



**Federal Energy  
Regulatory  
Commission**

**Office of Energy  
Projects**

**October 2014**

---

**Carolina Gas Transmission Corporation**

**Docket No. CP14-97-000**

# **Edgemoor Compressor Station Project**

## **Environmental Assessment**

**Washington, DC 20426**

FEDERAL ENERGY REGULATORY COMMISSION  
WASHINGTON, D.C. 20426

OFFICE OF ENERGY PROJECTS

In Reply Refer To:  
OEP/DG2E/Gas 4  
Carolina Gas Transmission  
Corporation  
Edgemoor Compressor Station  
Project  
Docket No. CP14-97-000

TO THE PARTY ADDRESSED:

The staff of the Federal Energy Regulatory Commission (FERC or Commission) has prepared an environmental assessment (EA) for the Edgemoor Compressor Station Project (Project) proposed by Carolina Gas Transmission Corporation (Carolina Gas) in the above-referenced docket. Carolina Gas states that the Project would provide about 45,000 dekatherms of natural gas per day to two local distribution customers from Transcontinental Pipe Line Corporation's system.

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

The proposed Edgemoor Compressor Station Project consists of the following facilities all in Chester County, South Carolina:

- construction of one new compressor station consisting of four natural gas fired compressor units totaling 9,500 horsepower;
- construction of the Cone Mills Lateral Extension which consists of about 1,300 feet of 8-inch-diameter pipeline; and
- construction and modification of various ancillary facilities.

The FERC staff mailed copies of the EA to federal, state, and local government representatives and agencies; elected officials; environmental and public interest groups; Native American tribes; potentially affected landowners and other interested individuals and groups; newspapers and libraries in the Project area; and parties to this proceeding. In addition, the EA is available for public viewing on the FERC's website ([www.ferc.gov](http://www.ferc.gov)) using the eLibrary link. A limited number of copies of the EA are available for distribution and public inspection at:

Federal Energy Regulatory Commission  
Public Reference Room  
888 First Street NE, Room 2A  
Washington, DC 20426  
(202) 502-8371

Any person wishing to comment on the EA may do so. Your comments should focus on the potential environmental effects, reasonable alternatives, and measures to avoid or lessen environmental impacts. The more specific your comments, the more useful they will 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 November 15, 2014.**

For your convenience, there are three methods you can use to file your comments with the Commission. In all instances please reference the project docket number (CP14-97-000) with your submission. The Commission encourages electronic filing of comments and has expert staff available to assist you at 202-502-8258 or [efiling@ferc.gov](mailto:efiling@ferc.gov).

- (1) You can file your comments electronically using the [eComment](#) feature located on the Commission's website ([www.ferc.gov](http://www.ferc.gov)) under the link to [Documents and Filings](#). 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](http://www.ferc.gov)) under the link to [Documents and Filings](#). 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:

Kimberly D. Bose, Secretary  
Federal Energy Regulatory Commission  
888 First Street NE, Room 1A  
Washington, DC 20426

Any person seeking to become a party to the proceeding must file a motion to intervene pursuant to Rule 214 of the Commission's Rules of Practice and Procedures (18 CFR 385.214).<sup>1</sup> Only intervenors have the right to seek rehearing of the Commission's decision. The Commission grants affected landowners and others with environmental concerns intervenor

---

<sup>1</sup> See the previous discussion on the methods for filing comments.

status upon showing good cause by stating that they have a clear and direct interest in this proceeding which no other party can adequately represent. **Simply filing environmental comments will not give you intervenor status, but you do not need intervenor status to have your comments considered.**

Additional information about the Project is available from the Commission's Office of External Affairs, at **(866) 208-FERC**, or on the FERC website ([www.ferc.gov](http://www.ferc.gov)) using the eLibrary link. Click on the eLibrary link, click on "General Search," and enter the docket number excluding the last three digits in the Docket Number field (i.e., CP14-97). Be sure you have selected an appropriate date range. For assistance, please contact FERC Online Support at [FercOnlineSupport@ferc.gov](mailto:FercOnlineSupport@ferc.gov) or toll free at (866) 208-3676, or for TTY, contact (202) 502-8659. 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 [www.ferc.gov/docs-filing/esubscription.asp](http://www.ferc.gov/docs-filing/esubscription.asp).

# TABLE OF CONTENTS

---

<b>A.</b>	<b>PROPOSED ACTION</b> .....	<b>1</b>
1.	INTRODUCTION.....	1
2.	PURPOSE AND NEED.....	2
3.	NONJURISDICTIONAL FACILITIES.....	2
4.	LAND REQUIREMENTS.....	2
5.	CONSTRUCTION PROCEDURES.....	5
6.	BACKGROUND AND PUBLIC REVIEW.....	6
7.	PERMITS AND CONSULTATIONS.....	7
<b>B.</b>	<b>ENVIRONMENTAL ANALYSIS</b> .....	<b>8</b>
1.	GEOLOGY AND SOILS.....	8
2.	GROUNDWATER.....	9
3.	WATERBODIES AND WETLANDS.....	10
4.	VEGETATION, FISHERIES, AND WILDLIFE.....	11
5.	THREATENED AND ENDANGERED SPECIES.....	12
6.	LAND USE, RECREATION, AND VISUAL RESOURCES.....	12
7.	CULTURAL RESOURCES.....	14
8.	AIR QUALITY.....	14
9.	NOISE.....	21
10.	RELIABILITY AND SAFETY.....	24
11.	CUMULATIVE IMPACTS.....	30
<b>C.</b>	<b>ALTERNATIVES</b> .....	<b>29</b>
<b>D.</b>	<b>STAFF’S CONCLUSIONS AND RECOMMENDATIONS</b> .....	<b>34</b>
<b>E.</b>	<b>LIST OF PREPARERS</b> .....	<b>39</b>

## LIST OF TABLES

---

<b>TABLE 1</b>	<b>ENVIRONMENTAL COMMENTS</b> .....	<b>7</b>
<b>TABLE 2</b>	<b>PERMITS AND CONSULTATIONS</b> .....	<b>8</b>
<b>TABLE 3</b>	<b>CONSTRUCTION EMISSIONS SUMMARY</b> .....	<b>17</b>
<b>TABLE 4</b>	<b>OPERATIONAL EMISSIONS SUMMARY</b> .....	<b>17</b>
<b>TABLE 5</b>	<b>NAAQS MODELING RESULTS</b> .....	<b>18</b>
<b>TABLE 6</b>	<b>ESTIMATED NOISE CONTRIBUTION OF THE EDGEMOOR COMPRESSOR STATION</b> .....	<b>22</b>
<b>TABLE 7</b>	<b>NATURAL GAS TRANSMISSION PIPELINE SIGNIFICANT INCIDENTS BY CAUSE 1994-2013</b> .....	<b>28</b>
<b>TABLE 8</b>	<b>OUTSIDE FORCES INCIDENTS BY CAUSE 1994-2013</b> .....	<b>28</b>
<b>TABLE 9</b>	<b>INJURIES AND FATALITIES - NATURAL GAS TRANSMISSION PIPELINES</b> .....	<b>29</b>
<b>TABLE 10</b>	<b>NATIONWIDE ACCIDENTAL DEATHS</b> .....	<b>29</b>
<b>TABLE 11</b>	<b>COMPARISON OF FACILITY ALTERNATIVES</b> .....	<b>32</b>

## **LIST OF FIGURES**

---

---

<b>FIGURE 1</b>	<b>GENERAL PROJECT MAP .....</b>	<b>3</b>
<b>FIGURE 2</b>	<b>EDGEMOOR COMPRESSOR STATION MAP.....</b>	<b>4</b>
<b>FIGURE 3</b>	<b>PROJECT ALTERNATIVES MAP .....</b>	<b>33</b>

## TECHNICAL ACRONYMS AND ABBREVIATIONS

---

AAQS	Ambient Air Quality Standards
AQCR	air quality control region
CAA	Clean Air Act
CH <sub>4</sub>	methane
CO	carbon monoxide
CO <sub>2</sub>	carbon dioxide
CO <sub>2</sub> e	carbon dioxide equivalents
dBa	decibels
DOT	U.S. Department of Transportation
EPA	U.S. Environmental Protection Agency
FERC Plan	FERC's <i>Upland Erosion Control, Revegetation, and Maintenance Plan</i>
FERC Procedures	FERC's <i>Wetland and Waterbody Construction and Mitigation Procedures</i>
GHG	greenhouse gas
GWP	global warming potential
HAP	hazardous air pollutants
Hp	horsepower
L <sub>dn</sub>	day-night sound level
L <sub>eq</sub>	equivalent sound level
MAOP	maximum allowable operating pressure
N <sub>2</sub> O	nitrous oxide
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NO <sub>2</sub>	nitrogen dioxide
NOI	<i>Notice of Intent to Prepare an Environmental Assessment for the Proposed Edgemoor Compressor Station Project and Request for Comments on Environmental Issues</i>
NO <sub>x</sub>	nitrogen oxides
NSA	noise sensitive area
NSPS	New Source Performance Standards
PHMSA	U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration
PM <sub>2.5</sub>	particulate matter less than 2.5 microns in diameter
PM <sub>10</sub>	particulate matter less than 10 microns in diameter
ppm	parts per million
PSD	Prevention of Significant Deterioration
psig	pounds per square inch gauge
PTE	potential to emit
SESC Plan	Soil Erosion and Sediment Control Plan
SCDHEC	South Carolina Department of Health and Environmental Control
SCDNR	South Carolina Department of Natural Resources
SHPO	State Historic Preservation Officer
SIP	State Implementation Plan
SO <sub>2</sub>	sulfur dioxide
SWPP Plan	Storm Water Pollution Prevention Plan
tpy	tons per year
USFWS	U.S. Fish and Wildlife Service
VOC	volatile organic compounds

**Carolina Gas Transmission Corporation  
(Docket No. CP14-97-000)**

**ENVIRONMENTAL ASSESSMENT**

**A. PROPOSED ACTION**

On February 28, 2014, Carolina Gas Transmission Corporation (Carolina Gas) filed an application with the Federal Energy Regulatory Commission (FERC or Commission) in Docket No. CP14-97-000 for authorization under prior notice regulations in 18 Code of Federal Regulations Part (CFR) 157, section 157.205 and 157.210 to construct and operate natural gas pipelines and aboveground facilities in Chester County, South Carolina under a blanket certificate.

Pursuant to section 157.205, authorization to engage in qualifying activities under a blanket certificate is automatic as long as no protests are filed by the 60-day deadline for filing interventions and protests. However, we received several protests regarding potential environmental impacts of the proposed action (see section A.6, below). Since the protests to this case were not withdrawn within 30 days after the 60-day notice period (30-day “reconciliation period”), the prior notice request proceeded as an application under section 7(c) of the Natural Gas Act for a case-specific Certificate of Public Convenience and Necessity (Certificate) on June 9, 2014. Carolina Gas’ proposed project is referred to as the Edgemoor Compressor Station Project (Project).

We<sup>2</sup> prepared this environmental assessment (EA) in compliance with the requirements of the National Environmental Policy Act of 1969 (NEPA), the Council on Environmental Quality’s regulations for implementing NEPA (Title 40 Code of Federal Regulations, Parts 1500-1508 [40 CFR 1500-1508]), and the Commission’s regulations implementing NEPA (18 CFR 380).

The assessment of environmental impacts is an important and integral part of the Commission’s decision-making process. As such, we prepared this EA to assess the environmental impacts that would likely occur as a result of the construction and operation of the proposed facilities. We have developed and incorporated measures into this EA that we believe would appropriately and reasonably avoid, minimize, or mitigate environmental impacts associated with construction and operation of the Project.

**A.1 Introduction**

Carolina Gas proposes to construct, own, and operate a new compressor station in Chester County, South Carolina. The new Edgemoor Compressor Station would consist of three refurbished Solar Saturn natural gas fired compressors, each with a nominal power output of 1,600 horsepower (hp), and one refurbished Solar Centaur natural gas fired compressor with a nominal output of 4,700 hp. The total nominal output of the Edgemoor Compressor Station would be 9,500 hp.

