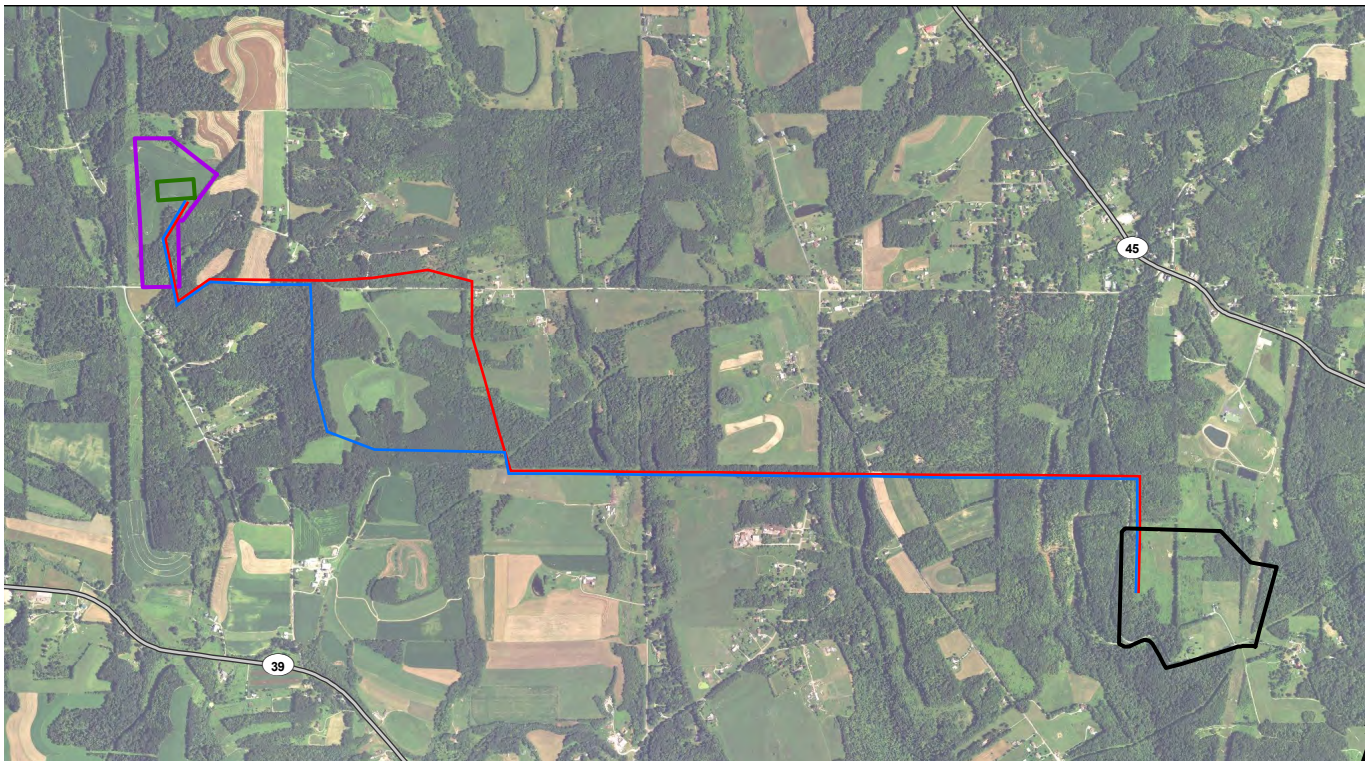


Case No. 15-1717-EL-BTX

# Application to the Ohio Power Siting Board for a Certificate of Environmental Compatibility and Public Need – SFE Interconnection Facilities



Submitted by:  
**South Field Energy LLC**

**January 2016**

**South Field**  
ENERGY

**BEFORE THE OHIO POWER SITING BOARD**  
**Certificate Application of South Field Energy LLC**  
**South Field Energy Interconnection Facilities**  
**Table of Contents**

	<u><b>Page No.</b></u>
LIST OF TABLES .....	vii
LIST OF FIGURES .....	vii
LIST OF APPENDICES .....	viii
ACRONYMS AND ABBREVIATIONS .....	ix
4906-5-02 Project Summary and Applicant Information .....	1
(A) PROJECT SUMMARY AND OVERVIEW .....	1
(1) General Purpose of the Facility .....	1
(2) Location, Size, and Operating Characteristics of the Facility .....	2
(3) Suitability of the Preferred and Alternate Routes .....	4
(a) Land Use Impacts .....	5
(b) Economic Impacts .....	6
(c) Ecological Impacts .....	7
(d) Cultural Impacts .....	8
(4) Project Schedule .....	8
(B) Applicant Information .....	9
4906-5-03 Review of Need and Schedule .....	10
(C) NEED FOR THE PROPOSED FACILITY .....	10
(1) Purpose of the Proposed Facility .....	10
(2) System Conditions, Local Requirements and Other Factors .....	10
(3) Load Flow Studies and Contingency Analysis .....	11
(4) System Performance Transcription Diagrams .....	12
(5) Natural Gas Transmission Line Base Case Data .....	12
(D) REGIONAL EXPANSION PLANS .....	12
(1) Consistency with Long-Term Forecast and Regional Plans .....	12

	(a) Reference Project and/or Alternatives in Long-Term Forecast .....	12
	(b) Explanation if Not Referenced.....	12
	(c) Effect on Regional Expansion Plans.....	13
	(2) Gas Transmission Long-Term Forecasting.....	13
(E)	SYSTEM ECONOMY AND RELIABILITY .....	13
(F)	OPTIONS TO ELIMINATE NEED FOR THE PROPOSED FACILITY .....	13
(G)	FACILITY SELECTION RATIONALE.....	14
(H)	FACILITY SCHEDULE .....	14
	(1) Schedule.....	15
	(a) Preparation of the Certificate Application .....	15
	(b) Submittal of the Application for Certificate .....	15
	(c) Issuance of the Certificate.....	15
	(d) Receipt of Grid Interconnection Studies and Other Critical Path Milestones for Construction.....	15
	(e) Acquisition of Rights-of-Way and Land Rights for the Certified Facility .....	15
	(f) Preparation of the Final Design .....	15
	(g) Construction of the Facility .....	16
	(h) Placement of the Facility in Service .....	16
	(2) Impact of Critical Delays .....	16
4906-5-04	Site and Route Alternatives Analysis .....	17
(A)	SITE AND ROUTE SELECTION STUDY .....	17
	(1) Description of Routing Study Area.....	17
	(2) Routing Study Area Constraints .....	18
	(3) Routing Study Area Site Map.....	18
	(4) Siting Criteria.....	18
	(5) Route Selection Process .....	19
	(6) Ranking and Selection Rationale .....	20
(B)	SUMMARY TABLE .....	22
(C)	PUBLIC INVOLVEMENT .....	22

4906-5-05	Project Description.....	24
(A)	DESCRIPTION OF GEOGRAPHY, TOPOGRAPHY, POPULATION CENTERS, MAJOR INDUSTRIES, AND LANDMARKS .....	24
(1)	Geography and Topography .....	24
(a)	Proposed Transmission Line Alignments .....	24
(b)	Proposed Substation or Compressor Station Site Locations.....	27
(c)	Roads and Railroads .....	28
(d)	Major Public Institutions, Parks, and Recreational Areas ...	28
(e)	Existing Gas Pipeline and Electric Transmission Lines .....	29
(f)	Named Lakes, Reservoirs, Streams, Canals, and Rivers .....	29
(g)	Population Centers and Legal Boundaries of Cities, Villages, Townships, and Counties.....	30
(2)	Facility Dimensions .....	30
(B)	LAYOUT AND INSTALLATION .....	31
(1)	Construction and Reclamation Activities .....	31
(a)	Surveying and Soil Testing .....	31
(b)	Grading and Excavation.....	32
(c)	Construction of Temporary and Permanent Access Roads and Trenches .....	32
(d)	Stringing of Cable and/or Laying of Pipe .....	32
(e)	Installation of Electric Transmission Line Poles, Structures and Foundations .....	33
(f)	Post-Construction Reclamation .....	34
(2)	Layout for Associated Facilities .....	34
(a)	Site Map .....	34
(b)	Reason for Proposed Layout and Unusual Features .....	38
(c)	Plans for Future Modifications .....	38
(C)	TRANSMISSION EQUIPMENT .....	38
(1)	Electric Transmission Line Data.....	38
(a)	Design Voltage.....	39

	(b) Tower Designs, Pole Structures, Conductor Size and Number per Phase, and Insulator Arrangement .....	39
	(c) Base and Foundation Design .....	40
	(d) Underground Cable Type and Size .....	41
	(e) Other Major Equipment or Special Structures .....	41
	(2) Electric Power Transmission Substations: SFE Switchyard.....	41
	(3) Gas Pipelines.....	42
4906-5-06	Economic Impact and Public Interaction .....	43
(A)	OWNERSHIP STATUS .....	43
(B)	ESTIMATES OF CAPITAL AND INTANGIBLE COSTS .....	43
(C)	GAS PIPELINE CAPITAL AND INTANGIBLE COSTS .....	44
(D)	PUBLIC INTERACTION AND ECONOMIC IMPACT .....	44
	(1) Counties, Townships, Villages, and Cities within 1,000 Feet .....	44
	(2) List of Public Officials.....	44
	(3) Public Interaction: Siting, Construction and Operation .....	45
	(4) Liability Compensation.....	46
	(5) Tax Revenues.....	47
4906-5-07	Health and Safety, Land Use, and Regional Development.....	48
(A)	HEALTH AND SAFETY .....	48
	(1) Compliance with Safety Regulations.....	48
	(2) Electric and Magnetic Fields .....	48
	(a) Calculated EMF Levels.....	49
	(b) EMF Health Effects .....	50
	(c) EMF Design Considerations .....	50
	(d) Procedures for Addressing Public Inquiries Regarding EMF.....	51
	(3) Radio and Television Interference .....	51
	(4) Noise Generation .....	52
(B)	LAND USE.....	54
	(1) Mapping of Study Area.....	54
	(2) Land Use Impact .....	55

	(3)	Impact on Existing Structures .....	59
	(a)	Distance from Nearest Existing Structures .....	59
	(b)	Building Demolition, Acquisition, or Removal .....	60
	(c)	Mitigation Procedures .....	60
(C)		IMPACTS TO AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND .....	60
	(1)	Agricultural Area Mapping .....	60
	(2)	Agricultural Land Impacts .....	61
	(a)	Quantification of Acreage Impacted .....	61
	(b)	Evaluation of Impacts Associated with Construction, Operation and Maintenance .....	61
	(c)	Impact to Agricultural Field Operations .....	62
	(d)	Mitigation Measures .....	62
(D)		REGIONAL LAND USE PLANS AND REGIONAL DEVELOPMENT .....	62
	(1)	Impact on Formally Adopted Regional Plans .....	62
	(2)	Compatibility Assessment with Regional Plans .....	63
(E)		CULTURAL AND ARCHAEOLOGICAL RESOURCES .....	65
	(1)	Cultural Resource Mapping .....	66
	(2)	Cultural Resources Location Studies .....	66
	(3)	Evaluation of Probable Impact .....	68
	(4)	Mitigation Procedures .....	70
	(5)	Aesthetic Impact .....	70
	(a)	Views from Sensitive Vantage Points .....	70
	(b)	Anticipated Impacts to Aesthetic Quality .....	72
	(c)	Measures to Minimize Visual Impacts .....	74
4906-15-08		Ecological Information and Permitting Compliance .....	76
(A)		ECOLOGICAL FEATURES MAP .....	76
	(1)	Proposed Transmission Line Alignments .....	77
	(2)	Proposed Switchyard Site .....	77
	(3)	Natural Resource Features .....	77
	(a)	Streams and Drainage Channels .....	77

(b)	Lakes, Ponds, and Reservoirs .....	79
(c)	Wetlands .....	80
(d)	Woody and Herbaceous Vegetation Land .....	82
(4)	Highly Erodible Soils and Slopes of 12 Percent or Greater.....	84
(5)	Wildlife Areas, Nature Preserves, and Publicly Identified Conservation Areas .....	84
(B)	FIELD SURVEY OF VEGETATION AND SURFACE WATERS .....	85
(1)	Description of Vegetative Communities, Wetlands and Streams .....	85
(2)	Mapping of Delineated Resources .....	85
(3)	Probable Construction Impact on Vegetation, Surface Waters, and Wetlands .....	85
(a)	Vegetation .....	85
(b)	Waterbodies .....	86
(c)	Wetlands .....	87
(4)	Probable Operational Impact on Vegetation and Surface Waters	88
(a)	Vegetation .....	88
(b)	Waterbodies .....	89
(c)	Wetlands .....	89
(5)	Mitigation Procedures .....	89
(a)	Post-Construction Restoration and Stabilization .....	89
(b)	Frac-Out Contingency Plan.....	90
(c)	Demarcation of Surface Waters and Wetlands During Construction .....	90
(d)	Procedures for Erosion Control Measure Inspection and Repair .....	90
(e)	Measures to Divert Stormwater Away from Fill Slopes and Exposed Surfaces .....	90
(f)	Methods to Protect Vegetation from Damage .....	91
(g)	Options for Woody and Debris Disposal .....	91
(h)	Herbicide Use for Maintenance .....	91

(C)	PLANT AND ANIMAL LIFE.....	92
(1)	List of Species Identified .....	92
(2)	Probable Construction Impact.....	92
(3)	Probable Operation and Maintenance Impact.....	93
(4)	Mitigation Measures .....	93
(D)	GEOLOGY AND SOILS .....	94
(E)	COMPLIANCE WITH ENVIRONMENTAL AND AVIATION REGULATIONS.....	101
(1)	List of Anticipated Licenses, Permits, and Authorizations Required for Construction.....	101
(2)	Debris Disposal Plans .....	102
(3)	Stormwater Management, Erosion Control, and Restoration .....	102
(4)	Disposition of Contaminated Soil and Hazardous Materials .....	103
(5)	Height of Tallest Anticipated Aboveground Structures and Construction Equipment .....	104
(6)	Excessively Dusty or Muddy Soil Conditions .....	104
(a)	Dust Control.....	105
(b)	Excessively Muddy Conditions .....	105

## LIST OF TABLES

Table 06-1	Estimated Capital and Intangible Costs .....	43
Table 07-1	Land Use within the SFE Interconnection Facilities Study Area .	56
Table 08-1	Delineated Streams within the Field Survey Area.....	78
Table 08-2	Wetlands within the Field Survey Area .....	80
Table 08-3	Soil Properties and Characteristics .....	95

## LIST OF FIGURES

Figure 02-1: Project Location

Figure 03-1: SFE Interconnection Facilities Location

Figure 03-2: One-Line Diagram



Figure 03-3: Schedule

Figure 04-1: Routing Study Area

Figures 05-1a – 05-1g: SFE Interconnection Facilities and Major Features

Figure 05-2: SFE Switchyard Layout and Grading

Figure 05-3: Tangent Configuration

Figure 05-4: Light Angle Configuration

Figure 05-5: Dead End Structure

Figure 07-1a – 07-d: Land Use, Cultural, Archaeological, and Ecological Resources

Figure 07-2: Land Use within the Study Area

Figure 07-3: Agricultural Land

Figure 07-4: Future Archaeology Survey Areas

Figure 08-1: Land Cover Types and Tree Clearing

Figure 08-2: Highly Erodible and Sloping Soils

Figure 08-3: Soil within the Study Area

Figure 08-4: Air Transportation Facilities

## **LIST OF APPENDICES**

Appendix A: PJM Feasibility Study

Appendix B: PJM System Impact Study

Appendix C: Motion for Waivers and Board Decision

Appendix D: Preliminary Engineering Design – SFE Switchyard

Appendix E: EMF and Corona Effects Report

Appendix F: Cultural Historic Investigations Report

Appendix G: Archaeological Investigations

Appendix H: Wetland and Other Waters Delineation Report

Appendix I: Species Correspondence

## LIST OF ACRONYMS AND ABBREVIATIONS

%	percent
AC	alternating current
ACSR	aluminum conductor steel reinforced
Advanced Power	Advanced Power AG
the Alternate ROW	an approximately 3.9-mile ROW of leased land in Madison and Yellow Creek Townships, within which the SFE Transmission Line could extend
AM radio	amplitude modulation radio
amsl	above mea sea level
Application	the Application provided to the Ohio Power Siting Board to support a request for a Certificate of Environmental Compatibility and Public Need to Construct an Electric Generation Facility
BkB	Berks channery silt loam, with 3 to 8 percent slopes
BkC	Berks channery silt loam, with 8 to 15 percent slopes
BkD	Berks channery silt loam, with 15 to 25 percent slopes
BkE	Berks channery silt loam, with 25 to 70 percent slopes
BMP	Best Management Practice
BpF	Bethesda very channery silt loam, with 25 to 70 percent slopes
Certificate	Certificate of Environmental Compatibility and Public Need
CFR	Code of Federal Regulations
CoB	Coshocton silt loam, with 2 to 6 percent slopes
CoC	Coshocton silt loam, with 6 to 15 percent slopes
dB	decibel
dB $\mu$ V/m	decibel microvolts per meter
dBA	A-weighted decibel, corresponding to the sensitivity range for human hearing
Dominion	Dominion Transmission, Inc.
EPRI	Electric Power Research Institute
EMF	electric and magnetic fields
FAA	Federal Aviation Administration
FbB	Fairpoint very channery silt loam, with 0 to 8 percent slopes
FbF	Fairpoint very channery silt loam, with 25 to 70 percent slopes
FEMA	Federal Emergency Management Agency

Field Survey Area	property within which landowner permission to access was received, generally at least 100 feet from the SFE Transmission Line and SFE Switchyard
the Generating Facility	South Field Energy
GnB	Gilpin silt loam, with 3 to 8 percent slopes
GnC	Gilpin silt loam, with 8 to 15 percent slopes
GoC	Gilpin-Coshocton silt loams, with 6 to 15 percent slopes
HHEI	Primary Headwater Habitat Evaluation Index
HkA	Holly silt loam, with 0 to 2 percent slopes, frequently flooded
IEEE	Institute of Electrical and Electronics Engineers
ICNIRP	International Commission on Non-Ionizing Radiation Protection
kcml	thousand circular mills
KeB	Keene silt loam, with 3 to 8 percent slopes
kV	kilovolt
kV/m	kilovolt per meter
m/G	milligauss
NERC	North American Electric Reliability Corporation
NHD	National Hydrography Dataset
NIH	National Institute of Health
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NWI	National Wetland Inventory
OAC	Ohio Administrative Code
ODOT	Ohio Department of Transportation
ODNR	Ohio Department of Natural Resources
Ohio EPA	Ohio Environmental Protection Agency
OHI	Ohio Historic Inventory
OPSB	Ohio Power Siting Board
ORAM	Ohio Rapid Assessment Method
OSHA	Occupational Safety and Health Administration
OWI	Ohio Wetland Inventory
PEM	palustrine emergent
PFO	palustrine forested
PJM	the regional electric transmission independent system operator

POI	point of interconnection
the Preferred ROW	an approximately 3.9-mile ROW of leased land in Madison and Yellow Creek Townships, within which the SFE Transmission Line is proposed to extend
QHEI	Qualitative Habitat Evaluation Index
Revised Code	Ohio Revised Code
ROW	right-of-way
SCADA	supervisory control and data acquisition
SCS	Soil Conservation Service
SFE	South Field Energy LLC
the SFE Interconnection Facilities	a proposed a 345-kV transmission line and switchyard, which will connect South Field Energy to the power grid
the SFE Switchyard	a new 345-kV switchyard, which will be used to deliver electricity from the proposed Generating Facility to the power grid
the SFE Transmission Line	a new 345-kV transmission line, which will be used to deliver electricity from the proposed Generating Facility to the power grid
SHPO	State Historic Preservation Office
SPCC	Spill Prevention, Control and Countermeasures
Study Area	the area within 1,000 feet of the SFE Transmission Line and SFE Switchyard
the Switchyard Site	a 38-acre property located north of Osbourne Road proposed for the SFE Switchyard
SWPPP	Stormwater Pollution Prevention Plan
UkC2	Upshu-Berks complex, with 6 to 15 percent slopes, eroded
U.S.	United States
USACE	United States Army Corps of Engineers
USDA	United States Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

**(A) PROJECT SUMMARY AND OVERVIEW**

South Field Energy LLC (SFE), a wholly owned subsidiary of Advanced Power AG (Advanced Power), is proposing to construct a 345-kilovolt (kV) transmission line (the SFE Transmission Line) and switchyard (the SFE Switchyard; together with the SFE Transmission Line, collectively referred to as the SFE Interconnection Facilities), to be located in Columbiana County, Ohio. The SFE Interconnection Facilities (shown in Figure 02-1) are associated with South Field Energy (the Generating Facility), a proposed combined cycle generating facility to be located on Hibbetts Mill Road in Columbiana County, Ohio. The Generating Facility is addressed in a separate application to the Ohio Power Siting Board (OPSB), Case No. 15-1716-EL-BGN, submitted on December 8, 2015. Electricity generated by the Generating Facility will be delivered to the electrical grid at the existing First Energy Highland-Sammis 345-kV transmission line located approximately 3.2 miles to the west via the SFE Interconnection Facilities.

