Federal Energy Regulatory Commission

Office of Energy Projects

August 2020

PennEast Pipeline Company, LLC **Docket No. CP20-47-000**

PennEast 2020 Amendment Project

Environmental Assessment

Cooperating Agencies:

Washington, DC 20426

FEDERAL ENERGY REGULATORY COMMISSION
WASHINGTON, DC 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:
OEP/DG2E/Gas 2
PennEast Pipeline Company, LLC
Docket No. CP20-47-000

TO THE INTERESTED PARTIES:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the PennEast 2020 Amendment Project, proposed by PennEast Pipeline Company, LLC (PennEast) in the above referenced docket. PennEast proposes to amend its certificate of public convenience and necessity for the PennEast Pipeline Project (Docket No. CP15-558-000) that was issued by the Commission on January 19, 2018 and the PennEast Pipeline Project Amendment (CP19-78-000) that was issued by the Commission on March 19, 2020. In the PennEast 2020 Amendment Project, PennEast requests authorization to construct and operate the previously authorized project in two phases, beginning with the facilities located in Pennsylvania through approximate milepost (MP) 68.2 of the certificated route. As part of Phase 1, PennEast proposes to include new delivery points with Columbia Gas Transmission, LLC and Adelphia Gateway, LLC at a new metering and regulating station (Church Road Interconnects) in Northampton County, Pennsylvania. The Phase 1 facilities would deliver up to 650,000 dekatherms per day of firm transportation service to the new delivery points. PennEast states it will continue to work towards acquiring the New Jersey authorizations for the Phase 2 facilities located in New Jersey.

The EA assesses the potential environmental effects of the construction and operation of the PennEast 2020 Amendment Project in accordance with the requirements of the National Environmental Policy Act (NEPA). The FERC staff concludes that approval of the proposed amendment, with appropriate mitigating measures, would not constitute a major federal action significantly affecting the quality of the human environment.

The U.S. Army Corps of Engineers, U.S. Environmental Protection Agency, and U.S. Department of Agriculture – Natural Resources Conservation Service participated as cooperating agencies in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to resources potentially affected by the proposal and participate in the NEPA analysis. In addition to the lead and cooperating agencies, other federal, state, and local agencies may use this EA in approving or issuing permits for all or part of the PennEast 2020 Amendment Project.

The proposed PennEast 2020 Amendment Project includes the following facilities:

- new interconnection facilities in Bethlehem Township, Northampton County, Pennsylvania (Church Road Interconnects), including:
    - a metering and regulation station, and a pig[1] launcher and receiver, at approximate at MP 68.2 of the certificated route; and
    - two separate interconnection and measurement facilities;
- phasing of the certificated facilities, such that PennEast would construct and operate the facilities – including the modifications under the PennEast 2020 Amendment application – in two phases:
    - Phase 1 would consist of construction of the certificated route to approximate milepost 68.2, including two of the compressor units at the Kidder Compressor Station in Carbon County, Pennsylvania, as well as the new interconnection facilities in Northampton County, Pennsylvania; and
    - Phase 2 would consist of the remainder of the certificated facilities from approximate MP 68.2 to MP 114 and would include the third compressor unit at the Kidder Compressor Station. Proposed Phase 2 facilities are located in Northampton and Bucks Counties, Pennsylvania, and Hunterdon and Mercer Counties, New Jersey.

The Commission mailed a copy of the *Notice of Availability* to federal, state, and local government representatives and agencies; Native American tribes; potentially affected landowners; and other interested individuals and groups that filed comments on the project docket prior to issuance of the notice. The EA 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 EA may be accessed by using the eLibrary link on the FERC's website. Click on the eLibrary link (https://www.ferc.gov/ferc-online/elibrary/overview), select "General Search" and enter the docket number in the "Docket Number" field, excluding the last three digits (i.e. CP20-47). 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.

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

The EA 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 issues raised in this proceeding. Any person wishing to comment on the EA may do so. Your comments should focus on the EA's disclosure and discussion of potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they would be. To ensure that the Commission has the opportunity to consider your comments prior to making its decision on this project, it is important that we receive your comments in Washington, DC on or before 5:00 pm Eastern Time on **September 2, 2020.**

For your convenience, there are three methods you can use to submit your comments to the Commission. The Commission encourages electronic filing of comments and has staff available to assist you at (866) 208-3676 or FercOnlineSupport@ferc.gov. Please carefully follow these instructions so that your comments are properly recorded.

1) You can file your comments electronically using the eComment feature on the Commission's website (www.ferc.gov) under the link to FERC Online. This is an easy method for submitting brief, text-only comments on a project;

2) You can also file your comments electronically using the eFiling feature on the Commission's website (www.ferc.gov) under the link to FERC Online. With eFiling, you can provide comments in a variety of formats by attaching them as a file with your submission. New eFiling users must first create an account by clicking on "eRegister." You must select the type of filing you are making. If you are filing a comment on a particular project, please select "Comment on a Filing"; or

3) You can file a paper copy of your comments by mailing them to the following address using the U.S. Postal Service. Be sure to reference the project docket number (CP20-47-000) with your submission: Kimberly D. Bose, Secretary, Federal Energy Regulatory Commission, 888 First Street NE, Room 1A, Washington, DC 20426 NE, Room 1A, Washington, DC 20426. Submissions sent through carriers other than the U.S. Postal Service must be sent to 12225 Wilkins Avenue, Rockville, Maryland 20852 for processing.

Filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered. Only intervenors have the right to seek rehearing or judicial review of the Commission's decision. At this point in this proceeding, the timeframe for filing timely intervention requests has expired. Any person seeking to become a party to the proceeding must file a motion to intervene out-of-time pursuant to Rule 214(b)(3) and (d) of the Commission's Rules of Practice and Procedures

(18 CFR 385.214(b)(3) and (d)) and show good cause why the time limitation should be waived. Motions to intervene are more fully described at https://www.ferc.gov/ferc-online/ferc-online/how-guides.

Additional information about the PennEast 2020 Amendment Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website (www.ferc.gov) using eLibrary. The eLibrary link also provides access to the texts of formal documents issued by the Commission, such as orders, notices, and rulemakings.

In addition, the Commission offers a free service called eSubscription, which allows you to keep track of all formal issuances and submittals in specific dockets. This can reduce the amount of time you spend researching proceedings by automatically providing you with notification of these filings, document summaries, and direct links to the documents. Go to https://www.ferc.gov/ferc-online/overview to register for eSubscription.

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Technical Abbreviations and Acronyms

ACHP	Advisory Council on Historic Preservation
APE	Area of Potential Effects
AIMP	agricultural impact mitigation plan
AQCR	Air Quality Control Regions
ASME	American Society of Mechanical Engineers
ATWS	additional temporary workspace
BCC	Birds of Conservation Concern
BGEPA	Bald and Golden Eagle Protection Act
BGS	below ground surface
BMP	best management practice
CAA	Clean Air Act
Certificate	Certificate of Public Convenience and Necessity
Certificated Project	PennEast Pipeline Project and PennEast Pipeline Project Amendment previously approved in Docket Nos. CP15-558-000 and CP19-78-000, respectively
Certificated Route	Pipeline route authorized for the Certificated Project in Docket No. CP15-558-000 and CP19-78-000
CFR	Code of Federal Regulations
CH_4	methane
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalents
COE	U.S. Army Corps of Engineers
Commission	Federal Energy Regulatory Commission
CWA	Clean Water Act
dBA	A-weighted decibels
DRBC	Delaware River Basin Commission
Dth/d	dekatherms per day
EA	environmental assessment
EDR	Environmental Data Resources, Inc.
EI	Environmental Inspector
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
E&SCP	Erosion and Sediment Control Plan
EV	exceptional value
F	Fahrenheit
FDCP	Fugitive Dust Control Plan
FEIS	Final Environmental Impact Statement
FERC	Federal Energy Regulatory Commission
FWS	U.S. Fish and Wildlife Service
g	gravity
GHG	greenhouse gases

GWP	global warming potential
HAPs	hazardous air pollutants
HCA	high consequence area
HQ	high quality
HUC	Hydrologic Unit Code
IBA	Important Bird Area
L_{dn}	day-night equivalent sound level
L_{eq}	equivalent sound level
M&R	metering and regulation
MAOP	maximum allowable operating pressure
MBTA	Migratory Bird Treaty Act
MLVs	mainline valves
MOU	memorandum of understanding
MP	milepost
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
N_2O	nitrous oxide
NO_2	nitrogen dioxide
NO_x	nitrogen oxides
NOI	*Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast 2020 Amendment Project, and Request for Comments on Environmental Issues*
NPDES	National Pollutant Discharge Elimination System
NRCC	Northeast Regional Climate Center
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSA	noise sensitive areas
NSPS	New Source Performance Standards
NSR	New Source Review
O_3	ozone
OEP	Office of Energy Projects
Order	Certificate of Public Convenience and Necessity
PADCNR	Pennsylvania Department of Conservation and Natural Resources
PADEP	Pennsylvania Department of Environmental Protection
PennDOT	Pennsylvania Department of Transportation
PennEast	PennEast Pipeline Company, LLC
PFBC	Pennsylvania Fish and Boat Commission
PGA	peak ground acceleration
PGC	Pennsylvania Game Commission

PHMSA	Pipeline and Hazardous Materials Safety Administration
Plan, or FERC Plan	*FERC Upland Erosion Control, Revegetation, and Maintenance Plan*
Procedures, or FERC Procedures	*FERC Wetland and Waterbody Construction and Mitigation Procedures*
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
$PM_{2.5}$	particulate matter sized 2.5 microns or smaller
PM_{10}	particulate matter sized 10 microns or smaller
SFHA	Special Flood Hazard Area
SHPO	State Historic Preservation Office
SIPs	state implementation plans
SO_2	sulfur dioxide
SPCC Plan	*Spill Prevention, Containment, and Countermeasures Plan*
SSA	sole source aquifers
TCO	Columbia Gas Transmission, LLC
T&E	threatened and endangered
TMDL	Total Maximum Daily Load
tpy	tons per year
UDP	*Unanticipated Discovery Plan*
UGI-LEH	UGI Utilities, Inc.
USC	United States Code
USDA	U.S. Department of Agriculture
USDOT	U.S. Department of Transportation
USGS	U.S. Geological Survey
VdB	vibration decibels
VOC	volatile organic compound
WHPA	Wellhead Protection Area

SECTION A – PROPOSED ACTION

1.0 INTRODUCTION

The staff of the Federal Energy Regulatory Commission (FERC or Commission) prepared this environmental assessment (EA) to assess the potential environmental impacts of the construction and operation of the PennEast 2020 Amendment Project, involving phased construction of the PennEast Pipeline Project[1] and new interconnection facilities (Church Road Interconnects) in Northampton County, Pennsylvania. PennEast Pipeline Company, LLC (PennEast) requests a Certificate of Public Convenience and Necessity (Certificate or Order) to incorporate the Church Road Interconnects to the PennEast Pipeline or Project, approved in a Commission Order issued on January 19, 2018, and amended on March 19, 2020 (Certificated Project). The location and a general overview of the proposed facilities are provided on figure A.1-1.

The FERC is the lead federal agency for authorizing interstate natural gas transmission facilities under the Natural Gas Act (NGA), and is the lead federal agency for preparation of the EA. We[2] prepared this EA in compliance with the requirements of the National Environmental Policy Act (NEPA) (Title 40 of the Code of Federal Regulations [CFR] Parts 1500-1508 [40 CFR 1500-1508]) and the Commission's implementing regulations under 18 CFR 380.

On January 30, 2020, PennEast, filed an application for the 2020 Amendment Project with the Commission in Docket No. CP20-47-000 under Section 7(c) of the NGA and Part 157 of the Commission's regulations. PennEast proposes to construct the Certificated Project in Docket Nos. CP15-558-000 and CP19-78-000 in two phases. Phase 1 would consist of construction and operation of the Certificated Project in Pennsylvania from milepost (MP) 0.0 to the proposed Church Road Interconnects at approximate MP 68.2R2 in Northampton County, Pennsylvania. The Church Road Interconnects facility would include new delivery points with Columbia Gas Transmission, LLC and Adelphia Gateway, LLC. Phase 1 would also consist of construction of two of the three authorized compressor units at the Kidder Compressor Station in Carbon County, Pennsylvania. Phase 2 would consist of construction and operation of the remaining facilities associated with the Certificated Project from MP 68.2R2 to MP 114.0,[3] including the third compressor unit at the Kidder Compressor Station. Phase 2 would be constructed upon receipt of the New Jersey authorizations.[4] Because the facilities associated with Phase 1 and Phase 2 are only a change in timing of the construction and were analyzed in their entirety for the Certificated Project, this EA will primarily assess the impacts associated with construction and operation of the newly proposed Church Road Interconnects. Impacts that could result from phasing the PennEast Pipeline Project are analyzed for air quality, socioeconomics, and cumulative impacts.

[1] Our analysis of the PennEast Pipeline Project was completed in an environmental impact statement (EIS) issued on April 7, 2017, in Docket No. CP15-558-000 and the EA for the PennEast Pipeline Project Amendment issued on September 20, 2019, in Docket No. CP19-78-000. As many of the impacts disclosed in the previous EIS and EA are relevant and applicable to the proposed Project, they are incorporated by reference and are available on eLibrary under Accession No. 20170407-4001 and 20190920-3001, respectively. To access the public record for this current proceeding (CP20-47-000) or the PennEast Pipeline Project (CP15-558-000) and PennEast Pipeline Amendment Project (CP19-78-000), go to FERC's Internet website (http://www.ferc.gov) and select the "eLibrary" feature. Click on "Advanced Search" from the eLibrary menu and enter the accession number for the document of interest.

[2] The pronouns "we," "us," and "our" refers to environmental and engineering staff of the Office of Energy Projects.

[3] The Certificate Order issued on January 19, 2018 states the route would end at MP 116. Since that time several route revisions have resulted in changes to the route. In order to avoid confusion and keep MPs fixed, PennEast utilized the "station equation" method and designated any changes with and "R1," "R2," etc. Although the changes resulted in a pipeline length of 116 miles for the Certificated Route, the downstream terminus has remained the same and retained the original MP 114.02 per PennEast's application under Docket No. CP15-558.

[4] The New Jersey Department of Environmental Protection denied PennEast's application in October following the ruling by the U.S. Appeals Court regarding the use of eminent domain for lands in which the state hold interest. For information on the status of PennEast's application visit: https://www.nj.gov/dep/penneast/.

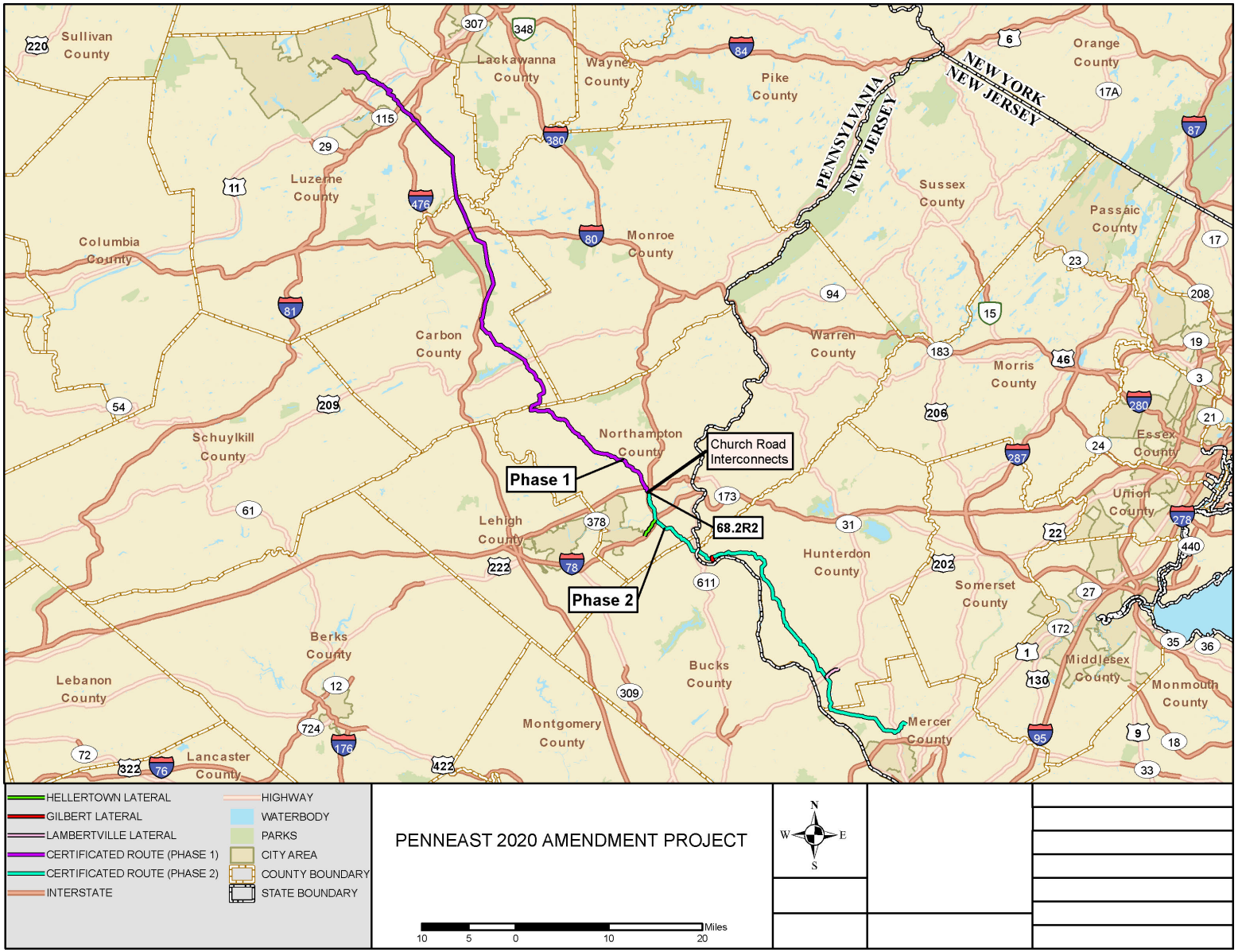

Figure A.1-1 Location and Overview of Proposed Facilities

2.0 PURPOSE AND NEED

PennEast states in its application that it has encountered delays in obtaining certain New Jersey governmental authorizations and in acquiring certain real property rights for facilities associated with the Certificated Project in New Jersey. The purpose of the 2020 Amendment Project would be to allow Phase 1 delivery of up to 650,000 dekatherms per day (Dth/d) of firm transportation service to new delivery points with existing Columbia Gas Transmission, LLC (Columbia) and Adelphia Gateway, LLC (Adelphia) at the proposed new Church Road Interconnects facility.

PennEast executed precedent agreements[6] with 4 shippers for 52 percent of the Phase 1 capacity of 650,000 Dth/d.[7] The 4 Project shippers are affiliates of PennEast and include:

- New Jersey Natural Gas Company (180,000 Dth/d);
- South Jersey Gas Company (75,000 Dth/d);
- UGI Energy Services (50,000 Dth/d); and
- Elizabethtown Gas Company (33,000 Dth/d).

The purpose and need for the completion of the Phase 2 facilities, if constructed subsequently following Phase 1 of the Certificated Project, would be the same purpose and need reflected in the Final Environmental Impact Statement (FEIS) issued in Docket No. CP15-558-000, as supplemented by the EA in CP19-78-000.

Under Section 7(c) of the NGA, the Commission considers all factors bearing on the public interest as part of its decision to authorize natural gas transportation facilities, and if so, grants a Certificate to construct and operate the facilities. The Commission bases its decision on both economic issues, including need, and environmental impacts.

3.0 SCOPE OF THIS ENVIRONMENTAL ASSESSMENT

Our principal objectives in preparing this EA are to:

- identify and assess potential impacts on the natural and human environment that would result from implementation of the proposed action;
- describe and evaluate reasonable alternatives to the proposed actions that would avoid or minimize adverse effects on the environment;
- identify and recommend specific mitigation measures, as necessary, to minimize the environmental impacts; and
- facilitate public involvement in identifying the significant environmental impacts.

The topics addressed in this EA include: geology; soils; groundwater; surface waters; wetlands; vegetation; wildlife and aquatic resources; special status species; land use, recreation, special interest areas, and visual resources; socioeconomics (including transportation and traffic); cultural resources; air quality and noise; reliability and safety; and cumulative impacts. The EA describes the affected environment as it currently exists, discusses the environmental consequences of the 2020 Amendment Project, and compares the 2020 Amendment Project's potential impact with that of various alternatives. The EA also presents our recommended mitigation measures.

[6] A precedent agreement is a binding contract under which one or both parties have the ability to terminate the agreement if certain conditions such as receipt of regulatory approvals, are not met.
[7] See Accession number 20200226-5347 in the FERC elibrary website.

For most topics addressed in this EA, the scope is limited to potential impacts from construction and operation of the proposed new aboveground facility - the Church Road Interconnects. For three topics - air quality, socioeconomics, and cumulative impacts - we also consider impacts from the proposed phasing of pipeline construction where those impacts could differ from the impacts evaluated under Docket Nos. CP15-558-000 and CP19-78-000.

The EA will be used by the Commission in its decision-making process to determine whether to authorize PennEast's proposal. Approval would be granted if, after consideration of both environmental and non-environmental issues, the Commission finds that the 2020 Amendment Project is in the public convenience and necessity.

4.0 COOPERATING AGENCIES

The U.S. Army Corps of Engineers (COE), U.S. Environmental Protection Agency (EPA), and U.S. Department of Agriculture (USDA) – Natural Resources Conservation Service (NRCS) participated as cooperating agencies in the preparation of the EA. Cooperating agencies have jurisdiction by law or special expertise with respect to environmental impacts involved with a proposal. The roles of the COE, EPA, and NRCS in the 2020 Amendment Project review process are described below. The EA provides a basis for coordinated federal decision making in a single document, avoiding duplication among federal agencies (or state agencies with federal delegation authority) in the NEPA environmental review process. In addition to the lead and cooperating agencies, other federal, state, and local agencies may use this EA in approving or issuing permits for all or part of the 2020 Amendment Project. Federal, state, and local permits, approvals, and consultations for the 2020 Amendment Project are discussed in section A.10.0.

4.1 U.S. Army Corps of Engineers

The COE has jurisdictional authority pursuant to Section 404 of the Clean Water Act (CWA) (33 United States Code [USC] 1344), which governs the discharge of dredged or fill material into waters of the U.S. and Section 10 of the Rivers and Harbors Act (33 USC 403), which regulates any work or structures that potentially affect the navigable capacity of navigable waterbodies. Though construction of the 2020 Amendment Project would not impact waters of the U.S., the COE has consistently participated as a cooperating agency for the PennEast Pipeline Project and has chosen to continue to participate in the development of this EA.

4.2 U.S. Environmental Protection Agency

The EPA has delegated water quality certification, under Section 401 of the CWA, to the jurisdiction of individual state agencies. 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 into waterbodies. In addition to its authority under the CWA, the EPA 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 toxic substances into the air. Under this authority, the EPA has developed regulations for major sources of air pollution and has delegated the authority to implement these regulations to state and local agencies. State and local agencies also develop and implement their own regulations for nonmajor sources of air pollutants.

4.3 U.S. Department of Agriculture – Natural Resources Conservation Service

The NRCS is charged with helping America's farmers, ranchers, and forest landowners conserve the nation's soil, water, air and other natural resources. Though not a permitting agency, the NRCS will ensure that the impact of the proposed 2020 Amendment Project on NRCS acquired easement holdings is fully and adequately considered.

5.0 PUBLIC REVIEW AND COMMENT

On February 28, 2020, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed PennEast 2020 Amendment Project, and Request for Comments on Environmental Issues* (NOI). The NOI was published in the Federal Register and mailed to 142 entities, including federal, state, and local government agencies; Native American tribes; landowners potentially affected by the Church Road Interconnects; and other interested parties, including those that filed comments on the 2020 Amendment Project prior to issuing the NOI.[8] All comments received by the Commission are part of the public record for the 2020 Amendment Project and are available for viewing on the FERC Internet website (www.ferc.gov).[9]

As of August 2, 2020, we received 984 comment letters on Docket No. CP20-47-000, which includes 184 letters from Pennsylvania residents, 619 letters from New Jersey residents, and letters from other interested parties, including: Delaware Riverkeeper Network, Clean Air Council, Penn Future, Delaware Township Citizens Against the Pipeline, New Jersey Conservation Foundation, and the Watershed Institute. Agencies and elected officials that filed comments include the Delaware River Basin Commission, Bethlehem Township Board of Commissioners, EPA Region III, USDA NRCS, and Pennsylvania Senator Gene Yaw. Table A.5-1 summarizes the environmental issues identified in the comment letters and the applicable sections of the EA where they are addressed.

We acknowledge the receipt of many comment letters regarding the proposed construction phasing component of the 2020 Amendment Project. Comments on the construction phasing are addressed in the air quality, socioeconomics, and cumulative impacts sections of this EA where we analyze impacts that could result from phasing the PennEast Pipeline Project. Comments regarding Docket Nos. CP15-558-000 and CP19-78-000 specific to resources that would not be affected by the 2020 Amendment Project are not addressed further in this EA, as they are outside the scope of the NEPA analysis for this proceeding. Similarly, we do not re-evaluate resource impacts for the PennEast Pipeline Project where the 2020 Amendment Project would not alter our previous NEPA analysis. For example, we received a number of comments regarding the Project's impact on climate change, including requests to include climate change impacts from upstream gathering and production wells, and the downstream use of natural gas that would be transported by the Project. The Commission addressed climate change, upstream impacts, and downstream use for the PennEast Pipeline Project in Docket Nos. CP15-558-000, CP15-558-001, CP19-78-000, and CP19-78-001. We find the limited scope of the proposed 2020 Amendment Project does not raise new impacts that would alter the staff's previous environmental analyses for the PennEast Pipeline Project, nor raise new issues the Commission has not already considered and addressed in its previous orders. In addition, comments regarding Project need are outside the scope of our NEPA review and are not addressed in the EA.[10] Project need is addressed by the Commission during its consideration of whether or not to issue a Certificate.[11] We also received requests for extension of the scoping period. It is our policy to review and consider comments received after the scoping period expiration date, up until the time the NEPA document is prepared for issuance. Accordingly, we have considered and addressed late filed comments in this EA to extent practicable, and therefore we find extension of the scoping period unnecessary. We note that this EA is being issued for public review, affording all interested stakeholders

[8] On March 5, 2020, the NOI was published in 85 FR 12911.

[9] Using the "eLibrary" link, select "General Search" from the eLibrary menu and enter the docket number excluding the last three digits in the "Docket Number" field (i.e., CP20-47), and select an appropriate date range.

[10] A FERC EA is not a decision-making document. The EA reports the project sponsor's stated purpose for a project in order to describe the proposed facilities that support that purpose and set reasonable boundaries for the range of alternatives to be considered, consistent with CEQ regulations at 40 C.F.R. § 1508.9.

[11] The Commission's Certificate Policy Statement provides guidance for evaluating proposals to certificate new construction. The Certificate Policy Statement establishes criteria for determining whether there is a need for a proposed project and whether the proposed project will serve the public interest. The Certificate Policy Statement explains that, in deciding whether to authorize the construction of new pipeline facilities, the Commission balances the public benefits against the potential adverse consequences.

with a 30-day comment period to submit comments. Commenters also requested the comment period be extended to 90-days and new public comment meetings in the Project area. Based on the limited scope of the proposed amendment, we conclude that no additional comment period or public meetings are warranted.