---

<sup>2</sup> “We,” “us,” and “our” refer to the environmental staff of the Office of Energy Projects.



Associated activities in conjunction with construction of the Edgemoor Compressor Station include:

- construction of the Cone Mills Lateral Extension which consists of about 1,300 feet of 8-inch-diameter pipeline;
- an increase in the maximum allowable operating pressure (MAOP) of the existing Line 2 from 857 pounds per square inch gauge (psig) to 975 psig; and
- construction and modifications of various ancillary facilities associated with the Project.

The general Project location is shown in figures 1 and 2.

## **A.2 Purpose and Need**

According to Carolina Gas, the Project is needed to meet contract pressure and capacity obligations while improving the efficiency, flexibility, and reliability of Carolina Gas' current system in order to deliver additional supplies to its customers. More specifically, the Project would transport a total of 45,000 dekatherms per day of natural gas capacity to two local distribution customers from Transcontinental Pipe Line Corporation's system.

Under section 7 of the Natural Gas Act, the Commission determines whether interstate natural gas transportation facilities are in the public convenience and necessity and, if so, grants a Certificate to construct and operate them. The Commission bases its decision on technical competence, financing, rates, market demand, gas supply, environmental impact, long-term feasibility, and other issues concerning a proposed project.

## **A.3 Nonjurisdictional Facilities**

Construction of the Edgemoor Compressor Station would require electrical service supplied by the local energy provider, Duke Energy Corporation, and may require telecom service provided by a local telecom provider. Any required utilities outside of the construction footprint will be constructed, operated, and maintained by the utility providers. The utility providers would own these nonjurisdictional facilities and would be responsible for any required design or environmental permitting. The installation of electrical and potential telecom services is addressed more in section B.11.

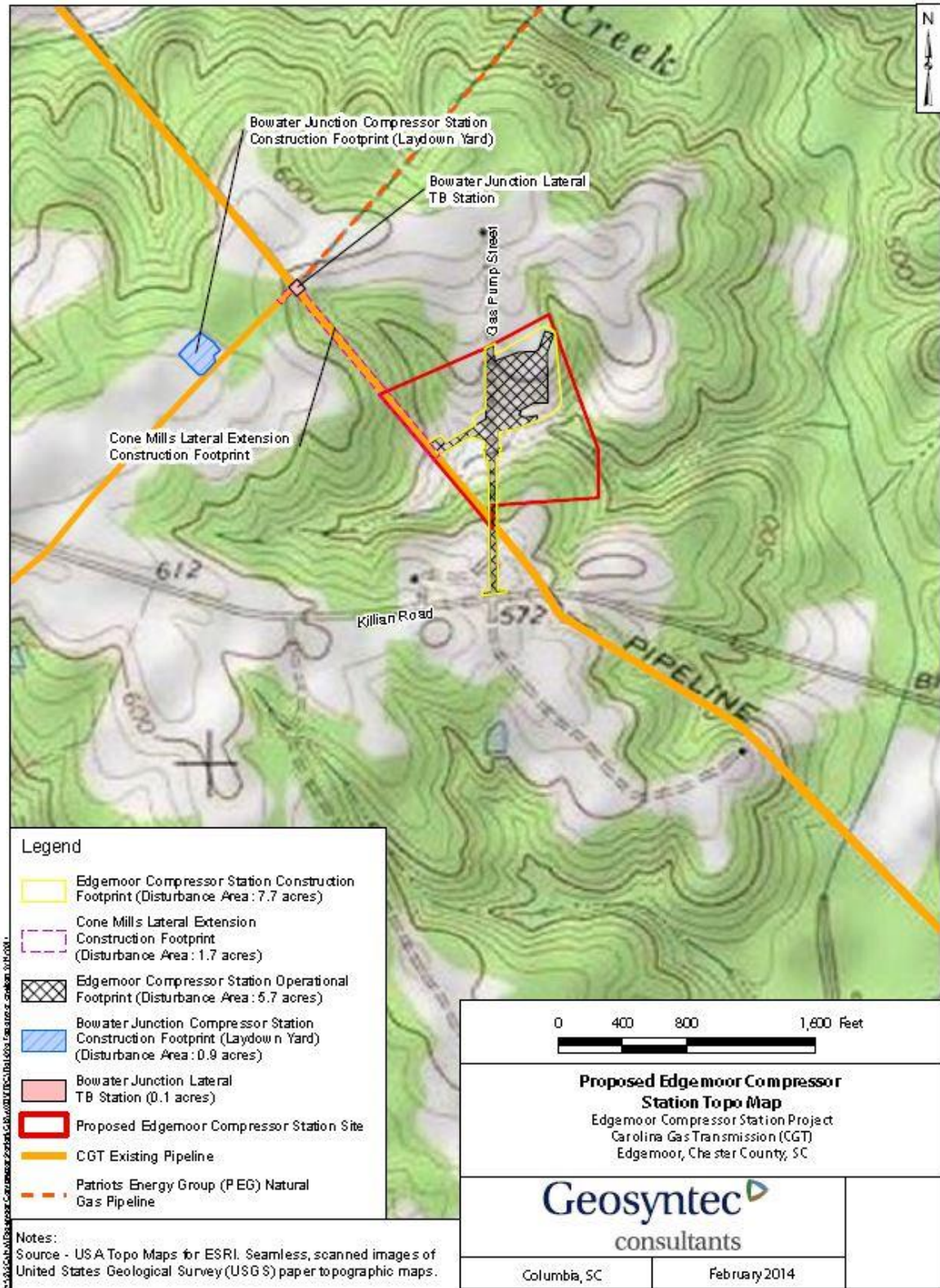
## **A.4 Land Requirements**

Construction of the Edgemoor Compressor Station would impact about 7.7 acres of land within a 23.1-acre parcel owned by Carolina Gas. Following construction activities, about 2.0 acres of the 7.7 acres would be allowed to revegetate, while the remaining 5.7 acres would be retained by Carolina Gas as part of its operational footprint.

Land disturbance for the Cone Mills Lateral Extension would occur within the existing Carolina Gas 50-foot-wide right-of-way. Ancillary facilities associated with the Project, including town border (TB) stations, mainline valves, take-off stations, extra work spaces, and a laydown yard, would not require the acquisition of any additional new land, and would be



Figure 2 – Edgemoor Compressor Station Location



located within Carolina Gas' existing previously disturbed rights-of-way and facility footprints. The estimated total land disturbance of these facilities is about 8.1 acres.

#### **A.5 Construction, Operation, and Maintenance Procedures**

Carolina Gas would utilize conventional construction techniques for the pipeline and aboveground facilities. Construction activities would require the use of trucks, front-end loaders, excavators, backhoes, cranes, and other typical equipment. Aboveground facility construction would involve grading, excavation for building foundations, laying of a concrete foundation, constructing the building, and coordinating the turbine installation with associated metering, machinery, piping, electrical conduit systems, and other electrical wiring.

Installation of the pipeline would be accomplished using conventional overland construction techniques, which consists of the construction spread proceeding along the pipeline right-of-way in one continuous operation, with the process coordinated in such a manner as to minimize the total amount of time a tract of land is disturbed. In this scenario, construction of the pipeline would follow a set of sequential operations: temporary soil erosion and sedimentation control measures would be installed along the construction right-of-way, temporary workspaces, and access roads; grading of the right-of-way; trenching activities; assembling and welding of the pipe; lowering of the pipe into the trench; and backfilling of the trench.

Carolina Gas would design, construct, test, operate, and maintain the Project facilities in accordance with the requirements of 49 CFR 192, *Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards* as further discussed below, and with all other appropriate local, state, and federal regulations and codes. To minimize potential impacts associated with construction and operation, Carolina Gas has agreed to follow the FERC *Upland Erosion Control, Revegetation Maintenance Plan* (FERC Plan) and FERC *Wetland and Waterbody Construction and Mitigation Procedures* (FERC Procedures) without deviation. Additionally, Carolina Gas prepared a Soil Erosion and Sediment Control Plan (SESC Plan). Carolina Gas would restrict construction activities to the approved and clearly marked workspaces.

To avoid or minimize the potential for harmful spills and leaks during construction, Carolina Gas would ensure implementation of a Storm Water Pollution Prevention Plan (SWPP Plan). SWPP Plans typically describe spill and leak preparedness and prevention practices, procedures for emergency preparedness and incident response, training requirements, and reporting protocols. We have reviewed Carolina Gas' SWPP Plan and find it acceptable.

Cleanup and stabilization of disturbed areas would be an ongoing process throughout construction, and would be performed in accordance with the FERC Plan and Procedures and SESC Plan. Implementation of mitigation measures in the FERC Plan and Procedures and SESC Plan (e.g., installation of erosion control devices) would ensure that the Project would minimize soil erosion and soil-related impacts.

Post construction, Carolina Gas would restore affected areas to pre-construction conditions to the extent possible. Carolina Gas would stabilize the ground surface at the site of the proposed compressor station with gravel and restore grade and vegetation along the rights-of-way. Vegetation would be periodically maintained by mowing as described by the Plan.

Carolina Gas anticipates beginning Project construction activities once FERC authorization is received, and would place the Project in service by summer 2015.

#### *Environmental Inspector*

Carolina Gas would employ at least one Environmental Inspector (EI) during construction of the Project to ensure that all environmental requirements are satisfied. The EI would have peer status with other inspectors and would have stop-work authority.

Construction contractors employed by Carolina Gas would be required to observe and comply with federal, state, and local laws, ordinances, and regulations that apply to the conduct of their work. Contractors must also comply with Minimum Federal Safety Standards under the Natural Gas Pipeline Safety Act of 1968, as well as Carolina Gas safety standards.

In addition, FERC staff or a contractor would conduct compliance inspections during construction and restoration to ensure compliance with Carolina Gas's proposed action, the FERC Plan and Procedures, and environmental conditions in any Certificate that may be issued for the Project.

#### **A.6 Background and Public Review**

Carolina Gas contacted applicable federal, state, and local environmental and cultural resource agencies with regard to the Project. Carolina Gas also contacted all landowners within 0.5 mile of the compressor station site in accordance with 18 CFR 157.203(d). On March 10, 2014, the Commission issued its *Notice of Request Under Blanket Authorization* (Notice) for the proposed Project. The Notice described the proposed facilities and informed the public how to intervene in the proceedings or submit a protest. We received four responses to the Notice from landowners (Lloyd Ledford; Michelle and Stephen Bragg; and two community letters, dated March 24 and April 7, 2014).

Mr. Ledford filed a timely protest related to levels of noise that may result from the Edgemoor Compressor Station's operation. Mr. Ledford stated that a gun range is in the vicinity of the Project site and as such could result in a safety issue. The Braggs also filed a timely protest related to air quality and the increased levels of noise that may result from the Edgemoor Compressor Station's operation which could impact the health of nearby residents. Similar to Mr. Ledford, the Braggs also raised concerns over the presence of the gun range in the area. In comments dated March 24 and April 7, 2014, numerous landowners filed a timely joint protest related to levels of noise, impacts on air quality, cultural resources, a wetland site, threatened and endangered species, groundwater, and safety. Table 1 describes where we address these comments in environmental analysis sections below.

As noted above, due to the unresolved protests, the prior notice request proceeded as an application under section 7(c) of the Natural Gas Act for a case-specific Certificate. This EA fulfills the Commission’s NEPA requirements for the proposed action.

