C-16 in appendix C affirm the need for improved transportation infrastructure.

4.11.3.10 Environmental Justice

Based on the scope of the Project and our analysis of the Project's impacts on the environment as described throughout this EIS, we have determined Project-related impacts on visual resources, socioeconomics, traffic, noise, and air quality may adversely affect the identified environmental justice communities. Therefore, cumulative impacts on environmental justice communities could occur for these resources. Cumulative impacts on environmental justice communities are not present for other resource areas such as geology, groundwater, wetlands, wildlife, or cultural resources due to the minimal overall impact the Project would have on these resources. Projects included in the consideration of cumulative impacts are listed in table C-17 in appendix C.

The Project's facilities would contribute to cumulative visual impacts through the clearing of vegetation and installation of aboveground facilities. All but one of the aboveground facilities (Compressor Station 201) involve modifications to existing facilities. In the short term, visual impacts on environmental justice communities due to the addition of Compressor Station 201 would be significant. Long term visual impacts on environmental justice communities, once the plantings are established, would be less than significant. The overall contribution of the Project to cumulative visual impacts would be relatively minor given a majority of the Project's facilities and the other FERC-regulated pipeline projects within the geographic scope would be below ground (i.e., pipeline facilities) and adjacent to existing rights-of-way. The Project's facilities along with projects listed in table C-17 in appendix C that fall within environmental justice communities would contribute to cumulative visual impacts on environmental justice communities.

Impacts on population and employment, demand for housing and public services, and government revenue from sales and payroll taxes would generally be temporary and primarily limited to the period of construction. These impacts could contribute to cumulative impacts on these resources should more than one project from table C-17 in appendix C be built at the same time. An influx of construction workers associated with projects that fall within environmental justice communities could temporarily increase demand for housing and increase calls for public services, such as police, fire, and medical services. The increase in construction workforce would also have a beneficial, short-term impact on employment, local goods and service providers, and state and local governments in the form of sales tax revenues. The Project along with the projects listed in table C-17 in appendix C would contribute to both beneficial and adverse cumulative socioeconomic impacts on environmental justice communities. Due to the temporary nature of these impacts, impacts on environmental justice communities would be less than significant.

Construction of the Project, along with the projects identified in table C-17 in appendix C, could result in temporary impacts on road traffic and could contribute to cumulative traffic impacts if other projects in table C-17 in appendix C are scheduled to take place at the same time within the same geographic scope. Depending on the location of the project facility, this increased traffic would impact individuals from environmental justice communities. A traffic mitigation plan would be implemented to minimize overall traffic impacts. With mitigation, overall cumulative traffic impacts on environmental justice communities would be less than significant.

Construction of the Project, along with the projects identified in table C-17 in appendix C, would temporarily increase air quality impacts surrounding the construction workspaces due to emissions from the combustion engines used to power construction equipment, vehicle emissions traveling to and from the construction sites, and fugitive emission dust resulting from equipment movement on dirt roads and earth-disturbing activities. The potential for cumulative construction emissions impacts would be greatest during site preparation when fugitive dust production would likely be at its peak should projects from table C-17 in appendix C be constructed at the same time. Construction emissions would cease with the end of construction; thus, the period of influence for cumulative air quality impacts would be temporary (weeks to months at each location). Based on the short-term nature of construction and the implementation of appropriate mitigation measures, the cumulative air quality impacts on environmental justice communities during construction would not be significant.

Operational air dispersion modeling conducted for Compressor Station 505 indicates that air emissions would not exceed the significant impact levels beyond 1.0 kilometer from the modeled compressor stations. Therefore, cumulative impacts associated with the operation of the Project's aboveground facilities were evaluated within 1.0 kilometer of the proposed facilities. There are no FERC-regulated projects identified within 1.0 kilometer of Compressor Stations 505 for which the project would cause a significant impact. The Project would contribute to additional operational air quality impacts; however, all facilities would be required to be in compliance with all applicable federal air quality permitting programs. The Project would not cause or significantly contribute to an exceedance of the NAAQS and would not result in a significant impact on air quality in environmental justice communities in the region.

Construction of the Project and other projects and actions listed in table C-17 in appendix C could require the use of construction equipment that would generate noise. Cumulative impacts on noise could occur where the location and timing of those noise effects overlap. The estimated noise generated from the Project would not exceed our recommended 55 dBA Ldn at the NSAs near the directional bore entry site, which are all residences, some of which are located in environmental justice communities. The estimated operational noise levels of the Project are below our recommended level of 55 dBA Ldn. We did not identify any projects that would contribute to operational noise impacts in the cumulative impact area for the Project's compressor stations and conclude that operation of the Project would not contribute cumulative noise impacts. The construction and operation of the Projects would not result in significant cumulative noise impacts on local residents and the surrounding communities, including environmental justice populations.

Construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past and future emissions from all other sources and would contribute incrementally to future climate change impacts. While the climate change impacts taken individually may be manageable for certain communities, the impacts of compounded extreme events (such as simultaneous heat and drought, or flooding associated with high precipitation on top of saturated soils) may exacerbate preexisting community vulnerabilities and have a cumulative adverse impact on environmental justice communities. This EIS is not characterizing the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct significance determinations going forward.[103]

As described throughout this EIS, the proposed Project would have a range of impacts on individuals living in the vicinity of the Project facilities, including environmental justice populations. Based on our analysis, environmental justice communities in the study area would experience cumulative impacts on socioeconomics, traffic, visual, noise, air quality, and GHG related to the Project and the additional projects listed in table C-17 in appendix C. Other than short term visual impacts on environmental justice communities from Compressor Station 201, the overall project contribution to cumulative impacts on environmental justice communities related to socioeconomics, traffic, visual resources, noise, and air quality would be less than significant.[104]

4.11.3.11 Air Quality

Construction

Construction of the Projects would temporarily increase air quality impacts surrounding the construction workspaces due to emissions from the combustion engines used to power construction equipment, vehicle emissions traveling to and from the construction sites, and fugitive emission dust resulting from equipment movement on dirt roads and earth-disturbing activities. The potential for cumulative construction emissions impacts would be greatest during site preparation when fugitive dust production would likely be at its peak. Construction emissions would cease with the end of construction;

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[103] See Order on Draft Policy Statements, 178 FERC ¶ 61,197 (2022).

[104] It should be noted that this is not considering climate change or GHG emissions because no determination on significance has been made.

thus, the period of influence for cumulative air quality impacts during construction of the Projects and other FERC-regulated projects in the cumulative impacts area would be temporary (weeks to months at each location). The FERC-regulated projects in the cumulative impacts area would implement mitigation measures to minimize construction impacts on air quality such as applying water or dust control chemicals to minimize fugitive dust and by complying with applicable EPA mobile source emission performance standards, including use of equipment manufactured to meet these standards. In addition, construction emissions would also disperse within the airshed and diminish in concentration with distance from active construction areas.

Based on the short-term nature of construction and the implementation of appropriate mitigation measures, the cumulative impacts on air quality due to construction of these facilities would not be significant. Local residents near the compressor sites and/or pipeline projects and within the impact area may experience localized, minorly to moderately elevated levels of fugitive dust and tailpipe emissions near the construction areas. Due to the short duration of construction activities, and minimal concurrent projects associated with construction, we determined that cumulative impacts on air quality due to construction would be negligible.

Operation

Air dispersion modeling conducted for Compressor Stations 505 and 515 indicate that the facilities air emissions would not exceed the significant impact levels beyond 1.0 kilometer from the modeled compressor stations. Therefore, cumulative impacts associated with the operation of the Project's aboveground facilities were evaluated within the 1-kilometer significant impact area for each of the proposed facilities. There are no FERC-regulated projects identified in 4.1.1-1 within the significant impact area of 1 kilometer of Compressor Stations 505 or 515 for which the project would cause a significant impact.

As discussed above, the Projects would contribute to additional operational air quality impacts; however, all facilities would be required to be in compliance with all applicable federal air quality permitting programs.

4.11.3.12 Noise

Construction

Construction of the Projects and other projects and actions in table C-16 in appendix C could require the use of heavy equipment, directional bore rigs, pile driving equipment, and other equipment and vehicles, all of which would generate noise. Cumulative impacts on noise could occur where the location and timing of those noise effects overlap the Projects' noise effects. The Project's construction noise would attenuate quickly as the distance from the construction site increases.

Construction would generally not affect nighttime noise levels as it would be limited to 7 a.m. to 7 p.m., except for bore activities and specific limited construction activities such as tie-ins and hydrostatic testing. The estimated noise generated from the Project would not exceed our recommended 55 dBA L_{dn} at the NSAs near the directional bore entry site, which are all residences.

Operation

The estimated operational noise levels of the Project are below our recommended level of 55 dBA L_{dn}. Noise decreases logarithmically with increasing distance from a noise source; therefore, cumulative operational noise impacts would only occur where other facilities or activities would occur very close to the Project's noise-emitting facilities (i.e., compressor stations). We did not identify any projects that would contribute to operational noise impacts in the cumulative impact area for the Project's compressor stations and conclude that operation of the Project would not contribute significantly to existing noise in the area.