Table A.5-1

Environmental Issues Identified During the Preparation Period of the EA and Addressed in this EA

Issue	Comments	EA Section(s) Where Comments are Addressed
Incorporation of Previous Amendments in Docket No. CP19-78	EA should incorporate amendments from Docket No. CP19-78.	A.3
Precedent Agreements and Shipper Information; Purpose and Need	Purpose and need for Phase 1 and/or Phase 2; identification of precedent agreements and shipper information.	A.2
Interconnected Projects	Phase 1 of the 2020 Amendment Project and the Adelphia Gateway Pipeline Project should be considered connected actions and evaluated together as a single project; and potential for the 2020 Amendment Project to result in expansion of the Adelphia Gateway Project Quakertown Compressor Station.	A.5, B.9.6
Comment Period and Meetings	Scoping comment period should be extended to 90 days, and new public comment meetings should be held in the Project area.	A.5
Other Permits	Delaware River Basin Commission permit authority.	A.10
Geology	Construction in karst area and potential for sinkholes and surface depressions to effect interconnect facilities; need for updated geotechnical reports for proposed Church Road Interconnects site; and location of interconnects site near a fault.	B.1.0
Soils	Effects on soils from compaction during construction of the Church Road Interconnects; and soil erosion and sedimentation control measures at Church Road Interconnects.	B.1.2
Water Use and Quality	Effects on water quality and supply in the surrounding community; effects on wells in karst zone near the proposed interconnect site; effects on groundwater recharge from interconnect construction and operation.	B.1.3
Surface Waters	Effects on surface waters including from site runoff from the Church Road Interconnects; stormwater management at the interconnects site.	B.2.1
Wetlands	Effects on wetlands from runoff from Church Road Interconnects site.	B.2.2
Vegetation	Effects of new invasive species since issuance of final EIS under Docket No. CP15-558, including spotted lantern fly and emerald ash borer; and revegetation of Church Road Interconnects site.	B.3.1
Fish and Wildlife	Effects on wildlife from construction and operation of Church Road Interconnects.	B.3.2
Threatened, Endangered, and Special-Status Species	Effects on threatened and endangered species at the proposed Church Road Interconnects site.	B.3.3
Cultural Resources	Effects on cultural and historic resources during construction and operation of the Church Road Interconnects.	B.4.0
Land Use, Recreation, and Visual Resources	Effects on existing land use, including nearby schools, church, and golf course; effects on proposed new residential development across Church Road; potential effects on NRCS-held easement, the Setzer property, in Northampton County, PA; visual effects from Church Road Interconnects; overlapping land use impacts between construction of Phase 1 and Phase 2; demolition plan for existing residence on proposed interconnects site; and Bethlehem Township zoning requirements.	B.5.0

Table A.5-1

Environmental Issues Identified During the Preparation Period of the EA and Addressed in this EA

Issue	Comments	EA Section(s) Where Comments are Addressed
Socioeconomics	Effects of construction of the Church Road Interconnects on area traffic including along William Penn Highway, including in the event of an evacuation; potential for the Project to exacerbate traffic impacts from roadway flooding in Bethlehem Township which has no roadway storm drains; effects of project construction and operation on quality of life for nearby residents; and effects on nearby property values.	B.6.0
Air Quality and Noise	Air pollution during construction and operation, including from venting, blowdowns, and pigging at meter and regulator station; air emissions-related health effects on surrounding community; air emissions and GHG emissions from the Phase 1 pipeline as a result of phased construction; noise impacts on nearby residences and schools; and details of proposed noise mitigation measures.	B.7.0
Reliability and Safety	General safety concerns for the community and nearby residences; health and safety effects of Church Road Interconnects on nearby schools, a church with day care, and golf course; operational integrity of interconnects site in karst area and near a fault; and high consequence areas in vicinity of interconnects site.	B.8.0
Cumulative Impacts	Include Adelphia Gateway project, new construction projects in Northampton County, and other pipeline projects in the same region as Phase 1; and include changes to Mill Creek Corporate complex since previous EIS.	B.9.0
Alternatives	EA should evaluate a smaller diameter pipeline and less compression at the Kidder Compressor Station for Phase 1 and for the entirety of Phase 2; evaluate Phase 1 ending at previously authorized Hellertown Lateral and interconnect; evaluate alternate site for Church Road Interconnects; include new separate alternatives analysis for Phase 1 and Phase 2; No Action alternative should include scenario of Phase 2 not being built; evaluate using Columbia TCO pipeline system or expanding Adelphia as alternatives to Phase 2; evaluate a shorter pipeline route and closer termination point for Phase 2.	C.1

We also received comments asserting that the Adelphia Gateway Project (Docket No. CP18-46-000) and PennEast Pipeline Project are connected actions and should be reviewed as a single project. While the Adelphia Gateway Project would tie into the 2020 Amendment Project via the Church Road Interconnects, we disagree that they are connected actions that require review as a single project, as neither project triggers the other, or depends on the other for their justification; nor is there any indication either project cannot, or will not, proceed without the other (see the Commission's review of this same comment in the June 18, 2020 Order on Rehearing and Stay for the PennEast Amendment Project, Docket No. CP19-78-001, at page 10, accession number 20200618-3057). In addition, the Adelphia Gateway Project was authorized on December 20, 2019, and began service on the Adelphia Zone North facilities on January 13, 2020, all of which occurred prior to PennEast filing the 2020 Amendment Application. Regardless of whether or not the Adelphia Gateway Project were constructed, PennEast could still move forward with its Project; similarly, without the PennEast Pipeline Project, the Adelphia Gateway Project would be able to proceed. Moreover, this EA and other environmental analyses (CP15-558-000 and CP19-78-000) have included the Adelphia Gateway Project in its cumulative impacts analysis and determined that there would be no cumulatively significant impacts on resources.

6.0 PROPOSED FACILITIES

6.1 Church Road Interconnects

The 2020 Amendment Project would include the addition of the Church Road Interconnects, which would include a meter and regulator (M&R) station with two separate interconnections, measurement facilities, and a pig[12] launcher and receiver, all located within an approximately 2.1-acre site at MP 68.2R2 of the Certificated route in Bethlehem Township, Northampton County, Pennsylvania. A general location map is shown on figure A.1-1 and a topographic figure is included in appendix A.

7.0 NON-JURISDICTIONAL FACILITIES

As part of its decision to approve facilities under Commission jurisdiction, the Commission considers all factors bearing on the public interest. Occasionally, proposed projects have associated facilities that do not come under the jurisdiction of FERC. These "non-jurisdictional" facilities may be integral to the needs of a project (e.g., a new or expanded power plant at the end of a pipeline that is not under the jurisdiction of FERC) or may be merely associated as minor, non-integral components of the jurisdictional facilities that would be constructed and operated as part of a project.

The Church Road Interconnects would require a powerline and telecommunications cable which would be non-jurisdictional utilities. These facilities would be connected from the existing powerline and telecommunication cables along road frontage of Church Road and would be installed within the same workspace proposed for the Church Road Interconnects. Therefore, any impacts from installation of these facilities are accounted for in our consideration of the 2020 Amendment Project impacts as described in section B of this EA.

8.0 CONSTRUCTION, OPERATION, AND MAINTENANCE PROCEDURES

The 2020 Amendment Project facilities would be designed, constructed, tested, operated, and maintained in the same manner as approved for the Certificated Project. PennEast would follow U.S. Department of Transportation (USDOT) regulations at 49 CFR 192, Transportation of Natural or Other Gas by Pipeline: Minimum Federal Safety Standards. These regulations specify material selection, design criteria, corrosion protection, and qualifications for welders and operation personnel. The proposed aboveground facilities would also be constructed in accordance with American Society of Mechanical Engineers (ASME) B31.8 standards.[13] These regulations ensure adequate protection for the public and prevent natural gas facility accidents and failures. Additionally, PennEast would comply with the Commission's regulations at 18 CFR 380.15 regarding siting and maintenance of pipeline rights-of-way.

8.1 General Construction Procedures

PennEast would not begin construction of the 2020 Amendment Project until the receipt of all necessary approvals and authorizations, including those under the Certificated Project that are applicable from its origin to approximate MP 68.2R2. General construction procedures for the Church Road Interconnects would begin with clearing and grading as necessary to create level surfaces for the movement of construction vehicles and to prepare areas for building and equipment installations. Erosion and sediment controls would be installed. PennEast anticipates that construction of the Church Road Interconnects would take approximately six months with construction beginning in January 2021. PennEast

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

[13] ASME B31.8 prescribes requirements for the design, fabrication, installation, testing, and safety aspects of operation and maintenance of gas transmission and distribution piping systems, including gas pipelines, gas compressor stations, gas metering and regulation stations, gas mains, and service lines up to the outlet of the customer's meter set assembly.

adopted FERC's *Upland Erosion Control, Revegetation, and Maintenance Plan* (FERC Plan) and *Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures). PennEast would also implement its *Spill Prevention, Containment, and Countermeasures Plan* (SPCC Plan) and Project-specific *Erosion and Sediment Control Plan* (E&SCP)[14] to help ensure the successful re-establishment of vegetation in temporarily disturbed areas and proper handling of lubricants, fuel, or other potentially toxic materials and prevention of spills, respectively. PennEast would also revegetate temporarily disturbed areas in accordance with the FERC Plan and Procedures.

As stated in the PennEast final Environmental Impact Statement (FEIS) (Docket No. CP15-558-000), typical construction drawings would be available to guide construction crews to the approved methods to employ at appropriate locations. Construction crews would be familiar with the plans and assessing actual conditions before employing the guidelines.

For purposes of quality assurance and compliance with mitigation measures and other applicable regulatory requirements, the 2020 Amendment Project would be represented on site by a Chief Inspector. There would be one or more Craft Inspectors (construction activity inspectors) and one or more Environmental Inspectors (EI) assisting the Chief Inspector. To ensure that the environmental conditions associated with other permits or authorizations are satisfied, the EI's duties would be fully consistent with those contained in paragraph II.B of the FERC Plan. The EI(s) would have authority to stop work or require other corrective actions to achieve environmental compliance. In addition to monitoring compliance, the EI's duties would include training personnel about environmental requirements and reporting compliance status to the contractors, project management, FERC, and other agencies, as required.

FERC staff would conduct compliance inspections during construction. Other federal and state agencies may also conduct oversight of inspection to the extent determined necessary by the individual agency. After construction, the FERC staff would continue to conduct oversight inspection and monitoring during operation to ensure successful restoration of temporarily disturbed areas.

8.2 Operation and Maintenance

The 2020 Amendment Project facilities would be operated and maintained in the same manner as approved for the Certificated Project. Maintenance activities would include regularly scheduled gas leak surveys and measures necessary to repair any potential leaks. All fence posts, signs, markers, and decals would be painted or replaced to ensure visibility from the air or ground. The pipeline right-of-way and adjacent Church Road Interconnects would be patrolled on a routine basis by air to provide information on potential problems that may affect safety and operation such as possible leaks, exposed pipe, erosion, construction activities, adjacent population density, or possible encroachment. Much of the Church Road Interconnects site would be covered with gravel following installation and therefore would not require routine vegetation maintenance during operation. It is expected that areas within the fenced aboveground facility that are not covered with gravel would be mowed periodically as needed as part of facility maintenance. PennEast has committed to seeding/planting stormwater basins with native plants or allowing them to grow naturally without mowing in accordance with Pennsylvania Department of Environmental Protections (PADEP) Best Management Practices (BMPs) and standards.

[14] Included as Appendix D in the FEIS for Docket No. CP15-558-000 (Accession number 20170407-4001).

9.0 LAND REQUIREMENTS

Construction of the Church Road Interconnects would impact 2.6 acres, of which 1.9 acres of workspace would overlap between Phase 1 and Phase 2. Following construction, 0.5 acre would be restored to pre-construction conditions and 2.1 acres, owned by PennEast, would be maintained as part of the permanent aboveground facility.

10.0 PERMITS, APPROVALS, AND REGULATORY CONSULTATIONS

Table A.10-1 lists the federal and major state regulatory agencies that PennEast identified as having permit approval authority or consultation requirements and the status of that review for the 2020 Amendment Project. PennEast would be responsible for obtaining all necessary permits, licenses, and approvals required for the 2020 Amendment Project, regardless of whether or not they are listed in table A.10-1. We received several comments that PennEast should obtain a permit from the Delaware River Basin Commission (DRBC) prior to constructing the 2020 Amendment Project. In its response Environmental Information Request 5 dated April 21, 2020 (see accession number 20200421-5192), PennEast stated the DRBC lacks jurisdiction over the 2020 Amendment Project because the proposed action does not constitute a "project[15]" under Section 3.8 of the Delaware River Basin Compact. In its comments filed on April 28, 2020[16] , the DRBC states that "the PennEast Natural Gas Transmission Pipeline Phase 1 Project ('Phase 1') is subject to review under Section 3.8 of the Delaware River Basin Compact and implementing regulations to ensure compatibility with the Commission's Comprehensive Plan." On May 11, 2020, PennEast submitted an application[17] to the DRBC for the Phase 1 portion of the 2020 Amendment Project. Given that PennEast submitted an application, we included the DRBC in the table below; however, we clarify that FERC staff is not making any determination of jurisdiction or opinion on this ongoing matter.

Other permits and approvals required for the Certificated Project but not specifically required for the 2020 Amendment Project are not listed in table A.10-1.

Table A.10-1

Major Permits, Approvals, and Consultations for the 2020 Amendment Project

Agency	Permit/Approval/Consultation	Actual or Anticipated Submittal	Actual/Anticipated Issuance
FERC	Authorization pursuant to Section 7(c) of the Natural Gas Act	January 30, 2020	Pending
FWS	Section 7 Endangered Species Act Consultation/Clearance	PennEast initiated consultation on January 23, 2020	March 5, 2020
Pennsylvania State Historic Preservation Office (SHPO)	Section 106 National Historic Preservation Act Consultation, Clearance	Reports submitted September 24, 2015 and January 24, 2020.	February 7 and 26, 2020
Delaware River Basin Commission	Review under Delaware River Basin Compact	May 11, 2020	Pending

[15] Under Section 1.2 of the Delaware River Basin Compact a project is defined as "any work, service or activity which is separately planned, financed, or identified by the commission, or any separate facility undertaken or to be undertaken within a specified area, for the conservation, utilization, control, development or management of water resources which can be established and utilized independently or an addition to an existing facility, and can be considered as a separate entity for purposes of evaluation."

[16] See accession number 20200428-5058.

[17] See accession number 20200513-5228.

SECTION B – ENVIRONMENTAL ANALYSIS

In the following sections, we address the affected environment, direct and indirect construction and operational impacts, and proposed mitigation to minimize or avoid impacts for each resource that would result from construction and operation of the Church Road Interconnects. Impacts that could result from phasing the PennEast Pipeline Project are addressed in the air quality, socioeconomics, and cumulative impacts sections of this EA. For all other resource areas, the proposed phasing would merely affect the timing of resource impacts and would not alter our conclusions previously presented in the FEIS for the PennEast Pipeline Project issued on April 7, 2017 (Docket No. CP15-558-000) and the EA for the PennEast Pipeline Project Amendment issued on September 20, 2019 (Docket No. CP19-78-000).

PennEast, as part of its proposal, agreed to implement certain measures to reduce impacts on environmental resources. We evaluated PennEast's proposed mitigation measures to determine whether additional measures would be necessary to reduce impacts. Where we identify the need for additional mitigation, the measures appear as bulleted, boldfaced paragraphs in the text. We will recommend that these measures be included as specific conditions to any authorization that the Commission may issue to PennEast. Conclusions in this EA are based on our analysis of the environmental impact of the 2020 Amendment Project construction and operation as described in section A of this document, including implementation of the mitigation measures included in PennEast's applications and supplemental filings to FERC.

1.0 GEOLOGY, SOILS AND GROUNDWATER

The geology, soils and groundwater evaluation criteria relied on the same or similar sources as used in the Certificated Project, as well as a site-specific geotechnical report prepared by PennEast (Mott MacDonald, 2020).

Bedrock geology beneath the Church Road Interconnects area are sedimentary rocks of the Rickenbach and Allentown formations, a dark-gray, thick-bedded dolomite and impure limestone; containing chert stringers and nodules. A boring advanced as part of the geotechnical evaluation for the Project (Mott-MacDonald, 2020) indicates a thin layer of topsoil underlain by silt over alternating layers of clay and clayey sand of variable thickness before encountering decomposed dolomite at a depth of 50.5 feet.

The geotechnical report indicates slab on grade construction to a depth of several feet would be an appropriate design for the Church Road Interconnects building. The pipeline entering and exiting the Church Road Interconnects would be in a trench excavated to a depth within 8-10 feet of the surface. The construction would occur well above the bedrock surface therefore there would be no need for blasting or removal of bedrock. There would be no effect to bedrock geology.

PennEast consulted with paleontological specialists, no known paleontological sites were identified within 0.5 mile of the Church Road Interconnects site. Based on the bedrock and overburden type present beneath the site, it is unlikely that there any paleontological resources present.

There are no new active or abandoned mines and quarries within 0.25 mile of the Church Road Interconnects that have not been previously identified under the Certificated Project. There are no mapped locations of oil and gas wells within 0.25 mile of the Church Road Interconnects.

1.1 Geologic Hazards

Geologic hazards are natural, physical conditions that can result in damage to land and structures or injury to people. Such hazards typically include seismicity (e.g., earthquakes, surface faults, soil

liquefaction), landslides, and ground subsidence. Conditions necessary for the development of other geologic hazards, including flashflooding, avalanches and volcanism, are not present in the Church Road Interconnects area. Based on the Certificate, areas underlain by karst terrain would be extensively evaluated to ensure that the Church Road Interconnects would be constructed using BMPs for work conducted in karst terrain and engineered to account for conditions largely related to ground subsidence.

The U.S. Geological Survey (USGS) has extensively studied the Ramapo Fault system and the level of seismicity in the region and is discussed in the FEIS for the Certificated Project. The USGS's review of data for indicates that there is no clear association between the fault and small earthquakes that occur in the region. The Pennsylvania Department of Conservation and Natural Resources (PADCNR) and USGS mapping indicate that one fault line exists approximately one mile south of the Church Road Interconnects site, but it is not considered active (Mott-MacDonald, 2020).

Based on the low seismic risk and occurrence assigned to the Church Road Interconnects area, and the lack of recent (Holocene-age) faulting, we find the risk of damage by earthquakes to be low. The modifications do not change the seismic hazard evaluation that was previously conducted for the Certificated Project.

In addition, due to the low potential for strong and prolonged ground-shaking associated with a seismic event and the soil types present at the site, we find the potential for soil liquefaction at the Church Road Interconnects site to be low. Based on shallow slopes reported for the Church Road Interconnect area by PennEast, there is low potential for landslides in the area. The risks and conclusions that were presented for the Certificated Project remain unchanged. Further, Environmental Condition 15 of the Certificate Order would also be applicable to the 2020 Amendment Project, which requires PennEast to file a completed Geohazard Risk Evaluation Report and pipeline design geotechnical report, prior to construction for our review and approval.

Subsidence is the local downward movement of surface material with little or no horizontal movement. Subsidence is a potential geologic hazard in areas where karst terrain occurs. In karst terrain, karst features, such as sinkholes, caves, and caverns, can form as a result of the long-term action of groundwater on soluble carbonate rocks (e.g., limestone and dolomite).

The Church Road Interconnects site would be located within the Allentown geological formation known to contain karst features. PADCNR mapping indicate that there are more than 100 surface depressions and 29 sinkholes within 0.5 mile of the proposed Church Road Interconnects site (Mott MacDonald, 2020). There are two documented surface depressions on site, and one documented sinkhole immediately east of the site. PennEast has performed a site-specific karst investigation at the Church Road Interconnects site using surface geophysical techniques and one boring drilled to bedrock. Based on this limited evaluation, we conclude that PennEast should evaluate the site further for karst features, and therefore **we recommend that**:

- **<u>Prior to construction,</u> PennEast should file with the Secretary of the Commission (Secretary), for review and written approval by the Director of the Office of Energy Projects (OEP) or the Director's designee:**

    a. a plan for additional geotechnical borings/subsurface investigations, including additional surface geophysics (i.e. ground penetrating radar) that would provide greater definition of subsurface conditions/karst development for design of the interconnect foundations; and

    b. a final report summarizing the results of this investigation.

With implementation of PennEast's proposed mitigation and design criteria and our recommendation, we conclude that the 2020 Amendment Project would not significantly impact or be impacted by geological conditions in the area and that the overall effect of the 2020 Amendment Project on topography and geology would be minor.

1.2 Soil

Surficial deposits beneath the Church Road Interconnects consists of well drained soils formed from a Pre-Wisconsin Age glacial drift and colluvium (limestone and granitic gneiss).

Construction activities have the potential to cause adverse soil impacts. None of the soil limitations that we typically evaluate including hydric, severe compaction potential, severe wind/water erosion potential, poor drainage, and poor revegetation potential, are present based on analysis criteria for the one soil type present.

The Church Road Interconnects would impact approximately 2.6 acres of prime farmland soils. The existing use of the site is residential and not farmland. It is unlikely that this small area of prime farmland soil would be used for agriculture in the future based on the existing use of the property as residential.

Soil limitations have been addressed in PennEast's E&SCP. PennEast's E&SCP is consistent with FERC's Plan and Procedures and 25 PA Code §102 requirements, and in accordance with Environmental Condition 27 of the Certificate Order, PennEast would file a revised E&SCP with the FERC for review and written approval prior to construction. PennEast would use the Certificated Project Winter Construction Plan, as required by the FERC Plan at the Church Road Interconnects. The 2020 Amendment Project would not result in any changes to soil mitigation measures that were approved in the Certificate Order or the analyses and conclusions presented for the Certificated Project.

Soil contamination in the area of the Church Road Interconnects could result from at least two sources: new spills of hazardous material or fuel during construction, and/or those occurring before construction in pre-existing contaminated areas that are encountered during construction. PennEast has developed an SPCC Plan for the Certificated Project. PennEast and its contractors would use the SPCC Plan to minimize soil contamination. Upon completion of construction, the SPCC plan would be used during operation of the facility. PennEast would implement the protocols in its Unanticipated Discovery of Contamination Plan prepared for the Certificated Project. Environmental Condition 24 of the Certificate Order would address would apply to the 2020 Amendment Project addressed in this EA.

The overall effect of the 2020 Amendment Project on soils would be minor. The effects would mostly be limited to construction activities and would include temporary disturbance to surficial deposits resulting from grading and trenching similar to those described in the Certificated Project.

1.3 Groundwater

The proposed Church Road Interconnects site lies over the Allerton Formation a principal carbonate bedrock aquifer. The Church Road Interconnects is not located over a Sole Source Aquifer or within 5 miles of a Wellhead Protection Area. The boring advanced as part of the geotechnical investigation did not indicate the presence of groundwater in the surficial aquifer

PennEast's Revised Karst Mitigation Plan increased the evaluation range from 150 feet to 500 feet for wells and springs within areas of karst terrain. To date, PennEast has identified three wells within 500 feet of the proposed Church Road Interconnects. PennEast continues to identify well locations, and this outstanding information is addressed by Environmental Condition 21 of the Certificate Order. A refined

list of water wells and springs within 500 feet of the 2020 Amendment Project will be provided in an Implementation Plan prior to Project construction.

PennEast has prepared a draft Well Monitoring Plan to outline the specific monitoring and mitigation measures that would be implemented to protect any identified groundwater sources, should drinking water supply wells be found during field investigations. This plan details special protocols required for karst-prone terrain, well and spring yield testing procedures, water quality testing procedures, and impacted well and spring procedures. PennEast would perform monitoring for well yield and water quality before and after construction. We find PennEast's draft Well Monitoring Plan acceptable; and submittal of a final Well Monitoring Plan is required by Environmental Condition 23 of the Certificate Order, which would also apply to the 2020 Amendment Project.

PennEast did not identify any areas of potential groundwater contamination within 0.25 mile of the proposed Church Road Interconnects. Additionally, based on the geology and hydrogeology in these areas, it is expected that the site would be located above the water table and, therefore, not encounter potential groundwater contamination. If contaminated soils are found during construction, PennEast would implement its Unanticipated Discovery of Contamination Plan which is included in the Certificated Project.

The 2020 Amendment Project would not significantly impact groundwater quality or quantity during construction or operation. In most cases, construction of the Church Road Interconnects facilities would involve excavations of between about 8 and 10 feet deep to allow for building foundations and the burial of facility piping with 3-to-4 feet of cover. Minor temporary impacts on groundwater could include changes in percolation rates from clearing of vegetation, soil mixing and compaction, and permanent conversion of portions of the site to impervious or semi-impervious surfaces. PennEast would implement its E&SCP and our Plan and Procedures to minimize erosion potential of soils in the workspace.

Overall, impacts on geologic soil and groundwater resources resulting from the installation of the Church Road Interconnects would be minor and not significant. With the implementation of BMPs and our Plan and Procedures, impacts on geological resources would be adequately minimized during construction and operation of the 2020 Amendment Project.

2.0 WATER RESOURCES AND WETLANDS

2.1 Surface Water

The FERC defines waterbodies[18] as any natural or artificial stream, river, or drainage with perceptible flow at the time of crossing, and other permanent waterbodies such as ponds and lakes. The hydrologic regimes for surface waters are classified into one of three categories: perennial, intermittent, and ephemeral. Surface water resource data were collected by means of environmental field surveys, including aquatic resource delineations completed in January 2020, and information from the National Hydrography Dataset (NHD); PADCNR; NRCS county soils surveys; watershed data from the USGS; and aerial photography. Based on these surveys and research, the proposed Church Road Interconnects is within the Nancy Run subwatershed (HUC 020401060812) – part of the Lower Lehigh River watershed, within the Lehigh sub-basin. The closest waterbody to the 2020 Amendment Project that PennEast delineated in its study corridor is about 0.4 mile from the Church Road Interconnects workspace.

No waterbody, of any classification, would be affected by construction or operation of the Church Road Interconnects facility. This includes sensitive surface waters, state-designated high-quality and exceptional value waters, impaired surface waters or waterbodies with contaminated sediments, and Special

[18] Note that FERC's definition differs from the definition of Waters of the United States as defined by COE and EPA. That definition can be found in the Federal Register at 84 FR 56626.

Flood Hazard Areas. In addition, measures detailed in PennEast's E&SCP would prevent or minimize runoff and sedimentation outside of the workspace. Therefore, we conclude that construction and operation of the 2020 Amendment Project would have no significant impact on surface water resources.

2.2 Wetlands

Wetlands can be defined as 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 wetland vegetation adapted for life in saturated soil conditions (COE 1987). The COE enforces the federal CWA, Section 404 (33 U.S.C. 1344) which regulates waters of the United States, including jurisdictional wetlands.

In Pennsylvania, wetlands are regulated at both federal (COE) and state (PADEP) levels. PennEast conducted site-specific field surveys and wetland delineation within the proposed Church Road Interconnects site in January 2020. No wetlands were identified within the proposed workspace. The closest wetland to the Church Road Interconnects site that PennEast delineated in its study corridor is about 3.2 miles from the Church Road Interconnects workspace. The National Wetland Inventory identifies a wetland about 0.7 mile from the Church Road Interconnects workspace, outside of the Project's study corridor.

2.3 General Wetland Impacts and Mitigation

The proposed 2020 Amendment Project would be constructed in compliance with applicable federal, state, and local regulations and guidelines, specifications, and Project-specific permit conditions. Operation and maintenance plans would incorporate measures to protect wetland resources, as applicable. PennEast would control runoff with approved BMPs, as part of the approved E&SCP, to encourage soil infiltration and promote groundwater recharge.

There are no wetlands within the proposed Church Road Interconnects site; therefore, no wetland resource impacts are anticipated from construction or operation, and no mitigation is proposed. In addition, measures detailed in PennEast's E&SCP would prevent or minimize runoff and sedimentation outside of the workspace. Therefore, we conclude that construction and operation of the 2020 Amendment Project would have no significant impacts on wetland resources.

3.0 VEGETATION, WILDLIFE, AND THREATENED AND ENDANGERED SPECIES

3.1 Vegetation

The proposed Church Road Interconnects and temporary workspace are located on residential land. The land currently includes a house, driveway, with vegetation including mowed lawn, and mature, decorative trees along the property boundaries. The parcel is bordered by crop land, residential land, Church Road, and highway PA-33. The Church Road Interconnects site does not contain wetlands or vegetation communities of special concern.

Construction of the Church Road Interconnects would impact about 2.6 acres. Of this, 0.5 acre (19 percent) would be utilized for temporary workspace for construction. Construction impacts would be mitigated through stabilization and re-vegetation of the temporary construction workspace. After construction, all disturbed areas would be restored in compliance with PennEast's E&SCP. Generally, this would include seeding the restored areas with grasses and other herbaceous vegetation. PennEast has committed to use only plant species that are native to the local area for revegetation of the Project area. Stormwater facilities would also utilize native vegetation or be allowed to grow naturally without mowing in accordance with PADEP BMPs and standards.

The remaining acreage affected during construction would be associated with permanent easements acquired to operate the pipeline facilities (2.1 acres; 81 percent). The existing structure and vegetation would be removed, and the majority of this area would be converted to gravel or pad area for the proposed aboveground facilities.

The term "invasive plant species" typically refers to plants that are non-native and are capable of aggressive growth, thereby displacing native species. A subset of invasive plant species referred to as "noxious weeds" are plants that the state identifies as being particularly detrimental to public health, or natural and economic resources. Invasive species may also provide habitat for invasive insects, such as the spotted lantern fly (*Lycorma delicatula*), which has been found in Northampton County. Project construction has the potential (through the disturbance of habitats and soils) to spread existing invasive plant species as well as create conditions that promote the establishment of new infestations. PennEast would work with the appropriate regulatory agencies (e.g. PADEP, PADCNR) as part of the permitting process to minimize the potential for invasive or noxious plant species to spread during construction or operation of the Church Road Interconnects. Further, Environmental Condition 33 of the Order for Docket No. CP15-558-000 requires PennEast to file an Invasive Species Management Plan that includes documentation of consultation with the appropriate state agencies and measures it would implement during construction and operation to minimize the spread of invasive and noxious plant species. This condition would be applicable to the 2020 Amendment Project. However, based on the prevalence of a new invasive species insect, the spotted lantern fly, **we recommend that**:

- **<u>Prior to construction,</u> PennEast should file with the Secretary, for review and written approval by the Director of the OEP or the Director's designee, a revised Invasive Species Management Plan that includes documentation of consultation with the appropriate state agencies and measures it would implement during construction and operation to minimize the spread of the spotted lantern fly.**

Based on the amounts and types of vegetation impacted along the pipeline, and the measures that would be implemented to minimize adverse effects, and our recommendation above, we conclude that construction and operation of the 2020 Amendment Project would not significantly affect vegetation.

3.2 Wildlife

3.2.1 Terrestrial Resources

As stated above, the existing habitat within the Church Road Interconnects area is currently residential. The temporary workspace would be reseeded after construction as described above. The majority of the permanent easement would be converted to gravel or pad area for the proposed aboveground facilities. Some mature trees are present along the edges of the property, which PennEast intends to leave in place.

Wildlife species that generally occur within residential land cover in the Church Road Interconnects area are adapted to human presence. These areas typically provide little wildlife habitat, and mostly support opportunistic species, including gray squirrel, American crow (*Corvus brachyrhynchos*), European starling (*Sturnus vulgaris*), and opossum (*Didelphis virginiana*) (Collins 1981; PGC 2013).

The proposed Church Road Interconnects would not overlap with unique, sensitive, or significant habitat types. The Church Road Interconnects site falls within the five-mile swarming area of known northern long-eared bat hibernacula; however, no tree clearing is proposed for construction or operation of the Church Road Interconnects. No wetlands, surface waters, or fisheries would be impacted.

The impact of the Church Road Interconnects' construction and operation on terrestrial wildlife species and their habitats would vary depending on the timing of construction, types of construction techniques used, the habitat and life-history requirements of each species affected, and the type and extent of habitats that would be impacted. Direct impacts on wildlife during construction could include the displacement of wildlife from the Church Road Interconnects area, as well as direct mortality of some individuals. Individuals of some wildlife species may be directly affected by construction of the Church Road Interconnects if they are killed by vehicles or construction equipment traveling to, from, or within the construction site.

PennEast would be required to adhere to all commitments from the Certificated Project. PennEast has further stated that it intends to leave the existing mature trees that are present along the property boundaries in place, and that they would not be affected during construction or operation of the Church Road Interconnects.

Based on the types of available habitats within the Church Road Interconnects area, and the measures that would be implemented to minimize adverse effects, we have determined that construction and operation of the 2020 Amendment Project would not significantly affect wildlife species (see additional discussion below for migratory birds and eagles).