<b>TABLE 1 Environmental Comments</b>		
<b>Landowner</b>	<b>Comment</b>	<b>Section Addressed in EA</b>
Michelle & Stephen Bragg	Property Values Noise Safety	B.6 B.9 B.10
Lloyd Ledford	Noise	B.9
Joint Letter	Groundwater Wetlands Wildlife Threatened & Endangered Species Property Values Cultural Resources Air Quality Noise Safety Alternative Site Locations	B2 B.3 B.4 B.5 B.6 B.7 B.8 B.9 B.10 C

On June 17, 2014, the Commission issued a *Notice of Intent to Prepare an Environmental Assessment for the Proposed Edgemoor Compressor Station Project and Request for Comments on Environmental Issues* (NOI). The NOI was published in the Federal Register and was mailed to interested parties, including federal, state, and local officials; agency representatives; conservation organizations; local libraries and newspapers; and property owners potentially affected by the proposed facilities. Written comments were requested from the public on specific concerns about the Project or environmental issues that should be considered during the preparation of the EA.

In response to the NOI, we received comment letters from the U.S. Fish and Wildlife Service (USFWS), South Carolina Electric & Gas Company, and three landowners (Jane Pettit, William and Laura Simpson, and Lloyd Ledford). The South Carolina Electric & Gas Company expressed its approval of the Project. The USFWS expressed concern over endangered species and alternatives. Ms. Pettit, Mr. and Mrs. Simpson, and Mr. Ledford were all concerned about air quality, noise, and safety. The landowner’s comments regarding air quality, noise, and safety are addressed in respective sections B.8, B.9, and B.10 below.

**A.7 Permits and Consultations**

Federal, state, and local permits, authorizations, or clearances for the construction of the Project, as well as filing status, are summarized in table 2. Carolina Gas would be responsible for obtaining all applicable permits regardless of whether they appear in the table or not.

<b>TABLE 2 Permits and Consultations</b>		
<b>Permit/Approval</b>	<b>Administering Agency</b>	<b>Status</b>
<b>FEDERAL</b>		
Section 7(c) Application	Federal Energy Regulatory Commission	Under review
Clean Water Act Section 404 Nationwide Permit	U.S. Army Corps of Engineers	Concurrence received April 18, 2014
Endangered Species Act - Section 7 Consultation	U.S. Fish and Wildlife Service	Concurrence received January 28, 2014
National Historic Preservation Act Section 106 Clearance/Approval	South Carolina Department of Archives and History	Concurrence received February 10, 2014
<b>STATE</b>		
Air Quality Construction Permit (Edgemoor Compressor Station)	South Carolina Department of Health and Environmental Control	Receipt May 7, 2014
Notice of Intent (NOI) to Discharge Storm Water Associated with Construction Activities		Receipt April 14, 2014
Clean Water Act Section 401 Water Quality Certification		Receipt May 2, 2014
Hydrostatic Test Wastewaters Discharge Permit		Anticipated filing March 2015
State Endangered Species Consultation	South Carolina Department of Natural Resources	Concurrence received December 30, 2013

## **B. ENVIRONMENTAL ANALYSIS**

### **B.1 Geology and Soils**

#### *Geology*

The Project area is located within the Piedmont Unit, which consists of a 100-mile-wide rolling plain oriented northeast to southwest incised by river valleys and a decreasing elevation from 1,200 feet at the base of the Blue Ridge region toward the coastal plain. The Project area is composed primarily of metamorphic rocks overlaid by regolith of varying thickness.

Mineral resources in Chester County are known to include sand and gravel. No active mines are near the Project area. The potential for geologic hazards in the Project area such as landslides, seismic activity, land subsidence would be minimal. The compressor station site is in a flat, stable area and the pipeline and ancillary facilities would be installed within previously disturbed areas and currently used operational rights-of-way. As such, we conclude that construction and operation of the Project would not significantly impact geologic resources or be subject to significant geologic hazards.

## *Soils*

The Project area is located within 4 different soil types: Cecil sandy clay loam, Helena sandy loam, Pacolet sandy loam, and Cecil sandy clay loam. Potential impacts on soils could include erosion, reduction of soil productivity, soil compaction and rutting, and contamination.

Carolina Gas would construct and operate the Project to minimize impacts on soils by implementing the FERC Plan and Procedures. Soils could be vulnerable to contamination caused by inadvertent surface spills of hazardous materials used during construction. To reduce potential impacts from spills, Carolina Gas would implement its SWPP Plan.

Upon completion of construction, Carolina Gas would restore the ground surface as closely as practicable to original contours and revegetate the work areas. As such, we conclude that construction and operation of the Project would not significantly impact soils.

## **B.2 Groundwater**

The Project area does not overlie any sole source aquifers and is not within any sole source aquifer protection areas. There are no private or public groundwater wells or springs within 150 feet of the proposed work areas. There are no wellhead or source water protection areas within 150 feet of the Project.

Project construction would not result in significant groundwater impacts because the majority of construction would involve shallow, temporary, and localized excavation. If groundwater is encountered during pipeline construction, Carolina Gas would implement our Procedures and dewater the trench to well-vegetated upland areas or utilize an energy dissipation structure where dense vegetation is absent, allowing the water to infiltrate back into the ground and minimizing any long-term impacts on the water table.

Shallow groundwater could be vulnerable to contamination caused by the inadvertent surface spills of hazardous liquids or petroleum fuel used during construction. To reduce potential impacts from spills of hazardous materials, Carolina Gas would implement its SWPP Plan.

Upon completion of construction, Carolina Gas would restore the ground surface as closely as practicable to original contours and revegetate the work areas to facilitate restoration of preconstruction overland flow and recharge patterns.

Based on Carolina Gas' proposed construction techniques and the implementation of measures contained in the applicable plans, we conclude that construction and operation of the Project would not significantly impact groundwater resources.



### **B.3 Waterbodies and Wetlands**

#### *Waterbodies*

One unnamed perennial stream is within the proposed Edgemoor Compressor Station parcel. Gas Pump Street, a private dirt gravel road, off of Killian Road, would be used to permanently access the Edgemoor Compressor Station. This road crosses the unnamed perennial stream over an existing 29-inch-diameter culvert. To facilitate improvements of Gas Pump Street, the existing culvert would be replaced with an approximate 42-inch-diameter culvert and the road would be graded and improved with asphalt. The culvert replacement would be conducted in the same location of the existing culvert. No other waterbodies would be crossed by other Project components.

During construction, clearing and grading of vegetation cover could increase erosion. Compaction of soils by heavy equipment near waterbodies may accelerate erosion and the transportation of sediment carried by stormwater runoff into waterbodies. Extra workspaces and standard setbacks for material staging, refueling, and equipment maintenance areas would be conducted per the FERC Procedures and as outlined in Carolina Gas' SWPP Plan and SESC Plan, and would include temporary sediment barriers. The one unnamed perennial stream would be restored to pre-construction conditions to ensure that no surface flow capacity is lost.

Carolina Gas' SWPP Plan describes measures to prevent and, if necessary, control any inadvertent spill of hazardous materials such as fuels, lubricants, or solvents that could affect water quality. Hazardous materials, chemicals, lubricating oils, and fuels used during construction would be stored in upland areas at least 100 feet from waterbodies. No equipment would be parked and/or refueled within 100 feet of waterbodies without the coordination of the EI and implementation of additional precautions such as continual monitoring of fuel transfer and use of secondary containment structures.

Following the FERC Plan and Procedures along with Carolina Gas' SESC Plan and SWPP Plan during construction and revegetation, would ensure that no long-term effects would occur on the unnamed stream, and also ensure that no significant short-term impacts would occur.

#### *Wetlands*

Field surveys were conducted by Geosyntec Consultants, Inc., a consultant of Carolina Gas, and were completed in December 2013 and identified 0.12 acre of forested wetlands within the property boundary of the proposed Edgemoor Compressor Station site; however, the wetlands are outside the proposed construction area and would not be directly affected. Carolina Gas would implement our Procedures, which contain measures to minimize indirect impacts on nearby wetlands. For example, identifying and flagging the location of the wetland prior to the start of construction and installing silt fence along the boundary of the wetland. Therefore, no adverse impacts on wetlands are anticipated.

## *Hydrostatic Test Water*

Carolina Gas would use 1,330,000 gallons of water from municipal sources to perform hydrostatic testing of all station piping, pipeline sections, and appurtenances. No chemicals would be added to the test water. Upon completion, the test water would be discharged into well-vegetated upland areas using appropriate energy dissipation devices and containment structures to reduce the velocity of the discharged water, thereby reducing the potential for erosion.

### **B.4 Vegetation, Fisheries, and Wildlife**

The proposed Project is primarily within the open land use type (about 13.5 acres) and partly within the mixed forest land use type (about 2.2 acres). The typical vegetation associated with open land is rush, spikerush, wire grass, smartweed, milkweed, goldenrod, green briar, and wild blackberry. This vegetation cover may provide habitat for small mammals such as opossums, Eastern cotton-tailed rabbits, gray squirrels, and meadow voles as well as for transient species such as white-tailed deer and wild turkey.

The proposed site of the Edgemoor Compressor Station is the only project location where mixed forest is present. Of the 2.2 acres of forest which would be cleared, only 1.2 acres would be permanently affected due to operation of the compressor station. The remaining 1.0 acre would be a long-term but temporary impact and would be allowed to return to its original state over time. Temporary and permanent erosion control measures would be installed as appropriate, and revegetation measures would be implemented in accordance with the FERC Plan.

Geosyntec Consultants, Inc., a consultant of Carolina Gas, conducted field surveys of the Project area and identified the presence of invasive and noxious plants. As such, Carolina Gas would implement several management strategies to minimize the spread of exotic and invasive plant species, such as:

- sowing a cover crop along exposed soil surfaces within temporary workspaces to assure that a suitable growing substrate for exotic or invasive species would not be available for long periods of time;
- monitoring the disturbed sites following construction to assure that revegetation of the areas with suitable cover-plant mixtures has been successful and that invasive or exotic species have not become established; and
- following construction, Carolina Gas would conduct post-construction monitoring and any exotic or nuisance species would be selectively removed or treated with herbicide as necessary.

Construction activities include the cutting, clearing, and/or removal of existing vegetation to provide a safe working area for personnel and equipment. These activities would result in the alteration and loss of vegetation and could result in increased soil erosion, changes to surface water flow and infiltration, and a local reduction in available wildlife habitat. However, these impacts are expected to be short-term as herbaceous vegetation typically regenerates quickly.

Construction and operation of the Project could result in short- and long-term impacts on wildlife including the displacement, stress, and injury of some individuals. During construction activities, the temporary loss of habitat would displace mobile wildlife from the immediate vicinity of the Project to surrounding areas. This would be a short-term impact limited predominately to the construction period, as the Project would not permanently alter the character of the majority of available habitats. Some smaller or less mobile species may be killed.

Construction and operation of the Project is not expected to have an impact on fisheries. The Project would not cross any waterbodies which support fisheries. No coldwater fisheries exist within the Project area. The unnamed perennial stream in the compressor station parcel is not classified as an impaired waterbody.

Based on Carolina Gas' proposed construction techniques and the implementation of minimization and mitigation measures as outlined in the FERC Plan, FERC Procedures, Carolina Gas' SESC Plan and SWPP Plan, we conclude that construction and operation of the Project would not significantly impact vegetation, wildlife, or fisheries.

## **B.5 Threatened and Endangered Species**

Section 7 of the Endangered Species Act requires each federal agency to ensure that any action authorized, funded, or carried out by the agency does not jeopardize the continued existence of federally listed endangered or threatened species, or result in the destruction or adverse modification of designated critical habitat for any federally listed species. To comply with the requirements of Section 7 of the Endangered Species Act, Carolina Gas, acting as our non-federal representative, conducted informal consultations with the USFWS and South Carolina Department of Natural Resources (SCDNR) to determine if any federally or state-listed endangered or threatened species (including federal and state species of special concern) or their designated critical habitats occur within the Project area. In letters dated January 28, 2014, from the USFWS and December 30, 2013, from the SCDNR, the agencies determined that the Project would not likely adversely affect any federally or state listed threatened or endangered species. We agree.