4.11.4 Conclusions on Cumulative Impacts

Construction of the REAE Project, in addition to other projects within geographic scopes of analysis, could have minor cumulative impacts on a range of environmental resources, as discussed above. The majority of the cumulative impacts associated with the Project and with the projects listed in table C-16 in appendix C would be minor and temporary during construction. However, some long-term cumulative impacts would occur in forested areas and associated wildlife habitats. Some cumulative long-term benefits include new jobs and wages, purchases of goods and materials, and tax revenues. For the federal projects listed in table C-16 in appendix C, there are laws and regulations in place that protect waterbodies and wetlands, threatened and endangered species, and historic properties, and limit impacts from air and noise pollution. We only have limited information about potential or foreseeable private projects in the region. For some resources, there are also state laws and regulations that apply to private projects as listed in table C-16 in appendix C. Given the REAE Project BMPs, design features, and mitigation measures that would be implemented, and the federal and state laws and regulations protecting resources that would apply to the other projects listed in table C-16 in appendix C, we conclude that when added to other present and reasonably foreseeable future actions in table C-16, cumulative impacts on environmental resources within the geographic scopes affected by the Project would not be significant.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 CONCLUSIONS OF THE ENVIRONMENTAL ANALYSIS

The conclusions and recommendations presented in this section are those of the FERC environmental staff. Our conclusions and recommendations were developed with input from the EPA and USACE. The federal cooperating agencies may adopt the EIS per 40 CFR 1506.3 if, after an independent review of the document, they conclude that their permitting requirements and/or regulatory responsibilities have been satisfied. However, these agencies would present their own conclusions and recommendations in their respective and applicable records of decision. Otherwise, they may elect to conduct their own supplemental environmental analysis, if necessary.

We determined that construction and operation of the REAE Project would result in some environmental impacts, most of which would occur during construction. Operational emission increases from the Project would result from natural gas combustion turbines at Compressor Stations 505 and 515. Long-term impacts on noise would result from the operation of Compressor Stations 201, 195, 207, and 505. As part of our review, we developed specific mitigation measures that we determined would appropriately and reasonably reduce the environmental impacts resulting from construction and operation of the Project. We are therefore recommending that our mitigation measures be attached as conditions to any authorizations issued by the Commission. Although individual impacts associated with construction of certain Project components may be predominately borne by environmental justice communities, impacts on environmental justice communities from the Project as a whole would not be disproportionately high and adverse. With implementation of Transco's impact avoidance, minimization, and mitigation measures, as well as their adherence to our recommendations, we conclude that Project effects would be reduced to less-than-significant levels, except for climate change impacts that are not characterized in this EIS as significant or insignificant.

A summary of the anticipated impacts, our conclusions, and our recommended mitigation measures is provided below, by resource area.

5.1.1 GEOLOGY

Construction and operation of the Project would not materially alter existing geologic conditions in the area and the overall effect of the Project on topography would be minor.

The potential for a significant, damaging earthquake to affect the Project area is low. The pipelines would be constructed using arc-welding techniques and would be resistant to traveling groundwave effects and moderate amounts of permanent deformation. Aboveground facilities would also be designed, constructed, and operated in accordance with modern engineering standards and applicable DOT construction and safety requirements. The Project area also has a low susceptibility and incidence of landslide activity, and pipeline installation techniques, including padding and use of rock-free backfill, effectively insulate the pipe from minor earth movements.

No karst features were identified within 10 miles of the proposed Regional Energy Lateral or Effort Loop, and the Compressor Station 201 site is not underlain by geologic deposits that are conducive to karst formation. While some facility modifications (Compressor Station 200, Lawnside M&R Station, and Beaver Dam M&R Station) are in susceptible karst areas, work in these areas would involve shallow excavations and Transco stated that no previous karst occurrences have been reported at these facilities. Therefore, we conclude that Project activities are unlikely to encounter existing karst and would not significantly contribute to karst development.

Transco does not anticipate the need for blasting but, should it become necessary, blasting would be conducted in accordance with Transco's general Blasting Plan.

The Regional Energy Lateral would not cross any active aboveground or underground mines, pits, or quarries but would cross one active coal refuse processing (the Silverbrook Anthracite Laflin Bank). Transco confirmed with the landowner that no active mining or direct extraction of coal is taking place at the Silverbrook Anthracite Laflin Bank; therefore, the Project would not be expected to impact operations at the site, and Transco stated that it would coordinate with the landowner to ensure that construction and operation activities would minimize disturbance to anthracite processing activities. Based on the distance to active and historic mineral extraction, construction and operation of the Effort Loop and Compressor Station 201 would not significantly impact availability of or access to mineral resources in the area. Based on the location of the Regional Energy Lateral, which avoids crossing active mines, and Transco's coordination with the owners/operators of other mineral resource-related facilities crossed by the pipeline, we conclude that construction and operation of the Regional Energy Lateral would not significantly impact availability of or access to mineral resources.

Transco proposes to utilize the Direct Pipe® method to cross the Susquehanna River. The Direct Pipe® path would be within unconsolidated sand, silt, clay, and gravel for its entire length and at least 50 feet above the bedrock surface and approximately 170 feet above the nearest known former underground coal mine. During Direct Pipe® operations, drilling fluids would be returned to the surface through dedicated pipes inside the prefabricated pipeline and the drilling fluid pressure inside the borehole would be significantly reduced, thereby greatly reducing the potential for an inadvertent release to occur.

We reviewed Transco's geotechnical and geophysical surveys and Direct Pipe Plan, which includes the hydraulic fracture analysis and Direct Pipe® design and construction recommendations, and find them complete, accurate, and adequate in designing the river crossing. Based on the subsurface conditions observed in the geotechnical borings, the geotechnical engineering evaluations, the detailed design analyses, and the development of contingencies to be implemented during the bore, we concur that the proposed Susquehanna River Direct Pipe® crossing has a high likelihood of successful installation and that adequate contingencies are in place to minimize potential impacts of an inadvertent return or failure of the crossing should either occur.

In summary, the Project would not significantly impact geologic resources and the potential for the proposed facilities to be affected by geologic hazards or extreme weather events is low. These risks would be further reduced by constructing and operating the proposed facilities in accordance with applicable industry standards, regulatory requirements, Transco's Plans and Procedures, other Project-specific plans, and our recommendations.

5.1.2 SOILS

The Project would traverse a variety of soil types and conditions. Construction activities such as clearing, grading, trenching, and backfilling, could adversely impact soil resources by causing erosion, compaction, and the introduction of excess rock or fill material to the surface, which could hinder restoration. However, Transco would implement mitigation measures contained in its Plan to control erosion and enhance successful restoration. Specifically, soil impacts would be mitigated through measures such as topsoil segregation, temporary and permanent erosion controls, decompaction, and post-construction restoration and revegetation of work areas. Transco would also implement Project-specific plans to avoid and limit inadvertent spills of fuel and other hazardous substances, and to address pre-existing contaminated soil if encountered.

In summary, construction-related impacts on soils would be temporary and localized to the construction workspace, except where erosion, sedimentation, landslides, and other forms of soil movement affect adjacent areas. However, construction impacts on soil resources would be minimized and mitigated through implementation of the measures in Transco's construction and restoration plans. About 47.4 acres of soil would be permanently affected by access roads and aboveground facilities, but this impact is nominal when compared to the extent of the resource in the Project area.

5.1.3 WATER RESOURCES

5.1.3.1 Groundwater

The majority of Project construction would occur above the shallow, surficial aquifers that typically occur in unconsolidated deposits in the Project area; therefore, most direct impacts on groundwater resources would be avoided. Groundwater quality could be impacted primarily by increased turbidity during construction; however, this impact would be temporary, minor, and localized, and would be further reduced by restoring surface contours to pre-construction conditions and implementing other measures in Transco's Plan and Procedures to minimize construction time and erosion. After construction, Transco would conduct soil decompaction as necessary, restore the ground surface as closely as practicable to original contours, and revegetate any previously vegetated areas to restore pre-construction overland flow patterns and groundwater recharge.

Shallow groundwater resources could also be vulnerable to contamination caused by an inadvertent spill of hazardous materials during construction. Transco would implement measures within its Spill Plan to prevent hazardous material spills and minimize the impact of a spill should one occur.

The potential to encounter pre-existing groundwater contamination during construction of the Project is low. However, should pre-existing contaminated media (soil or groundwater) be encountered, Transco would implement the measures detailed in its Project-specific UDCP, which we reviewed and found would avoid or adequately minimize potential impacts associated with handling unanticipated, pre-existing, contamination.

The Direct Pipe® crossing of the Susquehanna River would utilize drilling fluid comprised primarily of water, inert solids, and bentonite (a naturally occurring clay mineral). Other non-petrochemical-based, non-hazardous additives may be included in the drilling fluid to enhance the drilling process and maintain borehole integrity. Transco would work with the FERC and other applicable agencies and would provide a Drilling Fluids Management Plan that discloses the exact mixtures of drilling fluids and additives, including product Safety Data Sheets, prior to construction. The Direct Pipe® method reduces the potential for the loss of drilling fluid to the surrounding environment (referred to as "inadvertent returns"), and the potential impact of inadvertent returns would be further reduced by implementation of Transco's Direct Pipe® Plan, which we reviewed and found acceptable. In addition, no public or private water supply are within 1,000 feet of the proposed Direct Pipe® crossing. Based on the low potential for the Direct Pipe® method to result in a significant loss of drilling fluid, the non-hazardous composition of the drilling fluid, and the lack of nearby water supply wells, we conclude that the Direct Pipe® crossing of the Susquehanna River would not pose a significant risk to groundwater resources.