3.2.2 Migratory Birds, the Migratory Bird Treaty Act (MBTA) and the Bald and Golden Eagle Protection Act (BGEPA)

Section 703 of the Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the U.S. Department of the Interior. The Bald and Golden Eagle Protection Act (BGEPA) prohibits harming eagles, their nests, or their eggs. The National Bald Eagle Management Guidelines are intended to ensure that project actions avoid injury, decreased productivity, or nest abandonment. On March 31, 2011, FERC and the FWS signed an MOU (as required by Executive Order 13186) that identifies specific activities where cooperation between FERC and FWS would contribute to the conservation of migratory birds and their habitat, and outlines a collaborative approach to promoting the conservation of migratory bird populations and furthering implementation of the migratory bird conventions, the MBTA, and the BGEPA.

The potential impacts on migratory birds would be similar to those discussed above for general wildlife species. Further, Environmental Condition 34 of the Order for CP15-558-000 requires PennEast to file a Migratory Bird Conservation Plan developed in consultation with the FWS, along with documentation of consultation with the FWS. This condition would be applicable to the 2020 Amendment Project. PennEast does not propose tree clearing as part of the Church Road Interconnects construction or operation.

In the event that migratory bird's eggs or chicks (nestlings or fledglings) are found out of a nest during construction, PennEast would take the following actions: PennEast would contact the FWS immediately during normal business hours. If eggs or chicks can be salvaged (i.e., if not cracked or dead), then they would be taken to a federal or state permitted wildlife rehabilitation center by a person authorized to handle migratory birds. The EI would maintain a log of MBTA bird salvage efforts, including unintentional mortalities and individuals transferred to wildlife rehabilitation care facilities. PennEast would file a report with the FWS within 24 hours of an occurrence.

Bald eagles, which are protected under by both the MBTA and the BGEPA, could be present in the Project area. They are raptors with a characteristic white head and tail, and black body plumage. They primarily feed on fish; however, their diet can also include smaller birds, mammals and reptiles. Important habitat for this species includes areas of low human development with large areas of open water with

abundant of prey and forested areas with large mature canopy trees for perch hunting, roosting, and nesting. Breeding activities for these birds include courtship, nest building, egg laying, incubation, hatching, and rearing and fledging of young. Breeding and nest building can occur one to three months prior to egg laying. For eagles occurring in Pennsylvania, egg laying and incubation typically occurs between January and the end of March, and young stay in the nest until they are approximately 8 to 14 weeks old when they fledge. Bald eagles have high nest fidelity and typically return to the same nesting sites every year.

PennEast has committed to following the following guidelines regarding bald eagles, as requested by the FWS:

- a linear distance buffer of at least 330 feet would be maintained between areas with active construction and eagle nests (including alternate nests that are not actively used that year). If an existing activity that is similar in kind and size is closer than 330 feet and has been tolerated by eagles, the distance buffer for the PennEast construction activity would be the same or greater than that of the existing tolerated activity;
- within 660 feet of an eagle nest, all activities that may disturb bald eagles would be avoided from January 1 to July 31 (the breeding season). These activities include, but are not limited to: construction, excavation, use of heavy equipment, use of loud equipment or machinery, vegetation clearing, earth disturbance, planting, and landscaping. If Project activities encroach within 660 feet of an eagle nest, PennEast would secure the necessary BGEPA permits from the FWS prior to the activity occurring;
- established landscape buffers that screen the activity from an eagle nest would be maintained; and
- from January 1 to July 31, blasting and other activities that produce extremely loud noises would not occur within 1/2 mile of active eagle nests, unless greater tolerance to the activity (or similar existing activity) has been demonstrated by the eagles in the breeding area.

The Church Road Interconnects would not impact any Important Bird Areas (IBAs) and would not introduce any facility types or construction methods not already described for the Certificated Project. The analysis presented for the Certificated Project, including measures that PennEast proposes to implement to minimize impacts on migratory birds, remains applicable. Based on the measures described for the Certificated Project, as well as the ongoing consultation with the FWS, we believe that the 2020 Amendment Project would be in compliance with the MBTA and the BGEPA.

3.3 Special Status, Threatened, and Endangered Species

Section 7 of the Endangered Species Act (ESA) (19 U.S.C 1536(c)), as amended, requires that any actions authorized, funded, or carried out by a federal agency do not jeopardize the continued existence of a federally listed endangered or threatened species, or result in the destruction or adverse modification of federally listed designated critical habitat. The action agency is required to consult with the FWS and/or the National Marine Fisheries Service (NMFS) to determine whether federally listed endangered or threatened species or designated critical habitat are found within the vicinity of the project, and to determine the proposed action's potential effects on those species or critical habitats.

PennEast, acting as the FERC's non-federal representative for the purpose of complying with section 7(a)(2) of the ESA, initiated informal consultation with the FWS and NMFS through correspondence on August 12, 2014. On September 18, 2014, NMFS replied stating that no threatened or endangered species under its jurisdiction are known to occur in the Certificated Project area, and no further consultation is necessary with NMFS (NMFS 2014). Because no water resources are located within the proposed Church Road Interconnects area, consultation with the NMFS specific to the Church Road Interconnects is not required.

The FWS, when considering the effects of a federal action on a listed species or critical habitat, considers the consequences of other activities which would not occur but for the proposed action, including those occurring outside the immediate area involved in the action (50 CFR 402.02). Because the proposed Church Road Interconnects would be a component of the overall Certificated Project, the FWS would consider the new facility in combination with the previously Certificated Project facilities when making its effects determination pursuant to ESA Section 7.

In consultations on the Certificated Project since 2014, the FWS has considered potential effect on six federally listed species: the Indiana bat (*Myotis sodalis*, federally endangered), northern long-eared bat (*M. septentrionalis*, federally threatened), northeastern bulrush (*Scirpus ancistrochaetus*, federally endangered), bog turtle (*Glyptemys muhlenbergii*, federally threatened), dwarf wedgemussel (*Alasmidota heterodon*, federally endangered), and rusty patched bumble bee (*Bombus affinis*, federally endangered). After reviewing the Certificated Project, including multiple alternative configurations and alignments, the FWS determined that the Certificated Project would have no effect on the rusty patched bumblebee and was "not likely to adversely affect" the northern long-eared bat, northeastern bulrush, and dwarf wedgemussel.

On July 17, 2017, the FERC submitted its biological assessment (BA) to the FWS and requested the initiation of formal consultation under the ESA for the Certificated Project as of 2017 (FERC 2017b), and the FWS released their biological opinion (BO) on November 28, 2017 (FWS 2017b), regarding the Certificated Project elements "likely to adversely affect" threatened and endangered species. In its BO, the FWS concluded that the Certificated Project is not likely to adversely affect the Indiana bat and it was therefore excluded from the BO. The FWS also concluded that the Certificated Project may result in incidental take of the northern long-eared bat and the bog turtle but would not jeopardize the continued existence of either species. The BO allowed for the exemption of limited incidental take from ESA Section 9 prohibitions for the bog turtle; incidental take of northern long-eared bats was determined to be exempt from Section 9 prohibitions because it was compliant with the final 4(d) rule (50 CFR §§ 17.40(o) et seq.) for that species.

The majority of the Church Road Interconnects site is within the area considered in the Certificated Project; however, the southwest corner of the property, approximately one acre, is outside the previously surveyed corridor and is not covered by the 2017 BA and BO. Field observations indicated that the Church Road Interconnects site is similar to that described in the 2017 BA and BO and the additional one-acre area is residential in nature. PennEast has consulted with the FWS, the Pennsylvania Fish and Boat Commission (PFBC), the PADCNR, and the Pennsylvania Game Commission (PGC) regarding the 2020 Amendment Project and has received concurrence from each agency that the Church Road Interconnects would not result in impacts to special status, threatened, and endangered species beyond those described for the Certificated Project. Therefore, ESA consultation for the 2020 Amendment Project is complete. Protected wildlife species and their preferred habitats are summarized in table B.3.3-1.

In addition to the federally listed species, there are state-listed species that may potentially occur in the Church Road Interconnects area. Table B.3.3-1 lists the state-listed wildlife species that could potentially occur in the vicinity of the Church Road Interconnects.

Pennsylvania enacted the Endangered Species Coordination Act (under Pennsylvania House Bill 1576) to designate and protect state listed species. This EA provides general information related to impacts on state listed species in compliance with these state laws; however, the applicable state wildlife agencies would take the lead on any state permitting requirements and assessments related to state listed species.

Table B.3.3-1

Federally Listed and State Listed Wildlife Species Potentially Occurring in the Vicinity of the 2020 Amendment Project

Species	Federal Status a/	State Status a/	Potential Occurrence in the Project Area	Preferred Habitat	Impact Determination
Mammals					
Indiana bat (*Myotis sodalist*)	E	E	Potential	Winter habitat consists of caves or mines. Summer roosting habitat consists of dead or dying trees, or trees with exfoliating bark.	The Church Road Interconnects does not cross through any known bat hibernacula, swarming areas, or maternity colonies for the Indiana bat. Construction of the Church Road Interconnects would not impact forested habitats. PennEast plans to leave intact the mature, decorative trees at the edge of the parcel. Therefore, we have determined that the 2020 Amendment Project may affect, but is not likely to adversely affect, the Indiana bat.
Northern long-eared bat (*Myotis septentrionalis*)	T	SC	Potential	Winter habitat consists of caves or mines. Summer roosting habitat consists of dead or dying trees, or trees with exfoliating bark.	The Church Road Interconnects is not within 0.25 mile of any known bat hibernacula or within 150 feet of any maternity colonies for the northern long-eared bat, but is within the range of mileposts identified in the Certificated Route as swarming areas (areas within 5 miles of a hibernaculum; FWS 2017). No impacts on mines and caves (i.e., habitats used as hibernacula by these listed bat species) are expected to occur, as these habitats would not be directly affected by the Church Road Interconnects and there are no known bat hibernacula within 0.25 miles of the Church Road Interconnects. Construction of the Church Road Interconnects would not impact forested habitats. PennEast plans to leave intact the mature, decorative trees at the edge of the parcel. Therefore, we have determined that the 2020 Amendment Project may affect, but is not likely to adversely affect, the northern long-eared bat.
Allegheny woodrat (*Neotoma magister*)	N	T	Unlikely	Caves, rocky cliffs, ridge crests, overhangs and boulder fields with deep crevices and underground chambers.	The Church Road Interconnects would not result in impacts to preferred habitat types for the Allegheny woodrat; therefore, we have determined that the 2020 Amendment Project would not adversely impact the Allegheny woodrat.
Eastern Small-Footed Bat (*Myotis leibii*)	N	T	Unlikely	Deciduous and coniferous forest.	The Church Road Interconnects would not result in impacts to preferred habitat types for the eastern small-footed bat; therefore, we have determined that the 2020 Amendment Project would not adversely impact the eastern small-footed bat.

Table B.3.3-1

Federally Listed and State Listed Wildlife Species Potentially Occurring in the Vicinity of the 2020 Amendment Project

Species	Federal Status a/	State Status a/	Potential Occurrence in the Project Area	Preferred Habitat	Impact Determination
Reptiles and Amphibians					
Bog turtle (*Glyptemys muhlenbergii*)	T	E	Unlikely	Wetland bogs that have deep organic soils, and a spring-fed hydrology. These wetlands are typically surrounded by an open canopy with a minimal presence of woody species.	The Church Road Interconnects would not result in impacts to wetland habitat; therefore, we have determined that the 2020 Amendment Project is not likely to adversely affect the bog turtle.
Timber Rattlesnake (*Crotalus horridus*)	N	C	Unlikely	Deciduous forest habitat with at least 70 percent canopy cover, rocky hillsides and outcrops for use as hibernacula and exposed rocks for basking.	The Church Road Interconnects would not result in impacts to preferred habitat types for the timber rattlesnake; therefore, we have determined that the 2020 Amendment Project would not adversely impact the timber rattlesnake.
Invertebrates					
Rusty patched bumble bee (*Bombus affinis*)	E	N	N/A	Grasslands and tallgrass prairies of the Upper Midwest and Northeast. Needs areas that provide food (nectar and pollen from flowers), nesting sites (underground and abandoned rodent cavities or clumps of grasses above ground), and overwintering sites for hibernating queens (undisturbed soil).	The FWS indicated that the Project is not within the range of the rusty patched bumble bee in Pennsylvania, and that Project related avoidance and minimization measures for this species, consultation, and/or incidental take permits are therefore not necessary (FWS 2017a).
Dwarf wedgemussel (*Alasmidonta heterodon*)	E	E	N/A	Regionally in the Delaware River, as well as some smaller tributaries of the Delaware River.	The dwarf wedgemussel was included in the BA prepared for PennEast Pipeline Project under CP15-558-000 (FERC 2017b) as portions of the Certificated Project addressed in the BA impacted the Delaware River and its tributaries; however, the Church Road Interconnects would not impact these areas and would have no effect to the dwarf wedgemussel.

Notes:
a/ E = endangered, T = threatened, C = candidate, SC = special concern, N = not listed.

PennEast has stated that it would adhere to the recommendations and requirements of the respective state agencies with jurisdiction over state listed species and state species of concern (e.g., PGC, PFBC, and PADCNR) in order to avoid or minimize impacts on these species, including completing all necessary surveys for state species. Ongoing permit review by Pennsylvania may result in the identification of additional avoidance, minimization, or mitigation measures that would be attached as permit conditions. In general, we believe that relying on state-level experts for the development of measures that would minimize impacts on state listed species and state species of concern would appropriately avoid or reduce impact on these species. Further, Environmental Condition 39 of the Order for Docket No. CP15-558-000 requires PennEast to file a comprehensive list of measures developed in consultation with applicable state wildlife agencies to avoid or mitigate impacts on state-listed species and state species of concern. This condition would be applicable to the 2020 Amendment Project.

One plant species, northeastern bulrush (*Scirpus ancistrochaetus*), is both federally and state listed as endangered. It is found in small wetlands, sinkholes, or wet depressions. The Church Road Interconnects would not result in impacts to wetland habitat; therefore, we have determined that the 2020 Amendment Project is not likely to adversely affect the northeastern bulrush.

In addition, several plant species that could potentially be impacted by the Project are listed by Pennsylvania as threatened or endangered. These plant species include variable sedge (*Carex polymorpha*; endangered); spotted pondweed (*Potomogeton pulcher*; endangered); wild bleeding hearts (*Dicentra exima*; endangered); and sweet-gale (*Myrica gale*; threatened) (PNHP 2020). PennEast submitted a Rare Plant Mitigation Plan to the PADCNR on April 19, 2018, which contained measures that would avoid and minimize impacts to rare plant species. In its May 22, 2018 response, the PADCNR agreed with the plan's content but requested that PennEast also incorporate a 3-year post-construction annual monitoring program into the plan. PennEast has since updated the Rare Plant Mitigation Plan to include the requested 3-year post-construction monitoring program.

Furthermore, as the area proposed for the Church Road Interconnects and temporary workspace is entirely residential and actively maintained, the likelihood of encountering rare plant species is low. Through implementation of the measures required by the State, we have determined that impacts on state listed plants would not be significant.

In addition, several plant species that could potentially be impacted by the Project are listed by Pennsylvania as threatened or endangered. These plant species include variable sedge (*Carex polymorpha*; endangered); spotted pondweed (*Potomogeton pulcher*; endangered); wild bleeding hearts (*Dicentra exima*; endangered); and sweet-gale (*Myrica gale*; threatened) (PNHP 2020). PennEast submitted a Rare Plant Mitigation Plan to the PADCNR on April 19, 2018, which contained measures that would avoid and minimize impacts to rare plant species. In its May 22, 2018 response, the PADCNR agreed with the plan's content but requested that PennEast also incorporate a 3-year annual monitoring program into the plan. PennEast has since updated the Rare Plant Mitigation Plan to include the requested 3-year monitoring program.

4.0 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act (NHPA), as amended, requires FERC to consider 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 (ACHP) an opportunity to comment. PennEast, as a non-federal party, is assisting us in meeting our obligations under Section 106 of NHPA and implementing regulations at 36 CFR 800.

4.1 Survey Results and Consultations

We sent copies of our NOI for the 2020 Amendment Project to a range of stakeholders, including the ACHP, Pennsylvania SHPO, NPS and 13 federally recognized tribes (tribes). The NOI, issued on February 28, 2020, stated that we use the NOI to initiate consultations with SHPO and to solicit their views and those of other government agencies, interested tribes, and the public on the 2020 Amendment Project's potential effect on historic properties.

During November 2019 and January 2020, PennEast conducted an archaeological survey of 2.3 acres that comprise the Church Road Interconnects workspace. Field conditions consisted of grass-covered fields, tree lines, and a residential lawn, with no ground surface visibility. Background review of the Pennsylvania Archaeological Site Survey Files indicated no archaeological sites recorded in or adjacent to the 2.6-acre area of potential effects (APE) for the Church Road Interconnects workspace. The archaeological survey revealed no identified archaeological sites and no further archaeological investigation was recommended. During November 2019, PennEast conducted a reconnaissance-level historic architecture survey. The survey reported 13 properties within the APE. None of the resources were recommended as eligible to the National Register of Historic Places.

In January 2020, PennEast sent reports of recent archaeological and historic architecture surveys of the 2020 Amendment Project to the SHPO. In a letter dated February 7, 2020, SHPO agreed with PennEast that the 2020 Amendment Project would result in no effects to archaeological resources listed in or eligible to the NRHP. In a letter dated February 26, 2020, SHPO stated that the 2020 Amendment Project would have no effect on any above ground historic buildings, structures, district, and/or object listed in or eligible to the NRHP. In addition, SHPO, in a letter dated October 22, 2015, had concurred with PennEast recommendations made on a portion of the 2020 Amendment Project previously surveyed and reported in 2015. We concur with SHPO that the 2020 Amendment Project would have no effect on historic properties.

4.2 Unanticipated Discovery Plan

In the event that unanticipated finds are uncovered during 2020 Amendment Project construction, PennEast would implement the procedures outlined in its *Unanticipated Discovery Plan* (UDP). PennEast submitted a UDP to the SHPO on August 30, 2019. We have also reviewed the UDP and find it acceptable.

4.3 Compliance with the National Historic Preservation Act

To ensure that the Commission meets its responsibilities under Section 106 of the NHPA, Environmental Condition 51 of the Order for Docket No. CP15-558-000 requires that PennEast file any outstanding information required to meet its responsibilities and that the Section 106 consultation process is complete prior to construction. This condition would also apply to the 2020 Amendment Project.

5.0 LAND USE, RECREATION, AND VISUAL RESOURCES

5.1 Land Use

This section describes the land requirements for construction and operation of the Church Road Interconnects, the current use of the lands, and an evaluation of the Project-related impacts. PennEast used field surveys, aerial imagery, and PASDA geographic information system layers to evaluate land use cover types.

Construction of the Church Road Interconnects would impact a total of about 2.6 acres. Of this, 0.5 acres (19 percent) would be utilized for temporary workspace for construction. The remaining acreage affected during construction would be maintained as the permanent facilities (2.1 acres; 81 percent). All new construction would be located near MP 68.2R2 in Northampton County, Pennsylvania.

5.1.1 Environmental Setting

Only residential lands would be affected by the Church Road Interconnects. The Church Road Interconnects would be constructed on a parcel of land owned by PennEast and consists of mowed lawn and a single-family residence. The house would be vacated and demolished prior to construction.[19] There are no buildings identified within 50 feet of the proposed new facilities. The parcel is bordered to the south by currently undeveloped agricultural lands. West of the site is Church Road, beyond which is an agricultural field. To the east, the site is bordered by Route 33 and Country Club Road, beyond which there is a residential subdivision. There are residences to the north and southwest, the closest of which is over 300 feet from the site. The Green Pond Country Club golf course is located 0.2 mile west of the Church Road Interconnects.

PennEast consulted with local and county government planning officials to determine if new residential or commercial development is scheduled to occur within 0.25-mile of the Church Road Interconnects. Planned residential and commercial developments include developments on file with a local planning board or those included in a municipal master plan. One such commercial development project, the Mill Creek Corporate Campus Development, is located approximately 0.14-mile south of the proposed new facilities. The Mill Creek Corporate Campus Development is a proposed corporate building development whose current schedule is unknown; the Bethlehem Township Planning Committee last reviewed the development in February 2018. Construction of the Church Road Interconnects would last approximately six months, would require approximately 10-20 vehicles per day, and would not significantly affect this development. See section B.9.5 for further discussion on the Mill Creek Corporate Campus Development.

The Church Road Interconnects is anticipated to have a minor permanent effect on land use. The measures that PennEast proposes to implement to minimize impacts to surrounding landowners would be the same as for the Certificated Project.

5.1.2 Specially-Designated Land Uses

A permanent easement established under the U.S. Department of Agriculture's Farm and Ranch Lands Protection Program (now the Agricultural Conservation Easement Program) is located approximately 3 miles northeast of the Church Road Interconnects. Impacts on this easement were addressed for the Certificated Project. The Church Road Interconnects would not affect this property.

The Church Road Interconnects would not impact public land, recreation areas, or other designated areas. The proposed facilities would not require use of agricultural lands, would not impact any landfills or hazardous waste sites, and would not be located in a Coastal Zone Management Area.

5.2 Visual Resources

Construction of the Church Road Interconnects would result in temporary impacts to visual and/or aesthetic resources due to the construction equipment and activities necessary for constructing the facilities. After construction, all temporarily disturbed areas within the Church Road Interconnects site would be restored in compliance with PennEast's E&SCP and federal, state, and local permits. Generally, this would include seeding the restored areas with grasses and other herbaceous vegetation.

During operation, the presence of the new aboveground facilities would result in permanent visual impacts. The proposed Church Road Interconnects would be located between Route 33 to the east and Church Road to the west. The closest neighboring residence is to the north, more than 300 feet away. The Green Pond Country Club golf course is located 0.2 mile west of the Church Road Interconnects, separated

[19] PennEast has provided a Demolition Plan (see accession number 20200421-5192).

from the facility by a row of trees, a field, and Church Road. A number of line-of-sight features would partially screen views and minimize the visual impact of the facilities:

- to the east, there is an existing tree line and highway sound barriers which would block most or all of the new facility from the view of highway drivers;
- to the south, there is an existing tree line which would block the new facility from view of the nearest residence in that direction, which is more than 600 feet away;
- to the west, there is an existing tree line of short, decorative tree species which line the road front of the property along Church Road, which would limit the facility's visual impact from that direction; and
- to the north, the closest residence is more than 300 feet away, and that property has a number of decorative trees which would partially screen the facility from view.

To limit the visual impact of the facilities on nearby residences and roadways, PennEast would keep the existing perimeter tree line intact. We conclude that the Church Road Interconnects would have minimal long-term impacts on visual and aesthetic resources.

6.0 SOCIOECONOMICS

Socioeconomics is an evaluation of the basic conditions (attributes and resources) associated with the human environment, particularly the population and economic activity within a region. Economic activity generally encompasses regional employment, personal income, and revenues and expenditures. Impacts on the fundamental socioeconomic components can influence other issues such as regional housing availability and provision of community services. This section addresses several different factors that could affect the quality of life and economy in the area surrounding the 2020 Amendment Project. These factors include public services such as fire, police, medical, and educational facilities. This section also addresses environmental justice.

The 2020 Amendment Project involves new interconnection facilities (Church Road Interconnects) in Bethlehem Township, Northampton County, Pennsylvania, that would consist of a M&R station, two separate interconnection and measurement facilities, and a pig launcher and receiver, at approximate MP 68.2R2 of the Certificated Route. As part of the 2020 Amendment Project, PennEast would construct the Certificated Project in two phases. The Church Road Interconnects would be constructed as part of Phase 1, which would consist of construction and operation of the Certificated Route from MP 0.0 to the Church Road Interconnects (MP 68.2R2).

PennEast has indicated that the 2020 Amendment Project would not noticeably affect the overall workforce and cost estimates developed for the Certificated Project and, therefore, in some cases, it is appropriate to evaluate potential workforce- and cost-related socioeconomic impacts in the context of the Certificated Project, as discussed below.

6.1 Population, Economy, and Employment

Total estimated population is presented for Bethlehem Township, Northampton County, and the Commonwealth of Pennsylvania in Table B.6.1-1. Northampton County had a total estimated population of 304,807 in 2018, with an estimated population density of 825 persons per square mile, compared to a statewide average of 286 persons per square mile. Bethlehem Township had a total estimated population of 24,055, with an estimated population density of 1,673 persons per square mile. Population grew from 2000 to 2010 in Bethlehem Township and Northampton County at rates 3 to 3.5 times the state average of 3.4 percent. All three areas gained population between 2010 and 2018, but at slower rates than in the preceding decade.

Table B.6.1-1

Population by Township, County, and State

Geographic Area	2018 Population	2018 Population Density (persons/ square mile)	Population Change (Percent)	
			2000 to 2010	2010 to 2018
Bethlehem Township	24,055	1,673	12.1	1.4
Northampton County	304,807	825	10.4	2.4
Commonwealth of Pennsylvania	12,807,060	286	3.4	0.8

Sources: U.S. Census Bureau 2000, 2018

Summary economic information is presented in Table B.6.1-2. The statewide annual unemployment rate in Pennsylvania (4.3 percent) was higher than the U.S. average (3.9 percent) in 2018 (U.S. Bureau of Labor Statistics 2018a). This was also the case with Northampton County, which had an annual average unemployment rate of 4.4 percent in 2018. Statewide, median household income in 2018 in Pennsylvania ($60,891) was equivalent to about 98 percent of the national median ($61,937). Median household income was higher than the state and national medians in Northampton County in 2018 ($68,217). An estimated 12.2 percent and 10.2 percent of the respective populations in Pennsylvania and Northampton County were below the poverty level in 2018. Based on data compiled for 2017 by the U.S. Bureau of Economic Analysis (2018), the top three economic sectors in Pennsylvania by employment in 2016 were: health care, government, and retail. Retail, government, and health care were also the top three employers in Northampton County.

Table B.6.1-2

Employment, Poverty, and Income by County and State

Geographic Area	Civilian Labor Force [a]	Unemployment Rate (Percent) [a]	Population below the Poverty Level (Percent) [a]	Median Household Income [a]	Percent of State/ US Median [b]	Top Economic Sectors by Employment [c]
Northampton County	158,900	4.4	10.2	$68,217	112	Retail (10.2%), Government (9.7%), Health Care (9.7%)
Commonwealth of Pennsylvania	6,424,000	4.3	12.2	$60,891	98	Health Care (14.3%), Government (10.1%), Retail (10.0%)

Notes:
[a] Civilian labor force and unemployment rate are annual average figures for 2018. Poverty and household income figures are also from 2018.
[b] County median household income is shown as a percent of the corresponding state average; the state figure is shown as a percent of the national average ($61,937 in 2018).
[c] Top economic sectors by employment are identified from annual data compiled for 2017 by the U.S. Bureau of Economic Analysis. Percentages indicate the share of total employment that each sector monitors.
Sources: U.S. Bureau of Economic Analysis 2018, U.S. Bureau of Labor Statistics 2018a, 2018b, U.S. Census Bureau 2019a

PennEast would not begin construction of the 2020 Amendment Project until the receipt of all necessary approvals and authorizations, including those under applicable to construction and operation of Phase 1 of the Certificated Route from MP 0.0 to the Church Road Interconnects (MP 68.2R2). PennEast anticipates that construction of the Church Road Interconnects would take approximately six months and require an estimated labor force of 25 workers during peak construction. The Certificated Project addressed the potential impacts from construction and operation on population and the economy and employment. Because the 2020 Amendment Project would not be expected to affect the overall construction and operation workforce estimates that were evaluated for the Certificated Project, the findings of this analysis also apply to the 2020 Amendment Project.

6.2 Housing

Housing resources are summarized by township, county, and state in Table B.6.2-1. Data on housing units are annual estimates prepared by the U.S. Census Bureau (2019b, 2019c). The Census Bureau defines a housing unit as a house, apartment, mobile home or trailer, group of rooms, or single room occupied or intended to be occupied as separate living quarters. An estimated 1,685 units were available for rent in Northampton County, with 25 of these units located in Bethlehem Township. In addition, housing resources in the area also include units for seasonal, recreational, or occasional use. Further temporary housing resources are available in Northampton County in the form of hotels and motels and campgrounds and RV parks. Twenty hotels and motels with more than 2,000 rooms are located in Northampton County (STR 2016).

Table B.6.2-1

Housing by Township, County, and State [a]

Geographic Area	Total Housing Units	Rental Vacancy Rate	Units Available for Rent	For Seasonal, Recreational, or Occasional Use [b]
Bethlehem Township	9,133	2.0	25	94
Northampton County	122,452	4.9	1,685	806
Commonwealth of Pennsylvania	5,653,599	5.9	97,964	175,834

Note:
[a] Data on housing units are annual estimates from the American Community Survey 5-year estimates for 2013-2017.
[b] Housing units for seasonal, recreational, or occasional use are generally considered to be vacation homes. They are not included in the estimated number of housing units available for rent.
Sources: U.S. Census Bureau 2019a, 2019b

The analysis performed for the Certificated Project addressed the potential impacts from construction and operation on housing. Because the 2020 Amendment Project would not be expected to change the overall construction and operation workforce estimates that were evaluated for the Certificated Project, the findings of the analysis for the Certificated Project also applies to the 2020 Amendment Project. The Certificated Project analysis concluded that construction crews should not encounter difficulty in finding temporary housing, and project construction should not significantly impact the availability of housing for non-project-related needs. In addition, the analysis found that the addition of an estimated 24 new permanent employees would have a negligible effect on the demand for local housing resources.

6.3 Displacement of Residences and Businesses

PennEast owns the site of the proposed Church Road Interconnects, therefore there would be no displacement of residences or businesses as a result of construction and operation.

6.4 Public Services

Summary data for law enforcement, fire departments, hospitals, school districts, schools, and students are presented in Table B.6.4-1. Twenty-five law enforcement agencies and providers were identified in Northampton County. These agencies and providers include the Pennsylvania state patrol, the county sheriff, and local police departments. Eleven fire and rescue units were identified in Northampton County. Three hospitals with a total of 285 beds are located in Northampton County. Minor work-related injuries would be treated at local medical facilities or emergency rooms. Workers with more serious injuries would be transported to one of the larger hospitals in the general vicinity.