This Application seeks a Certificate of Environmental Compatibility and Public Need (Certificate) for the SFE Interconnection Facilities, and was prepared in accordance with Section 4906.06 of the Ohio Revised Code (Revised Code) and Chapter 4906-5 of the Ohio Administrative Code (OAC).

**(1) General Purpose of the Facility**

The sole purpose of the SFE Interconnection Facilities is to deliver electricity generated by the Generating Facility to the regional power grid.

## **(2) Location, Size, and Operating Characteristics of the Facility**

The SFE Interconnection Facilities will consist of the new 345-kV SFE Transmission Line and SFE Switchyard, which will be used to deliver electricity from the proposed Generating Facility to the power grid. The SFE Switchyard will be located adjacent to the point of interconnection (POI) into the existing Highland-Sammis 345-kV transmission line owned by First Energy. A preferred and alternate right-of-way (ROW) for the transmission line corridors (the Preferred ROW and the Alternate ROW, respectively) have been identified and are evaluated in this Application. Both begin at a POI at the first take-off structure outside of the on-site switchyard located at the Generating Facility and extend in a generally west-northwesterly direction to reach the proposed SFE Switchyard. Each component of the SFE Interconnection Facilities is further described below.

*SFE Transmission Line:* The Preferred ROW traverses approximately 3.9 miles of land for which easements will be purchased in Madison and Yellow Creek Townships, connecting the Generating Facility to the SFE Switchyard located adjacent to First Energy's Highland-Sammis 345-kV transmission line. The Alternate ROW also traverses approximately 3.9 miles of land for which easements would be purchased in Madison and Yellow Creek Townships, between the Generating Facility and the First Energy 345-kV transmission line.

Approximately 67 percent of the Alternate ROW overlaps with the Preferred ROW predominantly in order to allow for a shared corridor with the proposed natural gas pipeline that will provide fuel for the Generating Facility; the natural gas pipeline will be the subject of a separate filing to the OPSB.

The SFE Transmission Line will be constructed within the Preferred ROW or Alternate ROW with a typical cleared ROW width of 75 feet on either side of the centerline. Additional clearing will be associated with access roads that are located outside of the ROW; roads are anticipated to be 20 feet wide. A variety of structure types (e.g., angle structures) will be used for the SFE Transmission Line, due to different physical requirements along both ROWs; however, all of the structures are expected to utilize a single-pole design, which will minimize the amount of soil disturbance as compared to double-pole, H-frame designs.

A total of 26 single-pole structures are shown in the preliminary design along the 3.9-mile Preferred and Alternate ROWs, spaced strategically to span ecological resources and to utilize reclaimed land of former strip mines. Structures will range in height from approximately 80 to 170 feet above ground, with direct embedded foundations, and will be constructed of tubular, galvanized steel.

Access roads to permanent structures will be constructed within the Preferred ROW or Alternate ROW for periodic operation and maintenance use. Access points will be located off of public roadways, and extend across private property (where easements will be granted); the locations have been carefully considered to allow for access while minimizing environmental impact. Access points will be provided off of Hibbetts Mill Road, Forbes Road, Fife-Coal Road, Nicholson Road, and Osbourne Road.

*SFE Switchyard:* The SFE Transmission Line will connect to the existing First Energy Highland-Sammis 345-kV circuit via the SFE Switchyard. The portion of the SFE Switchyard that will be fully enclosed by a chain link fence will be approximately 3.5 acres, with associated grading occurring within an area of approximately 6.6 acres. Located

within a 38-acre property (the Switchyard Site) north of Osbourne Road, the SFE Switchyard will be accessed from a road approximately 0.3 mile in length, upgrading and extending an existing farm road from Sines Road to the SFE Switchyard. The SFE Switchyard design includes a 345-kV breaker ring bus interconnection substation with a loop connection to the First Energy 345-kV line. In addition to the electrical equipment, supervisory control and data acquisition (SCADA) systems, and associated equipment will be located in a 20-by-50 foot on-site building also located within the fenced area.

### **(3) Suitability of the Preferred and Alternate Routes**

The Switchyard Site location was determined based on proximity to the desired POI at the existing Highland-Sammis 345-kV corridor, as well as community and environmental factors. The Switchyard Site was further evaluated based on a Feasibility Study (Appendix A) and a System Impact Study (Appendix B) completed by PJM.<sup>1</sup> The studies determined that the Highland-Sammis 345-kV transmission line was suitable for interconnection and delivery of the Generating Facility's output to the regional power grid. An alternate switchyard location is not proposed for the SFE Interconnection Facilities.

SFE has identified the Preferred ROW and the Alternate ROW, which are set forth and analyzed in this Application. Field studies were completed within the corridor for which SFE has obtained landowner permission and the Switchyard Site (the Field Survey Area), which generally includes the area within 100 feet of the centerline. Secondary source review has occurred for an area of 1,000 feet from the centerline and from the SFE Switchyard (Study Area).

---

<sup>1</sup> PJM is the regional independent transmission organization that coordinates the movement of wholesale electricity in all or parts of 13 states (including Ohio) and the District of Columbia. Its name results from its origin serving Pennsylvania (P), New Jersey (J), and Maryland (M).



The Applicant sought and received a waiver allowing for greater than typical overlap of the Preferred ROW and the Alternate ROW and for relief from providing fully developed information on the Alternate ROW (Appendix C). In an effort to minimize environmental impact associated with the SFE Interconnection Facilities, the Applicant proposes to co-locate the SFE Transmission Line and the natural gas pipeline associated with the Generating Facility, which limits the potential for alternate routing. Selection of the routes also focused on factors such as minimizing the total length of the electric transmission line; minimizing the number of turns; minimizing the number of parcels crossed; minimizing crossings of public roads and railroads; minimizing tree clearing and wetland or stream crossings; minimizing proximity to residences and other sensitive land uses; and reducing landowner interference by focusing on routes along the edge of properties.

A summary of the environmental and socioeconomic considerations utilized in selection of the location of the SFE Interconnection Facilities is provided below.

***(a) Land Use Impacts***

The area surrounding the SFE Interconnection Facilities is dominated by forest, agricultural, and pasture land. A scattering of rural residences occur within the Study Area for the SFE Interconnection Facilities, representing about 5 percent of land use. Approximately 8 percent of the Study Area is comprised of reclaimed land that was formally strip-mined. The nearest community center to the SFE Interconnection Facilities is the Village of Wellsville, located approximately 4 miles to the southeast.

There are 41 residential structures within Study Area for the Preferred ROW, and 31 residential structures within the Study Area for the Alternate ROW. Three of these structures are also located within the Study Area for the SFE Switchyard. One residential structure is located within Field Survey Area of the Preferred ROW. No sensitive land uses, such as recreational or institutional, were identified within the Study Area for the SFE Interconnection Facilities.

Temporary impacts to land used during construction of the SFE Interconnection Facilities could include damage to crops, fences, gates, subsurface drainage systems (i.e., tile lines) and/or temporarily blocking access to agricultural fields. However, construction impacts will be temporary in nature, followed by site restoration in accordance with the terms of each land lease agreement, and will be confined to the properties of participating landowners.

***(b) Economic Impacts***

The SFE Interconnection Facilities will be dedicated to the purpose of delivering electricity generated by the Generating Facility to the regional power grid. Therefore, the benefits associated with the Generating Facility are also benefits associated with the SFE Interconnection Facilities. Significant positive impact on the local economy will result, through construction employment and easement purchase payments to landowners. Construction of the Generating Facility is estimated to generate \$680 million in total economic output in the State of Ohio, \$380.2 million in gross state product, and an annual peak average of 550 construction jobs over the 30-month construction period, as well as 337 indirect and 465 induced jobs in the State of Ohio. During the 30-year operational phase,

the Generating Facility is estimated to result in \$57.6 million annually in total output for the state's economy, approximately \$37.8 million in gross state product, and an annual average of 29 facility jobs, as well as 189 indirect and 67 induced jobs in the State of Ohio. It is important to note that the proposed Generating Facility and SFE Interconnection Facilities will make few, if any, demands on local government services. Easement purchase payments will be provided to local landowners on whose property the SFE Interconnection Facilities will be located.

***(c) Ecological Impacts***

The Preferred ROW, the Alternate ROW, and the Switchyard Site are primarily located on wooded land, open land used for agricultural purposes, and land previously used for coal mining. Desktop assessment and on-site field studies of ecological resources were completed, including delineation of wetlands and streams, as well as characterization of vegetation and habitat.

No wetland or stream impacts are proposed on the Switchyard Site. While several small streams occur along the Preferred and Alternate ROWs, structures and roads have been located specifically to avoid impacts to such resources, where possible. Only one location, shared by the Preferred and Alternate ROWs, proposes impact to an intermittent stream for access. Minor impact may also be associated with widening of access roads to reach the ROW. Limited conversion from forest to scrub-shrub may occur for certain wetlands with the ROW.

No unique habitat areas were identified within the Study Area for the SFE Interconnection Facilities, and no specific species were identified by the Ohio Department of Natural Resources (ODNR) or United States Fish and Wildlife

Service (USFWS), with the exception of the Indiana bat (*Myotis sodalis*) and northern long-eared bat (*Myotis septentrionalis*) that potentially occur within this range. Tree clearing will be minimized, and will be restricted to occur only from October 31 through March 31 in order to avoid the potential for impact to these summer tree-roosting species.

***(d) Cultural Impacts***

A cultural historic survey was conducted for the SFE Interconnection Facilities to consider the potential for historic structures to be affected. This survey included an examination of the Preferred ROW, the Alternate ROW, and the Switchyard Site. No cultural features, such as cemeteries or historic structures, will be directly affected by the SFE Interconnection Facilities. Only one property over 50 years old was identified within the Study Area for the SFE Interconnection Facilities; this group of structures, a dilapidated farmstead located near the Switchyard Site, was determined to not be eligible for listing on the National Register of Historic Places (NRHP). In addition, an archaeological investigation was completed for the Switchyard Site that did not identify any significant archaeological resources. Both studies are currently under review by the Ohio State Historic Preservation Office (SHPO).

**(4) Project Schedule**

The schedule for construction of the SFE Interconnection Facilities is based on commencement of commercial operation of the Generating Facility by 2020, in order to meet anticipated demand within the PJM marketplace. Therefore, the SFE Interconnection Facilities must be available in time to support first fire and performance testing of the

Generating Facility. To meet this schedule, the Applicant is requesting issuance of the Certificate by late spring 2016 to support commercial and financing activities in the third and fourth quarters of 2016 and commencement of construction in the first quarter of 2017.

**(B) APPLICANT INFORMATION**

SFE is proposing to develop, build, and operate the Generating Facility and the SFE Transmission Facilities. SFE is within the corporate organizational structure of Advanced Power, an international developer of independent power generation projects. Advanced Power develops and invests in power generation and related infrastructure projects in North America and Europe, and continually assesses market conditions to identify opportunities to bring additional natural gas-fueled energy facilities on-line. Advanced Power is currently developing three projects, totaling 2,500 megawatts, in the eastern United States. In addition, since 2006, Advanced Power has developed more than 1,500 megawatts of generation in the United States and Europe, including Carroll County Energy, a 750-megawatt generation facility in Carroll County, Ohio.

A qualified contractor will be selected to complete final design, procurement, construction, commissioning, and testing of the SFE Interconnection Facilities; the selected contractor has not yet been identified.

**(C)      NEED FOR THE PROPOSED FACILITY**

The purpose of the proposed SFE Interconnection Facilities is to deliver electricity generated by the Generating Facility to the nearby First Energy 345-kV transmission line. The SFE Interconnection Facilities will allow power generated by the Generating Facility to be distributed through the First Energy Highland-Sammis 345-kV circuit to the regional power grid.

**(1)      Purpose of the Proposed Facility**

SFE is proposing to construct the SFE Interconnection Facilities in Columbiana County, Ohio, extending within Madison and Yellow Creek Townships. The SFE Interconnection Facilities are associated with the proposed Generating Facility on Hibbetts Mill Road in Columbiana County (which is also being developed by SFE), and are solely designed to connect the new 1,105-megawatt combined cycle Generating Facility to the existing First Energy Highland-Sammis 345-kV electric transmission line.

The SFE Interconnection Facilities, in conjunction with the Generating Facility, will be used to contribute energy to the PJM transmission grid. The SFE Interconnection Facilities are the means by which the Generating Facility will be able to convey efficiently produced energy into the PJM transmission system to bolster the regional system and support the energy needs of the people and businesses reliant on that system.

**(2)      System Conditions, Local Requirements and Other Factors**

Recent and planned retirement of existing coal-fired generating assets located in PJM, including several facilities in Ohio, has prompted a need for additional energy generating units. Since 2014, 12.8 gigawatts have retired and 2.6 gigawatts are pending

retirement by the end of 2019. The Generating Facility will help meet energy demand in the region by providing additional base load and peaking capacity via its efficient dual fuel combined cycle technology. The SFE Interconnection Facilities will deliver the generated electricity to the regional grid.

### **(3) Load Flow Studies and Contingency Analysis**

Because the SFE Interconnection Facilities are being used to connect the Generating Facility to the regional power grid, detailed studies have been and will be completed to evaluate the POI at the existing 345-kV transmission line and determine the need for associated system improvements.

Figure 03-1 shows the location of the proposed Generating Facility and the POI at the existing First Energy 345-kV circuit, labeled AA1-123.<sup>2</sup> The PJM Feasibility Study (Appendix A) was completed in March 2015, with the System Impact Study (Appendix B) completed in September 2015. The Facility Study is currently in process. Upgrades and system reinforcements identified in the System Impact Study will be accomplished as a part of the Interconnection Agreement assuring system reliability and that all contingencies will be met.

The SFE Interconnection Facilities will be engineered and constructed to comply with all applicable electrical safety codes and good engineering practices. The Generating Facility will interconnect and operate in conformance with the requirements of PJM and First Energy. These requirements will also meet the reliability criteria and standards for the North American Electric Reliability Corporation (NERC).

---

<sup>2</sup> The Generation Interconnection Request Queue Position assigned by PJM.  
<http://www.pjm.com/planning/generation-interconnection/generation-queue-active.aspx>

**(4) System Performance Transcription Diagrams**

The SFE Interconnection Facilities will serve solely as a method of interconnection for the Generating Facility with the existing First Energy Highland-Sammis 345-kV transmission line located approximately 3.2 miles west of the Generating Facility (Figure 03-1). A one-line diagram is provided as Figure 03-2.

**(5) Natural Gas Transmission Line Base Case Data**

Since the proposed SFE Interconnection Facilities do not include the installation of any gas transmission facilities, this section is not applicable. The natural gas pipeline associated with the Generating Facility will be addressed in a separate filing with the OPSB.

**(D) REGIONAL EXPANSION PLANS**

**(1) Consistency with Long-Term Forecast and Regional Plans**

***(a) Reference Project and/or Alternatives in Long-Term Forecast***

SFE is not an electric distribution company or an electric distribution utility, and, as such, does not have transmission and distribution planning responsibilities for franchised service areas. Therefore, SFE does not maintain or file long-term electric forecast reports, and this section is not applicable.

***(b) Explanation if Not Referenced***

As noted above, SFE is not required to file long-term electric forecast reports and, therefore, this section is not applicable.



***(c) Effect on Regional Expansion Plans***

As indicated above, the Feasibility Study and System Impact Study completed by PJM have determined that the Generating Facility and the SFE Interconnection Facilities will have no significant negative impact on grid reliability.

**(2) Gas Transmission Long-Term Forecasting**

This section is not applicable, as the SFE Interconnection Facilities do not involve gas transmission facilities. Although the natural gas pipeline associated with the Generating Facility will be co-located with a portion of the Preferred or Alternate ROW, the gas transmission component will be the subject of a separate filing to the OPSB.

**(E) SYSTEM ECONOMY AND RELIABILITY**

The Generating Facility will help meet energy demand in the region by providing additional base load and peaking capacity via its efficient dual fuel combined cycle technology. The SFE Interconnection Facilities will deliver the generated energy to the electrical grid.

**(F) OPTIONS TO ELIMINATE NEED FOR THE PROPOSED FACILITY**

The purpose of the SFE Interconnection Facilities is to deliver electricity generated by the Generating Facility to the nearby First Energy Highland-Sammis 345-kV transmission line. Without the SFE Interconnection Facilities, interconnection between the Generating Facility and the regional electric transmission system is not possible.

Several First Energy 138-kV transmission lines extend across the Generating Facility site; however, these lines were determined to not have adequate capacity to support the Generating Facility. The First Energy Highland-Sammis 345-kV circuit, located west

of the Generating Facility, was determined to be a favorable option for interconnection based on independent interconnection studies. At approximately 3.2 miles from the Generating Facility, SFE determined that an appropriate corridor could be identified for a new electric transmission interconnection, with the potential for co-locating this corridor with the required natural gas pipeline corridor.

#### **(G) FACILITY SELECTION RATIONALE**

The SFE Interconnection Facilities are required in order to deliver electricity generated by the Generating Facility to the regional transmission grid. Delivering electricity by the Generating Facility to the regional transmission grid via the Preferred ROW and the SFE Switchyard will serve the public convenience and necessity. The Preferred ROW and SFE Switchyard were selected as the most efficient way to achieve this interconnection. Due to careful siting, route selection, and analysis, other alternatives would have greater environmental and social impacts, and/or would be more expensive.

#### **(H) FACILITY SCHEDULE**

This section describes the anticipated schedule for the SFE Interconnection Facilities permitting and construction. Figure 03-3 depicts the estimated schedule in a bar chart format. As additional information becomes available, the OPSB will be informed of the actual dates of construction commencement, construction completion, and commencement of operation for the SFE Interconnection Facilities.

**(1) Schedule**

***(a) Preparation of the Certificate Application***

Preparation of this Application occurred in the late summer through winter of 2015/2016, with data and analyses added as various studies were completed. A public information meeting was held October 20, 2015.

***(b) Submittal of the Application for Certificate***

The schedule is based upon submittal of the application in January 2016.

***(c) Issuance of the Certificate***

In order to maintain the proposed schedule, the Applicant requests that the Certificate be issued by late spring of 2016.