Transco may need to conduct blasting if mechanical techniques are unable to remove bedrock within excavations. Blasting would not impact important deep bedrock aquifers but could increase turbidity and affect hydrologic characteristics of shallow groundwater resources if present in the immediate area of blasting activity; we anticipate that these effects would be localized, temporary, and minor. Construction, including blasting, could also physically damage wells or diminish the yield and water quality of wells and springs within 150 feet of construction workspaces. The potential to impact wells and springs would be further reduced by implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources. In addition, wells and springs within workspaces would be marked and protected to prevent construction-related damage, and pre- and post-construction testing of well yield and water quality on wells within 150 feet would be conducted with landowner permission. In the unlikely event that a well or spring is affected, Transco would arrange for a temporary water supply until the water supply and quality are restored.

In summary, construction and operation of the Project would not result in significant impacts on groundwater resources, and potential impacts would be further avoided or minimized by implementing Transco's construction and restoration plans and our recommendations and by complying with other regulatory permit conditions that are protective of water resources.

5.1.3.2 Surface Water Resources

The Project would cross a total of 39 perennial waterbodies, 16 intermittent waterbodies, and 24 ephemeral waterbodies. Seventy-four of these waterbodies are crossed by the pipeline centerline, including the Susquehanna River, a major waterbody, that would be crossed using the Direct Pipe® method.

Transco would use dry-ditch crossing methods to install the proposed pipelines across most waterbodies including flume and dam and pump methods. Dry-ditch crossing methods divert flow around the workspace, thus minimizing turbidity and sedimentation while maintaining flow upstream and downstream from the crossing location. Two existing access roads would cross waterbodies; however, no improvements to these roads are proposed and no impacts would be expected at these crossings. Transco would implement other measures included in its Procedures that are designed to avoid and minimize impacts on waterbodies including limiting the amount of time to complete each crossing, prohibiting fueling within 100 feet of a waterbody, and restoring the streambed and banks upon construction completion. As a result, impacts on waterbodies would be temporary to short-term and minor.

The Direct Pipe® method would avoid direct impacts on the Susquehanna River, but indirect impacts could occur if drilling fluid is inadvertently released into the waterbody during drilling operations. The primary impacts that an inadvertent release of drilling fluid would have on a waterbody would be increased turbidity and sedimentation downstream from the release. However, as discussed above, the potential for an inadvertent release to occur is low.

Transco would use about 10.2 million gallons of water from the Susquehanna River and municipal sources for hydrostatic testing. Impacts associated with the withdrawal and discharge of water would be minimized by Transco's adherence to their construction plans and compliance with state water withdrawal and NPDES discharge permits.

In summary, pipeline construction activities affecting surface waters would be conducted in accordance with Transco's Procedures, along with any conditions that are part of other federal or state water approvals. We conclude that with these measures, along with our additional recommended mitigation measures, impacts on surface waters would largely temporary and minor.

5.1.3.3 Wetlands

Construction of the Project would impact a total of approximately 16.7 acres of wetlands, consisting of 10.7 acres of emergent wetland, 1.4 acres of scrub-shrub wetland, 4.6 acres of forested wetlands, and a fractional amount of open water wetland. Of the 4.6 acres of forested wetland impacts, approximately 2.6 acres are located within the permanent pipeline easement and could be impacted by operation and maintenance of the pipeline, and 1.6 acres are located within the portion of the pipeline right-of-way that would be converted to emergent wetland for vegetation maintenance requirements along the pipeline facilities.

Wetland impacts would generally be avoided by collocating the pipeline facilities with existing utility rights-of-way (approximately 60 percent of Transco's Regional Energy Lateral and 100 percent of the Effort Loop).

Where wetlands could not be avoided, Transco would minimize impacts and restore the construction right-of-way in accordance with its Procedures and other permit conditions. More specifically, vegetation clearing in wetlands would be limited to trees and shrubs, which would be cut flush with the surface of the ground and removed from the wetland. Stump removal, grading, topsoil segregation, and excavation would be limited to the area immediately over the trenchline to avoid excessive disruption of wetland soils and the native seed and rootstock within the wetland. Transco would limit the type of equipment (e.g., low ground pressure equipment, trenching and backfilling equipment) allowed to access wetland areas, and would implement weight dispersing devices such as timber mats to proactively address compaction and rutting issues. Additionally, machinery would operate on one side of the trench (working side), and excavated materials would be stockpiled on the other (nonworking side).

Sediment barriers would be installed and maintained adjacent to wetlands and within ATWS as necessary to minimize the potential for sediment runoff. Hydrology would be maintained by installing trench breakers at the wetland/upland boundary, sealing the trench bottom where necessary, and by restoring wetlands to original contours. Prior to backfilling, Transco would install permanent trench breakers where necessary to prevent the subsurface drainage of water from wetlands. During operation, Transco would maintain a 10-foot-wide swath of vegetation within wetlands centered over the pipelines in an herbaceous state, and would selectively cut and remove trees within 15 feet of the pipeline to maintain pipeline integrity.

Transco's consultation with PADEP and USACE regarding wetland mitigation requirements is ongoing. Transco is proposing offsite wetland mitigation at two locations, the Perin Site, located in Northampton County within the Delaware River Basin, and the Grajewski Site, located in Luzerne County in the Susquehanna River Basin. Transco proposes to enhance existing wetlands with tree and shrub plantings to mitigate for the functional conversion associated with the Project. Mitigation plans for each site were filed as part of the application submitted to the PADEP on April 8, 2020, and the USACE on May 3, 2020. Review of the applications, including the mitigation plans, is ongoing by the agencies.

Permanent impacts on wetlands would include the conversion of forested wetlands to scrub-shrub or emergent wetlands within the maintained permanent pipeline easement. In addition, long-term to permanent impacts on woody vegetation would occur as it may take several decades for the vegetation to reach maturation within the temporary workspace that is cleared for construction. While long-term and permanent effects on wetlands would occur, adherence to Transco's Procedures, conditions of state and federal permits, and a Project-specific mitigation plan would reduce effects.

5.1.4 FISHERIES, VEGETATION, AND WILDLIFE

5.1.4.1 Fisheries

Installation of the Project would include 77 crossings of waterbodies supporting coldwater fisheries, with 39 of those crossings being high quality-designated waterbodies. The Project would cross two exceptional value waterbodies. The Project would also include two crossings of waterbodies supporting warmwater fisheries. Twenty of the crossings are designated by the PFBC as Class A Wild Trout Streams and 56 crossings of waterbodies with naturally producing wild trout (not trout stocked).

Construction impacts on fishery resources may include direct contact by construction equipment with fish, fish eggs, and other aquatic organisms, including fish prey and forage species; alteration or removal of adjacent riparian vegetation and aquatic habitat cover; introduction of pollutants; and impingement or entrainment of fish and other biota associated with the use of water pumps, including appropriation of hydrostatic test water. Impacts on fisheries would be reduced by limiting in-stream work to the time periods required by federal and state agencies. For waterbodies that do not have a specific timing restriction or are otherwise authorized by the Commonwealth of Pennsylvania, Transco would adhere to the in-stream construction timing restrictions included in section V.B.1 of its Procedures. We find that implementing these timing restrictions would minimize impacts on fish species in the area of the Project.

We expect streambeds and banks to quickly revert to preconstruction conditions. Transco's commitment to conduct restoration, bank stabilization, and revegetation efforts in accordance with its Procedures, and all applicable state and federal permits, would minimize the potential for erosion from the surrounding landscape. Adherence to Transco's Procedures would also maximize the potential for regrowth of riparian vegetation, thereby minimizing the potential for any long-term impacts associated with lack of shade and cover. All temporary work areas would be restored and allowed to revegetate to original conditions. No long-term impacts are anticipated after restoration of stream bottoms and regrowth of stream bank and aquatic vegetation. If vegetation maintenance during operation would be required along specific streambanks, impacts on fisheries would be minor. By implementing the above measures, we conclude that impacts on fisheries related to the Project would not be significant and would be sufficiently minimized.

5.1.4.2 Vegetation

Impacts on upland vegetation from the Project would range from temporary to permanent due to the varied amount of time required to reestablish certain community types, as well as the maintenance of herbaceous and shrub vegetation within the permanent right-of-way and the conversion of aboveground facility locations and new permanent access roads to non-vegetated areas. Construction of the Project would affect about 603.1 acres of upland vegetation, including about 296.2 acres of upland forest vegetation. Operation of the Project would affect about 183.1 acres of upland vegetation, including about 105.9 acres of upland forest. Operation of the proposed Compressor Station 201 would permanently impact 15.3 acres of open upland, or 8.4 percent of the operational impact of the Project on upland vegetation.

In general, impacts on vegetation resources would be minimized utilizing existing rights-of-way or previously disturbed, non-forested areas to the extent possible. Approximately 60 percent of Transco's proposed Regional Energy Lateral and 100 percent of the proposed Effort Loop would be collocated with existing utility rights-of-way. Transco would further minimize impacts on upland vegetation by implementing the measures outlined in its Plan, including topsoil segregation and replacement, mitigation of compacted soils, and the use of erosion controls. After construction, Transco would seed the affected areas using seed mixes recommended by the NRCS, local agencies or organizations, or relevant landowner agreements.

We received a comment regarding the disruption of forest and forest soil ecosystem services lost as carbon sinks by construction through forest and natural soils. Based on our analysis, there would be a loss of carbon storage due to the Project. The Project would result in landcover conversion for up to approximately 106 acres of forest to grassland or other lands. While some annual carbon storage would occur in the revegetated grasslands, the rate would be much less than the rate of annual forest carbon storage.

