Large Filing Separator Sheet

Case Number: 12-1727-EL-BSB

File Date: 2/13/2012

Section: 1 of 4

Number of Pages: 200

Description of Document: Exhibit

PUCO EXHIBIT FILING

Date of Hearing: February 12, 2013 Case No. 12-1727-EL-BSB PUCO Case Caption: In the matter of the Application of American Transmission Systems, Incorporated for a Certificate of Environmental Compatibility and Public Need for the Glenwillow Transmission Switching Substation Project List of exhibits being filed: 1 Application Hoolxant Exhibit Proof of Publications Exhibita Initial Testimony of Jay Ruberto Exhibit 3 Supplemental Testimony of Jay Ruberto Exhibit

Joint Exhibit 1 Joint Stipulation

Staff Exhibit 1 Staff Report of Investigation

ECEIVED-DOCKETING DIV 2013 FEB 13 PM 2: 45 Reporter's Signature:______ Date Submitted:

FILE

This is t accurate

and compi

Lete

reproduction

the

regular course of

Date Processed

is to certify

that the images

appearing

are

aD

Case

iocument delivered in

lechnician

BEFORE THE

OHIO POWER SITING BOARD

In the Matter of the Application . : of American Transmission Systems, : Incorporated for a Certificate of : Environmental Compatibility and : Case No. Public Need for the Glenwillow : 12-1727-EL-BSB Transmission Switching Substation : Project. 1

PROCEEDINGS

before Jay S. Agranoff, Administrative Law Judge, held at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Hearing Room 11-D, Columbus, Ohio, on Tuesday, February 12, 2013, at 10:00 a.m.

ARMSTRONG & OKEY, INC. 222 East Town Street, 2nd Floor Columbus, Ohio 43215-5201 (614) 224-9481 - (800) 223-9481 FAX - (614) 224-5724

Armstrong & Okey, Inc., Columbus, Ohio (614) 224-9481

FILE

Robert J. Schmidt, Jr. rechmidt@porterwrlight.com

Porter Wright Morris & Arthur LLP 41 South High Street Suites 2800-3200 Columbus, Ohio 43215-6194

> Direct: 614-227-2028 Fax: 614-227-2100 Toli free: 800-533-2794

> > www.porterwright.com

porter wright

CINCINNATI CLEVELAND COLUMBUS DAYTON NAPLES WASHINGTON, DC December 19, 2012

Ms. Barcy F. McNeal, Secretary Public Utilities Commission of Ohio 180 East Broad Street Columbus, Ohio 43215

RE: In the Matter of the Application of American Transmission Systems, Inc. for a Certificate of Environmental Compatibility and Public Need for the Construction of the Glenwillow Substation Case No. 12-1727-EL-BSB

Dear Ms. McNeal:

Enclosed for filing are the original and 10 copies of the proof of publication of the first public notice for the local public hearing and evidentiary hearing scheduled in the above-captioned case. The public notice appeared in the December 14, 2012 *The Plain Dealer*.

If you have any questions regarding this filing, please feel free to contact me at your convenience.

Sincerely,

Robert J. Schmidt, Jr. Attorney for Applicant American Transmission Systems, Inc.

Enclosures

PUCO	2012 DEC 19 PH 1: 24	RECEIVED-DOCKETING DIV
------	----------------------	------------------------

EXHIBIT

This is to certify that the images appearing are an accurate and complete reproduction of a case file document delivered in the regular course of business Technician _____ Date Processed NN 1 9 2012

AFFIDAVIT OF DISTRIBUTION

HIU STATE OF WYAHOGA-COUNTY OF _____ being designated agent for turDOALOR HJ Alr (Publication)

And has full knowledge of the facts herein as follows:

IRST ENERGY (Advertiser) 12-14-12 (Date of ROP Insertion) by PLAN DEALER (Publication) THE

The Print ad was printed in accordance with the insertion order request.

Veaui Signed:

NOTICE OF PROPOSED MAJOR UTILITY FACILITY

an Transmission Systems, Incorporated ("ATSP), a subsidiary Selection Transmission Systems, acceptional (ALS), a stochastic of Freitingery Corp., proposes to construct the new Generaliow Transmission Switching Substation Project ("Project"). ATSI owna Freitingery Corp.'s Orice transmission itree. The proposed project is a major utility studies of the been proposed and previously submitted to the Ohio Power Siltery Board Insey, and Application iox a Certificate of Environmental Compatibility and Public Need.

The Project is needed to ensure the cellshilly of the more system in the greater Cleveland metropolitins area which consently taces agaiticant operating timitations including themat satings, capacit shortage, and low vollage concerns. The Project, in conjunction with other system improvements, is designed to connect these operating limitations. These improvements will provide enhanced reliability with sufficient capacity for future growth and development.

The proposed project will consist of a new 345 kV transmission swit sublication located in the Village of Glanwitow in Cayehoga County, Ohio. The proposed Substation will connect with two existing 345 kV Ices that plass clear to the proposed substation site as well the proposed substation site as well the proposed substation site are well the carefully studied the general project area to identify potentially sensitive areas and land uses, and has evolusted multiple sites for the substation in an aftert to identify the most appropriate location. ATSI has submitted both a Preferred and Aliennese sile, both of which are located in close proximity to existing transmission lines, as shown on the attached map.



The following public officials and agencies have been served with copies of the Application as required by the Ohio Power Siting Soard anotteluget

- Mr. Ed FilzGeraid, Cuvahoge County Executive
- Ms. Ellen Connelly, Cuyshoga County Council President
- Mr. Nathan Kelly, Chair, Cuyaboga County Planning Commis-Ma. Jeanne Schmotzer, Cuyaboga County Clark of Council
- Mr. Jack Schron, Cuyshoge County Cound Member -- District 6 Mr. Merk A. Cagelin, Village of Glenwillow Mayor Mr. Bill Davis, Cheirmen, Village of Glenwillow Plensing Commission

- Mr. Michael E. Henry, Engineer, Village of Cleriwillow Mr. John A Bace, Vice-Mayor, Village of Gleriwillow Mr. Dan T. Moore, President, Cleveland Metio Parle

Copies of the application are available for public inspection at the Comes of the approximant are evaluated on particulation in approximation of the Ohio Power Siling Board, cite Public Utilities Commission of Ohio, Utilities Department, 12th Floor, Borden Building, 180 East Broad Street, Columbus, Ohio 43215-5793, www.apab.ohio.gov. A acopy of the application was also sent to the following iteraty:

Cuyahoga County Public Library, Solon Branch, 34125 Portz Parlaway, Solon, Ohio 44139

An Application for a cartificate to construct operate, and maintain the show named electric transmission facility are how pending before the Board. The application has been essigned Docket No. 12-1227-EL-BSR, and the cocket numbers should be referenced in eff-cammunications sbout these proceedings

In accordance with the Ohio Power Siling Board regulations (Admin. Code Rule (806-5-08), the following sections of the Ohio Revised Codo plus additional information are shown.

Section 4005.10(A)

(A) The power string board shall render a decision upon the record ver granting or denying lite application as filed, or granting it upon such terms, conditions, or modifications of the construction, op or melmionance of the major utility facility as the board conside prints. The certificate shall be conditioned upon the facility being itence with standards and rules adopted under sections 1501.33. 1501 34, and 4561.32 and Chapters 3704., 3734., and 6111. of the Revised Code. The period of initial operation under a condicate shall expire two years after the date on which electric power is first genera by the facility. During the pariod of initial operation, the lacility shall be . subject to the enforcement and monitoring powers of the director of environmiental protection under Chapters 3704., 3734., and 6111. of the Revised Code and to the emergency provisions under those chapt It a major utility facility constructed in accordance with the terms and In a many of the certificate is unable to operate in complemce with all applicable requirements of state laws, rules, and etandards partaining to all pollution, the facility may apply to the director of environmental

protection for a conditional operating parmit under division (G) of section 3704.93 of the Revised Code and the rules adopted thereunder. The operation of a major utility lacitity in compliano operating permit is not in violation of its certific ance with a conditioned le. Áfter the expli of the period of inlited operation of a major utility facility, the facility shall be under the justicition of the environmental protection agency and E comply with all tame, rules, and standards pertaining to air pollution, or pollution, and solid and fazardous waste disposal. anes comply with all le

The board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the board, unless it finds and determines all of the following:

(1) The basis of the need for the facility if the facility is an electric transmission line or gas or natural gas transmission line; (2) The nature of the probable environmental impact;

(3) That the facility represents the minimum adverse environmental impact, considering the state of available factorology and the nature and montics of the various alternatives, and other pertinent considerations; (4) in the case of an electric trainsmission fine or generating facility, that the facility is consistent with registrat plans for asparaton of the electric power grid of the electric systeme serving this state and interconnected stilly system and that the facility will perve the interests of electric

state potential and the line takes of the test of the potential of the second of the s chapters and under sections 1501,35, 1501,34, and 4561,82 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under section 4561.32 of the Re Code, the board shall context with the office of aviation of the division of multi-model planning and programs of the department of transportation under section 4651.341 of the Revised Code. (6) That the facility will serve the public tatgest, convenience, and

(7) in addition to the provisions contained in divisions (A)(1) to (8) of this section and rules adopted under those divisions, what its impact will be on the visibility as agricultural land of any land in an additing agricultural district established under Chapter 929, of the Nevised Code that is located within the site and sharnshow site of the proposed major utility solidly. Rules accord to evaluate impact under division (A)(7) of this section shall not require the complication, creation, submission, or roduction of any information, document, or other data pertaining to lend not incated within the site and alternative sit (d) That the facility incorporates maximum leasible weier conservation prodices as determined by the board, considering available technology and the nature and economics of the various all

Section 4906.07. Public hearing an application

(A) Upon the receipt of an application complying with section 4908.06 of the Revised Code, the power silling buard shaft promptly fix a data for a public hearing thereon, not sees than sixty for more than hinely days after such receipt, and shall conclude the proceeding as expeditionisity as

(B) On an application for an amandment of a cartilicate, the board shall you on an appenance nor an amounters or a optimizate, the coard shall hold a hearing in the same memory as a hearing is held on an application for a certificate if the proposed change in the facility would result in any material increase in any environmental impact of the facility or a substantial change in the location of all or a ponion of such facility other

then as provided in the elements set forth in the application. (C) The chairman of the power siting board shall cause each applie (c) I has onservery on the power wing poarts and cause such appearance files with the board to be investigated and shall, not less than Resen tays prior to the date any application is set for hearing submit is written report to the board and to the applicant. A copy of such report shall set made available to any person upon request. Such report shall set that a policy of the boarding and shall analyze any contract of the board. the nature of the investigation, and shall contain recommended findings with regard to division (A) of section 4906 10 of the Revised Code and shall become part of the record and served upon all parties to the proceeding.

As scheduled by Board, the public hearing in this once consists of two parts:

A. A local public bearing, pursuant to Section 4905.08(C), Re Code, where the Board of all accept written or onal testimony from core, while the House shall be an accept within or our wathrough any parson on January 36, 2013, at 6:00 p.m., at the Villegie of Glanarillow Council Chambers, 28655 Pathbone Road, Glanari Ohio 44138-5348.

B. An avide B. An evidentiary hearing commanding on February 12, 2013, at 1930 auto, at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Hewing Room 11-D. Columbus, Ohio 43215-3793

4906.08(C). Partine - testimony

(C) The board shall accept written or oral testimony from any person at the public hearing, but the right to call and exemine with a chail be reserved for perfex. However, it's board may adopt rules to exclude regulative, immeterial, or melevant testmony.

wantion

Petitions to intervene in the adjudicatory hearing will be accepted by the Board up to 30 days following publication of the notice required by Fule 4906-5-08(C)(1), O.A.C., or by January 14, 2013, whichever is later However, the Board strangly encourages interested persons who wish to intervent, the build study of contractor here tool point a that with to intervent in the adjudicatory hearing to file their petitions as early as possible. Petitions should be addressed to the Ohio Power Siting Board. Docketing Division, 180 East Broad Street, Columbus, Ohio 43215-3793 and cite the above-interl case runther (Docket No. 12-1727-EL-BSB)

People living longer. fewer children are dving

MARIA CRENG

LONG ON - Heady everywhere around the world, people are its-ing longer and fewer shifting are dring. But intrastingly, people are graphing with the diseases and disabilities of modern Ma, accord ing to the stort expr Inch so far at He i the biggant health i The last compre

The last comprehensive study was in 1960, and the top builts problem these was the doubt of children cache to -- mays than 10 million each year. Since then, tangaigns to variants children tankan diverse like addention ainst diseases like poli adas have reduced the m mainer di ono and of children dying to about 7 milon annually. Malastrition was or

falestrition was once fin gain igh threat for children. New, weywhere many Africa, they are such more likely to ovarest chan

Wish more childe fronic filments an which intre character parvering, chronic (Encases and disabilitien that airlise laber in Mic are taking a bigger toll, the resourch said. High blood pressure has become the backing hashin tilk workfwide, this loved by analong and electro

koned by analytics and sleaked. "The largest contributor to the slopks hould burden surf perma-tures (desthal), but chronic size-some, signizer, torestal health con-ditions and all the Dans and Joint diaman," and nor of the study busines, Christopher Marray, di-rector of the Institute of Health Marries, and Institutes of Health the information of the industries unity of Washington. In developed countries, su

the helf of the health problems, trans, now or the normal properties. freeled by an aging population. While the expectancy is classifing many everywhere, so too are the number of years people will live with things allow vision or bearing and mental beaks pr

The research appears in seven papers published online Thursday by the journel Lancet. More than en iz 50 a 480 re gathered data up to 2010 from serveys, consider and pust stud-

in, As in 1990, Jupan copped the life expectancy list in 2010, with 79 for more and 66 for women. In the United Systes that year, life ex-pectancy for men was 76 and for men. 81.

The research formd wide varia the remarks which will vari-tions in what's killing people around the world. Some of the most actions findings highlighted by the permitcher

"Humicide is the No. 5 killer of non in Latin America; it ranks nom in Latin America; it ranks 20th worldwide. In the United States, it is the 21st of tie of death in men, and in Western Ex

oren. a While subide ranks globally as the Sist-leading killer, it is as high as the minth top cause of death in women across Asis's "subide belt," from ledia to Chize. Sainide

belt," from india to China. Sainide panks 14th in North Assaytes and 15th in Western Borope. a in people and 15-50, disbetes is a bayer filler in Arica than in: Western Excope (8.5 denths ver-sus 1 denth per 100,000). Elohully, heart disease and stroke remons the top hillers. Re-Menting an older population, imag Notice at remem the top inters. As forting as older population, lang concer moved to the fifth cause of death globally, while other ran-outs including those of the liver, stormach and colou are also in the Lop 20. AIDS jumped from the 36th cause of death in 1990 to the mith heading unne two de

While chronic disances are kill-ing now people nearly every-where, the overall trend is the op-

FILE

12-1727-EL-BSB

Robert J. Schmidt, Jr. rachmidt@porterwright.com

Porter Wright Morris & Arthur LLP 41 South High Street Suites 2800-3200 Columbus, Ohio 43215-6194

> Direct: 614-227-2028 Fax: 614-227-2100 Toli free: 800-533-2794

> > www.porterwright.com

porter wright

CINCINNATI CLEVELAND COLUMBUS DAYTON NAPLES WASHINGTON, DC January 23, 2013

Ms. Barcy F. McNeal, Secretary Public Utilities Commission of Ohio 180 East Broad Street Columbus, Ohio 43215

RE: In the Matter of the Application of American Transmission Systems, Inc. for a Certificate of Environmental Compatibility and Public Need for the Construction of the Glenwillow Substation Case No. 12-1727-EL-BSB

Dear Ms. McNeal:

Enclosed for filing are the original and 10 copies of the proof of publication of the second public notice for the local public hearing and evidentiary hearing scheduled in the above-captioned case. The public notice appeared in the January 15, 2013, *The Plain Dealer*.

If you have any questions regarding this filing, please feel free to contact me at your convenience.

Sincerely,

Robert J. Schmidt Jr. Ste

Robert J. Schmidt, Jr. Attorney for Applicant American Transmission Systems, Inc.

Enclosures

RECEIVED-DOCKETING BIV

This is to certify that the images appearing are an accurate and complete reproduction of a case file incument delivered universe of business rechnician ______ Date Processed _______ AN 2.3 203

AFFIDAVIT OF DISTRIBUTION

STATE OF OHD CUVATIOGA COUNTY OF _____being designated agent for AUG THE PLAIN DEALON (Publication)

And has full knowledge of the facts herein as follows:

FIRST ENERGY - GLEWWILLOW (Advertiser) /-/5-13 (Date of ROP Insertion) by THE PLAN DEACOR (Publication)

The Print ad was printed in accordance with the insertion order request.

Deaver Signed:

anuary 15, 2013

where resusciences of floriberin China

The Plain Dealer | Breaking news: cleveland.com

A. L. W. Int. - Withhand problems it said, "but makes us see extra by rapid development.

Judge convicts boy kindergarten when he stabled a teacher with a pencil.

A3

mists seize more of Mali, vite fierce French airstrikes

ALLIMACHI HMED

IALI - Despite a combardment by planes, al-Qaidairgents grabbed ry in Mali on Mona strategic military prought them far government's seat

a administration to help the French t against Islamist Mali, Defense Sec-E. Panetta said ording to the New He said the assist include air and al support. ed States has al-

i intelligence with Defense officials lecisions had been it whether the s would also offer idflight refueling air transport, but ptions were under imes reported. fficials would not : possibility that transport planes n Mali, where the es has been con-

mbitions counterrogram for years. would not discuss United States has me aircraft, either urmed, over Maii. who spoke to re-

s plane en route to a weeklong trip in that the chaos in deep concern to stration, and he rench for their ac-

id "what we have hem is that we with them, to cothem, to provide listance we can to em in that effort." ported. threatened retri-

st France. , has fallen into a more dangerous fghanistan or So-Omar Ould Hamt of the Movement and Jihad in West of the rebel groups

Y LINE) Ohio Poison Cenergency advice

ion about potentiis products. Call 1222 avytime.

on radio Europe 1.

French fighter jets have been pummeling the insurgents' desert stronghold in the north since Friday, determined to shatter the Islamist domination of a region many fear could become a launch pad for terrorist attacks on the West and a base for coordination with al-Qaida in Yemen, Soma-

lia and Pakistan. The Islamist fighters responded with a counter-offensive Monday, overrunning the garrison town of Diabaly, about 100 miles north of Segou, the administrative capital of central Mali, said French Defense Minister Jean-Yves Le

Drian. The French Embassy in Bamake immediately ordered the evacuation of the roughly 60 French nationals in the Segou region, said a French citizen who insisted on anonymity out of fear for her safety.

France expanded its aerial bombing campaign, launching Airstrikes for the first time in central Mali to combat the new throat. But the intense assault, including raids by gunship helicopters and Mirage fighter jets, failed to halt the advance of the rebels, who were only 250 miles from the capital, Bamake, in the far south.

The rebels "took Diabaly after fierce fighting and resistance from the Malian army. which couldn't hold them

Tuesdav~Week 3

controlling the north, speaking back," said Le Drian, the French defense minister. Mali's military is in disarray

and has let many towns fail with barely a shot fired since the insurgency in the West African nation began almost a vear ago. While the al-Qaidalinked extremists control the north, they had been blocked in the narrow central part of the landlocked nation.

They appear to have now done a flanking move, opening a second front in the broad southern section of the country, knifing in from the west on government forces. Monday's surprise assault

and the downing of a French combat halicopter by rebel fire last week have given many pause. Just hours before Diabaly fell, a commander at the military post in Niono, the town immediately to the south. laughed on the phone, and confidently asserted that the Islamists would never take it.

By afternoon, the commander, who could not be named because he was not authorized to speak publicly, sounded almost desperate. "We feel truly threatened," he said. It was unclear what hap-

pened to the Malian troops based at the military camp in Diabaly. The commander said that he had not been able to reach any of the officers at the base, raising fears they were massacred.

DONATE YOUR CAR

Wheels For Wishes

Make (A Wish.

Ohio, Kentucky and Indiana

o ANYWHERE

Call: (216) 206-6530



American Transmission Systems, Incorporated (ATSI), a subsidiary of FirstEnergy Corp., proposes to construct the new Glenwillow Transmission Switching Substation Project (Project). ATSI owns FirstEnergy Corp.'s Ohio transmission lines. The proposed project is a major utility facility and has been proposed and previously submitted to the Ohio Power Siting Board through an Application for a Certificate of Environmental Compatibility and Public Need.

The Project is needed to ensure the reliability of the transmission system in the greater Cleveland metropolitan area which currently faces significant operating limitations including potential thermal ratings, capacity shortage, and low voltage concerns. The Project, in conjunction with other system improvements, is designed to help correct these operating limitations. These improvements will provide enhanced reliability with sufficient capacity for future growth and development.

The proposed project will consist of a new 345 KV transmission switching substation located in the Village of Gleriwillow in Cuyehoga County, Ohio. The proposed Substation will connect with two existing 345 kV lines that pass close to the proposed substation site as well the proposed new Bruce Mansfield - Glenwillow 345 kV line. ATSI has carefully studied the general project area to identify potentially sensitive areas and land uses, and has evaluated multiple sites for the substation in an effort to identify the most appropriate location. ATSI has submitted both a Preferred and Alternate site for the substation, both of which are located in close proximity to existing transmission lines, as shown on the attached map,



An Application for a certificate to construct operate, and maintain the above named electric transmission facility is now pending before the Board. The application has been assigned Docket No. 12-1727-EL-BSB, and the docket number should be referenced in all communications about these proceedings.

As scheduled by Board, the public hearing in this case consists of two parts: A. A local public hearing, pursuant to Section 4906.06(C), Revised Code, where the Board shall accept written or oral testimony from any person on January 30, 2013, at 6:00 p.m., at the Village of Glenwillow Council Chembers, 29555 Pettibone Road, Glerwillow, Ohio 44139-5348.

B. An evidentiary hearing commancing on February 12, 2013, at 10:00 n.m., at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Hearing Room 11-D, Columbus, Ohio 43215-3793.

4906.06(C). Parties - testimony

(C) The board shall accept written or oral testimony from any person at the public hearing, but the right to call and examine witnesses shall be reserved for parties. However, the board may adopt rules to exclude repetitive, immaterial, or irrelevant testimony.

This marks the second public notice regarding public hearings for the project. The first notice was published in the Plain Dealer on December 14, 2012.

BEFORE THE

OHIO POWER SITING BOARD

In the Matter of the Application of) American Transmission Systems, Incorporated) for a Certificate of Environmental Compatibility) and Public Need for the Glenwillow Transmission) Switching Substation Project)

Case Numbers: 12-1727-EL-BSB

....

INITIAL TESTIMONY OF

JAY A. RUBERTO

ON BEHALF OF

AMERICAN TRANSMISSION SYSTEMS, INCORPORATED

	EXHIBIT
tabbles"	3

1 2	TESTIMONY OF MR. JAY A. RUBERTO
3 4	INTRODUCTION AND PURPOSE
5	Q. PLEASE STATE YOUR NAME, EMPLOYER, BUSINESS ADDRESS AND
6	POSITION.
7	A. My name is Jay A. Ruberto. I am employed by the FirstEnergy Service Company. My
8	business address is 5001 NASA Boulevard, Fairmont WV 26554. I am a Senior Advisor in
9	the Transmission and Substation Engineering Group of the Energy Delivery organizational
10	unit. Additional information regarding my education and work experience can be found in
11	Attachment A.
12	
13	OBSERVATIONS THAT WILL ASSIST THE READER WITH UNDERSTANDING
14	THIS TESTIMONY
15	
16	O. BEFORE TURNING TO SUBSTANTIVE MATTERS, DO YOU HAVE ANY
17	OBSERVATIONS THAT WILL ASSIST THE READER WITH UNDERSTANDING
18	THIS TESTIMONY?
19	A. Yes. My testimony is being submitted in the proceedings for Glenwillow Transmission
20	Switching Substation Project (Ohio Power Siting Board Case no. 12-1727-EL-BSB).
21	Unless otherwise indicated, capitalized terms that are used in my testimony have the same
22	meaning as the same capitalized terms have in the Application The common terms used in
23	my testimony are as follows:
24	

.

ł

STATES STATES STATES STATES

.

1	Application: means the Application of American Transmission Systems, Incorporated for a
2	Certificate of Environmental Compatibility and Public Need for the Glenwillow
3	Transmission Switching Substation.
4	Applicant: means American Transmission Systems, Incorporated.
5	ATSI: means American Transmission Systems, Incorporated, the Applicant in this
6	proceeding.
7	Glenwillow Transmission Switching Substation: means the construction of a transmission
8	switching substation as proposed at the Preferred Site as described in Case No. 12-1727-EL-
9	BSB.
10	OPSB: means the Ohio Power Siting Board.
11	Project: means the proposed Glenwillow Transmission Switching Substation Project.
12	ODNR: means the Ohio Department of Natural Resources.
13	ODOT: means the Ohio Department of Transportation.
14	OEPA: means Ohio Environmental Protection Agency.
15	
16	Also, I note that the Application is filed with the OPSB and posted on the Board's website,
17	and therefore available to all parties who have been granted intervention and other interested
18	parties.
19	
20	Finally and again speaking as sponsor of the Application, in the unlikely event that there is a
21	difference between data or information provided in the Applicant's prefiled testimony and
22	the Application, the data or information in the prefiled testimony will control.
23	

1

OVERVIEW OF THE APPLICATION

2

3 Q. WHAT IS THE PURPOSE OF THIS PART OF YOUR TESTIMONY?

A. This section of my prefiled testimony will provide a summary of how the Application is
organized and will briefly summarize each section of the Application.