Table B.6.4-1

Public Services in Northampton County

County [a]	Law Enforcement Agencies	Fire and Rescue Units	Total Hospitals	Number of Hospital Beds	Number of School Districts	Number of Schools	Number of Students
Northampton	25	11	3	285	14	65	45,768

Note:
[a] Data from FERC (2017).
Sources: American Hospital Directory 2019, FERC 2017, National Center for Educational Statistics 2019, USA Cops 2019

The FEIS for the Certificated Project addressed the potential impacts from construction and operation on public services. Because the 2020 Amendment Project would not be expected to affect the overall construction and operation workforce estimates that were evaluated for the Certificated Project, the findings for the Certificated Project also apply to the 2020 Amendment Project. The analysis performed for the Certificated Project concluded that the temporary addition of construction workers to local communities would not be expected to affect the levels of service provided by existing law enforcement and fire protection personnel or have significant adverse effects on local and regional medical facilities and services. Further, the Certificated Project analysis concluded that construction and operation of the overall project would be unlikely to noticeably affect school enrollment in the Project area.

6.5 Transportation and Traffic

For the Certificated Project, we addressed potential impacts from construction and operation on transportation and traffic. The 2020 Amendment Project may temporarily impact transportation and traffic during construction across roadways and railroads. Increases in traffic volumes associated with construction workers commuting to and from job sites, deliveries of equipment and materials to the 2020 Amendment Project, and the movement of construction equipment may also affect transportation and traffic. Existing public and private roads would be used to access the Church Road Interconnects site. Major roads providing access to the Church Road Interconnects site include the Lehigh Valley Thruway (U.S. 22) and State Route 33. Access to the site would be via Church Road and permanent access road number AR-066N, which is an existing paved/gravel driveway from Church Road. The access road is approximately 10 feet long and currently paved/gravel; no improvements to this access road would be required.

6.6 Property Values

For the Certificated Project, we addressed the potential impacts from construction and operation on property values. This discussion was primarily based on existing professional and academic studies of natural gas pipelines and related aboveground facilities and, therefore, our analysis and conclusions for the Certificated Project with respect to potential impacts on property values would also apply to the 2020 Amendment Project.

6.7 Tax Revenues

For the Certificated Project, we addressed the potential impacts from construction and operation on tax revenues. Because the 2020 Amendment Project would not be expected to affect the overall cost estimates that were evaluated for the Certificated Project, the findings of the analysis for the Certificated Project would also apply to the 2020 Amendment Project.

6.8 Environmental Justice

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, requires each federal agency to make the achievement of environmental justice part of its mission by identifying and addressing disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority and low-income populations. The Executive Order further stipulates that the agencies conduct their programs and activities in a manner that does not have the effect of excluding persons from participating in them, denying persons the benefits of them, or subjecting persons to discrimination because of their race, color, or national origin.

For the Certificated Project, we addressed the potential impacts from construction and operation on environmental justice. This assessment included a discussion of public involvement activities and the efforts made by PennEast and the FERC to ensure that stakeholders and other interested parties had opportunities to participate in the EIS process for the Certificated Project. This discussion would also apply to the proposed 2020 Amendment Project.

The census block group that encompasses the Church Road Interconnects site (census block group 176.05.2) was evaluated for the Certificated Project and did not meet the definition of a minority population or the definition of a low-income population based on CEQ (1997) and EPA (1998) guidelines. In addition, the analysis for the Certificated Project concluded that construction and operation would not be expected to have high and adverse human health or environmental effects on any nearby communities or result in adverse and disproportionate human health or environmental effects to minority or low-income communities. The findings of this analysis would also apply to the proposed 2020 Amendment Project. In accordance with Executive Order 12898, all public documents, notices, and meetings were made readily available to the public during FERC's review of the Project (see section A.5).

7.0 AIR QUALITY AND NOISE

7.1 Air Quality

Air quality would be affected by construction and operation of the Church Road Interconnects which is part of the 2020 Amendment Project. This section of the EA addresses existing air quality, applicable regulatory requirements for air quality, and projected impacts on air quality from the construction of the 2020 Amendment Project. In addition, this section presents a comparison of the differing air quality impacts presented in the FEIS, the 2019 amendment EA, and the 2020 Amendment Project, as PennEast has revised aspects of its construction assumptions and emission calculation methodology since its original certificate application. The term *air quality* refers to the relative concentrations of pollutants in the ambient air. The subsections below describe well-established air quality concepts that are applied to characterize air quality and to determine the significance of increases in air pollution. This includes metrics for specific air pollutants known as criteria pollutants, in terms of ambient air quality standards (AAQS), regional designations to manage air quality known as Air Quality Control Regions (AQCR), and the ongoing monitoring of ambient air pollutant concentrations under state and federal programs.

Combustion of fossil fuels, such as natural gas, produces criteria air pollutants, such as nitrogen dioxide (NO_2), carbon monoxide (CO), sulfur dioxide (SO_2), and inhalable particulate matter ($PM_{2.5}$ and PM_{10}). $PM_{2.5}$ includes particles with an aerodynamic diameter less than or equal to 2.5 micrometers, and PM_{10} includes particles with an aerodynamic diameter less than or equal to 10 micrometers. Combustion of fossil fuels also produces volatile organic compounds (VOCs), a large group of organic chemicals that have a high vapor pressure at room temperature; and oxides of nitrogen (NO_x). VOCs react with NO_x, typically on warm summer days, to form ozone (O_3), which is another criteria air pollutant. Other byproducts of combustion are greenhouse gases (GHGs) and hazardous air pollutants (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. Fugitive dust is a mix of particulate matter sized 2.5 microns or smaller ($PM_{2.5}$), particulate matter sized 10 microns or smaller (PM_{10}), and larger particles thrown up into the atmosphere by moving vehicles, construction equipment, earth movement, and/or wind erosion. Fugitive emissions, in the context of this EA, would be fugitive emissions of methane and/or VOCs from operational pipelines and aboveground facilities.

7.2 Regional Climate

The 2020 Amendment Project facilities would be located in southeastern Pennsylvania and western New Jersey, which are classified as having a humid continental climate with hot summers (Köppen-Geiger climate classification *Dfa*) (NOAA 2015a).

Climate data were obtained from the Northeast Regional Climate Center (NRCC), for measurements taken either at Lehigh Valley International Airport or at the Allentown National Weather Service station. The annual mean temperature is 51.1 °Fahrenheit (F), with a maximum daily mean of 73.4 °F in July, and a minimum daily mean of 27.8 °F in January. The normal daily maximum temperature is 61.4 °F, with a highest normal daily maximum of 84.2 °F in July, and a lowest normal daily maximum of 36.0 °F in January. The normal daily minimum temperature is 40.8 °F, with a highest normal daily minimum of 62.7 °F in July, and a lowest normal daily minimum of 19.5 °F in January. Maximum daily temperatures above 90 °F occur on average 19 days per year, and minimum daily temperatures below 32 °F occur on average 103 days per year.

Mean annual precipitation is 45.35 inches, evenly distributed throughout the year, and mean annual snowfall is 32.9 inches, occurring primarily in December through March. Maximum daily values for relative humidity can exceed 80 percent in the summer months. The average annual wind speed is 7.9 mph, predominantly from the west (NRCC 2020, PSU 2020).

7.2.1 Existing Air Quality

The EPA has established National Ambient Air Quality Standards (NAAQS) for six pollutants: SO_2, CO, O_3, NO_2, particulate matter (PM) including PM_{10} and $PM_{2.5}$, and lead.[20] There are two classifications of NAAQS, primary and secondary standards. Primary standards set limits the EPA believes are necessary to protect human health including sensitive populations such as children, the elderly, and asthmatics. Secondary standards are set to protect public welfare from detriments such as reduced visibility and damage to crops, vegetation, animals, and buildings.

In addition to the national standards, Pennsylvania and New Jersey have established their own more stringent standards for certain pollutants. Table B.7.2-1 presents the additional standards for Pennsylvania, and table B.7.2-2 presents the additional standards for New Jersey.

[20] https://www.epa.gov/criteria-air-pollutants/naaqs-table

Table B.7.2-1

Pennsylvania Ambient Air Quality Standards [a]

Pollutant	Averaging Period	State AAQS
Settled particulate (total)	Annual	0.8 mg/cm^2/month
	30-day	1.5 mg/cm^2/month
Beryllium	30-day	0.01 $\mu g/m^3$
Fluorides (total soluble, as HF)	24-hour	5 $\mu g/m^3$
Hydrogen Sulfide	24-hour	0.05 ppm
	1-hour	0.1 ppm

Note:
mg/cm^2/month = milligrams per square centimeter per month, ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter
[a] Maximum values that may not be exceeded.

Table B.7.2-2

New Jersey Ambient Air Quality Standards

Pollutant	Averaging Period	State AAQS	
		Primary	Secondary
Sulfur Dioxide	Annual [a]	80 $\mu g/m^3$ (0.03 ppm)	60 $\mu g/m^3$ (0.02 ppm)
	24-hour [b]	365 $\mu g/m^3$ (0.14 ppm)	260 $\mu g/m^3$ (0.01 ppm)
	3-hour [b]	-	1,300 $\mu g/m^3$ (0.5 ppm)
			1.5 mg/cm^2/month
Suspended particulate matter	Annual [c]	75 $\mu g/m^3$	60 $\mu g/m^3$
	24-hour [b]	260 $\mu g/m^3$	150 $\mu g/m^3$
Nitrogen Dioxide	Annual [a]	100 $\mu g/m^3$ (0.05 ppm)	same as primary
Carbon Monoxide	8-hour [b]	10 mg/m^3 (9 ppm)	same as primary
	1-hour [b]	40 mg/m^3 (35 ppm)	same as primary
Ozone	1-hour	0.12 ppm (235 $\mu g/m^3$) [d]	0.08 ppm (160 $\mu g/m^3$) [e]
Lead	Rolling 3-month average [f]	1.5 $\mu g/m^3$	same as primary

Note:
ppm = parts per million, $\mu g/m^3$ = micrograms per cubic meter, µg/m3 = micrograms per cubic meter
[a] Arithmetic mean, not to be exceeded during any 12 consecutive months.
[b] Not to be exceeded more than once during any 12 consecutive months.
[c] Geometric mean of all 24-hour averages, not to be exceeded during any 12 consecutive months.
[d] Daily maximum one-hour average, not to be exceeded more than once during any 12 consecutive months.
[e] One-hour average, not to be exceeded more than once during any 12 consecutive months.
[f] Arithmetic mean of 24-hour averages, not to be exceeded during any 3 consecutive months.

AQCRs are areas established for air quality planning purposes in which implementation plans describe how ambient air quality standards will be achieved and maintained. AQCRs were established by the EPA and local agencies, in accordance with Section 107 of the CAA and its amendments, as a means to implement the CAA and comply with the NAAQS through state implementation plans (SIPs). The AQCRs are intrastate and interstate regions such as large metropolitan areas where the improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR.

An AQCR, or portion thereof, is designated based on compliance with the NAAQS. AQCR designations fall under three general categories as follows: attainment (areas in compliance with the NAAQS); nonattainment (areas not in compliance with the NAAQS); or unclassifiable. AQCRs that were previously designated nonattainment but have since met the requirements to be classified as attainment are classified as maintenance areas. Table B.7.2-3 presents the AQCRs in which various components of the 2020 Amendment Project would be located, along with the current attainment status listed in 40 CFR 81 for each pollutant. As shown, the areas in which the 2020 Amendment Project would be located are in attainment for all pollutants except ozone. Two AQCRs, in northeastern Pennsylvania and in the metropolitan Philadelphia region, were also previously in nonattainment for $PM_{2.5}$, but are currently maintenance areas, having been re-designated as attainment.

Table B.7.2-3

Attainment Status for 2020 Amendment Project Components

2020 Amendment Project Component	Phase	Location (County/Township)	AQCR	Attainment/ Unclassifiable	Nonattainment/ Maintenance
22.7 miles of mainline pipeline: Spread 1 and part of Spread 2	Phase 1	Luzerne, PA – Dallas, Kingston, West Wyoming, Wyoming, Jenkins, Plains, Bear Creek	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2, Ozone	None [a]
28.4 miles of mainline and 0.5 miles of lateral pipeline: Remainder of Spread 2, Kidder Compressor Station, and part of Spread 3.1	Phase 1	Carbon, PA – Kidder, Penn Forest, Towamensing, Lower Towamensing	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008
1.0 miles of mainline pipeline: Part of Spread 3.1	Phase 1	Monroe, PA - Eldred	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2, Ozone	None [a]
17.5 miles of mainline pipeline: Remainder of Spread 3.1, and Church Road Interconnects	Phase 1	Northampton, PA – Lehigh, Moore, Upper Nazareth, Lower Nazareth, East Allen, Bethlehem	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008 Maintenance area for $PM_{2.5}$ 2006 [b]
8.1 miles of mainline pipeline: Part of Spread 3.2	Phase 2	Northampton, PA – Bethlehem, Easton, Lower Saucon, Williams	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008 Maintenance area for $PM_{2.5}$ 2006 [b]
1.8 miles of mainline pipeline: Part of Spread 3.2 and Spread 4	Phase 2	Bucks, PA – Durham, Riegelsville	Metropolitan Philadelphia Interstate Air Quality Control Region (PA-NJ-DE)	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008 Maintenance area for 1997 and 2006 $PM_{2.5}$ [c]
27.9 miles of mainline pipeline and 2.1 miles of lateral pipeline: Remainder of Spread 3.2 and part of Spread 4	Phase 2	Hunterdon, NJ – Holland, Alexandria, Kingwood, Delaware, West Amwell	Northeast PA-Upper Delaware Valley Interstate Air Quality Control Region	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008

Table B.7.2-3

Attainment Status for 2020 Amendment Project Components

2020 Amendment Project Component	Phase	Location (County/Township)	AQCR	Attainment/ Unclassifiable	Nonattainment/ Maintenance
9.8 miles of mainline pipeline: Remainder of Spread 4	Phase 2	Mercer, NJ – Hopewell	Metropolitan Philadelphia Interstate Air Quality Control Region (PA-NJ-DE)	CO, NO_X, Pb, PM_{10}, $PM_{2.5}$, SO_2	Marginal for O_3 2008 Maintenance area for 1997 and 2006 $PM_{2.5}$ [d]

Notes
NO_x = nitrogen oxides, Pb = lead
[a] For new source review (NSR) purposes, all Amendment Project sites and counties in PA and NJ are subject to moderate ozone non-attainment as both states are within the Ozone Transport Region (OTR).
[b] Northampton County, PA was previously designated as moderate nonattainment for the 2006 24-hour PM2.5 standard but was re-designated as attainment on April 13, 2015.
[c] Bucks County, PA was previously designated as moderate nonattainment for the 1997 annual and 24-hour PM2.5 standards but was redesignated as attainment for both standards on April 21, 2015.
[d] Mercer County, NJ was previously designated as moderate nonattainment for the 1997 annual and 24-hour PM2.5 standards but was redesignated as attainment for both standards on September 4, 2013.

Note: Mileages for each county are from the January 2020 application and from Response 17 to EIR 2.

Greenhouse Gases

The EPA has defined air pollution to include the mix of six long-lived and directly emitted GHGs (carbon dioxide (CO_2), methane (CH_4), nitrous oxide (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 PennEast Pipeline Project, as modified by the 2020 Amendment Project, would contribute to GHG emissions. The principle GHGs that would be produced by the 2020 Amendment Project are CO_2, CH_4, and N_2O. Emissions of GHGs are quantified and regulated in units of carbon dioxide equivalents (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.

The EPA has expanded its regulations to include the emission of GHGs from major stationary sources under the Prevention of Significant Deterioration (PSD) program. The EPA's current rules require that a stationary source that is major for a non-GHG-regulated New Source Review (NSR) pollutant must also obtain a GHG PSD permit prior to beginning construction of a new or modified major source with mass-based GHG emissions equal to or greater than 100,000 tons per year (tpy) and significant net emission increases in units of CO_2e equal to or greater than 75,000 tpy. There are no NAAQS or other significance thresholds for GHGs.

7.2.2 Regulatory Requirements for Air Quality

The 2020 Amendment Project would be potentially subject to a variety of federal and state regulations pertaining to the construction of air emission sources. The CAA, 42 USC 7401 et seq., as amended in 1977 and 1990, and 40 CFR Parts 50 through 99 are the basic federal statutes and regulations governing air pollution in the U.S. The PADEP has the primary jurisdiction over air emissions produced by stationary sources associated with the Church Road Interconnects facility, proposed in Phase 1. The following sections summarize the applicability of various state and federal regulations that are relevant to construction and operating emissions of the 2020 Amendment Project facilities.

7.3 General Conformity

A general conformity analysis must be conducted by the lead federal agency if a federal action would result in the generation of emissions that would exceed the general conformity applicability threshold levels of the pollutants(s) for which an AQCR is in nonattainment. According to Section 176(c)(1) of the CAA (40 CFR §51.853), a federal agency cannot approve or support any activity that does not conform to an approved SIP. Conforming activities or actions should not, through additional air pollutant emissions:

- cause or contribute to any new violation of any standard in any area;
- increase the frequency or severity of any existing violation of any standard in any area; or
- delay timely attainment of any standard or any required interim emission reductions or other milestones in any area.

General Conformity does not apply to federal actions in attainment areas or unclassifiable/attainment areas, including counties designated attainment or unclassifiable/attainment that are within the Northeast OTR. The EPA amended the General Conformity Rule in 2010 (Federal Register, Volume 75, Number 64) to exclude emissions regulated by any permit issued under minor and major NSR from a General Conformity applicability analysis.

General conformity assessments must be completed when the total direct and indirect emissions of a project would equal or exceed specified pollutant thresholds on a calendar year basis for each nonattainment or maintenance area. With regard to the 2020 Amendment Project, the relevant general conformity pollutant thresholds are shown in Table B.7.3-1. These thresholds are based on the current air quality designations (e.g., serious nonattainment, moderate nonattainment, maintenance, etc.).

Table B.7.3-1 presents the emissions for the 2020 Amendment Project (revised to incorporate the four re-alignments approved in the 2019 Amendment EA CP19-78) that are subject to review under general conformity, along with a comparison to the applicable general conformity thresholds. Only construction emissions would be subject to review under general conformity. The operational emissions from the Church Road Interconnects would be governed by the minor NSR permitting programs in Pennsylvania, as described below under "Applicable State Air Quality Requirements."

Table B.7.3-1

General Conformity Applicability Evaluation for the 2020 Amendment Project

Amendment Project Component	Phase	Location (County, State)	County Nonattainment or Maintenance Pollutants [a b]	Construction Emissions [c]	General Conformity "de minimis" rates for Nonattainment or Maintenance Areas	General Conformity Determination Required? (Yes/No)
22.7 miles of mainline pipeline: Spread 1 and part of Spread 2	Phase 1	Luzerne, PA	None	N/A	N/A	No
28.4 miles of mainline and 0.5 miles of lateral pipeline: part of Spread 2, Kidder Compressor Station, and part of Spread 3.1	Phase 1	Carbon, PA	O_3	50.8 tons NOx 7.5 tons VOC	100 tpy NOx 50 tpy VOC	No
1.0 miles of mainline pipeline: part of Spread 3.1	Phase 1	Monroe, PA	None	N/A	N/A	No
25.6 miles of mainline pipeline: part of Spread 3.1, Church Road Interconnects, and Part of Spread 3.2	Phase 1 and Phase 2	Northampton, PA	$PM_{2.5}$ O_3	85.8 tons $PM_{2.5}$ 0.6 tons SO_2 41.5 tons NOx 6.1 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC	No
1.8 miles of mainline pipeline: Part of Spread 3.2 and Part of Spread 4	Phase 2	Bucks, PA	$PM_{2.5}$ O_3	8.1 tons $PM_{2.5}$ 0.0 tons SO_2 7.8 tons NOx 0.8 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC	No
27.9 miles of mainline pipeline and 2.1 miles of lateral pipeline: Part of Spread 3.2 and Part of Spread 4	Phase 2	Hunterdon, NJ	O_3	66.1 $PM_{2.5}$ 72.6 tons NOx 7.8 tons VOC	100 tpy NOx 50 tpy VOC	No
9.8 miles of mainline pipeline: Part of Spread 4	Phase 2	Mercer, NJ	$PM_{2.5}$ O_3	29.0 tons $PM_{2.5}$ 0.1 tons SO_2 14.4 tons NOx 1.8 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC	No

Notes:
[a] Marginal or Moderate Nonattainment for the 2008 8-hour Ozone standard.
[b] Maintenance Area for the 1997 and/or 2006 $PM_{2.5}$ Standards.
[c] Assumes that emissions of all major construction activities would occur during one calendar year.

Note: Mileages for each county are from the January 2020 application and from Response 17 to EIR 2.

All construction emissions for Phase 1 and 2 of the 2020 Amendment Project were conservatively assumed to occur in a single calendar year as demonstrated in the 2020 Amendment application. This assumption ensures that any possible exceedance of a general conformity threshold would be identified, since emissions spread over multiple calendar years would be less likely to trigger general conformity. Based on this assumption, emission estimates for construction would not exceed general conformity applicability thresholds. Based upon this evaluation, a general conformity determination would not be required for the 2020 Amendment Application. PennEast would remain subject to Environmental Condition 52 of the Order for CP15-558-000, and must file updated construction emission estimates prior to construction, if any changes to the schedule or design occur that would materially impact the amount of construction emissions generated in a single calendar year.

The General Conformity emissions presented in Table B.7.3-2 should not be viewed as additional emissions beyond those estimated for the CP15-558-000 FEIS but should be viewed as completely replacing the emissions that were presented in the FEIS. The emissions presented in the 2020 Amendment

Project reflect a re-worked approach to the entire PennEast Pipeline Project, which differs from the original PennEast Pipeline Project in Docket No. CP15-558-000 by including the proposed Church Road Interconnects, and by splitting the entire project into two separate phases of construction and operation. In addition, both the 2019 amendment application and the present 2020 Amendment Project use modified construction durations and emission factors as compared to the original application that was reviewed in the FEIS (CP15-558-000). Since the 2019 certificate amendment has been approved as of March 19, 2020, the 2020 Amendment Project emissions have been updated to incorporate the four pipeline route re-alignments from the 2019 amendment application.

To avoid confusion and to more clearly illustrate how the estimated construction emissions differ between the Certificated Project (Docket No. CP15-558-000), the 2019 Amendment (Docket No. CP19-78-000), and the 2020 Amendment Project, all three sets of General Conformity emissions are presented side by side in Table B.7.3-2.

Table B.7.3-2

Comparison of General Conformity Emissions for the Original FEIS, 2019 Amendment, and 2020 Amendment Project

Location (County, State)	County Nonattainment or Maintenance Pollutants [a b]	Approved Project CP15-558 (FEIS) Project Construction Emissions [c]	2019 Amendment Approved Project CP19-78 Construction Emissions [c]	2020 Amendment Application Construction Emissions [c]	General Conformity "de minimis" rates for Nonattainment or Maintenance Areas
Luzerne, PA	None	N/A	N/A	N/A	N/A
Carbon, PA	O_3	28.2 tons NOx 3.4 tons VOC	50.0 tons NOx 7.3 tons VOC	50.8 tons NOx 7.5 tons VOC	100 tpy NOx 50 tpy VOC
Monroe, PA	None	Not included in Certificated Project	N/A	N/A	N/A
Northampton, PA	$PM_{2.5}$ O_3	82.5 tons $PM_{2.5}$ 0.1 tons SO_2 21.7 tons NOx 2.7 tons VOC	78.2 tons $PM_{2.5}$ <1.0 tons SO_2 42.6 tons NOx 6.3 tons VOC	85.8 tons $PM_{2.5}$ 0.6 tons SO_2 41.5 tons NOx 6.1 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC
Bucks, PA	$PM_{2.5}$ O_3	4.5 tons $PM_{2.5}$ 0.0 tons SO_2 1.4 tons NOx 0.2 tons VOC	Not included in 2019 Amendment	8.1 tons $PM_{2.5}$ 0.0 tons SO_2 7.8 tons NOx 0.8 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC
Hunterdon, NJ	O_3	20.2 tons NOx 2.5 tons VOC	Not included in 2019 Amendment	72.6 tons NOx 7.8 tons VOC	100 tpy NOx 50 tpy VOC
Mercer, NJ	$PM_{2.5}$ O_3	25.0 tons $PM_{2.5}$ 0.0 tons SO_2 6.7 tons NOx 0.8 tons VOC	Not included in 2019 Amendment	29.0 tons $PM_{2.5}$ 0.1 tons SO_2 14.4 tons NOx 1.8 tons VOC	100 tpy $PM_{2.5}$ 100 tpy SO_2 100 tpy NOx 50 tpy VOC

Notes:
[a] Marginal or Moderate Nonattainment for the 2008 8-hour Ozone standard.
[b] Maintenance Area for the 1997 and/or 2006 $PM_{2.5}$ Standards.
[c] Assumes that emissions from all major construction activities would occur during one calendar year.

7.3.1 Applicable State Air Quality Requirements

In addition to the federal regulations identified above, Pennsylvania and New Jersey have their own air quality regulations that may be applicable to the 2020 Amendment Project, which are summarized below.

7.3.1.1 Pennsylvania

Air quality regulations for the state of Pennsylvania are codified in Title 25 of the Pennsylvania Code (Pa. Code) and are administered by the PADEP.

- 25 Pa. Code Chapter 123. *Standards for Contaminants*. This chapter establishes standards and limits for emissions of various pollutants, including fugitive emissions (123.1 and 123.2), particulate matter (123.11 through 123.14), sulfur compounds (123.21 through 123.25), odor (123.31), visible emissions (123.41 through 123.46), and NO_x (123.51). These requirements would be generally applicable to the Kidder Compressor Station emission sources and to the fuel heaters at the Church Road Interconnects.
- 25 Pa. Code Chapter 124. *National Emission Standards for Hazardous Air Pollutants (NESHAP)*. This chapter incorporates by reference the federal NESHAP standards as promulgated by EPA in 40 CFR 61 under Section 112(d) of the CAA.
- 25 Pa. Code Chapter 122. *National Standards of Performance for New Stationary Sources*. This chapter incorporates by reference the federal New Source Performance Standards (NSPS) standards as promulgated by EPA in 40 CFR 60 under Section 111 of the CAA.
- 25 Pa. Code Chapter 127. *Construction, Modification, Reactivation and Operation of Sources*. This chapter implements the state air permitting program both for major sources (subject to NSR, PSD, and/or Title V) and non-major sources. The Kidder Compressor Station (for both the modified Phase 1 scenario (constructing two compressor units out of the three approved in the Certificated Project), and for Phase 2, would continue to be a non-major source, with potential emissions below the NSR, PSD, and Title V thresholds. The compressor turbines, emergency generator, and fuel gas heater at the Kidder Compressor Station would be required to apply to the PADEP for a preconstruction permit, as well as a state-only operating permit, and the compressor turbines would be required to demonstrate the use of Best Available Technology for control of emissions. The natural gas line heaters and emergency generator at the Church Road Interconnects would be exempt from the requirement to obtain a PADEP plan approval (either a General Plan Approval or a General Permit) due to their small heat input ratings. The fugitive emissions, venting, and pig retrieval operations at the Church Road Interconnects would also be exempt from needing a PADEP plan approval due to their low emissions, provided that PennEast complies with the criteria specified at 25 Pa Code 127.14(a)(8), exemption 38(c), which include a specific leak detection and repair program, and best management practices for pigging operations.

7.3.1.2 New Jersey

Air quality regulations for the state of New Jersey are codified in Chapter 27 of the New Jersey Administrative Code (NJAC) and are administered by the New Jersey Department of Environmental Protection (NJDEP).

- Air quality regulations for the state of New Jersey are codified in Chapter 27 of the New Jersey Administrative Code (NJAC) and are administered by the NJDEP.
- NJAC 7:27-2 through 7:27-7 and 7:27-9. These subchapters establish general prohibitions against air pollution, including prohibitions on open burning, smoke and particulate from fuel combustion, odor, and sulfur emissions. These would be generally applicable to operations at the New Jersey interconnect stations.
- NJAC 7:27-8, Permits and Certificates for Minor Facilities (and Major Facilities without an Operating Permit). This chapter implements the state air permitting program for non-major sources. The natural gas line heaters at the three New Jersey interconnect stations in Hunterdon and Mercer counties would be non-major sources below all NSR, PSD, and Title V thresholds.

However, the heaters would exceed the size threshold for "commercial fuel burning equipment" under 7:27-8.2(c) and would be required to obtain preconstruction permits from NJDEP. PennEast would have the option to obtain General Permits for the heaters, which are pre-approved air permits for specific classes of emission sources. Depending on their individual heat input ratings, General Permits GP-009A or GP-018 would be applicable to the natural gas line heaters at the New Jersey interconnect stations.

- NJAC 7:27-19, Control and Prohibition of Air Pollution from Oxides of Nitrogen. This chapter establishes requirements for emissions from various combustion sources and other industrial facilities. If the natural gas line heaters in New Jersey were permitted using General Permits, they would be subject to the requirements under NJAC 7:27-19.16 to perform tune-ups and other adjustments to minimize emissions of NOx and CO.

7.3.2 Air Emissions Impacts and Mitigation

7.3.2.1 Construction Emissions and Mitigation

Construction of the 2020 Amendment Project components would result in short-term increases in emissions of some air pollutants due to the use of equipment powered by diesel fuel or gasoline engines and the generation of fugitive dust due to the disturbance of soil and other dust-generating activities. More specifically, the construction activities that would generate air emissions include:

- site preparation (land clearing, grading, excavation, etc.);
- installation of pipeline and pipeline interconnection equipment;
- operation of off-road vehicles and trucks during construction; and
- workers' vehicles used for commuting to and from the construction site (i.e., on-road vehicles).

PennEast estimates approximately 2.6 additional acres would be disturbed during construction of the Church Road Interconnects and meter station, which are part of the 2020 Amendment Project components. PennEast has also adjusted the assumed acreages of disturbed soil for other pipeline construction activities (such as pipeline footprint, access roads, pipeyards, aboveground facilities, and staging areas) as compared to both the Certificated Project and the 2019 amendment application. Site preparation and construction activities would generate fugitive dust from clearing, trenching, backfilling, grading, and traffic on paved and unpaved areas, as well as fuel combustion emissions from the construction equipment. The internal combustion engines powering most of the construction equipment and vehicles would burn ultra-low-sulfur diesel fuel and the remaining vehicles would burn gasoline. Equipment that would be used for the interconnect station construction activities would include various earthmoving equipment (bulldozers, backhoes, and graders), cranes, compressors, pumps, welding rigs, and miscellaneous trucks.