Transco would implement its Invasive Species Management Plan, which outlines methods to prevent, mitigate, and control the spread of noxious and invasive weeds during ground-disturbing activities. In general, vehicles and equipment would be inspected and cleaned of soils, vegetation, and debris before they are brought to the Project area or moved to another work area within the construction right-of-way. Following construction, Transco would monitor the right-of-way for invasive species and, if identified, would consult with a state-certified applicator and applicable regulating agency to determine the most effective method of control.

In summary, we conclude that implementation of the measures outlined in Transco's Plan and Invasive Species Management Plan would adequately minimize impacts on upland vegetation resources.

5.1.4.3 Wildlife

The REAE Project would impact wildlife species and their habitats. Impacts from construction include the displacement of wildlife from work spaces into adjacent areas and the potential mortality of some less mobile individuals. Vegetation removal could also reduce the amount of available habitat for nesting, cover, and foraging, and construction could lower reproductive success by disrupting courting, nesting, or breeding of some species, which could also result in a decrease in prey available for predators of these species. Most impacts would be temporary, lasting only while construction is occurring, or short-term, lasting no more than a few years until preconstruction habitat is reestablished. Other impacts would be longer term such as the re-establishment of forested habitats, which could take decades.

We received comments concerning the potential effects of forest fragmentation, the creation of microclimates, and impacts on interior forest species that require shade, humidity, and tree canopy protection which only deep forest environments can provide. The Project would impact two blocks of interior forest; the Regional Energy Lateral would impact a total of 2.2 acres of an approximately 3,919-acre interior block and Compressor Station 515 would impact 9.2 acres of an approximately 31.3-acre block of interior forest.

The landscape along the Regional Energy Lateral and Effort Loop is generally fragmented by existing roads, utility rights-of-way, residential and commercial development, pastures, and agriculture. Collocation of the pipeline loops with existing utility rights-of-way would reduce fragmentation effects. During operation, previously forested habitat (including forested wetlands) would not reestablish within the permanent right-of-way for the pipelines. The principal impact would be a shift in species use from those favoring forest habitat to those using either edge habitat or areas that are more open. It is not likely that the relatively small widening (generally an additional 25 feet) of existing permanently cleared rights-of-way would impede the movement of most forest interior species. The impact of the permanent conversion of forested habitat to non-forested habitat would be minimized by installing most of the proposed loops adjacent to existing rights-of-way, which is maintained in an herbaceous state.

We received a comment recommending that Transco undertake voluntary mitigation for tree loss, with a suggestion to replace trees removed with native saplings at a 1:1 ratio. Transco would develop a Replanting Plan that would include voluntary replanting of trees in forested temporary workspace that is greater than 15 feet from the pipeline centerline, with specific locations pending landowner approval. Transco anticipates replanting at a density of 435 trees per acre.

We received comments regarding the effects on wildlife due to noise, light, and heat from operation of the aboveground facilities. During operation, Compressor Station 201 would generate noise on a nearly continuous basis, which could impact nearby wildlife. Transco would implement various noise mitigation measures at Compressor Station 201, such as using high-density insultation for walls/roof, turbine exhaust silencer system, blowdown silencers, and acoustical pipe insulation for outdoor piping. The noise levels to which wildlife would be exposed beyond the compressor station property boundaries would vary based on the distance from the facility. Based on Transco's proposed noise mitigation measures and the representative wildlife species near Compressor Station 201, in the years following initial construction, birds and other wildlife would either become habituated to the operational noise associated with the compressor station or move into similar available habitat farther from the noise source. As such, the effects on wildlife due to noise emissions would be minimal and highly localized.

Construction of Compressor Station 201 would require the installation of exterior lighting at the main gates, yards, and all building entry and exit points of the facility. Transco would limit outdoor lighting to the minimum amount they require for security purposes. The lighting would be positioned downward and comply with OSHA standards for lighting. Air quality impacts from operation of the Projects' compressor stations would be minimized by the use of equipment, emissions controls, and operating practices that meet or exceed BMPs. Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be minimized during installation and operation of the Projects' compressor units.

The effects of heat on wildlife during operation of the Project would be mainly associated with the combustion emissions from the new compressor station stacks. Transco has committed to using equipment, emissions controls, and operating practices that meet or exceed BMPs, and operation of the Project's compressor units would comply with federal and state permit requirements. The exhaust stacks would be located within the developed area of the compressor station facility, with the closest stack located approximately 140 feet from the post-construction tree line. While we acknowledge that it is possible for birds to enter into the exhaust stream, due to the industrial nature of the compressor station (increased noise, human activity, and light during nighttime hours) and distance between the exhaust stack and nearest tree line, we conclude that the potential for exhaust from the compressor station to significantly impact wildlife is low.

A variety of migratory birds, including BCC-listed birds and species occupying IBAs, are associated with the habitats that would be affected by the Project. Project construction could affect raptors and migratory birds if it would take place during the nesting season. The temporary loss of upland forest and forested wetlands associated with the pipeline facilities would present a long-term impact for migratory birds that depend on forested land. Noise and other construction activities could affect courtship and breeding activities, including nesting and the rearing of young. Clearing and grading would also temporarily remove nesting and foraging habitat and could destroy occupied nests resulting in the mortality of eggs and young if these activities are done during the nesting season. To avoid or reduce construction-related impacts on migratory birds, Transco would implement the measures in its Migratory Bird Plan, including times of year when construction should be avoided.

Transco would replace/relocate one communication tower at existing Compressor Station 515. Migratory birds are known to collide with towers during migration and could become confused or disoriented by lighting or fly directly into the tower or guy wires during nighttime migrations. Birds may also use the tower to build nests or as perches, which could be impacted by maintenance activities occurring during operation. The FWS has developed Recommended Best Practices for Communication Tower Design, Siting, Construction, Operation, Maintenance, and Decommissioning to reduce the risk of bird mortality at communication towers. Transco would adopt the FWS Recommended Best Practices to limit communication towers to 199 feet or less above ground level; to utilize free-standing towers, free of guy wires; utilize the minimum amount of pilot warning and obstruction avoidance lighting required by the Federal Aviation Administration; and install down-shielded and motion-activated security lighting needed for the tower.

Construction of the Project would temporarily impact about 332 acres of pollinator habitat. The temporary loss of this habitat would increase the rates of stress, injury, and mortality experienced by honey bees and other pollinators. Transco would incorporate measures to support foraging habitat for pollinators along the proposed rights-of-way, including applying herbicides, if needed, in accordance with manufacturer specifications and applicable regulations to reduce spills or overspray; developing a revegetation/restoration plan in coordination with landowners and agencies that includes native and pollinator species; and implementing an invasive species management plan to prevent the spread of invasive and noxious species.

Based on the above discussion and Transco's implementation of the measures in its Plan and Procedures which are designed to minimize impacts, reduce construction time, and ensure revegetation, as well as our recommendations, we conclude that constructing and operating the Project would not significantly affect common wildlife species at population levels.

5.1.4.4 Protected Species

Special status species are those for which federal or state agencies afford an additional level of protection by law, regulation, or policy. Included in this category are federally listed species classified as threatened or endangered; species considered as candidates or petitioned for federal listing by the FWS; and species that are designated as state-listed or receive special management considerations by Pennsylvania, New Jersey, or Maryland.

To comply with section 7 of the ESA, we consulted either directly or indirectly (through Transco's informal consultation) with the FWS and state resource agencies regarding the presence of federally listed, proposed for listing, or state-listed species in the Project area. We determined that six federally listed species may occur in the Project area. According to the FWS' National Listing Workplan, two additional species under review for federal listing are also known to occur in the Project area. We determined that no critical habitat for any federally listed species is present in the Project area. Due to the distance of their primary habitat from the Project area or the absence of individuals observed during field surveys, it was determined that the Project would have *no effect* on one of the six listed species. Based on our analysis, we conclude that the Project *may affect, but is not likely to adversely affect* the remaining five federally listed species.

We have requested that the FWS consider the final EIS as our official Biological Assessment for the REAE Project. In addition, because Transco's final mitigation plans for impacts on northern long-eared bat, Indiana bat, little brown bat, and tricolored bat have not been finalized, we are recommending that Transco not begin construction until it files final bat conservation measures and mitigation, incorporating any additional conservation measures and mitigation developed in coordination with the Pennsylvania Field Office of the FWS; FERC staff receives comments from the FWS regarding the proposed action; FERC staff completes formal ESA consultation with the FWS, if required; and Transco has received written notification from the Director of OEP that construction or use of mitigation may begin.

In addition to the federally listed species, 14 state-listed species in Pennsylvania and 18 state-listed species in New Jersey could occur in the vicinity of the Project. Based on our analysis, we conclude that, given the nature of the species present, the results of the surveys conducted and agency consultation, and the measures that Transco would implement as part of the Project, impacts on state-sensitive species would be avoided or appropriately minimized, and impacts would not be significant.

5.1.5 LAND USE, RECREATION, SPECIAL INTEREST AREAS, AND VISUAL RESOURCES

Construction and operation of the REAE Project would affect 792.3 acres, including 522.7 acres for construction of pipeline facilities, 161.2 acres for construction of aboveground facilities, 45.8 acres for access roads, and 62.6 acres for staging areas. Upon completion, Transco would maintain 175.6 acres for the permanent pipeline right-of-way, including 54.6 acres for aboveground facilities, and 1.3 acres for access roads. The remaining 560.9 acres would be restored and allowed to revert to preconstruction uses, with the exception of about 105.9 acres of forest/woodland within the permanent right-of-way, which would be converted to open land

The Effort Loop would cross one organic farm between MPs 49.3 and 49.5 in Monroe County. Transco confirmed with the landowner that this farm has not received organic certification. No other specialty crops, including nurseries, vineyards, orchards, citrus groves, dairies, and aquaculture, or tree farms, would be affected by the Project.