6

7 Q. HOW IS THE APPLICATION ORGANIZED?

8 A. The Application was submitted in Docket No. 12-1727-EL-BSB.

9 The Application was prepared in accordance with the OPSB's rules as provided in Chapter 10 4906-15 of the Ohio Administrative Code which is tilted "Instructions for the Preparation of 11 Certificate Applications for Electric Power, Gas and Natural Gas Transmission Facilities." This chapter of the OPSB's rules is divided into seven second level divisions, sections 4906-12 15-01 through 4906-15-07. The seven sections are further divided into third level divisions, 13 14 (A), (B), (C), ..., (n) section titles. Some section titles are further divided into fourth level divisions, (1), (2), (3), ..., (n) subsection titles. Some subsection titles are further divided 15 16 into fifth level divisions, (a), (b), (c), ..., (n) subheadings. Some of the subheadings are 17 further divided into sixth level divisions, (i), (ii), (iii), ..., (n) sub-subheadings. The OPSB's 18 rules generally instruct an applicant to provide narrative and other data in response to each 19 section, section titles, subsection, and subheadings. Most of the sub-subheadings direct the 20 applicant to provide information on maps or figures and typically do not require a narrative 21 response.

The Application mirrors the organization of Chapter 4906-15 of the Ohio Administrative 1 Code. Thus, the Application is organized into seven sections, each of which corresponds to 2 the sections in Chapter 4906-15-01 through 4906-15-07 of the OPSB rules. Each page of 3 each section is numbered with identification unique to that section, for example the page 4 numbers of the section corresponding to section 4906-15-01 are number 01-1, 01-2, 01-3, 5 6 etc. Further, the various Tables, Exhibits and Appendixes of each section also utilize a 7 similar numbering nomenclature. The sections of the Application are further divided to 8 correspond to the section titles, subsection titles, subheadings and sub-subheadings, each of 9 which is numbered with a heading that corresponds to the associated parts of Chapter 4906-10 15 of the OPSB rules. Where the appropriate response to the OPSB rules requires inclusion 11 of information on a map, exhibit or similar document, more so for the sub-subheading aspects of the rules, the information is provided on a map or exhibit and usually described in 12 the narrative of the next higher division. 13

14

15 Q. PLEASE BRIEFLY SUMMARIZE EACH SECTION OF THE APPLICATION.

A. The Application was submitted to the OPSB on November 9, 2012. The Project was
 submitted in a single volume marked as the Glenwillow Transmission Switching Substation
 Project.

- 19
- 20

The seven sections of each Application are:

21 22

.

 Section 1 – Project Summary and Facility Overview, beginning at page 1-1 of the Application, addresses the requirements of the OPSB rules provided in Ohio

Administrative Code Section No. 4906-15-01 - Project Summary and Facility
 Overview;

3	٠	Section 2 - Review of Need for Proposed Project, beginning at page 2-1 of the
4		Application, addresses the requirements of the OPSB rules provided in Ohio
5		Administrative Code Section No. 4906-15-02 - Review of Need for Proposed Project;
6	•	Section 3 - Site and Route Alternatives Analysis, beginning at page 3-1 of the
7		Application, addresses the requirements of the OPSB rules provided in Ohio
8		Administrative Code Section No. 4906-15-03 – Site and Route Alternatives Analysis;
9	٠	Section 4 – Technical Data, beginning at page 4-1 of the Application, addresses the
10		requirements of the OPSB rules provided in Ohio Administrative Code Section No.
11		4906-15-04 – Technical Data;
12	٠	Section 5 - Financial Data, beginning at page 5-1 of the Application, addresses the
13		requirements of the OPSB rules provided in Ohio Administrative Code Section No.
]4		4906-15-05 - Financial Data;
15	٠	Section 6 - Socioeconomic and Land Use Impact Analysis, beginning at page 6-1 of
16		the Application, addresses the requirements of the OPSB rules provided in Ohio
17		Administrative Code Section No. 4906-15-06 - Sociocconomic and Land Use Impact
18		Analysis; and
19	٠	Section 7 - Ecological Impact Analysis, beginning at page 7-1 of the Application,
20		addresses the requirements of the OPSB rules provided in Ohio Administrative Code
21		Section No. 4906-15-07 – Ecological Impact Analysis.
22		

5

.

APPLICANT'S WITNESS' RESPONSIBILITIES FOR SPONSORING THE VARIOUS PARTS OF THE APPLICATION 3

4 Q. PLEASE IDENTIFY THE APPLICANT'S WITNESSES THAT ARE SPONSORING 5 EACH PART OR SUBPART OF THE APPLICATION.

6 A. I am sponsoring the Application as an entire document.

7 Q. WHAT DO YOU MEAN WHEN YOU SAY YOU ARE SPONSORING THE ENTIRE 8 APPLICATION?

9 A. That the data and information in the identified parts of the Application, including tables, 10 figures and appendices, were either prepared by me, or prepared under my supervision as the 11 person at FirstEnergy Service Company on behalf of ATSI responsible for the overall 12 preparation of the Application. For the parts of the Application where I relied on technical 13 knowledge or other information provided by consultants, experts or other individuals 14 working on behalf of ATSI, I am familiar with those portions of the Application and the 15 information provided therein, and I am sponsoring that information on behalf of ATSI.

16

Q. TO THE BEST OF YOUR INFORMATION AND BELIEF IS THE APPLICATION SUBMITTED TO THE OHIO POWER SITING BOARD COMPLETE AND ACCURATE?

- 20 A. Yes.
- 21
- 22

1	ADDITIONAL TESTIMONY IN RESPONSE TO PUBLIC COMMENTS AND OTHER
2	ISSUES
3	
4	Q. DID YOU ATTEND THE JANUARY 30, 2013 PUBLIC HEARING ON THE
5	PROJECT?

6 A. Yes.

7

8 Q. DO YOU HAVE ANY COMMENTS ON TESTIMONY GIVEN AT THE PUBLIC9 HEARING?

A. Yes. One person spoke in favor of the project and the two other persons who provided 10 11 testimony in general questioned why the substation couldn't be located somewhere other than within Glenwillow Village. As discussed in Section 3 of the Application, ATSI conducted a 12 siting analysis to determine a location for the new 345 kV switching substation that best 13 balances social, environmental, engineering and economic considerations. The goal of the 14 siting study was to select an appropriate site for a new 345 kV switching substation to 15 connect two existing 345 kV transmission lines as well as the proposed Bruce Mansfield -16 17 Glenwillow 345 kV Transmission Line. And while many potential sites were considered, the preferred site is compatible with existing land use, is generally cleared of trees, has no houses 18 19 located within 1,000 feet, has no known cultural or historic resource concerns, and has 20 minimal wetland and stream features onsite. In addition, the property parcel of the preferred site that ATSI has acquired also includes the location of the new and existing 345 kV 21 22 transmission lines that need to be connected to the substation. The extension of these transmission lines to the preferred site of the substation can be installed entirely within this 23

property parcel. Our evaluations demonstrate the preferred site represents the minimum I adverse environmental impact, considering the state of available technology and the nature 2 3 and economics of the various alternatives and other pertinent considerations. 4 5 Q. HAS THE APPLICANT DISCUSSED THE RECOMMENDED CONDITIONS FOR 6 THE PROJECT WITH THE OTHER PARTIES IN THE CASE? A. Not at the time of the filing of this testimony, however, the Applicant and the OPSB Staff 7 8 have scheduled a conference call for February 7, 2013 to discuss the recommended 9 conditions included in the Staff Report of Investigation. Applicant anticipates that a Joint 10 Stipulation will be filed in this matter following that conference call. 11 12 Q. WILL GLENWILLOW VILLAGE PARTICIPATE IN THE DISCUSSION OF THE **CONDITIONS?** 13 14 A. At this time, we do not believe that Glenwillow Village will participate in discussions regarding recommended conditions for the Project. We believe ATSI and Glenwillow 15 Village have reached an agreement that addresses Glenwillow Village's concerns with the 16 Project. At the time of the submittal of this testimony, therefore, we believe that Glenwillow 17 18 Village will withdraw their intervention or agree to the terms of the Joint Stipulation. 19 20 **O. DOES THIS CONCLUDE YOUR INITIAL DIRECT TESTIMONY?** A. Yes it does. However, I reserve the right to supplement my initial testimony if anything 21 22 changes with respect to the status of the Application, the Staff's Recommended Conditions. 23 or for the development of any stipulations with the Staff or intervening party.

ATTACHMENT A

SUMMARY OF EDUCATION AND WORK EXPERIENCE OF JAY A.

RUBERTO

1	Q. HOW LONG HAVE YOU BEEN EMPLOYED BY FIRSTENERGY SERVICE
2	COMPANY, FIRSTENERGY CORP., OR ITS OTHER SUBSIDIARIES OR
3	PREDECESSOR COMPANIES?
4	A. I have been employed with FirstEnergy Service Company, or other FirstEnergy subsidiaries
5	or predecessors, continuously since September 1984.
6	
7	Q. WHAT IS YOUR CURRENT JOB TITLE?
8	A. I am Senior Advisor, Transmission and Substation Engineering in the Transmission
9	Engineering Group of the Energy Delivery organizational unit.
10	
11	Q. HOW LONG HAVE YOU BEEN IN YOUR CURRENT POSITION?
12	A. I was named to my current position in April 2011 following the merger between FirstEnergy
13	and Allegheny Energy.
14	
15	Q. PLEASE DESCRIBE YOUR CURRENT POSITION.
16	A. In this position I provide support for FirstEnergy's and its subsidiaries, including ATSI,
17	efforts to site new transmission facilities, by assisting with efforts in developing transmission
18	line route siting studies, transmission substation siting studies, and associated regulatory
19	filings. This also involves working with internal and external resources that include
20	FirstEnergy's Legal-Regulatory, Real Estate, Transmission Engineering, Customer Support,
21	External Affairs Managers, Environmental Permitting & Compliance, Vegetation
22	Management, Operations Support, Transmission Lines Services Department, Public

.

Party State

ž

Communications, Regional Organizations, Area Managers, and Asset Management
 Departments.

3

4 Q. PLEASE DESCRIBE, BRIEFLY AND GENERALLY, THE POSITIONS YOU HAVE 5 HELD IN YOUR CAREER WITH FIRSTENERGY.

6 A. Prior to the merger with Allegheny Energy, I was employed by Allegheny Energy Service 7 Corporation as Director, Transmission Siting since 2006 and was responsible for directing 8 the activities associated with the siting of transmission lines, real estate and rights of way. 9 drafting, documents and records, permitting and surveying for the regulated companies of 10 Allegheny Energy. Prior to that position, I was Director, Customer Service Center since 1999 where I directed the call center and various customer service and billing functions for 11 12 the operating companies of Allegheny Energy. Prior to that I held various positions including General Manager of the Customer Service Center, Team Leader of Customer 13 14 Service Center Support, Supervisor, Division Customer Services and Accounting, and various Engineering positions. My current assignments include leading and assisting in the 15 16 coordination of environmental studies and regulatory permitting for various FirstEnergy's 17 transmission projects.

18

Q. STARTING WITH AFTER HIGH SCHOOL GRADUATION, PLEASE TELL US YOUR EDUCATIONAL BACKGROUND.

A. I earned a Bachelor of Science degree in Electrical Engineering from Pennsylvania State
 University in 1983.

DB1/62075427.1

Q. HAVE YOU EVER HAD TO TESTIFY PREVIOUSLY IN OHIO POWER SITING BOARD OR OTHER ELECTRIC-UTILITY PROCEEDINGS?

A. Yes. I have testified before the Ohio Power Siting Board for the East Springfield-LondonTangy 138 kV Transmission Line Project (OPSB Case No. 11-4884-EL-BTX) and the
London Substation Project (OPSB Case No. 11-4885-EL-BSB). I have also testified before
the Pennsylvania Public Utility Commission ("PA PUC"), the West Virginia Public Service
Commission ("WV PSC"), the Virginia State Corporation Commission ("VSCC"), the
Maryland Public Service Commission ("MD PSC"), the Federal Energy Regulatory
Commission ("FERC") and in several cases in the Circuit Court in West Virginia.

10

Q. HAVE YOU BEEN INVOLVED ON OTHER PROJECTS REQUIRING SUBMITTAL
 OF OTHER TYPES OF SITING FILINGS FOR APPROVAL OF THE
 CONSTRUCTION OF OTHER ELECTRIC TRANSMISSION PROJECTS?

A. Yes, I have either prepared or participated in the preparation of numerous filings to the WV
 PSC, the VSCC, MD PSC and the PA PUC, as well as two other Application filings and two
 Letter of Notification filings with the OPSB.

17

18 Q. WHAT IS YOUR ROLE ON THE PROJECT?

A. I am the person with responsibility for coordinating the Applicant's efforts to obtain the
 OPSB's authorization to construct the proposed Project. As such, I am responsible for the
 overall Project, including the Site Selection Study, the preparation of the Application, filing
 the Application with the OPSB and acting as the Applicant's lead representative to the OPSB
 Staff throughout the Board's regulatory process.

DB1/62075427.1

3

.

- I
- 2

3 Q. GO ON.

A. In this role, I worked with the subject matter experts with expertise on the various topics that
are described in Chapter 4906-15 of the Board's regulations. The subject matter experts
were drawn from qualified employees of the Applicants or the Applicants' affiliates or, in
some cases, from qualified external consulting firms.

8

9 Q. DO YOU HOLD FINAL DECISION-MAKING AUTHORITY FOR THE PROJECT?

10 A. No. The Applicant's executives hold final decision-making authority for the Project. My 11 role is to formulate issues and recommendations for executive review and approval, and to 12 implement the executives' decisions and guidance. As such, I hold responsibility for 13 identifying issues that require executive authorization, presenting such issues to the 14 executives - including answering questions from the executives - and then executing on 15 executive decisions and direction. In this role, I was the project lead for preparation of the 16 Application draft that was presented for executive authorization. Once the executives approved filing of the Application, I was responsible for acting as the Applicant's lead 17 18 representative to the OPSB Staff throughout the OPSB's regulatory process.

19

20 Q. PLEASE IDENTIFY THE RESOURCES THAT WERE AND ARE AVAILABLE TO

21

YOU AS YOU PERFORM YOUR DUTIES IN THIS MATTER.

A. I received and continue to receive assistance from the subject matter experts. In addition, I
 obtained and continue to obtain assistance on an "as needed" basis from other internal

DB1:62075427.1

.

FirstEnergy (and affiliated company) personnel in engineering, real estate, regulatory, asset management, legal, construction, forestry, procurement, customer relations, area and community relations, and communications resources. Finally, acting pursuant to executive direction, I have access to and on an "as needed" basis receive assistance from, external resources such as the Louis Berger Group, Inc.

.

una and a second of the second second second and the constraint of the second second

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/4/2013 3:41:43 PM

in

Case No(s). 12-1727-EL-BSB

Summary: Testimony of Jay A. Ruberto electronically filed by Ms. Catherine Darcy Copeland on behalf of American Transmission Systems, Incorporated

BEFORE THE

OHIO POWER SITING BOARD

In the Matter of the Application of) American Transmission Systems, Incorporated) for a Certificate of Environmental Compatibility) and Public Need for the Glenwillow Transmission) Switching Substation Project)

Case Numbers: 12-1727-EL-BSB

SUPPLEMENTAL TESTIMONY OF JAY A. RUBERTO

ON BEHALF OF

AMERICAN TRANSMISSION SYSTEMS, INCORPORATED

IN SUPPORT OF JOINT STIPULATION FILED IN THIS MATTER

1-6969	EXHIBIT
D 800-63	4
PENG	

1 2		TESTIMONY OF MR. JAY A. RUBERTO
3 4	0.	PLEASE STATE YOUR NAME, EMPLOYER, BUSINESS ADDRESS AND
¢.	γ.	
3		rosition.
6	A.	My name is Jay A. Ruberto. I am employed by the FirstEnergy Service Company. My
7		business address is 5001 NASA Boulevard, Fairmont WV 26554. I am a Senior Advisor in
8		the Transmission and Substation Engineering Group of the Energy Delivery organizational
9		unit.
10		
11	Q.	HAVE YOU PREVIOUSLY FILED DIRECT TESTIMONY IN THESE
12		PROCEEDINGS?
13	А.	Yes. I filed testimony in support of the Application of American Transmission Systems,
14		Incorporated ("ATSI") for a Certificate of Environmental Compatibility and Public Need
15		("Certificate") on February 4, 2013.
16		
17	Q.	WHAT IS THE PURPOSE OF YOUR TESTIMONY TODAY?
18	A.	The purpose of this supplemental testimony is to support the Joint Stipulation entered into by
19		ATSI and by the Staff of the Ohio Power Siting Board ("OPSB") and docketed in these
20		proceedings on February 7, 2013.
21		
22	Q.	DOES THE JOINT STIPULATION REPRESENT A PRODUCT OF SERIOUS
23		BARGAINING AMONG CAPABLE, KNOWLEDGEABLE PARTIES?
24	А.	Yes, it does. ATSI and Staff are knowledgeable about the matters before the OPSB and were
25		represented by experienced, competent council during the settlement discussions. Both ATSI

DB1/62075427.1

. . . .

1

ووراده الأوار والصار المتهية لتوادر لأ

التعريبين فعيد التابي والتنبي ولتعتد فترارف

1		and Staff were provided with copies of the draft Joint Stipulation. Therefore, the Joint
2		Stipulation represents a product of bargaining among capable, knowledgeable parties.
3		
4	Q.	DOES THE JOINT STIPULATION BENEFIT CONSUMERS AND THE PUBLIC
5		INTEREST?
6	A.	Yes, it does. The Joint Stipulation provides for construction of the proposed Glenwillow
7		Transmission Switching Substation at the proposed Preferred Substation Site, thus
8		reinforcing ATSI's Bulk Electric System and ensuring that the transmission system in
9		northeastern Ohio will maintain reliability.
10		
11	Q.	DOES THE JOINT STIPULATION VIOLATE ANY IMPORTANT REGULATORY
12		PRINCIPALS AND PRACTICES?
13	А.	No. The Joint Stipulation is designed to comply with the requirements of Ohio Revised Code
14		Section 4906.10, which provides the basis for the OPSB's decision for granting or denying a
15		certificate.
16		
17	Q.	WERE THERE ANY ADDITIONAL PARTIES TO THESE PROCEEDINGS WHO
18		WERE NOT SIGNATORIES TO THE JOINT STIPULATION?
19	А.	Yes. The Village of Glenwillow was an intervenor in these proceedings. However, ATSI
20		and the Village of Glenwillow have reached and signed an agreement concerning its
21		participation in this matter. Pursuant to the terms of that agreement, the Village of
22		Glenwillow will withdraw from these proceedings. Consequently, the Village of Glenwillow
23		did not sign the Joint Stipulation.

1

2 Q. DOES THIS CONCLUDE YOUR TESTIMONY?

- 3 A. Yes, it does. However, I reserve the right to supplement my testimony if anything changes
- 4 with respect to the status of the Application, the Joint Stipulation, or with the Village of
- 5 Glenwillow's withdrawal from these proceedings.
- б социмвияловатая

والرواب والمستعم بمنته بالمتها هاليها والرواوية متستعا والموار والمست

This foregoing document was electronically filed with the Public Utilities

Commission of Ohio Docketing Information System on

2/8/2013 3:55:50 PM

in

Case No(s). 12-1727-EL-BSB

Summary: Testimony Supplement of Jay A. Ruberto in Support of Joint Stipulation electronically filed by Ms. Catherine Darcy Copeland on behalf of American Transmission Systems, Incorporated

BEFORE THE OHIO POWER SITING BOARD

)

)

)

)

)

In The Matter Of: The Application of American Transmission Systems, Incorporated for a Certificate of Environmental Compatibility and Public Need for the Construction of the Glenwillow Transmission Switching Substation

Case No. 12-1727-EL-BSB

JOINT STIPULATION AND RECOMMENDED FINDINGS OF FACT AND CONCLUSIONS OF LAW

Applicant, American Transmission Systems, Incorporated ("Applicant" or "ATSF") is proposing to construct the Glenwillow Transmission Switching Substation ("Glenwillow Substation") to support ATSI's Bulk Electric System ("BES") in the Cleveland, Ohio area. The retirement of the majority of coal-fired generating plants in northeastern Ohio means that the transmission system must be able to import more power from outside the local load center to maintain reliability. To resolve this need, ATSI is proposing to construct the Glenwillow Substation, in conjunction with the new Bruce Mansfield – Glenwillow 345 kV Transmission Line, docketed as Case No. 12-1726-EL-BLN. The proposed Glenwillow Substation will connect the proposed new transmission line to two existing 345 kV transmission lines to reinforce the BES.

The Applicant filed an Application for a Certificate of Compatibility and Public Need for the Construction of the Glenwillow Transmission Switching Substation Project ("Application"), Case No. 11-1727-EL-BSB, on November 9, 2012.

×	EXHIBIT
tabbi	1

I. INTRODUCTION

The project is described in ATSI's Application for the Glenwillow Substation, Case No. 11-1727-EL-BSB, filed on November 9, 2012. This Joint Stipulation results from discussions between ATSI and Staff, who agree that this Joint Stipulation and Recommendation is supported by the record and is therefore entitled to careful consideration by the Board. Accordingly, ATSI and Staff recommend that the Board issue a Certificate of Environmental Compatibility and Public Need ("Certificate") for the Preferred Substation Site, as identified in the Application and subject to the conditions described in this Joint Stipulation.

The Village of Glenwillow was an intervenor in these proceedings. ATSI and the Village of Glenwillow have reached an agreement concerning its participation in this matter. The Village of Glenwillow, pursuant to the terms of that agreement, will withdraw from these proceedings.

II. STIPULATIONS

A. Recommended Findings of Fact

ATSI and Staff agree that the record in this case, which consists of the Application, the *Staff Report of Investigation*, and any testimony and documentary evidence submitted during the evidentiary hearing, contains sufficient probative evidence for the Board to find and determine, as findings of fact, that:

 Applicant American Transmission Systems, Incorporated is a wholly owned subsidiary of FirstEnergy Corp. ATSI owns and operates its electric transmission system within the State of Ohio.

(2) The proposed Glenwillow Substation is a "major utility facility," as defined in Section 4906.01(B)(2) of the Ohio Revised Code.

(3) ATSI held four public informational meetings prior to filing the Application. The public informational meetings were held on Monday, September 18, 2012 at the East Palestine High School, 360 West Grand Street, East Palestine, Ohio from 6:00 to 8:00 p.m.; Tuesday, June 19, 2012 in the Mahoning County Career and Technical Center, 7300 North Palmyra Road, Canfield, Ohio from 6:00 to 8:00 p.m.; Wednesday, June 20, 2012 at the Maplewood Career Center, 7075 State Route 88, Ravenna, Ohio from 6:00 to 8:00 p.m.; and Thursday, June 21, 2012 in the Nordonia High School cafeteria, 8006 S. Bedford Road, Macedonia, Ohio from 6:00 to 8:00 p.m.

(4) On June 21, 2012, the Village of Glenwillow filed a letter in opposition to the proposed location of the Glenwillow Substation.

(5) On July 10, 2012, Staff filed a letter sent to the mayor of the Village of Glenwillow addressing the Village's concerns.

(6) On September 12, 2012, Applicant filed proof of publication of notice of the four public information meetings. The public notices were published in the *Aurora Advocate, Hudson Hub-Times, Nordonia Hills News-Leader,* and *Statesboro Gateway News* on June 6, 2012. The public notices were published in the *Morning Journal, The Vindicator, Tribune Chronicle, Record-Courier, Twinsburg Bulletin, Chagrin Valley Times & Solon Times, The Plain Dealer,* and *The Akron Beacon Journal* on June 7, 2012.

(7) On September 25, 2012, the Village of Glenwillow filed a letter to ATSI expressing concerns about the Glenwillow Substation Project.

(8) On October 12, 2012, Applicant filed a request for a waiver of the application requirement set forth in Admin. Code. § 4906-5-04(A) that the Application include fully developed information on both a preferred and an alternate substation site.

(9) On October 19, 2012, the Village of Glenwillow filed a notice of intention to intervene in Case No. 12-1727-EL-BSB.

(10) On November 5, 2012, Staff filed a letter of notification indicating Staff did not object to Applicant's request for waiver, but reserved the right to request information from the Applicant in areas covered by the requested waiver if determined to be necessary during the course of the investigation.

(11) On November 9, 2012, the Applicant filed the Application for the proposed Glenwillow Substation Project with the Board, initiating the completeness review process.

(12) On November 14, 2012, the Village of Glenwillow opposed Applicant's motion for certain waivers.

(13) On November 28, 2012, the Board notified Applicant that the Application was complete.

(14) On November 30, 2012, Applicant filed proof of service notice of accepted and complete Application on local government officials.

(15) On December 10, 2012, by Entry, the Administrative Law Judge granted the Village of Glenwillow's motion to intervene; granted Applicant's waiver request; and scheduled a local public hearing in this matter for January 30, 2013 at 6:00 p.m., at the Village of Glenwillow Council Chambers, 29555 Pettibone Road, Glenwillow, Ohio 44139-5348, and an adjudicatory hearing for February 12, 2013 at 10:00 a.m., 11th floor. Hearing Room 11-D, at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Columbus, Ohio 43215-3793.

(16) On December 19, 2012, Applicant filed proof of publication of the first newspaper notice required to published pursuant to Admin. Code §§ 4906-5-08(C)(1) and 4906-5-09(A).
The required newspaper notification was published in the December 14, 2012 edition of *The Plain Dealer*.

(17) On January 11, 2013, Applicant moved for an order approving the letter mailing date of the public notification required by Admin. Code § 4906-5-08(C)(3).

(18) On January 11, 2013, Applicant filed an affidavit stating that, in accordance with Admin. Code § 4906-5-06, the mailing list required to be sent to each public official entitled to service of the Application pursuant to Admin. Code § 4906-5-08(C)(3) was sent to each public official by first class mail on January 11, 2013.

(19) On January 14, 2013, Staff issued and filed its "Staff Report of Investigation" for the proposed Glenwillow Substation Project, recommending that a Certificate of Environmental Compatibility and Public Need be issued for the Preferred Substation Site, as described in the Application ("Preferred Site"), and subject to all conditions enumerated within the Staff Report.

(20) On January 22, 2013, Applicant filed a prehearing statement of issues in advance of the public and adjudicatory hearing scheduled by the Board.

(21) On January 23, 2013, Applicant filed proof of publication of the second newspaper notice required to published pursuant to Admin. Code §§ 4906-5-08(C)(2) and 4906-5-09(B). The required newspaper notification was published in the January 15, 2013 edition of *The Plaim Dealer*.