***(d) Receipt of Grid Interconnection Studies and Other Critical Path Milestones for Construction***

Additional critical path milestones, such as signing of the Interconnection Service Agreement, and achieving financial close are reflected in Figure 03-3, projected to be completed by the fourth quarter of 2016.

***(e) Acquisition of Rights-of-Way and Land Rights for the Certified Facility***

Acquisition of land rights and ROW for the SFE Interconnection Facilities began in early 2015, and will continue through the spring of 2016.

***(f) Preparation of the Final Design***

It is expected that final designs and detailed construction drawings will be completed following financial close (anticipated late in 2016) and prior to construction.

***(g) Construction of the Facility***

Construction is anticipated to begin in the first quarter of 2017 and be completed within approximately 18 to 24 months.

***(h) Placement of the Facility in Service***

The SFE Interconnection Facilities will be placed in service upon completion of construction, timed to support first fire of the Generating Facility, which is anticipated to occur in mid- to late-2019. As-built specifications will be provided to the OPSB within one year of the commencement of commercial operation.

**(2) Impact of Critical Delays**

Critical delays may have material, adverse effects on the financing of both the SFE Interconnection Facilities and the associated Generating Facility, including the Applicant's ability to procure turbines and other associated components. Such delays would impact the in-service date. Additionally the SFE Interconnection Facilities must be completed to facilitate testing of the Generating Facility prior to commercial operation.

**(A) SITE AND ROUTE SELECTION STUDY**

PJM has completed a Feasibility Study (Appendix A) and a System Impact Study (Appendix B) based on the proposed location of the Switchyard Site; therefore, an alternate switchyard location is not proposed.

SFE conducted an evaluation of available routes between the two end points (the POI at the Generating Facility and the SFE Switchyard), considering a range of technical, community, and environmental factors as well as considering the potential to co-locate the required natural gas pipeline interconnection within the same corridor. Given the resulting options, a waiver was sought and received from the requirement to minimize the overlap between the Preferred and Alternate ROWs to no more than 20 percent. See Appendix C for a copy of the Motion for Waivers and corresponding staff recommendation and OPSB approval.

Details regarding the route selection process are provided in the sections below.

**(1) Description of Routing Study Area**

The study area for the route selection process was established based on the proposed location of the Generating Facility and the SFE Switchyard adjacent to the existing Highland-Sammis 345-kV circuit. The routing study area, therefore, lies between those features within Yellow Creek and Madison Townships.

## **(2) Routing Study Area Constraints**

As indicated above, the routing study area was established based on the proposed location of the Generating Facility and the SFE Switchyard adjacent to the existing 345-kV Highland-Sammis transmission lines.

## **(3) Routing Study Area Site Map**

The routing study area and evaluated routes/sites are illustrated on Figure 04-1, along with features considered in evaluating opportunities and constraints during the route selection process.

## **(4) Siting Criteria**

SFE utilized a multi-phased evaluation process, evaluating potential routes using the following selection criteria:

- Adequate route width – The desire to co-locate the natural gas pipeline with the proposed transmission line requires a corridor of at least 150 feet for the co-located portions of the route;
- Minimize total length of transmission line – Related to cost, including easement purchase payments, design, engineering, materials, and construction, as well as the potential to result in increased environmental impact;
- Minimize number of turns – Related to cost, design/construction complexity, and efficiency, as well as the feasibility of co-location with the natural gas pipeline;
- Minimize number of parcels crossed – Related to cost, including lease payments, and typically minimizes community-wide impacts;

- Minimize crossings of public roads and railroads – Potentially minimizes public disruption and visual impacts;
- Minimize forest clearing – Typically also minimizes impacts to diverse species habitat, including for potential tree-roosting bats;
- Minimize crossing of wetlands, streams, and other water bodies – Typically also minimizes impacts to diverse ecological communities, and potentially minimizes impacts to habitat for rare species;
- Minimize crossing/activities within floodplains – Typically also minimizes impact to streams; and
- Minimize proximity to residences and other sensitive land uses, such as schools, churches, hospitals, cemeteries, historic sites, recreation area, parks, and preserves.

Identifying routes that minimize both impacts and costs requires balancing and prioritizing many factors. In addition to the criteria listed above, all routes must have landowners willing to grant land easements to accommodate the transmission line infrastructure. SFE prioritized corridors that extended along property lines in order to minimally disrupt existing or future landowner activities.

## **(5) Route Selection Process**

The evaluation of the various routes included a comparison based on the social, environmental, and engineering factors listed above in 4906-5-04(A)(4). These factors were utilized to identify and evaluate the Preferred ROW and Alternate ROW, as described below. Secondary sources and general information were used in this analysis, including: United States Geologic Survey (USGS) topographic maps; National Hydrography Dataset

(NHD) data, National Wetland Inventory (NWI) data; Ohio Wetlands Inventory (OWI) data; NRHP data; Ohio Historic Inventory (OHI) resources; Federal Emergency Management Agency (FEMA) floodplain data; and USFWS data.

SFE's familiarity with this general area, as a result of its activities associated with designing the proposed Generating Facility, was also utilized during the route selection process. In addition, SFE utilized local, experienced land agents to site the Preferred ROW on parcels owned by landowners willing to participate, and along edges of parcels, rather than crossing areas in current active or future use. Locations were sought within the routing study area that would minimize both community and environmental impacts. Using these parameters, the Preferred ROW and Alternate ROW were selected for further evaluation, including field reconnaissance.

#### **(6) Ranking and Selection Rationale**

The Applicant did not conduct a formal, stand-alone route ranking process; however, with respect to comparing potential impacts associated with the Preferred and Alternate ROWs, the following analysis was prepared:

- Adequate route width – Adequate width is available to accommodate both the SFE Transmission Line and the required natural gas pipeline along portions of the ROW for which this is relevant. Along the majority of the Preferred and Alternate ROW, a width of at least 150 feet is available, with the exception of one limited area west of the co-located corridor where the ROW narrows to 124 feet due to proximity of a residence.
- Minimize total length of transmission line – Both ROWs are approximately the same length, resulting in similar potential for community and



environmental impacts. While a direct distance could be somewhat shorter (approximately 3.2 miles), an approximately 3.9-mile length is considered to be favorable.

- Minimize number of turns – This is of particular importance for the portion of the ROW planned for co-location with the required natural gas pipeline. The shared corridor was identified to allow for only a single turn as the ROW exits the Generating Facility site and continues in a straight line to the west.
- Minimize number of parcels crossed – The Preferred ROW traverses parcels owned by 13 landowners, while the Alternate ROW crosses parcels owned by 11 landowners; both generally follow the boundary lines between parcels and avoid land in active use by the landowner. While the straight-line distance is shorter, it crosses more parcels and would, therefore, result in higher lease payments and greater community impacts.
- Minimize crossings of public roads and railroads – Both ROWs cross four public roadways (Hibbetts Mill Road, Forbes Road, Fife-Coal Road, and Osbourne Road). These are local roads with the potential for minimal delay to users during construction. No railroad crossings occur along the identified ROWs.
- Minimize crossing of wetlands, streams and other waterbodies – The Preferred and Alternate ROW each cross five NWI wetland resources and one USGS blue line stream. Given the nature of the proposed work, it was anticipated that these resources (and any refinements to those resources

through later delineation) could be spanned for both the Preferred and the Alternate ROWs.

- Minimize crossings and activities within floodplains – Neither the Preferred ROW or the Alternate ROW lie within the mapped FEMA 100-year floodplain; therefore, no crossings or activities associated with the SFE Interconnection Facilities are proposed within mapped floodplains.
- Minimize proximity to residences and other sensitive land uses – The Preferred ROW passes within 150 feet of three residences, while the Alternate ROW passes within 150 feet of one residence. It was determined that adjustments could be made in the proposed width of the ROW to minimize impacts on these residences.

While both routes were identified as a potential preferred route, landowner considerations led SFE to select the northerly routing as the Preferred ROW, with the southerly routing as the Alternate ROW.

## **(B) SUMMARY TABLE**

No additional routes or sites were formally evaluated. A summary of key characteristics of the selected Preferred and Alternate ROWs is provided in Section 4906-5-04(A)(6).

## **(C) PUBLIC INVOLVEMENT**

Work within the community associated with the Generating Facility has been ongoing since 2012, when informal discussions with interested parties began while exploring potential sites. These discussions have included reference to the associated interconnection needs of the Generating Facility. Throughout the routing and site selection process, SFE

and its representatives have held numerous meetings with local public officials, proximate neighbors and potential participating landowners. Following site and route selection, public involvement has continued, as further described in Section 4906-5-06(D)(3).

**(A) DESCRIPTION OF GEOGRAPHY, TOPOGRAPHY, POPULATION CENTERS, MAJOR INDUSTRIES, AND LANDMARKS**

**(1) Geography and Topography**

A map series of at least 1:24,000 scale showing the proposed SFE Interconnection Facilities and the respective Study Area is presented in Figures 05-1a through 05-1g. The mapping shows (to the extent found within the Study Area): the proposed SFE Transmission Line alignments; the proposed SFE Switchyard location; roads and railroad routes; existing gas pipeline and electric transmission line corridors; named lakes, reservoirs, streams, canals, and rivers; and population centers and legal boundaries of cities, villages, townships, and counties. The figures were developed using USGS topographic maps, NHD data, NWI data, OWI data, NRHP data, OHI resources, FEMA floodplain data, and USFWS data.

***(a) Proposed Transmission Line Alignments***

As noted throughout this Application, SFE has identified a Preferred ROW and an Alternate ROW with a single location for the SFE Switchyard. The proposed alignments for the SFE Transmission Line, including the proposed turning points, are shown on Figures 05-1a through 05-1g and are described, east-to-west, in the following sections.

**Preferred ROW**

The SFE Transmission Line within the Preferred ROW originates at the first takeoff structure (Pole No. 1) outside the switchyard located on the Generating Facility site (which is included in the Application for the Generating Facility, Case

No. 15-1715-EL-BGN). The Preferred ROW extends north from that point within a 300-foot wide corridor approximately 1,700 feet before turning at Pole No. 3 to cross Hibbetts Mill Road and continuing in a westerly direction for 9,419 feet to cross an existing natural gas pipeline ROW owned by Dominion Transmission, Inc. (Dominion). The first portion of that segment (from Pole No. 3 to just after Pole No. 5) narrows to a 200-foot wide corridor to traverse a former strip mine area (containing two steep topographic cuts), then returns to a 300-foot wide corridor to cross open fields and forest, Forbes Road, and the majority of a second area of former strip mine (also containing two steep topographic cuts). The corridor narrows to 200 feet again just prior to crossing Fife-Coal Road (and just prior to Pole No. 8), after which – from Pole Nos. 8 through 14 – it continues in that width to traverse open fields and forest until reaching the Dominion natural gas pipeline (at Pole No. 14). This segment of the ROW is located entirely within Yellow Creek Township.

At Pole No. 14, the Preferred ROW diverges from the Alternate ROW, and turns north-northwest to cross into Madison Township along a 300-foot wide corridor. The remainder of the Preferred ROW is located in Madison Township. The Preferred ROW continues over forest and open field areas for 2,945 feet to cross Osbourne Road and reach Pole No. 18. For the short stretch from Pole No. 17 to Osbourne Road, the corridor width narrows, reaching 124 feet in width at its narrowest point. This decrease in width is associated with the presence of a residential structure located south off of Osbourne Road in close proximity to the Preferred ROW. Once crossing Osbourne Road, the corridor expands to 200 feet

in width as it parallels north of Osbourne Road in a westerly direction from Pole No. 18 to Pole No. 21 within predominantly wooded area. The Preferred ROW then continues west to cross Osbourne Road, where the Preferred and Alternate ROWs again overlap at Pole No. 22 to approach the Switchyard Site.

The Preferred and Alternate ROWs then cross Osbourne Road and continue straight west to Pole No. 23. The ROW jogs to the south to Pole No. 24 to create an appropriate angle of entry into the Switchyard Site. The ROW then extends north into the Switchyard Site (crossing Osbourne Road again), and continues north within the Switchyard Site along Poles No. 25 and 26 to access the SFE Switchyard. The total length of the Preferred ROW is approximately 3.9 miles.

As previously noted, the easternmost portions of the Preferred ROW traverse and utilize reclaimed land of former strip mines. Topography in these sections is characterized by sheer slopes originating from flat irregular uplands terminating in narrow ravines. The remainder of the Preferred ROW passes over rolling topography with elevations that range between approximately 1,040 feet and 1,220 feet above mean sea level (amsl).

#### Alternate ROW

The Alternate ROW is identical to the Preferred ROW for the first 10,119 feet, until it reaches Pole No. 14 at the existing Dominion natural gas pipeline ROW. After Pole No. 14, the Preferred ROW and Alternate ROW diverge.

The Alternate ROW crosses the Dominion natural gas pipeline corridor into Madison Township with a short northwesterly stretch from Pole No. 14 to Pole No. 15A. The remainder of the Alternate ROW is in Madison Township. From Pole

No. 15A, the Alternate ROW extends west within a 200-foot wide corridor traversing wooded areas until just after Pole No. 17A. At Pole No. 17A, the Alternate ROW begins to angle to the northwest, and at Pole No. 18A the alignment continues in a northerly direction across predominantly wooded areas to reach Pole No. 21A, located just southwest of Osbourne Road. From Pole No. 21A, the ROW extends along a 200-foot wide corridor to join the Preferred ROW alignment at Pole No. 22.

The Alternate ROW is also approximately 3.9 miles in length and shares topographic characteristics with the Preferred ROW.

***(b) Proposed Substation or Compressor Station Site Locations***

To meet the needs of the Generating Facility, the SFE Transmission Line will connect to the existing First Energy Highland-Sammis 345-kV circuit via the SFE Switchyard. The SFE Switchyard (shown in Figures 05-1g and 05-2) will be approximately 3.5 acres, fully enclosed by a chain link fence. Located within the 38-acre Switchyard Site, which is situated north of Osbourne Road, the SFE Switchyard will be accessed from a newly constructed road approximately 0.3 mile in length, extending from an existing farm road off of Sines Road (which extends north off of Osbourne Road).

The SFE Switchyard design includes a 345-kV ring bus interconnection substation with a loop connection to the First Energy Highland-Sammis 345-kV line. SCADA systems, and associated equipment will be located in a 20-by-50 foot control building on the Switchyard Site.

***(c) Roads and Railroads***

No major highways or railroad routes were identified within the Study Area. Rural roadways within Madison and Yellow Creek Townships are crossed by the Preferred ROW and the Alternate ROW. As shown in Figures 05-1a through 05-1g, both the Preferred ROW and the Alternate ROW cross Hibbetts Mill Road, Forbes Road, Fife-Coal Road, and Osbourne Road. Nicholson Road is located just south of the Preferred and Alternate ROWs. No railroads are crossed by either the Preferred or Alternate ROW.

***(d) Major Public Institutions, Parks, and Recreational Areas***

No major public institutions, parks, or recreational areas are located within the Study Area. The closest recreational use is Hammond Park, a public recreational facility located approximately 2.2 miles south of the SFE Interconnection Facilities. Given the separation of Hammond Park from the Facility Site by distance, vegetation, and terrain, no significant impact is anticipated. Other small parks are located in Wellsville and East Liverpool, and across the Ohio River, in Newell, West Virginia. The Highland Country Club is located approximately 3.3 miles to the east.

The nearest school is the Wellsville High School, located approximately 2.7 miles southeast of the SFE Interconnection Facilities. Wellsville High School, a public, coeducational school, is the only high school in the Wellsville local school district. During the 2012-2013 school year, 235 students attended and 19 teachers taught at the high school. The other two schools in the Wellsville local school district, Daw Middle School and Garfield Elementary School, are located



approximately 2.8 miles southeast of the SFE Interconnection Facilities and enroll approximately 300 students each.

The Highlandtown Wildlife Area is located approximately 0.5 mile west of the Switchyard Site, beyond the existing First Energy 345 kV transmission line.

***(e) Existing Gas Pipeline and Electric Transmission Lines***

Both the Preferred ROW and Alternate ROW for the SFE Interconnection Facilities cross the existing Dominion-owned natural gas pipeline and are routed to connect into the existing First Energy Highland-Sammis 345-kV transmission line via the proposed adjacent SFE Switchyard. The alignments of the existing First Energy electric transmission lines and Dominion gas pipeline are also shown on Figure 03-1. No other major utilities are known to traverse the Study Area.

***(f) Named Lakes, Reservoirs, Streams, Canals, and Rivers***

A full description of the waterbodies and wetlands located within the Study Area is provided in Section 4906-5-08(B)(1) of this Application. As can be seen on Figures 05-1a through 05-1g, named water features are limited within the Study Area to Alder Lick Run and Baily Run (both of which traverse the ROWs) and Bogart Pond (located north of Osbourne Road along the northern extent of the Study Area). Additional maps of streams, ponds, and wetlands that were field-delineated are provided in Section 4906-5-08.

***(g) Population Centers and Legal Boundaries of Cities, Villages, Townships, and Counties***

Population centers (to the extent located within the Study Area) and the legal boundaries of municipalities in the vicinity of the SFE Interconnection Facilities are shown on Figures 05-1a through 05-1g.

The Switchyard Site is located in Madison Township, while the Preferred and Alternate ROWs extend through both Madison and Yellow Creek Townships. The portion of the overlapping ROW within Yellow Creek Township from Pole No. 3 through Pole No. 14 parallels the boundary between Madison and Yellow Creek Townships. The remainder of both the Preferred and Alternate ROWs is located in Madison Township, with a small portion of the Alternative ROW (from Pole No. 15A to 17A) paralleling the municipal line between the two townships.

The nearest densely populated area is the Village of Wellsville, which is located approximately 3 miles to the southeast along the Ohio River.

**(2) Facility Dimensions**

The area encompassed by the Preferred ROW is 94.1 acres, while the area encompassed within the Alternate ROW is 102 acres. The permanently maintained ROW, which will be 75 feet on either side of the centerline, reflects a smaller area, which is 70 acres and 69.7 acres, respectively, for the Preferred and Alternate ROW (conservatively presuming a uniform 75-foot width, although the permanent ROW will be narrower in some locations). Both the Preferred and Alternate ROW locations for the SFE Transmission Line would be approximately 3.9 miles long. The Preferred ROW (including the Switchyard Site) traverses 18 parcels of land (some owned by the same landowners),

while the Alternate ROW (including the Switchyard Site) traverses 15 parcels of land (some owned by the same landowner).

**(B) LAYOUT AND INSTALLATION**

The following paragraphs provide data on the layout, engineering design process, and construction of the proposed SFE Interconnection Facilities. Additionally, Section 4906-5-08(B) of this Application provides data relating to vegetation removal during construction of the proposed SFE Interconnection Facilities.

**(1) Construction and Reclamation Activities**

***(a) Surveying and Soil Testing***

General topographic information is shown on Figures 05-1a through 05-1g and in preliminary design drawings for the SFE Switchyard provided in Figure 05-2. The selected ROW for the SFE Transmission Line will be field-surveyed to stake out the centerline prior to construction. The surveying will be completed using conventional and/or aerial methods. The location of significant topographic features and man-made structures along or near the ROW that may affect the design of the SFE Transmission Line will be identified. If the surveyor's line of sight is obstructed, minimal clearing of small trees and brush may be required.

Offsets will be used to survey around large trees and other large obstructions. Profile measurements will also be obtained by conventional or aerial methods. Structure locations will be staked prior to construction.

Where necessary for concrete foundations, a geotechnical study may be performed at the Switchyard Site and/or at foundation locations along the SFE Transmission Line prior to construction.

***(b) Grading and Excavation***

No significant grading is anticipated to construct the SFE Transmission Line on either the Preferred ROW or the Alternate ROW. The existing terrain within the Preferred ROW and the Alternate ROW generally provides a suitable surface for construction vehicle operations.