## **B.6 Land Use, Recreation, and Visual Resources**

The proposed Project is primarily within the open land use type (about 13.5 acres) and partly within the mixed forest land use type (about 2.2 acres). The majority of all Project activities would involve minimal land disturbance and would occur within the previously disturbed Carolina Gas facility footprints or rights-of-way. Construction would require about 13.5 acres of temporary workspace, including an existing 4.2-acre laydown area inside the Salley Junction Station. All permanent impacts, about 5.7 acres, would be associated with the Edgemoor Compressor Station.

Gas Pump Street, an existing dirt and gravel road, would be used for access to the Project site during construction and operation of the Project. As a part of the Project, Carolina Gas would make improvements to Gas Pump Street. Improvements would include widening the road from about 10 feet to about 24 feet and paving with asphalt to provide an all-weather access road to the compressor station, allowing for two-way traffic along Gas Pump Street and improving accessibility for emergency vehicles.

Existing public roads would be used during Project construction to move equipment and materials to and from the compressor station and ancillary activity locations. These roads would be used without modification or improvement, although some maintenance to public roads may be required.

### *Residential Areas*

Based on a review of aerial photography and field surveys, one house is located adjacent to Gas Pump Street near the intersection of Gas Pump Street and Killian Road. The closest construction activity would be about 485 feet away. No structures or residences are located within 1,000 feet of the proposed Edgemoor Compressor Station facility. There are no planned developments within a 0.25-mile radius of the Project. As such, we believe impacts on residential areas would be minimal.

### *Property Values*

Several commenters expressed concern over the impact of the Project on their property values. As referenced in the Appraisal Institute's *The Appraisal of Real Estate*<sup>3</sup>, environmental conditions are one of four basic forces which may influence value by impacting the neighborhood of a property or its geographic location, and may be either natural or man-made. Nuisances and hazards are listed as important environmental considerations to be taken into account when performing a real estate appraisal, and may otherwise be referred to as environmental liabilities or environmental impairments. Such factors could likely decrease a home's sales price but it is difficult to precisely quantify the extent of this effect. There are limited studies specifically evaluating the effect of natural gas compressor stations on property values.

Additional reduction in property values could potentially arise if various nuisance effects are prominent, such as noise, aesthetics, or air emissions. In the case of the Edgemoor Compressor Station, the station is unlikely to be visible from any adjoining properties, would meet the Commission's noise standards and would meet applicable air emission standards. Therefore, it is unlikely that the station would notably reduce property values or resale values.

### *Recreation and Special Land Uses*

The Project area is not within 0.25 mile of any federal land, state land, or land administered by local agencies or private conservation organizations. No National Parks,

---

<sup>3</sup> Appraisal Institute (1992)

National Landmarks, or National Scenic Rivers would be affected by the Project. As such, we conclude that the Project would not result in a significant impact on any special land types or uses.

### *Visual Resources*

The Project would not cross or be within any federal, state, or locally designated visual resources of significance (e.g., scenic roads/highways or National Wild and Scenic Rivers).

The construction and operation of the Edgemoor Compressor Station would be in a rural area with low density residential and agricultural use on a 23.1-acre site acquired by Carolina Gas. Permanent impacts associated with the construction of the Edgemoor Compressor Station would be about 5.6 acres. Carolina Gas would retain existing trees and forested areas as practicable to provide a visual buffer around the compressor station. We conclude that impacts on visual resources would be minimal.

## **B.7 Cultural Resources**

On December 23, 2013, Carolina Gas submitted a consultation letter to the South Carolina Archives and History Center, which serves as the South Carolina State Historic Preservation Office (SHPO) regarding the proposed Project. In a letter dated February 4, 2014, Carolina Gas submitted a copy of the Phase I cultural resources survey report to the South Carolina SHPO for review. The survey report did not identify any structures or archaeological sites within the Project area.

In a letter dated February 10, 2014, the SHPO commented on the Phase I report and agreed with the recommendations in the report. We received and reviewed the Phase I report and concur with the SHPO, and find that the Project would not affect historic properties.

Carolina Gas contacted the Catawba Indian Nation regarding the Project. On January 17, 2014, the Catawba Indian Nation indicated that the Project was not in an area of interest.

Carolina Gas has developed an Unanticipated Discovery Plan for the Project. This plan establishes procedures to be used in the event that previously unreported historic properties or human remains are found during Project construction. We have reviewed this plan and find it acceptable.

## **B.8 Air Quality**

Air quality can be affected by both construction and operation of the proposed facilities. The U.S. Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) for criteria pollutants for the purpose of protecting human health (primary standards) and public welfare (secondary standards). The EPA set NAAQS for the following air contaminants designated as “criteria pollutants”: nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), lead, particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM<sub>10</sub>), particulate matter with an aerodynamic diameter less than or equal to 2.5

microns (PM<sub>2.5</sub>), and ozone. Ozone is the result of a reaction between nitrogen oxides (NO<sub>x</sub>) and volatile organic compounds (VOC); as a result, ozone formation cannot be directly controlled. Limiting NO<sub>x</sub> and VOC emissions would result in a lower potential for ozone formation.

These NAAQS reflect the relationship between pollutant concentrations and health and welfare effects, and are supported by sound scientific evidence. The states implement and enforce the NAAQS through State Implementation Plans (SIPs), which must be approved by the EPA. The state of South Carolina implements its SIP through the South Carolina Department of Health and Environmental Control (SCDHEC).

Air quality control regions (AQCRs) are areas established for air quality planning purposes in which SIPs describe how ambient air quality standards would be achieved and maintained. AQCRs were established by the EPA and local agencies, in accordance with section 107 of the Clean Air Act of 1970 and its amendments (CAA), as a means to implement the CAA and comply with the NAAQS through SIPs. The CAA is the basic federal statute governing air pollution. AQCRs are intra- and interstate regions such as large metropolitan areas where improvement of the air quality in one portion of the AQCR requires emission reductions throughout the AQCR. Each AQCR, or portion thereof, is designated based on compliance with the NAAQS. AQCR designations fall under three categories as follows: “attainment” (areas in compliance with the NAAQS), “non-attainment” (areas not in compliance with the NAAQS), or “unclassifiable/ attainment” (areas that cannot be classified on the basis of available information as meeting or not meeting the NAAQS). Areas in nonattainment with the NAAQS for any criteria pollutant are held to more restrictive air emissions limits when determining whether the facility is a major source under federal programs.

Chester County is in attainment with the NAAQS for all criteria pollutants.

On December 7, 2009, the EPA defined air pollution to include six of the greenhouse gases (GHGs): carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride.<sup>4</sup> GHGs occur in the atmosphere both naturally and as a result of human activities, such as the burning of fossil fuels. These gases are the integral components of the atmosphere’s greenhouse effect that warms the earth. The most abundant GHGs are water vapor, CO<sub>2</sub>, CH<sub>4</sub>, and N<sub>2</sub>O. No fluorinated gases would be emitted during construction or operation of the Project. GHG emissions are typically estimated as carbon dioxide equivalents (CO<sub>2</sub>e). GHGs are ranked by their global warming potential (GWP), which is the potential of each gas to increase heating in the atmosphere. The GWP is a ratio relative to CO<sub>2</sub> that is based on the GHG’s ability to absorb solar radiation as well as the residence time within the atmosphere and is expressed as a multiple of the GWP of CO<sub>2</sub>. Based on EPA guidelines, CO<sub>2</sub> has a GWP of 1, CH<sub>4</sub> has a GWP of 25, and N<sub>2</sub>O has a GWP of 298.<sup>5</sup> During construction and operation of the Project, GHGs would be emitted from non-electrical construction equipment and any compressors, line heaters, and generators. Table 4 summarizes the estimated potential-to-emit (PTE) for GHG emissions for the Edgemoor Compressor Station.

---

<sup>4</sup> See volume 74 of the Federal Register, page 66,496 (74 FR 66,496).

<sup>5</sup> On November 29, 2013, the EPA issued its final rule updating the global warming potential for greenhouse gases (78 FR 71,904). The final rule can be found at <http://www.gpo.gov/fdsys/pkg/FR-2013-11-29/pdf/201327996.pdf>.

## State Air Quality Regulations

Carolina Gas must comply with applicable regulatory standards at Chapter 61 of South Carolina's Code of Regulations, which outline air quality standards that could potentially apply to construction and operation of Carolina Gas' Project.

### **Air Quality Construction Impacts and Mitigation**

Emissions of regulated air pollutants would occur as a result of construction and operation of the Project. Emissions associated with construction activities generally include exhaust from construction equipment, fugitive dust associated with vehicle movement at the Project sites, and fugitive dust associated with trenching, backfilling, and other earth-moving activities. Exhaust emissions would depend on the equipment used and the horsepower-hours of operation. The quantity of fugitive dust emissions would depend on the moisture content and texture of the soils that would be disturbed. Table 3 displays the estimated construction emissions in tons per year (tpy).

Section III of Regulation 61-62.6 of South Carolina's Code of Regulations would apply to fugitive dust generated by the Project. To minimize fugitive dust, Carolina Gas would apply water to unpaved construction areas and spoil storage piles.

Emissions from construction equipment exhaust would be temporary in nature. Once construction activities in the Project area are completed, fugitive dust and construction vehicle/equipment emissions associated with the pipeline and compressor station construction would subside. Therefore, we conclude that emissions associated with the construction phase of the Project would not result in a significant impact on local air quality.

### **Air Quality Operation Impacts and Mitigation**

Emissions of regulated air pollutants would occur as a result of operation of the Project. Carolina Gas filed its Air Quality Construction Permit Application for the Edgemoor Compressor Station with the SCDHEC on February 21, 2014. Table 4 displays the PTE emissions of criteria pollutants and hazardous air pollutants (HAPs) for the Edgemoor Compressor Station. The PTE emissions represent the maximum capacity of a stationary source to emit any air pollutant, although actual operational emissions may be less.

<b>TABLE 3</b>							
<b>Construction Emissions Summary (tons per year)</b>							
<b>Construction Activity</b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>SO<sub>2</sub></b>	<b>VOC</b>	<b>CO<sub>2</sub>e (tonnes)<sup>1</sup></b>
Nonroad Construction Equipment	0.33	0.31	6.33	62.2	0.94	1.55	339
Onroad Vehicle Emissions	-	-	0.55	1.57	-	0.15	521
Fugitive Materials Handling	0.19	0.11	-	-	--	-	-
Fugitive Dust from Roadways	2.57	0.40	-	-	-	-	-
<b>COMPRESSOR STATION TOTAL</b>	<b>3.09</b>	<b>0.82</b>	<b>6.88</b>	<b>63.77</b>	<b>0.94</b>	<b>1.70</b>	<b>860</b>
Ancillary Activities <sup>2</sup>	0.31	0.08	0.69	6.38	0.09	0.17	86.0
<b>PROJECT TOTAL</b>	<b>3.40</b>	<b>0.90</b>	<b>7.57</b>	<b>70.15</b>	<b>1.03</b>	<b>1.87</b>	<b>946</b>
Note:							
1) Tonnes: metric tons							
2) Ancillary activities were estimated assuming a factor of 0.1 (i.e., 0.1* sum of Nonroad Construction Equipment, Onroad Vehicle Emissions, Fugitive Materials Handling, and Fugitive Dust from Roadways from the construction of the proposed compressor station equals the construction emissions associated the ancillary activities).							