(22) A public hearing was held on January 30, 2013 at 6:00 p.m., at the Village of Glenwillow Council Chambers, 29555 Pettibone Road, Glenwillow, Ohio 44139-5348.

(23) An adjudicatory hearing will be held on February 12, 2013 at 10:00 a.m., 11th floor, Hearing Room 11-D, at the offices of the Public Utilities Commission of Ohio, 180 East Broad Street, Columbus, Ohio 43215-3793.

(24) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and Staff to determine the basis of the need for the proposed facility, as required by Section 4906.10(A)(1) of the Ohio Revised Code.

(25) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and Staff to determine the nature of the probable environmental impact of the proposed facility, as required by Section 4906.10(A)(2) of the Ohio Revised Code.

(26) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and Staff to determine that the Preferred Site described in the Application represents the minimum adverse environmental impact, considering the available technology and nature and economics of the various alternatives, and other pertinent considerations, as required by Section 4906.10(A)(3) of the Ohio Revised Code.

(27) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and its Staff to determine that construction of the proposed substation and transmission line is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability in compliance with Section 4906.10(A)(4) of the Ohio Revised Code.

(28) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and its Staff to determine that the proposed facility will comply with Chapters 3704, 3734 and 6111 of the Ohio Revised Code, Sections 1501.33 and 1501.34 and 4561.32 of the Ohio
Revised Code, and all regulations adopted thereunder, all as required by Section 4906.10(A)(5) of the Ohio Revised Code.

(29) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and its Staff to determine that the proposed facility will serve the public interest, convenience and necessity, as required by Section 4906.10(A)(6) of the Ohio Revised Code.

(30) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and its Staff to determine the proposed facility's impact on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Ohio Revised Code, as required by Section 4906.10(A)(7) of the Ohio Revised Code.

(31) Adequate data on the proposed Glenwillow Substation Project has been provided to the Board and its Staff to determine that consideration of water conservation practices considering available technology and the nature and economics of the various alternatives under Section 4906.10(A)(8) of the Ohio Revised Code is not applicable to certification of the proposed Glenwillow Substation Project.

(32) The information, data and evidence in the record of this proceeding provides substantial and adequate evidence and information to enable the Board to make an informed decision on the Application for the proposed Glenwillow Substation Project.

B. Recommended Conclusions of Law

ATSI and Staff further agree that the record in this case contains sufficient probative evidence for the Board to find and determine, as conclusions of law, that:

(1) Applicant ATSI is a "person" under Section 4906.01(A) of the Ohio Revised Code.

(2) The proposed Glenwillow Substation is a "major utility facility" as defined by Section 4906.01(B)(2) of the Ohio Revised Code.

(3) ATSI's Application, filed on November 9, 2012, complies with the requirements of Admin. Code §§ 4906-15-01 et seq.

(4) The record establishes the need for the proposed Glenwillow Substation Project, as required by Section 4906.10(A)(1) of the Ohio Revised Code.

(5) The record establishes the nature of the probable environmental impact from construction, operation and maintenance of the proposed Glenwillow Substation Project, as required by Section 4906.10(A)(2) of the Ohio Revised Code.

(6) The record establishes that the Preferred Site for the Glenwillow Substation Project, if conditioned in the Certificate as recommended by ATSI and Staff, represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations, as required by Section 4906.10(A)(3) of the Ohio Revised Code.

(7) The record establishes that the Preferred Site for the Glenwillow Substation Project, if conditioned in the Certificate as recommended by ATSI and Staff, is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability in compliance with Section 4906.10(A)(4) of the Ohio Revised Code.

(8) The record establishes that the Preferred Site for the Glenwillow Substation, if conditioned in the Certificate as recommended by ATSI and Staff, will comply with Chapters 3704, 3734, and 6111 of the Ohio Revised Code, and all rules and regulations adopted under

those chapters, and under Sections 1501.33, 1501.34 and 4561.32 of the Revised Code, all as required by Section 4906.10(A)(5) of the Ohio Revised Code.

(9) The record establishes that the Glenwillow Substation Project will serve the public interest, convenience and necessity, as required by Section 4906.10(A)(6) of the Ohio Revised Code.

(10) The record establishes the impact of the proposed Glenwillow Substation Project on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929 of the Ohio Revised Code, as required by Section 4906.10(A)(7) of the Ohio Revised Code.

(11) The record establishes that no agricultural district parcels are located within the project areas and, thus, the proposed Glenwillow Substation Project will have no impact on existing agricultural districts.

C. Recommended Conditions of the Certificate of Environmental Compatibility and Public Need.

ATSI and Staff jointly recommend that the Board issue a Certificate of Environmental Compatibility and Public Need for the Preferred Substation Site, as described in the Application, and subject to all of the following conditions:

(1) The facility shall be installed at Applicant's Preferred Site as presented in the Application and as modified and/or clarified by the Applicant's supplemental filings and further clarified by recommendations in the *Staff Report of Investigation*.

(2) Applicant shall utilize the equipment and construction practices as described in the Application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.

(3) Applicant shall implement the mitigation measures as described in the

Application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.

(4) The Applicant, in support of a staged sequence of construction, shall conduct preconstruction conferences prior to the start of any construction activities on that stage of the Project. The planned staged sequence of construction shall be presented at the first preconstruction conference. Staff, the Applicant, and representatives of the prime contractor and all subcontractors for that stage of the project shall attend each preconstruction conference. The conference shall include a presentation of the measures to be taken by Applicant and contractors to ensure compliance with all conditions of the Certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to each preconstruction conference, the Applicant shall provide a proposed conference agenda for Staff review.

(5) The Applicant shall submit to Staff, for review and acceptance, one set of engineering drawings of the final project design, including the substation, temporary and permanent access roads, construction staging areas, and any other associated facilities and access points, so that Staff can determine that the final project design is in compliance with the terms of the Certificate. The Staff shall be provided with up to 30 days for their review of this submittal. Foundation, structure and equipment fabrication and construction drawings, wiring diagrams and similar detailed engineering drawings do not need to be included in this submittal. The engineering drawings of the final project layout shall be provided in hard copy. The Applicant's geographically referenced electronic data of the final project layout, to the extent that the Applicant develops this as part of its engineering design, shall also be provided. The final design shall include all conditions of the Certificate and references at the locations where the Applicant and/or its contractors must adhere to a specific condition in order to comply with the Certificate.

(6) If any changes are made to the project layout after the submission of final engineering drawings, all changes shall be provided to Staff in hard copy and, to the extent applicable, as geographically-referenced electronic data. All changes outside the environmental survey areas and any changes within environmentally sensitive areas will be subject to Staff review and acceptance, to ensure compliance with all conditions of the Certificate, prior to construction in those areas.

(7) Within ninety (90) days after the completion of construction, the Applicant shall submit to Staff a copy of the as-built plan view engineering drawings for the facility. If the Applicant demonstrates that good cause prevents it from submitting a copy of the engineering drawings of the facility within one year after completion of construction, it may request an extension of time for the submittal of such engineering drawings. The Applicant shall provide as-built drawings in both hard copy and to the extent applicable as geographically-referenced electronic data.

(8) The Certificate shall become invalid if Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the Certificate.

(9) As the information becomes known, Applicant shall provide to Staff the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.

ECOLOGICAL CONDITIONS

ATSI and Staff recommend the following conditions to address the impacts discussed in the Ecological Impacts section of the <u>Nature of Probable Environmental Impact</u>:

(10) Applicant shall have a construction access plan based on final plans for the

access roads, substation facilities, and types of equipment to be used, that addresses the concerns outlined in the *Staff Report of Investigation*. Prior to commencement of construction, the Applicant shall submit the plan to Staff, for review and confirmation that it complies with this condition.

(11) Applicant shall have a vegetation management plan that addresses the concerns outlined in the *Staff Report of Investigation*. Prior to commencement of construction, the Applicant shall submit this plan to Staff, for review and confirmation that it complies with this condition.

(12) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas, as mutually agreed upon between the Applicant and Staff, and as shown on the Applicant's final construction access plan. Sensitive areas include, but are not limited to, areas of vegetation clearing, designated wetlands and streams, and locations of threatened or endangered species or their identified habitat. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction.

(13) Applicant shall contact Staff, the Ohio Department of Natural Resources
("ODNR") and the United States Fish and Wildlife Service ("USFWS") within 24 hours if state
or federal threatened or endangered species are encountered during construction activities.
Construction activities that could adversely impact the identified plants or animals shall be halted
until an appropriate course of action has been agreed upon by Applicant, Staff, and ODNR, in
coordination with the USFWS. Nothing in this condition shall preclude agencies having
jurisdiction over the facility with respect to threatened or endangered species from exercising

their legal authority over the facility consistent with law.

(14) Based on coordination with USFWS, the Applicant shall adhere to seasonal cutting dates of November 15 through March 15 for removal of suitable Indiana bat habitat trees located within the five-mile buffer of a suspected hibernaculum.

(15) The Applicant shall consult with an ODNR-approved herpetologist to review the project area and construction access routes for potential impacts to the spotted turtle. The results of this review shall be coordinated with OPSB Staff and ODNR to determine if avoidance, minimization, or construction restriction measures are required.

PUBLIC SERVICES, FACILITIES, AND SAFETY CONDITIONS

ATSI and Staff recommend the following conditions to address the impacts discussed in the **Public Services**, **Facilities**, and **Safety** section of the <u>Nature of Probable Environmental</u> <u>Impact</u>:

(16) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary or permanent road closures, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the county engineer, Ohio Department of Transportation ("ODOT'), local law enforcement, and health and safety officials. This coordination shall be detailed as part of a final traffic plan submitted to Staff prior to the applicable preconstruction conference for review and confirmation that it complies with this condition.

(17) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving and hoe ram

operations, if required, shall be limited to the hours between 10:00 a.m. to 5:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above the ambient levels at sensitive receptors are permitted outside of daylight hours when necessary.

AIR, WATER, SOLID WASTE, AND AVIATION CONDITIONS

ATSI and Staff recommend the following conditions to address the impacts discussed in Air, Water, Solid Waste, and Aviation:

(18) Prior to the commencement of construction activities that require permits, licenses, or authorizations by federal or state laws and regulations, Applicant shall obtain and comply with such permits, licenses, or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the applicable preconstruction conference.

III. Exhibits

The ATSI and Staff stipulate that the following Exhibits were among those exhibits in the docket which have been marked and admitted into the record of this proceeding, and that cross-examination is waived thereon:

Applicant Exhibit No. 1:	The Application filed on November 9, 2012.
Applicant Exhibit No. 2:	Certificates of Publication of the first and second notice
	required by Admin. Code § 4906-5-08 in local newspapers.
Staff Exhibit No. 1:	Staff Report of Investigation, issued and filed on January
	14, 2013.

Joint Exhibit No. 1: This Joint Stipulation and Recommendations, signed by counsel for ATSI and Staff.

In deliberating the merits of the Applications and reasonableness of this Joint Stipulation, ATSI and Staff encourage the Board to review and consider all evidence and exhibits submitted and admitted in these cases.

IV. Other Stipulations.

(1)This Stipulation is a compromise involving a balance of competing positions, and it does not necessarily reflect the position that one or more of ATSI and Staff would have taken if these issues had been fully litigated. ATSI and Staff believe that this Stipulation represents a reasonable compromise of varying interests. This Stipulation is expressly conditioned upon adoption in its entirety by the Board without material modification by the Board. Should the Board reject or materially modify all or any part of this Stipulation, ATSI and Staff shall have the right, within thirty (30) days of the issuance of the Board's Order, to file an application for rehearing. Upon the Board's issuance of an entry on rehearing that does not adopt the Stipulation in its entirety without material modification, any Party may terminate or withdraw from the Stipulation by filing a second application for rehearing with the Board within thirty (30) days of the Board's entry on rehearing. The second application shall be limited in scope to a party giving notice of exercising its right to terminate and withdraw from the Stipulation to the Board, and requesting an evidentiary hearing with all appertaining rights of process, as if the Stipulation had never been executed. Prior to any Party seeking rehearing or terminating and withdrawing from this Stipulation pursuant to this provision, ATSI and Staff agree to convene immediately to work in good faith to achieve an outcome that substantially satisfies the intent of the Board or proposes a reasonable equivalent thereto to be submitted to the Board for its

consideration. Upon a second application for rehearing being filed giving notice of termination or withdrawal by any Party, pursuant to the above provisions, the Stipulation shall immediately become null and void.

(2) ATSI and Staff agree and recognize that this Stipulation has been entered into only for the purpose of this proceeding. Each party agrees not to assert against another party in any proceeding before the Board or any court, other than in a proceeding to enforce the terms of this Stipulation, that party's participation in this Stipulation as support for any particular position on any issue. Each party further agrees that it will not use this Stipulation as factual or legal precedent on any issue, except as may be necessary to support enforcement of this Stipulation. ATSI and Staff request that the Board recognize that its use of this Stipulation in any proceeding other than this proceeding is contrary to the intentions of ATSI and Staff in entering into this Stipulation.

WHEREFORE, based upon the record, and the information and data contained therein, ATSI and Staff recommend that the Board issue a Certificate of Environmental Compatibility and Public Need for construction, operation and maintenance of the proposed Glenwillow Substation Project, as described in the Application filed with the Board on November 9, 2012, and as conditioned herein.

The undersigned stipulate and represent that they are authorized to enter into this Joint Stipulation and Recommendation on the 7th day of February, 2013.

Respectfully submitted on behalf of:

STAFF OF THE OHIO POWER SITING BOARD

- By: MICHAEL DEWINE ATTORNEY GENERAL OF OHIO
- By: <u>s/ Steven Beeler *</u> Steven Beeler (0078076)] Ryan O'Rourke (0082651) Assistant Attorneys General Public Utilities Section 180 East Broad Street, 6th Floor Columbus, Ohio 43215-3793 Phone: (614) 644-8764 Fax: (614)-644-8764 Email: steven.beeler@puc.state.oh.us
- By: <u>s/Sarah Bloom-Anderson *</u> Sarah Bloom-Anderson (0082817) Summer J. Koladin-Plantz (0072072) Assistant Attorneys General Environmental Enforcement Section 30 East Broad Street, 25th Floor Columbus, Ohio 43215-3793 Phone: (614) 644-8764 Fax: (614)-644-8764 Email: sarah.anderson@ohioattorneygeneral.gov
- * pursuant to email authorization February 7, 2013

AMERICAN TRANSMISSION SYSTEMS, INCORPORATED

s/Robert J Schmidt Jr. Christopher R. Schraff (0023030) Robert J. Schmidt, Jr. (0062261) C. Darcy Jalandoni (0086981) Porter, Wright, Morris & Arthur LLP 41 South High Street Columbus, OH 43215 Phone: (614) 227-2097 Fax: (614) 227-2100

Morgan Parke (0083005) Anne Juterbock (0079637) FirstEnergy Corp. 76 South Main Street Akron, OH 44308 Email: mparke@firstenergycorp.com ajuterbock@firstenergycorp.com

COLUMBUS/1663036v.1

Staff Report of Investigation

Glenwillow Transmission Switching Substation

Case Number 12-1727-EL-BSB

January 14, 2013



In the Matter of the Application by American Transmission Systems, Incorporated for a Certificate of Environmental Compatibility and Public Need for the Glenwillow Transmission Switching Substation

 \mathcal{A}

Case Number 12-1727-EL-BSB

)

)

)

)

.

Staff Report of Investigation

Submitted to the OHIO POWER SITING BOARD

BEFORE THE POWER SITING BOARD OF THE STATE OF OHIO

In the Matter of the Application by American Transmission Systems, Incorporated for a Certificate of Environmental Compatibility and Public Need for the Glenwillow Transmission Switching Substation

Case Number 12-1727-EL-BSB

Members of the Board:

Todd Snitchler, Chairman, PUCO Christiane Schmenk, Director, ODSA Dr. Ted Wymyslo, Director, ODH David Daniels, Director, ODA Scott Nally, Director, Ohio EPA Jim Zehringer, Director, ODNR Jeffery J. Lechak, PE, Public Member VACANT, State Representative Sandra Williams, State Representative Tom Sawyer, State Senator Shannon Jones, State Senator

)

)

To the Honorable Power Siting Board:

In accordance with provisions of the Ohio Revised Code (ORC) Section 4906.07(C), and the Commission's rules, the Staff has completed its investigation in the above matter and submits its findings and recommendations in this staff report for consideration by the Ohio Power Siting Board (Board).

The *Staff Report of Investigation* has been prepared by the Staff of the Public Utilities Commission of Ohio. The findings and recommendations contained in this report are the result of Staff coordination with the Ohio Environmental Protection Agency, the Ohio Department of Health, the Ohio Development Services Agency, the Ohio Department of Natural Resources, and the Ohio Department of Agriculture. In addition, the Staff coordinated with the Ohio Department of Transportation, the Ohio Historic Preservation Office, the U.S. Fish and Wildlife Service, the U.S. Army Corps of Engineers, and the Federal Aviation Administration.

In accordance with ORC Sections 4906.07 and 4906.12, copies of this staff report have been filed with the Docketing Division of the Public Utilities Commission of Ohio on behalf of the Ohio Power Siting Board and served upon the Applicant or its authorized representative, the parties of record, and the main public libraries of the political subdivisions in the project area.

The staff report presents the results of the Staff's investigation conducted in accordance with ORC Chapter 4906 and the rules of the Board, and does not purport to reflect the views of the Board nor should any party to the instant proceeding consider the Board in any manner constrained by the findings and recommendations set forth herein.

Respectfully submitted,

Klaus Lambeck Chief Facilities, Sitting, & Environmental Analysis Division

ACRONYI	MS	
		-
I. POWERS A	AND DUTIES	
Ohio Po	ower Siting Board	
Nature	of Investigation	
Criteria		
II. APPLICA	TION	
Applica	nt	
History	of the Application	
Project	Description	
Project	Map	
	FRATIONS AND RECOMMENDED 1	FINDINGS Q
Basis of	f Need	ر ٩
Nature	of Probable Environmental Impact	11
Minimu	m Adverse Environmental Impact	10
Flectric	Grid	
	tor Solid Worts and Aviation	
Alf, Wa	leters solid waste, and Aviation	
Public	interest, Convenience, and Necessity	
Agricul	tural Districts	
Water (Conservation Practice	
IV. RECO	MMENDED CONDITIONS OF CERT	IFICATE
General	l Conditions	
Ecologi	cal Conditions	
Public S	Services, Facilities, and Safety Condition	ons 32
Air, Wa	ater, Solid Waste, and Aviation Conditi	ons
APPENDI	x	
1 Deal	rating Record	22
1. DUCK		
Z. Refer		

TABLE OF CONTENTS

.

.

.

-

ACRONYMS

¥

best management practices
Federal Aviation Administration
kilovolts
megawatts
National Pollutant Discharge Elimination System
National Register of Historic Places
Ohio Administrative Code
Ohio Department of Agriculture
Ohio Development Services Agency
Ohio Department of Health
Ohio Department of Natural Resources
Ohio Department of Transportation
Ohio Environmental Protection Agency
Ohio Historic Preservation Office
Ohio Power Siting Board
Ohio Revised Code
Public Utilities Commission of Ohio
Storm Water Pollution Prevention Plan

USFWS U.S. Fish and Wildlife Service

iv

I. POWERS AND DUTIES

OHIO POWER SITING BOARD

The Ohio Power Siting Board (Board or OPSB) was created in 1972. The Board is a separate entity within the Public Utilities Commission of Ohio (PUCO). The authority of the Board is outlined in Ohio Revised Code (ORC) Chapter 4906.

The Board is authorized to issue certificates of environmental compatibility and public need for the construction, operation, and maintenance of major utility facilities as defined in ORC Section 4906.01. Included within this definition are: electric generating plants and associated facilities designed for, or capable of, operation at 50 megawatts (MW) or more; electric transmission lines and associated facilities of a design capacity greater than or equal to 125 kilovolts (kV); and gas and natural gas transmission lines and associated facilities designed for, or capable of, transporting gas or natural gas at pressures in excess of 125 pounds per square inch. In addition, per ORC Section 4906.20, the Board authority applies to economically significant wind farms, defined in ORC 4906.13(A) as wind turbines and associated facilities with a single interconnection to the electrical grid and designed for, or capable of, operation at an aggregate capacity of five MW or greater but less than 50 MW.

Membership of the Board is specified in ORC Section 4906.02(A). The voting members include: the Chairman of the PUCO who serves as Chairman of the Board; the directors of the Ohio Environmental Protection Agency (Ohio EPA), the Ohio Department of Health (ODH), the Ohio Development Services Agency (ODSA), the Ohio Department of Agriculture (ODA), and the Ohio Department of Natural Resources (ODNR); and a member of the public, specified as an engineer, appointed by the Governor from a list of three nominees provided by the Ohio Consumers' Counsel. Ex-officio Board members include two members (with alternates) from each house of the Ohio General Assembly.

NATURE OF INVESTIGATION

The OPSB has promulgated rules and regulations, found in Chapter 4906 of the Ohio Administrative Code (OAC), which establish application procedures for major utility facilities and wind farms.

Application Procedures

Any person that wishes to construct a major utility facility or economically significant wind farm in this state must first submit to the OPSB an application for a certificate of environmental compatibility and public need (ORC 4906.04 and 4906.20). The application must include a description of the facility and its location, summary of environmental studies, a statement explaining the need for the facility and how it fits into the applicant's energy forecasts (for transmission projects), and any other information the OPSB may consider relevant (ORC 4906.10(A)(1) and 4906.20(B)(1)).

Within 60 days of receiving an application, the OPSB must determine whether the application is sufficiently complete to begin an investigation (OAC 4906-5-05(A)). If an application is considered complete, the Chairman of the OPSB will cause a public hearing to be held 60 to 90 days after the official filing date of the completed application. At the public hearing, any person may provide written or oral testimony and may be examined by the parties (ORC 4906.07). Parties include the Applicant, public officials, and any person who has been granted a motion of leave for intervention (ORC 4906.08(A)).

Staff Investigation and Report

The Chairman will also cause each application to be investigated and a report published not less than 15 days prior to the public hearing. The report sets forth the nature of the investigation and contains the findings and conditions recommended by Staff. The Board's Staff, which consists of career professionals drawn from the Staff of the PUCO and other member agencies of the OPSB, coordinates its investigation among the agencies represented on the Board and with other interested agencies such as the Ohio Department of Transportation (ODOT), the Ohio Historical Society, and the U.S. Fish and Wildlife Service (USFWS).

The technical investigations and evaluations are conducted under guidance of the OPSB rules and regulations in OAC Chapter 4906. The recommended findings resulting from the Staff's investigation are described in the staff report pursuant to ORC Section 4906.07(C). The report does not represent the views or opinions of the OPSB and is only one piece of evidence that the Board may consider when making its decision. Once published, the report becomes a part of the record and is served upon all parties to the proceeding and is made available to any person upon request (4906.07(C) and 4906.10). A record of the public hearings and all evidence, including the staff report, may be examined by the public at any time (ORC 4906.09 and 4906.12).

Board Decision

The OPSB may approve, modify and approve, or deny an application for a certificate of environmental compatibility and public need. If the OPSB approves, or modifies and approves an application, it will issue a certificate subject to conditions. The certificate is also conditioned upon the facility being in compliance with standards and rules adopted under the ORC (ORC 4906.10(A) and (B)).

Upon rendering its decision, the OPSB must issue an opinion stating its reasons for approving, modifying and approving, or denying an application for a certificate of environmental compatibility and public need (ORC 4906.11). A copy of the OPSB's decision and its opinion is memorialized upon the record and must be served upon all parties to the proceeding (ORC 4906.10(C)). Any party to the proceeding that believes its issues were not adequately addressed by the OPSB may submit within 30 days an application for rehearing (ORC 4903.10 and 4906.12). An entry on rehearing will be issued by the OPSB within 30 days and may be appealed within 60 days to the Supreme Court of Ohio (ORC 4903.11, 4903.12, and 4906.12).

CRITERIA

The recommendations and conditions in this *Staff Report of Investigation* were developed pursuant to the criteria set forth in ORC Section 4906.10(A), which reads in part:

The Board shall not grant a certificate for the construction, operation, and maintenance of a major utility facility, either as proposed or as modified by the Board, unless it finds and determines all of the following:

- (1) The basis of the need for the facility if the facility is an electric transmission line or gas or natural gas transmission line;
- (2) The nature of the probable environmental impact;
- (3) That the facility represents the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, and other pertinent considerations;
- (4) In the case of an electric transmission line or generation facility, that the facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems and that the facility will serve the interests of electric system economy and reliability;
- (5) That the facility will comply with Chapters 3704., 3734., and 6111. of the Revised Code and all rules and standards adopted under those chapters and under Sections 1501.33, 1501.34, and 4561.32 of the Revised Code. In determining whether the facility will comply with all rules and standards adopted under Section 4561.32 of the Revised Code, the Board shall consult with the ODOT Office of Aviation of the Division of Multi-Modal Planning and Programs of the Department of Transportation under Section 4561.341 of the Revised Code.
- (6) That the facility will serve the public interest, convenience, and necessity;
- (7) In addition to the provisions contained in divisions (A)(1) through (A)(6) of this section and rules adopted under those divisions, what its impact will be on the viability as agricultural land of any land in an existing agricultural district established under Chapter 929. of the Revised Code that is located within the site and alternative site of the proposed major utility facility. Rules adopted to evaluate impact under division (A)(7) of this section shall not require the compilation, creation, submission, or production of any information, document, or other data pertaining to land not located within the site and alternative site; and
- (8) That the facility incorporates maximum feasible water conservation practices as determined by the Board, considering available technology and the nature and economics of the various alternatives.

II. APPLICATION

APPLICANT

American Transmission Systems, Inc. (ATSI) will construct, own, operate, and maintain the proposed Glenwillow Transmission Switching Substation. ATSI owns the existing 345 kV and 138 kV equipment that currently traverses the proposed sites.

ATSI is a wholly-owned subsidiary of The FirstEnergy Corporation. FirstEnergy Corp. was formed in 1997 through the merger of Ohio Edison Company and Centerior Energy Corporation. Through this merger, FirstEnergy became the holding company for Ohio Edison and its Pennsylvania Power Company subsidiary, as well as The Cleveland Electric Illuminating Company and The Toledo Edison Company.