***(c) Construction of Temporary and Permanent Access Roads and Trenches***

Access roads to permanent structures will be constructed at certain points along the SFE Transmission Line ROW, or where available along other existing access corridors, as shown on Figures 05-1a through 05-1g, for construction activities and periodic operation and maintenance. Access will be located off of public roadways and extend across private land in a manner that minimizes tree clearing and land disturbance to the greatest extent possible. As detailed in Section 4906-5-5(B)(2), permanent access points will be provided via Hibbets Mill Road, Forbes Road, Nicholson Road, Fife-Coal Road, and Osbourne Road to service certain SFE Transmission Line structures.

***(d) Stringing of Cable and/or Laying of Pipe***

Installation for the proposed SFE Transmission Line maybe accomplished using the tension stringing method or other suitable method, as deemed appropriate after detailed engineering design. Lightweight guy cables or ropes will be fed through the stringing sheaves of the sections of line that require stringing. Conductors will then be pulled through under sufficient tension to keep the conductor “in the air.” This protects the conductor from surface damage.

Temporary guard or clearance poles will be used as a safety precaution at locations where the conductors could create a hazard to either crew members or the general public. The locations and heights of clearance poles will be such that the conductors are held clear of power and communication circuits, vehicular traffic, and other structures. The stringing operation will be under the observation of crew members at all times. The observers will be in radio and/or visual contact with the operator of the stringing equipment.

***(e) Installation of Electric Transmission Line Poles, Structures and Foundations***

Installation of each steel transmission pole will require a machine-drilled hole and a reinforced concrete foundation. A portion of the excavated soil will be used for backfill. Excavated soil backfill will be tamped around the pole in layers. Crushed rock backfill may be required where normal soil conditions are not suitable for excavated soil backfill. The excess material will either be placed around the structure or hauled off-site.

Steel pole foundations will be designed for the specific loading conditions of the structure. The permanent impact area for each structure foundation is estimated to be 900 square feet.

During construction, workspace requirements will be larger. Each workpad is estimated to require approximately 130 x 130 feet, or 0.4 acre. Pull pads may also be established in upland locations within the ROW between poles. These temporary work spaces would typically have an approximate area of 50 x 50 feet. Following construction, these areas will be restored such that permanent impact is limited to the approximately 900 square feet per pole.

***(f) Post-Construction Reclamation***

After construction, certain drainage, fencing, and erosion control aspects of the SFE Transmission Line will be decommissioned or established, as appropriate and in accordance with landowner agreements, and – except where the structures and access roads will remain – the properties will be restored to conditions as good as or better than those that existed prior to construction. This includes the restoration of drainage ditches; repair or replacement of any pre-existing or damaged fencing or field drainage tiles; and seeding or other stabilization of disturbed non-cultivated areas. Once vegetative cover has been established, temporary soil erosion and sedimentation control measures will be removed.

**(2) Layout for Associated Facilities**

The following paragraphs provide data on the layout of the proposed SFE Interconnection Facilities. Additional preliminary engineering detail can be found in Appendix D for the SFE Switchyard.

***(a) Site Map***

Figure 05-2 is a scale map of at least 1:12,000 that shows the Switchyard Site including: the SFE Switchyard, access road, and laydown areas with final anticipated grades. The proposed location of major structures and buildings and fenced-in or secure areas are detailed in Appendix D.

Figures 05-1a through 05-1g show the proposed SFE Transmission Line relative to the existing First Energy Highland-Sammis 345-kV transmission line and Dominion natural gas pipeline.

### Final Grades After Construction

Construction will not alter the existing grades along the Preferred ROW or the Alternate ROW. Grading will be necessary to construct the SFE Switchyard and access roadway, as shown in Figure 05-2.

### Temporary and Permanent Access Roads, Staging Areas and Laydown Areas

Gravel access roads will be constructed at various points along the SFE Transmission Line ROW to facilitate construction and to allow for periodic operation and maintenance. The access points will be located off of public roadways, utilizing existing farm roads and trails where possible. Anticipated access road locations, selected to minimize impact to natural resources and landowners, are shown in Figures 05-1a through 05-1g. Access points will be provided via Hibbetts Mill Road, Forbes Road, Fife-Coal Road, Nicholson Road, and Osbourne Road to service certain SFE Transmission Line structures, as further detailed below:

- Pole Nos. 1 and 2 will be accessed from the Generating Facility.
- Pole No. 3 will be accessed via a road to be created along the northern edge of the ROW that will extend east from Hibbetts Mill Road.
- Pole No. 4 will be accessed via a longer road extending south off of Hibbetts Mill Road through the former strip mine area to reach the SFE Transmission Line centerline, then following the centerline east to reach the pole.
- Pole Nos. 5, 6, and 7 will be accessed via a road extending east from Forbes Road along the northern edge of the ROW.

- Pole Nos. 8 and 9 will be accessed from Fife-Coal Road. Pole No. 8 is just west of Fife-Coal Road, and the new access will extend down the center of the ROW to Pole No. 9.
- Pole Nos. 10 and 11 will be accessed via a road extending east from the northern end of Nicholson Road down the center of the ROW.
- Pole Nos. 12 through 17 (a portion of the overlapping ROW and continuing with the Preferred ROW) will utilize a road extending south off of Osbourne Road and paralleling the ROW, extending in to reach each pole location. This road utilizes portions of existing pathways, and the portions of it that are located outside of the Field Survey Area will be adjusted as necessary to avoid or minimize impacts to wetland and stream features.
- Pole No. 18 (Preferred ROW) will be accessed via a short road extending north off of Osbourne Road.
- Pole Nos. 19 and 20 (Preferred ROW) will be accessed via a road that will extend north off of Osbourne Road to the centerline just west of Pole No. 20 and travel east to access each pole.
- Pole No. 21 (Preferred ROW) will be accessed via a short road extending north from Osbourne Road.
- Pole Nos. 22, 23, and 24 (Preferred and Alternate ROW) will be accessed via a road extending south from Osbourne Road adjacent to the Switchyard Site and continuing generally along the centerline of the ROW.
- Pole Nos. 25 and 26 will be accessed via a road from the SFE Switchyard and are located within the Switchyard Site.



Access for the Alternate ROW, where not overlapping with the Preferred ROW, would utilize the same road that would be used for the Preferred ROW's access to Pole Nos. 12 through 17. This road utilizes portions of existing pathways, and the portions of it that are located outside of the Field Survey Area will be adjusted as necessary to avoid or minimize impact to wetland and stream features. Upon entering the ROW, the road would extend along the centerline of the ROW to access each pole, terminating at Pole No. 20A. Pole No. 21A is accessible directly from Osbourne Road.

Access to the SFE Switchyard will include improvement and extension of a farm road approximately 0.3 mile in length, extending off of Sines Road, which is directly off of Osbourne Road to the north.

Within the ROW, temporary pull pad locations may be established in upland areas between certain structures. The specific location of these will be based on final design and the detailed construction access plan prepared prior to construction.

#### Location of Major Structures and Buildings

A new control building will be constructed as a part of the SFE Switchyard, as shown in Appendix D. No major structure or buildings will be associated with the SFE Transmission Line; pole locations and types are shown in Figures 05-1a through 05-1g and Figures 05-3 through 05-5, respectively.

#### Fenced-In or Secured Areas

The SFE Switchyard will be fully enclosed by a chain link fence to restrict access and protect the public. Fencing associated with the SFE Transmission Line

will be installed as agreed upon with landowners to protect livestock and restrict usage of certain access points located on private property.

Once constructed, the dimensions of the SFE Switchyard will be approximately 550 feet by 280 feet. Both the Preferred and the Alternate ROWs are 3.9 miles in length and will be contained within a ROW corridor with a typical cleared area of 75 feet on either side of the centerline.

***(b) Reason for Proposed Layout and Unusual Features***

The proposed layout is the most efficient and least disruptive approach. There are no unusual features associated with construction of the SFE Interconnection Facilities.

***(c) Plans for Future Modifications***

Current plans do not include installing additional lines or equipment within the SFE Interconnection Facilities.

**(C) TRANSMISSION EQUIPMENT**

**(1) Electric Transmission Line Data**

Single-pole structures are proposed along the SFE Transmission Line, spaced strategically to span ecological resources and to utilize reclaimed land of former strip mines. A total of 14 pole locations will be shared by the Preferred and Alternate ROWs as the SFE Transmission Line leaves the Generating Facility site and reaches the existing Dominion natural gas pipeline corridor. The Preferred and Alternate ROWs each include 7 separate pole locations before rejoining to approach the SFE Switchyard. Once the ROWs are again joined, they share another 5 pole locations prior to entering the SFE

Switchyard. Therefore, a total of 26 poles is reflected in the preliminary design for both the Preferred ROW and the Alternate ROW.

Structures will range in height from approximately 80 to 170 feet above ground, with direct embedded foundations, and will be constructed of tubular, galvanized steel. Typical pole designs are illustrated in Figures 05-3 through 05-5.

***(a) Design Voltage***

The SFE Transmission Line will be designed and constructed to operate at 345 kV.

***(b) Tower Designs, Pole Structures, Conductor Size and Number per Phase, and Insulator Arrangement***

The proposed SFE Transmission Line will be supported on multiple types of steel structures, depending on location and purpose, as discussed below. The structures will be designed to support a single 345-kV circuit and two overhead ground wires.

For tangent configurations, single steel pole tangent structures, shown conceptually in Figure 05-3, will be utilized. These typical tangent structures will consist of a single steel pole with three suspension attachment insulators to support the transmission conductors. For structures with a light angle configuration, shown conceptually in Figure 05-4, a single steel structure, with three suspension attachment insulators to support the transmission conductors will be used. For structures with a dead end configuration, shown conceptually in Figure 05-5 a single steel pole structure, with three post dead end attachment insulators to support the transmission conductors will be used. The anticipated structure locations for

the Preferred ROW and the Alternate ROW are shown in Figures 05-1a through 05-1g.

The conductors used for both the Preferred ROW and the Alternate ROW will be designed and constructed for 345-kV operation and will be 954 thousand circular mills (kcmil) aluminum conduct steel reinforced (ACSR) per phase. This conductor has a maximum strength of approximately 338,500 pounds. The design reflects two conductors per phase, or ACSR Cardinal. Tangent structures are in a delta configuration with suspension. The ground wire to be installed will be two #7 Alumoweld. The phase conductors and overhead ground wires will be installed in accordance with the latest version of the National Electrical Safety Code. The conductors will be supported by aluminum clamps attached to the polymer horizontal post insulators. Aluminum clamps will support the overhead ground wire. At dead-ends, bolted-type dead-end clamps will be used on the conductor and on the ground wire.

***(c) Base and Foundation Design***

Each steel pole will be set on a reinforced concrete foundation cast in a drilled hole. Excavated soil backfill will be tamped around the pole in layers. Crushed rock backfill may be required where normal soil conditions are not suitable for excavated soil backfill. Steel pole foundations will be designed for the specific loading conditions of the structure. The permanent impact area for each structure foundation is estimated to be 900 square feet.

During construction, workspace requirements will be larger. Each workpad is estimated to require approximately 130 x 130 feet, or 0.4 acre. As previously

noted, pull pads may also be established in upland locations within the ROW between poles. These temporary work spaces would have an approximate area of 50 x 50 feet. Following construction, these areas will be restored such that permanent impact is limited to the approximately 900 square feet per pole.

***(d) Underground Cable Type and Size***

There are no underground cables associated with the SFE Transmission Line. Within the SFE Switchyard, certain underground cables and conduits may be installed associated with communication to the control room and other connections.

***(e) Other Major Equipment or Special Structures***

No other major equipment or special structures, other than those previously described, are anticipated in association with the SFE Interconnection Facilities.

**(2) Electric Power Transmission Substations: SFE Switchyard**

The SFE Transmission Line will connect to the existing First Energy Highland-Sammis 345-kV line via the proposed SFE Switchyard. The SFE Switchyard will be approximately 550 feet by 280 feet, covering 3.5 acres in area, and fully enclosed by a chain link fence. Associated grading will extend over an approximately 6.6 acre area. Located within the 38-acre Switchyard Site, situated north of Osbourne Road, the SFE Switchyard will be accessed from a newly constructed road approximately 0.3 mile in length, extending from an existing farm road off of Sines Road.

The SFE Switchyard design includes a 345-kV breaker ring bus interconnection substation with a loop connection to the First Energy 345-kV line. In addition to the

electrical equipment, SCADA systems and associated equipment will be located in a 20-by-50 foot on-site control building.

Appendix D provides additional preliminary engineering information associated with the major equipment, such as: breakers; switchgear; bus arrangement and structures; transformers; control buildings; other major equipment or special structures. Note that this information is preliminary and is subject to final design change. Figure 03-2 provides a one-line diagram.

### **(3) Gas Pipelines**

This section is not applicable, as the SFE Interconnection Facilities do not include a gas transmission line. The proposed natural gas pipeline associated with the Generating Facility will be addressed in a separate filing with the OPSB.

**(A) OWNERSHIP STATUS**

SFE will develop, construct, own, and operate the proposed SFE Transmission Line. The SFE Switchyard will be developed and constructed by SFE in cooperation with First Energy; it is anticipated that ownership and operation of the switchyard will be transferred to First Energy upon completion and testing. SFE is currently pursuing easements for the Preferred ROW and Alternate ROW, and holds an option to purchase the approximately 38-acre SFE Switchyard Site within which the SFE Switchyard will be constructed. SFE is within the corporate organizational structure of Advanced Power.

**(B) ESTIMATES OF CAPITAL AND INTANGIBLE COSTS**

Table 06-1 presents estimated capital and intangible cost information for development and construction of the SFE Interconnection Facilities.

**Table 06-1  
Estimated Capital and Intangible Costs**

Description	Cost		
	SFE Switchyard	Preferred ROW	Alternative ROW

**(C) GAS PIPELINE CAPITAL AND INTANGIBLE COSTS**

This section is not applicable, as the SFE Interconnection Facilities do not include a natural gas pipeline. The natural gas equipment associated with the Generating Facility will be the subject of a separate filing with the OPSB.

**(D) PUBLIC INTERACTION AND ECONOMIC IMPACT**

**(1) Counties, Townships, Villages, and Cities within 1,000 Feet**

The entire SFE Interconnection Facilities Study Area is located within Columbiana County. The SFE Interconnection Facilities are located in Yellow Creek Township and Madison Township.

**(2) List of Public Officials**

The following is a list of relevant public officials, with addresses and telephone contacts as well as relevant web addresses:

Columbiana County Commissioners

Mike Halleck (VP), Jim Hoppel (Chairman), and Tim Weigle (President);

105 South Market Street, Lisbon, Ohio 44432; phone: (330) 424-9511

[http://www.columbianacounty.org/comm\\_home.htm](http://www.columbianacounty.org/comm_home.htm)

Yellow Creek Township Trustees

Trustees: John Russell, David Boyd, and Glenn Duck; Township

Administration Building located at 42793 Oakridge Road; P.O. Box 584,

Wellsville, OH 43968; phone: (330) 532-2745

<http://www.columbianacounty.org/Township/yellowcreek.htm>



Madison Township Trustees

Trustees: Mint Cook, Gary Williams, and Roger Walker; 13174 State Route 45, Lisbon, Ohio 44432; phone: (330) 424-7480

<http://www.columbianacounty.org/Township/madison.htm>

Columbiana County Economic Development:

Director, Tad Herold; 130 West Maple Street, Lisbon, Ohio 44432; phone: (330) 424-9078; <http://www.columbianacodev.org/index.html>

**(3) Public Interaction: Siting, Construction and Operation**

Work within the community associated with the Generating Facility has been on-going since 2012, when informal discussions with interested parties began while exploring potential sites. These discussions have included reference to the associated interconnection needs of the Generating Facility.

SFE has developed a number of presentations for various meetings, and has met with reporters from the local newspapers to advise them of the Generating Facility and its status, including interconnection. SFE has created a company web-site, as a means of keeping the community informed, and is committed to continuing local outreach activities.

On July 8, 2015, a pre-application conference meeting was held with the OPSB Staff in Columbus, Ohio to introduce SFE, the Generating Facility, and the SFE Interconnection Facilities. On October 20, 2015, SFE held a public information meeting as required by OAC Rule 4906-3-03. The meeting was properly noticed in the local newspapers. Representatives, including SFE personnel and consultants, staffed the meeting, which included an information display and an opportunity to speak one-on-one with SFE representatives. The SFE Switchyard Site and Preferred and Alternate ROW

were shown on presentation materials (although the designation of Preferred and Alternate ROWs were subsequently reversed). In addition, SFE and its representatives have held numerous meetings with local public officials and proximate neighbors.

SFE will continue to engage in active public outreach prior to, during, and after construction. Once the Generating Facility is in commercial operation, SFE intends that its local personnel will maintain a high level of community involvement.

During the construction phase for the SFE Interconnection Facilities, an on-site construction manager will be available to respond to local issues.

A complaint resolution procedure will be implemented to ensure that any complaints regarding construction or operation of the proposed SFE Interconnection Facilities are adequately investigated and resolved. All complaints received will be investigated by SFE and/or Generating Facility staff. The complaint resolution process will be developed with OPSB Staff, and be in place at least 30 days before the pre-construction conference.

Notification requirements will be established with affected property owners (who will have signed easement agreements with SFE) to notify them and any associated tenants at least 7 days prior to start of construction.

#### **(4) Liability Compensation**

SFE will carry significant amounts of liability insurance. The SFE Interconnection Facilities will be covered under SFE's liability insurance programs for general commercial liability insurance and automobile liability insurance during construction and operation of the SFE Interconnection Facilities.

**(5) Tax Revenues**

SFE has approached the Columbiana County Economic Development Director with regard to establishing an Enterprise Zone within Yellow Creek Township, in which the Generating Facility and a portion of the SFE Interconnection Facilities would be located. An Enterprise Zone Agreement would result in a significant increase in local revenues. The terms of the Enterprise Zone Agreement would require SFE to pay annual compensation to the Wellsville School District and potentially other taxing units in exchange for real and personal property tax exemptions.

Enterprise Zone Agreement discussions with Columbiana County officials have been preliminary to date; therefore, it is very difficult to predict the total increase in local revenues. However, SFE estimates the total annual amount of compensation payments would be more than [REDACTED] per year during the 15-year term of the Enterprise Zone Agreement.

**(A) HEALTH AND SAFETY**

**(1) Compliance with Safety Regulations**

Safety is the Applicant's highest priority. Therefore, the Applicant will assure that the SFE Interconnection Facilities will be designed, constructed, and operated to comply with the requirements specified in the NERC mandatory Reliability Standards, the National Electrical Safety Code, and the Public Utilities Commission of Ohio. During the construction and operation of the SFE Interconnection Facilities all applicable safety standards established by the Occupational Health and Safety administration (OSHA) will be adhered to.

**(2) Electric and Magnetic Fields**

Given that one residence is located within 100 feet of the Preferred ROW centerline, details are provided regarding electric and magnetic fields (EMF). On average, electric fields within a residential structure range from 0 to 10 volts per meter. Electric fields directly beneath power lines may vary from a few volts per meter for some overhead distribution lines to several thousands of volts per meter for extra high voltage power lines. Electric fields from power lines rapidly weaken with distance and can be greatly reduced by walls and roofs of buildings (National Institute of Health (NIH) 2002, Electric Power Research Institute (EPRI) 2009).

In contrast, magnetic fields are not blocked by most materials. Magnetic fields encountered in homes vary greatly and exponentially weaken with distance from the source. Magnetic fields close to electrical appliances are often much stronger than those from other sources, including magnetic fields directly under power lines. Appliance fields

decrease in strength with distance more quickly than power line fields. Alternating magnetic fields produced by alternating current (AC) electricity can induce the flow of weak electric currents in the body. However, such currents are estimated to be smaller than the measured electric currents produced naturally by the brain, nerves, and heart (NIH, 2002; EPRI, 2009).