For the 2020 Amendment Project construction activities of the Church Road Interconnects, construction truck traffic (e.g., supply trucks) and worker commuter vehicles would generate fugitive dust from travel on paved and unpaved surfaces as well as tailpipe emissions. In addition, the 2020 Amendment Project would involve the use of gasoline pickup trucks, lowboy tractor trucks, and diesel parts vans.

Fuel combustion emissions from off-road construction equipment and on-road vehicles were estimated using EPA's MOVES2014 model.[21] For each equipment type, MOVES2014 can generate specific emission factors, which take into account such information as regional meteorology, regional equipment mix, and the calendar year of activity. For off-road and on-road combustion emissions, PennEast

[21] The EPA's most current model for estimating nonroad equipment emissions, NONROAD2008, has been incorporated into MOVES2014, which previously only modeled on-road equipment.

used the predicted MOVES2014 emission factors for Northampton (Church Road Interconnect and meter station) and Carbon (Kidder Compressor Station) Counties, Pennsylvania.

Fugitive dust emissions generated by on-site construction equipment were estimated using emission factors from the EPA reference document "Estimating Particulate Matter Emissions from Construction Operations" (Eastern Research Group, Inc. 1999). PennEast used the document's recommended values for roadway construction, which is considered similar in nature to pipeline construction, along with specific dry silt factor based on Project-specific soil data. Roadway fugitive dust emissions were estimated using emission factors from EPA's AP-42 document, with most of the vehicle miles occurring on paved rather than unpaved roadways. Fugitive dust emission estimates for unpaved roadways assume the use of water spray dust suppression with a control efficiency of 50 percent.

The construction emissions for criteria air pollutants and GHG are presented in table B.7.3-3 for Phase 1 of the 2020 Amendment Project, and in table B.7.3-4 for Phase 2 of the 2020 Amendment Project. These totals include fuel combustion emissions as well as fugitive dust emissions. As shown, fugitive dust accounts for the majority of PM_{10} and $PM_{2.5}$ emissions during construction of the 2020 Amendment Project. PennEast has developed a Fugitive Dust Control Plan (FDCP) to mitigate these emissions.[22] We reviewed the FDCP and find it acceptable. Some of the measures outlined in the FDCP include the following:

- where possible, use of water for control of dust in the construction operations, the grading of roads, or the clearing of land;
- application of water, or suitable dust suppression chemicals on dirt roads, materials stockpiles, and other surfaces which may create significant airborne dust;
- where possible, paving/grading of roadways and maintaining them in a clean condition;
- removal of spilled or tracked dirt or other materials from paved streets, and of dried sediments resulting from soil erosion;
- reducing vehicular traffic speed to a point below significant dust emission creation;
- preventing motor vehicle use in unpaved areas when necessary;
- stabilizing topsoil piles with use of BMPs, mulch, temporary seeding, tackifiers, or functional equivalents, when necessary; and/or
- covering open-bodied trucks while transporting materials.

In addition, the Field Project Manager and EI would determine when to apply dust control measures during construction activities and these 2020 Amendment Project personnel would share the authority with the contractor and construction superintendent to determine if/when water needs to be reapplied for dust control and to determine if/when additional mitigation would be needed. In addition, the Field Project Manager and EI would have the authority to stop work on any activity that would not apply with the dust control measures outlined in the plan.

[22] Appendix L-5 of the original September 2015 application under Docket No. CP15-558-000 (see Accession number 20150925-5028).

Table B.7.3-3

Construction Emissions for Phase 1 of the 2020 Amendment Project

Activity	Pollutants (Tons)							
	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	HAPs
Pipeline Diesel Non-Road Equipment	94.83	30.81	13.16	4.99	4.89	0.40	43,932	1.787
Diesel and Gas On-Road Equipment	5.26	30.95	3.43	0.28	0.19	0	2,132	0.215
Construction Activity Fugitive Dust	-	-	-	1,085.1	162.55	-	-	-
Roadway Fugitive Dust	-	-	-	173.29	27.43	-	-	-
Compressor Station Construction	3.3	3.3	0.7	28.6	4.3	0.0	1,708	0.05
Church Road Interconnect	0.41	0.65	0.11	9.76	2.04	0.0016	190	0.008
Total	**103.8**	**65.7**	**17.4**	**1,302.0**	**201.4**	**0.40**	**47,962**	**2.06**

Table B.7.3-4

Construction Emissions for Phase 2 of the 2020 Amendment Project

Activity	Pollutants (Tons)							
	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	HAPs
Pipeline Diesel Non-Road Equipment	118.9	26.5	12.9	5.9	5.7	0.7	37,839	0.8
Diesel and Gas On-Road Equipment	1.9	6.7	0.7	0.15	0.1	0.0	890	0.06
Construction Activity Fugitive Dust	-	-	-	779.3	121	-	-	-
Roadway Fugitive Dust	-	-	-	59.4	10	-	-	-
Total	**120.8**	**33.2**	**13.6**	**844.7**	**136.8**	**0.8**	**38,729**	**0.86**

For comparison purposes, Table B.7.3-5 presents construction emissions for the Certificated Project as presented in the original FEIS (Docket No. CP15-558-000), the 2019 amendment project (Docket No. CP19-78-000, and now part of the Certificated Project), and the 2020 Amendment Project (after incorporating the four modifications evaluated in the 2019 Amendment EA under Docket No. CP19-78-000). The estimated construction emissions for the 2019 amendment project and the 2020 Amendment Project should not be viewed as additional emissions beyond those estimated for the Certificated Project. Rather, the emissions for the 2019 amendment application would completely replace the emissions for the PA portion of the Certificated Project. The emissions for the 2020 Amendment Project would completely replace the emissions for both the Certificated Project, and for the 2019 amendment project.

As shown in table B.7.3-6, the 2020 Amendment Project estimates that construction emissions would increase for most aspects of construction. Changes in emissions include an increase in emissions from non-road construction equipment, due to revised assumptions about the duration of construction equipment use, and updates to the emission factors used; and a slight decrease in fugitive dust emissions from non-road construction activities. Construction emissions for the Kidder Compressor Station would be lower than those estimated for the Certificated Project for most pollutants, again due to revised assumptions about the duration of construction equipment use.

Table B.7.3-5

Comparison of Construction Emissions for the Original FEIS, 2019 Amendment, and 2020 Amendment Project

Activity	Pollutants (Tons)							
	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	HAPs
Original FEIS (PA and NJ)								
Pipeline Diesel Non-Road Equipment	94.9	24.9	9.8	6.2	6.0	0.27	29,874	0.71
Diesel and Gas On-Road Equipment	5	22.8	2.53	0.29	0.17	0.03	1,690	0.18
Construction Activity Fugitive Dust	-	-	-	1,927	287	-	-	-
Roadway Fugitive Dust	-	-	-	132	21	-	-	-
Compressor Station Construction	6	5	1	28	4	0.02	1,712	0.05
Total	**106**	**53**	**13**	**2,093**	**318**	**0.32**	**33,276**	**0.94**
2019 Approved Amendment (PA only)								
Pipeline Diesel Non-Road Equipment	128.1	38.0	16.7	6.6	6.4	0.9	54,317	2.00
Diesel and Gas On-Road Equipment	6.2	35.8	4.0	0.34	0.2	0.0	2,527	0.26
Construction Activity Fugitive Dust	-	-	-	1,102.5	166.1	-	-	-
Roadway Fugitive Dust	-	-	-	272.7	50.1	-	-	-
Compressor Station Construction	3.3	3.3	0.7	35.5	5.5	0.0	1,708	0.05
Total	**137.6**	**77.1**	**21.4**	**1,417.6**	**228.3**	**0.9**	**58,552**	**2.31**
Present 2020 Amendment Project (PA and NJ)								
Pipeline Diesel Non-Road Equipment	213.73	57.31	26.06	10.89	10.59	1.1	81,771	2.587
Diesel and Gas On-Road Equipment	7.16	37.65	4.13	0.43	0.29	0	3,022	0.275
Construction Activity Fugitive Dust	-	-	-	1,864.4	283.55	-	-	-
Roadway Fugitive Dust	-	-	-	232.69	37.43	-	-	-
Compressor Station Construction	3.3	3.3	0.7	28.6	4.3	0.0	1,708	0.05
Church Road Interconnect	0.41	0.65	0.11	9.76	2.04	0.0016	190	0.008
Total	**224.6**	**98.9**	**31.0**	**2,146.7**	**338.2**	**1.1**	**86,691**	**2.92**

Emissions during construction would increase pollutant concentrations in the vicinity of the pipeline; however, their effect on ambient air quality would vary with time due to the construction schedule, the mobility of the sources, and the variety of emission sources. Construction emissions associated with the 2020 Amendment Project would be considered temporary and cease at completion of construction. Following construction, air quality would not revert back to previous conditions, but would transition to permanent operational-phase emissions after commissioning and initial start-up.

Due to the temporary nature of construction activities, and with the implementation of the mitigation measures discussed in the FDCP, we conclude that construction of the 2020 Amendment Project would not have a significant impact on air quality.

7.3.2.2 Operating Emissions and Mitigation

The 2020 Amendment Project would result in minor changes to the operating emissions due to the addition of the Church Road Interconnects and the reduced number of permanent emission sources included in Phase 1. However, the mitigations that were presented for the Certificated Project remain unchanged.

Table B.7.3-6 presents the potential operating emissions for Phase 1 of the 2020 Amendment Project, including the Church Road Interconnects, and the modified Phase 1 operating emissions for the Kidder Compressor Station, and operating emissions for the Blue Mountain, Springville, Wyoming, Leidy, and Auburn Interconnects (which are unchanged from the Certificated Project). Rather than the full buildout and operating capacity presented for the Certificated Project under Docket No. CP15-558, the Kidder Compressor Station during Phase 1 would only include two compressor turbines operating at a year-round average capacity of approximately 56 percent, rather than three compressor turbines operating at full capacity year-round.

Table B.7.3-6

Phase 1 Operating Emissions

Activity	Pollutants (Tons)							
	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	HAPs
Indirect-Fired NG Line Heater at Blue Mountain Lateral Interconnect (BML)	0.14	0.12	0.008	0.01	0.01	0.001	169	0.0027
Fugitive and Venting from Interconnection Piping at BML	-	-	0.229	-	-	-	1,830	-
Indirect-Fired NG Line Heaters at CRI	2.45	0.134	2.050	0.19	0.19	0.018	2,923	0.046
Fugitive and Venting from Interconnection Piping at CRI	-	-	0.004	-	-	-	149	-
Pig Retrieving at CRI	-	-	0.0001	-	-	-	1	-
Diesel Emergency Generator at CRI	0.12	0.028	0.110	0.01	0.01	0.0002	16	0.0004
Compressors (Two Combustion Turbines) at KCS	35.34	10.12	2.12	9.72	9.72	2.20	76,583	0.84
Auxiliary Power Unit (Generator) at KCS	1.61	1.69	0.28	0.03	0.03	0.01	333	0.21
Indirect-Fired NG Line Heaters at KCS	0.18	0.19	0.018	0.03	0.03	0.012	396	0.006
Equipment Leaks at KCS	-	-	0.004	-	-	-	150	-
Equipment Vents at KCS	-	-	0.01	-	-	-	47	-
Fugitive and Venting at Springville, Wyoming, Leidy, and Auburn Interconnects	-	-	0.726	-	-	-	5,974	-
Total	**39.84**	**12.28**	**5.56**	**9.99**	**9.99**	**2.24**	**88,592**	**1.097**

Table B.7.3-7 presents the potential operating emissions for Phase 1 and Phase 2 combined, which includes all of the Phase 1 facilities, operating emissions from the full buildout of the Kidder Compressor Station (adding the third compressor turbine and increasing the average load to full capacity year-round), and operating emissions for the Hellertown, Lamberville, Elizabethtown, and Transco Interconnects (which are unchanged from the Certificated Project).

Table B.7.3-7

Phase 1 and Phase 2 Operating Emissions

Activity	Pollutants (Tons)							
	NO_X	CO	VOC	PM_{10}	$PM_{2.5}$	SO_2	CO_2e	HAPs
Phase 1 Total without KCS	2.71	0.28	3.13	0.21	0.21	0.02	11,083	0.049
Compressors (Three Combustion Turbines) at KCS	87.41	15.40	5.14	24.08	24.08	5.46	189,603	2.071
Auxiliary Power Unit at KCS	1.61	1.69	0.28	0.03	0.03	0.01	333	0.21
Indirect-Fired NG Line Heaters at KCS	0.18	0.19	0.02	0.03	0.03	0.01	396	0.006
Equipment Leaks at KCS	-	-	0.004	-	-	-	150	-
Equipment Vents at KCS	-	-	0.006	-	-	-	47	-
Indirect-Fired NG Line Heater at Hellertown Interconnect (UGI-LEH)	6.18	5.19	0.34	0.47	0.47	0.045	7,386	0.117
Fugitive and Venting at UGI-LEH	-	-	0.46	-	-	-	3,640	-
PIG Retrieving at UGI-LEH	-	-	0.0004	-	-	-	3	-
Indirect-Fired NG Line Heater at Lambertville Interconnect	9.81	14.02	1.51	2.09	2.09	0.20	32,825	0.519
Fugitive and Venting at Lambertville	-	-	0.455	-	-	-	3,677	-
PIG Retrieving at Lambertville	-	-	0.0004	-	-	-	3	-
Indirect-Fired NG Line Heater at Elizabethtown Interconnect (ETG)	3.09	2.59	0.17	0.23	0.23	0.023	3,693	0.058
Indirect-Fired NG Line Heater at Elizabethtown Interconnect (NRG)	3.09	2.59	0.17	0.23	0.23	0.023	3,693	0.058
Fugitive and Venting at Elizabethtown	-	-	0.458	-	-	-	3,640	-
Fugitive and Venting at Transco Interconnect	-	-	0.295	-	-	-	2,372	-
Other Phase 2 Pipeline/Lateral Fugitives	-	-	0.0019	-	-	-	15	-
Total	**114.08**	**41.95**	**12.44**	**27.37**	**27.37**	**5.79**	**262,559**	**3.08**

PennEast stated in its filing on April 21, 2020 that it would comply with the requirements of Exemption 38(c) as listed in PADEP Bureau of Air Quality Document Number 275-2101-003, "Air Quality Permit Exemptions," effective date August 8, 2018. The requirements of Exemption 38(c) shall apply to operation of the Church Road Interconnects, as well as all other interconnects located in Pennsylvania that are part of Phase 1. The requirements are summarized below:

- Follow a leak detection and repair program that meets applicable state and federal requirements.
- Limit VOC and HAP emissions (not including a specific list of HAPs) from all sources including tanker truck loadouts at the facility to:
    a. less than 2.7 tons VOC on a 12-month rolling basis; and,
    b. less than 1,000 pounds (lbs.) of a single HAP in any consecutive 12-month period; and,
    c. less than one (1) ton combined HAP emissions in any consecutive 12-month period.
- Limit methane emissions from each individual source at the facility to less than 200 tpy.
- Comply with the non-road engines requirements defined in 40 CFR § 89.2.
- Limit combined NOx emissions for all exempt engines at the site to less than 100 lbs./hr, 1,000 lbs./day, 2.75 tons per ozone season and 6.6 tpy on a 12-month rolling basis.
- Conduct pigging operations by employing best management practices to minimize the liquids present in the pig receiver chamber and to minimize emissions from the pig receiver chamber.

Due to the temporary nature of construction emissions and with the implementation of the mitigation measures discussed for operational emissions, and the FDCP of the 2020 Amendment Project, we conclude that the construction and operation of the 2020 Amendment Project would not have a significant impact on air quality.

7.4 Noise

Construction and operation of the 2020 Amendment Project would affect the local acoustical environment. The ambient sound level of a region is defined by the total noise generated within the specific environment and comprises sounds from both natural and industrial sources. At any location, both the magnitude and frequency of environmental noise may vary considerably throughout the day and week, in part due to changing weather conditions and the impacts of seasonal vegetative cover.

Two measurements used by some federal agencies to relate the time-varying quality of environmental noise to its known effects on people are the equivalent sound level (L_{eq}) and the day-night equivalent sound level (L_{dn}). The L_{eq} is a sound level containing the same sound energy as the instantaneous sound levels measured over a specific time period. Noise levels are perceived differently, depending on length of exposure and time of day. The L_{dn} takes into account the duration and time the noise is encountered. Specifically, in the calculation of the L_{dn}, late night to early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized by 10 A-weighted decibels (dBA), to account for people's greater sensitivity to sound during the nighttime hours. The A-weighted scale is used because human hearing is less sensitive to low and high frequencies than mid-range frequencies. For an essentially steady sound source that operates continuously over a 24-hour period, the L_{dn} is 6.4 dBA above the measured L_{eq}.

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 an L_{dn} of 55 dBA protects the public from indoor and outdoor activity interference. PennEast has adopted this criterion to evaluate the potential noise impacts from the 2020 Amendment Project at noise-sensitive areas (NSAs) such as residences, schools, or hospitals. FERC requires that the noise attributable to any to any new installation (i.e., new compressor stations and associated pipeline facilities) during full load operation not exceed an L_{dn} of 55 dBA at any NSAs. Due to the 10 dBA nighttime penalty added when calculating the L_{dn}, for a facility to meet the L_{dn} 55 dBA limit, it must be designed such that average noise levels on a 24-hour basis do not exceed 48.6 dBA L_{eq} at any NSA.

There are no noise regulations or ordinances at the state or county level applicable to the 2020 Amendment Project. Bethlehem Township has a noise ordinance that is applicable to the 2020 Amendment Project and prescribes daytime and nighttime sound limits applicable at the lot line of the Church Road Interconnects. Table B.7.4-1 presents those limits.

Table B.7.4-1

Bethlehem Sound Level Limits by Receiving Land Use and Time

Receiving Land Use	Daytime (7:00 am – 9:00 pm) (dBA)	Nighttime (9:00 pm – 7:00 am) (dBA)
Residential Land Use, Agricultural District Land use, or Lot Line from a Dwelling or Hospital	57	53
Commercial	64	64
Industrial	69	69

In addition, the ordinance states that if a sound source emits a pure tone, then the limits presented in Table B.7.4-1 will be reduced by 5 dBA. The most stringent noise requirements for Bethlehem Township applicable to the Project prescribe a daytime sound limit of 57 dBA and a nighttime sound limit of 53 dBA applicable at the site boundary.

7.4.1 Existing Noise Conditions

PennEast measured the existing ambient acoustic environment at the Church Road Interconnects by collecting ambient sound data at three baseline monitoring locations representing the five NSAs within 0.5 mile of the proposed Church Road Interconnects.[23] The five NSAs, including their distances to the Church Road Interconnects, are displayed in figure B.7.4-1.

[23] The Notre Dame High School was not included as an NSA. Although a 0.5-mile buffer would extend partially into property owned by Notre Dame High School, this property is an undeveloped field that is not used for current or planned educational or recreational activities.

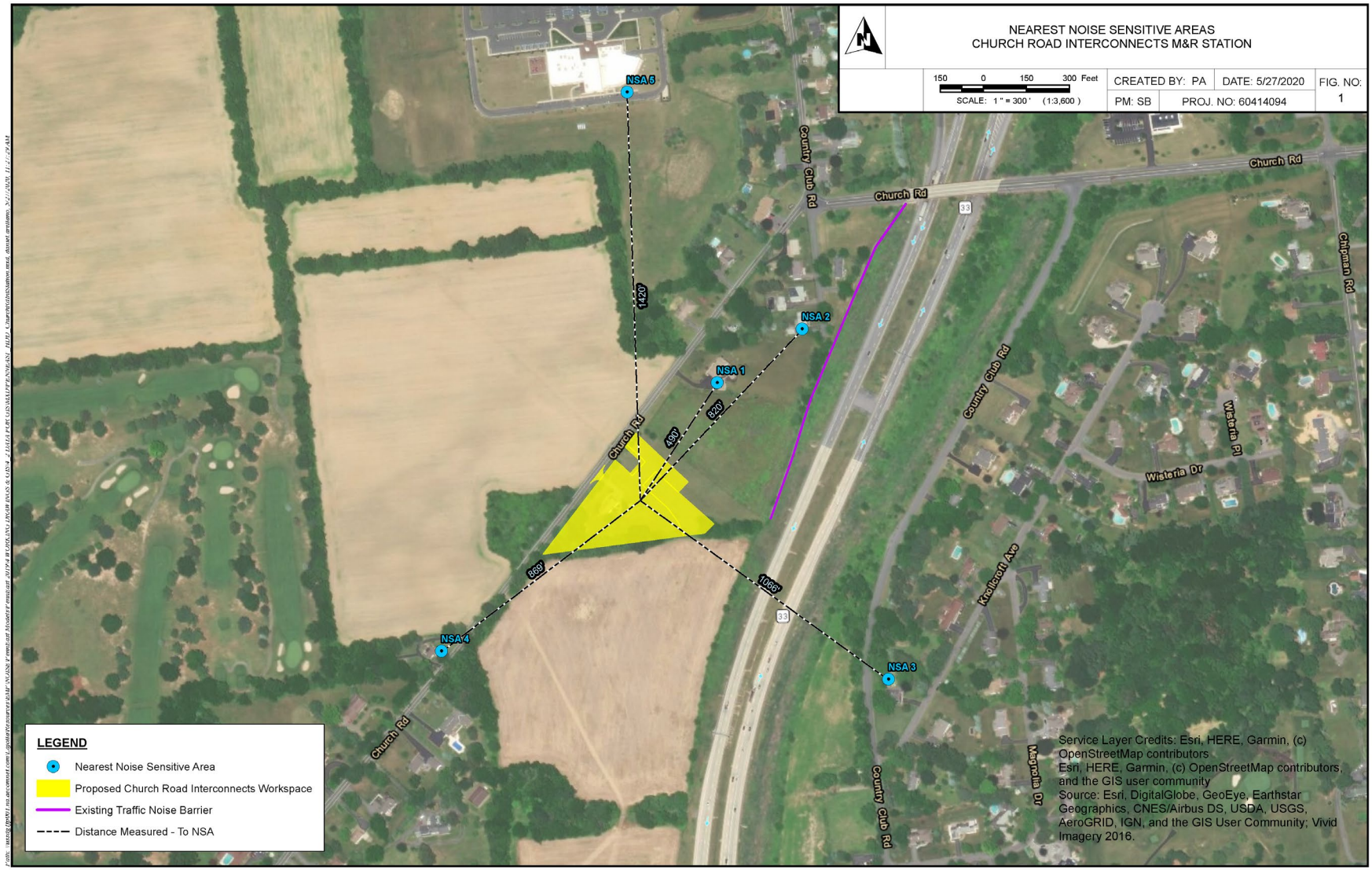

Figure B.7.4-1 Nearest Noise Sensitive Areas Church Road Interconnects M&R Station

PennEast collected ambient sound measurements during both daytime and nighttime periods on November 14 and 15, 2019. The goal of the ambient sound survey was to document the lower range of ambient sound levels for the meteorological conditions that existed during the sound survey. Existing sound sources observed during the survey included vehicular traffic along PA-33, aircraft flyovers, and natural sounds such as birds. A summary of the sound level measurement data and associated meteorological conditions are presented in table B.7.4-2.

Table B.7.4-2

Church Road Interconnects - Summary of Ambient Sound Survey Results

NSA	Distances (feet) and Direction to Site Center	Ambient Sound Level (L_{dn}, dBA)
NSA-1, Residence	490/NE	68
NSA-2, Residence	820/NE	65
NSA-3, Residence	1,066/SE	66
NSA-4, Residence	869/SW	66
NSA-5, Calvary Baptist Church	1,420/N	65

7.4.2 Construction Noise Impacts and Mitigation

Noise emissions during construction of the Church Road Interconnects were evaluated with the most acoustically significant activities including site clearing, grading, and trenching. The four loudest pieces of construction equipment were assumed to be located at the centroid of the site and construction noise levels were calculated at nearby NSAs. Table B.7.4-3 summarizes the predicted noise levels produced during construction at nearby NSAs. PennEast is not planning to perform construction activities during nighttime hours as defined by Bethlehem Township; therefore, no construction noise mitigation would be required.

Since the ambient noise environmental is currently high and construction noise is temporary and intermittent; therefore, we conclude that the estimated construction noise from the 2020 Amendment Project would not have a significant impact on the acoustical environment at nearby NSAs.

Table B.7.4-3

Predicted Construction Noise (dBA) at Closest NSAs Relative to the Church Road Interconnects

NSA	Distances (feet) and Direction to Site Center	Ambient Sound Level (L_{dn}, dBA)	Construction Noise Level (L_{dn}, dBA)	Cumulative Noise Level (dBA)	Potential Noise Level Increase (dBA)
NSA-1	490/NE	68	67	71	3
NSA-2	820/NE	65	57	66	1
NSA-3	1,066/SE	66	60	67	1
NSA-4	869/SW	66	62	68	2
NSA-5	1,420/N	65	59	66	1

7.4.3 Operational Noise Impacts and Mitigation

Operation of the Church Road Interconnects would have the potential to result in noise impacts at nearby NSAs. The proposed major noise-producing equipment at the interconnect would include interstate meter runs, flow control valves, meter runs, and water bath heaters. PennEast provided an acoustic analysis that addressed noise from those significant sound contributors. Other proposed onsite equipment is relatively quiet in comparison. For instance, there would be a pig launcher/receiver onsite; however, its

operation is expected to produce negligible sound mainly due its bypass piping being located underground. In developing the estimated operation noise, standard propagation conditions were assumed (i.e., no wind, 60 degrees F, 70 percent relative humidity) and an average ground absorption coefficient of 0.6 was used. Table B.7.4-4 summarizes the results of the operational acoustic analysis for the Church Road Interconnects.

Table B.7.4-4

Church Road Interconnects, Unmitigated Operational Noise Impact Summary

NSA	Distance to Center of Proposed Interconnects Site	Existing Ambient L_{dn} (dBA)	Predicted Noise Contribution from Church Road Interconnects L_{dn} (dBA)	Existing Ambient and Predicted Station Contribution L_{dn} (dBA)	Expected Increase (dBA)
NSA-1	490/NE	68	66	70	2
NSA-2	820/NE	65	60	66	1
NSA-3	1,066/SE	66	53	66	0
NSA-4	869/SW	66	60	67	1
NSA-5[24]	1,420/N	65	60	66	1

The results presented in Table B.7.4-4 indicate that the predicted noise contribution from the Church Road Interconnects would exceed the 55 dBA L_{dn} FERC noise criterion at NSA-1, NSA-2, NSA-4, and NSA-5. In order to reduce operational noise produced by the Church Road Interconnects, PennEast incorporated some noise control measures into the proposed design, including:

- acoustical pipe lagging of 3-inch-thick fiberglass or mineral wool with a mass-loaded vinyl jacket applied to the meter runs;
- globe style control valves with low noise trim with upstream and downstream acoustical pipe lagging; and
- low-noise box-type burner for the water bath heaters, and the heater must generate a maximum a-weighted sound pressure level of 55 dBA at 50 feet from the heater perimeter at rated maximum operating condition.

In addition, PennEast would install three site-specific perimeter barrier walls along the southern, northwestern, and northern site boundaries. The Church Road Interconnects would be constructed on the property line and would consist of solid wall construction. In addition, it would be designed to adhere to a sound transmission class rating of 25 or greater. Table B.7.4-5 summarizes the results of the operational acoustic analysis for the Church Road Interconnects inclusive of noise mitigation.

After implementing noise mitigation, predicted operational received sound levels at NSAs range from 36 to 51 dBA L_{dn}, which is in compliance with the 55 dBA L_{dn} FERC noise criterion. Combined with ambient noise levels, which already exceed the FERC noise criterion due primarily to vehicular traffic on PA-33, future noise levels at NSAs are expected to increase by less than 1 dBA, L_{dn}.

[24] Unmitigated operational noise impacts at NSA-5 have been estimated based on expected sound propagation and noise impacts at other NSAs.

Table B.7.4-5

Church Road Interconnects, Mitigated Operational Noise Impact Summary

NSA	Distance to Center of Proposed Interconnects Site	Existing Ambient L_{dn} (dBA)	Predicted Noise Contribution from Church Road Interconnects L_{dn} (dBA)	Existing Ambient and Predicted Station Contribution L_{dn} (dBA)	Expected Increase (dBA)
NSA-1	490/NE	68	51	68	0
NSA-2	820/NE	65	49	66	0
NSA-3	1,066/SE	66	36	66	0
NSA-4	869/SW	66	48	66	0
NSA-5	1,420/N	65	41	65	0

Sound levels were also evaluated at the interconnect lot line to assess compliance with the Bethlehem Township noise ordinance. Predicted operational sound levels from the Church Road Interconnects were determined to be 2 to 20 dBA below the limits prescribed by the Township at the property lines.

The results of the measurements, observations and analysis indicate that the proposed Church Road Interconnects sound level contribution at the nearby NSAs would be significantly below an L_{dn} of 55 dBA. Therefore, the sound level attributable to the proposed Church Road Interconnects would be expected to comply with the FERC criterion of 55 dBA L_{dn} at the nearby NSAs.

Based on the implementation of the noise control measures presented above, we conclude that operational noise from the 2020 Amendment Project would not have a significant impact on the acoustical environment at the nearby NSAs.

8.0 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. It 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 degrees 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 result in an explosion. It is buoyant at atmospheric temperatures and disperses rapidly in air.

8.1 Pipeline Safety Standards

The USDOT is mandated to prescribe minimum safety standards to protect against risks posed by pipeline facilities under Title 49, USC Chapter 601. The USDOT's Pipeline and Hazardous Materials Safety Administration (PHMSA) administers the national regulatory program to ensure the safe transportation of natural gas and other hazardous materials by pipeline. It 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 which set the level of safety to be attained and allow the pipeline operator to use various technologies to achieve safety. PHMSA's safety mission is to ensure 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.