In 2011, FirstEnergy completed a merger with Allegheny Energy, a Greensburg, PA-based company that served 1.6 million customers in Pennsylvania, West Virginia, Maryland and Virginia. The merger more than doubled FirstEnergy's highly efficient, supercritical coal capacity and provided opportunities for the company to grow and expand into new markets with a stronger, more focused competitive operation. Today, FirstEnergy is one of the nation's largest investor-owned electric systems based on the number of customers served.

HISTORY OF THE APPLICATION

Prior to formally submitting its application, the Applicant consulted with the Staff and representatives of the Board, including the Ohio EPA, regarding application procedures.

On June 18, 2012 through June 21, 2012, the Applicant held four public information meetings regarding the proposed electric substation project.

On October 12, 2012, the Applicant filed a motion for waiver of the requirement to submit fullydeveloped information for the alternate substation site. This waiver was granted.

On October 22, 2012, the Village of Glenwillow provided notice to intervene.

On November 9, 2012, the Applicant filed the Glenwillow Transmission Switching Substation Project application.

On November 28, 2012, the Applicant was issued a letter of compliance regarding the application from the Chairman of the Board.

A local public hearing has been scheduled for January 30, 2013, at 6:00 p.m., at the Village of Glenwillow Council Chambers, 29555 Pettibone Road, Glenwillow, Ohio 44139. The adjudicatory hearing will commence on February 12, 2013, at 10:00 a.m., in Hearing Room 11-D, at the offices of the PUCO, 180 East Broad Street, Columbus, Ohio.

This summary of the history of the application does not include every filing in case numbers 12-1727-EL-BSB. The docketing record for this case, which lists all documents filed to date, can be found in the Appendix to this report and online at http://dis.puc.state.oh.us.

PROJECT DESCRIPTION

ATSI proposes to construct, own, operate, and maintain the Glenwillow Transmission Switching Substation in Cuyahoga County, Ohio. The \$18.2 million project is part of a major transmission reinforcement effort to help ATSI maintain an adequate level of reliability and availability of electric power to customers in the greater Cleveland metropolitan area. The major transmission reinforcement effort is known as the Bruce Mansfield-Glenwillow 345 kV Transmission Line Project, which was submitted to the Board separately (case number 12-1726-EL-BLN).

The Applicant has proposed two locations for the substation for the Board's consideration, hereinafter referred to as a Preferred and Alternate site. Both sites would require approximately 5.5 acres of land. The substation would be fenced and contain five 345 kV breakers, a five-position ring bus, control building, capacitor voltage transformers, surge arresters, line traps, and disconnect switches.

The Applicant plans to begin construction in July 2013 and place the facility in service by June 2015. The Preferred and Alternate sites are shown on the map in this report.

Preferred Site

The project is located in the village of Glenwillow in Cuyahoga County, Ohio. The Preferred Site is located on an irregular-shaped parcel located at the intersection of Austin Powder Drive and Cochran Road. The parcel is approximately 24.8 acres and classified by Cuyahoga County as commercial vacant land. ATSI signed a purchase agreement with the owner of the Preferred Site.

Alternate Site

The Alternate Site is accessed from Beaver Meadow Parkway, north of the Preferred Site on an adjacent irregular-shaped parcel located on the northern side of the existing 345 kV transmission lines. The parcel is approximately 23 acres and classified by Cuyahoga County as commercial vacant land. If the Alternate Site is approved, ATSI would need to acquire approximately 400 to 800 feet of new transmission right-of-way to connect the existing Eastlake-Juniper and Perry-Inland 345 kV transmission lines into the new substation. The Alternate Site is not actively listed for sale, but the Applicant states that the landowner is willing to consider selling the property.

PROJECT MAP

This page intentionally left blank



This page intentionally left blank

ĩ

.

•

-

•

III. CONSIDERATIONS AND RECOMMENDED FINDINGS

In the matter of the application of American Transmission Systems, Incorporated, the following considerations and recommended findings are submitted pursuant to ORC Section 4906.07(C) and ORC Section 4906.10(A).

Considerations for ORC Section 4906.10(A)(1)

BASIS OF NEED

Purpose of Proposed Facility

The purpose of the Glenwillow Transmission Switching Substation Project is to reinforce the ATSI 138 kV and 345 kV transmission systems in the greater Cleveland metropolitan area. The proposed substation is directly related to the Bruce Mansfield-Glenwillow 345 Transmission Line Project, OPSB case number 12-1726-EL-BLN. Without the proposed substation and associated transmission line project, the Cleveland area faces significant operating limitations including thermal ratings, capacity shortage, and low voltage concerns and would be unable to maintain compliance with PJM and NERC reliability criteria for the bulk electric system. This section of the staff report focuses on reviewing the need of the proposed substation.

Long Term Forecast

The Ohio Administrative Code requires electric utilities and transmission owners to annually file a forecast report with the PUCO (OAC 4901-5-5). The report requires a 10-year plan of committed or tentatively projected projects on the bulk power transmission network. For the year 2012, PUCO assigned FirstEnergy case number 12-0504-EL-FOR for its latest long-term forecast report. The proposed substation project was not identified in the latest long-term forecast report. The substation project is a result of generation retirements in the ATSI control zone and neighboring utilities. The complete list of generation retirements and reliability analysis was not complete until after the 2012 long-term forecast report was filed.

PJM Regional Transmission Expansion Plan

PJM Interconnection LLC (PJM) is the Regional Transmission Organization charged with planning for upgrades to the regional transmission system in Ohio. PJM annually issues the Regional Transmission Expansion Plan (RTEP) report. The RTEP analyzes reliability criteria, operational performance of the transmission system, and economic and environmental factors. The RTEP provides for the construction of expansions and upgrades of the PJM transmission system, as needed to maintain compliance with reliability criteria and, when appropriate, to enhance the economic and operational efficiency of wholesale electricity markets in the PJM Region.

The proposed project was presented at the April 2012 Transmission Expansion Advisory Committee and was identified as baseline RTEP upgrade (PJM, 2012, April 27). A baseline upgrade resolves a PJM, NERC, ReliabilityFirst, or transmission owner reliability criteria violation. Baseline projects are required to be constructed to keep the bulk electric system operating reliably. Approval was received by the PJM Board on May 17, 2012. The Applicant's baseline projects were assigned upgrade IDs b1923 and b1924. The status of these projects can be tracked on PJM's website (PJM, n.d.).

Load Growth

PJM projects that electric demand will grow at an average rate of approximately 1 percent per year in the ATSI footprint (PJM, 2012, January). ATSI set a 2011 summer peak record of 14,032 MW, which represents a system peak 850 MW's higher than the 2010 actual peak load. Between the years 2001-2011, the ATSI system load increased an average of 1.5 percent per year and increased by an average of 2.8 percent since the year 2009. Without the proposed substation, increased load growth will further increase the risk for voltage and thermal violations. The table below shows the percent change to system load in the Cleveland area since the year 2001.

Peak Load Data Percent Change, Cleveland Area				
Year	CEI	OE	ATSI	
2001	3.9%	12.2%	8.8%	
2002	2.6%	8.6%	1.2%	
2003	-8.8%	-8.6%	-8.5%	
2004	-0.8%	-9.0%	1.2%	
2005	9.6%	12.1%	10.3%	
2006	3.4%	1.3%	1.7%	
2007	-4.3%	-1.1%	-1.9%	
2008	-3.9%	-6.3%	-4.2%	
2009	-4.1%	-5.6%	-5.1%	
2010	7.3%	7.0%	7.0%	
2011	5.2%	9.8%	6.5%	
Average	0.9%	1.9%	1.5%	
Average (2001-2007)	0.8%	2.2%	1.8%	
Average (2009-2011)	2.8%	3.7%	2.8%	

System Economy and Reliability

The proposed Glenwillow Transmission Switching Substation Project would reinforce the bulk electric system in the Cleveland area. Without this project, ATSI would be unable to provide safe, reliable electric service. This project is expected to fix thermal overages, capacity limitations, and voltage violations, allowing ATSI to meet all ATSI, NERC, and PJM reliability criteria. A more-detailed investigation of voltage and electric grid concerns is found in the Electric Grid section of this report.

Conclusion

Staff concludes that ATSI has demonstrated the basis of need due to the projected load growth and the inability of the transmission system to provide safe, reliable electric service while meeting all the applicable NERC and PJM reliability criteria.

Recommended Findings

Staff recommends that the Board find that the basis of need for the project has been demonstrated and therefore complies with the requirements specified in ORC Section 4906.10(A)(1), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled <u>Recommended Conditions of Certificate</u>.

Considerations for ORC Section 4906.10(A)(2)

NATURE OF PROBABLE ENVIRONMENTAL IMPACT

Pursuant to ORC Section 4906.10(A)(2), the Board must determine the nature of the probable environmental impact of the proposed facility. Staff has found the following with regard to the nature of the probable environmental impact:

Socioeconomic Impacts

Demographics

The project is located within the village of Glenwillow in Cuyahoga County, in a suburban area consisting of mixed land uses. Over the last ten years, the population of this region has peaked and is now in decline. According to the U.S. Census Bureau, the population of Cuyahoga County has decreased between the years of 2000 and 2010 by 8 percent to 1,280,122 (2010). Over the same period, the population of Glenwillow doubled to 923 (U.S. Census Bureau, 2010). However, according to the Ohio Department of Development, Glenwillow's dramatic growth trend has since reversed. Population estimates, published by ODOD, suggest that the population of both Cuyahoga County and Glenwillow decreased by approximately 0.6 percent between 2010 and 2011 (2012, July). In 2010, Glenwillow had an average population density of 332 persons per square mile, compared to 2,800 persons per square mile in Cuyahoga County (U.S. Census Bureau, 2010). The project is not expected to impact the demographics of the region as a whole.

Land Use

The Applicant identified four residences within 1,000 feet of the Preferred Site, none of which are within 1,000 feet of the proposed substation's fence line. Three of these residences are located southwest of the site along North Village Lane. Stratford Commons, a nursing home within the Kindred Transitional Care and Rehabilitation Center, is located approximately 935 feet to the northwest of the Preferred Site. No residences are located within 1,000 feet of the Alternate Site. Moreover, no residences would be relocated or removed for construction or operation of the substation at either the Preferred or Alternate site.

No commercial land uses are located within 1,000 feet of the either the Preferred or Alternate site. No adverse impacts to commercial land are expected as a result of construction or operation of the substation.

All properties adjacent to the Preferred Site are zoned for industrial use. Five industrial facilities are located within 1,000 feet of the Preferred Site, none of which are located within 100 feet. A Dirt Devil headquarters is located approximately 450 feet north of the Preferred Site fence line. Custom Products Corporation and Genesis Plastic Technologies are located to the west of the Preferred Site along Cochran Road. Seven industrial facilities are located within 1,000 feet of the Alternate Site, none of which are within 100 feet. The Dirt Devil headquarters is approximately 350 feet to the west of the Alternate Site fence line. Three facilities, associated with the City of Solon Wastewater Treatment Plant, are located approximately 650 feet to the northeast of the Alternate Site. Approximately 900 feet to the southeast of the Alternate Site is the HD Supply facility. Finally, the Kennametal Industrial facility and Tameran Graphics Systems are located north of the Alternate Site along Beaver Meadow Parkway. No commercial structures would be relocated or removed from construction of the Preferred or Alternate site.

Two recreational land uses are located within 1,000 feet of the Preferred Site. The Fresh Air Camp of Prokop Velky Lodge is located approximately 560 feet to the west of the site along Austin Powder Drive. Glenwillow Park is located approximately 670 feet to the southwest of the Preferred Site. With the exception of a parking lot and picnic area, the park is mostly undeveloped. The Glenwillow Master Plan (2009) indicates that a Metroparks Connection Trial is proposed to run along the Wheeling & Lake Erie Railway, approximately 600 feet to the west of the Preferred Site. No recreational land uses are located within 1,000 feet of the Alternate Site.

The Applicant identified one institutional land use within 1,000 feet of the Preferred Site. The Kindred Transitional Care and Rehabilitation Center is located approximately 935 feet to the northwest of the Preferred Site. The City of Solon Police Firing Range is located within 1,000 feet of the Alternate Site. No institutional land uses would be relocated or removed as a result of project construction or operation at either the Preferred or Alternate site.

The nature of residential, recreational, industrial, and institutional land use impacts would be similar at either the Preferred or Alternate site. Impacts would primarily include temporary ambient noise increases associated with project construction. Existing noise from the nearby railroad and roadways as well as the City of Solon Police Firing Range would make these construction-related noise increases less noticeable. The distance separating the Preferred and Alternate sites from residential, recreational, and institutional land uses, as well as the woodland buffers along Tinker Creek and Beaver Meadows Creek, would also serve to reduce noise impacts. Moreover, the Applicant intends to limit project construction to daylight hours, further minimizing any construction-related noise impacts.

As a means of mitigating the potential for erosion or sedimentation on nearby land that may result during project construction, the Applicant would develop a Storm Water Pollution Prevention Plan for the project that would include silt fencing, straw bales, and other erosion and sedimentation management practices. Following substation construction and final grading, disturbed land would be restored to its original condition. Construction, operation, and maintenance of the substation is not anticipated to permanently impact residential, commercial, recreational, or institutional land use patterns in the project area. The Alternate Site would have slightly less impact to land use than the Preferred Site because of its greater distance from sensitive land uses.

Cultural and Archaeological Resources

The Applicant identified two previously-recorded archeological sites within 1,000 feet of the Preferred or Alternate site. One site is located within the parcel boundary of the Preferred Site, adjacent to the proposed access road. Archeological investigations conducted on this site in 1980 uncovered an artifact that prompted the surveyor to recommend additional studies in the project area. The second site of lesser interest was also discovered approximately 375 feet to the east of the Preferred Site.

A recent Phase I Literature Review and Cultural Resources Survey conducted for the Emerald Valley Business Park indicated that both sites have been destroyed since the 1980 study. However, the Applicant has been consulting with the Ohio Historical Preservation Office (OHPO) to further assess the site for potential cultural resources. No NRHP structures, districts, or cemeteries were identified within 1,000 feet of the Preferred Site. The Applicant identified no previously-recorded archeological sites, architectural resources listed on the NRHP, unevaluated architectural resources, historic districts, or cemeteries within 1,000 feet of the Alternate Site. However, the site has not previously been surveyed for archeological resources. The Applicant

continues to coordinate with the OHPO to determine if any additional architectural or archeological surveys are necessary.

Aesthetics

The Applicant has located both the Preferred and Alternate sites in a developed suburban area consisting of industrial, residential, and recreational land uses. Perceptions of substation compatibility with surrounding development would vary by viewer and vantage point. However, both the Preferred and Alternate sites are located in proximity to existing transmission and substation infrastructure, as well as industrial facilities and a railroad corridor. The character of the area is largely defined by this major infrastructure. Consequently, the presence of a large substation at either location would not dramatically conflict with the existing visual context.

While residential and recreational land uses are located within 1,000 feet to the southwest of the Preferred Site, the Tinkers Creek floodplain slope, Cochran Road, and the Wheeling & Lake Erie Railway would buffer area residences from the Preferred Site, significantly reducing the visibility of the proposed substation from these sensitive vantage points. Moreover, the Applicant has coordinated with the developer of the Emerald Valley Business Park in developing a landscaping plan for the project that would add vegetative screening to existing foliage along the western site boundary adjacent to Cochran Road. This design feature would further reduce any project-related visual impacts at the Preferred Site. While a substation at the Preferred Site would be largely shielded from view, the Alternate Site is far enough away from residential, recreational, and public vantage points to render any visual impacts at this location negligible. Consequently, the Alternate Site would create fewer aesthetic impacts than the Preferred Site.

Economics

The estimates of applicable intangible and capital costs for the Preferred Site and the Alternate Site for the project are \$18,175,000. The Preferred and Alternate sites for the project are located within the village of Glenwillow in Cuyahoga County, Ohio. ATSI would pay taxes on utility facilities in this county in the amount of \$184,000 in the first year based on the 2012 tax rates.

Ecological Impacts

Surface Waters

Two streams, both tributaries of Tinker's Creek, totaling approximately 1,110 linear feet, were delineated at the Preferred Site. One stream (Beaver Meadows Creek) is characterized by the Ohio EPA's Qualitative Habitat Evaluation Index (QHEI) method as having "excellent" habitat, with a QHEI score of 78. The second stream (un-named tributary of Tinker's Creek) is characterized by the Ohio EPA's Headwater Habitat Evaluation Index (HHEI) as a Modified Class II Primary Headwater Habitat stream. Both streams are located in the northeast corner of the Preferred Site. Beaver Meadows Creek (identified in the application as Stream CFBL) is located outside of the proposed construction limits, and no impacts are expected. The Applicant stated, in response to Staff interrogatories, that the un-named tributary (Stream CFBS) is located within the grading limits of the preliminary design. The Applicant estimates that 150 linear feet of Stream CFBS could be permanently impacted, and once the substation design is finalized, impacts to Stream CFBS may be reduced or avoided.

The extent of surface water impacts for the Alternate Site are not fully known because the Applicant was granted a waiver from submitting detailed engineering information on the Alternate Site. If the Alternate Site was chosen by the Board, then the Applicant would need to submit detailed engineering information that shows impacts to surface waters. Six streams were

delineated on the Alternate Site, totaling approximately 5,744 linear feet. Of these, one is characterized as having "excellent" habitat (Beaver Meadows Creek) and the other is characterized as having "good" habitat (Stream CFBM), with a QHEI score of 68.5. The third delineated stream (Stream CFBU) is characterized as a Modified Class II Primary Headwater Habitats. The remaining three streams (Streams TSDL, TSDM, and TSDO) are characterized as Class I Primary Headwater Habitats.

Based on preliminary design for the Alternate Site, it is anticipated that Beaver Meadows Creek would need to be spanned in order to connect the 345 kV lines into the new substation if the Alternate Site were developed. The Applicant also anticipates that the grading within the Alternate Site could result in permanent fill to Beaver Meadows Creek. In addition, an unnamed tributary to Beaver Meadows Creek (Stream CFBU) would likely have to be crossed and require a permanent culvert in order to construct an access road to the Alternate Site from Beaver Meadow Parkway.

Three wetlands, totaling approximately 2.85 acres, were delineated within the Preferred Site. All three wetlands are classified as Category 2 wetlands. No Category 3 wetlands were observed.

In response to Staff's interrogatories, the Applicant anticipates no temporary impacts to wetlands within the Preferred Site. However, a finger of a modified Category 2 wetland (Wetland CFBR) would be permanently filled as part of the grading for the substation. Based on preliminary design, approximately 1,628 square feet of Wetland CFBR would be permanently filled. The Applicant would use silt fence and other best management practices (BMPs) during construction to prevent sedimentation occurring in the unfilled portion of Wetland CFBR. The total area of wetland loss is expected to be less than 0.1 acres within the Preferred Site. All other wetlands would be avoided, and protected through BMPs.

As previously mentioned, detailed engineering information and design has not been completed for the Alternate Site. Fifteen wetlands, totaling approximately 5.31 acres, were delineated within the Alternate Site. All fifteen wetlands are classified as Category 2 wetlands. Based on the Applicant's conceptual layout of the Alternate Site, it appears that grading outside the fence line of the substation could result in permanent fill to wetlands CFBO and CFBP. The Applicant also anticipates that wetlands TSDQ and CFBX would be spanned as a result of connecting the proposed and existing transmission lines into the substation.

Tinker's Creek is located approximately 0.1 miles west of the Preferred Site and approximately 0.3 miles southwest of the Alternate Site. All of the wetland and stream features delineated on the Preferred and Alternate sites are hydrologically connected to Tinker's Creek. To control erosion during installation of the project, the Applicant indicates that a Storm Water Pollution Prevention Plan (SWPPP) and BMPs such as silt fence, timber mats, and sediment and erosion control blankets would be implemented.

In order to minimize impacts to surface waters, Staff recommends that the Applicant be required to provide a construction access plan for review prior to the preconstruction conference, as outlined in the conditions. The plan would consider the location of streams, wetlands, wooded areas, and sensitive plant species, as identified by the ODNR, Division of Wildlife (ODNR-DOW), and explain how impacts to all sensitive resources would be avoided or minimized during construction, operation, and maintenance.

For both construction and future maintenance, the Applicant would limit, to the greatest extent possible, the use of herbicides in proximity to surface waters, including wetlands along the right-

of-way. Individual treatment of tall-growing woody plant species is preferred, while general widespread use of herbicides during initial clearing or future maintenance should only be used where no other options exist.

.

Vegetation

The Preferred and Alternate sites are located adjacent to each other in an area that is heavily developed with both commercial and industrial uses. The Preferred Site is approximately 24.8 acres and is primarily cleared and characterized as old field habitat, with a small section of forest. The field areas within the Preferred Site and adjacent areas include grasses, forbs, and occasional shrubs. Approximately five acres of trees are along the southern and eastern border of the Preferred Site.

The potential impacts on woody and herbaceous vegetation at the Preferred Site would be minimal because the majority of the site is cleared and is zoned for industrial use. The Applicant anticipates that approximately 0.9 acres of trees would need to be removed for construction of the Glenwillow Transmission Switching Substation at the Preferred Site. Approximately 0.25 acres of tree clearing is anticipated within the proposed fenced area. The remaining 0.65 acres of tree clearing is anticipated in areas that would require grading.

The Alternate Site is approximately 47 acres and is almost completely forested, with a tributary to Tinker's Creek traversing the eastern portion of the property. Although fully developed engineering information is not available for the Alternate Site, the Applicant would anticipate approximately six acres of tree clearing for the proposed fence line and an additional six acres or more for grading and site access. If the Alternate Site is selected, additional tree clearing would be required to accommodate a portion of the transmission right-of-way into the substation. The right-of-way would be 150 feet in width through this area.

Staff recommends that the Applicant be required to provide a vegetative management plan, including measures to minimize tree clearing near streams, wetlands, and other environmentally-sensitive areas, for review prior to the preconstruction conference, as outlined in the conditions.

Some of the vegetative waste, such as tree limbs and trunks, that is generated during the construction may be harvested and removed from the site. The remaining vegetative waste would be chipped and disposed of appropriately, although some vegetative waste materials may be used on site for erosion control. However, no chipped vegetation, or other project-related material, will be left in wetlands or in riparian areas within 50 feet of any stream.

The Applicant worked with the developer of the Emerald Valley Business Park to prepare a landscaping plan for the Glenwillow Transmission Switching Substation. The landscaping plan involves planting various shrubs and trees, primarily along the western site boundary adjacent to Cochran Road. The tree species selected for the landscaping plan consist of eastern white pine (*Pinus strobus*), Norway spruce (*Picea abies*), arbor vitae (*Thuja accidentalis*), red maple (*Acer rubrum*), red cedar (*Juniperus verginiana*), sugar maple (*Acer saccharum*), pink flowering dogwood (*Cornus florida var. rubra*), and northern red oak (*Quercus rubra*). The shrub species selected for the landscaping plan consist of Canada yew (*Taxus Canadensis*), hazelnut (*Corylus Americana*), black chokecherry (*Aronla melanocarpa*), gray dogwood (*Coruns racemosa*), blackhaw (*Vilournum prunifolium*), and crabapple (*Maius sp.*). The landscaping plan also includes preserving the existing landscaped area of pine trees and deciduous shrubs along Cochran Road.

Threatened and Endangered Species

 $\tilde{\Sigma}_{1}$

The Applicant requested information from the ODNR and the USFWS regarding state- and federally-listed threatened and endangered plant and animal species. Additional information was provided through field assessments and published ecological information. The following table reflects the results of the information requests, field assessments, and document review.

BIRDS					
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area	
bald eagle	Haliaeetus leucocephalus	BGEPA & MBTA ¹	N/A	Known range, not found in Biodiversity Database near the project area.	
piping plover	Charadrius melodus	Endangered	Endangered	Known range, due to the project type, location, and onsite habitat, this species would not be expected within the project area, and no impacts to this species are expected.	
Kirtland's warbler	Setophaga kirtlandii	Endangered	Endangered	Known range, due to the project type, location, and onsite habitat, this species would not be expected within the project area, and no impacts to this species are expected.	
king rail	Rallus elegans	N/A	Endangered	Known range, no suitable habitat found in the project area.	

REPTILES & AMPHIBIANS

Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
spotted turtle	Clemmys guttata	N/A	Threatened	Known range, suitable habitat is available within the project area. Staff requests that the Applicant consult with a professional herpetologist (approved by ODNR Division of Wildlife) to determine whether a survey for this species needs to be performed.

MAMMALS					
Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area	
Indiana bat	Myotis sodalis	Endangered	Endangered	Known range, suitable habitat is present, Applicant will need to adhere to seasonal cutting dates (November 15 th to March 15 th).	
black bear	Ursus americanus	N/A	Endangered	Known range, if present would not be impacted due to mobility	
	• <u>•</u> ••••	INSI	ECTS		

Common Name	Scientific Name	Federal Status	State Status	Presence in Project Area
Canada darner	Aeshna canandensis	N/A	Endangered	Known range, due to the quality of wetlands being impacted, the project is not likely to impact this species.

¹ bald and golden eagles are protected under the Bald and Golden Eagle Protection Act and the Migratory Bird Treaty Act

Most of these species are not expected to be negatively impacted by the proposed project. However, the loss of suitable habitat may introduce the potential for the project to negatively impact the Indiana bat.

The Indiana bat has a historical range that includes the project area. The proposed project sites are located within a five-mile radius of a suspected Indiana bat hibernaculum.² The Applicant, in coordination with the USFWS, conducted an Indiana bat habitat assessment for the Preferred Site. The results of the habitat assessment indicated that 11 potential Indiana bat roost trees exist on the property. However, only two of the identified potential roost trees are located within the limits of disturbance. Based upon the photos and descriptions of these trees, the USFWS concluded that it appears that these trees exhibit lower roosting quality than other potential roost trees in the vicinity. Therefore, removal of these trees during the winter months, while bats are hibernating, should not impact this species. However, because of the nearby hibernaculum, tree clearing at this site should only occur between the dates of November 15 and March 15 to avoid potential impacts to Indiana bats during the summer roosting season as well as fall swarming and spring staging.