Due to public concern that the use of electricity, electrically-powered devices, and electrical power distribution networks may adversely affect health, numerous research studies and scientific reviews have been conducted to address this topic. Initial concerns were raised in the late 1970s, and scientists continue to investigate possible relationships between EMF and positive or negative health effects. However, there is no conclusive evidence that exposure to EMF causes health effects.

***(a) Calculated EMF Levels***

Calculations have been conducted (Appendix E) to estimate the field effects of this transmission line and compare the results to applicable standards and guidelines. EMF was analyzed at the minimum conductor height under anticipated summer and winter load conditions.

The maximum electric field values within the ROW were calculated to be 1.1 kilovolts per meter (kV/m) for the tangent structure and 0.2 kV/m for the dead-end structure, both of which are below the International Commission on Non-Ionizing Radiation Protection (ICNIRP) occupational exposure reference level of 8.33 kV/m and the general public exposure reference level of 4.16 kV/m. Maximum magnetic field values within the ROW were calculated to be 284.4 milligauss (mG) for the tangent structure and 272.1 mG for the dead-end structure

under winter loading conditions. The values calculated at the edge of ROW were below 66 mG for all conditions analyzed. These values are well below the ICNIRP reference levels of 4,167 mG for occupational exposure and 833 mG for general public exposure.

***(b) EMF Health Effects***

EMFs are naturally occurring in the environment and can be found in the Earth's interior and in the human body. EMFs are generated essentially wherever there is a flow of electricity, including electrical appliances and power equipment. Electric fields are associated with the voltage of the source; magnetic fields are associated with the flow of current in a wire. The strength of these fields decreases rapidly with distance from the source. Scientists have conducted extensive research over the past two decades to determine whether EMFs are associated with adverse health effects. There is no firm basis or evidence to conclude that EMFs from transmission lines cause adverse health effects (NIH 2002). Additional information is provided in Appendix E.

***(c) EMF Design Considerations***

The strength of EMFs can potentially be reduced by installing transmission line conductors in a compact configuration and, for multiple circuit transmission lines, by selecting conductor phasing that reduces the field strengths. The SFE Transmission Line will be installed on monopole tangent structures; this is a compact design that reduces EMF field strengths in comparison to other installations. The final design of the SFE Interconnection Facilities will be in accordance with requirements of the National Electric Safety Code.

***(d) Procedures for Addressing Public Inquiries Regarding EMF***

A complaint resolution procedure will be implemented to ensure that any complaints regarding construction or operation of the proposed SFE Interconnection Facilities are adequately investigated and resolved. All complaints received will be investigated by SFE and/or Generating Facility staff. The complaint resolution process will be developed with OPSB Staff, and be in place at least 30 days before the pre-construction conference.

**(3) Radio and Television Interference**

Calculations have been performed to estimate the potential for audible noise and amplitude modulation (AM) radio and television interference (Appendix E) associated with the SFE Interconnection Facilities at the average conductor height.

For AM radio and television interference, only the radio interference results produced values higher than the EPRI-recommended limit of 40 decibel microvolts per meter (dB $\mu$ V/m) at 100 feet from the outermost phase conductor. The maximum value, calculated 100 feet from the outermost phase conductor for the configurations analyzed, was 43.3 dB $\mu$ V/m. Radio interference results for all configurations analyzed were below the Institute of Electrical and Electronics Engineers (IEEE) Radio Noise Design Guide recommended limit of 56 dB $\mu$ V/m (assessed at 50 feet from the outermost phase conductor) throughout the entire ROW.

Television interference has no published guidelines for digital television signals; however, these values are reported for reference should any low-strength analog stations or digital signals at the edge of their operating range exist in the area of the SFE Interconnection Facilities. The maximum calculated television interference at the edge of

ROW was 22.6 dB $\mu$ V/m, with a maximum calculated value within the ROW of 37.5 dB $\mu$ V/m for the dead-end structure.

#### **(4) Noise Generation**

##### Construction Impacts

Major construction work will typically occur during the day, between the hours of 7:00 a.m. and 7:00 p.m. (or until dusk when sunset occurs after 7:00 p.m.). Some construction activity, such as extended concrete pours, and minor construction work may extend earlier or later. Construction is expected to be intermittent. Work on the Switchyard Site will generally be at least 650 feet from the nearest residence. With time-of-day restrictions on drilling, blasting, and helicopter operations, and the limited duration of construction, construction noise will not create an undue adverse impact.

If blasting or rock breaking is required, it will occur during normal business hours and neighbors will be provided with the phone number of the site supervisor should they have any questions or complaints.

During construction of the SFE Interconnection Facilities, a temporary increase in noise will result from truck traffic in the area and the equipment used to excavate, install equipment and, where necessary, clear the area of any woody brush. Standard construction techniques will be used. Construction along the route of the SFE Transmission Line and the SFE Switchyard will be relatively brief, involving installation of poles and conductors. The total duration of construction of the SFE Interconnection Facilities is estimated to be approximately 18 months. As a result, the noise impact on nearby sensitive areas is anticipated to be minimal.



### Operation and Maintenance Impacts

Calculations were performed to estimate the field and corona effects and audible noise of the SFE Transmission Line to compare the results to applicable standards and guidelines (Appendix E).

There are two main sources of noise from electrical transmission systems: the transmission lines and the substation. High voltage transmission lines can generate noise during corona discharges. This occurs primarily in foul weather when water droplets form on the conductors. Dirty conductors can also lead to corona discharge.

Predicting audible noise from overhead power lines has been done primarily through empirical formulas based on measurements of existing power lines. For the SFE Transmission Line, an average conductor height above ground per phase was used. Maximum calculated audible levels within the ROW were 50 A-weighted decibels (dBA), below the typical United States Environmental Protection Agency (USEPA) guideline of 55 dBA for a day-night average in the outdoors.

### Mitigation Procedures

Mitigation procedures will include properly maintained construction equipment with mufflers and construction activities typically limited to occur during daylight hours to the extent feasible, and noise related procedures done according to OSHA requirements. No additional noise mitigation is expected as noise sources are primarily associated with operation of construction equipment and will be temporary in nature.

## **(B) LAND USE**

### **(1) Mapping of Study Area**

Figures 07-1a through 07-1d provide a map of at least 1:24,000 scale that provides the following information within the Study Area: the ROWs and centerlines associated with the SFE Transmission Line; the SFE Switchyard; road names; and incorporated areas and population centers. Land use and structures can also be seen on Figures 07-1a through 07-1d, which uses an aerial photographic base map. Additional detail of current land use on and surrounding the proposed Switchyard Site and SFE Preferred and Alternate ROWs (including residential; commercial; industrial; institutional; agricultural; vacant; or as otherwise classified by the relevant land use authority) is depicted on Figure 07-2. Figure 07-2 also shows residential structures that are located within the Study Area, differentiating residences on land owned by participating landowners. A map of agricultural land within the Study Area is provided on Figure 07-3. The Study Area does not include any commercial centers or buildings, industrial buildings and installations, schools, hospitals, churches, civic buildings, or other occupied places.

The existing First Energy Highland-Sammis 345-kV electric transmission corridor lies adjacent to the west of the Switchyard Site, and represents the terminal POI for the SFE Interconnection Facilities. The Preferred and Alternate ROWs cross the following public roadways: Hibbetts Mill Road; Forbes Road; Fife-Coal Road; and Osbourne Road. Nicholson Road extends within the Study Area but is not crossed by either ROW. Four historic strip mine cuts are crossed by the SFE Transmission Line, along the eastern portion of the ROW, although the SFE Transmission Line will span the steep terrain associated with these features.

Aside from the areas of former strip mining, the character of surrounding land within the Study Area is dominated by agricultural and forested land use. Other land uses (residential, commercial, and institutional) are scattered within the Study Area. No recreational land use, school or places of worship are located within the Study Area; the closest, Yellow Creek Presbyterian Church, is approximately 1 mile to the north.

No residential structures will be demolished as a result of the proposed SFE Interconnection Facilities. As shown in Figure 07-2, 11 residential structures are located within the Switchyard Site Study Area, with none located within 100 feet of the SFE Switchyard. A total of 41 residential structures are located within the Study Area of the Preferred ROW, with only one of them located within 100 feet. A total of 31 residential structures are located within the Study Area for the Alternate ROW, with none located within 100 feet. The 14 closest residences are on property owned by participating landowners, with the exception of one residence located along the Preferred ROW, between Pole Nos. 17 and 18, directly south of Osbourne Road. The Preferred ROW has been narrowed to a 124-foot width in this area in order to create greater buffer area between the SFE Transmission Line and the residential property.

## **(2) Land Use Impact**

Table 07-1 presents the area of land use types within the Study Area, as well as the percentage of the Study Area reflected by each category.

**Table 07-1**  
**Land Use within the SFE Interconnection Facilities Study Area**

Land Use Category	Study Area Preferred ROW		Study Area Alternate ROW		Study Area Switchyard Site	
	Approximate Acreage	Approximate Percentage	Approximate Acreage	Approximate Percentage	Approximate Acreage	Approximate Percentage
Forest	517	58	523	59.5	146	58
Agricultural	211	24	209	24	64	26
Former Strip Mine	72	8	72	8	--	--
Residential	48	5	34	4	21	8
Institutional	29	3	29	3	--	--
Utility	9	1	9	1	19	8
Open Water	3	0.5	--	--	--	--
Commercial	5	0.5	5	0.5	--	--
Industrial	0	0	0	0	0	0

The temporary and permanent disturbance areas associated with each element of the SFE Interconnection Facilities has been calculated based upon the following assumptions. Temporary impacts have been presumed to include disturbance within the entire width of the Preferred ROW and the Alternate ROW, as well as 20-foot wide corridors for access roads located outside of the ROW; this overstates impacts, as certain areas will be avoided due to wetland features, but reflects the potential for use of temporary work spaces in upland areas throughout the ROW. Temporary impacts associated with the SFE Switchyard include the open field areas within the Switchyard Site as well as the 20-foot access corridor. Permanent impacts associated with the SFE Transmission Line reflect the 75-foot wide corridor on either side of the centerline, in addition to the access roads

located outside of that clearing area. For the SFE Switchyard, permanent impacts will be considered to be solely within the fenceline and access road.

Because forested area reflects the majority of the land use type, it also reflects the land use with the greatest area of disturbance. The Preferred ROW and the SFE Switchyard result in 57.5 acres of temporary forest disturbance, while the Alternate ROW and SFE Switchyard result in 67 acres of forest disturbance. The SFE Switchyard utilizes predominantly open areas, and will not utilize forested portions of the site for laydown. Permanent impacts would be 43.5 acres for the Preferred ROW scenario and 44.5 acres for the Alternate ROW scenario. Impacts to forested lands will be minimized by restricting cutting of mature trees generally to within 75 feet on either side of the SFE Transmission Line centerline and to generally 20 feet along each access road. Seasonal clearing restrictions will be imposed on applicable areas such that clearing will not occur during months when summer-roosting bats could be present in the area.

Land in agricultural or open use is the second most predominant land use type. The Preferred ROW scenario results in 49 acres of temporary agricultural land disturbance, while the Alternate ROW scenario results in 48.5 acres. Of that, the SFE Switchyard utilizes predominantly open areas, and involves impact to 6.6 acres of agricultural land. Permanent agricultural land impacts would be 21.5 acres for the Preferred ROW scenario and 20.5 acres for the Alternate ROW scenario; however, landowners will continue to use the majority of this area for existing agricultural purposes, with only the limited area of the access road and structure locations unable to return to agricultural use.

The SFE Switchyard will not result in direct temporary or permanent impacts to any other land use type. The SFE Transmission Line will not result in temporary or

permanent impacts to open water, commercial, or industrial land uses. Impacts to former strip mine areas; residential areas; institutional land uses; and utility corridors associated with the Preferred and Alternate ROWs are outlined below:

- Both ROWs will be co-located as they extend through former strip mine areas, although they will span the steep terrain associated with such features. Temporary work will occur within 9.5 acres, with permanent disturbance of 6.5 acres. As a practical matter, only the limited areas for pole placement and access would have any permanent change in use.
- The Preferred and Alternate ROWs each traverse small areas of land that are predominantly in residential use. Temporary impact for such area will be 1.9 acres and 0.4 acre for the Preferred and Alternate ROWs, respectively. Permanent impact will be 1.7 acres for the Preferred ROW and 0.3 acre for the Alternate ROW.
- Both ROWs are co-located as they extend through land owned by Buckeye Water District, an institutional use. Temporary and permanent impact through this area will be 3.8 acres.
- Both ROWs also cross the existing Dominion natural gas pipeline, each resulting in 0.2 acre of impact across utility land use area.

Given the location of the SFE Interconnection Facilities and the characteristics of the land where they are proposed, minimal land use impact is anticipated, as further outlined in the following sections.

Only very minor changes in land use are anticipated within the SFE Transmission Line and the Switchyard Site as a result of operation, and no changes are predicted outside the specific ROW selected, Switchyard Site, and associated access. Permanent impacts will be extremely limited. The portion of the SFE Transmission Line proposed to extend through former strip mine areas is well-buffered from other land uses. The majority of locations where the SFE Transmission Line utilizes agricultural land, the ROW is located on the edge of the property, minimizing potential interference. Few residences are located proximate to the Preferred or Alternate ROW, with much of the surrounding land anticipated to remain forested, resulting in a visual buffer around the SFE Transmission Line.

During operation, additional impacts on land use should be infrequent and minimal. Aside from occasional maintenance and repair activities, operation of the SFE Interconnection Facilities will not interfere with on-going land use (i.e., farming activities).

### **(3) Impact on Existing Structures**

#### ***(a) Distance from Nearest Existing Structures***

The closest structures to the SFE Switchyard are a residence and associated structures located approximately 142 feet to the north; no other structures are located within 200 feet. Three residential structures are located within 200 feet of the Preferred ROW and two within 200 feet of the Alternate ROW. One residence, approximately 186 feet from the centerline, is located along the shared easterly portion of the ROW at Fife-Coal Road; one residence, approximately 95 feet from the centerline, is located along the Preferred ROW where it turns west at Osbourne Road; and one residence, approximately 85 feet from the Preferred ROW centerline

and 120 feet from the Alternate ROW centerline, is located where the two ROWs are once again co-located as they extend west down Osbourne Road to the Switchyard Site. All are participating landowners.

***(b) Building Demolition, Acquisition, or Removal***

No impacts to buildings are anticipated during the construction or operation and maintenance of the SFE Interconnection Facilities.

***(c) Mitigation Procedures***

The SFE Interconnection Facilities were sited predominantly within forested land, agricultural land, and reclaimed strip mines. SFE will use existing farm roads, and access points from public roads where available, to limit the amount of crop area disturbed during construction. Following construction activities, temporarily disturbed areas will be seeded (and stabilized with mulch and/or straw, as necessary) to reestablish vegetative cover in these areas, and in accordance with landowner agreements.

**(C) IMPACTS TO AGRICULTURAL DISTRICTS AND AGRICULTURAL LAND**

**(1) Agricultural Area Mapping**

No agricultural district land is located within the boundaries of the Switchyard Site. Of the land in agricultural use along the SFE Transmission Line, three parcels have agricultural district status. Figure 07-3 illustrates the agricultural districts and land in agricultural use located within the Study Area.



## **(2) Agricultural Land Impacts**

### ***(a) Quantification of Acreage Impacted***

As can be seen in Figure 07-3, the Preferred ROW includes a small amount of agricultural district land along the portion of the ROW shared with the Alternate ROW, reflecting 9 acres within 100 feet of the centerline and 6 acres within the 75-foot permanent ROW area. The Alternate ROW encompasses a greater area of agricultural district land, a total of 28 acres within 100 feet of the centerline and a total of 21 acres within the 75-foot permanent ROW.

A total of less than 50 acres of agricultural land is estimated to be within the temporarily impact area, with a total of approximately 20 acres located within permanent ROW or impact areas.

Once the SFE Transmission Line is operational, only very small areas will remain out of potential agricultural production, associated with the access roads and specific pole locations. All other areas will be allowed to be used for landowner agricultural uses so long as line clearance is appropriately maintained.

### ***(b) Evaluation of Impacts Associated with Construction, Operation and Maintenance***

The transportation and use of construction equipment and material could impact growing crops; fences and gates; subsurface drainage systems (tile lines); and may temporarily block farmers' access to agricultural fields. However, construction impacts will be temporary in nature, and confined to the properties of participating landowners. Once operational, agricultural lands will be restored in accordance with the terms of each landowner agreement.

***(c) Impact to Agricultural Field Operations***

As stated above, the transportation and use of construction equipment and material could impact growing crops; fences, and gates; subsurface drainage systems (tile lines); and may temporarily block farmers' access to agricultural fields. However, construction impacts will be temporary in nature, and confined to the properties of landowners from whom easements have been purchased. Measures will be taken to minimize impacts to agricultural field operations and to restore agricultural properties in accordance with landowner agreements.

***(d) Mitigation Measures***

Work associated with the SFE Interconnection Facilities will avoid or minimize to the maximum extent practicable any damage to field tile drainage systems and soils and agricultural areas. Where any disruption occurs, timely repairs will be made. All work and restoration activities will be completed in accordance with the terms of each landowner agreement.

**(D) REGIONAL LAND USE PLANS AND REGIONAL DEVELOPMENT**

**(1) Impact on Formally Adopted Regional Plans**

Although no formal regional plans exist, the Generating Facility and its associated SFE Interconnection Facilities are supported by local officials. In addition, the Generating Facility's compatibility with regional energy planning will be affirmed through the PJM review process associated with its interconnection into the existing transmission grid. As previously stated, the SFE Transmission Facilities have the sole purpose of facilitating this interconnection.

## **(2) Compatibility Assessment with Regional Plans**

Construction and operation of the proposed Generating Facility and its associated interconnections will have a substantial positive effect on local commercial and industrial activities. The Generating Facility represents a substantial economic contribution to Columbiana County, and construction and operations will benefit Ohio commercial and industrial activities through direct purchases related to construction activities, indirect purchases from purchase of local supplies and induced impacts from workers spending wages locally.

SFE retained an independent firm to analyze the direct, indirect, and induced economic impact of constructing and operating of the Generating Facility. A brief summary of the results are discussed below.

Direct economic impacts associated with the Generating Facility reflect preliminary construction budgets. The expected result is \$922.5 million in direct economic impact to the State of Ohio during construction, including \$204.7 million in gross state product, a peak average of 550 jobs during construction, and \$117 million in wages over the 30-month construction period.

Indirect economic impacts associated with the Generating Facility reflect the purchasing of supplies and services, which is expected to result in the following over the 30-month construction period:

- \$237.5 million of indirect economic impact to the State of Ohio during construction, including \$87.3 million in gross state product, an average of 337 jobs during construction, and \$58.9 million in wages; and

- \$145.7 million of indirect economic impact to the Northeast Ohio Region during construction, including \$55.8 million in gross regional product, an average of 235 jobs during construction, and \$37.5 million in wages.

Induced economic effects associated with the Generating Facility reflect worker wages being spent locally, which is expected to result in the following over a 30-month construction period:

- \$150.9 million of induced economic impact within the State of Ohio, including \$88.3 million in gross state product, an average of 465 jobs during construction, and \$49.4 million in wages; and
- \$129.6 million of induced economic impact within the Northeast Ohio Region, including \$76.2 million in gross regional product, an average of 403 jobs during construction, and \$42.7 million in wages.