Transco's construction work would be within 50 feet of 84 residences and 143 other structures. Transco prepared site-specific RCPs to address impacts for residences within 50 feet of construction workspace. We reviewed these plans and find them acceptable. However, we are encouraging the owners of each of these residences to provide us comments on the plan specific to their property. We conclude that implementation of Transco's construction methods for working in proximity to residences and commercial facilities and site-specific RCPs would minimize disruption to residential and commercial areas to the extent practicable and facilitate restoration of these areas as soon as reasonably possible upon completion of construction. To further ensure that impacts on homeowners are minimized to the extent practicable, Transco developed an Environmental/Landowner Complaint Resolution Procedures for all landowners potentially impacted by the Project that outline the procedures to follow if there are any environmental or landowner concerns or problems during construction and/or restoration of the right-of-way. We reviewed these procedures and find them acceptable.

We received a comment from a landowner regarding the potential for damage to outbuildings on their property or trees, shrubs, and other vegetation planted on the property with the assistance of Monroe County Conservation Service, PADCNR funding, and USDA/NRCS grant funding. The Effort Loop is collocated with existing Transco pipelines where it crosses this parcel. Land cover within the temporary workspace is forested and tree clearing would be necessary in this area. Transco would compensate landowners for the right-of-way and for any damages incurred during construction. Furthermore, we are recommending that prior to construction, Transco file evidence of landowner concurrence with removal of outbuildings or construction workspaces within 10 feet of a residence. If Transco is unable to obtain concurrence, Transco should file revised alignment sheets for construction that avoids removal of the structure and maintain a 10-foot buffer between the workspace and the residence. We received an additional comment on the draft EIS indicating a septic system would be affected by construction. Regarding this property, Transco indicated that the septic system is located over 26 feet from the workspace and that the septic drain field is located cross-slope from the construction workspace and would be protected by erosion control devices during construction.

Construction and operation of the Project could potentially impact other planned development in the area. No planned projects would be crossed by the Project. Four planned projects are within 0.25 mile of Project facilities. We conclude that no impacts these planned projects are anticipated from construction of the Project.

Collectively, the Project would impact a total of about 112 acres of recreational and special interest areas during construction. The pipeline facilities would cross 16 recreational and special interest areas for a total of about 9.1 miles and an additional 22 recreational and special interest areas would be within 0.25 mile of the Project facilities. In addition, the existing Beaver Dam M&R Station is would affect 0.9 acre of a local park. One of the primary concerns when crossing recreation and special interest areas is the impact of construction on the purpose for which the area was established (e.g., the recreational activities, public access, and resources the area aims to protect). Construction would alter visual aesthetics by removing existing vegetation and disturbing soils. Construction would also generate dust and noise, which could be a nuisance to recreational users. Construction could also interfere with or diminish the quality of the recreational experience by affecting wildlife movements or disturbing trails.

We received comments on the draft EIS asking for verification that Transco's easement on the Coventry Farm property allows Transco to complete the proposed modifications to the Station 210 Pooling Point. Transco provided a copy of it June 26, 2001 Deed of Conservation and Agricultural Easement in favor of Delaware and Raritan Greenway, Inc. which verifies that Transco has the rights necessary to complete modifications to this facility.

In general, impacts on recreational and special interest areas would be temporary and limited to the period of active construction, which typically would last only several days to several weeks in any one area, with the exception of linear trails where a detour or temporary closure may be required. Transco has proposed general mitigation measures for recreation and special interest areas that would be affected by the Project (e.g., public notification protocols), and provided site-specific crossing plans completed in consultation with the applicable land management agency for other areas. Based on the impacts identified and the mitigation measures that Transco would implement, we conclude that the Project would not result in significant adverse impacts on recreational or special interest areas. We received comments on the draft EIS regarding the status of consultation with federal, state, and private agencies with jurisdiction over conservation easements and information about specific mitigation requirements that are negotiated for these resources. Transco's coordination with several of these agencies or organizations is ongoing.

The Beaver Dam M&R Station is located within the Maryland Coastal Zone. Transco consulted with the Maryland Department of Environment's Wetland and Waterways Program and the agency confirmed that a Coastal Consistency Determination is not required for the proposed modifications to the existing Beaver Dam M&R Station. The portion of the Project in Pennsylvania and New Jersey is not subject to coastal zone consistency review.

Two former landfill sites would be crossed by the pipeline loops, and seven other landfills or contaminated sites are within 0.25 of Project facilities. Transco developed a UDCP, which includes measures that would be implemented in the event contaminated media is encountered during construction (see table 2.3-1). We have reviewed this plan and find it acceptable.

Visual resources along the proposed pipeline loops are a function of geology, climate, and historical processes, and include topographic relief, vegetation, water, wildlife, land use, and human uses and development. Temporary visual impacts from the Project would result from the construction and clearing of the pipeline right-of-way, ATWS, contractor yards, and Project access roads. Because the Project would expand existing rights-of-way in most areas, the visual impact on motorists who observe road crossings would be minor. About 60 percent of the Regional Energy Lateral and 100 percent of the Effort Loop would be within or adjacent to existing rights-of-way. Construction within or adjacent to existing rights-of-way reduces the severity of impacts on visual resources because it minimizes vegetation clearing for the construction work areas and permanent right-of-way and also minimizes new fragmentation of vegetation and habitat. After construction, disturbed areas would be restored and returned to preconstruction conditions in compliance with federal, state, and local permits; landowner agreements; Transco's Plan and Procedures; and applicable right-of-way requirements.

In general, the impacts on visual resources resulting from the construction and operation of the MLVs would be minimal as each site is small and would be operated within the pipeline operational right-of-way. Proposed modification activities at the majority of aboveground facility sites would occur within the property lines at the already developed sites; therefore, no permanent changes to the current visual landscape would occur. Modifications to Compressor Station 515 would require additional operational footprint beyond the existing fence line of the facility on the northern portion of the site. The new compressor station equipment would be similar in nature to the existing facility and during operation the existing forested areas surrounding Compressor Station 515 would screen the facility from commuters along Buck Boulevard. We conclude that no significant long-term impacts would occur.

Construction of Compressor Station 201 would result in a permanent change in the viewshed and would add an additional industrial element to a currently mixed residential and commercial setting. Transco provided two visual simulations of the proposed compressor station from the intersection of Mantua Grove Road and Grove Road where the facility has the potential to be visible; one with turbine powered facilities and one with electric powered facilities. In both scenarios, the vegetation buffer that would be installed by Transco during restoration would partially screen the new Compressor Station 201 from commuters along Mantua Grove Road and Grove Road, but the facility would still be visible.

The implementation of visual buffers (i.e., additional and existing vegetation) around the east, west, and south ends of the facility would reduce the visual impacts on nearby residences. We recommended in the draft EIS that Transco file with the Secretary a visual screening plan to minimize visual impacts on residences near Compressor Station 201. Transco provided a Planting Plan that describes the vegetative screening that would be installed around the perimeter of Compressor Station 201 and updated visual simulation drawings for NSAs 1, 2, and 3 that show how the vegetative screening would appear in winter and with full foliage. Transco filed the recommended visual screening plan for Compressor Station 201 which we reviewed and find acceptable. Visual impacts would be minimized to the extent possible through the mitigation offered through the tree plantings included in the visual screening plan. In the short term, impacts due to the addition of Compressor Station 201 would be significant. Long term visual impacts, once the plantings are established, would be less than significant. The visual simulation drawings for NSAs 1, 2, and 3 are provided in appendix F.

With adherence to Transco's proposed impact avoidance, minimization, and mitigation plans, and our recommendations, we conclude that overall impacts on land use, recreation and special interest areas, and visual resources would be adequately minimized.

5.1.6 CULTURAL RESOURCES

Transco completed archival research and field surveys to identify historic resources and locations for additional subsurface testing in areas with potential for prehistoric and historic archaeological sites. The REAE Project would not significantly impact cultural resources in the area, or adversely affect historic properties.

We, as well as Transco, consulted with 15 federally recognized Native American tribes to provide them an opportunity to comment on the Project. One tribe requested additional information from Transco, which it provided. One other tribe responded that it had no objections. No other responses have been received.

Transco prepared plans to be used in the event any unanticipated archaeological sites or human remains are encountered during construction. The plans provide for work stoppage and the notification of interested parties, including Indian tribes, in the event of discovery. The Pennsylvania, New Jersey, and Maryland SHPOs reviewed these plans and found them acceptable. We concur.

FERC has completed its compliance requirements with section 106 of the NHPA for the proposed Project.

5.1.7 SOCIOECONOMICS

Construction of the REAE Project would not have a significant adverse impact on local populations, housing, employment, or the provision of community services. There would be temporary increases in demand for housing such as hotels, motels, and other rental units due to the influx of construction workers, and temporary increase in demand for local public services, such as police to direct traffic during construction, or to respond to emergencies associated with pipeline construction. Also, traffic levels would temporarily increase due to the commuting of the construction workforce to the Project area as well as the movement of construction vehicles and delivery of equipment and materials to the construction right-of-way.

We received comments regarding the potential effect of the Project on property values. We assessed several available studies regarding property values and based on the research reviewed, we find no conclusive evidence indicating that natural gas pipeline easements or compressor stations have a significant negative impact on property values, although this is not to say that any one property may or may not experience an impact on property value for either the short or long term.