The ODNR Natural Heritage Database has a record for the spotted turtle within approximately 1,500 feet of the project area. The spotted turtle's habitat includes shallow, sluggish waters of ditches, small streams, marshes, bogs, and pond edges, especially where vegetation is abundant. It occasionally wanders away from water and lives in wet woods and meadows. Staff requests that the Applicant consult with an ODNR-approved herpetologist to determine if suitable habitat is available for this species within the Preferred or Alternate site. The results of this review would need to be coordinated with OPSB Staff and ODNR to determine if avoidance, minimization, or construction restriction measures are required.

All OPSB Staff recommendations for the requirements discussed in this section can be found under the Ecological Conditions of the <u>Recommended Conditions of Certificate</u>.

Public Services, Facilities, and Safety

The Applicant will comply with safety standards set by the Occupational Safety and Health Administration, the PUCO, and NERC Mandatory Reliability Standards. The Applicant will construct and operate the facility to meet the requirements of the National Electric Safety Code.

Noise

Most noise impacts associated with the proposed substation would be confined to the 24-month construction period. The Applicant proposes to mitigate noise impacts by ensuring all mufflers are properly installed and equipment has received proper maintenance. The transient nature of the construction activities and proposed limitation of construction to daylight hours on weekdays would further reduce impacts to surrounding receptors.

Communications

Radio or television interference is not expected to occur from the operation of the proposed substation at either the Preferred or Alternate site. Any likely source of radio or television

² Hibernaculum is a quiet, dark, and cool place which is necessary for hibernation of Indiana bats. These places include caves and mines where they spend the winter. The best hibernation caves are cold, but above freezing, and temperatures remain fairly stable throughout winter. During hibernation, Indiana bats stop producing body heat and, in turn, slow their metabolism, heart rate, and breathing rate to extremely low levels (USFWS, 2013).

interference would be a localized effect primarily from defective hardware that should be easily detected and replaced.

All OPSB Staff recommendations for the requirements discussed in this section can be found under the **Public Services**, **Facilities**, and **Safety Conditions** of the <u>Recommended Conditions</u> of Certificate.

Recommended Findings

The Staff recommends that the Board find that the nature of the probable environmental impact has been determined for the proposed facility, and therefore complies with the requirements specified in ORC Section 4906.10(A)(2), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(3)

Sugar 2

MINIMUM ADVERSE ÉNVIRONMENTAL IMPACT

Pursuant to ORC Section 4906.10(A)(3), the proposed facility must represent the minimum adverse environmental impact, considering the state of available technology and the nature and economics of the various alternatives, along with other pertinent considerations.

Site Selection

The Applicant retained a consultant to identify Preferred and Alternate sites that would meet economic and engineering requirements for the project, while also minimizing associated ecological, cultural, and land use impacts. A project study area was defined by the location of the existing parallel section of the Eastlake-Juniper and Inland-Perry 345 kV transmission lines. The consultant then identified and mapped ecological and cultural features in the study area that represent possible constraints to project construction. Primary constraints included engineering requirements, unavailable land, habitat of endangered or threatened species, sensitive land uses, and sites of historic or archeological significance.

Eleven potential sites were identified that contain desirable attributes and avoid major constraints to the greatest extent practicable. The consultant ranked the overall desirability of these potential sites based on their quantitative and qualitative characteristics. The Applicant then selected the two highest-ranking locations as the Preferred and Alternate sites. Selection of the Preferred and Alternate sites was largely influenced by engineering considerations. The Preferred Site requires no additional right-of-way acquisition and construction of a substation at this location would minimize facility distance from existing and proposed transmission lines that would interconnect with the substation.

Minimizing Impacts

Nearby residential, recreational, institutional, and cultural land uses are similar for both sites. The Preferred Site is currently zoned industrial and located in a business park, thereby suitable for utility use. The Applicant has previously coordinated with the business park developer and is currently negotiating with the city to develop a landscaping plan to mitigate aesthetic impacts of the facility. The Preferred Site represents shorter electrical interconnections and fewer engineering challenges.

The Preferred Site would require significantly less overall vegetative clearing than the Alternate Site, needing only about one acre for the Preferred Site and about 12 acres for the Alternate Site. Impacts to wetlands, streams, and other ecologically sensitive land uses are greater for the Alternate Site. Overall project impacts would be minimized by the Applicant's development of vegetation management and access plans. Coordination with appropriate agencies and the employment of an environmental specialist would also be required.

Conclusion

The construction of this facility would result in both temporary and permanent impacts to the project area. The Preferred Site is owned by the Applicant, thus reducing overall land use conflicts. Because of this and the reasons discussed above, Staff concludes that the Preferred Site represents the minimal adverse environmental impact. With the recommended conditions, Staff concludes that minimum adverse environmental impacts would be realized.
Recommended Findings

The Staff recommends that the Board find that the proposed facility represents the minimum adverse environmental impact, and therefore complies with the requirements specified in ORC Section 4906.10(A)(3), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled <u>Recommended Conditions of Certificate</u>.

an fairt a

2.

Considerations for ORC Section 4906.10(A)(4)

ELECTRIC GRID

Pursuant to ORC Section 4906.10(A)(4), the Board must determine that the proposed electric facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility will serve the interests of electric system economy and reliability.

The purpose of this section is to evaluate the impact of integrating the proposed Glenwillow Transmission Switching Substation Project into the existing regional transmission grid. FirstEnergy has retired or is in the process of retiring several generating units in Ohio (PJM, n.d.). The retirement of these units will cause reliability problems in the greater Cleveland metropolitan area. The proposed project would reinforce the ATSI 138 kV and 345 kV transmission systems and enable ATSI to maintain compliance with PJM and NERC reliability criteria for the bulk electric system.

NERC/ATSI Planning Criteria

The North American Electric Reliability Corporation (NERC) is responsible for the development and enforcement of the federal government's approved reliability standards, which are applicable to all owners, operators, and users of the bulk power system. NERC requires planners of the bulk electric transmission system to meet Reliability Standards TPL-001-0.1 through TPL-004-0 under transmission outage conditions for categories A, B, C, and D contingencies (NERC, 2012). According to NERC, a contingency is an unexpected failure or outage of a system component, such as a generator, transmission line, circuit breaker, switch, or other electrical element. Below is a partial list of the NERC categories and their meanings:

- Category A (no contingencies, normal system conditions);
- Category B (single contingency outage, N-1), the planning authority and transmission planner shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand; and,
- Category C (multiple contingency outages, N-1-1), the planning authority shall demonstrate that the interconnected transmission system can operate to supply projected customer demands and firm transmission service at all demand levels over the range of forecast system demand and may rely upon the controlled interruption of customers or curtailment of firm transmission service.

FirstEnergy planning criteria states that, during system normal conditions and categories B and C system outages, transmission lines shall not exceed their conductor thermal rating. Substation bus voltages must range from 0.95 per unit to 1.05 per unit, with a minimum contingency voltage of .092 per unit for 345 kV and networked 138 kV transmission lines. Transformer ratings are specific to each transformer and are based on seasonal conditions, considering loss of life and thermal stresses, and ratings should not be exceeded during normal conditions or emergency conditions.

PJM Analysis

In January of 2012, FirstEnergy gave notice to PJM about their plan to retire 14 generating units with a total capacity of 2,705 MW. PJM performed a deactivation study which studied the transmission system and found significant reliability concerns as a result of the generator

retirements (PJM, 2012, April 26). The proposed substation project is one of many that PJM proposed to bring the system up to required reliability requirements. Below is a summary of reliability impacts on the FirstEnergy and surrounding systems due to the FirstEnergy generator retirements.

Single Contingency Outage (N-1)

Voltage Violations

• Ten low voltage violations on the 138 kV system

Multiple Contingency Outages (N-1-1)

Thermal Violations

- Six 138 kV thermal violations in the Allegheny Power zone
- Thirty 138 kV and 345 kV thermal violations in the ATSI zone
- Two 230 kV / 115 kV thermal violations (transformers) in the Penelec zone
- Ten 138 kV thermal violations in the American Electric Power zone

Voltage Violations

• Ninety-two low voltage violations in the ATSI zone

Load Deliverability Analysis

The annual load deliverability analysis is performed to ensure the transmission system is able to deliver capacity resources to load under peak system conditions. The analysis is performed by increasing load in the study area, while removing generation, under many scenarios and contingencies. Below are the reliability violations that were found.

- One voltage collapse violation observed in the ATSI zone
- One 345 kV overload on an American Electric Power / ATSI facility

Generator Deliverability

The annual generator deliverability assessment is run to ensure the transmission system has the resources to deliver the output of all generators to the remainder of PJM during peak system conditions. The analysis is performed by ramping up generation in one area and scaling down generation in another area, under many scenarios and contingencies, to verify that all of the generators' output can be delivered. Below are the overloads that were found.

- Twenty-six 138 kV and 345 kV overloaded facilities in the ATZI zone.
- One 138 kV overload facility in the Allegheny Power zone.
- Seven 115 kV and 345 kV overloaded facilities in the Penelec zone.
- Eight 345 kV and 138 kV overloads in the AEP zone.

Load Flow Studies

ATSI and PJM studied the system using a 2015 summer peak forecast with and without the proposed project in-service. The studies were run using a variety of contingencies at both $50/50^3$ and $90/10^4$ load levels.

³ 50/50 peak load is the forecast for which there is a 50 percent probability that the actual peak load for the season will be less than the forecast and a 50 percent probability that it will be higher.

Normal Conditions

Under normal system conditions and with the announced generation retirements, the system can not support the increased load forecast. ATSI plans to convert a few generating units to synchronous condensers to help maintain a level of dynamic reactive power response, which will help maintain voltage levels. The synchronous condensers will allow the system to operate within reliability limits during normal system conditions through 2015.

N-1 Conditions

ATSI's studies revealed several thermal issues with the bulk electric system due to the retirement of FirstEnergy generators. The results indicated seven thermal violations at the 50/50 load level and 26 thermal violations at the 90/10 load level. The table below shows a snapshot of the results with and without the Glenwillow Transmission Switching Substation Project and Bruce Mansfield-Glenwillow 345 kV Transmission Line Project, case number 12-1726-EL-BLN, inservice. With the proposed project in-service, the analysis shows the thermal ratings are within the allowable range.

Thermal Overload	Line Outage	WITHOUT Project (per unit)		WITH Project (per unit)	
		50/50 load	90/10 load	50/50 load	90/10 load
Hanna-	Hanna-Chamberlin 345 kV	1.128	1.219	0.917	0.969
Juniper 345 kV	Hardin-Chamberlin 345 kV	1.063	1,139	0.847	0.898
	Hardin-Chamberlin 138 kV	1.04	1.143	0.855	0.938
Brush- West Akron 138 kV	Juniper-Star 345 kV	1.063	1.17	0.889	0.975
WEST ARION 130 KV	Juniper- Hanna 345 kV	1.065	1.185	0.876	0.966
Cloverdale- Barberton 138 kV	Harmon-Star 345	1.005	1.068	0.927	0.971

Category B - Contingency Thermal Analysis, Study Year 2015 (Perry Nuclear Power Plant Offline)

N-1-1 Conditions

As discussed above in the PJM analysis section, PJM performed a deactivation study which studied the transmission system and found several N-1-1 reliability concerns (PJM, 2012, April 26). The proposed substation project is one of many that PJM proposed to bring the system up to required reliability requirements (PJM, 2012, April 27).

Conclusion

The Applicant provided details on studies that were performed by ATSI and PJM. These studies demonstrated that, without the proposed Glenwillow Transmission Switching Substation Project and associated projects, ATSI would be unable to provide safe, reliable electric service. In addition, the studies revealed that the system would experience significant reliability problems in the year 2015 without any system improvements. The proposed substation would help ATSI meet and maintain required ATSI, NERC, and PJM planning criteria. The proposed facility is consistent with plans for expansion of the regional power system, and serves the interests of electric system economy and reliability.

⁴ 90/10 peak load is the forecast for which there is a 90 percent probability that the actual peak load for the season will be less than the forecast and a 10 percent probability that it will be higher.

Recommended Findings

The Staff recommends that the Board find that the proposed facility is consistent with regional plans for expansion of the electric power grid of the electric systems serving this state and interconnected utility systems, and that the facility would serve the interests of electric system economy and reliability. Therefore, the facility complies with the requirements specified in ORC Section 4906.10(A)(4), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled <u>Recommended Conditions of Certificate</u>.

Considerations for ORC Section 4906.10(A)(5)

AIR, WATER, SOLID WASTE, AND AVIATION

Pursuant to ORC Section 4906.10(A)(5), the facility must comply with specific sections of the ORC regarding air and water pollution control, withdrawal of waters of the state, solid and hazardous wastes, and air navigation.

ŧ

Air

Air quality permits are not required for construction of the proposed facility. However, fugitive dust rules adopted pursuant to the requirements of ORC Chapter 3704 (air pollution control laws) may be applicable to the proposed facility. The Applicant will control fugitive dust through dust suppression techniques such as irrigation, mulching, or application of tackifier resins. These methods of dust control are sufficient to comply with fugitive dust rules.

Water

Neither construction nor operation of the proposed facility would require the use of significant amounts of water, so requirements under ORC 1503.33 and 1501.34 are not applicable to this project.

A U.S. Army Corps of Engineers (USACE) Nationwide Permit No. 12 is likely to be required to permit the minor stream and wetland impacts associated with construction of the switching substation.

The Applicant has indicated that it intends to submit a Notice of Intent (NOI) for coverage under the Ohio EPA's National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activity, and a related Storm Water Pollution Prevention Plan (SWPPP). This SWPPP would be developed for the project pursuant to Ohio EPA regulations and would conform to the ODNR's Rainwater and Land Development Manual. The SWPPP would include a detailed construction access plan. Following the SWPPP, as well as using best management practices for construction activities, would help minimize any erosion-related impacts to streams and wetlands. Wetlands, streams, and other environmentallysensitive areas shall be clearly identified before commencement of clearing or construction. No construction or access is permitted in these areas unless clearly specified in the construction plans and specifications, thus minimizing any clearing-related disturbance to surface water bodies. Construction of this facility would comply with requirements of ORC Chapter 6111, and the rules and laws adopted under this chapter.

Solid Waste

Solid waste generated from construction activities would include items such as conductor scrap, construction material packaging including cartons, insulator crates, conductor reels, and wrapping, and used storm water erosion control materials. All construction-related debris would be disposed of in Ohio EPA approved landfills, or other appropriately licensed and operated facilities.

Any contaminated soils discovered or generated during construction would be handled in accordance with applicable regulations. The Applicant plans to have a Spill Prevention Plan in place and would follow manufacturer's recommendations for any spill cleanup. Vegetation waste from clearing activities is to be removed or wind-rowed along the edge of the right-of-way. Marketable timber would be cut into appropriate lengths for sale or disposition by the landowner, and stumps would not be removed. However, no windrowed or chipped vegetation, or other

project-related material, will be left in wetlands or in riparian areas within 50 feet of any stream. The Applicant's solid waste disposal plans would comply with solid waste disposal requirements in ORC Chapter 3734, and the rules and laws adopted under this chapter.

Aviation

i

According to the Federal Aviation Administration's (FAA) Office of Aeronautical Information Services, five airports and 20 heliports are located in Cuyahoga County. None of these facilities are located within 0.5 miles of the Preferred or Alternate site. The closest of these facilities, the St. Vincent Charity Medical Center Solon Heliport, is located approximately two miles from the Preferred Site and 1.7 miles from the Alternate Site. The height of the tallest proposed above ground structure and construction equipment at the Preferred Site is expected to be approximately 100 feet. Because of the distance from the nearest airport facilities and the absence of structures at the Preferred Site that would be greater than 200 feet above ground level, the construction and operation of the proposed facility at the Preferred Site is not expected to have an impact on airport facilities.

In accordance with ORC 4561.32, Staff contacted the ODOT Office of Aviation during review of this application in order to coordinate review of potential impacts of the facility on local airports. As of the date of preparation of this report, no such concerns have been identified. Construction and operation at the Preferred Site is not expected to have an impact on aviation.

The exact pole heights have not yet been determined for the Alternate Site. If the Alternate Site is selected by the Board, then the Applicant would need to submit pole heights to the ODOT Office of Aviation, the FAA, and Staff for review and approval prior to commencement of construction.

All Staff recommendations for the requirements discussed in this section can be found under the Air, Water, Solid Waste, and Aviation Conditions heading of the <u>Recommended Conditions</u> of <u>Certificate</u>.

Recommended Findings

The Staff finds that the proposed facility complies with the requirements specified in ORC Section 4906.10(A)(5), provided that any certificate issued by the Board for the certification of the proposed facility include the conditions specified in the section of this report entitled Recommended Conditions of Certificate.

Considerations for ORC Section 4906.10(A)(6)

PUBLIC INTEREST, CONVENIENCE, AND NECESSITY

Pursuant to ORC Section 4906.10(A)(6), the Board must determine that the facility will serve the public interest, convenience, and necessity. The Glenwillow Transmission Switching Substation Project would serve the public interest by helping to ensure reliable electric service throughout the area.

EMF

Electric transmission lines generate electromagnetic fields (EMF). Laboratory studies have failed to establish a strong correlation between exposure to EMF and effects on human health. However, there have been concerns that EMF may have impacts on human health. Because these concerns exist, the Applicant is required to compute the EMF associated with the new circuits. The fields were computed based on the maximum loadings of the lines, which would lead to the highest EMF values that might exist at the proposed substation. Daily current load levels would normally operate below the maximum load conditions, thereby further reducing nominal EMF values. The EMF profiles are shown in Figures 06-2 to 06-5 in the application.

ASTI filed a request with the Board for a waiver of the need to submit fully developed engineering and EMF information for the Alternate Site. Because engineering design was not completed for the Alternate Site, specific EMF calculations were not included. The Applicant states that EMF calculations for the Alternate Site should be similar to the Preferred Site.

The electric field is a function of the voltage, the line configuration, and the distance from the substation. Electric fields are produced by voltage or electric charge. For example, a plugged in lamp cord produces an electric field, even if the lamp is turned off. The electric field would be less than 2.27 kilovolt/meter. The electric fields are easily shielded by physical structures such as the walls of a house, foliage, or other barriers.

The magnetic fields are a function of the electric current, the configuration of the conductors, and the distance from transmission lines. The magnetic fields were estimated at the Preferred Site fence to be less than 265.88 milligauss. The magnetic field output is comparable to that of common household appliances; for example, a corded power tool has a magnetic field output of 123 milligauss. The maximum magnetic field scenarios for the proposed Preferred Site are listed in the application (Table 06-2).

The magnetic fields generated by the substation are attenuated very rapidly as the distance from them increases. Past experience has shown that, within 100 feet of the fence line of the substation, the magnetic field is not of sufficient strength to be measureable because the background effects overwhelm the measurements (NIEHS/DOE EMF RAPID Program, 2002; OPSB Staff, 1996). The nearest residence is over 1,309 feet from the Preferred Site, and about 1,810 feet from the Alternate Site.

Recommended Findings

Staff recommends that the Board find that the proposed facility would serve the public interest, convenience, and necessity, and therefore complies with the requirements specified in ORC Section 4906.10(A)(6), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled <u>Recommended Conditions of Certificate</u>.

<u>Considerations for ORC Section 4906.10(A)(7)</u>

AGRICULTURAL DISTRICTS

Pursuant to ORC Section 4906.10(A)(7), the Board must determine the facility's impact on the agricultural viability of any land in an existing agricultural district within the Preferred and Alternate site of the proposed utility facility. The agricultural district program was established under ORC Chapter 929. Agricultural district land is exempt from sewer, water, or electrical service tax assessments. Agricultural land can be classified as an agricultural district through an application and approval process that is administered through local county auditors' offices. Eligible land must be devoted exclusively to agricultural production or be qualified for compensation under a land conservation program for the preceding three calendar years. Furthermore, eligible land must be at least 10 acres or produce a minimum average gross annual income of \$2,500.

The Applicant has confirmed with the Cuyahoga County Auditor that no agricultural district land is located within 1,000 feet of both the Preferred and Alternate sites. No adverse impacts to agricultural land are expected as a result of construction or operation of the substation.

Recommended Findings

The Staff recommends that the Board find that the impact of the proposed facility on the viability of existing agricultural land in an agricultural district has been determined, and therefore complies with the requirements specified in ORC Section 4906.10(A)(7), provided that any certificate issued by the Board for the proposed facility include the conditions specified in the section of this report entitled <u>Recommended Conditions of Certificate</u>.

Considerations for ORC Section 4906.10(A)(8)

WATER CONSERVATION PRACTICE

Pursuant to ORC Section 4906.10(A)(8), the proposed facility must incorporate maximum feasible water conservation practices, considering available technology and the nature and economics of the various alternatives.

Because the facility would not require the use of water for operation, water conservation practice as specified under ORC 4906.10(A)(8) is not applicable to the project.

Recommended Findings

The Staff recommends that the Board find that the requirements specified in ORC Section 4906.10(A)(8) are not applicable to this project.

IV. RECOMMENDED CONDITIONS OF CERTIFICATE

Following a review of the application filed by American Transmission Systems, Incorporated and the record compiled to date in this proceeding, Staff recommends that a number of conditions become part of any certificate issued for the proposed facility. These recommended conditions may be modified as a result of public or other input received subsequent to issuance of this report.

GENERAL CONDITIONS

Staff recommends the following conditions to ensure conformance with the proposed plans and procedures as outlined in the case record to date, and to ensure compliance with all conditions listed in this staff report:

- (1) The facility shall be installed at the Applicant's Preferred Site, as presented in the application, and as modified and/or clarified by the Applicant's supplemental filings and further clarified by recommendations in the *Staff Report of Investigation*.
- (2) The Applicant shall utilize the equipment and construction practices as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.
- (3) The Applicant shall implement the mitigation measures as described in the application and as modified and/or clarified in supplemental filings, replies to data requests, and recommendations in the *Staff Report of Investigation*.
- (4) The Applicant shall conduct a preconstruction conference prior to the start of any construction activities. Staff, the Applicant, and representatives of the prime contractor and all subcontractors for the project shall attend the preconstruction conference. The conference shall include a presentation of the measures to be taken by the Applicant and contractors to ensure compliance with all conditions of the certificate, and discussion of the procedures for on-site investigations by Staff during construction. Prior to the conference, the Applicant shall provide a proposed conference agenda for Staff review. The Applicant may conduct separate preconstruction meetings for each stage of construction.
- (5) At least 30 days before the preconstruction conference, the Applicant shall submit to Staff, for review and acceptance, one set of detailed engineering drawings of the final project design, including the substation, temporary and permanent access roads, construction staging areas, and any other associated facilities and access points, so that Staff can determine that the final project design is in compliance with the terms of the certificate. The final project layout shall be provided in hard copy and as geographically-referenced electronic data. The final design shall include all conditions of the certificate and references at the locations where the Applicant and/or its contractors must adhere to a specific condition in order to comply with the certificate.
- (6) If any changes are made to the project layout after the submission of final engineering drawings, all changes shall be provided to Staff in hard copy and as geographically-referenced electronic data. All changes outside the environmental survey areas and any changes within environmentally-sensitive areas will be subject to Staff review and acceptance, to ensure compliance with all conditions of the certificate, prior to construction in those areas.

and the second

المراجعة والمتحدث والمراجع

- (7) Within 60 days after the commencement of commercial operation, the Applicant shall submit to Staff a copy of the as-built specifications for the entire facility. The Applicant shall provide as-built drawings in both hard copy and as geographically-referenced electronic data.
- (8) The certificate shall become invalid if the Applicant has not commenced a continuous course of construction of the proposed facility within five years of the date of journalization of the certificate.
- (9) As the information becomes known, the Applicant shall provide to Staff the date on which construction will begin, the date on which construction was completed, and the date on which the facility begins commercial operation.

ECOLOGICAL CONDITIONS

Staff recommends the following conditions to address the impacts discussed in the Ecological Impacts section of the <u>Nature of Probable Environmental Impact</u>:

- (10) The Applicant shall have a construction access plan based on final plans for the access roads, substation, and types of equipment to be used, that addresses the concerns outlined in this *Staff Report of Investigation*. Prior to commencement of construction, the Applicant shall submit the plan to Staff, for review and confirmation that it complies with this condition.
- (11) The Applicant shall have a vegetation management plan that addresses the concerns outlined in this *Staff Report of Investigation*. Prior to commencement of construction, the Applicant shall submit this plan to Staff, for review and confirmation that it complies with this condition.
- (12) The Applicant shall have a Staff-approved environmental specialist on site during construction activities that may affect sensitive areas, as mutually agreed upon between the Applicant and Staff, and as shown on the Applicant's final construction access plan. Sensitive areas include but are not limited to areas of vegetation clearing, designated wetlands and streams, and locations of threatened or endangered species or their identified habitat. The environmental specialist shall be familiar with water quality protection issues and potential threatened or endangered species of plants and animals that may be encountered during project construction.
- (13) The Applicant shall contact Staff, ODNR, and the USFWS within 24 hours if state or federal threatened or endangered species are encountered during construction activities. Construction activities that could adversely impact the identified plants or animals shall be halted until an appropriate course of action has been agreed upon by the Applicant, Staff, and ODNR in coordination with the USFWS. Nothing in this condition shall preclude agencies having jurisdiction over the facility with respect to threatened or endangered species from exercising their legal authority over the facility consistent with law.
- (14) Based on coordination with USFWS, the Applicant shall adhere to seasonal cutting dates of November 15 through March 15 for removal of suitable Indiana bat habitat trees located within the five-mile buffer of a suspected hibernaculum.
- (15) The Applicant shall consult with an ODNR-approved herpetologist to review the project area and construction access routes for impacts to the spotted turtle. The results of this

review shall be coordinated with OPSB Staff and ODNR to determine if avoidance, minimization, or construction restriction measures are required.