During the 30-year operational phase, the Generating Facility will also provide direct, indirect, and induced economic benefits to the Northeast Ohio Region and the state of Ohio. These effects can be summarized as follows:

- \$25.3 million of annual direct economic impacts to the State of Ohio and the Northeast Ohio Region, including \$19.2 million in gross state and regional product, 29 new Generating Facility jobs, and \$4 million in annual wages;
- \$23.7 million of annual indirect economic impact to the State of Ohio, including \$13.5 million in gross state product, 189 new supplier jobs, and \$7.9 million in annual wages;

- \$20.2 million of annual indirect economic impact to the Northeast Ohio Region, including \$11.7 million in gross regional product, 164 new supplier jobs, and \$6.8 million in annual wages;
- \$8.6 million of annual induced economic impact to the State of Ohio, including \$5 million in gross state product, 67 new jobs, and \$2.8 million in annual wages; and
- \$8.2 million of annual induced economic impact to the Northeast Ohio Region, including \$4.8 million in gross regional product, 64 new jobs, and \$2.7 million in annual wages.

These economic impacts do not include the effect of local property tax or Enterprise Zone Agreement payments that will be made by SFE for the Generating Facility. Because the SFE Interconnections Facilities will exist solely to support the Generating Facility, these benefits also apply to the SFE Interconnection Facilities.

#### **(E) CULTURAL AND ARCHAEOLOGICAL RESOURCES**

A cultural historic architecture survey for the SFE Interconnection Facility Study Area (Appendix F) and an archaeological investigation for the SFE Switchyard Site Study Area (Appendix G) have been completed to address potential impacts. In addition, a reconnaissance level review of potential archeology sensitivity along the Preferred and Alternate ROWs has been completed (Appendix G); more detailed investigation, as warranted, will be completed prior to construction if direct impact is proposed in areas identified in Figure 07-4.

## **(1) Cultural Resource Mapping**

Figures 07-1a through 07-1d depict the SFE Interconnection Facilities and the 1,000-foot Study Area with the following information shown, as applicable: recreational areas; recreational trails; scenic rivers; scenic routes or byways; and registered landmarks of historic, religious, archaeological, scenic, natural or other cultural significance. As shown in this figure, there are no recreational areas or cultural significant resources located within the Study Area of the SFE Interconnection Facilities.

## **(2) Cultural Resources Location Studies**

Cultural resource studies (Appendix F and Appendix G) have been completed and provided to the Ohio SHPO for review, as further discussed below.

### **Cultural Historic Investigations**

The purpose of the cultural historic survey (Appendix F) was to identify any historic properties in the Study Area that may be affected by the proposed development of the SFE Interconnection Facilities. Based on the nature of the proposed SFE Interconnection Facilities, the cultural historic investigations consisted of a systematic survey of all properties 50 years of age or older situated within the Study Area.

A majority of the scattered residences within the Study Area consists of a mixture of older homes as well as modern houses, mobile homes, and modular homes. Overall, the entirety of the Study Area was contained within rural areas, including multiple forested areas, which eliminated some of the residential properties from having potential visibility to the SFE Interconnection Facilities. The terrain within the Study Area is undulating and contains several hills and valleys with periodic agricultural fields appearing on the landscape on ridgetop areas. The undulating terrain, in conjunction with the forest canopy,

aids in shielding the SFE Interconnection Facilities from a vast majority of the proximate structures.

The viewshed within the Study Area currently includes several modern intrusions. Besides the existing 345-kV and 138-kV transmission lines, there are multiple transmission, telephone, and other types of line crossings throughout the Study Area. The rural character of the Study Area has not significantly changed over its history, as evidenced by the fact that a majority of architecture through the rural area post-dates World War II. Construction appears to have gained momentum during the second half of the twentieth century, with several mobile homes, modular homes, and modern frame homes present within the Study Area. Many of the modern rural residential areas occur along the outer boundaries of farmlands, where farmers have parceled off small lots for modern residential development. While some older farmsteads remain, a vast majority of the limited residential properties are modern and often appear in clusters.

In total, one individual property 50 years of age or older was identified within the Study Area that will have a direct line-of-sight to the SFE Interconnection Facilities. The property is located on the same parcel as the proposed SFE Switchyard, at the western end of the Study Area; however, all buildings associated with the farmstead are outside of the proposed area of disturbance. The property is a farmstead with several buildings surrounding the house. Following evaluation of the resource, it was determined to not be eligible for listing in the NRHP, due to a lack of association and integrity. Therefore, it was concluded that no historic properties will be affected by the SFE Interconnection Facilities. The report in Appendix F has been provided to the Ohio SHPO for review and concurrence.

### Archaeological Investigation

A literature review for the SFE Interconnection Facilities identified only a few recorded resources within the Study Area. However, one survey was completed (Soldo 2002) for an area that overlaps with the northern and western part of the Study Area. There are no recorded architectural or archaeological sites or cemeteries located within the Study Area. There is only one architectural site, the Wellsville Reservoir (COL0042317) recorded in the far western part of the Study Area. There are no NRHP of Determination of Eligibility resources recorded in the Study Area.

A detailed archaeological investigation was completed for the Switchyard Site (Appendix G). These investigations involved subsurface testing and visual inspection. The field investigations, involving subsurface testing methods and visual inspection, identified two previously unrecorded archaeological sites (i.e., 33CO963 and 964). These sites are not considered to be significant or eligible for the NRHP. No further archaeological work is deemed necessary on this property. This report has been provided to the Ohio SHPO for review and concurrence.

A pedestrian reconnaissance level investigation was conducted along the Preferred and Alternate ROWs (Appendix G) which did not reveal any archeologically sensitive areas within the Study Area, and reduced the area within which future study is recommended if impacts occur within such areas. Figure 07-4 identifies areas where future archaeological study would be conducted if direct impact is proposed in those locations.

### **(3) Evaluation of Probable Impact**

In estimating the impact of the proposed SFE Interconnection Facilities on the preservation and continued meaningfulness of known historic landmarks, direct, indirect,



and reasonably foreseeable future impacts to aboveground historic resources were considered. Due to established setback requirements for the transmission line, direct effects to aboveground resources will not occur. Indirect visual effects are more likely, as the introduction of the SFE Interconnection Facilities to the area may alter people's perceptions of the historic resources and landscapes within the Study Area, altering important characteristics of the historic setting. Given local land use patterns, which are largely categorized by open agricultural fields interspersed with scattered rural residences and a few small wood lots, portions of the SFE Interconnection Facilities will be visible from locations within the Study Area. However, visual impacts from the SFE Interconnection Facilities will be limited through the establishment of vegetated and forested buffers, and by locating SFE Transmission Line structures at the edges of open fields as to take advantage of fringe view screening. See Section 4906-5-07(D)(5) of this Application for additional detail.

The records review did not identify any properties within the Study Area that are listed or determined eligible for listing in the NRHP; therefore, there are no known impacts to aboveground historic properties at this time. An archaeological investigation for the SFE Switchyard Site did not reveal any archeologically sensitive areas. The pedestrian reconnaissance level investigation along the Preferred and the Alternate ROWs eliminated areas of low archaeological sensitive and identified areas where field review will occur if direct impact is proposed in these locations.

#### **(4) Mitigation Procedures**

As described above, the proposed SFE Interconnection Facilities are not anticipated to impact any known cultural resources within the Study Area, and no specific mitigation measures are proposed at this time.

#### **(5) Aesthetic Impact**

##### ***(a) Views from Sensitive Vantage Points***

The area in the vicinity of the Preferred and Alternate ROWs and the Switchyard Site does not include sensitive vantage points such as recreational areas, scenic overlooks, parks, scenic highways or major waterways. Three types of viewers have the potential to experience visual change and are addressed below. These viewers and their sensitivity to visual change in the landscape are described below.

##### **Local Residents**

Local residents include those who live and work in the area and generally view the landscape from their yards, homes, local roads, and places of employment. Except when involved in local travel, residents are likely to be stationary and have frequent or prolonged views of the landscape. Local residents may view the landscape from ground level or elevated viewpoints (typically upper floors/stories of homes). Residents' sensitivity to visual quality is variable; however, it is assumed that residents may be sensitive to changes in particular views that are important to them.

Within the easternmost portion of the Preferred and Alternate ROW, visual impacts are limited due to the absence of residential properties (especially in areas

of historic strip mining) and the presence of forested buffer. Along the central portion of the Preferred and the Alternative ROWs, the potential for visual impacts has been minimized by locating the SFE Transmission Line structures along the edges of property lines and fields so as to not interfere with existing land use and to take advantage of fringe view screening. Forested buffers will exist between residences located in proximity to the westernmost portion of the Preferred and the Alternate ROWs, screening views of permanent SFE Transmission Line structures. Those residences for whom more direct line-of-sight may be available, are typically located further from the SFE Transmission Line. The closest residences are generally those of participating landowners who fully understand and are compensated for the use of their land.

Only one residential structure is located within the Study Area for the SFE Switchyard. Although the SFE Switchyard will be visible from that location, the SFE Switchyard will be compact in design and is located adjacent to existing major electric transmission structures that are similar in character. Landscaping will be incorporated into the design to soften the visual effect.

#### Through Travelers/Commuters

Commuters and travelers passing through the area view the landscape from motor vehicles on their way to and from work or other destinations. Commuters and through travelers are typically moving, have a relatively narrow field of view, and are destination-oriented. Their sensitivity to visual change tends to be relatively low. Drivers will generally be focused on the road and traffic conditions, and have limited opportunity to observe roadside scenery. Passengers in moving

vehicles will have greater opportunities for prolonged off-road views and may have greater perception of changes in the visual environment. Road crossings are minimal for the SFE Transmission Line and viewers currently experience views of overhead transmission lines within the Study Area.

#### Tourists/Recreational Users

Recreational users and tourists include local residents and out-of-town visitors involved in cultural and recreational activities at parks, recreational facilities, and historic sites, as well as in undeveloped natural settings such as forests and fields. Due to the lack of recreational facilities within the Study Area, such viewers would only be likely to be exposed to the SFE Interconnection Facilities if they are through travelers passing on local roads.

#### ***(b) Anticipated Impacts to Aesthetic Quality***

##### Visual Characteristics

The proposed SFE Transmission Line will be designed and constructed to operate at 345 kV. Tangent structures are proposed to utilize single, tapered monopoles with a delta configuration of insulators (see Figure 05-3). Light angle (Figure 05-4) and dead end structures (Figure 05-5) are proposed to be guyed poles with insulators stacked on the inside angle side of the pole and guy wires on the outside of the angle opposite the insulators.

Pole height will range from 80 to 170 feet above ground level, and the base diameter of the poles will range from 36 inches to 50 inches. The current design calls for 6 tangent structures and 2 dead end and running angle structures along the length of the Preferred and the Alternate ROWs (26 structures in total). Although

transmission line structures, conductors, and associated hardware are primarily defined by engineering requirements, several features of the proposed SFE Transmission Line will reduce the potential visual impact of the structures:

- The proposed use of single monopoles for all structures will give the line a simple and clean appearance;
- The use of guy wires eliminates the need for multiple poles at the angle structures;
- The vertical configuration of the conductors (as opposed to a horizontal configuration on H-frame structures) reduces the total number of poles required and the width of ROW clearing; and
- Access roads for construction and operation of the line will utilize existing access points from public roadways, existing farm roads, and newly constructed roads within and along the edges of the ROW.

The SFE Switchyard will be approximately 3.5 acres in size, enclosed by a chain link fence, and accessed by a new gravel-covered road. The SFE Switchyard design includes three 345-kV circuit breakers, configured in a breaker and one half bus arrangement, operated as a ring-bus, along with metering units, a control house, and associated equipment will be located immediately adjacent to the existing First Energy Highland-Sammis 345-kV transmission line.

#### Impact Assessment

Both the Preferred and Alternate ROWs traverse an agricultural and forested landscape, which is also the setting for the SFE Switchyard. This landscape is characterized by rolling topography, with a mixture of scattered farms

and rural residences, open fields, forest, hedgerows, and small woodlots. Much of the SFE Transmission Line is expected to be screened by forested buffer or former strip mine area; where open fields create more direct views, the SFE Transmission Line would be a more distant element.

In addition, the Study Area setting currently includes existing major transmission structures (for example, the First Energy Highland-Sammis 345-kV corridor into which the SFE Interconnection Facilities will interconnect and the First Energy 138-kV corridor that extends across the Generating Facility site), as well as smaller distribution and telephone lines. The SFE Transmission Line, therefore, will be one more similar element added to the viewscape.

The SFE Switchyard will also be somewhat screened by existing vegetation and topography. It will have a relatively compact design, and will be located directly adjacent to the existing electrical transmission corridor with which it will interconnect.

No significant impacts to the aesthetic quality of the surrounding area are anticipated.

***(c) Measures to Minimize Visual Impacts***

As mentioned above, certain routing and design features of the proposed SFE Interconnection Facilities will help to mitigate visual impact. These include the following:

- Routing using the edges of open/agricultural land that minimizes the need for ROW clearing;

- Limiting the geographic area and number of viewers potentially affected with relatively short overall line length (approximately 3.9 miles) ;
- Avoiding major road crossings, areas of concentrated settlement, and recognized sensitive aesthetic resources, to limit the number and sensitivity of potentially affected viewers;
- Using monopole structures to minimize the number of poles required and present a simple clean appearance;
- Using existing farm roads, locating roads along the edges of open fields and woodlots and preserving forested buffers to the extent practicable; and
- Limiting the width of all access roads to 20 feet, to minimize visual impacts associated with transmission line access roads.

In addition, landscaping plans will be developed for the Switchyard Site. The landscaping will be designed to screen the SFE Switchyard from adjacent roads and residences, and will likely include a mix of deciduous and coniferous trees and shrubs.

**(A)    ECOLOGICAL FEATURES MAP**

In support of the preparation of this Application, site visits have been conducted within the proposed Preferred and Alternate ROWs and the Switchyard Site. A report detailing the characteristics of delineated wetlands and other waters is provided in Appendix H. This assessment included a desktop review of streams and wetlands data, vegetation, and major species; stream and wetland field delineations; and habitat observations and sensitive species assessment.

An ecological review was conducted for the Switchyard Site, the Preferred ROW, and the Alternate ROW. The review consisted of collecting information from ODNR, USFWS, USDA, NWI, OWI, and USGS, as well as a field reconnaissance to document site conditions and ecological features. Features evaluated included wetlands, habitats, and wildlife, on and in the vicinity of the proposed SFE Interconnection Facilities. The field visits were conducted in April and November of 2015. The Wetland and Other Waters Delineation Report is provided in Appendix H.

Figures 07-1a through 07-1d depicts the physical and ecological features identified within the Study Area. Along the Preferred and Alternate ROWs, the Field Survey Area was within the corridor for which SFE has obtained landowner permission. In several locations, once engineering design placed structures within the corridor, a full 100 feet surveyed area was not available on each side; in other locations, the survey area was larger. Where surveys were not completed within 100 feet it has been so noted. Field work associated with the SFE Switchyard encompassed the entire Switchyard Site, which



provides for 100 feet around the SFE Switchyard. Additional review within the Study Area utilized secondary source data.

Information illustrated in Figures 07-1a through 07-1d is summarized in the following sections.

**(1) Proposed Transmission Line Alignments**

Both the Preferred and Alternate ROWs are depicted in Figures 07-1a through 07-1d, as well as proposed access roads intended for use during construction and operation. As can be seen on the figure, areas of overlap exist between the two, with the most significant overlap occurring from the Generating Facility to the point where the SFE Transmission Line will cross the existing Dominion natural gas pipeline corridor. Wetland and stream features were identified in locations along the Preferred and Alternate ROWs, and impact was avoided by the SFE Transmission Line design to the greatest extent possible.

**(2) Proposed Switchyard Site**

The proposed SFE Switchyard is depicted in Figures 07-1a through 07-1g, as well as the proposed access drive. No wetlands or streams will be impacted by these proposed elements.

**(3) Natural Resource Features**

***(a) Streams and Drainage Channels***

Two USGS-named perennial streams, 12 intermittent streams, and 11 ephemeral streams were identified and delineated with the Preferred ROW, the Alternate ROW, and the Switchyard Site. Ephemeral and intermittent streams were assessed using the Primary Headwater Habitat Evaluation Index (HHEI) and

perennial streams were assessed using the Qualitative Habitat Evaluation Index (QHEI). Descriptions of the streams and details regarding scoring for each are provided in Appendix H. Table 08-1 provides a listing of the delineated streams within the SFE Interconnection Facilities and their identified location.

**Table 08-1  
Delineated Streams within the Field Survey Area**

Stream		Type	Average Bankfull Width (feet)	Average Depth at Time of Survey (inch)	Length (linear feet)	Area (acres)	QHEI/HHEI Score	Location
Alder Lick Run		Perennial	10	8	244	0.056	29.5	Preferred & Alternate ROW
Bailey Run		Perennial	8	6	206	0.038	57	Preferred & Alternate ROW
S-1		Ephemeral	1	0	1	0.001	24	Switchyard
S-2	a	Intermittent	3	3	642	0.044	31	Switchyard, Preferred & Alternate ROW
	b				64	0.004		Preferred & Alternate ROW
S-3		Intermittent	2	3	98	0.005	21	Switchyard
S-4		Intermittent	3	2	21	0.001	33	Preferred & Alternate ROW
S-5	a	Intermittent	3	4	860	0.059	50	Preferred & Alternate ROW
	b				260	0.018		Alternate ROW
	c				187	0.013		Alternate ROW
	d				18	0.001		Alternate ROW
	e				11	0.001		Alternate ROW
S-6		Ephemeral	3	0	103	0.007	11	Alternate ROW
S-7		Intermittent	3	0.5	313	0.021	30	Alternate ROW
S-8		Ephemeral	4	0	42	0.004	25	Alternate ROW
S-9		Ephemeral	2	0	273	0.013	30	Alternate ROW
S-10		Intermittent	4	2	416	0.038	39	Alternate ROW
S-11		Ephemeral	2	0	66	0.003	35	Alternate ROW

Stream	Type	Average Bankfull Width (feet)	Average Depth at Time of Survey (inch)	Length (linear feet)	Area (acres)	QHEI/HHEI Score	Location
S-12	Ephemeral	2	0	25	0.001	26	Alternate ROW
S-13	Intermittent	4	2	500	0.046	50	Preferred ROW
				554	0.051		
S-14	Ephemeral	1	0	27	0.001	17	Preferred ROW
S-15	Ephemeral	2	0	31	0.001	17	Preferred ROW
S-16	Ephemeral	1	0	73	0.002	14	Preferred ROW
S-17	Intermittent	4	2	176	0.016	37	Preferred ROW
S-18	Intermittent	4	3	255	0.023	41	Preferred ROW
S-19	Intermittent	3	3	115	0.008	31	Preferred & Alternate ROW
S-20	Ephemeral	2	0	4	0.001	17	Preferred & Alternate ROW
				38	0.002		
S-21	Intermittent	2	1	33	0.002	16	Preferred & Alternate ROW
S-22	Ephemeral	1	1	68	0.002	16	Preferred & Alternate ROW
S-23	Intermittent	4	3	228	0.021	47	Preferred & Alternate ROW
Total Stream				5,952	0.504		
Total within the Preferred ROW				3,034	0.302		
Total within the Alternate ROW				3,775	0.326		

The two perennial streams continue to extend within the broader Study Area, flowing into former strip mine areas. Additional streams that extend and/or flow within the Study Area are shown in Figures 07-1a through 07-1d.

***(b) Lakes, Ponds, and Reservoirs***

No major lakes, ponds, or reservoirs are located within the Study Area, other than Bogart Pond (located north of Osbourne Road along the northern extent of the

Study Area). Therefore, for the purposes of this section, palustrine systems other than wetlands and lacustrine waters are addressed as ponds and lakes, respectively.