Title 49, USC Chapter 601 provides for a state agency to assume all aspects of the safety program for intrastate facilities by adopting and enforcing the federal standards. A state may also act as USDOT's agent to inspect interstate facilities within its boundaries; however, the USDOT is responsible for enforcement actions. PHMSA federal inspectors perform inspections on interstate natural gas pipeline facilities in Pennsylvania and New Jersey. The USDOT pipeline standards are published in Parts 190-199 of Title 49 of the CFR. Part 192 specifically addresses natural gas pipeline safety issues.

Under a MOU on Natural Gas Transportation Facilities (Memorandum) dated January 15, 1993, between the USDOT and the FERC, the USDOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of the FERC's regulations require that an applicant certify that it will 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 USDOT in accordance with section 3(e) of the *Natural Gas Pipeline Safety Act*. The 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 USDOT. 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 USDOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the 2020 Amendment Project must be designed, constructed, operated, and maintained in accordance with the USDOT 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 USDOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

The USDOT 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 fewer 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; and
Class 4	Location where buildings with four or more stories aboveground are prevalent.

Class locations representing more populated areas (e.g., Class 2, 3 and 4) 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. However, PennEast has indicated that it would install pipes rated for Class 2 standards in all Class 1 locations in order to increase safety.

Class locations also specify the maximum distance to a sectionalizing block valve (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 Class locations for the 2020 Amendment Project remain unchanged from those for the Certificated Project which were developed based on the relationship of the pipeline centerline to other nearby structures and manmade features. The mainline pipeline, which would terminate at the Church Road Interconnects is consistent with a Class 2 designation. However, PennEast proposes to utilize Class 3 pipe at this location to account for the anticipated growth along US Route 33 corridor. If a subsequent increase in population density adjacent to the right-of-way results in a change in class location for the pipeline, PennEast would reduce the MAOP or replace the segment with pipe of sufficient grade and wall thickness to comply with the USDOT requirements for the new class location.

The USDOT Pipeline Safety Regulations require operators to develop and follow a written integrity management program that contain 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 USDOT has published rules that define HCAs where a 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 USDOT 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[25] is greater than 660 feet and there are 20 or more buildings intended for human occupancy within the potential impact circle;[26] or
- any area in Class 1 or 2 where the potential impact circle includes an identified site.

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.

In the second method, an HCA includes any area within a potential impact circle which contains 20 or more buildings intended for human occupancy or an identified site. Once a pipeline operator has determined the HCAs along its pipeline, it must apply the elements of its integrity management program to those segments of the pipeline within HCAs. The USDOT regulations specify the requirements for the integrity management plan in section 192.911. The Church Road Interconnects are within an HCA

[25] The potential impact radius is calculated as the product of 0.69 and the square root of the MAOP of the pipeline in psig multiplied by the square of the pipeline diameter in inches.
[26] The potential impact circle is a circle of radius equal to the potential impact radius.

previously identified for the Certificated Project. These HCAs were determined based on the relationship of the proposed pipeline centerline to nearby structures and identified sites.

We have received public comments expressing concern that the design class for some areas should be higher and the current list of HCAs does not contain some areas that should be classified as HCAs. Per USDOT regulations, PennEast would be required to design and construct the pipeline based on identified population densities and identified HCAs at the time of construction and update periodically per USDOT specifications.

USDOT regulations cover geological hazards under 49 CFR 192 by reference of ASME B31.8. ASME B31.8 Section 841.13 requires that reasonable precautions be taken, such as increasing wall thickness, constructing revetments, preventing erosions, and installing anchors to protect pipelines that are subject to natural hazards, such as washouts, floods, unstable soil, landslides, earthquake related events, or other conditions.

The pipeline and aboveground facilities would be designed, constructed, operated, and maintained in accordance with the USDOT's Minimum Federal Safety Standards in 49 CFR 192. The general construction methods that PennEast would implement to ensure the safety of the 2020 Amendment Project are described in section A.8 including welding, inspection, and integrity testing procedures. PennEast has indicated that they would build the 2020 Amendment Project to exceed certain aspects of the USDOT's Minimum Federal Safety Standards, such as:

- Class 2 pipe would be installed in all Class 1 locations in order to increase safety;
- nondestructive inspection would be conducted for 100 percent of the mainline welds in all areas (e.g., 49 CFR 192 only requires that 10 percent of the welds be tested in Class 1 locations); and
- prior to placing the pipeline into service, the pipe would be hydrostatically tested at a maximum pressure that exceeds industry standards identified in 49 CFR 192.

The USDOT prescribes the minimum standards for operating and maintaining pipeline facilities, including the requirement to establish a written plan governing these activities. Each pipeline operator is required to establish an emergency plan that includes procedures to minimize the hazards of a natural gas pipeline emergency. Key elements of the plan include procedures for:

- 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, including evacuating individuals and rerouting traffic as necessary to avoid any area that is deemed to be unsafe.

The USDOT also requires pipeline operators to place pipeline markers at frequent intervals along the pipeline rights-of-way, such as where a pipeline intersects a street, highway, railway or waterway, and at other prominent points along the route. Pipeline right-of-way markers can help prevent encroachment and excavation-related damage to pipelines. The 2020 Amendment Project's pipeline markers (which would identify the owner of the pipe and provide a 24-hour telephone number) would be placed to maximize "line of sight" visibility along the entire pipeline length, except in active agricultural crop locations and in waterbodies in accordance with USDOT requirements.

In accordance with USDOT regulations, the proposed facilities would be regularly inspected for leakage as part of scheduled operations and maintenance, including:

- physically walking and inspecting the pipeline corridor periodically;
- conducting fly-over inspections of the right-of-way as required;
- inspecting and maintaining mainline valves (MLVs) and M&R stations; and
- conducting leak surveys at least once every calendar year or as required by regulations.

During inspections, PennEast employees would look for signs of unusual activity on the right-of-way and would immediately respond to assess the nature of the activity and remedy with prescribed corrective action. PennEast would also be a member and become an advocate of the One Call System program. In addition, the PennEast Gas Control Center would electronically monitor the operations of the pipeline system and would be staffed 24 hours a day, 365 days a year, and would use a computerized gas-monitoring system to read pressures along the pipeline on a continuous basis. In the event of a leak, the Gas Control Center would have the ability to isolate a segment of pipe by sending commands to close the remotely operated MLVs. Further, although regulations requiring remote control shut-off valves have not yet gone into effect and would apply to pipelines built in the future, PennEast committed to the use of remote control shut-off valves for the proposed pipelines.

Cathodic protection[27] would be installed along the entire length of the new pipelines to prevent corrosion. PennEast personnel would check the voltage and amperage at regular intervals, as well as the pipe-to-soil potentials and rectifiers.

The USDOT regulations specified in Part 192 require that PennEast establish and maintain a 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. PennEast would utilize the emergency procedures contained in its emergency response plan, which require communication with emergency responders on an annual basis. Local contact phone numbers, external contact information, equipment or resources available for mobilization, and any specific procedures to be followed would be incorporated into the emergency response plans prior to commencement of pipeline operations. PennEast would 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. Because the pipeline right-of-way is much wider than the pipeline itself, and a pipeline can be anywhere within the right-of-way, state laws require excavators to call their state's One-Call center well in advance of digging in order to locate underground utilities and ensure it is safe for the contractor to dig in that location.

PennEast would establish and maintain liaison with appropriate fire, police, and public officials in a variety of ways. PennEast's annual communications would include the following information:

- the potential hazards associated with the 2020 Amendment Project facilities located in their service area and prevention measures undertaken;
- the types of emergencies that may occur on or near the 2020 Amendment Project facilities;
- the purpose of pipeline markers and the information contained on them;
- pipeline location information and the availability of the National Pipeline Mapping System;
- recognition of and response to pipeline emergencies; and
- procedures to contact PennEast or its contractors for more information.

[27] Cathodic protection is a technique to reduce corrosion (rust) of the natural gas pipeline that includes the use of an induced current and/or a sacrificial anode that corrodes preferentially.

PennEast's communications with local emergency responders may involve individual meetings, group meetings, or direct mailings. PennEast would also provide local emergency response and management personnel with emergency response training prior to the 2020 Amendment Project being placed into service and on an ongoing basis thereafter. Necessary information and instructions regarding the facilities would be provided to local emergency response and management personnel. A plan would be in place for coordination between PennEast and local emergency response and management personnel in the event of an incident. In addition, PennEast would perform periodic emergency exercises and mock emergency drills with local government, law enforcement, and emergency response agencies, subject to agency availability and willingness to participate.

PennEast staff would regularly walk the pipeline, conduct leak surveys, and send sensor equipment (i.e., smart pigs) through the line to make sure integrity has not been compromised. PennEast would continuously monitor how much gas is transported through the system, operating pressures and temperatures throughout the system, and other critical operating data. This would be done in real-time through the PennEast Gas Control Center. Should any unusual data surface, PennEast would immediately dispatch field personnel to address the issue and protect the community (as discussed above).

All gas within the pipeline would be odorized with mercaptan to provide an added level of safety and security to the gas system by providing a warning mechanism for the public.

8.1.1 Pipeline Accident Data

The USDOT requires all operators of natural gas transmission pipelines to notify the USDOT of any significant incident and to submit a report within 20 days. Significant incidents are defined as any leaks that caused a death or personal injury requiring hospitalization or involve property damage of more than $50,000 (1984 dollars).[28] During the period from 2000 through 2019, a total of 1,112 significant incidents were reported on approximately 296,000 total miles of onshore natural gas transmission pipelines nationwide (USDOT PHMSA 2020a).

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table B.8.1-1 provides a distribution of the causal factors as well as the number of each incident by cause. The dominant causes of pipeline incidents are corrosion and pipeline material, weld or equipment failure collectively constituting 53 percent of all significant incidents. The pipelines included in the data set 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, because corrosion and pipeline stress/strain are a time-dependent process.

[28] $50,000 in 1984 dollars is approximately $126,927 as of February 2020 (Bureau of Labor Statistics, 2020).

Table B.8.1-1

Onshore Natural Gas Transmission Pipeline Significant Incidents by Cause (2000-2019)

Cause	Number of Incidents	Percentage
Corrosion	188	16.9
Excavation [a]	186	16.7
Pipeline material, weld, or equipment failure	401	36.1
Natural forces [b]	99	8.9
Outside force [c]	72	6.5
Incorrect operation	56	5.0
All other causes [d]	110	9.9
Total	1,112	-

Source: USDOT PHMSA, 2020b.
[a] Includes third-party damage.
[b] Natural force damage includes earth movement, heavy rain, floods, landslides, mudslides, lightning, temperature, high winds, and other natural force damage.
[c] Outside force damage includes previous mechanical damage, electrical arcing, static electricity, fire/explosion, fishing/maritime activity, intentional damage, and vehicle damage (not associated with excavation).
[d] All other causes include miscellaneous, unspecified, or unknown causes.

The use of both an external protective coating and a cathodic protection system,[29] required on all pipelines installed after July 1971, significantly reduces the corrosion rate compared to unprotected or partially protected pipe.

Outside force, excavation, and natural forces were the cause in 32.1 percent of significant pipeline incidents from 2000 to 2019. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geological hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table B.8.1-2 provides a breakdown of outside force incidents by cause.

Table B.8.1-2

Outside Forces Incidents by Cause (2000-2019) a/

Cause	Number of Incidents	Percent of All Incidents
Third-party excavation damage	149	13.4
Operator/contractor excavation damage	26	2.3
Previous damage due to excavation	11	1.0
Heavy rain/floods	28	2.5
Earth movement	28	2.5
Lightning/temperature/high winds	32	2.9
Other/unspecified Natural force	11	1.0
Vehicle (not engaged with excavation)	39	3.5
Fire/explosion	11	1.0
Previous mechanical damage	5	0.4
Fishing or maritime activity	1	0.1

[29] 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 faster rate to reduce corrosion.

Table B.8.1-2

Outside Forces Incidents by Cause (2000-2019) a/

Cause	Number of Incidents	Percent of All Incidents
Maritime equipment or vessel adrift	2	0.2
Intentional damage	1	0.1
Electrical arcing from other equipment/facility	3	0.3
Unspecified/other outside force	10	0.9
Total	357	32.1

Note:
a/ Excavation, Outside Force, and Natural Force from table B.8.1-1.
Source: DOT PHMSA 2020b.

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.

8.1.2 Impact on Public Safety

The service incident data summarized in Table B.8.1-3 include natural gas transmission system failures of all magnitudes with widely varying consequences. Table B.8.1-3 presents the annual injuries and fatalities that occurred on natural gas transmission lines from significant incidents for the 20-year period between 2000 and 2019.

Table B.8.1-3

Injuries and Fatalities – Onshore Natural Gas Transmission Pipelines

Year	Total	Injuries	Fatalities
2000	45	16	15
2001	45	5	2
2002	40	4	1
2003	62	8	1
2004	44	2	0
2005	64	5	0
2006	59	3	3
2007	55	7	2
2008	47	5	0
2009	60	11	0
2010	58	61	10
2011	71	1	0
2012	48	7	0
2013	61	2	0
2014	65	1	1
2015	67	16	6
2016	50	3	3
2017	54	3	3
2018	57	7	1
2019	60	9	1

Source: USDOT PHMSA 2020c

The majority of fatalities from pipelines are due to local distribution pipelines. These are natural gas pipelines that are not regulated by FERC and that distribute natural gas to homes and businesses after transportation through interstate natural gas transmission pipelines. In general, these distribution lines are smaller diameter pipes and/or plastic pipes, often made of plastic or cast iron rather than welded steel and tend to be older pipelines which are more susceptible to damage. In addition, distribution systems do not have large rights-of-way and pipeline markers common to the FERC regulated natural gas transmission pipelines.

The nationwide totals of accidental fatalities from various manmade and natural hazards are listed in Table B.8.1-4 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 because individual exposures to hazards are not uniform among all categories.

The available data shows that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 2000 through 2019, a total of 1,112 significant incidents were reported on approximately 296,000 total miles of natural gas transmission lines and indicates the risk is low for an incident at any given location (USDOT PHMSA 2020a). The operation of the 2020 Amendment Project would represent a slight increase in risk to the nearby public. We conclude that, with the implementation of the standard safety design criteria, the 2020 Amendment Project would be constructed and operated safely.

Table B.8.1-4

Nationwide Accidental Fatalities by Cause

Type of Accident	Annual Number of Deaths
Motor vehicle [a]	35,369
Poisoning [a]	38,851
Falls [a]	30,208
Drowning [a]	3,391
Fire, smoke inhalation, burns [a]	2,760
Floods [b]	85
Tornado [b]	69
Lightning [b]	44
Hurricane [b]	46
Natural gas distribution lines [c]	10
Natural gas transmission pipelines [c]	3

Notes:
[a] All data, unless otherwise noted, reflects 2007 statistics from U.S. Census Bureau, Statistical Abstract of the United States: 2010b (129th Edition) Washington, DC, 2009; http://www.census.gov/statab.
[b] NOAA National Weather Service, Office of Climate, Water and Weather Services, 30-year average (1989-2018) https://www.nws.noaa.gov/om/hazstats/resources/79years.pdf.
[c] Accident data presented for natural gas distribution lines and transmission pipelines represent the 20-year average between 2000 and 2019 (USDOT PHMSA 2020b).

9.0 CUMULATIVE IMPACTS

NEPA requires the lead federal agency to consider the potential cumulative impacts of proposals under its review. Cumulative impacts may result when the environmental effects associated with the 2020 Amendment Project are superimposed on or added to impacts associated with past, present, and reasonably foreseeable future actions. Cumulative impacts can result from individually minor, but collectively significant, actions taking place over a period of time.

The 2020 Amendment Project-specific impacts are discussed in detail in other sections of this EA. The purpose of this section is to identify and describe cumulative impacts that would potentially result from implementation of the Church Road Interconnects along with other projects that could affect the same resources in the same approximate timeframe of construction and operation of the Church Road Interconnects. In addition, since the timeframe of Certificated Project construction has changed since the FEIS was prepared, this section also provides an update to the cumulative impacts discussion for Phase 1 and Phase 2, originally covered for the Certificated Project. To ensure that this analysis focuses on relevant projects and potentially significant impacts, the actions included in the cumulative impact analysis include projects that:

- impact a resource potentially affected by the Church Road Interconnects;
- impact that resource within all or part of the timespan encompassed by the proposed or reasonably expected construction and operation schedule of the Church Road Interconnects;
- impact that resource within all or part of the same geographic area affected by the Church Road Interconnects. The geographic area considered varies depending on the resource being discussed, which is the general area (geographic scope) in which the Church Road Interconnects could contribute to cumulative impacts on that particular resource; and

- are within the same geographic area evaluated for the Certificated Project but are newly identified since the FEIS was prepared for Docket No. CP15-558, and therefore could contribute to cumulative impacts with Phase 1 and Phase 2 of the pipeline.

We have identified four types of actions that would potentially cause a cumulative impact when considered with the Church Road Interconnects and Phase 1 and Phase 2 of the pipeline. These are:

- other natural gas projects, both under FERC's jurisdiction and those not under FERC's jurisdiction;
- electric generation and transmission projects;
- transportation projects; and
- commercial and large-scale residential developments.

9.1 Temporal and Geographic Distribution (Geographic Scope)

For the purpose of this analysis, the temporal extent of other projects would start in the recent past (completed or inservice approximately 2 years prior to this analysis) and extend out for the expected duration of the impacts caused by the proposed Project. Some Church Road Interconnects impacts from construction could occur as soon as site preparation begins and occur over about 6 months.

The criteria listed below define the geographic scope used in this analysis to describe the general area for which the Church Road Interconnects could contribute to cumulative impacts. Resource-specific geographic scopes used for the Church Road Interconnects are provided in Table B.9.1-1, and those used for Phase 1 and Phase 2 of the pipeline are as described in the FEIS. The geographic scope varies depending on the resource being discussed. Specifically, for the various resources our conservative approach considered that:

- impacts on geology and soils, land use, and visual resources by the Church Road Interconnects would be highly localized. Therefore, for cumulative impacts on these resources we evaluated other projects (e.g. residential development, small commercial development, and small transportation projects) within 0.25 mile of the construction work areas for the Church Road Interconnects.
- impacts on socioeconomics from construction and operation of the Church Road Interconnects was considered within Northampton County.
- operational impacts of the 2020 Amendment Project and Church Road Interconnects would not result in long-term impacts on air quality in the 81.55 Northeast Pennsylvania-Upper Delaware Valley Interstate AQCR. Therefore, we evaluated other projects with the potential to result in long-term impacts on air quality (e.g. natural gas compressor stations or industrial facilities) within the same AQCR. Construction of the Church Road Interconnects would result in short-term impacts on air quality in the same AQCR. Due to the limited amount of emissions generated by construction equipment, the geographic scope used to assess potential cumulative impacts on air from construction activities was set at 0.25 mile from the Church Road Interconnects.
- long-term noise impacts from the Church Road Interconnects would be localized to within one mile of the site. Therefore, we evaluated other projects that would result in long-term impacts on noise affecting the same NSAs as the Church Road Interconnects. Short-term noise impacts related to construction would be highly localized. Other projects within 0.25 mile of the construction work areas for the Church Road Interconnects were evaluated for cumulative impacts.

- impacts on vegetation by the Church Road Interconnects would be localized and minimized. Therefore, we included cumulative impacts on these resources by other projects within the sub-watershed (HUC 10 Watershed) affected by the Church Road Interconnects.

Based on our analysis, the Church Road Interconnects would not contribute to additional cumulative impacts beyond those addressed for the Certificated Project on cultural resources, water resources, and wildlife and we did not consider them further in this analysis.

Table B.9.1-1

Resource-specific Geographic Scopes for the Church Road Interconnects

Environmental Resource	Geographic Scope
Geology and Soils	Within 0.25 mile or adjacent to the construction workspace
Vegetation	HUC 10 Watershed
Land Use and Visual Resources	0.25-mile radius around the Church Road Interconnects
Socioeconomics	Northampton County
Air Quality [a]	Construction: 0.25-mile radius around the Church Road Interconnects Operation: within the same AQCR
Noise	Construction: NSAs within 0.25-mile Operation: Any facility that could have an impact on an NSA within 1-mile of the Church Road Interconnects

Note:

[a] We note that GHGs do not have a localized geographic scope. GHG emissions from the 2020 Amendment Project would combine with projects world-wide to increase CO_2, methane, and other GHG concentrations in the atmosphere.

9.2 Projects and Activities Considered

Table B.9.2-1 lists past, present, or reasonably foreseeable future projects or activities that may cumulatively or additively affect resources that would be also be affected by the construction and operation of the Church Road Interconnects. We acknowledge that cumulative impacts would also occur within the temporal scope for construction of the Phase 1 and Phase 2 pipeline, however, these impacts were evaluated in the FEIS and the 2019 EA for the Certificated Project and are not re-evaluated in this EA, with the exception of air quality. Since the previous FEIS and EA were completed some new projects have been identified, and past, present, or reasonably foreseeable future projects or activities within the geographic scopes of Phase 1 and Phase 2 not previously identified or substantially changed since the analysis completed for the Certificated Project are included in Table B.9.2-1 and sections B.9.3 through B.9.5. However, the addition of these new projects or project updates does not change the cumulative impacts analysis and conclusions from the Certificated Project. Therefore, projects and activities considered in our analysis below in section B.9.6 are limited to those that could have a cumulative impact when considered with the Church Road Interconnects. The exception is projects that could have a cumulative impact on air resources along Phase 1 and Phase 2 of the pipeline, since our analysis of cumulative air resource impacts considers the timing of impacts and the proposed phasing of pipeline construction would materially change the temporal scope evaluated for the Certificated Project.

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
Natural Gas Projects							
Adelphia Gateway (FERC Docket No. CP18-46)	Conversion of 50 miles of an existing 84-mile pipeline in southeastern PA from oil to natural gas; two pipeline laterals, aboveground facilities, meter stations, MLVs, and access roads	Adjacent; ties into the proposed Church Road Interconnects	42 acres	FERC issued its EA on January 4, 2019 and a Certificate Order on December 19, 2019. Adelphia Gateway expects construction to begin after all appropriate permits have been obtained	N/A	N/A	GS, VG, T, L, VI, SE, A, N
UGI Bethlehem Liquefied Natural Gas (LNG) Peak Delivery Facility (PADEP 48-00114A)	A new facility designed to supply natural gas to the distribution system during peak demand in extreme cold weather conditions in the city of Bethlehem, Northampton County, PA	6 miles SW of Church Road Interconnects	Less than 11 acres	Construction began in December 2019 and the Project is expected to be in service in 2020.	N/A	N/A	GW, VG, SE, L, VI
Northeast Supply Enhancement Project (FERC Docket No. CP17-101-000)	10 miles of 42-inch-diameter loop in Lancaster County, PA;3.4 miles of 26-inch-diameter loop in Middlesex County, NJ; 23.5 miles of 26-inch-diameter loop in Middlesex and Monmouth Counties, NJ and Queens and Richmond Counties, NY; modifications to Compressor Station 200 in Chester County, PA; and construction of new Compressor Station 206 in Somerset County, NJ.	11 miles NE of the terminus of Phase 2	14,524 acres during construction and 145 acres during operation	FERC issued a Certificate of Public Convenience and Necessity May 3, 2019. Construction is pending receipt of all remaining permits	620 workers for the onshore construction and up to 300 workers for the offshore construction	Two workers would be hired to operate Compressor Station 206	A

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
Regional Energy Access Expansion (FERC Docket No. PF20-3)	22.0 miles of 30-inch-diameter pipeline in Luzerne County, PA; 13.8 miles of 42-inch-diameter pipeline loop in Monroe County, PA; 31,871 hp at existing Station 515 in Luzerne County, PA; 16,000 hp at existing Station 505 in Somerset County, NJ; new 11,500 hp compressor station in Gloucester County, NJ; and other facility modifications along Transco's Leidy Line.	Adjacent to approximately first 18 miles of Phase 1	814 acres during construction, 232 acres during operation	Estimated 4th quarter 2022	N/A	N/A	SE, L, A
Central New York Oil & Gas Company (CNYOG), LLC MARC II Pipeline	A 30-mile proposed pipeline that would connect the PennEast pipeline to the MARC I pipeline, a component of the Central New York Oil & Gas Co. LLC pipeline system. Would also connect to Atlantic Sunrise Pipeline	Would connect to northern end of Phase 1	N/A acres	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Atlantic Sunrise Pipeline (FERC Docket No. CP15-138-000)	190 miles of new pipeline, 2.5 miles of pipeline replacement, two new compressor stations, and other facility additions or modifications to Transco's pipeline system in PA	Compressor station modifications located 2 miles NW of Phase 1	1109 acres	In service since September 2018	N/A	N/A	T, A
Garden State Expansion (FERC Docket No. CP15-89-000)	Phase 1 included new compressor station and M&R station. Phase 2 included new compressor station and electrical substation. It is owned and operated by Williams.	2.5 miles E	23 acres.	Phase 1 was placed into service September 2018 and Phase 2 was placed into service March 2018.	N/A	N/A	T, A

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
Electric Generation and Transmission							
Atlantic Wind LLC, Penn Forest Wind Farm	28-turbine wind farm in Carbon County, PA	Would overlap Phase 1 between about MPs 35 – 40	N/A	N/A	N/A	N/A	VG, VI, N
Transportation							
PennDOT Interstate 81	Resurfacing on I-81 northbound and southbound from Exits 164 to 178 in Luzerne County	Adjacent to Phase 1	N/A	Estimated completion date October 2020	N/A	N/A	GS, VG, T, L, VI, SE, A, N
PennDOT State Road 11 Federal Curb Ramps	Curb ramp installation on SR 11 from Breese St to Church St in Luzerne County	1.4 miles NW of Phase 1	N/A	Estimated completion date June 2020	N/A	N/A	A, N, T
PennDOT Luzerne SR 2015 Paving	Resurfacing SR 2015 (Market St, E Saylor Ave, W Saylor Ave) from SR 2026 to SR 2004 in Luzerne County	Adjacent to Phase 1	N/A	Estimated completion date November 2020	N/A	N/A	GS, VG, T, L, VI, SE, A, N
PennDOT District-Wide Rumble Strips	Installation of center line rumble strips and shoulder rumble strips	Adjacent to Phase 1	N/A	2019	N/A	N/A	GS, VG, T, L, VI, SE, A, N
PennDOT State Road 248 Resurface	Resurfacing of PA248	4 miles W of Phase 1	N/A	Estimated completion May 2020	N/A	N/A	A
PennDOT Median Barrier	Install median barrier or guiderail	Adjacent to Phase 1	N/A	2019	N/A	N/A	GS, VG, T, L, VI, SE, A, N
PennDOT Highway Restoration Project: SR 22 - Bethlehem Road to Farmersville Road	Resurface/restoration of Bethman Rd to Farmersville Rd including ramps at SR 33 interchange	0.18 mile NE of Phase 1	6 miles	Estimated completion date October 2020	N/A	N/A	A, VG, GS, SE, L, VI, N
PennDOT Mill and Pave of Passing Lane	Concrete patching of I-78 Passing Lane from Berks County line to PA100 Lehigh County	0.7 mile S of Phase 1	N/A	Estimated completion date June 2020	N/A	N/A	GS, VG, T, L, VI, SE, A, N

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
PennDOT Bridge Repair	Construction of bridge repairs and preservation in Lehigh and Northampton Counties	0.3 mile S of Phase 1	N/A	2019	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Freemansburg Ave Interchange	Roadway reconstruction and bridge rehabilitation of SR 2018 structure	Adjacent to Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
NJ Route 31 Expansion	A parkway system and expanded street networking to Route 31 throughout Raritan Township and Flemington Borough	7.4 miles NE of Phase 2	N/A	Construction to begin in spring 2023	N/A	N/A	A
Commercial/Residential Development							
Susquehanna Estates Subdivision Project	A residential development	N/A	N/A	N/A	N/A	N/A	A
Salvantis Residential Subdivision	A residential development	Adjacent to Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Mericle River Road, LLC Commercial Subdivision	A residential development	Adjacent to Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Subaru of Wyoming Valley	New car dealership	Adjacent to Phase 1	12 acres	Construction complete	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Little Gap Estates Subdivision Project	A residential development	1 mile N of Phase 1	N/A	N/A	N/A	N/A	A, N
Combined Heat and Power Plant at Blue Mountain	A Combined Heat and Power Plant by Tuthill Corporation, Funded by Pennsylvania Energy Development Authority	Adjacent to Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Waterpark and Hotel at Blue Mountain	A Hotel and Waterpark resort area planned at the top of Blue Mountain	Adjacent to Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Blue Ridge Real Estate Properties	Multiple Resort Residential and Commercial Properties	0.1 mile E of Phase 1	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
Trio Fields Subdivision	A 374-lot residential subdivision	0.1 mile W of Phase 1	90 acres	Complete	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Sterling Crossing Subdivision	A 41-lot residential subdivision	3.2 miles SW of Phase 1	N/A	Complete	N/A	N/A	A, T
Saratoga Farms Subdivision	A 55-lot residential subdivision	0.7 mile W of Phase 1	N/A	Complete	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Mill Creek Corporate Campus Development	Corporate building development	0.14 mile S of Church Road Interconnects	1.4 acres	N/A	N/A	N/A	GS, WD, VG, SE, VI, L, N, A
Traditions of America Subdivision	A proposed age-restricted 229 home subdivision adjacent to the Green Pond Country Club	0.5 mile W of Phase 2	119 acres	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Madison Farms Luxury Apartments	Mixed use rental properties	1.5 mile S of Church Road Interconnects, 0.3 mile W of Phase 2	100 acres	Constructed in 2018	N/A	N/A	A, T
Huntington Knolls, LLC Housing Development	A 29 building age-restricted and assisted-living housing development.	0.1 mile N of Phase 2	87	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Princeton Research Lands Properties	Princeton Research Lands Inc. - Landowner has plans for residential subdivisions on all 3 properties.	Adjacent to Phase 2	N/A	N/A	N/A	N/A	GS, VG, WD, T, L, VI, SE, A, N
Hopewell Township Affordable Housing Plan	Proposed affordable housing plans provided by Hopewell Township.	Adjacent to Phase 2	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N
Wawa on Highway 31	Landowner and developer are looking to develop land and are working with WAWA to put a store on the property.	Adjacent to Phase 2	N/A	N/A	N/A	N/A	GS, VG, T, L, VI, SE, A, N

Table B.9.2-1

Other Projects Potentially Contributing to Cumulative Impacts

Project Name [a]	Project Description	Approximate Distance of the Project from the Certificated Route	Estimated Land Area (acres)	Estimated Construction Date	Estimates of Construction Workforce	Estimates of Operation Workforce	Resources Assessed for Cumulative Impacts [b]
Subdivision (unnamed)	Subdivision in Pennington and Hopewell Townships Seven-lot residential subdivision located at Block 72, Lot 9; RJA Investment Fund VIII, LP is the contract purchasers of the property Commonly known as 135 Blackwell Rd	0.1 mile NE of Phase 2	N/A	N/A	N/A	N/A	GS, VG, WD, T, L, VI, SE, A, N
Ewing Town Center Redevelopment Project	A planned redevelopment of a closed General Motors facility with 1,182 apartment units as large as 1,950 square feet in 12 walk-up buildings; 94,750 square feet of retail; and 14,375 square feet of office space in four live/work buildings; to Ewing's downtown area.	6 miles SW of Phase 2	80	Construction began in early 2020	N/A	N/A	A

Notes:
This table lists the projects that have the most potential to contribute to the cumulative impacts within the vicinity of the proposed 2020 Amendment Project; it is not intended to provide an all-inclusive listing of projects in the region.
N/A = Information not available.
PennDOT = Pennsylvania Department of Transportation.
[a] Constitution Pipeline Company, LLC Constitution Pipeline (CP13-499-000) issued a statement on February 24, 2020 that it would no longer continue development of its project and it has therefore been removed from this table as no longer reasonably foreseeable.
[b] Resources previously evaluated for the Phase 1 and Phase 2 pipeline in Docket Nos. CP15-558-000 and CP19-78-000 are not listed here. Resources evaluated for the Church Road Interconnects include: GS = Geology and Soils, VG = Vegetation, T = Traffic, L = Land Use, VI = Visual, SE = Socioeconomics, A = Air, N = Noise

9.3 Marceullus Shale Development

9.3.1 Background

The Marcellus Shale is an approximately 385-million-year-old, organic-rich shale formation that exists beneath 57.6 million acres of Pennsylvania, southern New York, eastern Ohio, and northern West Virginia. Over geologic time and with the pressure and temperature associated with deep burial, oil and natural gas can be generated within organic-rich shale formations. However, because shale is generally impermeable (that is, fluids do not readily flow through the formation), the oil and natural gas contained in these types of rocks cannot be economically produced using conventional well drilling and completion methods. Within the last 20 years, however, the petroleum industry has developed deep directional drilling techniques in conjunction with hydraulic fracturing (fracking), which has been in use for over 50 years, to recover natural gas from shale reservoirs. Fracking involves the injection of fluids and sand under high pressure to fracture the shale around the wellbore, thus enabling the flow of natural gas to the well.