PUBLIC SERVICES, FACILITIES, AND SAFETY CONDITIONS

Staff recommends the following conditions to address the impacts discussed in the Public Services, Facilities, and Safety section of the <u>Nature of Probable Environmental Impact</u>:

- (16) Prior to commencement of construction activities that require transportation permits, the Applicant shall obtain all such permits. The Applicant shall coordinate with the appropriate authority regarding any temporary or permanent road closures, lane closures, road access restrictions, and traffic control necessary for construction and operation of the proposed facility. Coordination shall include, but not be limited to, the county engineer, ODOT, local law enforcement, and health and safety officials. This coordination shall be detailed as part of a final traffic plan submitted to Staff prior to the preconstruction conference for review and confirmation that it complies with this condition.
- (17) General construction activities shall be limited to the hours of 7:00 a.m. to 7:00 p.m., or until dusk when sunset occurs after 7:00 p.m. Impact pile driving and hoe ram operations, if required, shall be limited to the hours between 10:00 a.m. to 5:00 p.m., Monday through Friday. Construction activities that do not involve noise increases above ambient levels at sensitive receptors are permitted outside of daylight hours when necessary.

AIR, WATER, SOLID WASTE, AND AVIATION CONDITIONS

Staff recommends the following conditions to address the requirements discussed in <u>Air, Water,</u> <u>Solid Waste, and Aviation</u>:

(18) Prior to the commencement of construction activities that require permits, licenses, or authorizations by federal or state laws and regulations, the Applicant shall obtain and comply with such permits, licenses, or authorizations. The Applicant shall provide copies of permits and authorizations, including all supporting documentation, to Staff within seven days of issuance or receipt by the Applicant. The Applicant shall provide a schedule of construction activities and acquisition of corresponding permits for each activity at the preconstruction conference.

APPENDIX

1. DOCKETING RECORD

CASE NUMBER: 12-1727-EL-BSB

DESCRIPTION: Glenwillow Transmission Switching Substation FILINGS AS OF: 01/14/2013

01/11/2013	Affidavit of Jay A. Ruberto confirming mailing of addresses of property owners to local government officials electronically filed by Mr. Robert J. Schmidt on behalf of American Transmission Systems Inc.
01/11/2013	Motion and memorandum in support for Order Approving Public Notification Letter Mailing Date electronically filed by Mr. Robert J Schmidt on behalf of American Transmission Systems Inc.
12/19/2012	Proof of pub for the County of Cuyahoga filed by R. Schmidt on behalf of ATSI.
12/11/2012	Service Notice
12/10/2012	Administrative Law Judge Entry granting Glenwillow's motion to intervene in accordance with Finding (3), granting applicant's motion for a waiver in accordance with Finding (7), ordering hearings in this matter at the times and places designated in Finding (10), ordering that the notices of the application and hearings be published by ATSI in accordance with Findings (12) and (13), ordering Staff file its Staff Report in accordance with Finding (14), and ordering the parties file their issue lists and testimony in accordance with Finding (14) electronically filed by Sandra Coffey on behalf of Jay Agranoff, Attorney Examiner, Public Utilities Commission of Ohio.
11/30/2012	Service Notice of Accepted and Complete Application on Local Government Officials electronically filed by Mr. Robert J Schmidt on behalf of American Transmission Systems Inc.
11/28/2012	Chair Letter Regarding Compliance sent to: Mr. Morgan Parke Senior Corporate Counsel filed by T. Snitchler Chairman on behalf of the OPSB.
11/14/2012	Village of Glenwillow's memorandum in opposition to applicant's motion for certain waivers filed by Stephen M. Klonowski on behalf of Village of Glenwillow.
11/09/2012	Application continued. (part 4 of 4)
11/09/2012	Application continued. (part 3 of 4)
11/09/2012	Application continued. (part 2 of 4)
11/09/2012	Application of FirstEnergy Service Company (ATSI) for the Glenwillow Substation Project filed by J. Ruberto. (part 1 of 4)
11/05/2012	Letter of Notification submitted by Steven L. Beeler, Assistant Attorney General, on behalf of the Staff of the Ohio Power Siting Board stating that Staff does not object to the waivers requested by applicant in its October 12, 2012 motion for certain waivers electronically filed by Kimberly L. Keeton on behalf of Ohio Power Siting Board.
10/22/2012	Notice of intention to intervene by The Village of Glenwillow, Ohio filed by S. Klonowski.
10/12/2012	Motion for Certain Limited Waivers and Memorandum in Support electronically filed by Mr. Robert J Schmidt on behalf of American Transmission Systems Inc.
10/02/2012	Correspondence of Mayor M. Cegelka of the Village of Glenwillow in regard to concern over the location of the Glenwillow Transmission Substation Project, filed by Mayor Mark A. Cegelka.
09/12/2012	Proof of Publications for American Transmission Systems, Incorporated published in the counties of Columbiana, Mahoning, Trumbull, Portage, Cuyahoga, and Summit, filed by R. J. Schmidt, Jr.
07/10/2012	Response letter sent to: Mark A. Cegelka, Mayor Village of Glenwillow filed by K.Wissman on behalf of OPSB.
06/27/2012	Letter in opposition to the proposed location of the substation the Village of Glenwillow filed by Mayor Mark Cegelka.
06/05/2012	Notice of Correction of Typographical Error electronically filed by Mr. Robert J. Schmidt on behalf of American Transmission Systems Inc.
06/01/2012	In the matter of the Pre- Application Notification for the Glenwillow Transmission Substation Project

2. References

- NERC. (2012). Standards: Reliability Standards. Retrieved November 8, 2012, from North American Electric Reliability Corporation: http://www.nerc.com/page.php?cid=2|20
- NIEHS/DOE EMF RAPID Program. (2002, June). Electric and Magnetic Fields Associated with the Use of Electric Power.
- Ohio Department of Development. (2012, July). 2011 Population Estimates by County, City, Village, and Township. Retrieved December 17, 2012, from http://development.ohio.gov/files/research/P5027.pdf
- OPSB Staff. (1996, October). EMF Survey Report.
- PJM. (2012, January). 2012 Load Forecast Report. Retrieved December 10, 2012, from http://pjm.com/~/media/documents/reports/2012-pjm-load-report.ashx
- PJM. (2012, April 26). FirstEnergy January 2012 Generator Deactivation Request Study Results and Required Upgrades. Retrieved December 11, 2012, from http://pjm.com/planning/generation-retirements/gr-study-results.aspx
- PJM. (2012, April 27). Transmission Expansion Advisory Committee. Retrieved from PJM: http://pjm.com/committees-and-groups/committees/teac.aspx
- PJM. (n.d.). *PJM Retirement Summaries*. Retrieved from PJM: http://pjm.com/planning/generation-retirements/gr-summaries.aspx
- PJM. (n.d.). *PJM Transmission Construction Status*. Retrieved from http://pjm.com/planning/rtep-upgrades-status/construct-status.aspx
- U.S. Census Bureau. (2010). 2010 Census Summary File 1. Profile of General Demographic Characteristics. Retrieved December 17, 2012, from http://factfinder2.census.gov
- USFWS. (2013, January 3). *Indiana Bat Fact Sheet*. Retrieved from U.S. Fish & Wildlife Service Endangered Species: http://www.fws.gov/midwest/endangered/mammals/inba/inbafctsht.html

AMERICAN TRANSMISSION SYSTEMS, INCORPORATED SUBSIDIARY OF FIRSTENERGY CORP.

APPLICATION TO THE OHIO POWER SITING BOARD FOR A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY AND PUBLIC NEED FOR THE

GLENWILLOW TRANSMISSION SWITCHING SUBSTATION PROJECT

OPSB CASE NO.: 12-1727-EL-BSB

November 2012

American Transmission Systems, Incorporated 76 South Main Street Akron, Ohio 44308

TABLE OF CONTENTS

Section

4906-15-0	1		
PROJECT	SUMM	IARY AND FACILITY OVERVIEW	
(A)	PROJE	ECT SUMMARY AND FACILITY OVERVIEW	
	(1)	General Purpose of the Facility	01-2
	(2)	Summary Description	01-3
	(3)	Site Selection Process	01-5
	(4)	Principal Environmental and Socioeconomic Considerations	01-6
		(a) Land Use Impacts	01-7
		(b) Economic Impacts	01-7
		(c) Ecological Impacts	01-8
		(d) Cultural Impacts	01-9
		(e) Other Environmental Impacts	01-9
	(5)	Project Summary Schedule	01-9
(B)	INFOF	RMATION FILED IN RESPONSE TO REQUIREMENTS	01-10
(C)	PREPA	ARATION OF HARD COPY MAPS	01-11

4906-15-02

NEED FC	R PROPOSED PROJECT	
(A)	NEED FOR THE PROPOSED FACILITY	
	(1) Purpose of the Proposed Facility	
	(2) System Conditions and Local Requirements	
	(3) Load Flow Studies	
	(4) Power Flow Base Case Model Data	
	(5) Base Case Data for Natural Gas Transmission Line	
(B)	EXPANSION PLANS	
	(1) Long-Term Forecast and Regional Planning	
	(2) Gas Transmission Lines and Associated Facilities	
(C)	PROJECT IMPACT ON ELECTRIC SYSTEM ECONOMY AND	
	RELIABILITY	
(D)	ANALYSIS OF ALTERNATIVES	
(E)	PROJECT SELECTION RATIONALE	
(F)	FACILITY SCHEDULE	
	(1) Schedule Bar Chart	
	(2) Delays	

4906-15-03

SITE AND	ROUT	E ALTERNATIVES ANALYSES	03-1
(A)	SITE S	ELECTION RATIONALE	03-1
	(la)	Description of the study or geographic boundaries selected	
		and rationale for selection	03-2
	(1b)	Study Area Map depicting general routes, route segments, and	
		sites evaluated	03-4
	(1c)	Description of qualitative and quantitative siting criteria, factors, or	
		constraints utilized by the applicant, including any evaluation criteria	
		or weighting values assigned to each	03-4

i

•

Page

Section

	(1d)	Description of the process by which the applicant utilized the siting	
		criteria to determine the preferred and alternate routes and sites	03-20
	(2)	Constraint Map	03-30
(B)	SUMM	IARY TABLE	03-32
(C)	SITE S	ELECTION STUDY	03-35

4906-15-04

TECHNI	CAL DA	ATA		
(A)	SECT	ION S	UMMARY	
	(1)	Geo	graphy and Topography	
		(a)	Proposed Transmission Line Alignments	
		(b)	Substation Location	
		(c)	Major Highway and Railroad Routes	
		(d)	Air Transportation Facilities	04-4
		(e)	Utility Corridors	04-4
		(f)	Proposed Permanent Access Roads.	04-4
		(g)	Lakes, Ponds, Reservoirs, Canals, Rivers, and Swamps	04-4
		(h)	Topographic Contours	
		(i)	Soil Association	
		(j)	Population Centers and Legal Boundaries	
	(2)	Slop	e and Soil Mechanics	
		(a) Î	Description of soils in areas where slope exceeds twelve percent	ent 04-6
		(b)	Suitability of Soils for Foundation Construction	
(B)	LAY	DUT A	ND CONSTRUCTION	
	(1)	Site	Activities	
		(a)	Surveying and Soil Testing	
		(b)	Grading and Excavation	
		(c)	Acess Road and Trenches	
		(d)	Stringing of Cable	
		(e)	Post Construction Reclamation	
	(2)	Layo	out for Associated Facilities	
		(a)	Map of Associated Facilities	
			(i) Final Grades After Construction	
			(ii) Location of Major Structures and Buildings	
			(iii) Fenced-in or Secured Areas	
			(iv) Overal Dimensions	
		(b)	Reasons for Proposed Layout and Unusual Features	
		(c)	Future Modification Plans	
(C)	TRAN	ISMIS	SION EQUIPMENT	
	(1)	Elec	tric Transmission Line Data	
	(2)	Elec	tric Transmission Substation Data	
		(a)	Breakers	
		(b)	Switchgear	
		(c)	Bus Arrangement and Structures	
		(d)	Transformers	
		(e)	Control Buildings	
		(f)	Other Major Equipment	

Page

	(2)	Cos Transmission Line Data 04.12
	(3)	
	(4)	Gas Transmission Facilities
(D)	ENVI	RONMENTAL AND AVIATION COMPLIANCE INFORMATION
	(1)	List and Discussion of Permits Required04-13
	(2)	Description, Quantification, Characterization, Removal and Disposal of
		Construction Debris
	(3)	Storm Water and Erosion Controls during Construction and Restoration
		of Soils, Wetlands, and Streams Disturbed as a Result of Construction of
		the Facility
		(a) Erosion and Sediment Controls
		(b) Materials Management
	(4)	Plans for Disposition of Contaminated Soil and Hazardous Materials
		Generated or Encountered During Construction:
		(a) Spill Prevention
	(5)	Height of Tallest Anticipated Above Ground Structures and Construction
	. ,	Equipment within the Vicinity of Airports and Landing Strips
	(6)	Construction During Excessively Dusty or Excessively Muddy Soil
	. ,	Conditions
		(a) Dust Control
		(b) Excessive Muddy Soil Conditions

4906-15-05

Section

FINANCL	AL DATA	05-1
(A)	OWNERSHIP	05-1
(B)	ELECTRIC CAPITAL COST	05-1
(C)	GAS CAPITAL COST	05-1
x - y		

4906-15-06

SOCIOEC	ONOM	IC AND LAND USE IMPACT ANALYSIS	
(A)	SECTI	ON SUMMARY	
(B)	SOCIO	DECONOMIC CHARACTERISTICS	
	(1)	Proposed Routing Alignments and Turning Points	
	(2)	Substations	
	(3)	General Land Use	
		(a) Residential	
		(b) Commerical	
		(c) Industrial	
		(d) Cultural	
		(e) Agricultural	
		(f) Recreational	
		(g) Institutional	
	(4)	Transportation Corridors	
	(5)	Existing Utility Corridors	
	(6)	Noise Sensitive Areas	
	(7)	Agricultural Land (Agricultural District Land)	
(C)	LAND	USE IMPACTS OF THE PROPOSED PROJECT	



	(1)	Number of Residential Structures	06-10
	(2)	Impact of Construction	06-10
		(a) Residential	06-10
		(b) Commerical	06-10
		(c) Industrial	06-10
		(d) Cultural	06-11
		(e) Agricultural	
		(f) Recreational	06-11
		(g) Institutional	
	(3)	Impact of Operation and Maintenance	06-12
		(a) Residential	06-12
		(b) Commerical	06-12
		(c) Industrial	06-12
		(d) Cultural	06-12
		(e) Agricultural	06-13
		(f) Recreational	
		(g) Institutional	06-13
	(4)	Mitigation Procedures	
		(a) Residential	06-14
		(b) Commerical	06-14
		(c) Industrial	
		(d) Cultural	06-14
		(e) Agricultural	06-15
		(f) Recreational	06-15
		(g) Institutional	06-15
(D)	PUBI	LIC INTERACTION INFORMATION	06-15
	(1)	Counties, Townships, Cities and Villages within 1,000 feet of the Site	
		Alternatives	06-15
	(2)	Public Officials Contacted	06-15
	(3)	Public Information Programs	06-16
	(4)	Liability Compensation	06-17
	(5)	Serving the Public Interest	06-17
	(6)	Tax Revenues	06-17
	(7)	Impact on Regional Development	06-18
(E)	HEAI	LTH AND SAFETY	06-18
	(1)	Compliance with Safety Regulations	06-18
	(2)	Electric and Magnetic Fields	06-18
		(a) Calculated Electric and Magnetic Field Levels	06-20
		(b) State of EMF Knowledge	06-21
		(c) ATSI's Considerations to Reduce EMF	
		(d) Procedures for Addressing EMF Inquiries	06-22
	(3)	Aesthetic Impact	06-27
		(a) Views of the Proposed Facility	
		(b) Structure Design Features	06-31
		(c) Facility Effect on Site and Surrounding Area	
		(d) Visual Impact Minimization	
(T)	(4)	Estimate of Radio and Television Interference	
(٢)		TUKAL IMPACTS OF THE PROPOSED PROJECT	
	(1)	Archaeological Resources and Correspondence with Agency	

Section

Page

	(2)	Construction Impacts on Cultural Resources	
	(3)	Operation and Maintenance Impacts on Cultural Resources	
	(4)	Mitigation Procedures.	
(G)	NOISE		
•	(1)	Construction	
		(a) Dynamiting or blasting activities	
		(b) Operation of earth moving or excavating equipment	
		(c) Driving of piles	
		(d) Erection of structures	
		(e) Truck traffic	
		(f) Installation of equipment	
	(2)	Operation and Maintenance	
	(3)	Mitigation Procedures	
(H)	OTHER	R SIGNIFICANT ISSUES	

4906-15-07

ECOLOGI	ICAL IMPACT ANALYSIS	07-1
(A)	SUMMARY OF ECOLOGICAL IMPACT STUDIES	07-1
(B)	ECOLOGICAL FEATURES	
	(1) Route Alignments	
	(2) Substations	
	(3) All Areas Currently Not Developed For Agricultural, Residential,	
	Commercial, Industrial, Institutional, or Cultural Purposes:	
	(a) Streams and Drainage Channels	
	(b) Lakes, Ponds, and Reservoirs	07-6
	(c) Marshes, Swamps, and Other Wetlands	
	(d) Woody and Herbaceous Vegetation Land	07-8
	(e) Locations of Threatened and Endangered Species	
	(4) Soil Associations in the Corridor:	07-9
(C)	IMPACTS OF ALTERNATIVE SITES ON WATER BODIES	
	(1) Construction Impact	
	(2) Operation and Maintenance Impact	07-9
	(3) Mitigation Procedures	
(D)	WETLANDS IMPACT	07-10
	(1) Construction Impact	07-10
	(2) Operation and Maintenance Impact	07-10
	(3) Mitigation Procedures	
(E)	VEGETATION IMPACT	
	(1) Construction Impact	
	(2) Operation and Maintenance Impact	
12	(3) Mitigation Procedures	
(F)	COMMERCIAL, RECREATIONAL, AND THREATENED/ ENDANGEREI	0
	SPECIES IMPACTS	07-14
	(1) Construction.	
	(2) Operation and Maintenance Impact	
	(3) Mitigation Procedures.	
(G)	SLOPES AND ERODIBLE SOILS	

v

Section

Page

Section

	(1)	Construction Impact	
	(2)	Operation and Maintenance Impact	
	(3)	Mitigation Procedures	
(H)	Other	r Issues	

TABLES

2-1	Historical Peak Data0	2-12
2-2	PJM Load Forecast0	2-26
2-3	N-1 Contingency Thermal Results0	2-28
3-1	GIS Data Sources	3-15
3-2	Potential Site Analysis0	3-26
3-3	Summary of Site Selection Factors0	3-32
5-1	Estimates of Applicable Intangible and Capital Costs	05-2
6-1	Transmission Line Loadings0	6-20
6-2	Modeled EMF Calculations0	6-20
7-1	Delineated Streams within the Preferred and Alternate Sites	07-5
7-2	Delineated Wetlands within the Preferred and Alternate Sites	07-8
7-3	Approximate Vegetation Impacts at the Preferred and Alternate Switching	
	Station Sites	7-11

FIGURES

2-1	Project Area
2-2	Proposed Bruce Mansfield - Glenwillow Transmission Line Project
2-3	Cleveland Area PV Analysis: Perry Out and the Loss of the Perry – Astabula
	Erie – West 345 kV Line
2-4	Cleveland Area Dynamic Reactive Reserves: Perry Out and the Loss of the
	Perry – Ashtabula – Erie West 345 kV Line
2-5	Project Schedule
3-1	Project Study Area03-5
3-2	Potential Sites
3-3	Preferred and Alternate Sites
4-1	Constraint Map04-2
4-2	Preliminary Landscaping and Grading Plan04-8
6-1	Land Use
6-2	Substation Electric Field 06-23
6-3	Substation Magnetic Field, Normal Load06-24
6-4	Substation Magnetic Field, Emergency Loading
6-5	Substation Magnetic Field, Winter Ratings
6-6	Photo of the Preferred Site from Cochran Road looking Northeast
6-7	Photo of the Preferred Site from the western side of Cochran Road
	looking Northeast06-30
6-8	Photo of the Alternate Substation Site in the distance from the Dirt Devil
	parking lot looking Southeast06-32
6-9	Photo of the habitat present on the Alternate Site

Page

6-10	Photo taken from the western side of Cochran Road looking southwest at the closest residential area	06-34
6-11	Photo taken from the closest residence looking northwest toward the	
	Preferred Site	06-34
6-12	View looking southeast toward the Preferred Site from the Kindred	
	Entrance	06-35
6-13	Artist's rending of the Glenwillow 345 kV Switching Substation with	
	Existing landscaping	06-36
6-13	Artist's rending of the Glenwillow 345 kV Switching Substation with Existing landscaping	06-30

APPENDICES

Section

- 2-1 PJM Project Need Analysis
- 6-1 Agency Contact Letters
- 6-2 Officials Letters
- 6-3 Public Meeting Information
- 7-1 Wetland Delineation Report

Chapter 4906-15

Instructions for the Preparation of Certificate Applications for Electric Power, Gas and Natural Gas Transmission Facilities

- 4906-15-01 Project summary and facility overview.
- 4906-15-02 Review of need for proposed project.
- 4906-15-03 Site and route alternatives analyses
- 4906-15-04 Technical data
- 4906-15-05 Financial data.
- 4906-15-06 Socioeconomic and land use impact analysis
- 4906-15-07 Ecological impact analysis

4906-15-01 Project summary and facility overview

- (A) An applicant for a certificate to site a major electric power, gas, or natural gas transmission facility shall provide a project summary and overview of the proposed project. In general, the summary should be suitable as a reference for state and local governments and for the public. The summary and overview shall include the following:
 - (1) A statement explaining the general purpose of the facility.
 - (2) A description of the proposed facility.
 - (3) A description of the site or route selection process, including descriptions of the major alternatives considered.
 - (4) A discussion of the principal environmental and socioeconomic considerations of the preferred and alternate routes or sites.
 - (5) An explanation of the project schedule (a bar chart is acceptable).
- (B) Information filed by the applicant in response to the requirements of this section shall not be deemed responses to any other section of the application requirements.
- (C) If the applicant has prepared the required hard copy maps using digital, geographically referenced data, an electronic copy of all such data, excluding data obtained by the applicant under a licensing agreement which prohibits distribution, shall be provided to the board staff on computer disk concurrent with submission of the application.

Effective: 1/25/09 119.032 review dates: 11/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 12/27/76, 10/10/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-02 Review of need for proposed project

- (A) The applicant shall provide a statement explaining the need for the proposed facility, including a listing of the factors upon which it relied to reach that conclusion and references to the most recent long-term forecast report (if applicable). The statement shall also include but not be limited to, the following:
 - (1) A statement of the purpose of the proposed facility.

- (2) Specific projections of system conditions, local requirements or any other pertinent factors that impacted the applicant's opinion on the need for the proposed facility.
- (3) Relevant load flow studies and contingency analyses, if appropriate, identifying the need for system improvement.
- (4) For electric power transmission facilities, load flow data shall be presented in the form of transcription diagrams depicting system performance with and without the proposed facility.
- (5) For gas or natural gas transmission projects, one copy in electronic format of the relevant base case system data on diskette, in a format acceptable to the board staff, with a description of the analysis program and the data format.
- (B) Expansion plans.
 - (1) For the electric power transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent long-term electric forecast report and the regional plans for expansion, including, but not limited to, the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term electric forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term electric forecast report, an explanation as to why none was filed in the most recent long-term electric forecast report.
 - (c) Reference to regional expansion plans, including East Central Area Reliability Coordination Agreement bulk power plans, when applicable (if the transmission project will not affect regional plans, the applicant shall so state).
 - (2) For gas transmission lines and associated facilities, the applicant shall provide a brief statement of how the proposed facility and site/route alternatives fit into the applicant's most recent longterm gas forecast report, including the following:
 - (a) Reference to any description of the proposed facility and site/route alternatives in the most recent long-term gas forecast report of the applicant.
 - (b) If no description was contained in the most recent long-term gas forecast report, an explanation as to why none was filed in the most recent long-term gas forecast report.
- (C) For electric power transmission facilities, the applicant shall provide an analysis of the impact of the proposed facility on the electric power system economy and reliability. The impact of the proposed facility on all interconnected utility systems shall be evaluated, and all conclusions shall be supported by relevant load flow studies.
- (D) For electric power transmission lines, the applicant shall provide an analysis and evaluation of the options considered which would eliminate the need for construction of an electric power transmission line, including electric power generation options and options involving changes to existing and planned electric power transmission substations.
- (E) The applicant shall describe why the proposed facility was selected to meet the projected need.
- (F) Facility schedule.
 - (1) Schedule. The applicant shall provide a proposed schedule in bar chart format covering all applicable major activities and milestones, including:
 - (a) Preparation of the application.

4906-15 -3-

- (b) Submittal of the application for certificate.
- (c) Issuance of the certificate.
- (d) Acquisition of rights-of-way and land rights for the certified facility.
- (e) Preparation of the final design.
- (f) Construction of the facility.
- (g) Placement of the facility in service.
- (2) Delays. The applicant shall describe the impact of critical delays on the eventual in-service date.

Effective: 1/25/09 Replaces: part of 4906-15-04 119.032 review dates: 11/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-03 <u>Site and route alternatives analyses</u>

- (A) The applicant shall conduct a site and route selection study prior to submitting an application for an electric power transmission line, electric power transmission substation, gas or natural gas transmission line, or a gas compressor station. The study shall be designed to evaluate all practicable sites, routes, and route segments for the proposed facility identified within the project area.
 - (1) The applicant shall provide the following:
 - (a) A description of the study area or geographic boundaries selected, including the rationale for the selection.
 - (b) A map of suitable scale which includes the study area and which depicts the general routes, route segments, and sites which were evaluated.
 - (c) A comprehensive list and description of all qualitative and quantitative siting criteria, factors, or constraints utilized by the applicant, including any evaluation criteria or weighting values assigned to each.
 - (d) A description of the process by which the applicant utilized the siting criteria to determine the preferred and alternate routes and sites.
 - (e) A description of the routes and sites selected for evaluation, their final ranking, and the factors and rationale used by the applicant for selecting the preferred and alternate routes and sites.
 - (2) The applicant shall provide one copy of any constraint map utilized for the study directly to the board staff for review.
- (B) The applicant shall provide a summary table comparing the routes, route segments, and sites, utilizing the technical, financial, environmental, socioeconomic, and other factors identified in the study. Design

4906-15 -4-

and equipment alternatives shall be included where the use of such alternatives influenced the siting decision.