<b>TABLE 4</b>								
<b>Operational Emissions Summary (tons per year)</b>								
<b>Emission Source</b>	<b>PM<sub>10</sub>/PM<sub>2.5</sub></b>	<b>SO<sub>2</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>VOC</b>	<b>Formaldehyde</b>	<b>HAPs Total</b>	<b>CO<sub>2</sub>e</b>
E-1 (Combustion Turbine)	1.25	0.11	19.0	23.2	0.40	1.35E-01	1.95E-01	21,101
E-2 (Combustion Turbine)	0.49	4.47E-02	29.8	36.3	0.16	5.29E-02	7.66E-02	8,283
E-3 (Combustion Turbine)	0.49	4.47E-02	29.8	36.3	0.16	5.29E-02	7.66E-02	8,283
E-4 (Combustion Turbine)	0.49	4.47E-02	29.8	36.3	0.16	5.29E-02	7.66E-02	8,283
Pneumatic Devices	-	-	-	-	1.83	-	-	1,052
Wet Seal Degassing	-	-	-	-	0.45	-	-	256
Equipment Blowdown	-	-	-	-	1.14	-	-	656
Equipment Leaks	-	-	-	-	0.70	-	-	403
Emergency Generator 1	4.23E-03	2.51E-04	1.74	0.14	5.03E-02	2.25E-02	3.08E-02	60.2
Emergency Generator 2	4.23E-03	2.51E-04	1.74	0.14	5.03E-02	2.25E-02	3.08E-02	60.2
Catalytic and Comfort Heaters	0.33	2.58E-02	4.04	1.72	0.24	3.22E-03	8.11E-02	5,184
<b>Total</b>	<b>3.06</b>	<b>0.27</b>	<b>116</b>	<b>134</b>	<b>5.32</b>	<b>0.34</b>	<b>0.57</b>	<b>53,623</b>
Note: Total may be greater than sum of listed emission points due to rounding.								

Table 5 shows the emissions from the Edgemoor Compressor Station and provides a comparison to the NAAQS and South Carolina's Ambient Air Quality Standards (AAQS). Based on this information, the compressor station would not cause an exceedance of the NAAQS or South Carolina's AAQS.



Numerous landowners expressed concern with air quality and questioned whether air emissions from the station would be monitored. Carolina Gas would be required to report actual emissions from the compressor station. In addition, all states must incorporate an air quality monitoring program as part of its SIP. Chester County is in attainment with the NAAQS, and based on tables 4 and 5 (and as explained below), the station would be a major source under Title V, which imposes reporting requirements.

**TABLE 5  
NAAQS Modeling Results**

Pollutant	Averaging Period	Maximum Modeled Results ( $\mu\text{g}/\text{m}^3$ )	AAQS ( $\mu\text{g}/\text{m}^3$ )	Percent of Standard	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Concentration ( $\mu\text{g}/\text{m}^3$ )	Percent of Standard (Total)	Demonstrates Compliance? (Yes/No)
NO <sub>x</sub>	Annual	7.4	100	7%	9.6	17.0	10%	Yes
CO	1-hour	505.6	40,000	1%	1,374.0	1,879.6	3%	Yes
	8-hour	372.4	10,000	4%	916.0	1,288.4	9%	Yes

Note:  $\mu\text{g}/\text{m}^3$  : micrograms per cubic meter

### Federal Air Quality Regulations

During operation, the Edgemoor Compressor Station would emit quantities of regulated air pollutants and would be subject to federal and state air quality regulations that are driven by the CAA. The provisions of the CAA that are potentially relevant to this Project are discussed below.

### New Source Review – Prevention of Significant Deterioration

Prevention of Significant Deterioration (PSD) federal review regulations are part of the New Source Review program. PSD regulations are intended to protect the national public health and welfare as well as preserve the existing air quality in areas of special national or regional scenic, natural, recreational, or historic value where regulated pollutant levels are in compliance with the NAAQS. PSD regulations impose specific limits on the amount of pollutants that new major sources or major modifications at existing stationary sources may contribute to existing air quality levels. In addition, for existing PSD sources, modifications that exceed the PSD significant-emissions-increase rates are subject to PSD regulations. For natural gas compressor stations, the PSD regulations define a major source as any source that emits or has the PTE any regulated pollutant equal to or greater than 250 tpy. As shown in table 4, the Edgemoor Compressor Station would not emit 250 tpy of any criteria pollutant. Therefore, the station would not be subject to PSD regulations.

### Greenhouse Gases

On September 22, 2009, the EPA issued the final Mandatory Reporting of Greenhouse Gases Rule. It requires reporting of GHG emissions from suppliers of fossil fuels and facilities

that emit greater than or equal to 25,000 metric tons<sup>6</sup> of GHG per year. The combustion-related GHG emissions from operation of the Project would exceed 25,000 metric tons per year; therefore Carolina Gas would be required to report GHG emissions under the Mandatory Greenhouse Gas Reporting Rule.

On May 13, 2010, the EPA tailored the applicability criteria for stationary sources and modification projects, resulting in the PSD GHG Tailoring Rule.<sup>7</sup> The Tailoring Rule applied to new sources exceeding 100,000 tpy of CO<sub>2</sub>e or modified sources resulting in a GHG increase exceeding 75,000 tpy CO<sub>2</sub>e, whether or not they were major for a criteria pollutant. However, on June 23, 2014, the Supreme Court ruled that the EPA cannot require PSD permitting based solely on GHG emissions, striking down a portion of the rule.<sup>8</sup> The Edgemoor Compressor Station would be not a major source under PSD regulations; therefore, the GHG Tailoring Rule would not apply. Further, GHG emissions from the station would not exceed 100,000 CO<sub>2</sub>e and would not have been subject to the Tailoring Rule.

### New Source Performance Standards

New Source Performance Standards (NSPS), codified at 40 CFR 60, establish emission limits and requirements for monitoring, reporting, and recordkeeping for specific emission source categories. NSPS apply to new, modified, or reconstructed sources.

Subpart JJJJ would apply to the new emergency generator at the Edgemoor Compressor Station as it would be greater than 130 hp. Carolina Gas would comply with the emissions limits and requirements under subpart JJJJ: (i) operating and maintaining each emergency generator in accordance with the manufacturer's emissions-rated instructions and (ii) keeping records of conducted maintenance.

Subpart KKKK, *Standards of Performance for Stationary Combustion Turbines*, would apply to the modified or reconstructed turbines at the compressor station because the heat input at peak load would be greater than 10 million British thermal units per hour. Emissions limitations for the modified/reconstructed units are 150 parts per million (ppm) NO<sub>x</sub> at 15 percent O<sub>2</sub> and a fuel sulfur standard equivalent to 0.060 pounds SO<sub>2</sub> per million British thermal units. The turbines would be required to meet specific emission limits, and performance testing, monitoring, recordkeeping, and reporting requirements would apply.

Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines* would apply to each emergency generator. The generators would comply with the subpart ZZZZ by complying with NSPS subpart JJJJ.

### Title V Operating Permit

The Title V Operating Permit Program, as described in 40 CFR 70, requires major sources of air emissions to obtain a federal operating permit. The major source emissions

---

<sup>6</sup> A metric ton is 2,205 pounds, or approximately 1.1 tons.

<sup>7</sup> 75 FR 31,514.

<sup>8</sup> [http://www.supremecourt.gov/opinions/13pdf/12-1146\\_4g18.pdf](http://www.supremecourt.gov/opinions/13pdf/12-1146_4g18.pdf).

thresholds for determining the need for a Title V Operating Permit are 100 tpy for all criteria pollutants, 10 tpy for a single HAP, and 25 tpy for all HAPs combined. Air emissions from the Edgemoor Compressor Station would exceed the Title V major source threshold for NO<sub>x</sub> and CO; therefore, Carolina Gas would be required to obtain a Title V operating permit. In compliance with state regulations, Carolina Gas would apply for a Title V permit within 12 months of placing the station in service.

#### National Emissions Standards for Hazardous Air Pollutants (NESHAP)

NESHAPs apply to major sources of HAPs. A major source under NESHAP is defined as a source with PTE emissions exceeding 25 tpy for all HAPs or 10 tpy for individual HAPs. The Edgemoor Compressor Station would not qualify as a major source under NESHAP; therefore, it would not be subject to NESHAP regulations.

#### Climate Change

Climate change is the modification of climate over time, whether due to natural causes or as a result of human activities. Climate change cannot be represented by single annual events or individual anomalies. For example, a single large flood event or particularly hot summer is not an indication of climate change. However, unusually frequent or severe flooding, or several consecutive years of abnormally hot summers over a large region may be indicative of climate change. GHG emissions associated with operation of the proposed compressor station are estimated at 53,623 tpy of CO<sub>2</sub>e.

The Intergovernmental Panel on Climate Change (IPCC) is the leading international, multi-governmental scientific body for the assessment of climate change. The United States is a member of the IPCC and participates in the IPCC working groups. The leading U.S. scientific body on climate change is the United States Global Change Research Program (USGCRP). Thirteen federal departments and agencies<sup>9</sup> participate in the USGCRP, which began as a presidential initiative in 1989 and was mandated by Congress in the Global Change Research Act of 1990.

The USGCRP has recognized that:

- Globally, anthropogenic GHGs have been accumulating in the atmosphere since the beginning of the industrial era causing recent global warming;
- Combustion of fossil fuels (coal, petroleum, and natural gas), combined with agriculture and clearing of forests is primarily responsible for the accumulation of GHG;
- The anthropogenic GHG emissions are the primary contributing factor to recent climate change; and

---

<sup>9</sup> The EPA, U.S. Department of Energy, Department of Commerce, Department of Defense, Department of Agriculture, Department of the Interior, Department of State, U.S. Department of Transportation, Department of Health and Human Services, National Aeronautics and Space Administration, National Science Foundation, Smithsonian Institution, and Agency for International Development.

- Impacts extend beyond atmospheric climate change alone, and include changes to water resources, transportation, agriculture, ecosystems, and human health.

The USGCRP issued its assessments and findings in its Third National Climate Assessment: *Climate Change Impacts in the United States* (NCA), in May 2014. The NCA summarizes the impacts climate change has already had on the United States and what projected impacts climate change may have in the future. The report includes a breakdown of overall impacts by resource and impacts described for various regions of the United States.

Climate change has modified the regional environment in the continental Northeast and is projected to cause additional changes. The NCA identifies climate change impacts that have occurred along coastal regions in the Northeast. Previous impacts on historical baseline climate as well as projected climate change impacts that could affect the project area are identified below:

- Since 1970, average temperatures in the Southeast have risen about 2° F;
- Annually, there will be more days that reach temperatures above 95° F;
- Increasing temperatures and the associated increase in frequency, intensity, and duration of extreme heat events will affect public health, energy, agriculture, and forestry;
- Global sea level rise over the past century averaged about 8 inches and is projected to rise another 1 to 4 feet by 2100;
- higher sea levels will accelerate saltwater intrusion into freshwater supplies from rivers, streams, and groundwater sources near the coast;
- The region's aquaculture industry also may be compromised by climate-related stresses on groundwater quality and quantity;
- Coastal waters have risen about 2°F in several regions and are likely to continue to warm; and
- Communities are affected by heat waves and coastal flooding due to sea level rise and storm surge.

## **B.9 Noise**

Construction and operation of the Project would affect the local noise environment. Two measurements used by 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 sound level ( $L_{dn}$ ). The  $L_{eq}$  is an A-weighted sound level containing the same sound energy as 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. Late night through early morning (10:00 p.m. to 7:00 a.m.) noise exposures are penalized +10 decibels (db) to account for people's greater sensitivity to sound during nighttime hours. An  $L_{dn}$  of 55 decibels on the A-weighted scale (dBA) is equivalent to a continuous  $L_{eq}$  noise level of 48.6 dBA.

We received numerous comments from nearby landowners regarding noise levels from the Edgemoor Compressor Station. Commenters expressed concern that the noise would be disruptive and potentially harmful to the local residents and environment. Comments and concerns regarding acceptable noise levels and noise impacts are addressed throughout this section.

The EPA has indicated that an  $L_{dn}$  of 55 dBA protects the public from indoor and outdoor activity interference. We have adopted this criterion and use it to evaluate the potential noise impact from operation of compressor facilities. There are no state noise regulations applicable to the Project. Article II, Section 22-19 of Chester County’s Code of Ordinances prohibits “unauthorized production, transportation, storage, or discharge of fumes, dust, smoke, noise, chemicals, toxic materials, waste, or other materials which pose a threat to public health or safety.” Construction and operation of the Edgemoor Compressor Station are not expected to generate noise that could pose a threat to public health or safety.