Construction of the Project would benefit state and local economies by creating a short-term stimulus to the affected areas through payroll expenditures, local purchases of consumables and Project-specific materials, and sales tax. The long-term socioeconomic effect of the Project during operation is also likely to be beneficial, based on the increase in tax revenues that would accrue in the affected communities and jurisdictions; however, these benefits would not be as significant as during construction.

Based on the analysis presented, we conclude that the REAE Project would not have a significant adverse impact on the socioeconomic conditions of the Project area.

As presented in table 4.7.8-1, 47 block groups out of 104 block groups within the geographic scope of the Project are considered environmental justice communities. Of the 47 block groups, 11[105] block groups within the Project's area of review have a minority population that either exceeds 50 percent or is meaningfully greater than their respective counties. Eleven[106] block groups within the Project's area of review have a low-income population that is equal to or greater than their respective counties. Twenty-five[107] block groups within the Project's area of review have a minority population that exceeds 50 percent or is meaningfully greater than their respective counties and a low-income population that is equal to or greater than its respective county. Project work within the identified environmental justice communities includes the construction and operation of portions of the Regional Energy Lateral and the Effort Loop; construction and operation of the new Compressor Station 201; and modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, and the Lawnside M&R Station. The Mt. Laurel M&R Station is not located within an environmental justice community, but there are environmental justice communities within a 1-mile radius of the facility.

Potential impacts that could affect environmental justice communities may include groundwater, visual, socioeconomic, traffic, and air and noise impacts from construction and operation. Potentially

[105] Census Tract 3003.4, Block Group 4; Census Tract 3020, Block Group 2; Census Tract 3021.01, Block Group 1; Census Tract 3021.01, Block Group 2; Census Tract 3022.02, Block Group 1; Census Tract 78.01, Block Group 2; Census Tract 79.08, Block Group 1; Census Tract 79.08, Block Group 2; Census Tract 5002.04, Block Group 1; Census Tract 5002.04, Block Group 3; and Census Tract 6004, Block Group 3.

[106] Census Tract 2112.04, Block Group 4; Census Tract 2116, Block Group 2; Census Tract 3012.03, Block Group 2; Census Tract 240.01, Block Group 3; Census Tract 536.02, Block Group 3; Census Tract 5002.03, Block Group 2; Census Tract 5002.05, Block Group 3; Census Tract 6067, Block Group 3; Census Tract 6072, Block Group 1; Census Tract 6073, Block Group 2; and Census Tract 7040.05, Block Group 1.

[107] Census Tract 71.03, Block Group 2; Census Tract 6002, Block Group 1; Census Tract 6002, Block Group 2; Census Tract 6004, Block Group 1; Census Tract 6004, Block Group 2; Census Tract 6004, Block Group 4; Census Tract 6004, Block Group 5; Census Tract 6008, Block Group 1; Census Tract 6016, Block Group 1; Census Tract 6016, Block Group 2; Census Tract 6016, Block Group 3; Census Tract 6017, Block Group 1; Census Tract 6017, Block Group 2; Census Tract 6018, Block Group 1; Census Tract 6103 Block Group 1; Census Tract 6104 Block Group 1; Census Tract 6104 Block Group 2; Census Tract 6104 Block Group 3; Census Tract 6065, Block Group 1; Census Tract 6065, Block Group 2; Census Tract 6065, Block Group 3; Census Tract 6073, Block Group 4; Census Tract 7004.08, Block Group 1; Census Tract 7004.08, Block Group 2; and Census Tract 6034, Block Group 3.

adverse environmental effects on surrounding communities associated with the Project, including environmental justice communities, would be minimized and/or mitigated.

Approximately 48 groundwater wells located in environmental justice communities would be within 150 feet of Project facilities. Construction, including blasting, could physically damage wells or diminish the yield and water quality of wells and springs within 150 feet of construction workspaces. The potential to impact wells and springs would be reduced through implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources. In addition, wells and springs within workspaces would be marked and protected to prevent construction-related damage, and pre- and post-construction testing of well yield and water quality on wells within 150 feet would be conducted with landowner permission. With implementation of these mitigation measures, impacts on environmental justice communities associated with groundwater and well impacts would be less than significant.

Temporary visual impacts would occur during construction of the pipeline and aboveground facilities, including vehicle and equipment movement, vegetation clearing and grading, trench and foundation excavation, pipe storage, and spoil piles. Permanent visual impacts may occur within environmental justice communities along the pipeline right-of-way from periodic vegetation clearing to allow for visual pipeline inspection.

No visual impacts would occur from the modification of Compressor Stations 195, 200, and 207 as the modifications would not require additional operational facility footprint and no ground disturbance is anticipated. Mt. Laurel M&R Station and the Lawnside M&R Station are existing facilities and are not visible from the closest residences in environmental justice communities due to visual screening and proposed changes would occur within the facility fence line. The proposed modifications at Compressor Station 505 and Camden M&R Station are within the existing footprint and perimeter fence and consistent with what presently exists at the facilities. Therefore, we conclude that visual impacts on environmental justice communities from the modifications of Compressor Station 505 and Camden M&R Station would be less than significant.

Compressor Station 201 would result in a permanent change in the viewshed and would result in a permanent impact on the surrounding existing visual character of the Project area, which is an environmental justice community. To further minimize visual impacts to nearby residences, we required in the draft EIS that Transco file with the Secretary a visual screening plan to minimize visual impacts on residences (including but not limited to NSAs 1, 2, and 3) near Compressor Station 201. Transco provided a Planting Plan that describes the vegetative screening that would be installed around the perimeter of Compressor Station 201 and updated visual simulation drawings for NSAs 1, 2, and 3 that show how the vegetative screening would appear in winter and with full foliage. We have reviewed Transco's vegetative screening plan for Compressor Station 201 and find it to be acceptable. In the short term, visual impacts on environmental justice communities due to the addition of Compressor Station 201 would be significant. These impacts would be minimized to the extent possible through the mitigation offered through the tree plantings included in the visual screening plan. With mitigation, once the plantings are established, long term visual impacts on environmental justice communities would be less than significant.

Project impacts on environmental justice populations may include impacts on socioeconomic factors. Constructing the Project would require about 1,441 workers. Transco estimates that 40 percent of its construction workforce would temporarily relocate to the Project area; therefore, the average of 353 non-local workers (peak of 582 non-local workers) workers would temporarily increase the total population of the 11 county Project area by about 0.01 percent. The temporary influx of workers into the environmental justice community could increase the demand for community services, such as housing, police enforcement, and medical care. An influx of workers could also affect economic conditions, and other community infrastructure. No permanent employees are anticipated. Because the additional construction workers would represent a temporary increase, we conclude that socioeconomic impacts on the environmental justice community would be less than significant.

Regarding Project impacts on traffic, the movement of construction personnel, equipment, and materials would result in short-term impacts on roadways, lasting the 13-month duration of construction, and Transco would employ traffic control measures and schedule deliveries to minimize impacts on local traffic. Therefore, traffic impacts on environmental justice communities would be less than significant.

With respect to construction air emissions, exhaust emissions and fugitive dust would result in short-term, localized impacts in the immediate vicinity of construction work areas. Efforts to mitigate exhaust emissions during construction would include using construction equipment and vehicles that comply with EPA mobile and non-road emission regulations, and usage of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations. Transco would implement a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements. Operational emission increases from the Project would result from natural gas combustion turbines at Compressor Station 505. Based on the Project compressor station operational air quality modeling results and the mitigation measures proposed by Transco, we conclude that air quality impacts from construction and operation of the Project would not result in a significant impact on local or regional air quality for environmental justice communities.

Regarding noise impacts, construction noise related to Project activities would be temporary. Operation of the above ground facilities and compressor stations, with noise mitigation, would result in an increase in noise levels over ambient by 0.1 to 2.9 decibels. The anticipated noise increases would be below or at the human ear's threshold of perception and below the applicable FERC noise limit criterion at the affected NSAs. With Transco's proposed mitigation measures and our operational noise survey recommendations in section 4.9.3, the Project would not result in significant noise impacts on local residents and the surrounding communities, which include environmental justice communities.

In conclusion, aside from the insignificant impacts associated with modifications to existing Compressor Stations 195, 200, 207, and 505, Camden M&R Station, the Lawnside M&R Station, and the Mt. Laurel M&R Station and construction and operation of portions of the Regional Energy Lateral and the Effort Loop, the Project would not have disproportionately high and adverse impacts on environmental justice communities. Impacts associated with construction and operation of Compressor Station 201 would be predominately borne by environmental justice communities and disproportionately high and adverse. Proposed mitigation associated with Compressor Station 201 includes the following:

- implementation of Transco's Plan and Procedures, Spill Plan, Blasting Plan, and other BMPs designed to minimize erosion and protect environmental resources;
- marking and protecting springs and wells within workspaces to prevent construction-related damage;
- pre- and post-construction testing of well yield and water quality on wells within 150 feet of the Project;
- arrangements for a temporary water supply in the unlikely event that a well or spring is affected, until the water supply and quality are restored, or otherwise resolved;
- installation of down shielded lighting to minimize visual impacts at night;

- planting evergreen trees along the southern fence line of the facility to provide visual screening;
- implementation of a Traffic Management Plan to minimize Project effects on local traffic and transportation systems in environmental justice communities during construction;
- use of construction equipment and vehicles that comply with EPA mobile and non-road emission regulations,
- use of commercial gasoline and diesel fuel products that meet specifications of applicable federal and state air pollution control regulations;
- implementation of a Fugitive Dust Control Plan to control construction-related dust in compliance with state regulations and FERC requirements; and
- use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping.