Four open water aquatic resources, covering total of approximately 0.5 acre, were identified within the Field Survey Area (Figures 07-1a through 07-1d); these are associated with areas of standing water within former strip mine areas. Each of these extends into the broader Study Area as well.

**(c) Wetlands**

A total of 23 wetlands were identified and delineated within the SFE Interconnection Facilities, as outlined in Table 08-2, comprised of either palustrine emergent (PEM) or palustrine forested (PFO) wetlands. In addition, one wetland area that will be traversed by the SFE Transmission Line was previously delineated on the Generating Facility site. The delineated wetlands have been categorized using the Ohio Rapid Assessment Method for Wetlands v. 5.0 (ORAM).

**Table 08-2  
Wetlands within the Field Survey Area**

<b>Wetland</b>	<b>Cowardin Classification</b>	<b>ORAM Score</b>	<b>ORAM Category</b>	<b>Acres within Field Survey Area</b>	<b>Location</b>
W-1	PEM/PFO	47.5	Category 2	0.587	Switchyard, Preferred & Alternate ROW
W-2	PEM	40	Modified 2	0.018	Preferred & Alternate ROW
W-3	PEM	40	Modified 2	0.002	Preferred & Alternate ROW
W-4	PEM	40	Modified 2	0.001	Preferred & Alternate ROW
W-5	PEM	40	Modified 2	0.038	Preferred ROW
				0.058	Alternate ROW
W-6	PEM	47	Category 2	0.406	Alternate ROW

<b>Wetland</b>	<b>Cowardin Classification</b>	<b>ORAM Score</b>	<b>ORAM Category</b>	<b>Acres within Field Survey Area</b>	<b>Location</b>
W-7	PEM	46	1 or 2 gray zone	0.049	Alternate ROW
W-8	PEM	46	1 or 2 gray zone	0.012	Alternate ROW
W-9	PEM	46	Category 2	0.040	Preferred ROW
W-10	PFO	47.5	Category 2	0.101	Preferred ROW
W-11	PFO	47.5	Category 2	0.510	Preferred ROW
W-12	PEM	29.5	Category 1	0.012	Preferred ROW
W-13	PEM	47	Category 2	0.192	Preferred ROW
W-14	PEM	48	Category 2	0.002	Preferred ROW
W-15	PEM	23	Category 1	0.158	Preferred ROW
				0.261	Alternate ROW
W-16	PEM	43	Modified 2	0.139	Preferred & Alternate ROW
W-17	PEM	43	Modified 2	0.706	Preferred & Alternate ROW
W-18	PEM	29	Category 1	0.031	Preferred & Alternate ROW
W-19	PEM	40	Modified 2	0.173	Preferred & Alternate ROW
W-20	PEM	14	Category 1	0.008	Preferred & Alternate ROW
W-21	PEM	32	1 or 2 gray zone	0.019	Preferred & Alternate ROW
W-22	PEM	32	1 or 2 gray zone	0.138	Preferred & Alternate ROW
W-23	PEM	32	1 or 2 gray zone	0.013	Preferred & Alternate ROW
GF-1	PEM	35.5	Modified 2	0.118	Preferred & Alternate ROW
Total: 3.792 acres					
Total Wetlands in Preferred ROW: 2.419 acres					
Total Wetlands in Alternate ROW: 2.152 acres					

Category 3 wetlands have the highest quality and are generally characterized by a high level of biological diversity and topographical variation, large numbers of native species or a high level of functional importance to its surroundings. Category 2 wetlands have the capability to support a moderate wildlife community or maintain mid-level hydrological functions. Category 2 also includes wetlands that may be of lower quality or degraded, but have reasonable potential to be restored (Modified Category 2). Category 1 wetlands are of the lowest quality, and are generally characterized by hydrological isolation, lack of plant species diversity, insufficient habitat availability, and limited potential to perform major wetland functions. All delineated wetlands were categorized as either Category 1 or 2.

NWI-mapped wetlands within the Study Area are also shown in Figure 07-1a through 07-1d. Although mapping from secondary sources cannot be completely relied upon, this provides an indication of the character of the area with 1,000 feet of the SFE Transmission Line. The majority of the wetland resources within the delineated area are associated with streams, although some smaller areas of non-fringe wetlands are also seen. It is expected that, within the broader Study Area, such wetlands would continue to be found, generally associated with areas of lower topography or drainages.

***(d) Woody and Herbaceous Vegetation Land***

An environmental field survey was conducted for the SFE Interconnection Facilities in April and November of 2015. The survey included a review of representative plant communities. Vegetative communities present on the SFE

Interconnection Facilities include six upland communities: agricultural field, forest, maintained lawn, open field, old field, and scrub-shrub. Surrounding land is similar in character, with agricultural fields and wooded areas predominating. Cover types can be seen in the aerial photograph provided in Figure 08-1; additional information on that figure indicates areas where tree clearing is proposed.

The agricultural field community is dominated by corn (*Zea mays*) and alfalfa (*Medicago sativa*). Purple deadnettle (*Lamium purpureum*) is also present within the herbaceous layer.

The forested vegetative community includes black cherry (*Prunus serotina*), red maple (*Acer rubrum*), northern red oak (*Quercus rubra*), honeylocust (*Gleditsia triacanthos*), and white pine (*Pinus strobus*). The shrub layer contains tree saplings, American elm (*Ulmus americana*), swamp white oak (*Quercus bicolor*), rambler rose (*Rosa multiflora*), green ash (*Fraxinus pennsylvanica*), and Allegheny blackberry (*Rubus allegheniensis*). Dominant species within the herbaceous layer of the forest includes garlic mustard (*Alliaria petiolata*), spinulose wood fern (*Dryopteris carthusiana*), false mermaidweed (*Floerkea proserpinacoides*), and Virginia springbeauty (*Claytonia virginica*).

The maintained lawn community includes Kentucky bluegrass (*Poa pratensis*), great plantain (*Plantago major*), white clover (*Trifolium repens*), Virginia springbeauty, and common dandelion (*Taraxacum officinale*).

The open field community is dominated by white clover and orchardgrass (*Dactylis glomerata*). Other species present within the herbaceous layer include

common dandelion, English plantain (*Plantago lanceolata*), Canada goldenrod (*Solidago canadensis*), and common yarrow (*Achillea millefolium*).

The scrub-scrub community includes black cherry in the tree stratum. The shrub layer is dominated by crabapple (*Malus sp.*<sup>3</sup>) and rambler rose. Common herbaceous plants include false mermaidweed, Virginia springbeauty, grass (*Poa sp.*<sup>1</sup>), aster (*Symphyotrichum sp.*<sup>1</sup>), common yarrow, and oldfield cinquefoil (*Potentilla simplex*).

**(4) Highly Erodible Soils and Slopes of 12 Percent or Greater**

Several locations along the Preferred and Alternate ROWs, as well as on the Switchyard Site, have slopes that are greater than 12 percent or have mapped soil types indicated as highly erodible (Figure 08-2). Most of these areas occur on land that was historically strip mined. Design of the SFE Transmission Line will avoid structure placement in these areas to the extent possible, thereby minimizing possible impacts.

**(5) Wildlife Areas, Nature Preserves, and Publicly Identified Conservation Areas**

No wildlife areas, nature preserves, or publicly identified conservation areas occur within the Study Area. The Highlandtown Wildlife Area is located approximately 0.5 mile west of the Switchyard Site, beyond the existing First Energy 345 kV transmission line. This 2,265-acre wildlife area has steeply rolling terrain, with some flat hilltops and valley floors. Second growth hardwoods and confers cover most of the area, with interspersed brushy covers, former cropfields,

---

<sup>3</sup> Insufficient sample to determine exact species.



and some meadow and grain crops. Highlandtown Lake covers approximately 170 acres within the wildlife area and is inhabited by various species of fish. Public fishing, hunting, and boating are permitted on the property.

**(B) FIELD SURVEY OF VEGETATION AND SURFACE WATERS**

**(1) Description of Vegetative Communities, Wetlands and Streams**

Streams, wetlands, and vegetative communities are described in Section 4906-5-08(A)(3).

**(2) Mapping of Delineated Resources**

The surface water and wetland features delineated within the Study Area are depicted in Figures 07-1a through 07-d, and discussed in Section 4006-5-08(A)(3).

**(3) Probable Construction Impact on Vegetation, Surface Waters, and Wetlands**

***(a) Vegetation***

No forested vegetation will require clearing to support the construction of the SFE Switchyard and its associated access road.

Approximately 75 feet of clearing on either side of the centerline will be required to be maintained along the SFE Transmission Line in either the Preferred or Alternate ROW. Agricultural fields and other open areas were crossed when possible in the design of the SFE Interconnection Facilities. However, some forested areas will also need to be cleared. Approximately up to 19.5 acres of tree clearing will be associated with the permanent ROW that extends from the Generating Facility to the Dominion natural gas pipeline corridor. Many of the wooded areas over which this portion of the ROW extends occur within former strip mine areas, and it is expected that this estimate is overstated due to variability

of terrain. From the Dominion natural gas pipeline corridor, where the Preferred and Alternate ROWs diverge, to where they join once again, the Preferred ROW will require 19.3 acres of additional forest clearing, and the Alternate ROW will require approximately 20.5 acres of additional forest clearing. From the point where the Preferred and Alternate ROWs rejoin, an additional 6.3 acres of clearing will be required, including the clearing required for the ROW as it extends across the Switchyard Site to the SFE Switchyard.

Tree clearing will be restricted to occur only within the period from October 1 through March 31 to avoid any potential impact to summer tree-roosting bats.

***(b) Waterbodies***

No impact to waterbodies will occur in association with the SFE Switchyard. Although small intermittent streams extend into areas studied as part of the Switchyard Site, the SFE Switchyard is located in an upland area that will not influence streams. One small intermittent stream segment located along Sines Road will not be altered by the use of this existing road for access during construction and operation of the SFE Switchyard.

None of the open water areas or streams that occur along the Preferred and Alternate ROWs will be impacted by the SFE Transmission Line. Poles have been located such that all waterbodies will be spanned. In most locations, the proposed access roads have been located to avoid streams; however, at S-19, a culvert crossing will be proposed for access and it is likely that in one or two additional locations, a stream crossing will be required (for example, in areas outside of the currently delineated area, where existing culverted farm roads may need to be

upgraded). Efforts will be made to minimize the crossings needed, and coordination will occur with the United States Army Corps of Engineers (USACE) for appropriate coverage under a Nationwide Permit. With its 3-foot bank width, assuming a 20-foot wide road, this would translate to approximately 3 linear feet and 60 square feet (0.001 acre) of stream impact.

A Stormwater Pollution Prevention Plan (SWPPP) will be prepared to detail Best Management Practices (BMPs) that will be utilized to control the potential for erosion and sediment in accordance with Ohio Environmental Protection Agency (Ohio EPA), USACE, and USEPA standards.

***(c) Wetlands***

No wetland impact will be associated with construction of the SFE Switchyard. Although small wetlands extend onto the Switchyard Site, the SFE Switchyard and its associated access road have been located in upland areas and will not result in direct or indirect impacts to such resources.

Wetlands are located within the Preferred and Alternate ROWs that will be spanned by the SFE Transmission Line. Pole locations have been designed to avoid impact to wetlands; no direct wetland fill is proposed in association with the SFE Transmission Line or its access. Where access roads extend outside the delineated area, wetland delineations will be completed prior to use, and roadways will be adjusted to avoid wetland areas.

Although no wetland fill is proposed, the ROW within which the SFE Transmission Line will extend must be kept clear of tall, woody vegetation for safety reasons. Therefore, an area of approximately 75 feet on either side of the

SFE Transmission Line will be cleared and maintained, which has the potential to result in the conversion of certain wetlands. However, only three of the identified wetlands have the characteristics of PFO wetlands (W-1, W-10, and W-11); the remaining wetlands are considered to be PEM emergent wetlands and would, therefore, not contain substantial areas of tall vegetation that would require clearing. A large portion of Wetland W-1 (approximately 0.4 acre) will be located within the ROW as it extends north to interconnect with the SFE Switchyard for either the Preferred or Alternate ROW. Wetlands W-10 (0.101 acre) and W-11 (0.510 acre) are both located within the Preferred ROW, and are proximate to one another as the Preferred ROW extends north to cross and then parallel Osbourne Road.

The BMPs incorporated into the SWPPP that will be developed for construction will provide protections to minimize the potential for erosion and sedimentation to wetland areas.

#### **(4) Probable Operational Impact on Vegetation and Surface Waters**

##### ***(a) Vegetation***

Trimming of trees adjacent to the SFE Transmission Line and removal of brush and undergrowth within the ROW would occur as part of the on-going maintenance of new and existing transmission lines. Once cleared, new areas of ROW would be maintained in low-lying vegetated cover. The total area of currently forested land that will be converted to shrub-scrub cover is less than 45 acres.

***(b) Waterbodies***

No operation or maintenance impacts are anticipated to occur to waterbodies for either the Preferred or Alternate ROW or on the Switchyard Site.

***(c) Wetlands***

Operation and maintenance impacts are expected to be extremely limited, given the characteristics of most wetlands delineated. However, vegetation management will be necessary to prevent the growth of tall, woody trees within the ROW, within the three wetlands identified as PFO (W-1, W-10, and W-11). SFE will develop procedures that carefully address wetland areas and limit the use of herbicides.

**(5) Mitigation Procedures**

***(a) Post-Construction Restoration and Stabilization***

As part of the implementation of the SWPPP, disturbed areas will be re-seeded and re-vegetated with grasses and other native species. Clearing will be minimized, as practicable, with disturbed areas being re-seeded immediately after work is completed. Any impacts to wetland vegetation will be coordinated through permitting efforts with the USACE and Ohio EPA, as required.

Temporary staging areas will not be located in wetlands or streams, and will utilize appropriate BMPs for resource protection, and will be removed in accordance with procedures outlined in the SWPPP to prevent erosion or sedimentation into such areas.

***(b) Frac-Out Contingency Plan***

No horizontal directional drilling installation is proposed in association with the SFE Interconnection Facilities, and therefore, this section is not applicable.

***(c) Demarcation of Surface Waters and Wetlands During Construction***

The SWPPP will include the placement of silt fencing or other demarcation materials along edge of surface waters and wetlands located within the work area of the ROW. Construction equipment will not be allowed in such areas except in the limited locations where specific impact to a stream or wetland has been authorized by permit.

***(d) Procedures for Erosion Control Measure Inspection and Repair***

BMPs, including silt fencing and other erosion control measures, will be inspected routinely to assure proper installation and function. Inspections will also be triggered by significant rainfall events, to evaluate the need for repairs or adjustments in erosion control strategy.

***(e) Measures to Divert Stormwater Away from Fill Slopes and Exposed Surfaces***

On the Switchyard Site, the SWPPP will include specific measures to control runoff during construction and operation of the SFE Switchyard, as well as stabilization measures to be implemented in order to minimize exposed surface area and prevent stormwater from such areas from discharging excess sediment off-site. Along the ROW, each work space and/or pole location will be addressed separately and will be stabilized upon completion of pole installation, with BMPs removed only once revegetation has occurred.

***(f) Methods to Protect Vegetation from Damage***

For all elements of the SFE Interconnection Facilities, BMPs will be implemented during construction to control erosion and prevent siltation into nearby water bodies. Areas of ground disturbance will be seeded and/or mulched or stabilized to prevent soil erosion and sedimentation. Avoiding unnecessary clearing will reduce the amount of vegetative cover disturbance and the potential extent of the impacts. Where trees must be cleared, care will be taken to protect stream banks and to prevent the inadvertent placement of debris.

To prevent erosion and sedimentation that could affect wetlands, a SWPPP will be prepared and implemented in accordance with the Ohio EPA Stormwater General Permit. In addition, BMPs will be implemented during operation to manage stormwater runoff. Appropriate consultation will occur with the USACE to identify additional measures to be implemented during either construction or operation.

***(g) Options for Woody and Debris Disposal***

Woody debris associated with tree clearing is expected to be transported off-site by the clearing contractor for beneficial use. Removal from the ROW will be staged to minimize the amount of associated heavy equipment and vehicle traffic traversing local roadways.

***(h) Herbicide Use for Maintenance***

SFE will limit the use of herbicide use in accordance with a management plan that will be developed for the SFE Interconnection Facilities.

## **(C) PLANT AND ANIMAL LIFE**

### **(1) List of Species Identified**

Correspondence has occurred with both the ODNR and the USFWS, as provided in Appendix I.

Based on data provided by the ODNR, Division of Wildlife Resources, there are no records of any protected species occurring on or within the Study Area. The ODNR and USFWS have identified the potential for Indiana bat and northern long-eared bat to occur within the range of the SFE Interconnection Facilities. For this reason, forested areas within the Study Area should be considered potentially suitable for summer roosting habitat, and appropriate seasonal restrictions imposed on clearing activities.

The USFWS also identified the eastern hellbender, the eastern massasauga, and the bald eagle as species with the potential to occur within this range. During the field survey, it was determined that suitable habitat for these species was unlikely to exist within the Study Area.

### **(2) Probable Construction Impact**

Impacts to endangered or threatened species are not anticipated, based on correspondence from the ODNR and USFWS (Appendix I), field-confirmation that habitat in the Study Area is not suitable for federally listed species, and seasonal restriction of habitat tree clearing to be protective of potential Indiana bat and northern long-eared bat presence. Significant construction impacts on recreational or commercial species are also not anticipated. The limited terrestrial habitat to be altered that would be suitable for such species is not anticipated to have an adverse impact on species populations.



### **(3) Probable Operation and Maintenance Impact**

State-threatened or endangered terrestrial or aquatic species or their habitats will not be impacted by operation of the SFE Interconnection Facilities. Once the limited clearing necessary for construction is completed, operation is not expected to affect the potential for Indiana bat or northern long-eared bat to use surrounding habitat. Recreational or commercial species will also be unaffected by operation; the SFE Interconnection Facilities have been designed to limit ecological impact by being sited in a location with little terrestrial habitat diversity.

### **(4) Mitigation Measures**

The following measures are proposed to ensure that short- and long-term impacts to ecological resources remain insignificant:

- Sediment and Erosion Control – A detailed sediment and erosion control plan will be developed prior to initiating construction. The plan will detail temporary stormwater collection ponds as well as silt fencing or other erosion control devices proposed to limit off-site transport of sediment. In addition, a Notice of Intent will be filed with the Ohio EPA for coverage under the Stormwater Construction General Permit.
- Dust and Particulate Control – During grading activities, dust may be generated as exposed soils dry. Water sprays and other dust suppression methods will be employed on areas of exposed soils to minimize the potential for dust generation.
- Revegetation – Areas temporarily impacted by construction activities will be revegetated as soon as possible following completion of construction to

stabilize exposed areas of soil. Species proposed for the seeding will be selected to ensure compatibility and suitability with surrounding agricultural areas. Care will be taken to prevent the spread of invasive species through revegetation processes.

#### **(D) GEOLOGY AND SOILS**

The topographic contours of the Study Area are shown at five foot intervals on Figures 07-1a through 07-d. Four former strip mine cuts are crossed by the Preferred and Alternate ROWs. These former strip mines have been reclaimed and consist of topography characterized by sheer slopes originating from flat irregular uplands terminating in narrow ravines. The Study Area is otherwise generally characterized by rolling topography with elevations that range between approximately 1,040 feet and 1,220 feet amsl.