Construction Activities

Construction activities associated with the Project would be performed with standard heavy equipment such as track-excavators, backhoes, bulldozers, dump trucks, and cement trucks. The most prevalent sound source during construction would be the internal combustion engines used to power the construction equipment. Construction activities would temporarily increase ambient sound levels in the immediate vicinity of the compressor station construction site while pipeline construction for the Project would be limited to daytime hours, short-term, and transitory, and would subside once construction is complete; therefore, we conclude that no significant increase of local noise levels would result from construction of the Project.

Compressor Station Operation

As previously discussed, our noise criterion limits the noise attributable to full-load operation of the proposed compressor station at the nearest noise sensitive areas (NSAs) to 55 dBA.

Carolina Gas’ noise consultants, Hoover and Keith, Inc., conducted an acoustical analysis for the Edgemoor Compressor Station on January 17, 2014. The estimated noise attributable to operation of the station is shown in table 6.

Nearest NSAs	Approximate Distance and Direction of NSA to Proposed Compressor Station Location	Ambient $L_{dn}$ <sup>a</sup> (dBA)	Estimated Sound Level ( $L_{dn}$ ) of the Proposed Compressor Station (dBA)	Total Proposed Compressor Station $L_{dn}$ + Ambient $L_{dn}$ (dBA)	Potential Increase above Ambient (dB)
NSA 1	1,200 feet south-southwest	45.0	47.7	49.6	4.6
NSA 2	2,200 feet north	42.9	41.9	45.5	2.6

Note:  
<sup>a</sup>  $L_{dn}$  was calculated using the measured daytime level; nighttime levels were not measured.

In addition to normal operation, the Edgemoor Compressor Station would experience infrequent blowdown events. During a blowdown, natural gas would be vented to the atmosphere. These events occur prior to maintenance activities, during start-up and shutdown operations, and during emergencies. Blowdown noise from the compressor station would be silenced to 60 dBA at 300 feet and would be about 47 dBA at the nearest NSA. This would be less than our 55 dBA requirement.

The noticeable noise increase threshold for humans is about 3 dBA; 5 dBA is a clearly noticeable increase in noise, while an increase of 10 dBA is perceived to be a doubling of noise. As shown in table 6, the noise attributable to the Edgemoor Compressor Station would be below 55 dBA. Further, the overall noise (ambient levels plus compressor station levels) would also be below 55 dBA. The noise increase at NSA 1 would be noticeable while the increase at NSA 2 would not be perceptible.

We received comments from numerous landowners regarding noise and requesting mitigation measures be undertaken to reduce noise. Carolina Gas has committed to implementing noise-abatement measures, as recommended by Hoover and Keith, Inc., including, but not limited to: installing exhaust silencers or mufflers on the turbines; separating aboveground piping from other metal structures; and installing an in-duct silencer for the air intake system for each turbine. We conclude that Carolina Gas' proposed compressor station design, which includes the measures described above, would adequately mitigate noise impacts.

Ms. Jane Petit expressed concern regarding the lack of noise inspections and/or monitoring for the compressor station. FERC staff would periodically conduct restoration inspections of the compressor station. During these inspections, or in addition, if we receive a noise complaint, staff may perform onsite visits, noise surveys, and/or overall station monitoring. Staff would work with landowners and company representatives to resolve the issue.

To further ensure that the noise attributable to operation of the Edgemoor Compressor Station would not exceed reasonable levels at nearby residences, **we recommend that Carolina Gas file a noise survey with the Secretary of the Commission (Secretary) no later than 60 days after placing the Edgemoor Compressor Station in service. If a full load condition noise survey is not possible, Carolina Gas should provide an interim survey at the maximum possible load and provide a full load survey within 6 months. If the noise attributable to the operation of all of the equipment at the Edgemoor Compressor Station under interim or full load conditions exceeds an  $L_{dn}$  of 55 dBA at any nearby NSAs, Carolina Gas should file a report on what changes are needed and should install the additional noise controls to meet the level within 1 year of the in-service date. Carolina Gas should confirm compliance with the above requirement by filing a second noise survey with the Secretary no later than 60 days after it installs the additional noise controls.**

We received comments regarding noise impacts on wildlife. Construction noise would likely result in temporary relocation of mobile species. Operational noise could potentially deter wildlife from returning to the immediate vicinity of the compressor station; however, the noise would be localized.

Based on the estimated sound levels, adherence to local noise regulations, and our commendation, we conclude that the noise attributable to operation of the Edgemoor Compressor Station would not cause a significant impact on the surrounding environment.

## **B.10 Reliability and Safety**

The transportation of natural gas by pipeline involves some incremental risk to the public due to the potential for accidental release of natural gas. The greatest hazard is a fire or explosion following a major pipeline rupture. The pressurization of natural gas at a compressor station involves some risk to the public in the event of an accident and subsequent release of gas. The greatest hazard is a fire or explosion following a leak, or rupture at the facility.

Methane is not toxic, but is classified as a simple asphyxiate, possessing a slight inhalation hazard. If breathed in high concentration, oxygen deficiency can result in serious injury or death. Methane has an auto-ignition temperature of 1,000 °F and is flammable at concentrations between 5.0 percent and 15.0 percent in air. An unconfined mixture of methane and air is not explosive, however it may ignite and burn if there is an ignition source. A flammable concentration within an enclosed space in the presence of an ignition source can explode. It is buoyant at atmospheric temperatures and disperses rapidly in air.

We received comments regarding the smell of natural gas and its impacts. Ms. Petit specifically expressed concern that the smell of natural gas may exacerbate asthma-related health issues. Methane, the primary component of natural gas, is colorless, odorless, and tasteless. However, the gas at the Edgemoor Compressor Station would contain an odorant, such as mercaptan, to produce the natural gas “smell,” which allows for detection in the event of a leak. During blowdown events, it is possible that the natural gas odorant would be detected in the immediate vicinity of the compressor station; however, these events are irregular occurrences.

As discussed earlier, the Edgemoor Compressor Station would not be a major source of air emissions under federal air quality permitting programs. In addition, the total potential emissions from the proposed station would comply with the EPA’s NAAQS, in accordance with the CAA. These standards were established to protect human health and public welfare and take into account “sensitive” populations such as asthmatics, children, and the elderly.<sup>10</sup> As such, we conclude that no significant impact to air quality would occur.

### **Safety Standards**

The U.S. Department of Transportation (DOT) is mandated to provide pipeline safety under Title 49, U.S.C. Chapter 601. The DOT’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.

---

<sup>10</sup> <http://www.epa.gov/air/criteria.html>

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 ensures that people and the environment are protected from the risk of pipeline incidents. This work is shared with state agency partners and others at the federal, state, and local level.

The DOT 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 DOT's agent to inspect interstate facilities within its boundaries; however, the DOT is responsible for enforcement actions. The DOT pipeline standards are published in 49 CFR 190-199. Part 192 specifically addresses natural gas pipeline safety issues.

Under a Memorandum of Understanding on Natural Gas Transportation Facilities dated January 15, 1993, between the DOT and the FERC, the DOT has the exclusive authority to promulgate federal safety standards used in the transportation of natural gas. Section 157.14(a)(9)(vi) of 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 DOT 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 DOT. The Memorandum also provides for referring complaints and inquiries made by state and local governments and the general public involving safety matters related to pipelines under the Commission's jurisdiction.

The FERC also participates as a member of the DOT's Technical Pipeline Safety Standards Committee which determines if proposed safety regulations are reasonable, feasible, and practicable.

The pipeline and aboveground facilities associated with the Project must be designed, constructed, operated, and maintained in accordance with the DOT Minimum Federal Safety Standards in 49 CFR 192. The regulations are intended to ensure adequate protection for the public and to prevent natural gas facility accidents and failures. The DOT specifies material selection and qualification; minimum design requirements; and protection from internal, external, and atmospheric corrosion.

Numerous landowners expressed concern with the response from emergency first-responders, such as the local volunteer fire department, in the event of an accident. The DOT 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.

The DOT requires that each operator establish and maintain liaison with appropriate fire, police, and public officials to learn the resources and responsibilities of each organization that may respond to a natural gas pipeline emergency, and to coordinate mutual assistance. The operator must also establish a continuing education program to enable customers, the public, government officials, and those engaged in excavation activities to recognize a gas pipeline emergency and report it to appropriate public officials. Carolina Gas would provide the appropriate training to local emergency service personnel before the pipeline facilities are placed in service.

We received a comment from Stephen and Michelle Bragg and Mr. Lloyd Ledford expressing concern with the proximity of the shooting range at Pappy's Gun Shop and the potential for a stray bullet to cause an accident at the compressor station. We independently reviewed aerial photography surrounding the shooting range and the compressor station. The shooting range is heavily surrounded by forested tracts, and is adjacent to a few homes. The range utilizes berms to prevent bullets from leaving the site, a common best management practice for shooting ranges. Carolina Gas would also house sensitive equipment inside enclosed buildings thereby providing an additional barrier. Based on our review, we conclude that the shooting range at Pappy's Gun Shop would not have a significant impact on operation of the Edgemoor Compressor Station or pose an elevated safety risk.

### **Pipeline Accident Data**

We received numerous comments regarding the impact of the Project on public safety. Specifically, landowners expressed concern with the potential for an accident and/or explosion and how Carolina Gas would handle such an event. These comments are addressed below.

The DOT requires all operators of natural gas transmission pipelines to notify the DOT 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).<sup>11</sup>

During the 20 year period from 1994 through 2013, a total of 1,237 significant incidents were reported on the more than 300,000 total miles of natural gas transmission pipelines nationwide.

---

<sup>11</sup> \$50,000 in 1984 dollars is approximately \$115,000 as of March, 2014 (CPI, Bureau of Labor Statistics, February, 2014).

Additional insight into the nature of service incidents may be found by examining the primary factors that caused the failures. Table 7 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 constituting 48.2 percent of all significant incidents. The pipelines included in the data set in table 7 vary widely in terms of age, diameter, and level of corrosion control. Each variable influences the incident frequency that may be expected for a specific segment of pipeline.

The frequency of significant incidents is strongly dependent on pipeline age. Older pipelines have a higher frequency of corrosion incidents and material failure, since corrosion and pipeline stress/strain is a time-dependent process.

The use of both an external protective coating and a cathodic protection system, 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 are the cause in 34.5 percent of significant pipeline incidents. These result from the encroachment of mechanical equipment such as bulldozers and backhoes; earth movements due to soil settlement, washouts, or geologic hazards; weather effects such as winds, storms, and thermal strains; and willful damage. Table 8 provides a breakdown of outside force incidents by cause.

Older pipelines have a higher frequency of outside forces incidents partly because their location may be less well known and less well marked than newer lines. In addition, the older pipelines contain a disproportionate number of smaller-diameter pipelines; which have a greater rate of outside forces incidents. Small diameter pipelines are more easily crushed or broken by mechanical equipment or earth movement.

Since 1982, operators have been required to participate in “One Call” public utility programs in populated areas to minimize unauthorized excavation activities in the vicinity of pipelines. The “One Call” program is a service used by public utilities and some private sector companies (e.g., oil pipelines and cable television) to provide preconstruction information to contractors or other maintenance workers on the underground location of pipes, cables, and culverts.

<b>Cause</b>	<b>No. of Incidents</b>	<b>Percentage</b>
Corrosion	292	23.6
Excavation <sup>2</sup>	211	17.0
Pipeline material, weld or equipment failure	304	24.6
Natural force damage	142	11.5
Outside force <sup>3</sup>	74	6.0
Incorrect operation	33	2.7
All other causes <sup>4</sup>	181	14.6
<b>TOTAL</b>	<b>1,237</b>	<b>-</b>

1. All data gathered from PHMSA significant incident files, March 25, 2014. <http://primis.phmsa.dot.gov/comm/reports/safety/>.  
2. Includes third party damage.  
3. Fire, explosion, vehicle damage, previous damage, intentional damage.  
4. Miscellaneous causes or unknown causes.