9.3.2 Natural Gas Production Wells

Analysis of Marcellus Shale natural gas extraction in Pennsylvania has shown that development creates "potentially serious patterns of disturbance on the landscape" (USGS 2012). Construction of access roads, drilling pads, and gathering lines results in land use and cover that affect the ability of ecosystems to provide essential ecological goods and services, resulting in erosion, sedimentation, and habitat fragmentation. There is no current or foreseeable well development or use within ten miles of the Church Road Interconnects, so Church Road Interconnect construction and operation activities would not be expected to result in cumulative impacts within the geographic scope.

9.4 FERC-Jurisdictional Natural Gas Pipeline Projects

There are five planned, proposed, or recently constructed FERC-jurisdictional natural gas transmission projects within 10 miles of Phase 1, Phase 2, and the Church Road Interconnects. A description of each project is below and additional details regarding each project can be obtained through our website at www.ferc.gov by entering the docket number given for each project. At the time of issuance of this EA, the Marc II Pipeline Project does not have a docket number, because it is still in the company's planning stage and has not entered into the pre-filing process with FERC.

As currently envisioned, CNYOG's MARC II Project would involve constructing a 30-mile, 30-inch-diameter pipeline in Sullivan, Wyoming, and Luzerne Counties, Pennsylvania, that would connect CNYOG's existing MARC I pipeline with Transco's Leidy pipeline and the Certificated Project at the northern end of Phase 1.

FERC granted Transco authorization to complete the Garden State Expansion Project, which expanded its interstate natural gas pipeline to provide additional service to New Jersey Natural Gas Company. The project is designed to provide up to 180,000 Dth/d of local gas distribution. The Garden State Expansion project included the installation of a new compressor station and meter and regulating station in Burlington County, New Jersey. No expansion of the existing Transco pipeline was required. The project has a been in service since 2018. The Garden State Expansion Project would connect to the Certificated Project near the southern end of Phase 2 at the Transco Station 205 in Mercer County, New Jersey. Phase 2 would be located in one of the same watersheds as the Garden State Expansion Project (Millstone).

Transco constructed the Atlantic Sunrise Project to provide 1,700 MDth/d of capacity from northern Pennsylvania to Alabama. The project included construction or replacement of 197.7 miles of various diameter pipe, construction of two new compressor stations and upgrades of three existing compressor stations, and addition M&R stations. This pipeline has been in service since September 2018.

The Adelphia Gateway Project, located adjacent to Phase 1, including an interconnect at the Church Road Interconnects, would involve the conversion of 50 miles of an existing 84-mile pipeline in southeastern Pennsylvania from oil to natural gas. In addition, two pipeline laterals, aboveground facilities, meter stations, MLVs, and access roads would be constructed. FERC issued a Certificate Order for the project on December 19, 2019. Pending receipt of all the necessary permits and regulatory actions, Adelphia Gateway anticipated project construction to begin after all appropriate permits have been obtained.

On June 11, 2020, Transco submitted a pre-filing request to FERC under Docket No. PF20-3-000 for the Regional Energy Access project. The project would consist of approximately 22.0 miles of 30-inch-diameter pipeline in Luzerne County, Pennsylvania and approximately 13.8 miles of 42-inch-diameter pipeline in Monroe County, Pennsylvania. This project also proposes a new compressor station, increased flow to six existing delivery meter stations, and modifications at: 4 existing compressor stations, 3 existing receipt meter stations, 2 existing interconnects, 1 existing valve set, 5 existing delivery meter stations, and 2 existing regulators. Impacts of this project are unknown at this time.

All identified interstate natural gas pipeline projects are, or would be, within the Northeast Pennsylvania-Upper Delaware Valley Interstate Air Quality Control Region and/or the Metropolitan Philadelphia Interstate Air Quality Control Region (Pennsylvania-New Jersey-Delaware).

9.5 Other Actions

Other actions considered in this analysis include electric generation and transmission, transportation, and commercial/residential development projects.

Atlantic Wind LLC, a subsidiary of Iberdrola Renewables, is proposing the construction of a 28-turbine wind farm in Penn Forest. The project could result in cumulative impacts if construction or operation occurs concurrently with PennEast. The wind farm would overlap a portion of the Phase 1 pipeline between about MPs 35 – 40.

Transportation projects near Phase 1, Phase 2, and the Church Road Interconnects with the potential to cumulatively impact environmental resources include:

- replacement of four bridges on Interstate 81 in Plains Township, Pennsylvania, which range in distance from 0.1 to 1.7 miles from Phase 1;
- a roadway reconstruction and bridge rehabilitation at the Freemansburg Avenue interchange in Bethlehem Township, Pennsylvania, located 0.1 mile from Phase 1;
- a resurface/restoration of Bethman Road to Farmersville Road including ramps at SR 33 interchange 0.18 mile from the Church Road Interconnects; and
- a parkway system and expanded street networking to route 31 throughout Raritan Township and Flemington Borough in New Jersey, located 7.4 miles from Phase 2.

Any resulting impacts from these projects would likely be highly localized, with the most acute being impacts on traffic patterns.

The analysis identified 19 commercial and/or residential development projects located within the geographic scopes. Summaries of these projects are included below.

The Susquehanna Estates Subdivision project, located near Phase 1 at MPs 6.2 to 6.5, in Jenkins Township, Luzerne County, Pennsylvania was identified in CP15-558-000 comments submitted by landowner and developer Harry Salavantis. Although construction appeared to be ongoing during a July

2015 site visit, PennEast contacted the Jenkins Township Manager in June 2015 and reported that the subdivision is currently on hold and that no plans have been submitted to date for this project. The site is adjacent to the Phase 1 route, and therefore could result in cumulative impacts if construction is concurrent.

The Salvantis Residential Subdivision would be located near MPs 7.5 to 8.0, in Jenkins Township, Luzerne County, Pennsylvania. The details of this project needed for this analysis are not currently publicly available, but cumulative impacts could occur if construction is concurrent with Phase 1, since the subdivision is adjacent to Phase 1.

Mericle River Road, LLC is a subdivision project located near Phase 1 between MPs 7.5 and 8.0, in Jenkins Township, Luzerne County, Pennsylvania. Currently detailed information for this analysis is not publicly available.

The Subaru of Wyoming Valley car dealership located on Highway 315 in Plains Township, Luzerne County, Pennsylvania involved the development of 12 acres of land for a new car dealership. This project is located less than 0.1 mile north of Phase 1 near MP 10.5 within one of the same watersheds (Upper Susquehanna River Watershed).

Blue Ridge Real Estate Properties consists of multiple resort residential and commercial properties in Carbon County, Pennsylvania, which Phase 1 would intersect near MP 26 in Kidder Township. The Blue Ridge Real Estate Properties consist of resort residential communities in the Pocono Mountains, including properties such as the Jack Frost National Golf Course. The Blue Ridge Real Estate Properties are located 0.1 mile east of Phase 1 and within two of the same watersheds (Upper Lehigh and Middle Lehigh Watersheds).

The Little Gap Estates Subdivision project, located near Phase 1 at MPs 47.2 to 47.5, in Lower Towamensing Township, Carbon County, Pennsylvania was identified as a potential development in comments submitted by Thomas and Carol Kidd in the Certificated Project docket, CP15-558-000.

The Pennsylvania Energy Development Authority (PEDA) awarded Blue Mountain a $500,000 grant in 2014 in support of The Tuthill Corporation's project to build a CHP plant, also known as a cogeneration plant, at Blue Mountain, west of Phase 1 near MP 50. The Certificated Project's Blue Mountain Interconnect would feed (and be located adjacent to) this project. The current status and schedule for the cogeneration facility is not available, but the plant would be located in one of the same watersheds as Phase 1 and the Church Road Interconnects (Lower Lehigh Watershed). Also, Blue Mountain has received a permit to build a water park adjacent to the plant at the top of Blue Mountain and is planning to construct a hotel in the same area.

Trio Fields Subdivision consists of a 374-lot residential subdivision approximately 0.1 mile southwest of Phase 1 at MP 61.8 to MP 64.7. The subdivision consists of 89.8 acres and would be within one of the same watersheds as Phase 1 (Lower Lehigh Watershed).

Sterling Crossing Subdivision is a 41-lot residential subdivision located approximately 3.2 miles southwest of the proposed MP 64.1. The subdivision is located within the Lower Lehigh Watershed, which Phase 1 would also intersect.

The Saratoga Farms Subdivision is a 55-lot residential subdivision approximately 0.7 mile west of Phase 1 at MP 66.2. The subdivision is within the Lower Lehigh Watershed, which is also intersected by Phase 1.

The Mill Creek Corporate Campus is a proposed development in Northampton County and would be located adjacent to the Church Road Interconnects. The development would entail eight office buildings, a four-story hotel, a restaurant, bank, dog park, soccer field, and walking trail. A comment submitted to CP20-47-000 by Bethlehem Township indicated a residential component. The Bethlehem Township Planning Commission conducted reviews of the corporate center as recently as February 26, 2018. According to the meeting minutes from that date, members of Bethlehem Township Planning Commission continued to be concerned regarding numerous technical matters, including water runoff and truck traffic. At this February meeting, a motion was made and carried to table and placed the Mill Creek Corporate Center resubmission in administrative review. The applicant did not make any further submissions, although the Bethlehem Township Planning Commission granted time extensions (first extension until March 31, 2019, then June 30, 2019. The publicly available meeting minutes reflect no submission for 2019 (through October 28, 2019). Based on available information, the Mill Creek Corporate Center does not appear to be reasonably foreseeable. In addition, the Mill Creek Corporate Center would appear to have minimal cumulative impacts on fugitive dust emissions, traffic, land use, and operational visual impacts. Moreover, construction of the Church Road Interconnects would last approximately six months and require approximately 10-20 vehicles per day. No cumulative impacts from fugitive dust emissions or construction traffic would be expected since construction of the construction of the Church Road Interconnects is anticipated to be completed prior to any earthwork or increase in construction traffic related to the Mill Creek Corporate Center, which would be in preliminary planning stages. Once in operation, the Church Road Interconnects would be an un-manned facility, so no longterm traffic impacts would be anticipated.

Traditions of America proposed a subdivision at the current Green Pond Country Club at the intersection of Green Pond Road and Farmersville Road in Bethlehem Township, Northampton County, Pennsylvania. Traditions of America proposes to build an age-restricted 229-unit subdivision over the span of 119 acres. As of January 2020, construction is currently underway. The subdivision is approximately 0.5 mile west of Phase 1, and 0.7 mile west of the Church Road Interconnects, and located within one of the same watersheds (Bushkill Creek - Delaware River Watershed). This development was identified in comments submitted to CP20-47 by Marilyn Jordan, Bethlehem Township, and John Gallagher.

Madison Farms is a mixed-use development in Bethlehem Township, located within a mile of Phase 2 near MP 69.8 to 69.9, currently consisting of 837 apartments on 100 acres of property, with 163,000 square feet of retail space, and a 26,000 square foot medical center.

Huntington Knolls, LLC Housing Development is proposed west of Route 519 and south of the Fox Hill Development in Holland Township, Hunterdon County, New Jersey. The proposed project includes building 29 buildings with age-restricted housing units, as well as assisted-living units. The proposed housing development would be located 0.1 mile north of Phase 2 near MP 82 in one of the same watersheds (Lower Delaware River Watershed).

Princeton Research Lands Inc. intends to build residential subdivisions on three properties in Hunterdon County, New Jersey. The project directly overlaps Phase 2 near MP 103 and would be located within one of the same watersheds (Lower Delaware River Watershed).

The Hopewell Township Affordable Housing Plan is a proposed plan developed by Hopewell Township in an effort to increase the amount of affordable housing in the area. The project would directly overlap Phase 2 at MP 122.2 and would be located within one of the same watersheds (Lower Delaware River Watershed).

A planned new Wawa convenience store would be located along Highway 31 in Hopewell Township, Mercer County, New Jersey. The landowner and developer are currently in negotiations with

Wawa. The project directly overlaps Phase 2 near MP 112.5 and would be located within one of the same watersheds (Lower Delaware River Watershed).

An unnamed subdivision sometimes referred to as 135 Blackwell Road, would be just north of the southern end of Phase 2 near MP 114, in Pennington and Hopewell Townships, New Jersey. This would be a seven-lot residential subdivision. The subdivision would be located within one of the same watersheds as Phase 2 (Lower Delaware River Watershed).

The Ewing Town Center Redevelopment Project, located at Parkway Avenue in Ewing Township, Mercer County, New Jersey, entails the redevelopment of a closed General Motors facility with 1,182 apartment units, 1,950 square feet in 12 walk-up buildings, 94,750 square feet of retail, and 14,375 square feet of office space. The project would encompass 80 acres and be located six miles southwest of MP 114 in Phase 2. The redevelopment project would be located within one of the same watersheds as Phase 2 (Lower Delaware River Watershed).

All identified commercial/residential projects are, or would be, within the Northeast Pennsylvania-Upper Delaware Valley Interstate Air Quality Control Region or the Metropolitan Philadelphia Interstate Air Quality Control Region (Pennsylvania-New Jersey-Delaware).

Several comments on the 2020 Amendment Project discussed the need to assess the cumulative impacts of the following projects:

- Southern Reliability Link Pipeline
- Central New York Oil & Gas Crestwood Marc II
- Texas Eastern's TEAM 2014 Project
- Columbia East Side Expansion Project
- DTE Midstream Appalachia Birdsboro Pipeline Project
- Millennium Eastern System Upgrade
- Tennessee Gas Pipeline Company Orion Project
- Tennessee Gas Pipeline Company Susquehanna West
- Tennessee Gas Pipeline Company Transco Triad Expansion
- Tennessee Gas Pipeline Company Northeast Upgrade Project
- Tennessee Gas Pipeline Company 300 Upgrade Project
- Sunoco Mariner East 2 and 2X Projects
- Paulsboro Natural Gas Delaware River Pipeline Relocation Project
- Sunoco Logistics Delaware Pipeline Relocation Project
- Gibbstown Liquefied Natural Gas Export Facility

The majority of the projects listed can be excluded from the cumulative impacts analysis related to construction activities based on the lack of temporal overlap, given that construction of the 2020 Amendment Project is not anticipated until 2021. Of the 15 projects included in the list above, construction has been completed on 10 projects. Three projects are currently in construction and are anticipated to complete construction and be in service before construction would begin on the 2020 Amendment Project. The construction timeframe on the remaining two projects is unclear. For all potential environmental impacts other than operational air quality, the identified projects are located outside of the relevant cumulative impact defined boundaries for the Project, and therefore lack any geographic overlap with effects of the Project. However, of the projects listed, five are located within the same AQCR as the Kidder Compression Station and involve modifications, upgrades, or installations of compressor stations:

Columbia East Side Expansion Project, Tennessee Gas Pipeline Company Orion Project, Tennessee Gas Pipeline Company Susquehanna West, Tennessee Gas Pipeline Company Northeast Upgrade Project, Tennessee Gas Pipeline Company 300 Upgrade Project. These projects are assumed to have long-term operational air impacts.

9.6 Analysis of Cumulative Impacts

The potential impacts that we consider as part of our cumulative impacts review pertain to:

- geology and soils;
- vegetation;
- land use, recreation, special interest areas, and visual resources;
- socioeconomics (including traffic); and
- air quality and noise.

In the following analysis we describe the potential cumulative impacts associated with the general development of the above-identified projects. For the reasons described above, we did not consider more distant actions in our analysis. Only projects with potential cumulative impacts not already considered for the Certificated Project are discussed in this analysis. The remaining projects will not be discussed further in this EA.

9.6.1 Geology and Soils

Phase 1 and Phase 2 cumulative impact analysis on Geology and Soils remains unchanged from the discussion for the Certificated Project. The Church Road Interconnects would be expected to have a direct but temporary impact on near-surface geology and soils. Clearing activities could expose the soil to erosive elements such as precipitation and wind. Temporary erosion controls in accordance with FERC's Plan and Procedures would be used to minimize these impacts. Cumulative impacts on geology and soils would be mitigated through PennEast's use of BMPs during construction and restoration to restore natural grades, control erosion, and implement measures in agricultural areas to minimize long-term impact on soils.

The Church Road Interconnects' effect on geology and soils would be highly localized and primarily limited to the construction period. Cumulative impacts would only occur if other projects are constructed during the Church Road Interconnects' construction period in a shared location. Compaction due to construction activity could contribute to cumulative erosion impacts on soils. Large residential developments like Blue Ridge Real Estate Properties and Mill Creek Corporate Campus Development could also lead to soil exposure, compaction, and erosion. The Highway Restoration PennDOT Project: SR22-Bethman Road to Farmersville Road is not expected to disturb soil as it involves improvements to existing paved surfaces.

The Adelphia Gateway project, which would tie into the proposed Church Road Interconnects, was issued a Certificate Order on December 19, 2019 and project construction would begin after all appropriate permits have been obtained. The Adelphia Gateway project would be constructed in accordance with applicable permits and approved engineering design, which would minimize the cumulative impacts on geological resources. This project would be required to develop and implement a site-specific Erosion and Sediment Control Plan that meets 25 Pa. Code Chapter 102 requirements. Adherence to these plans and requirements would minimize the potential for negative impacts on soil resources.

9.6.2 Vegetation

The Phase 1 and Phase 2 cumulative impact analysis on vegetation remains unchanged from the discussion for the Certificated Project. The Church Road Interconnects would result in changes to

vegetation cover from right-of-way clearing and grading. Other projects would result in the removal of vegetation and other potential secondary effects, such as the establishment or spread of invasive plant species. These effects would be greatest where the other projects are constructed within the same timeframe and areas as the Church Road Interconnects. For example, nine other projects have the potential to occur in the same timeframe as Phase 1 and the 2020 Amendment Project; Adelphia Gateway Project; Regional Energy Access Project; UGI Bethlehem LNG Peak Delivery Facility; Northeast Supply Enhancement Project; Highway Restoration PennDOT Project: SR22-Bethman Road to Farmersville Road; PennDOT Interstate 81; PennDOT Luzerne SR 2015 Paving; PennDOT State Road 11 Federal Curb Ramps; and Mill Creek Corporate Campus Development.

Vegetation impacts are expected to be minimal for projects that include improvements of existing infrastructure or are small development projects. Based on the types and amounts of vegetation affected by the Church Road Interconnects and Adelphia's proposed avoidance, minimization, and mitigation measures to limit project impacts, we conclude that impacts on vegetation from the Church Road Interconnects would not be significant. The Regional Energy Access Project is expected to take similar steps to minimize vegetation impacts. Similarly, the transportation and commercial development projects identified in Table B.9.2-1 would be required to adhere to applicable permits and approvals which are protective of vegetation. Therefore, cumulative impacts on vegetation associated with the Church Road Interconnects are not anticipated.

Seven comments on the 2020 Amendment Project discussed the recent invasion of the spotted lantern fly in Pennsylvania, noting how the pipeline's segmentation of forests could exacerbate the spread. PennEast would develop a Project-specific Invasive Species Management Plan in coordination with the appropriate regulatory agencies to minimize the Certificated Project's contribution to the cumulative impact of all the linear projects in the area.

9.6.3 Land Use and Visual Resources

The Phase 1 and Phase 2 cumulative impact analysis on land use and visual resources remains unchanged from the discussion for the Certificated Project. The Church Road Interconnects would result in temporary and permanent changes in land use. Land uses within new permanent aboveground facilities would be permanently converted to natural gas facilities. Similar land use impacts would occur for other buried pipeline projects in the area such as the Adelphia Gateway project, and other projects with new permanent aboveground facilities would contribute to cumulative change in land use.

The visual character of the existing landscape is defined by historic and current land uses. The visual qualities of the landscape are further influenced by existing linear installations such as highways, railroads, pipelines, mining operations, and electrical transmission and distribution lines. Temporary visual impacts would be evident during Church Road Interconnects construction due to clearing, grading, and construction activities. A number of line-of-sight occluding features would minimize the visual impact of the aboveground facilities including maintaining the existing tree line and highway sound barriers. Most disturbed areas would be revegetated after construction. The visual impact of the Church Road Interconnects would be minimal and has been designed to further reduce impacts on visual resources. At their nearest locations the Regional Energy Access Project and UGI Bethlehem LNG Peak Delivery Facility are approximately eight to six miles distant from the Church Road Interconnects, respectively, which minimizes the potential for overlapping cumulative effects on land use and visual resources. The Mill Creek Corporate Center will have minimal cumulative impacts with regards to operational visual impacts. However, a number of line-of-sight occluding features would minimize the visual impact of the Church Road Interconnects including maintaining the existing tree line and highway sound barriers.

9.6.4 Socioeconomics - Traffic

The addition of traffic on local roadways associated with construction personnel commuting to and from the Church Road Interconnects could contribute to cumulative traffic congestion. However, any contribution by the Church Road Interconnects to cumulative traffic impacts are expected to be temporary and short term. If construction of other projects occurs concurrently, the cumulative impact on traffic patterns could lead to congestion in localized areas. Construction of the Church Road Interconnects would be expected to be completed prior to any earthwork or increase in construction traffic related to the Mill Creek Corporate Center, which is still in the preliminary planning stages. Therefore, no cumulative impacts from construction traffic are expected. There would be no long-term traffic impacts since once in operation, the Church Road Interconnects would be an un-manned facility.

The Church Road Interconnects would not result in changes to other potential socioeconomic impacts, either in kind or in degree, to those impacts previously evaluated for the Certificated Project. The previous analyses and conditions remain unchanged. Further, potential impacts on socioeconomics from construction and operation of the Phase 1 and Phase 2 pipeline remains unchanged from the analysis previously completed the Certificated Project.

9.6.5 Air and Noise Quality

The Phase 1 and Phase 2 cumulative impact analysis on air and noise quality remains unchanged from the discussion for the Certificated Project. Construction of most of the projects and activities listed in Table B.9.2-1 would involve the temporary use of heavy equipment, vehicles, and other equipment powered by diesel or gasoline engines that would generate emissions of air contaminants. Construction activities would also result in the temporary generation of fugitive dust due to land clearing, ground excavation, and cut and fill operations, as well as noise. PennEast designed the 2020 Amendment Project to minimize temporary impacts to air quality due to construction activities wherever practicable. The operation of heavy construction equipment and its associated exhaust would increase diesel exhaust emissions and would suspend fugitive dust and other construction related particles in the air. The volume of dust emitted would vary depending on the level of activity, specific construction techniques, soil characterizations, and whether conditions. These temporary impacts would be minimized by requirements that the contractor keep machinery adequately maintained and operating. Construction dust and particles would be reduced by implementing fugitive dust control measures as detailed in the FDCP.

Projects that are constructed concurrently with the Church Road Interconnects may also impact air quality during construction, but these impacts would be short-term and local. These short-term emissions and temporary impacts may include emissions from construction equipment and contributions of fugitive dust. The Mill Creek Corporate Campus Development and Highway Restoration PennDOT Project: SR22-Bethman Road to Farmsville Road will likely implement similar minimization measures, and they would not result in air emissions once they have been constructed. Since PennDOT resurface and restoration projects typically do not have a significant impact on air quality, they and are exempt from PennDOT Air Quality Assessments (PennDOT n.d.). However, all PennDOT contractors perform construction activities in accordance with 25 Pa. Code Article III to ensure adequate emission control measures are in place (PennDOT n.d.). The Mill Creek Corporate Center is still in the preliminary planning stages, and the Church Road Interconnects would be expected to be completed prior to any earthwork related to construction of the Mill Creek Corporate Center. Therefore, no cumulative impacts from fugitive dust emissions are expected. Air emissions during construction of the Church Road Interconnects along with the potentially overlapping projects are anticipated to be negligible and hence unlikely to contribute to cumulative air quality impacts.

Some components of the proposed and other projects listed in table B.9.2-1 would have long-term air and noise impacts during operation. The Church Road Interconnects are estimated to have nitrogen

oxide, particulate matter, sulfur dioxide, and carbon monoxide emissions that would be less than the compressor station. Based on the estimated maximum case emission rates, the Church Road Interconnects would be exempt from requiring an air permit. Due to the exempt magnitude of the operational emissions, the Church Road Interconnects would not have an adverse impact within the vicinity of the site or larger region of the Certificated Project.

Several comments on the 2020 Amendment Project raised concern about the cumulative impacts of 15 other natural gas pipelines, discussed in section 9.5. It is acknowledged that the Columbia East Side Expansion Project, Tennessee Gas Pipeline Company Orion Project, Tennessee Gas Pipeline Company Susquehanna West, Tennessee Gas Pipeline Company Northeast Upgrade Project, Tennessee Gas Pipeline Company 300 Upgrade Project may have long term operational air impacts within the same AQCR as the Kidder Compressor Station. The emissions from the Kidder Compressor Station would be below CAA significance levels and are not expected to have a significant cumulative air quality impact. The compressors would be operated with emissions that represent Best Available Technology. The consideration of these other projects does not change the conclusion contained within the Certificated Project FEIS that the proposed Kidder Compressor Station and interconnect stations are considered non-major sources of emissions, do not exceed NAAQS, and would not be expected to contribute significantly to cumulative impacts on air quality.

Several comments on the 2020 Amendment Project expressed concern regarding cumulative operational air impacts from the interconnections to the Columbia Gas Transmission pipeline and the Adelphia Gateway Pipeline. These interconnections would occur at the Church Road Interconnects. Operational air emissions from the Church Road Interconnects is discussed in section B.7.3.2.2. Since the Church Road Interconnects has estimated emission rates and equipment that would qualify for exemption from air permitting requirements, its contribution to cumulative air impacts from operational emissions can be considered de minimis.

Several comments on the 2020 Amendment Project discussed the possible need for additional compressors at Adelphia's Quakertown Compressor Station due to the PennEast interconnect and the subsequent air and noise impacts. Adelphia would not require any additional compression at Adelphia's Quakertown Compressor Station to accommodate the PennEast-Adelphia interconnection at the Church Road Interconnects. With no changes at Adelphia's Quakertown Compressor Station, there would be no cumulative air and noise impacts.

Long-term cumulative noise impacts from the Church Road Interconnects in conjunction with other projects is not expected, as operational noise impacts would be very localized, and estimated operational noise impacts are within FERC regulatory limits. Any noise-producing activity identified in table B.9.2-1 would be required to adhere to applicable noise ordinances to minimize potential impact to the community. The Highway Restoration PennDOT Project: SR22-Bethman Road to Farmsville Road, and Adelphia Gateway project could potentially be under construction at the same time and could result in cumulative noise impacts, but due to the size of these projects and the localized nature of noise impacts, it is unlikely that construction would result in any significant cumulative effects. Any impacts would be short term.

SECTION C – ALTERNATIVES

In accordance with NEPA and FERC policy, we evaluated a range of alternatives to determine whether an alternative would be preferable to the proposed action. The range of alternatives evaluated include the No-Action Alternative, system alternatives, and site alternatives. Our criteria for determining if an alternative is "preferable" are discussed in the following section.

1.0 EVALUATION PROCESS

The purpose of this evaluation is to determine whether an alternative would be preferable to the proposed action. 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:

- the alternative meets the stated purpose of the project;
- is technically and economically feasible and practical; and
- 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. An alternative that cannot achieve the purpose for the project cannot be considered as an acceptable replacement for the project.

For further consideration, an alternative has to be technically and economically feasible. 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 the project economically impractical.

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 (factors), 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.