Regional geologic maps from ODNR indicate that the Study Area is located in the Muskingum-Pittsburgh Plateau of the Appalachian Highlands Physiographic Region. This region is defined by moderately to high relief plateau having broad major valleys that are dissected by smaller streams. Bedrock within the Study Area is comprised of the Conemaugh group of Pennsylvanian age. The Conemaugh group is defined at the top by the bottom of Pittsburgh coal seam, and at the bottom by the Upper Freeport coal seam; it is primarily composed of alternating sequences of sandstone, siltstone, claystone, limestone, and minor coals.

The soil associations that occur within the Preferred and Alternate ROWs and on the Switchyard Site are identified in Figure 08-3 using the 2007 United States Department of Agriculture (USDA) Soil Survey of Columbiana County, Ohio and updated county soil survey data and mapping. Based on review of the Soil Survey database for Columbiana

County, Ohio and the USDA Natural Resources Conservation Service (NRCS),<sup>4</sup> Soil Survey of Columbiana County, Ohio (2007), the soil units on the Switchyard Site, the Preferred ROW, and the Alternate ROW are mapped with the following soil types: Berks channery silt loam (BkB, BkC, BkD, and BkE, with 3 to 8 percent slopes, 8 to 15 percent slopes, 15 to 25 percent slopes, and 25 to 35 percent slopes, respectively); Bethesda very channery silt loam, with 25 to 70 percent slopes (BpF); Coshocton silt loam (CoB and CoC, with 2 to 6 percent slopes, and 6 to 15 percent slopes, respectively); Fairpoint very channery silt loam (FbB and FbF, with 0 to 8 percent slopes, and 25 to 70 percent slopes, respectively); Gilpin silt loam (GnB and GnC, with 3 to 8 percent slopes, and 8 to 15 percent slopes, respectively); Gilpin-Coshocton silt loams, with 6 to 15 percent slopes (GoC); Holly silt loam, with 0 to 2 percent slopes, frequently flooded (HkA); Keene silt loam, with 3 to 8 percent slopes (KeB); and Upshu-Berks complex, with 6 to 15 percent slopes, eroded (UkC2).

Each of these soil units is briefly discussed below, in the order of their prevalence on the Switchyard Site, based on information available (USDA SCS 2007), with characteristics summarized in Table 08-3.

**Table 08-3**  
**Soil Properties and Characteristics**

Soil Series	Depth Below Surface (inches)	Permeability (inches per hour)	Soil pH	Potential Frost Action	Shrink-Swell Potential
BkB	0 – 10	0.6 – 6.0	3.5 – 6.5	Moderate	Low
	10 – 36	0.6 – 6.0	3.5 – 6.5		Low
	36 – 38	0.0 – 0.2	--		--
BkC	0 – 7	0.6 – 6.0	3.5 – 6.5	Moderate	Low
	7 – 23	0.6 – 6.0	3.5 – 6.5		Low
	23 – 25	0.0 – 0.2	--		--
BkD	0 – 7	0.6 – 6.0	3.5 – 6.5	Moderate	Low
	7 – 24	0.6 – 6.0	3.5 – 6.5		Low

<sup>4</sup> Formerly the Soil Conservation Service (SCS).

Soil Series	Depth Below Surface (inches)	Permeability (inches per hour)	Soil pH	Potential Frost Action	Shrink-Swell Potential
	24 – 26	0.0 – 0.2	--		--
BkE	0 – 1	2.0 – 6.0	4.5 – 7.3	Moderate	Low
	1 – 8	0.6 – 6.0	3.5 – 6.5		Low
	8 – 22	0.6 – 6.0	3.5 – 6.5		Low
	22 – 24	0.0 -0.2	--		--
BpF	0 – 2	0.6 – 2.0	3.5 – 5.5	Moderate	Low
	2 – 80	0.2 – 0.6	3.5 – 5.5		Low
CoB	0 – 11	0.6 – 2.0	3.5 – 7.3	High	Low
	11 – 23	0.2 – 2.0	3.5 – 5.5		Moderate
	23 – 45	0.06 – 0.6	3.5 – 5.5		Moderate
	45 – 70	0.06 – 0.6	4.5 – 6.0		Moderate
	70 – 72	0.06 – 2.0	--		--
CoC	0 – 11	0.6 – 2.0	3.5 – 7.3	High	Low
	11 – 32	0.2 – 2.0	3.5 – 5.5		Moderate
	32 – 42	0.06 – 0.6	3.5 – 5.5		Moderate
	42 – 52	0.06 – 0.6	4.5 – 6.0		Moderate
	52 – 56	0.06 – 2.0	--		--
FbB	0 – 5	0.6 – 2.0	5.6 – 7.3	Moderate	Low
	5 – 80	0.2 – 0.6	5.6 – 7.3		Moderate
FbF	0 – 4	0.6 – 2.0	5.6 – 7.3	Moderate	Low
	4 – 80	0.2 – 0.6	5.6 – 7.3		Moderate
GnB	0 – 9	0.6 – 2.0	3.5 – 7.3	Moderate	Low
	9 – 22	0.6 – 2.0	3.5 – 5.5		Low
	22 – 26	0.6 – 2.0	--		--
GnC	0 – 3	0.6 – 2.0	3.5 – 7.3	Moderate	Low
	3 – 25	0.6 – 2.0	3.5 – 5.5		Low
	25 – 35	0.6 – 2.0	--		--
GoC Gilpin	0 – 7	0.6 – 2.0	3.5 – 7.3	Moderate	Low
	7 – 20	0.6 – 2.0	3.5 – 5.5		Low
	20 – 28	0.6 – 2.0	3.5 – 5.5		Low
	28 – 38	0.6 – 2.0	--		--
GoC Coschocton	0 – 7	0.6 – 2.0	3.5 – 7.3	High	Low
	7 – 40	0.2 – 2.0	3.5 – 5.5		Moderate
	40 – 46	0.06 – 0.6	3.5 – 5.5		Moderate
	46 – 56	0.06 – 0.6	4.5 – 6.0		Moderate
	56 – 66	0.06 – 2.0	--		--
HkA	0 – 4	0.6 – 2.0	5.1 – 7.3	High	Low
	4 – 20	0.2 – 2.0	5.1 – 7.3		Low
	20 – 75	0.6 – 6.0	5.1 – 7.8		Low
	75 – 77	0.2 – 2.0	--		--
KeB	0 – 11	0.6 – 2.0	4.5 – 7.3	High	Low
	11 – 25	0.2 – 2.0	4.5 – 5.5		Moderate
	25 – 66	0.06 – 0.6	4.5 – 6.5		Moderate
	66 – 76	0.0 – 0.2	--		--
UkC2 Upshur	0 – 4	0.2 – 0.6	4.5 – 7.3	High	Moderate
	4 – 44	0.06 – 0.2	4.5 – 8.4		High

Soil Series	Depth Below Surface (inches)	Permeability (inches per hour)	Soil pH	Potential Frost Action	Shrink-Swell Potential
	44 – 54	0.0 – 0.06	5.1 – 8.4		--
UkC2 Berks	0 – 7	0.6 – 6.0	3.5 – 7.3	Moderate	Low
	7 – 20	0.6 – 6.0	3.5 – 6.5		Low
	20 – 24	2.0 – 6.0	3.5 – 6.5		Low
	24 – 34	0.0 – 0.2	--		--

Source: Tables 17 and 18 of the Columbiana County Soil Survey (2007).

BkC, which covers approximately 42 percent of the Switchyard Site, 13 percent of the Preferred ROW, and 20 percent of the Alternate ROW, is a moderately steep, moderately deep, well-drained soil that occurs of the summit and shoulder of ridges. Permeability of the soil is moderately high to high, and available water storage is low. BkC has a high risk of soil erosion when vegetation is removed.

BkE, which covers approximately 27 percent of the Switchyard Site, 10 percent of the Preferred ROW, and 19.5 percent of the Alternate ROW, is a steep sloping, moderately deep, well-drained soil that predominantly occurs on the shoulder and backslope of hills. Low runoff occurs, permeability is moderately high to high, and BkE has very low available water storage.

BkB, which covers approximately 11 percent of the Switchyard Site, 1 percent of the Preferred ROW, and 1 percent of the Alternate ROW, is a gently sloping, moderately deep, well-drained soil that predominantly occurs on the summit of ridges. Permeability is moderately high to high and BkB has a very low available water storage capacity.

GnB, which covers approximately 11 percent of the Switchyard Site, 2 percent of the Preferred ROW, and 2.5 percent of the Alternate ROW, is a gently sloping, moderately deep, well-drained soil situated on the shoulder and summit of ridges. Medium runoff occurs, permeability is moderately high to high, and GnB has low available water capacity.

CoC, which covers approximately 9 percent of the Switchyard Site, 9 percent of the Preferred ROW, and 14.5 percent of the Alternate ROW, is a strongly sloping, deep, moderately well-drained soil that occurs on the footslope, backslope, and summit of hills. Medium runoff occurs from the soil's surface and permeability is moderately low to moderately high.

BkD, which covers approximately 16 percent of the Preferred ROW and 7 percent of the Alternate ROW, is a steeply sloping, moderately deep, well-drained soil that predominantly occurs on the shoulder, backslope, and summit of hills. Permeability is moderately high to high and BkD has a low available water storage capacity.

KeB, which covers approximately 10 percent of the Preferred ROW and 9.5 percent of the Alternate ROW, is a gently sloping, deep, moderately well-drained soil that occurs on the summit of ridges. Runoff is high, permeability ranges from moderately low to moderately high, and available water storage capacity is moderate.

GoC, which covers approximately 10 percent of the Preferred ROW and 2 percent of the Alternate ROW, is a steeply sloping, moderately deep, moderately well-drained soil situated on the side slope of hills. Medium to high runoff occurs, permeability is moderately low to moderately high, and GoC has low available water capacity.

BpF, which covers approximately 9 percent of the Preferred ROW and 8 percent of the Alternate ROW, is an extremely steep sloping, deep, well-drained soil situated on the side slope and summit of hills. Very high runoff occurs, permeability is moderately high, and BpF has a low available water capacity.

CoB, which covers approximately 6 percent of the Preferred ROW and 5 percent of the Alternate ROW, is a gently sloping, deep, moderately well-drained soil that occurs

on the summit of hills. Low runoff occurs from the soil's surface, permeability is moderately low to moderately high, and CoB has a moderate available water capacity.

GnC, which covers approximately 4 percent of the Preferred ROW and 4 percent of the Alternate ROW, is a steeply sloping, moderately deep, well-drained soil situated on the shoulder and summit of ridges. Permeability of the soil is moderately high to high, and GnB has low available water capacity.

FbB, which covers approximately 4 percent of the Preferred ROW and 3.5 percent of the Alternate ROW, is a gently sloping, deep, well-drained soil situated on the summit and shoulder of hills. Medium runoff occurs, permeability is moderately high, and FbB has a low available water capacity.

UkC2, which covers approximately 3 percent of the Preferred ROW and 0.5 percent of the Alternate ROW, is a steeply sloping, moderately deep, well-drained soil situated on the backslope, shoulder, and summit of hills. High to very high runoff occurs, permeability is very low to moderately high, and UkC2 has a very low to low available water storage capacity.

FbF, which covers approximately 2 percent of the Preferred ROW and 2 percent of the Alternate ROW, is an extremely steep sloping, deep, well-drained soil situated on the backslope, side slope, and summit of hills. Very high runoff occurs, permeability is moderately high, and FbF has a low available water storage capacity.

HkA, which covers approximately 1 percent of the Preferred ROW and 1 percent of the Alternate ROW, is a slightly sloping, deep, poorly drained soil situated on the toeslope of floodplains. Negligible runoff occurs from the soil's surface, permeability is moderately high to high, and HkA has a high available water storage capacity.

Based on available soil information, bedrock may be encountered at a fairly shallow depth (USDA SCS 2007), so it is anticipated that soil removal, rock excavation, and fill placement may be necessary to prepare for the SFE Interconnection Facilities. A geotechnical program is expected to be undertaken to support final design and construction of the SFE Interconnection Facilities given the potential for variability within any given site.

No slope or soil conditions were found that would limit construction feasibility of the proposed SFE Interconnection Facilities. Although segments of the Preferred ROW and the Alternate ROW cross reclaimed strip mines, steeper slopes will be avoided and spanned whenever possible; therefore, it is not anticipated that these slopes would impact the SFE Interconnection Facilities. Structures will be placed on stabilized locations to ease placement and reduce the potential for erosion.

It is anticipated that geotechnical borings will be undertaken where major structures will be located. This geotechnical work, to be completed prior to construction, could result in refinement of pole locations and/or adjustments in preliminary foundation designs. SFE will provide the borings and associated information (subsurface soil properties; static water level; rock quality description; percent recovery; and depth and description of bedrock contact) to the OPSB prior to construction.

The Switchyard Site will require careful consideration of grading and use of BMPs throughout the construction effort to appropriately stabilize soils and prevent erosion and sedimentation.



Where steeper slopes exist along the Preferred and Alternate ROWs, they will be spanned by appropriately placed structures. Therefore, no construction impacts are anticipated.

Once construction is complete and the area has been stabilized, operation and maintenance will not adversely affect soils or any potentially highly erodible soils. Areas disturbed during construction will subsequently be stabilized with vegetation.

A SWPPP will be prepared and implemented in accordance with the Ohio EPA General Permit for stormwater discharge associated with construction activities. In addition, BMPs will be implemented during operation of the SFE Interconnection Facilities to manage for soil erosion and stormwater runoff. Areas that are temporarily disturbed during construction and do not host associated structures will be stabilized with mulch, silt fencing or similar materials until vegetation can be re-established. Impacts to erodible soils are being managed through the SWPPP and appropriate BMPs. No special mitigation procedures are anticipated beyond these standard erosion prevention measures.

**(E) COMPLIANCE WITH ENVIRONMENTAL AND AVIATION REGULATIONS**

**(1) List of Anticipated Licenses, Permits, and Authorizations Required for Construction**

The Applicant anticipates submitting a Notice of Intent to the Ohio EPA for authorization of stormwater discharges associated with construction activity under the National Pollutant Discharge Elimination System (NPDES). It is anticipated that a Nationwide Permit will be required from the USACE. In addition, highway crossing permits may be required for the crossing of township roadways. A Columbiana County

driveway permit may also be required for the SFE Switchyard. It is not anticipated that Federal Aviation Administration (FAA) approval will be required.

SFE will obtain all applicable wetland and land use permits and authorizations prior to the commencement of construction activities. Copies of the permits and authorizations will be provided to the OPSB within seven days of issuance or receipt by SFE.

## **(2) Debris Disposal Plans**

Debris associated with construction of the SFE Interconnection Facilities is expected to consist of conductor scrap, construction material packaging (including pallets, cartons, boxes, insulator crates, conductor reels and wrapping), wire scraps, and used stormwater erosion control materials. Construction materials with salvage value will be removed from the construction area for reuse. Otherwise, waste materials will be properly disposed of at a licensed commercial landfill. As construction work proceeds, the selected ROW and area surrounding the Switchyard Site will be kept clean of all rubbish and debris resulting from SFE Interconnection Facilities construction activities.

Construction debris will be hauled away in construction dumpsters and disposed of in accordance with state and federal requirements in an Ohio EPA approved landfill or other appropriately licensed and operated facility. It is estimated that construction of the SFE Switchyard will result in approximately 100 cubic yards of debris, while construction of the SFE Transmission Line will result in only minimal debris.

## **(3) Stormwater Management, Erosion Control, and Restoration**

A comprehensive soil erosion and sedimentation control plan will be developed and implemented as part of the SWPPP required by the NPDES General Construction Permit for the SFE Interconnection Facilities. The SWPPP will address all components of the

NPDES permit, and conform to the specifications of the Rainwater and Land Development manual, which describes Ohio EPA's standards for stormwater management, land development, and urban stream protection. The SWPPP will identify potential sources of pollution that may reasonably be expected to affect the quality of stormwater discharges associated with construction activities.

The SWPPP will also describe and ensure the implementation of BMPs that reduce pollutants in stormwater discharges during construction. To protect surface waters, wetlands, groundwater, and stormwater quality, erosion and sediment control measures will be installed and maintained throughout construction. Such measures may include silt fence, hay bales or temporary siltation basins. The location of these features will be detailed on the construction drawings, approved by the Ohio EPA as part of the NPDES review, for use by the construction contractor. Inspection of these features will occur throughout construction to assure that they are functioning properly until completion of all restoration work, including final grading and seeding.

#### **(4) Disposition of Contaminated Soil and Hazardous Materials**

All materials stored on-site shall be kept in a neat, orderly manner in appropriate tightly sealed and clearly labeled containers. Manufacturer's recommendations for proper use and disposal will be followed. Material Safety Data Sheets will be retained and available on-site at all times. All sanitary waste will be collected in portable units and emptied regularly by a licensed sanitary waste management contractor.

In addition, if the capacity of on-site oil storage exceeds 1,320 gallons, a Spill Prevention, Control, and Countermeasures (SPCC) Plan will be prepared that outlines procedures to be implemented to prevent the release of hazardous substances into the

environment. The SPCC Plan would prohibit refueling of construction equipment within 100 feet of any stream or wetland, and contractors would be required to keep materials on hand to control and contain a petroleum spill, including a shovel, tank patch kit, and oil-absorbent materials. In the unlikely event a spill occurs, it will be cleaned up immediately after discovery, and reported in accordance with federal and Ohio EPA Division of Emergency and Remedial Response regulations.

**(5) Height of Tallest Anticipated Aboveground Structures and Construction Equipment**

As described above, structure heights along the SFE Transmission Line will range from 80 feet to 170 feet. Structures located within the SFE Switchyard will not exceed 70 feet in height. The Applicant will consult with the FAA and Ohio Department of Transportation (ODOT) to determine if a Notice of Construction or Alteration is required under 14 code of federal regulations (CFR) Part 77.9. However, as shown on Figure 08-4, the closest air transportation facility (the publicly used Columbiana County Airport) is located a direct distance of 2.5 miles from the SFE Interconnection Facilities. Given this distance and the proposed structure heights (a maximum of 170 feet), the SFE Interconnection Facilities are not expected to have adverse impacts to air traffic. Note that the Generating Facility, with stacks of 180 feet were not determined to be a hazard to air navigation, and no lighting was required.

**(6) Excessively Dusty or Muddy Soil Conditions**

The SWPPP will include provisions that address construction during both excessively dusty and excessively muddy conditions. These measures are briefly described below.

**(a) *Dust Control***

BMPs will be utilized and implemented to comply with fugitive dust control rules and minimize the amount of dust generated by construction activities. In addition, the extent of exposed/disturbed areas at any one time will be minimized and restored/stabilized as soon as practicable. Water or a dust suppressant, such as calcium carbonate, will be used to suppress dust on unpaved roads (public roads, as well as access roads) as needed throughout the duration of construction activities. If necessary, temporary paving (e.g., oil and stone) could be used to stabilize dusty surfaces in certain locations (e.g., construction entrances). However, oil and stone dust suppression methods will not be applied within or immediately adjacent to sensitive areas, such as streams or wetlands. Any unanticipated construction-related dust problems will be identified and immediately reported to the construction manager and contractor.

**(b) *Excessively Muddy Conditions***

Construction entrances will be established and maintained to a condition that will prevent tracking or flowing of sediment onto public roads. The SWPPP will provide guidance on the need to grade construction entrances to provide positive drainage and avoid the formation of standing water. Should muddy soils develop, stabilization measures may be employed, including the placement of dry materials, such as soil or gravel, to lower the overall water content. Any sediment spilled, dropped, washed or tracked onto public roads will be removed immediately.

**This foregoing document was electronically filed with the Public Utilities**

**Commission of Ohio Docketing Information System on**

**1/15/2016 12:18:07 PM**

**in**

**Case No(s). 15-1717-EL-BTX**

Summary: Application for SFE Interconnection Facilities electronically filed by Mr. Scott M Guttman on behalf of South Field Energy LLC