5.1.8 AIR QUALITY

Project construction would result in temporary increases of air emissions from the use of diesel- and gas-fueled equipment and vessels, blowdown and purging activities, as well as temporary increases in fugitive dust emissions from earth/roadway surface disturbance. These impacts would be temporary and localized and would not be expected to cause or contribute to a violation of applicable air quality standards. However, to further minimize construction emissions, Transco would implement the measures outlined in its Fugitive Dust Control Plan, which we reviewed and find acceptable. In addition, based on Transco's commitment to obtain the applicable air permits and adhere to air quality regulations, and the temporary nature of pipeline construction, we conclude that construction of the Project would not have a significant impact on regional air quality.

Transco performed air quality modeling analyses for Compressor Stations 505 and 515. The new compressor at Compressor Station 201 would be electric-driven and, therefore, no modeling was conducted for this station. Transco's Compressor Stations 207 and 195 would involve installing or uprating of electric-driven compression and, therefore, the additional compression would not generate combustion-related emissions. Transco completed its NAAQS analyses by modeling operating emissions from the compressor stations to determine the maximum ground level concentrations for each pollutant and averaging period, added ambient background concentrations. These results indicate that the Project would not contribute to a violation of the corresponding NAAQS.

Air quality impacts from operation of the Projects' compressor stations would be minimized by the use of equipment, emissions controls, and operating practices that meet or exceed BMPs. Compliance with federal and state air regulations and state permit requirements would ensure that air quality impacts would be minimized during installation and operation of the Projects' compressor units.

Construction and operation of the Project would increase the atmospheric concentration of GHGs, in combination with past, current, and future emissions from all other sources globally and would contribute incrementally to future climate change impacts. The EIS does not characterize the Project's GHG emissions as significant or insignificant because the Commission is conducting a generic proceeding to determine whether and how the Commission will conduct climate change significance determinations going forward.

5.1.9 NOISE

Noise would be generated during construction and operation of the proposed facilities. Construction activities in any one area would typically last from several days to several weeks on an intermittent basis. Construction equipment would be operated on an as-needed basis and limited primarily to daytime hours with the exception of some discrete construction related activities (e.g., hydrostatic testing and Direct Pipe® work). Transco proposes to use the Direct Pipe® method to cross the Susquehanna River. The Direct Pipe® activities would generate continuous noise at entry and exit points and could last 3 to 4 weeks depending on the length of the drill and the hardness of the substrate. Transco completed an acoustical assessment of cumulative noise impacts from the proposed Direct Pipe® crossing of the Susquehanna River and found that activities on the launching side would result in an unmitigated noise level increase of 3.8 dBA at the nearest NSA. Transco would reduce noise impacts on the NSA by using on-site equipment as a noise barrier for the pump skids and mud cleaning system. In addition, Transco would perform noise monitoring during the Direct Pipe® crossing of the Susquehanna River and employ additional noise mitigation measures as necessary. As such, we conclude that construction noise impacts would not be significant.

Ambient daytime and nighttime noise measurements at the nearest NSAs in addition to new and modified aboveground facilities, including Compressor Stations 195, 201, 207, 505, and 515, were used to estimate the noise that would result from normal operation of the facilities. Modifications at Compressor Station 200 piping would not result in changes to operational noise and no other sources of operational noise are anticipated from this facility. Noise estimates incorporated Transco's proposed noise mitigation measures, which would include the use of acoustically insulated compressor buildings; air inlet and exhaust silencers; a unit blowdown silencer; insulated, self-closing, and well-sealed access doors; and, if necessary, acoustical pipe insulation on aboveground outdoor piping. Based on modeling, the estimated noise associated with the facilities would range from a decrease in 6.0 dBA to an increase in 3.0 dBA at the nearest NSAs, which is below or at the threshold of perception for the human ear (3 dBA). Although Transco's noise levels are below our standard of 55 dBA for the estimated Project impacts, low ambient noise would make noise produced by the compressor stations and pipeline facilities more noticeable.

To verify that Transco's noise estimates are accurate, we recommend that Transco file a noise survey after placing the new and modified compressor stations in service. We further recommend that if a full load condition noise survey is not possible, Transco file an interim survey at the maximum possible horsepower load. If the noise attributable to the operation of all of the equipment at the station under interim or full horsepower load exceeds 55 dBA L_{dn} at any nearby NSA, which the EPA has indicated protects the public from indoor and outdoor activity interference, Transco would be required to file a report on what changes are needed and install the additional noise controls to meet the level.

Given adherence to Transco's proposed measures as well as our additional recommendations, we conclude that construction and operation of the Project would not result in significant noise-related impacts at nearby NSAs.

5.1.10 RELIABILITY AND SAFETY

The pipeline and aboveground facilities associated with the REAE Project would be designed, constructed, operated, and maintained to meet the DOT Minimum Federal Safety Standards in 49 CFR 192 and other applicable federal and state regulations. These regulations include specifications for material selection and qualification; minimum design requirements; and protection of the pipeline from internal, external, and atmospheric corrosion. The DOT rules require regular inspection and maintenance, including repairs as necessary, to ensure the facilities have adequate strength to transport the natural gas safely.

In summary, we conclude that Transco's compliance with applicable design, construction and maintenance standards and DOT safety regulations would be protective of public safety.

5.1.11 CUMULATIVE IMPACTS

The REAE Project would occur in an area that has been substantially altered by human activity. Within the existing environment, the Project and other current and reasonably foreseeable future projects in the area could result in varying degrees of cumulative impact on different resources depending on the type and scope of each project, their proximity to each other (the geographic scope), the timeframe in which they are constructed (the temporal extent), and the measures that would be implemented to avoid or reduce impacts at each project site.

We identified 120 other projects that could potentially cause a cumulative impact when added to the effects of the proposed Project including: energy projects (including FERC-jurisdictional projects); transportation projects; and residential, commercial, and industrial projects. We considered as part of our cumulative review potential cumulative impacts on geology and soils; groundwater, surface water, and wetlands; vegetation; wildlife; fisheries; land use, special interest areas, and visual resources; socioeconomics; environmental justice; cultural resources; air quality (including climate change); and noise.

As described in section 4.0, we found that most impacts associated with the REAE Project would be temporary to short-term in duration and localized to the construction workspace or adjacent areas. Long-term impacts would occur where temporary workspaces would be cleared of forest and permanent impacts would occur where new permanent access roads and new aboveground facilities are constructed and where the operating rights-of-way of the pipeline loops are maintained in an herbaceous condition.

Construction of the REAE Project, in addition to other projects within geographic scopes of analysis, could have minor cumulative impacts on a range of environmental resources. The majority of the cumulative impacts would be minor and temporary during construction. However, some long-term cumulative impacts would occur in forested areas and associated wildlife habitats. Some cumulative long-term benefits include new jobs and wages, purchases of goods and materials, and tax revenues. Given the REAE Project BMPs, design features, and mitigation measures that would be implemented, and the federal and state laws and regulations protecting resources that would apply to the other projects in our analysis, we conclude that when added to other present and reasonably foreseeable future actions, cumulative impacts on environmental resources within the geographic scopes affected by the Project would not be significant.

5.1.12 ALTERNATIVES

As an alternative to the proposed action, we evaluated the no-action alternative, the potential use of other natural gas transmission systems in the region, modification alternatives to Transco's existing system, pipeline route alternatives, alternative locations for Compressor Station 201, and the use of electric motor-driven compressors at Compressor Stations 505 and 515. Implementing the no-action alternative would result in no impacts on the environment; however, the Project's goals would not be met. The Commission decision, in its Order, would review the need for the Project. Because the Commission will ultimately determine Project need, and because staff has not identified a significant impact associated with the proposed action, we do not recommend the no-action alternative.

We received numerous comments requesting that we evaluate alternatives to the proposed pipeline routes or the aboveground facility locations. We also received comments requesting additional review of alternatives collocating with existing rights-of-way, especially at the Susquehanna River, review of the installation of electric motor-driven compressors at compressor station locations.

We assessed alternatives utilizing portions of Transco's existing pipeline system as well as two other existing interstate natural gas pipeline systems in the Project area. Our analysis concluded that other existing natural gas transmission systems in the Project area lack the available capacity to meet the purpose of the Project. Modifying these systems could result in impacts similar to those of the proposed Project or would be economically impractical. Additional compression/looping would not offer a significant environmental advantage over the proposed action. We conclude that the use of a system alternative is not preferable to the proposed action.

The entire Effort Loop route is collocated within or adjacent to Transco's existing A, B, and C pipeline corridor. We did not identify any route alternatives that deviate from the proposed pipeline alignment. However, we received a recommendation to evaluate an alternative that would site the proposed Effort Loop pipeline between Transco's existing pipelines to minimize widening of the right-of-way and vegetation cutting. We also received a recommendation that Transco modify the proposed Effort Loop pipeline alignment to the opposite side of the existing rights-of-way at this same location. We requested that Transco evaluate and justify the locations where Transco proposes to install the Effort Loop pipeline adjacent to its existing pipeline system instead of installing the Effort Loop between its existing pipelines, where sufficient separation would allow safe installation, as well as on the opposite side of the existing rights-of-way. Transco provided sufficient justification for the crossovers and proposed Effort Loop alignment and we find the alignment of the pipeline acceptable.