We considered a range of alternatives in light of the 2020 Amendment Project's objectives, feasibility, and environmental consequences. Through environmental comparison and application of our professional judgment, each alternative is considered to a point where it becomes clear whether the alternative could or could not meet the three evaluation criteria. To ensure a consistent environmental comparison and to normalize the comparison factors, we generally used desktop sources of information (e.g., publicly available data, aerial imagery), but also used field survey data collected by PennEast where comparable data is available for both the 2020 Amendment Project and its corresponding alternative. Where appropriate, we also used site-specific information (e.g., detailed designs). Our environmental analysis and this evaluation consider quantitative data (e.g., counts or acreage) and uses common comparative factors such as land area requirements.

Our evaluation also considers impacts on both the natural and human environments. The natural environment includes water resources and wetlands, vegetation, wildlife and fisheries habitat, farmland soils, and geology. The human environment includes nearby landowners, residences, land uses and recreation, utilities, and industrial and commercial development near construction workspaces. In recognition of the competing interests and the different nature of impacts resulting from an alternative that sometimes exists (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 or discount or eliminate factors that are not relevant or may have less weight or significance. In our analysis of alternatives, we often have to weigh impacts on one kind of resource (i.e., habitat for a species) against another resource (i.e., residential areas).

It is intended that each of the cooperating agencies, as discussed in section A.4.0, will review this alternatives analysis for consistency with their own administrative procedures, and those agencies with NEPA obligations may choose to adopt this analysis as part of their decision-making process.

1.1 No-Action Alternative

Under the no-action alternative PennEast would not construct the 2020 Amendment Project. If the 2020 Amendment Project is not authorized, then the environmental impacts described in this EA for the Church Road Interconnects would not occur, and the PennEast Pipeline would not be constructed in two phases. Implementing the no-action alternative would not allow PennEast to meet the purpose and need as described in section A.2.0 of this EA. It is reasonable to expect that if the 2020 Amendment Project is not authorized (the no-action alternative), PennEast would instead construct the Certificated Project as authorized by the Orders in Docket Nos. CP15-558-000 and CP19-78-000.

We conclude that the no-action alternative does not meet the 2020 Amendment Project objective. If the proposed amendment is not constructed, Columbia and Adelphia may seek other means to obtain an equivalent supply of natural gas from new or existing pipeline systems. Because any replacement project capable of transporting similar volumes of natural gas may result in the expansion of existing natural gas transportation systems or the construction of new infrastructure; both of which are likely to result in impacts comparable or greater than those described in section B of this EA, we conclude that in addition to not meeting the Project objective, the No Action Alternative is also not likely to provide a significant environmental advantage. Further, our analysis identified no significant impacts from the proposed action. Therefore, we do not consider it further.

1.2 System Alternatives

System alternatives are alternatives to the proposed action that would make use of other existing, modified, or proposed natural gas transmission facilities that would meet the stated purpose of the proposed actions. A system alternative would make it unnecessary to construct part or all of the proposed facilities, though additions or modifications to facilities on another existing natural gas transmission system may result in environmental impacts that are less than, equal to, or greater than the environmental impacts of the proposed facilities. We evaluated system alternatives in the final EIS prepared for the Certificated Route (FERC 2017a) and concluded that there are no reasonable system alternatives that would provide a significant environmental advantage to the Certificated Project. That previous analysis remains valid and applicable to the proposed 2020 Amendment Project. Because the proposed 2020 Amendment Project consists of only a minor addition to the Certificated Project, and phasing of construction of the facilities approved by the Orders in Docket Nos. CP15-558-000 and CP19-78-000, we do not consider system alternatives further in this EA.

1.2.1 Alternative Natural Gas Delivery Point

In response to scoping comments, we requested that PennEast evaluate an alternative that would replace the proposed Church Road Interconnects and instead end the Phase 1 pipeline near MP 71.5 and include the Hellertown Lateral connecting to both Adelphia and Columbia as authorized in the Order under Docket No. CP15-558-000. The Certificated Project includes delivery of natural gas to Columbia Gas at an aboveground facility at the end of the Hellertown Lateral (the Columbia Gas Transmission, LLC [TCO] & UGI Utilities, Inc. [UGI-LEH] Interconnects), however, the Certificated Project does not include delivery of natural gas to the Adelphia Gateway pipeline as proposed in the 2020 Amendment Project. Therefore, this alternative would require construction of additional facilities to connect to Adelphia Gateway in order to meet the purpose of the 2020 Amendment Project. In its May 29, 2020 response to our request, PennEast states that the Adelphia Gateway pipeline is crossed at MP 1.7 of the Hellertown Lateral about 0.4 mile from the lateral's end point and the TCO & UGI-LEH Interconnects, and identified two minor modifications to the Certificated Project that would be required to accomplish this alternative natural gas delivery point. Each of the alternatives would also require modifying the break point between Phase 1 and Phase 2, shifting about 3.3 miles of the Certificated PennEast Pipeline (between MPs 68.2 and 71.5) and the 2.1-mile-long Hellertown Lateral from Phase 2 into Phase 1. The two Adelphia Gateway interconnect alternatives are shown on figure C.1.3-1 and further described below.

Adelphia Gateway Interconnect Alternative 1

The Adelphia Gateway Interconnect Alternative 1 would involve construction of about 0.4 mile of additional pipeline to connect the existing Adelphia Gateway Pipeline to the Certificated TCO & UGI-LEH Interconnects at the end of the Hellertown Lateral. The additional pipeline would begin where the Hellertown Lateral crosses the Adelphia Gateway pipeline and continue immediately adjacent to the lateral to the interconnects site at MP 2.1 of the lateral (see figure C.1.3-1). This alternative would also require expansion of the TCO & UGI-LEH Interconnects site as needed to add facilities to accomplish the interconnect with Adelphia Gateway. In its May 29, 2020 response to our request, PennEast did not provide details of potential impacts from this alternative, however we estimate that construction of the additional pipeline could be accomplished with significant overlap with the construction right-of-way used for the Hellertown Lateral and may require about 2.5 acres of workspace in addition to the Certificated workspace. We also estimate that adding a third set of interconnection facilities within the TCO & UGI-LEH Interconnects would increase the size of the facility by about 1/3, or add about 1.6 acres to the 4.8 acres as Certificated. PennEast also notes that the TCO & UGI-LEH Interconnects site as authorized includes significant cut and fill and that expanding the site further would also require significant cut and fill which would likely increase the site footprint.

At a minimum, the Adelphia Gateway Interconnect Alternative 1 is estimated to require about 4.1 acres of additional land disturbance beyond the Certificated facilities. Construction of the proposed Church Road Interconnects site would affect 2.6 acres. Because the alternative would impact slightly more area than the proposed interconnects site, we conclude the Adelphia Gateway Interconnect Alternative 1 would not provide an environmental advantage over the proposed natural gas delivery point.

Adelphia Gateway Interconnect Alternative 2

The Adelphia Gateway Interconnect Alternative 2 would involve construction of a new aboveground interconnect facility at MP 1.7 of the Hellertown Lateral where the lateral crosses the Adelphia Gateway pipeline (figure C.1.2-1). In its May 29, 2020 response to our request, PennEast did not provide details of potential impacts from this alternative, however we estimate that a new interconnect facility for a single pipeline would impact roughly 2/3 the area as the proposed Church Road Interconnects which includes interconnects with two pipelines, or about 2 acres also accounting for an access road. Because the interconnect would be located directly at the intersection with the Adelphia Gateway pipeline,

no additional pipeline would be required for this alternative. Based on review of aerial imagery the alternative interconnect site would be partially open field and wooded area (see figure C.1.2-2). There are about 10 residences along Sherry Hill Road to the north, with the closest being about 700 feet from the assumed interconnect site. These residences would be shielded from the interconnect site by a wooded area. There are also some residences along Sherry Hill Road and Shady Lane about 1,000 feet to the west and southwest, with the area between the assumed interconnect site and these residences being almost entirely woods.

The Adelphia Gateway Interconnect Alternative 2 is estimated to impact less area (2 acres) than the proposed Church Road Interconnects site (2.6 acres). The alternative interconnect site would also be further from the nearest noise sensitive area (estimated 700 feet) and would be screened from the nearest residences by a natural wooded area, compared to the proposed Church Road Interconnects site which would be 490 feet from the nearest noise sensitive area with minimal natural screening. We acknowledge that analysis of the alternative site is based on an estimated location and best available information on that location. However, based on best available information we conclude that the Adelphia Gateway Interconnect Alternative 2 would result in only about 2 acres of additional impact beyond the facilities authorized in the Order under Docket No. CP15-558-000, and the alternative would more than double the distance between the aboveground interconnect facility and the nearest residence. We have received many scoping comments concerned about the location of the proposed Church Road Interconnects in proximity to residences, schools, and a church. In our evaluation of impacts on these resources in section B.5.0 of this EA we conclude there would be minor impacts on these land uses surrounding the Church Road Interconnects, and in section B.7.4.3 we conclude that construction noise would be temporary and with implementation of the proposed noise control measures operational noise from the Church Road Interconnects would not be significant. Further, while it is estimated that the alternative interconnect location would slightly reduce the area of impact (by about 0.6 acre), the overall impacts would be similar and merely relocated from the proposed site to the alternative site. Therefore, we conclude that the Adelphia Gateway Interconnect Alternative 2 would not provide a significant environmental advantage over the proposed Church Road Interconnects.

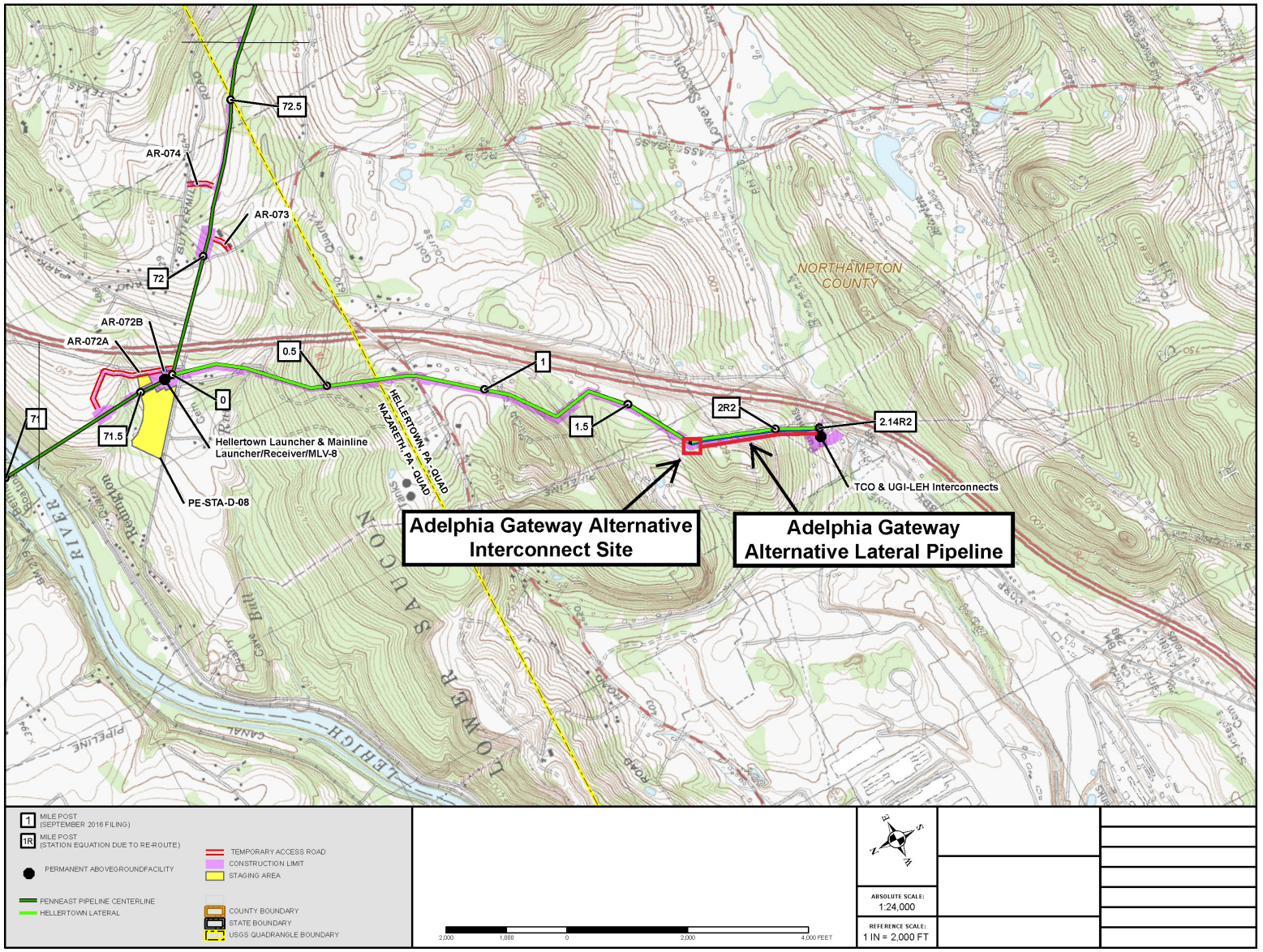

Figure C.1.2-1 Adelphia Gateway Interconnect Alternatives

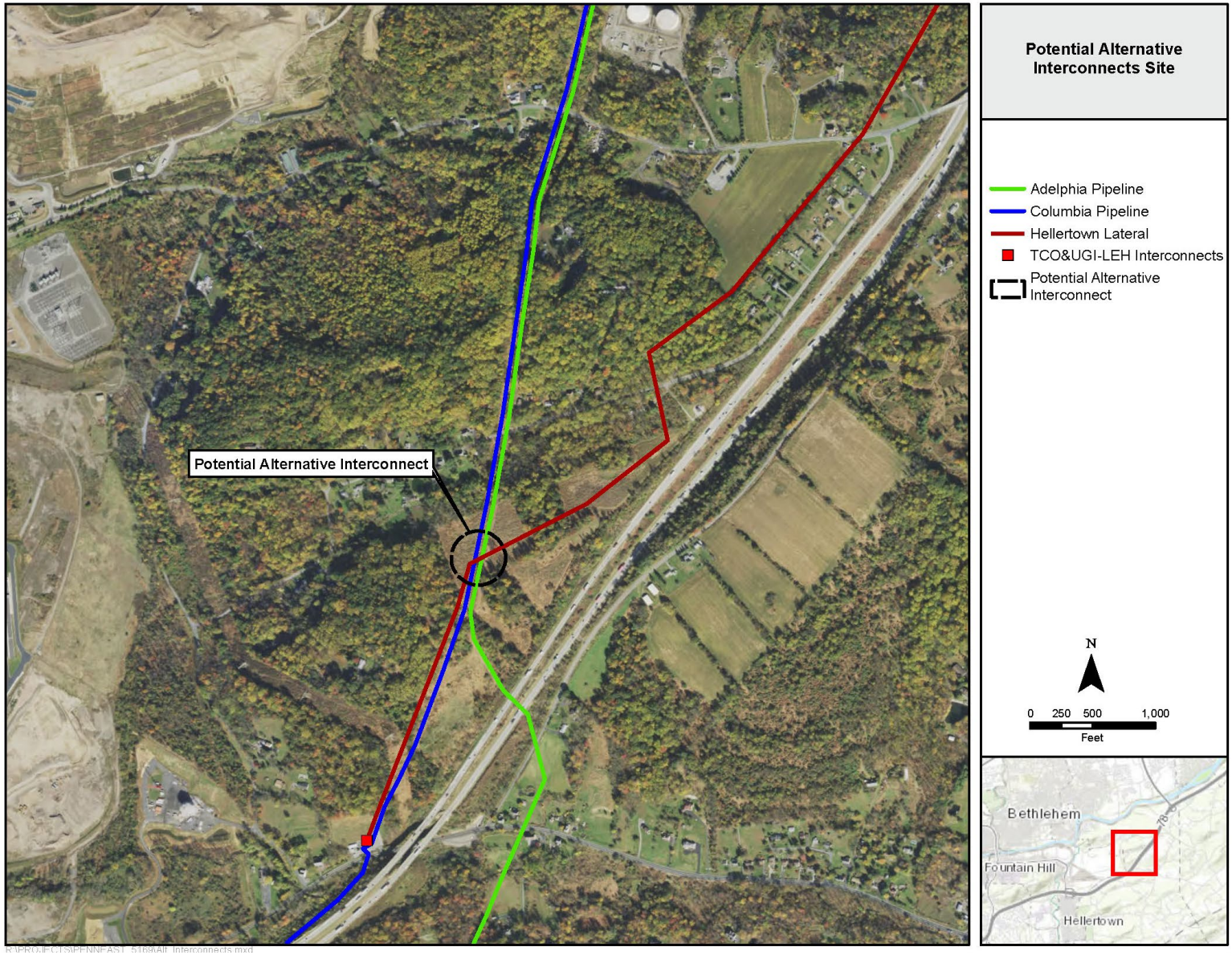

Figure C.1.2-2 Adelphia Gateway Interconnect Alternative Site

1.3 Aboveground Facility Site Alternative

The 2020 Amendment Project includes one aboveground facility, the Church Road Interconnects. In addition to the alternative sites identified above in the System Alternatives discussion, we evaluated an additional site alternative for this facility based on information provided by PennEast and our independent evaluation. The proposed site for the Church Road Interconnects is a property currently owned by PennEast on the south side of the Certificated Project route at MP 68.2R2. In response to our Environmental Information Request dated April 1, 2020, PennEast identified one alternative site on the north side of the Certificated Project route also at MP 68.2R2 that could meet the stated purpose (figure C.1.3-1). The alternative site would include the same end point of the pipeline and include some overlap of land as required for the proposed site. A comparison of environmental factors affected by the proposed Church Road Interconnects site and the alternative site is included in Table C.1.3-1.

The potential environmental advantage of the Church Road Interconnects alternative site is that use of this site would avoid the need to demolish the existing residence within the proposed site. However, PennEast owns this property. The primary environmental disadvantage of the alternative site is that it would be immediately adjacent to a residence to the north, and approximately 300 feet closer to this residence than the proposed site (24 feet compared to 332 feet). Other impacts between the two sites would be similar. Because the property line of the alternative site would be immediately adjacent to the nearest residence, we find that Church Road Interconnects alternative site would not provide a significant environmental advantage over the proposed Church Road Interconnects site.

Table C.1.3-1

Comparison of the Church Road Interconnects Alternative Site to the Proposed Church Road Interconnects Site

Environmental Factor	Alternative Site	Proposed Site
Construction area (acres)	4.5	2.6
Operation area (acres)	2.4	2.1
Existing agricultural area affected by operation (acres)	2.4	0.0
Prime farmland soils affected by operation (acres)	2.4	2.6
Residences within 50 feet of construction workspace (number) [a]	0	1
Nearest residence to site property line (feet)	24	332
Nearest Noise Sensitive Area to center of site (feet)	150	490
Documented karst features within site (number) [b]	1	2

Notes:
[a] .The proposed site is a property owned by PennEast and contains a residence that would be demolished prior to construction.
[b] Karst features within the proposed site are surface depressions. Karst feature within the alternative site is a sinkhole.

1.4 Alternatives Conclusion

Based on the results of the alternatives analysis discussed in the preceding sections, we find that the 2020 Amendment Project is the preferred alternative that meets the purpose and need as defined in this EA.

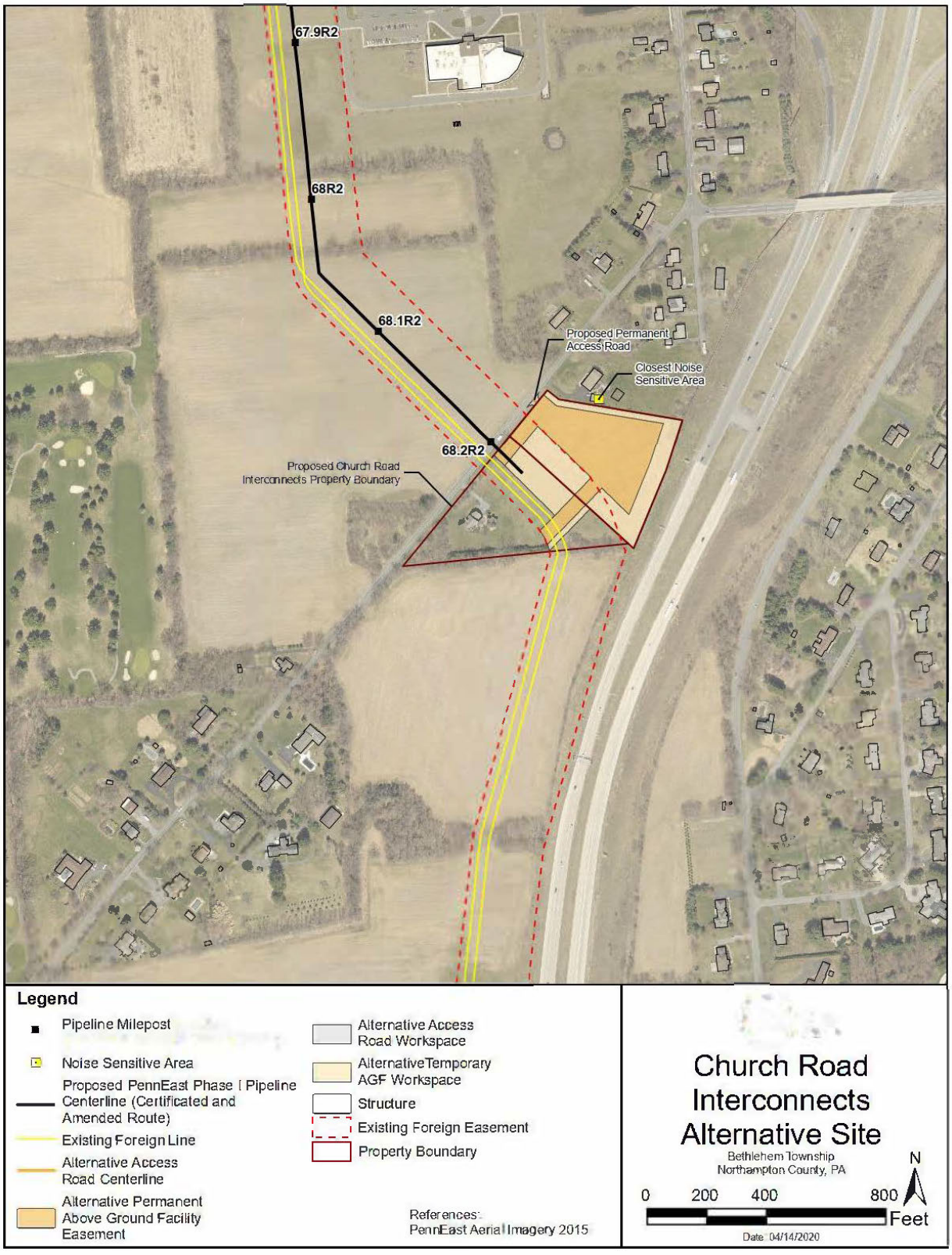

Figure C.1.3-1 Church Road Interconnects Alternative Site

SECTION D – CONCLUSIONS AND RECOMMENDATIONS

Based on the analysis contained in this EA, we have determined that if PennEast constructs and operates the proposed facilities in accordance with its application and supplements and our recommended mitigation measures, approval of this proposal would not constitute a major federal action significantly affecting the quality of the human environment. We recommend that the Order contain a Finding of No Significant Impact and include the following mitigation measures listed below as conditions to any authorization the Commission may issue.

1. PennEast 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 EA, unless modified by the Order. PennEast must:
    a. request any modifications 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 the Office of Energy Projects (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 2020 Amendment 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 the 2020 Amendment Project construction and operation.
3. PennEast shall continue to comply with environmental conditions set forth in Appendix A of the January 19, 2018 Order in Docket No. CP15-558-000.
4. **Prior to construction**, PennEast shall file with the Secretary, for review and written approval by the Director of the OEP or the Director's designee:
    a. a plan for additional geotechnical borings/subsurface investigations, including additional surface geophysics (i.e. ground penetrating radar) that will provide greater definition of subsurface conditions/karst development for design of the interconnect foundations; and
    b. a final report summarizing the results of this investigation.
5. **Prior to construction**, PennEast shall file with the Secretary, for review and written approval by the Director of the OEP or the Director's designee, a revised Invasive Species Management Plan that includes documentation of consultation with the appropriate state agencies and measures it will implement during construction and operation to minimize the spread of the spotted lantern fly.

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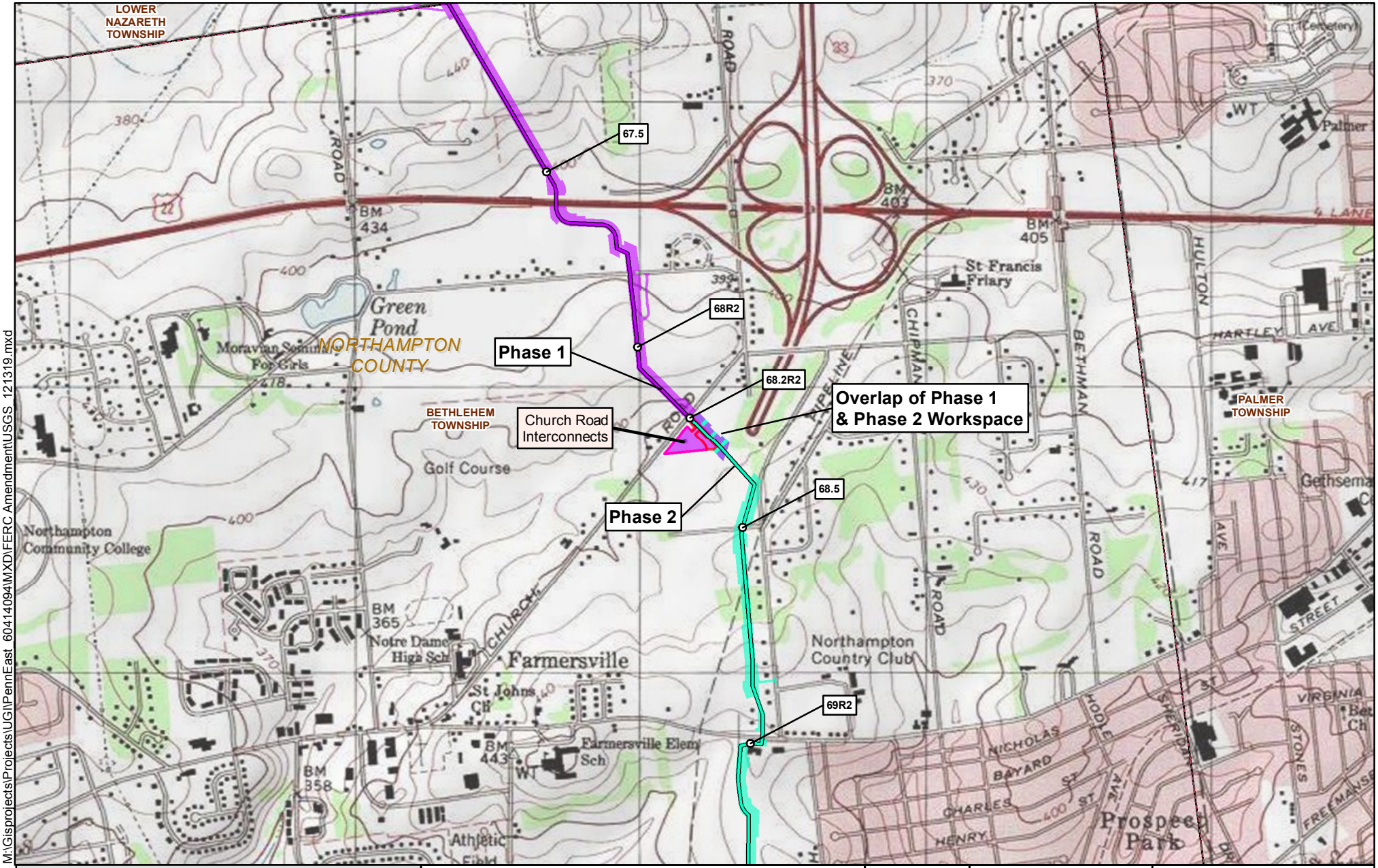
Tetra Tech, Inc. is a third-party contractor assisting the Commission staff in reviewing the environmental aspects of the project application and preparing the environmental documents required by NEPA. Third-party contractors are selected by Commission staff *and funded by project applicants. Per the procedures in 40 CFR 1506.5(c), third-party contractors execute a disclosure statement specifying that they have no financial or other conflicting interest in the outcome of the project. Third-party contractors are required to self-report any changes in financial situation and to refresh their disclosure statements annually. The Commission staff solely directs the scope, content, quality, and schedule of the contractor's work. The Commission staff independently evaluates the results of the third-party contractor's work and the Commission, through its staff, bears ultimate responsibility for full compliance with the requirements of NEPA.*

Appendix A
Map of Proposed Church Road Interconnects



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1 MILEPOST
1R MILEPOST (STATION EQUATION DUE TO REROUTE)
CERTIFICATED ROUTE (PHASE 1)
CERTIFICATED ROUTE (PHASE 2)
PROPOSED PERMANENT ACCESS ROAD
PROPOSED TEMPORARY ACCESS
CHURCH ROAD INTERCONNECTS PERMANENT EASEMENT
CHURCH ROAD INTERCONNECTS TEMPORARY WORKSPACE
CERTIFICATED ROUTE CONSTRUCTION LIMITS (PHASE 1)
CERTIFICATED ROUTE CONSTRUCTION LIMITS (PHASE 2)
USGS QUADRANGLE BOUNDARY
TOWNSHIP BOUNDARY
COUNTY BOUNDARY
STATE BOUNDARY

PENNEAST PIPELINE PROJECT
USGS QUADRANGLE MAP

1,000 500 0 1,000 2,000 Feet

N W E S

ABSOLUTE SCALE: 1:18,000

REFERENCE SCALE: 1 IN = 1,500 FT

PennEast PIPELINE

AECOM

DRAWN BY: CDW
CHECKED BY: NB
APPROVED BY: SB
REV. DATE: 1/23/2020
REVISION:
DESC: ISSUED FOR FERC
PAGE: PAGE 1 OF 1