<b>Cause</b>	<b>No. of Incidents</b>	<b>Percent of all Incidents</b>
Third party excavation damage	176	14.2
Operator excavation damage	25	2.0
Unspecified excavation damage/previous damage	10	0.8
Heavy rain/floods	72	5.8
Earth movement	35	2.8
Lightning/temperature/high winds	21	1.7
Natural force (other)	14	1.1
Vehicle (not engaged with excavation)	45	3.6
Fire/explosion	8	0.6
Previous mechanical damage	5	0.4
Fishing or maritime activity	7	0.6
Intentional damage	1	0.1
Electrical arcing from other equipment/facility	1	0.1
Unspecified/other outside force	7	0.6
<b>TOTAL</b>	<b>427</b>	<b>-</b>

### **Impact on Public Safety**

The service incidents data summarized in table 7 include pipeline failures of all magnitudes with widely varying consequences.

Table 9 presents the average annual injuries and fatalities that occurred on natural gas transmission lines for the 5 year period between 2009 and 2013. The majority of fatalities from pipelines are due to local distribution pipelines not regulated by FERC. These are natural gas pipelines 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 which are more susceptible to damage. Local distribution systems do not have large right-of-ways and pipeline markers common to the FERC regulated natural gas transmission pipelines.

Year	Injuries	Fatalities
2009	11	0
2010 <sup>1</sup>	61	10
2011	1	0
2012	7	0
2013	2	0

1. All of the fatalities in 2010 were due to the Pacific Gas and Electric pipeline rupture and fire in San Bruno, California on September 9, 2010.

The nationwide totals of accidental fatalities from various anthropogenic and natural hazards are listed in table 10 in order to provide a relative measure of the industry-wide safety of natural gas transmission pipelines. Direct comparisons between accident categories should be made cautiously, however, because individual exposures to hazards are not uniform among all categories. The data nonetheless indicate a low risk of death due to incidents involving natural gas transmission pipelines compared to the other categories. Furthermore, the fatality rate is much lower than the fatalities from natural hazards such as lightning, tornados, or floods.

The available data show that natural gas transmission pipelines continue to be a safe, reliable means of energy transportation. From 1994 to 2013, there were an average of 62 significant incidents, 10 injuries, and 2 fatalities per year. The number of significant incidents over the more than 303,000 miles of natural gas transmission lines indicates the risk is low for an incident at any given location. The operation of the Edgemoor Compressor Station would represent a slight increase in risk to the nearby public.

Type of Accident	Annual No. of Deaths
All accidents	117,802
Motor Vehicle	45,343
Poisoning	23,618
Falls	19,656
Injury at work	5,113
Drowning	3,582
Fire, smoke inhalation, burns	3,197
Floods <sup>2</sup>	85
Tractor Turnover <sup>3</sup>	62
Lightning <sup>2</sup>	51
Natural gas distribution lines <sup>4</sup>	14
Natural gas transmission pipelines <sup>4</sup>	2

1. All data, unless otherwise noted, reflect 2005 statistics from U.S. Census Bureau, Statistical Abstract of the United States: 2010 (129th Edition) Washington, DC, 2009; <http://www.census.gov/statab>.  
2. NOAA National Weather Service, Office of Climate, Water and Weather Services, 30 year average (1984-2013) <http://www.weather.gov/om/hazstats.shtml>.  
3. Bureau of Labor Statistics, 2007 Census of Occupational Injuries.  
4. PHMSA significant incident files, March 25, 2014. <http://primis.phmsa.dot.gov/comm/reports/safety/sigpsi.html>, 20 year average.

Carolina Gas' construction and operation of the Edgemoor Compressor Station would represent a minimum increase in risk to the nearby public. We are confident that with implementation of the required design criteria, the Edgemoor Compressor Station would be constructed and operated safely.

## **B.11 Cumulative Impacts**

Cumulative impacts occur when the potential impacts of a proposed project are added to the impacts or potential impacts of other past, present, or reasonably foreseeable future projects. Carolina Gas would require the installation of electricity, and potentially telecom services, to the proposed Edgemoor Compressor Station. Impacts associated with these projects would be relatively minor and would be minimized by being aligned within Carolina Gas rights-of-way. In addition, these projects would be permitted and installed in accordance with local, state, and applicable federal permitting guidelines.

Impacts associated with the Edgemoor Compressor Station Project would also be relatively minor and would be minimized by much of the Project being within existing Carolina Gas rights-of-way. We have also included recommendations in this EA to further reduce the environmental impacts associated with the Project. Cumulative air or noise impacts would be minimal, as the proposed Project would be within acceptable state and federal levels and are expected to be minimal (see EA sections B.8 and B.9). Other resources impacts are not expected to overlap to any noticeable extent. Consequently, the cumulative effects of the Project would be minimal.

## **C. ALTERNATIVES**

### **No-Action Alternative**

Under the No-Action alternative, the Project would not be constructed. Carolina Gas would be unable to provide 45,000 dekatherms per day of natural gas capacity to customers. Carolina Gas states that the Project would provide the ability to meet contract pressure and capacity obligations and would improve the efficiency, flexibility, and reliability of its current system.

Although pursuing the No-Action alternative would avoid the environmental impacts associated with the Project's construction and operation, we have demonstrated in our analysis that these impacts would not be significant and that the Project would be an environmentally acceptable action. We conclude that the No-Action alternative would not meet the objectives of the proposed action; thus, we are not recommending it.

### **Aboveground Facility Alternatives**

Comments were received regarding the location of the proposed Edgemoor Compressor Station. In response, we investigated five other potential sites. Figure 3 depicts the locations of the five alternative sites discussed herein.

Carolina Gas conducted hydraulic modeling to determine where the new Edgemoor Compressor Station should be located to meet the Project's objectives. This modeling was based on Carolina Gas' existing facilities and the assumption that the various ancillary facilities discussed in this EA would be constructed. Initial modeling determined that the compressor station needs to be as close as possible to Carolina Gas' A-1-A right-of-way and Bowater

Junction Lateral TB Station. In addition, considerations in the siting of the Edgemoor Compressor Station included existing road accessibility, the presence of sensitive environmental resources, and willingness of landowners to negotiate easement rights.

As a result of the process described above, we evaluated four sites (Alternatives 1, 2, 3, and 4A/B) in addition to the proposed site. Table 11 compares certain environmental characteristics of the four alternate sites to the proposed site. Each site is discussed in more detail below.

### *Alternatives 1 and 2*

When the landowners were initially approached by Carolina Gas early in the process, neither landowner expressed interest in selling the land, thus eliminating these parcels from consideration. In addition, both Alternatives 1 and 2 had greater permanent impacts on land use, impacted prime farmland, and had more NSAs in the vicinity. Thus, Alternatives 1 and 2 provide no significant environmental advantage over the proposed site, and we are not recommending them.

### *Alternative 3*

After a survey of Alternative 3 it was determined that the slope and topography of the land would not be readily suitable for the construction of a compressor station. The amount of land which would need to be graded and hauled off site would increase the environmental impacts on land use and soils, primarily soils designated as prime farmland (about 5.6 acres). Alternative 3 would also have a greater impact on forested land (about 4.8 acres). In addition, the number of nearby NSAs is also greater than the proposed site. As such, we do not recommend this alternative.

### *Alternative 4A/B*

Alternative 4A is a 35-acre parcel that comprises mostly prime farmland or farmland of statewide importance soils and is somewhat close to 12 residential properties, the closest being 268 feet away. Alternative 4B is a 12-acre parcel located to the west of Alternative 4A, but is not large enough for the construction of the compressor station without the acquisition of another abutting parcel. Therefore both A and B parcels would be required to make this alternative viable. The use of Alternative 4A/B would impact about 5.5 acres of forested land, which is greater than the proposed site.

Because of the increased land requirements for construction and operation, increased impacts on forested land, prime farmland, and the number of residential areas in proximity, Alternative 4A/B provides no significant environmental advantage over the proposed site. We do not recommend it.

**TABLE 11**  
**Comparison of Facility Alternatives**

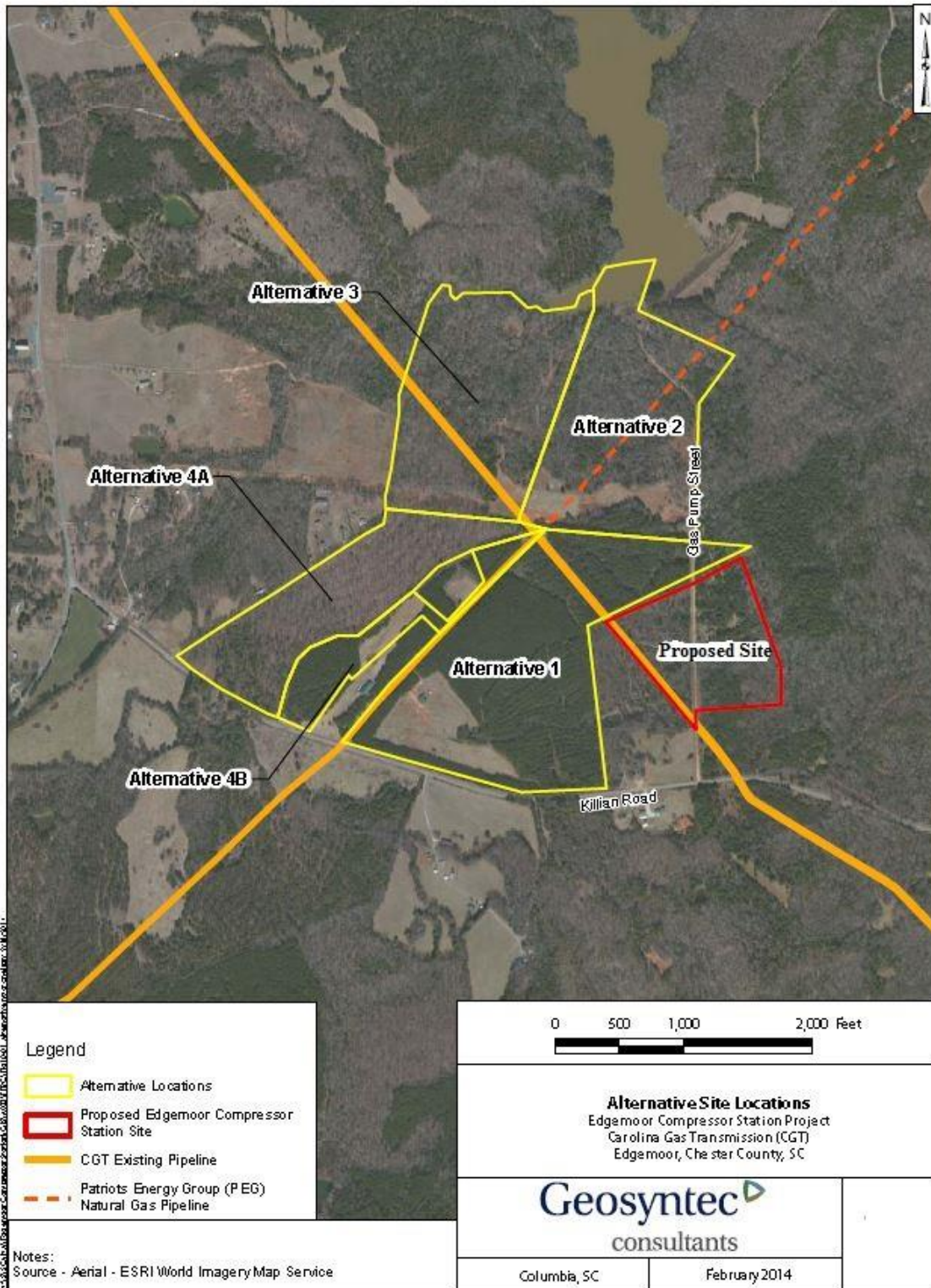
Evaluation Criteria	Unit	Proposed Site	Alternate Site			
			1	2	3	4A/B
<b>Property Acquisition<sup>a</sup></b>						
Landowner Willingness to Sell	yes/no	Yes	No	No	Unknown	Unknown
<b>Construction<sup>b</sup></b>						
Construction Land Requirements	acres	7.7	7.5	8.6	8.0	7.6
Operational Land Requirements	acres	5.7	6.1	7.0	6.4	6.0
<b>Noise Sensitive Areas (NSAs)<sup>c</sup></b>						
Residences within 0.5 mile	number	6	7	7	8	12
Closest NSA	feet	1,200	1,271	1,106	1,031	268
<b>Waterbodies<sup>d</sup></b>						
Waterbodies Crossed	number	1	1	1	0	0
Waterbody Impacts	acres	0.013	0.013	0.013	0.0	0.0
<b>Wetlands<sup>e</sup></b>						
Wetlands Crossed	number	0	0	0	0	0
Wetland Impacts	acres	0.0	0.0	0.0	0.0	0.0
<b>Land Use<sup>f</sup></b>						
Forest Impacts	acres	1.2	4.1	0.6	4.8	5.5
Agricultural Land Impacts	acres	0.0	0.0	0.0	0.0	0.0
Developed/Open Space Impacts	acres	4.4	2.1	6.2	1.7	0.4
Prime Farmland Impacts <sup>g</sup>	acres	1.3	0.6	5.2	5.6	3.5