(C) The applicant may provide a copy of any route and site selection study produced by or for the applicant for the proposed project as an attachment to the application. The study may be submitted in response to paragraphs (A) and (B) of this rule, provided that the information contained therein is responsive to the requirements of paragraphs (A) and (B) of this rule.

Effective: 1/25/09 119.032 review dates: 11/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15-04 Technical data

- (A) Site/route alternatives. Information on the location, major features, and the topographic, geologic, and hydrologic suitability of site/route alternatives shall be submitted by the applicant. If this information is derived from reference materials, it shall be derived from the best available and current reference materials.
 - (1) Geography and topography. The applicant shall providemap(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission line alignment, and the area within the immediate vicinity of a substation site or compressor station site, which shall include the following features:
 - (a) The proposed transmission line alignments, including proposed turning points.
 - (b) The proposed substation or compressor station site locations.
 - (c) Major highway and railroad routes.
 - (d) Identifiable air transportation facilities, existing or proposed.
 - (e) Utility corridors.
 - (f) Proposed permanent access roads.
 - (g) Lakes, ponds, reservoirs, streams, canals, rivers, and swamps.
 - (h) Topographic contours.
 - (i) Soil associations or series.
 - (j) Population centers and legal boundaries of cities, villages, townships, and counties.
 - (2) Slope and soil mechanics. The applicant shall:
 - (a) Provide a brief, but specific description of the soils in the areas depicted on the above map(s) where slopes exceed twelve per cent. This information may be extracted from published sources.
 - (b) Discuss the rationales as to suitability of the soils for foundation construction.

- (B) Layout and construction. The applicant shall provide information on the poposed layout and preparation of route/site alternatives, and the description of the proposed major structures and their installation as detailed below.
 - (1) Site activities. The applicant shall describe the proposed site clearing, construction methods and reclamation operations, including:
 - (a) Surveying and soil testing.
 - (b) Grading and excavation.
 - (c) Construction of temporary and permanent access roads and trenches.
 - (d) Stringing of cable and/or laying of pipe.
 - (e) Post-construction reclamation.
 - (2) Layout for associated facilities. The applicant shall:
 - (a) Provide a map of 1:2,400 scale of the site of major transmission line associated facilities such as substations, compressor stations and other stations, showing the following proposed features:
 - (i) Final grades after construction, including the site and access roads.
 - (ii) Proposed location of major structures and buildings.
 - (iii) Fenced-in or secured areas.
 - (iv) Estimated overall dimensions.
 - (b) Describe reasons for the proposed layout and any unusual features.
 - (c) Describe plans for any future modifications in the proposed layout, including the nature and approximate timing of contemplated changes.
- (C) Transmission equipment. The applicant shall provide a description of the proposed transmission lines, as well as switching, capacity, metering, safety and other equipment pertinent to the operation of the proposed electric power and gas transmission lines and associated facilities. Include any provisions for future expansion.
 - (1) Provide the following data for electric power transmission lines:
 - (a) Design voltage.
 - (b) Tower designs, pole structures, conductor size and number per phase, and insulator arrangement.
 - (c) Base and foundation design.
 - (d) Cable type and size, where underground.
 - (e) Other major equipment or special structures.
 - (2) Provide a description for electric power transmission substations that includes a single-line diagram and a description of the proposed major equipment, such as:
 - (a) Breakers.

- (b) Switchgear.
- (c) Bus arrangement and structures.
- (d) Transformers.
- (e) Control buildings.
- (f) Other major equipment.
- (3) Provide the following data for gas transmission lines:
 - (a) Maximum allowable operating pressure.
 - (b) Pipe material.
 - (c) Pipe dimensions and specifications.
 - (d) Other major equipment.
- (4) Provide a description of gas transmission facilities such as:
 - (a) Control buildings.
 - (b) Heaters, odorizers, and above-ground facilities.
 - (c) Any other major equipment.
- (D) Environmental and aviation compliance information. The applicant shall provide:
 - (1) A list and brief discussion of all permits that will be required for construction of the facility.
 - (2) A description, quantification and characterization of debris that will result from construction of the facility, and the plans for disposal of the debris.
 - (3) A discussion of the process that will be used to control storm water and minimize erosion during construction and restoration of soils, wetlands, and streams disturbed as a result of construction of the facility.
 - (4) A discussion of plans for disposition of contaminated soil and hazardous materials generated or encountered during construction.
 - (5) The height of tallest anticipated above ground structures. For construction activities within the vicinity of airports or landing strips, provide the maximum possible height of construction equipment as well as all installed above ground structures.
 - (6) A description of the plans for construction during excessively dusty or excessively muddy soil conditions.

Effective: 1/25/09 119.032 review dates: 11/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 7/7/88, 8/28/98, 12/15/03

4906-15 -7-

4906-15-05 Financial data.

- (A) Ownership. The applicant shall state the current and proposed ownership status of the proposed facility, including sites, rights-of-way, structures, and equipment. The information shall cover sole and combined ownerships, any leases, options to purchase, or franchises, and shall specify the extent, terms, and conditions of ownership, or other contracts or agreements.
- (B) Electric capital costs. The applicant shall submit estimates of applicable capital and intangible costs for the various components of electric power transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for the utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business). The estimates shall include:
 - (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Substation equipment.
 - (4) Poles and fixtures.
 - (5) Towers and fixtures.
 - (6) Overhead conductors.
 - (7) Underground conductors and insulation.
 - (8) Underground-to-overhead conversion equipment.
 - (9) Right-of-way clearing and roads, trails, or other access.
- (C) Gas capital cost. The applicant shall submit estimates of applicable capital and intangible costs for the various components of gas transmission facility alternatives. The data submitted shall be classified according to the federal energy regulatory commission uniform system of accounts prescribed by the public utilities commission of Ohio for utility companies, unless the applicant is not an electric light company, a gas company or a natural gas company as defined in Chapter 4905. of the Revised Code (in which case, the applicant shall file the capital costs classified in the accounting format ordinarily used by the applicant in its normal course of business. The estimates shall include:
 - (1) Land and land rights.
 - (2) Structures and improvements.
 - (3) Pipes.
 - (4) Valves, meters, boosters, regulators, tanks, and other equipment.
 - (5) Roads, trails, or other access.

Effective: 12/15/2003 119.032 review dates: 9/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 4906-15 -8-

Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 12/27/76, 11/6/78, 7/7/80, 3/14/83, 1/15/85, 7/7/88, 6/5/93, 8/28/98

4906-15-06 Socioeconomic and land use impact analysis

- (A) The applicant shall conduct a literature search and map review for the area within one thousand feet on each side of each proposed transmission line centerline and within one thousand feet of the perimeter of each substation or compressor station designed to identify specific land use areas as required in paragraph (B)(3) of this rule. On-site investigations shall be conducted within one hundred feet of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each side of each proposed transmission line centerline and within one hundred feet of the perimeter of each substation or compressor station to characterize the potential effects of construction, operation, and maintenance of the proposed facility.
- (B) The applicant shall provide, for each of the site/route alternatives and adjacent areas, map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of a transmission alignment, and the area within the immediate vicinity of a substation site, which map(s) shall include the following features:
 - (1) Proposed approximate centerline for each transmission line alternative being proposed.
 - (2) Proposed substation or compressor station locations.
 - (3) General land use, depicted as areas on the maps, including, but not limited to:
 - (a) Residential use.
 - (b) Commercial use.
 - (c) Industrial use.
 - (d) Cultural use (as identified in paragraph (F) of this rule).
 - (e) Agricultural use.
 - (f) Recreational use.
 - (g) Institutional use (e.g., schools, hospitals, churches, government facilities, etc.).
 - (4) Transportation corridors.
 - (5) Existing utility corridors.
 - (6) Noise-sensitive areas.
 - (7) Agricultural land (including agricultural district land) existing at least sixty days prior to submission of the application located within each transmission line right-of-way or within each site boundary.
- (C) The applicant shall provide for each of the site/route alternatives, a description of the impact of the proposed facility on each land use identified in paragraph (B)(3) of this rule. As it relates to agricultural land, the description shall include the acreage impacted and the applicant's evaluation of impacts to cultivated land, permanent pasture land, managed wood lots, orchards, nurseries, and agricultural-related structures.

- (1) Provide the number of residential structures within one thousand feet of the proposed facility, and identify all residential structures for which the nearest edge of the structure is within one hundred feet of the proposed facility.
- (2) Construction: The applicant shall estimate the probable impact of the proposed facility on each land use (including: (a) buildings that will be destroyed, acquired, or removed as the result of the planned facility and criteria for owner compensation; and (b) field operations [such as plowing, planting, cultivating, spraying, and harvesting], irrigation, and field drainage systems).
- (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on each land use.
- (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize impact to land use, such as effects on subsurface field drainage systems.
- (D) The applicant shall provide the following public interaction information for each of the site/route alternatives:
 - (1) A list of counties, townships, villages, and cities within one thousand feet on each side of the centerline or facility perimeter.
 - (2) A list of the public officials contacted regarding the application, their office addresses, and office telephone numbers.
 - (3) A description of the program or company/public interaction planned for the siting, construction, and operation of the proposed facility, i.e. public information programs.
 - (4) A description of any insurance or other corporate program, if any, for providing liability compensation for damages, if such should occur, to the public resulting from construction or operation of the proposed facility.
 - (5) A description of how the facility will serve the public interest, convenience, and necessity.
 - (6) An estimate of the increase in tax revenues as a result of facility placement.
 - (7) A description of the impact of the facility on regional development, referring to pertinent formally adopted regional development plans.
- (E) The applicant shall provide the following health, safety, and aesthetic information for each site/route alternative:
 - (1) The applicant shall provide a description of how the facility will be constructed, operated, and maintained to comply with the requirements of applicable state and federal statutes and regulations, including the 2002 edition of the "National Electrical Safety Code", applicable occupational safety and health administration regulations, U.S. department of transportation gas pipeline safety standards, and Chapter 4901:1-16 of the Administrative Code.
 - (2) For electric power transmission facilities, the applicant shall discuss the production of electric and magnetic fields during operation of the preferred and alternate site/route. If more than one conductor configuration is to be used on the proposed facility, information shall be provided for each configuration that constitutes more than ten per cent of the total line length, or more than one mile of the total line length being certificated. Where an alternate structure design is submitted, information shall also be provided on the alternate structure. The discussion shall include:

4906-15 -9-

- (a) Calculated electric and magnetic field strength levels at one meter above ground, under the conductors and at the edge of the right-of-way for:
 - (i) Winter normal conductor rating.
 - (ii) Emergency line loading.
 - (iii) Normal maximum loading.

Provide corresponding current flows, conductor ground clearance for normal maximum loading and distance from the centerline to the edge of the right-of-way. Estimates shall be made for minimum conductor height. The applicant shall also provide typical cross-section profiles of the calculated electric and magnetic field strength levels at the normal maximum loading conditions.

- (b) References to the current state of knowledge concerning possible health effects of exposure to electric and magnetic field strength levels.
- (c) Description of the company's consideration of electric and magnetic field strength levels, both as a general company policy and specifically in the design and siting of the transmission line project including: alternate conductor configurations and phasing, tower height, corridor location and right-of-way width.
- (d) Description of the company's current procedures for addressing public inquiries regarding electric and magnetic field strength levels, including copies of informational materials and company procedures for customer electric and magnetic field strength level readings.
- (3) The applicant shall discuss the aesthetic impact of the proposed facility with reference to plans and sketches, including the following:
 - (a) The views of the proposed facility from such sensitive vantage points as residential areas, lookout points, scenic highways, and waterways.
 - (b) Structure design features, as appropriate.
 - (c) How the proposed facility will likely affect the aesthetic quality of the site and surrounding area.
 - (d) Measures that will be taken to minimize any visual impacts created by the proposed facility.
- (4) For electric power transmission facilities, the applicant shall provide an estimate of the level of radio and television interference from operation of the proposed facility, identify the most severely impacted areas, if any, and discuss methods of mitigation.
- (F) The applicant shall provide, for each of the site/route alternatives, a description of the impact of the proposed facility on cultural resources. This description shall include potential and identified recreational areas and those districts, sites, buildings, structures, and objects which are recognized by, registered with, or identified as eligible for registration by the Ohio historical society or the Ohio department of natural resources. It shall include but not be limited to the following:
 - Location studies: The applicant shall describe studies used to determine the location of cultural resources within the study corridor. Correspondence with the Ohio historical preservation office shall be included.
 - (2) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on cultural resources.

- 4906-15 -11-
 - (3) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility on cultural resources.
 - (4) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during the operation and maintenance of the proposed facility to minimize impact to cultural resources.
- (G) The applicant shall submit data and related information on noise emissions generated by the proposed transmission line and associated facilities. Construction noise information shall be submitted for only those portions of transmission line routes requiring more than four months of actual construction time to complete in residential, commercial, and other noise-sensitive areas.
 - (1) Construction: To assure noise control during construction, the applicant shall estimate the nature of any intermittent, recurring, or particularly annoying sounds from the following sources:
 - (a) Dynamiting or blasting activities.
 - (b) Operation of earth moving and excavating equipment.
 - (c) Driving of piles.
 - (d) Erection of structures.
 - (e) Truck traffic.
 - (f) Installation of equipment.
 - (2) Operation and maintenance: The applicant shall estimate the effect of noise generation due to the operation or maintenance of the transmission line and associated facilities.
 - (3) Mitigation procedures: The applicant shall describe any equipment and procedures designed to mitigate noise emissions during both the site clearing and construction phase, and during the operation and maintenance of the facility to minimize noise impact.
- (H) The applicant shall provide site-specific information that may be required in a particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impact. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.

Effective: 1/25/09 119.032 review dates: 11/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 10/10/78, 6/5/93, 8/28/98, 12/15/03

4906-15-07 Ecological impact analysis.

(A) The applicant shall provide a summary of any studies that have been made by or for the applicant on the natural environment in which the proposed facility will be located. The applicant shall conduct and report the results of a literature search, including map review, for the area within one thousand feet on each side of a transmission line alignment and the area within the immediate vicinity of a substation or compressor station site. On-site investigations shall be conducted within one hundred feet on each side of a transmission line centerline or within one hundred feet of a substation or compressor station site to characterize the potential effects of construction, operation, or maintenance of the proposed facility.

4906-15 -12-

- (B) The applicant shall provide for each of the site/route alternatives a map(s) of not less than 1:24,000 scale, including the area one thousand feet on each side of the transmission line alignment and the area within the immediate vicinity of a substation site or compressor station site. The map(s) shall include the following:
 - (1) Proposed transmission line alignments.
 - (2) Proposed substation or compressor station locations.
 - (3) All areas currently not developed for agricultural, residential, commercial, industrial, institutional, or cultural purposes including:
 - (a) Streams and drainage channels.
 - (b) Lakes, ponds, and reservoirs.
 - (c) Marshes, swamps, and other wetlands.
 - (d) Woody and herbaceous vegetation land.
 - (e) Locations of threatened or endangered species.
 - (4) Soil associations in the corridor.
- (C) The applicant shall provide for each of the site/route alternatives a description of each stream or body of water (and associated characteristics including floodplain) that is present and may be affected by the proposed facility, including but not limited to the following:
 - (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on streams and bodies of water. This shall include the impacts from route clearing.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on streams and bodies of water. This shall include the permanent impacts from route clearing.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on streams and bodies of water.
- (D) The applicant shall provide for each of the site/route alternatives a description of each wetland that is present and may be affected by the proposed facility. The applicant shall describe the probable impact on these wetlands, including but not limited to the following:
 - (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on wetlands and wildlife habitat.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on wetlands and wildlife habitat. This would include the permanent impacts from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on wetlands and wildlife habitat.
- (E) The applicant shall provide for each of the site/route alternatives a description of the naturally occurring vegetation that is present and may be affected by the proposed facility. The applicant shall describe the

probable impact to the environment from the clearing and disposal of this vegetation, including but not limited to the following:

- (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on the vegetation. This would include the impacts from route clearing, types of vegetation waste generated, and the method of disposal or dispersal.
- (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
- (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (F) The applicant shall provide for each of the site/route alternatives a description of each major species of commercial or recreational value and species designated as endangered or threatened, in accordance with U.S. and Ohio species lists, that is present and may be affected. The applicant shall describe the probable impact to the habitat of the species described above, including but not limited to the following:
 - (1) Construction: The applicant shall estimate the probable impact of the construction of the proposed facility on commercial, recreational, threatened, or endangered species. This would include the impacts from route clearing and any impact to natural nesting areas.
 - (2) Operation and maintenance: The applicant shall estimate the probable impact of the operation and maintenance of the proposed facility after construction on species described above. This would include the permanent impact from route clearing and any impact to natural nesting areas.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during the operation and maintenance of the proposed facility to minimize the impact on species described above.
- (G) The applicant shall provide for each of the site/route alternatives a description of the areas with slopes and/or highly erodible soils (according to the natural resource conservation service and county soil surveys) that are present and may be affected by the proposed facility. The applicant shall describe the probable impact to these areas, including but not limited to the following:
 - (1) Construction: The applicant shall provide a description of the measures that will be taken to avoid or minimize erosion and sedimentation during the site clearing, access road construction, facility construction process, and any other temporary grading. If a storm water pollution prevention plan is required for the proposed facility, the applicant shall include the schedule for the preparation of this plan.
 - (2) Operation and maintenance: The applicant shall describe and estimate the probable impact of the operation and maintenance of the proposed facility after construction on the environment. This would include permanent impacts from sites where grading has taken place.
 - (3) Mitigation procedures: The applicant shall describe the mitigation procedures to be used during construction of the proposed facility and during operation and maintenance of the proposed facility to minimize the impact on the environment due to erosion from storm water run-off.
- (H) The applicant shall provide site-specific information that may be required in this particular case to adequately describe other significant issues of concern that were not addressed above. The applicant shall describe measures that were taken and/or will be taken to avoid or minimize adverse impacts. The applicant shall describe public safety-related equipment and procedures that were and/or will be taken.
4906-15 -14-

Effective: 12/15/2003 119.032 review dates: 9/30/13 Promulgated Under: 111.15 Statutory Authority: 4906.03 Rule Amplifies: 4906.06, 4906.03 Prior Effective Dates: 10/10/78, 3/20/87, 8/28/98

4906-15-01 PROJECT SUMMARY AND FACILITY OVERVIEW

(A) PROJECT SUMMARY AND FACILITY OVERVIEW

This Application seeks a Certificate of Environmental Compatibility and Public Need from the Ohio Power Siting Board ("Board") for the Glenwillow Transmission Switching Substation Project ("Project") proposed by American Transmission Systems, Incorporated ("ATSI" or the "Applicant"), a wholly owned subsidiary of FirstEnergy Corp. The scope of the Project involves construction of a new 345 kV switching substation.

ATSI's Bulk Electric System ("BES") currently relies heavily on generating units located in close proximity to the load center in Cleveland. The entire ATSI BES relies on generation in the Cleveland Area, as generation in the Cleveland Area minimizes the amount of power that must be transferred into the area. The retirement of the majority of Cleveland Area coal-fired generating plants means that the transmission system must import more power from outside the local load center to maintain reliability. To reinforce ATSI's BES in the greater Cleveland metropolitan area, ATSI and PJM Interconnection, LLC ("PJM"), determined that a new 345 kV transmission source (the Bruce Mansfield - Glenwillow 345 kV Transmission Line) is needed between ATSI's territory in Pennsylvania and Ohio and a new switching substation is necessary in the vicinity of the existing Eastlake - Juniper and Inland - Perry 345 kV lines, which converge in Summit and Cuyahoga counties, Ohio. To resolve this need, ATSI is proposing in this Application the construction of the Glenwillow Transmission Switching Substation. The Applicant will propose in a separate Letter of Notification Application under OPSB Case No. 12-1726-EL-BLN the construction of a new 345 kV transmission line (the Bruce Mansfield -Glenwillow 345 kV Transmission Line)¹. The proposed Glenwillow Transmission Switching Substation, which is the subject of this Application, will connect the proposed Bruce Mansfield -Glenwillow 345 kV Transmission Line to two existing 345 kV transmission lines and reinforce the BES.

American Transmission System, Incorporated A FirstEnergy Company

¹ On September 26, 2012 ATSI submitted a request to revise the case code of the case number from 12-1726-EL-BTX to 12-1726-EL-BLN. The Order approving the revised case number was issued on October 12, 2012.

ATSI has identified a Preferred Site and an Alternate Site for the Glenwillow Transmission Switching Substation.² Both sites are located within the Village of Glenwillow in Cuyahoga County, Ohio, on vacant parcels zoned as industrial and adjacent to the existing Eastlake – Juniper, Inland – Perry, and Harding – Perry 345 kV transmission lines. The Preferred Site is located at the intersection of Austin Powder Drive and Cochran Road. The Alternate Site is located adjacent to the Preferred Site on the north side of the existing 345 kV transmission lines. A detailed description of each site is provided under the Summary Description section.

The Board has jurisdiction over major electric transmission substations located wholly within the state of Ohio. This Application contains specific project details regarding environmental, socioeconomic, and ecological impacts, a discussion of the technical elements of the project, a description of the need for the project, and a summary of the financial elements of the project that meet the requirements of Ohio Revised Code Chapter 4906 and the corresponding rules of the Board.

(1) General Purpose of the Facility

The Glenwillow Transmission Switching Substation Project is directly related to, and its general purpose is the same as, the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project submitted to the Board in OPSB Case No. 12-1726-EL-BLN. As such, the general purpose and need for both the Glenwillow Transmission Switching Substation Project and the Bruce Mansfield – Glenwillow 345 kV Transmission Line Project (the "Transmission Line Project") is to ensure compliance with North American Electric Reliability Corporation ("NERC") planning criteria for ATSI's 345 and 138 kV transmission systems, PJM's³ planning criteria, and FirstEnergy's transmission planning criteria for the 345 kV transmission system in and around the Project Area.

² On October 12, 2012, ASTI filed a request with the Board for a waiver of the need to submit fully developed engineering and EMF information for the Alternate Site. EMF calculations for the Alternate Site should be similar to the Preferred Site. However, as engineering design was not completed for the Alternate Site, specific EMF calculations are not included in this Application.

³ PJM Interconnection, LLC ("PJM"), a FERC-approved Regional Transmission Organization ("RTO"), is charged with ensuring the reliability of the electric transmission systems under its functional control and coordinating the movement of wholesale electricity in all or parts of 13 states, including most of Ohio. PJM is responsible for ensuring compliance with NERC planning and operating standards for the bulk electric system (i.e. above 100 kV) within its control area.

ATSI's 345 and 138 kV transmission systems in the greater Cleveland metropolitan area (the "Project Area" and the "Project Area Transmission System") currently face significant operating limitations including thermal ratings, capacity shortage, and low voltage concerns. The Project and the Transmission Line Project are designed to correct these operating limitations.

Based upon the PJM 2013 and 2015 Load Forecasts, with the closure of the announced generation plants, the Project Area could experience thermal overload violations for multiple contingency conditions (i.e. the loss of two or more facilities) in 2012. Exceeding thermal ratings on the transmission system can damage the system and lead to load loss as efforts are made to correct the thermal violations.

Further, with the closure of the announced generation plants, demand in the Project Area is expected to exceed available capacity under certain contingency scenarios beginning as soon as late 2012. Construction of the Project and the Transmission Line Project will provide a robust electric supply to this portion of the Transmission System and thereby correct the inadequate capacity in the area. Moreover, this additional capacity allows for forecasted load growth and the interconnection of large customers.

In addition to capacity limitations and thermal violations resulting from the limited infrastructure in the area, the Project Area may be susceptible to a local voltage collapse under multiple contingency conditions (i.e. the loss of two or more facilities). The outage combination of greatest concern includes the loss of the single largest remaining generating unit in the Project Area (Perry Unit), combined with an outage to one of several 345 kV lines into the Cleveland area. The Project Area Transmission System and associated distribution and customer substations serve approximately 900,000 customers.

Ultimately, this Project and the associated Transmission Line Project are needed to ensure continued provision of safe and reliable electric service in the Project Area. An overview of the project study area is presented in Figure 3-1.

(2) Summary Description

ATSI has identified a Preferred and an Alternate site for the proposed Glenwillow Transmission Switching Substation in the Village of Glenwillow in Cuyahoga County, Ohio. The Preferred Site is located adjacent to several existing high voltage electric transmission lines on an irregular shaped parcel east of the intersection of Austin Powder Drive and Cochran Road. The parcel is approximately 24.8 acres in size and classified by Cuyahoga County as Commercial Vacant Land and zoned by the Village of Glenwillow as Industrial District A. The majority of the Site is cleared, with a small area of forested land on the eastern border. The northern portion of the Preferred Site is traversed by three existing 345 kV transmission lines: Eastlake – Juniper, Inland – Perry, and Harding – Perry. In addition, the Mayfield – Northfield #1 & #2 138 kV transmission lines and the Longfield 138 kV Substation border the Preferred Site to the north. ATSI plans to connect the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line into the new Glenwillow Transmission Switching Substation. The Bruce Mansfield – Glenwillow 345 kV Transmission Line is being filed under a separate Letter of Notification Application as Case No. 12-1726-EL-BLN.

The Alternate Site is located on an irregular shaped parcel adjacent to the Preferred Site and located south of Beaver Meadow Parkway in the Village of Glenwillow, directly north of the existing 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. The parcel is approximately 23 acres in size and classified by Cuyahoga County as Commercial Vacant Land and zoned by the Village of Glenwillow as Industrial District A. The majority of the parcel is forested and a tributary to Tinkers Creek traverses the eastern portion of the property. An electric distribution line bisects the property. If the Alternate Site is approved, ATSI would need to acquire approximately 400 to 800 feet of new, 150-footwide transmission ROW through the half-moon shaped parcel adjacent to and east of the Alternate Site in order to connect the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines into the new substation. The adjacent parcel is approximately 25 acres in size and also classified as Commercial Vacant Land and zoned as Industrial District A. The Preferred and Alternate sites are presented in Figure 3-3.