Transco incorporated seven minor route changes along the Regional Energy Lateral into the Project design after the issuance of the draft EIS to avoid interior forest, minimize impacts on proposed residential developments, and to reduce wetland impacts. We have reviewed these route changes and find them to have an equal or lessened environmental effect when compared to the original proposed route and we find them acceptable. We note that one route change involves disturbances to a landowner that was not previously affected by the proposed route and results in construction occurring within 50 feet of the newly affected landowner's home. As the new landowner has approved the route change, we find the route change acceptable.

Based on our evaluations of the remaining alternative routes for the proposed lateral pipeline and loop pipeline, we conclude that the pipeline route alternatives do not offer a significant environmental advantage when compared to the proposed route or would not be economically practical; and therefore, are not preferable to the proposed action. Lastly, we conclude that the alternative Compressor Station 201 aboveground facility locations and electric motor-driven compressor alternatives evaluated do not offer significant environmental advantages when compared to the proposed locations and proposed designs and are not preferable to the proposed action. Therefore, we conclude that the proposed action, as modified by our recommended mitigation measures below, is the preferred alternative to meet the Project objectives.

5.2 FERC STAFF'S RECOMMENDED MITIGATION

If the Commission authorizes the REAE Project, we recommend that the following measures be included as specific conditions in the Commission's Order. We conclude that these measures would further mitigate the environmental impact associated with construction and operation of the REAE Project.

1. Transco shall follow the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests) and as identified in the EIS, unless modified by the Order. Transco must:

   a. request any modification to these procedures, measures, or conditions in a filing with the Secretary;

b. justify each modification relative to site-specific conditions;

c. explain how that modification provides an equal or greater level of environmental protection than the original measure; and

d. receive approval in writing from the Director of OEP, or the Director's designee, **before using that modification**.

2. The Director of OEP, or the Director's designee, has delegated authority to address any requests for approvals or authorizations necessary to carry out the conditions of the Order, and take whatever steps are necessary to ensure the protection of environmental resources during construction and operation of the Project. This authority shall allow:

a. the modification of conditions of the Order;

b. stop-work authority; and

c. the imposition of any additional measures deemed necessary to ensure continued compliance with the intent of the conditions of the Order as well as the avoidance or mitigation of unforeseen adverse environmental impact resulting from Project construction and operation.

3. **Prior to any construction**, Transco shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, EIs, and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities

4. The authorized facility locations shall be as shown in the EIS, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Transco shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

   Transco's exercise of eminent domain authority granted under NGA section 7(h) in any condemnation proceedings related to the Order must be consistent with these authorized facilities and locations. Transco's right of eminent domain granted under NGA section 7(h) does not authorize it to increase the size of its natural gas facilities to accommodate future needs or to acquire a right-of-way for a pipeline to transport a commodity other than natural gas.

5. Transco shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP, or the Director's designee, **before construction in or near that area**.

This requirement does not apply to extra workspace allowed by the Commission's *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

a. implementation of cultural resources mitigation measures;

b. implementation of endangered, threatened, or special concern species mitigation measures;

c. recommendations by state regulatory authorities; and

d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.

6. **Within 60 days of the acceptance of the authorization and before construction begins**, Transco shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP, or the Director's designee. Transco must file revisions to the plan as schedules change. The plan shall identify:

   a. how Transco will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EIS, and required by the Order;

   b. how Transco will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at each site is clear to onsite construction and inspection personnel;

   c. the number of EIs assigned per spread, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;

   d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;

   e. the location and dates of the environmental compliance training and instructions Transco will give to all personnel involved with construction and restoration (initial and refresher training as the Project progresses and personnel change), with the opportunity for OEP staff to participate in the training session(s);

   f. the company personnel (if known) and specific portion of Transco's organization having responsibility for compliance;

   g. the procedures (including use of contract penalties) Transco will follow if noncompliance occurs; and

   h. for each discrete facility, a Gantt or PERT chart (or similar project scheduling diagram), and dates for:

i. the completion of all required surveys and reports;
ii. the environmental compliance training of onsite personnel;
iii. the start of construction; and
iv. the start and completion of restoration.

7. Transco shall employ at least one EI per construction spread. The EI shall be:

a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;

b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;

c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;

d. a full-time position, separate from all other activity inspectors;

e. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and

f. responsible for maintaining status reports.

8. Beginning with the filing of its Implementation Plan, Transco shall file updated status reports with the Secretary on a **biweekly** basis until all construction and restoration activities are complete. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:

a. an update on Transco's efforts to obtain the necessary federal authorizations;

b. the construction status of each spread, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally-sensitive areas;

c. a listing of all problems encountered and each instance of noncompliance observed by the EIs during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);

d. a description of the corrective actions implemented in response to all instances of noncompliance;

e. the effectiveness of all corrective actions implemented;

f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and

g. copies of any correspondence received by Transco from other federal, state, or local permitting agencies concerning instances of noncompliance, and Transco's response.

9. Transco shall develop and implement an environmental complaint resolution procedure, and file such procedure with the Secretary, for review and approval by the Director of OEP, or the Director's designee. The procedure shall provide landowners with clear and simple directions for identifying and resolving their environmental mitigation problems/concerns during construction of the Project and restoration of the right-of-way. **Prior to construction**, Transco shall mail the complaint procedures to each landowner whose property will be crossed by the Project.

   a. In its letter to affected landowners, Transco shall:

      i. provide a local contact that the landowners should call first with their concerns; the letter should indicate how soon a landowner should expect a response;

      ii. instruct the landowners that if they are not satisfied with the response, they should call Transco's Hotline; the letter should indicate how soon to expect a response; and

      iii. instruct the landowners that if they are still not satisfied with the response from Transco's Hotline, they should contact the Commission's Landowner Helpline at 877-337-2237 or at LandownerHelp@ferc.gov.

   b. In addition, Transco shall include in its biweekly status report a copy of a table that contains the following information for each problem/concern:

      i. the identity of the caller and date of the call;

      ii. the location by milepost and identification number from the authorized alignment sheet(s) of the affected property;

      iii. a description of the problem/concern; and

      iv. an explanation of how and when the problem was resolved, will be resolved, or why it has not been resolved.

10. Transco must receive written authorization from the Director of OEP, or the Director's designee, **before commencing construction of any Project facilities.** To obtain such authorization, Transco must file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).

11. Transco must receive written authorization from the Director of OEP, or the Director's designee, **before placing the Project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the right-of-way and other areas affected by the Project are proceeding satisfactorily.

12. **Within 30 days of placing the authorized facilities in service**, Transco shall file an affirmative statement with the Secretary, certified by a senior company official:

   a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or

   b. identifying which of the conditions in the Order Transco has complied with or will comply with. This statement shall also identify any areas affected by the Project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.

13. All conditions attached to the water quality certificate issued by PADEP, except those that the Director of OEP, or the Director's designee, identify as waived pursuant to 40 C.F.R. § 121.9, constitute mandatory conditions of the Certificate Order. **Prior to construction**, Transco shall file, for review and written approval of the Director of OEP, or the Director's designee, any revisions to its Project design necessary to comply with the water quality certification conditions.

14. **As part of its Implementation Plan**, Transco shall file with the Secretary, for review and written approval by the Director of OEP, or the Director's designee, a *Laflin Municipal Park Restoration Plan* that is developed in conjunction with the Borough of Laflin and describes the measures and timeframes that Transco will implement to restore the park and ballfield to existing or better use conditions. *(Section 3.4.3)*

15. Transco shall **not begin** construction activities **until**:

    a. Transco files with the Secretary the final bat conservation measures and mitigation, incorporating any additional conservation measures and mitigation developed in coordination with the Pennsylvania Field Office of the FWS;

    b. FERC staff receives comments from the FWS regarding the proposed action;

    c. FERC staff completes formal ESA consultation with the FWS, if required; and

    d. Transco has received written notification from the Director of OEP, or the Director's designee, that construction or use of mitigation may begin. *(Section 4.4.4.2)*

16. **Prior to construction**, Transco shall file with the Secretary, for review and written approval by the Director of OEP, or the Director's designee, evidence of landowner concurrence with the site-specific construction plans for construction workspace within 10 feet of a residence and any plans that include outbuilding removal, unless the workspace is part of the existing maintained right-of-way. If Transco is unable to obtain concurrence, Transco shall file revised site-specific construction plans that maintain a 10 foot buffer between the residence and the Project workspace and avoid outbuilding removal. *(Section 4.5.2.4)*

17. Transco shall file a noise survey with the Secretary **no later than 60 days** after placing the new Compressor Station 201 in service. If full load condition noise surveys are not possible, Transco shall provide an interim survey at the maximum possible horsepower load and provide the full load survey **within 6 months**. If the noise attributable to the operation of Compressor Station 201 under interim or full horsepower load conditions exceeds a L_{dn} of 55 dBA at any nearby NSAs, Transco shall file a report on what changes are needed and install additional noise controls to meet that level **within 1 year** of the facility's in-service date. Transco shall confirm compliance with the L_{dn} of 55 dBA requirements by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. *(Section 4.9.3)*

18. Transco shall file noise surveys with the Secretary **no later than 60 days** after placing in service the authorized unit(s) and uprates at Compressor Stations 195, 207, 505, and 515. If full load condition noise surveys are not possible, Transco shall provide an interim survey at the maximum possible horsepower load and provide the full load survey **within 6 months**. If the noise attributable to operation of the modified stations under interim or full horsepower load conditions

exceeds a L_{dn} of 55 dBA at any nearby NSAs, Transco shall file a report on what changes are needed and install additional noise controls to meet that level **within 1 year** of the in-service date. Transco shall confirm compliance with the L_{dn} of 55 dBA requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls. *(Section 4.9.3)*