- a Carolina Gas acquired the 23.1-acre tract identified as the proposed site on March 13, 2014.
- b Land requirements and impact calculations were based on a 50-foot-wide pipeline right-of-way and 24-foot-wide access road.
- c Number of residences were calculated within 0.5 mile of the operational footprint of the compressor station for each alternative site. Calculation based on the H&K noise assessment report included as Appendix 9C of Resource Report 9 and interpretation of 2014 aerial photography. The distance to the closest NSA for Alternatives 1-4A/B were calculated from the boundary of the operational footprint. However, the distance to the closest NSA for the proposed site was obtained from H&K's noise assessment report and calculated from the boundary of the nearest compressor building.
- d Waterbody impacts calculated from U.S. Geological Survey topographic maps and field surveys conducted December 5, 6, and 11, 2013. Impact is due to replacing an existing culvert to allow widening of the existing road.
- e Wetland impacts calculated from USFWS National Wetlands Inventory maps and field surveys conducted December 5, 6, and 11, 2013.
- f Permanent impacts for each alternative site were calculated from Fry, J., Xian, G., Jin, S., Dewitz, J., Homer, C., Yang, L., Barnes, C., Herold, N., and Wickham, J., 2011. Completion of the 2006 National Land Cover Database for the Conterminous United States, *PE&RS*, Vol. 77(9):858-864 and interpretation of 2014 aerial photography.
- g Data obtained from Natural Resources Conservation Service Web Soil Survey for Chester County, South Carolina.

### *Conclusion*

The proposed site meets the Project's land needs, is already acquired by Carolina Gas, contains an existing road which can be used to access the compressor station. Locating the compressor station at this site would allow for direct access to Carolina Gas' Line A-1-A and would provide a visual and noise buffer of forested land from the compressor station building to the nearest residence. The proposed site would allow the Project objectives to be met and would result in the least impact on sensitive environmental resources.

Figure 3 – Above Ground Facility Alternatives





## D. STAFF'S CONCLUSION AND RECOMMENDATIONS

Based on the above environmental analysis, the staff has determined that approval of the Project would not constitute a major federal action significantly affecting the quality of the human environment.

The staff recommends that the Commission Order contain a finding of no significant impact and include the mitigation measures listed below as conditions to the certificate the Commission may issue to Carolina Gas.

1. Carolina Gas 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. Carolina Gas must:
  - a. request any modification to these procedures, measures, or conditions in a filing with the Secretary of the Commission (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) **before using that modification.**
2. The Director of OEP has delegated authority to take whatever steps are necessary to ensure the protection of all environmental resources during construction and operation of the project. This authority shall allow:
  - a. the modification of conditions of the Order; and
  - b. the design and implementation of any additional measures deemed necessary (including stop-work authority) to assure continued compliance with the intent of the environmental conditions as well as the avoidance or mitigation of adverse environmental impact resulting from project construction and operation.
3. **Prior to any construction**, Carolina Gas shall file an affirmative statement with the Secretary, certified by a senior company official, that all company personnel, environmental inspectors (EIs), and contractor personnel will be informed of the EI's authority and have been or will be trained on the implementation of the environmental mitigation measures appropriate to their jobs **before** becoming involved with construction and restoration activities.
4. The authorized facility locations shall be as shown in the EA, as supplemented by filed alignment sheets. **As soon as they are available, and before the start of construction**, Carolina Gas shall file with the Secretary any revised detailed survey alignment maps/sheets at a scale not smaller than 1:6,000 with station positions for all facilities approved by the Order. All requests for modifications of environmental conditions of the Order or site-specific clearances must be written and must reference locations designated on these alignment maps/sheets.

5. Carolina Gas shall file with the Secretary detailed alignment maps/sheets and aerial photographs at a scale not smaller than 1:6,000 identifying all route realignments or facility relocations, and staging areas, pipe storage yards, new access roads, and other areas that would be used or disturbed and have not been previously identified in filings with the Secretary. Approval for each of these areas must be explicitly requested in writing. For each area, the request must include a description of the existing land use/cover type, documentation of landowner approval, whether any cultural resources or federally listed threatened or endangered species would be affected, and whether any other environmentally sensitive areas are within or abutting the area. All areas shall be clearly identified on the maps/sheets/aerial photographs. Each area must be approved in writing by the Director of OEP **before construction in or near that area.**

This requirement does not apply to extra workspace allowed by the FERC *Upland Erosion Control, Revegetation, and Maintenance Plan* and/or minor field realignments per landowner needs and requirements which do not affect other landowners or sensitive environmental areas such as wetlands.

Examples of alterations requiring approval include all route realignments and facility location changes resulting from:

- a. implementation of cultural resources mitigation measures;
  - b. implementation of endangered, threatened, or special concern species mitigation measures;
  - c. recommendations by state regulatory authorities; and
  - d. agreements with individual landowners that affect other landowners or could affect sensitive environmental areas.
6. **Within 60 days of the acceptance of the Certificate and before construction begins,** Carolina Gas shall file an Implementation Plan with the Secretary for review and written approval by the Director of OEP. Carolina Gas must file revisions to the plan as schedules change. The plan shall identify:
    - a. how Carolina Gas will implement the construction procedures and mitigation measures described in its application and supplements (including responses to staff data requests), identified in the EA, and required by the Order;
    - b. how Carolina Gas will incorporate these requirements into the contract bid documents, construction contracts (especially penalty clauses and specifications), and construction drawings so that the mitigation required at the project site is clear to onsite construction and inspection personnel;
    - c. the number of EIs assigned, and how the company will ensure that sufficient personnel are available to implement the environmental mitigation;
    - d. company personnel, including EIs and contractors, who will receive copies of the appropriate material;

- e. the location and dates of the environmental compliance training and instructions Carolina Gas will give to all personnel involved with construction and restoration (initial and refresher training as the project progresses and personnel change);
  - f. the company personnel (if known) and specific portion of Carolina Gas' organization having responsibility for compliance;
  - g. the procedures (including use of contract penalties) Carolina Gas will follow if noncompliance occurs; and
  - h. a Gantt or PERT chart (or similar project scheduling diagram), and dates for:
    - (1) the completion of all required surveys and reports;
    - (2) the environmental compliance training of onsite personnel;
    - (3) the start of construction; and
    - (4) the start and completion of restoration.
7. Carolina Gas shall employ at least one EI for the Project. The EI shall be:
- a. responsible for monitoring and ensuring compliance with all mitigation measures required by the Order and other grants, permits, certificates, or other authorizing documents;
  - b. responsible for evaluating the construction contractor's implementation of the environmental mitigation measures required in the contract (see condition 6 above) and any other authorizing document;
  - c. empowered to order correction of acts that violate the environmental conditions of the Order, and any other authorizing document;
  - d. responsible for documenting compliance with the environmental conditions of the Order, as well as any environmental conditions/permit requirements imposed by other federal, state, or local agencies; and
  - e. responsible for maintaining status reports.
8. Beginning with the filing of its Implementation Plan, Carolina Gas shall file updated status reports with the Secretary **on a monthly basis until all construction and restoration activities are complete**. On request, these status reports will also be provided to other federal and state agencies with permitting responsibilities. Status reports shall include:
- a. an update on Carolina Gas' efforts to obtain the necessary federal authorizations;
  - b. the construction status of the project, work planned for the following reporting period, and any schedule changes for stream crossings or work in other environmentally sensitive areas;
  - c. a listing of all problems encountered and each instance of noncompliance observed by the EI(s) during the reporting period (both for the conditions imposed by the Commission and any environmental conditions/permit requirements imposed by other federal, state, or local agencies);
  - d. a description of the corrective actions implemented in response to all instances of noncompliance, and their cost;
  - e. the effectiveness of all corrective actions implemented;

- f. a description of any landowner/resident complaints which may relate to compliance with the requirements of the Order, and the measures taken to satisfy their concerns; and
  - g. copies of any correspondence received by Carolina Gas from other federal, state, or local permitting agencies concerning instances of noncompliance, and Carolina Gas' response.
9. **Prior to receiving written authorization from the Director of OEP to commence construction of any project facilities**, Carolina Gas shall file with the Secretary documentation that it has received all applicable authorizations required under federal law (or evidence of waiver thereof).
10. Carolina Gas must receive written authorization from the Director of OEP **before placing the project into service**. Such authorization will only be granted following a determination that rehabilitation and restoration of the project site and other areas affected by the project are proceeding satisfactorily.
11. **Within 30 days of placing the authorized facilities in service**, Carolina Gas shall file an affirmative statement with the Secretary, certified by a senior company official:
- a. that the facilities have been constructed in compliance with all applicable conditions, and that continuing activities will be consistent with all applicable conditions; or
  - b. identifying which of the conditions in the Order Carolina Gas has complied with or will comply with. This statement shall also identify any areas affected by the project where compliance measures were not properly implemented, if not previously identified in filed status reports, and the reason for noncompliance.
12. Carolina Gas shall file a noise survey with the Secretary **no later than 60 days** after placing the Edgemoor Compressor Station in service. If a full load condition noise survey is not possible, Carolina Gas shall provide an interim survey at the maximum possible load and provide a full load survey within **6 months**. If the noise attributable to the operation of all of the equipment at the Edgemoor Compressor Station under interim or full load conditions exceeds an Ldn of 55 dBA at any nearby NSAs, Carolina Gas shall file a report on what changes are needed and shall install the additional noise controls to meet the level within **1 year** of the in-service date. Carolina Gas shall confirm compliance with the above requirement by filing a second noise survey with the Secretary **no later than 60 days** after it installs the additional noise controls.

## **E. LIST OF PREPARERS**

---

### **Hudzik Jr., Thomas B. – Environmental Project Manager**

M.P.S., Sustainable Urban Planning, 2014, The George Washington University

B.S., Environmental Science, 2008, University of Pittsburgh

### **Harris, Jessica**

#### **Air Quality and Noise; Reliability and Safety**

M.S. Candidate, Energy Policy and Climate, 2015, Johns Hopkins University

B.S., Mechanical Engineering, 2006, Clark Atlanta University

### **Howard, Eric**

#### **Cultural Resources**

M.A., Anthropology, 1997, University of Tennessee

B.A., Anthropology, 1992, University of Tennessee