The fenced area of the proposed Glenwillow Transmission Switching Substation will be approximately 465 feet by 490 feet and will be entirely graded and covered in gravel or equipment. The Preferred Site would be accessed from Cochran Road. The Alternate Site would be accessed from Beaver Meadow Parkway. When the Project is completed, the

01-4

Glenwillow Substation will connect the new Bruce Mansfield – Glenwillow 345 kV Transmission Line with two existing 345 kV transmission lines currently serving the region.

(3) Site Selection Process

ATSI conducted a Site Selection Study to identify an appropriate location for the Glenwillow Transmission Switching Substation. This study was conducted in conjunction with the Route Selection Study for the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project. The location of the Preferred and Alternate sites are identified in Figure 3-3 and the Site Selection Study is presented in Section 3. The Siting Team evaluated the advantages and disadvantages of potential sites based on established system planning and siting criteria, an inventory of land uses, environmental, and cultural factors at each of the sites, as well as local knowledge and professional judgment and experience. The objective of the Site Selection Study was to identify sites that meet the system planning requirements that minimized the impacts to the community and the environment, taking into account the engineering and construction needs of the Project.

ATSI determined that a new 345 kV source and switching substation were required to reinforce the BES in the Project Area as a result of the announced retirement of several coal-fired power plants. The new switching substation was designed to connect the new 345 kV source to the existing 345 kV transmission line system through the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines. Both lines converge approximately 0.3 miles west of Interstate 271 just south of the Cuyahoga and Summit County border and parallel each other for approximately 18 miles in a general northeast direction until reaching the Mayfield Substation in Geauga County, Ohio.

ATSI initially considered a Study Area that encompassed this entire parallel segment, which is generally bound by the Town of Chesterland in Geauga County to the north; the West Woods Nature Center in Novelty, Geauga County to the east; the Village of Glenwillow to the south; and the Cuyahoga-Summit county border near the intersection of Interstates 480 and 271 to the west. As a result of the transmission line Route Selection Study, however, the proposed switching substation Study Area was reduced as ATSI sought to take advantage of existing infrastructure including existing transmission lines with available open arm positions and the

potential for existing single circuit lines to be rebuilt for double circuit operation. Further, points farther northeast would have required additional and unnecessary construction. Finally, no existing transmission infrastructure is located in Geauga County that would have provided an existing corridor between the Chamberlin - Mansfield 345 kV Transmission Line open arm segment and potential switching substation locations in the northeast. The refined switching substation Study Area, therefore, included potential sites in the vicinity of the first 7.5 miles of parallel 345 kV transmission line, beginning at the intersection of Interstates 480 and 271 in the Village of Oakwood, Cuyahoga County and ending at the intersection of the lines with Route 422 in the City of Solon, Cuyahoga County. The initial potential route network for the Transmission Line Project evaluated routes parallel to Route 422 and the Norfolk Southern Railroad that would terminate at points adjacent to the existing 345 kV transmission lines within the City of Solon. Field reconnaissance identified numerous constraints that made these options less feasible with considerable greater potential impacts. Therefore, ATSI determined that the most suitable location for the new switching substation is in the vicinity of the first 4.5 miles of parallel transmission line in Summit and Cuyahoga counties. Based on a review of aerial imagery, zoning, and other available mapping, ATSI identified eleven potential locations for a new 345 kV switching substation in this Study Area.

These potential sites were reviewed in more detail, including direct field reconnaissance. Based on this review, ATSI identified four potential sites to present at public information meetings held in June 2012. Based on the proximity of the four selected sites to the Village of Glenwillow, the proposed new switching substation was identified as the Glenwillow Transmission Switching Substation. Subsequently, the four sites were narrowed down to the Preferred and Alternate sites presented in this Application. A detailed Site Selection Study is presented in Section 3 in accordance with Ohio Administrative Code Chapter 4906-15-03.

(4) Principal Environmental and Socioeconomic Considerations

A socioeconomic survey of the Study Area of the Project was performed as part of the Bruce Mansfield – Glenwillow 345 kV Transmission Line Project (OPSB Case No. 12-1726-EL-BLN) and included preparation of a land use map, current population estimates and projections for the area, consideration of compatibility of the Project with local and regional development plans, and a qualitative assessment of the impact of the proposed switching substation on the surrounding community.

(a) Land Use Impacts

ATSI identified Preferred and Alternate sites for the Glenwillow Transmission Switching Substation to provide 345 kV transmission switching and reinforce the BES. The Preferred Site is located within the Village of Glenwillow in an area zoned for industrial use. All of the adjacent properties are also zoned for industrial use and include the Longfield 138 kV Substation, the Dirt Devil Headquarters, and a vacant forested property to the north and northeast (the Alternate Site); the Wheeling & Lake Erie Railway tracks and a vacant forested property to the east; and Cochran Road and vacant lots to the south and west.

The Alternate Site borders the Solon Police Department gun range and the City of Solon Wastewater Treatment Facility to the north and east; a vacant forested property to the east; vacant lots to the south (including the Preferred Site); and the Dirt Devil Headquarters to the west.

Four residences were identified within 1,000 feet and no residences were identified within 100 feet of the Preferred Site. No residences were identified within 1,000 feet or 100 feet of the Alternate Site. ATSI believes the Preferred Site is the most feasible location for the new switching station based on the location and alignment of the existing 345 kV lines that must connect to the new substation; the proposed Bruce Mansfield – Glenwillow transmission line route; zoning and current land use of the identified parcel; and potential human and environmental impacts associated with the construction of new substation at the Preferred Site as compared to other locations, including the Alternate Site.

(b) Economic Impacts

The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project and the associated Glenwillow Transmission Switching Substation Project are needed to provide reliable electric service to the ATSI territory. Thus, the Project is anticipated to have an indirect positive impact on regional development in the Project Area. The construction process of the Project is

anticipated to have a small, but positive, impact on the local economy. A portion of the labor for the construction and materials of the facility is likely to be drawn from local sources.

(c) Ecological Impacts

An ecological study of the Preferred and Alternate sites was performed as part of this Application. The study included analysis of published literature and maps to assess the presence of endangered plant and animal species, streams, and wetlands, as well as field reconnaissance. Field surveys were conducted at both the Preferred and Alternate sites, including the adjacent half-moon parcel to the east of the Alternate Site (also known as Site A, a portion of which would be needed for transmission line connection right-of-way for the Alternate Site), for habitat of endangered animals, streams, and wetlands, as well as basic vegetation. The results of this survey are discussed in detail in Section 7 of this Application.

Based on field delineation and review of the National Wetland Inventory ("NWI") database, the Preferred Site contains three wetlands located on the northeastern portion of Preferred Site and two streams, both tributaries to Tinkers Creek. The Alternate Site contains four wetlands and three streams and Site A contains 11 wetlands and five streams. These features as well as other features identified within 100 feet of the Preferred and Alternate sites are discussed in Section 7 of this Application. An Indiana bat habitat assessment was also conducted on the Preferred and Alternate sites. The results of the habitat assessment are discussed in Section 7. Minimal disturbance to streams and wetlands are anticipated during construction on the Preferred Site. Potential impacts are described in subsequent sections.

Letters have been sent to the U.S. Fish and Wildlife Service ("USFWS"), Ohio Department of Natural Resources Division of Wildlife ("ODNR-DOW"), and ODNR-Department of Natural Areas and Preserves ("DNAP") requesting their initial comments regarding the Project and its potential, if any, to impact threatened, endangered, or other species of concern. Responses were received from USFWS and ODNR and are discussed in Section 7 of this Application.

Storm water best management practices, such as placement of silt fencing, will be employed where necessary to mitigate potential soil erosion and degradation during construction.

(d) Cultural Impacts

Two previously recorded archaeological sites were identified within 1,000 feet of the Preferred Site. One site, identified as Site No. CU0240, is located within the parcel boundaries of the Preferred Site outside of the proposed fence line adjacent to the proposed access road. Archeological investigations were conducted on the Preferred Site in 1980 and reassessed in 1999 as part of the cultural resources studies for the Emerald Business Park. The original Ohio Archeological Inventory form for the investigation indicates that further investigation is recommended based on the site location. However, the 1999 Phase I Literature Review and Cultural Resource Survey⁴ indicates that CU0240 was not identified during field surveys and was likely destroyed by topsoil removal in the area. LBG will continue to consult with the Ohio Historic Preservation Office ("OHPO") to further assess the site for potential cultural resources as determined appropriate.

One Ohio Historic Inventory ("OHI") structure was identified within 1,000 feet of the Preferred Site, but no OHI structures were identified within 100 feet. In addition, one historic architecture survey was conducted in the past within 1,000 feet of the Preferred Site, but no surveys were conducted within 100 feet. No previously recorded archaeological sites or National Register of Historic Places ("NRHP") structures or districts were identified within 1,000 feet of the Alternate Site.

(e) Other Environmental Impacts

No other potential environmental impacts beyond those discussed above and in Section 7 of this Application are expected as a result of the Project.

(5) Project Schedule Summary

The Project is needed to meet expected load requirements by June 1, 2015. Construction is proposed to begin in July 2013. Figure 2-5 provides additional details regarding the proposed Project schedule.

⁴ Whitman L. and Mustain C. 1999. Phase I Literature Review and Cultural Resource Survey for the Proposed Emerald Business Park in the Village of Glenwillow, Cuyahoga County, Ohio.

(B) INFORMATION FILED IN RESPONSE TO REQUIREMENTS

The information filed in response to the requirements of Ohio Administrative Code Chapter 4906-15-01 is in addition to information included in any other section of this Application.

The Board has jurisdiction over major substation and transmission line installations located wholly within the state of Ohio. As such, ATSI is required to file an application with the Board for a Certificate of Environmental Compatibility and Public Need for the Project. This Application contains specific project details regarding environmental, socioeconomic, technical, ecological, justification of need, and financial matters.

The Board process is initiated with a pre-application public information meeting held by the Applicant within the general project area. The pre-application information meeting, or meetings, is intended to provide general project information to the local residents and to detail upcoming Board activities. The Project was announced in conjunction with the Bruce Mansfield – Glenwillow 345 kV Transmission Line Project and four pre-application information meetings were held for this Project from June 18 to 21, 2012; the meeting on June 21, 2012 was held in Macedonia near the Village of Glenwillow.

Following the public information meeting or meetings, an application for a Certificate of Environmental Compatibility and Public Need is filed with the Board. The Board has 60 days to either certify the application filing as complete, or notify the Applicant by mail of the specific grounds for determining that the application is incomplete. Upon a completeness determination, the Board orders the Applicant to serve a copy of the complete Application on the chief executive officer of each municipal corporation and county, and the head of each public agency charged with the duty of protecting the environment or of planning land use in the area in which any portion of the project is to be located.

After complete applications have been served in the Project Area, the Board schedules public hearings. The Applicant is then required to provide two separate public notices of the project and upcoming hearings in newspapers of general circulation within the project area. The first public notice is to be published within 7 days of the complete Application service date, and the second public notice is to be published at least seven but not more than 21 days prior to the

public hearing. In addition, the applicant is required to send a letter describing the facility to each property owner within the planned site or right-of-way of the proposed facility and to each property owner who may be approached by the Applicant for any additional easement necessary for the construction, operation, or maintenance of the facility. The Board Staff is to conduct an investigation of the complete Application and submit a written report not less than fifteen days prior to the beginning of public hearings.

One session of the Public Hearings for the project is typically held at a convenient location within the general project area with the other session(s) held at the principal office of the Board. An Administrative Law Judge appointed by the Chairman of the Board will preside over the hearings. The Administrative Law Judge will regulate the proceedings and provide members of the public opportunity during a portion of the hearing to offer testimony. Within a reasonable time after conclusion of the hearings, the Board shall issue a final decision based on the record of the proceedings.

(C) PREPARATION OF HARD COPY MAPS

Digital, geographical referenced data used in the preparation of maps for the Glenwillow Transmission Switching Substation Project Application for a Certificate of Environmental Compatibility and Public Need will be provided under separate cover and submitted concurrent with the Application.

4906-15-02 NEED FOR THE PROPOSED PROJECT

SECTION SUMMARY

This section of the application provides an explanation of:

- Why it is necessary to construct the proposed Glenwillow Transmission Switching Substation (or "Project");
- How the Project fits into the Applicants' recent long-term forecast and regional plans for the electric system; and
- How the Project serves the interest of the system economy and reliability, and provides a schedule of the Project.

Installation of the proposed Glenwillow Transmission Switching Substation described in this Application, and the associated Bruce Mansfield – Glenwillow 345 kV Transmission Line Project and the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line extensions to the Glenwillow Transmission Switching Substation are needed to reinforce ATSI's Bulk Electric System ("BES") in the Project Area. In a separate submittal to the Board, ATSI, in Case No. 12-1726-EL-BLN, submitted a Letter of Notification ("LON") for the Bruce Mansfield – Glenwillow 345 kV Transmission Line Project and the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line extensions to the Glenwillow 345 kV Transmission Line Project and the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line extensions to the Glenwillow Transmission Switching Substation. Given the interrelationship of the projects, the technical information supporting the Justification of Need section of this Application also applies to the related transmission line projects and is presented in an abbreviated format in the LON.

As explained in this section of the Application, ATSI's 345 kV and 138 kV transmission system in the greater Cleveland metropolitan area (the "Project Area" and the "Project Area Transmission System") currently face significant operating limitations including capacity shortage, the existence of thermal ratings constraints¹ and low voltage. The ability to import power into the Cleveland area has historically been limited by low voltage concerns. Deactivation of generation in and around Cleveland will significantly increase these voltage

¹ Exceeding thermal ratings results in wires overheating to the point that the electric system is damaged.

limitations. This Project, in conjunction with others identified and directed by PJM, is designed to correct these operating limitations and to ensure reliable energy delivery in the Project Area.

The Project Area Transmission System has been evaluated using the PJM Interconnection ("PJM") 2013 and 2015 Load Forecasts from the forecast report dated January 26, 2012. These evaluations are discussed later in this Application. The evaluations demonstrate that the Project Area Transmission System will experience potential voltage violations and thermal overloads under various planning scenarios for multiple contingency conditions (i.e. the loss of two or more facilities) when all the generation units announced for deactivation are deactivated. Upon these generation deactivations, the area load will exceed the delivery capacity available under contingency conditions in the existing Project Area Transmission System, and may experience local voltage collapse during multiple contingency conditions. The outage combination of greatest concern is the outage of the single largest remaining generating unit in the Project Area (Perry Nuclear Power Plant), combined with the loss of one of several 345 kV facilities in the Project Area Transmission System.

When compared to other alternatives, the proposed Project is the best option to resolve capacity limitations, thermal overloads and voltage violations based on existing infrastructure and to reinforce the ATSI transmission system. Construction of the Project along with several other projects identified by PJM will provide a new, reliable electric supply to the Project Area Transmission System and thereby correct for the lost capacity in the area. PJM has considered this Project as part of its continuing review of the transmission system within the ATSI footprint. The Transmission Expansion Advisory Committee ("TEAC") Recommendations to the PJM Board as summarized in the PJM Staff Whitepaper². It contains additional information regarding the drivers and need for this Project and other projects within the ATSI footprint, as directed by PJM. Moreover, the additional capacity provided to the Project Area from this project, when considered in conjunction with the other PJM identified projects, will support forecasted load growth and interconnection of potential new loads.

² Located at: http://www.pjm.com/committees-and-groups/committees/teac.aspx, and is included in this Application in Appendix 2-1, May 2012.

(A) NEED FOR THE PROPOSED FACILITY

ATSI's 345 kV and 138 kV transmission systems in the Project Area Transmission System are part of the transmission grid and, through various substations, provide electric supply to a large portion of The Cleveland Electric Illuminating Company ("CEI") and Ohio Edison Company ("Ohio Edison") service territories. This area of CEI and Ohio Edison's service territories are referenced in this Application as the "Project Area."

Under the normal configuration, the Project Area Transmission System supplies distribution and customer substations. The substations in the Project Area serve more than 900,000 customers. The Project Area Transmission System, when installed, was developed for area needs as they existed at that time (when the Project Area was populated by primarily residential and industrial customers) and relied heavily on generating units located in close proximity to the load center. The 345 kV and 138 kV Project Area Transmission System was expanded over time to both accommodate growth in the Project Area and better integrate the CEI system in the larger interconnected transmission grid system. However, the Project Area Transmission System relies on generating units located inside the load center to both meet local electrical demand and provide voltage stability through dynamic reactive power response. The amount of dynamic reactive power available in any area is defined as the difference between the actual reactive output of dynamic reactive devices (i.e. generating units, synchronous condensers, static var compensators ["SVC"], etc.) and the maximum capability of the dynamic reactive devices, which is commonly referred to as dynamic reactive reserve. When dynamic reactive reserve is exhausted, the Project Area Transmission System becomes at risk for low voltage and voltage collapse.

The retirement of the majority of Cleveland Area coal-fired generating plants means that the Project Area Transmission System must import more power from outside the local load center – and rely on some retired units being converted from generating units to synchronous condensers – to maintain a level of dynamic reactive power response. Much of the power being imported into the Project Area Transmission System moves over the ATSI transmission system which ultimately connects to neighboring utilities. These facilities have import capacity limitations;

imports that exceed these limitations result in thermal overloads on these facilities as well as within the Project Area being served. Additionally, with increased loading on the transmission lines that move power into the Project Area, there are increased power losses. These power losses also contribute to a reduction in dynamic reactive reserves in the Project Area, as reactive power is consumed by the transmission system.

Furthermore, many additional factors have led to increased consumption of electricity in the affected areas. The expansion of the greater Cleveland metropolitan area into the surrounding rural areas has led to a significant increase in the number of new homes, schools, and service businesses in the Project Area, as well as increased commercial and industrial businesses that have started or expanded their facilities and operations in the Project Area. Each new home, and new or expanded business, adds to the load on the Project Area Transmission System, which therefore adds to the amount of power that must be imported into the Project Area. Even without the retirement of the generation units in the area, the Project Area Transmission System was approaching the limits for which it was designed. The retirement of the generating units therefore exacerbate and hasten the need for this Project. The core issue is that, unless a new supply of electric energy is brought into the area, the existing Project Area Transmission System is unlikely to be able to support a reliable electric system capable of delivering needed electricity to Project Area businesses, homes and communities, and no additional capacity will be available for new homes or businesses in the area.

Because the Project Area Transmission System is approaching its operating limits, in order to accommodate electric contingencies – as well as new load (i.e. homes, businesses, and industrial facilities) that come on-line prior to the completion of the Project – operating procedures are in place on affected circuits in the area. Operating procedures may include manual load reductions (forced outages) in the Project Area, should they be required, as voltages in the Project area begin to deteriorate. This may be necessary to ensure the reliable operation of the Transmission System as it relates to voltage stability. To minimize the potential for these operating procedures and manual load reductions, ATSI is planning on completing this Project prior to the generation retirement if all applicable requirements can be met in sufficient time.

(1) Purpose of the Proposed Facility

The Glenwillow Transmission Switching Substation Project, the Bruce Mansfield – Glenwillow 345 kV Transmission Line, and the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line extensions to the Glenwillow Transmission Switching Substation Project are needed to support recent and future increases in electric load and maintain voltage levels in the greater Cleveland area. Specifically, these projects are intended to reinforce the interconnected transmission system following the announced retirement of 18 units at coal-fired power plants in the ATSI territory – located in both Ohio and Pennsylvania – that will occur by 2015. Additionally there are other projects identified by PJM and FirstEnergy that are also needed to ensure compliance with North American Electric Reliability Corporation ("NERC") planning criteria for the 345 and 138 kV transmission systems, PJM planning criteria³ and the FirstEnergy transmission planning criteria. Ultimately, the projects are needed to ensure continued provision of safe and reliable electric service in the Project Area.

The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line will add an additional path for energy flows into the Project Area from an area with additional generation resources. This pathway for the increased importation of power into the Project Area will provide the following benefits to the Project Area Transmission System:

- 1. Increase the import capability into the Project Area
- 2. Make the area more reliable under contingency conditions
- 3. Decrease flows on existing infrastructure
- 4. Reduce reactive power losses on transmission lines moving power into the Project Area
- 5. Increase dynamic reactive reserves in the Project Area to maintain voltage stability

The proposed Glenwillow Transmission Switching Substation is the termination point of the Bruce Mansfield – Glenwillow 345 kV Transmission Line. Through the installation of the Eastlake – Juniper and Inland – Perry 345 kV Transmission Line extensions to the Glenwillow

³ PJM's planning criteria utilizes the most stringent of the applicable NERC, PJM or local (transmission owner) criteria. PJM Manual 14-B, page 20.

Transmission Switching Substation Project, the Glenwillow Transmission Switching Substation integrates the energy flow along the Glenwillow Transmission Switching Substation into the transmission system located in the Project Area.

(2) System Conditions and Local Requirements

This section describes the facilities and equipment that comprise ATSI's transmission facilities located in the Project Area. Further, it describes the existing violations of contingency planning and power flow criteria in the Project Area. Finally this section describes the projected conditions on the system after the Project is placed in-service.

Project Area

The Project Area Transmission System, in the greater Cleveland metropolitan area, is a part of the transmission grid and, through various substations, provides electric supply to CEI and Ohio Edison service territories in this area. The area served by the Project Area Transmission System is referenced here as the Project Area as shown in Figure 2-1. The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project is shown in Figure 2-2.

The existing 345 kV source transmission lines in the Project Area are:

- Beaver Davis Besse
- South Canton Star
- Sammis Star
- Hanna Canton Central

- Beaver Valley Hanna
- Chamberlin Mansfield
- Hanna –Highland
- Ashtabula Erie West

The existing 138 kV source transmission lines in the Project Area are:

- Ford-New Departure
- Beaver NASA
- Beaver Greenfield
- Beaver –Henrietta
- Carlisle Shinrock

- Cloverdale Star
- Barberton Cloverdale
- Dale –West Canton
- East Akron Sammis
- Hanna Newton Falls



The existing 69 kV source transmission lines in the Project Area are:

- Edgewater Shinrock
- Oberlin Shinrock
- Henrietta –Johnson
- Carlisle Wellington

- Homer Seville
- Cloverdale Dale
- Bluebell –Hartville



Figure 2-2. Proposed Bruce Mansfield – Glenwillow Transmission Line Project

Change in System Conditions

FirstEnergy Solutions Corp. ("FES") and neighboring generation owners have submitted to PJM plans to retire generation units in the ATSI footprint. FES has submitted a deactivation request for generation units in the Cleveland Area at Ashtabula (Unit #5), Lakeshore (Unit #18), and Eastlake (Units #1-5)⁴.

The announced retirement of these generating units will create potential reliability issues for the Project Area and surrounding area. The Project Area Transmission System was originally designed for and has evolved with large generating plants located in close proximity to the area

American Transmission Systems, Incorporated A FirstEnergy Company

⁴ PJM's FirstEnergy deactivation report containing the entire list of deactivations can be found at <u>http://pim.com/planning/generation-retirements/~/media/planning/gen-retire/20120425-fe-jan-2012-generator-deactivation-request-study-results-required-upgrades.ashx</u>, and is included in this Application in Appendix 2-1.

of greatest load density. The existing number of interconnections between the Project Area, remaining generation in the Project Area, and remainder of the ATSI transmission system and neighboring transmission systems are insufficient to support the Project Area without the historical levels of local generation.

Thus, in the event of a contingency, or multiple contingencies, the Project Area has fewer resources to bolster the transmission system, making it more vulnerable as capacity in the area is reduced. The proposed Project will bring another source of electric energy supply into the Project Area to provide additional support to the Project Area Transmission System.

The Project Area is currently served by eight 345 kV, ten 138 kV, and seven 69 kV transmission lines as identified above. Under normal operating conditions, with the generation retirements as proposed, the existing system cannot support the load as forecasted. System upgrades are required in order to operate the system under normal operating conditions. Additional system upgrades are required to operate under contingency conditions. In the Project Area, upon the retirement of the generation and without the implementation of system upgrades, there are certain single and multiple contingencies which cannot be supported without the interruption of load.

Load growth will exacerbate capacity, voltage and thermal limitations in the ATSI footprint, which includes the Project Area. Per the PJM 50/50 forecast (50% probability that the actual load is higher or lower than the projected load), over a 10-year period, the forecast averages a one percent (1%) load growth per year⁵. Per the PJM forecast, load growth in the ATSI footprint, which includes the Project Area, is projected to be approximately one and one half percent (1.5%) per year over the next three years under current economic conditions.

Load served in the Project Area is closely tied to the observed voltage on the Project Area Transmission System. The relationship between load and voltage is analyzed using planning tools which simulate the response of system voltage to increases in system load under

⁵ PJM Load Forecast Development Process, located at: <u>http://www.pjm.com/planning/resource-adequacy-planning/load-forecast-dev-process.aspx</u>.

contingency conditions. Typically, voltage levels at monitored locations will decrease as system load is increased. Increases in load being served and subsequent increases in reactive power losses on transmission lines moving power into the study area results in depletion of dynamic reactive reserves. The decrease in voltage due to increases in load and losses is gradual until dynamic reactive reserves are exhausted, at which point voltage decay accelerates and eventually collapses. Planning analysis performed on the Project Area indicates that potential voltage collapses under contingency conditions are expected at PJM forecasted 2015 load levels as the identified generation retires and no system reinforcements are implemented. The reinforcement projects identified and directed by PJM in the TEAC Recommendations to the PJM Board, PJM Staff Whitepaper (see Appendix 2-1) ensure system voltage stability for forecasted system load levels.

ATSI's Transmission System in the Project Area

ATSI's bulk transmission system in the Project Area consists of 345 kV and 138 kV source transmission lines coming into the area from the West, Southwest, Southeast and East. There are no lines coming in from the north since the Project Area is bordered on the north side by Lake Erie. Power enters the Project Area primarily through the 345 kV circuits and 138 kV circuits, with limited support from networked 69 kV area transmission circuits.

The lines that comprise the 345 kV and 138 kV Project Area Transmission System are the "backbone" for electric delivery to the Project Area. Under normal operating conditions prior to the announced generation retirements, these 345 kV and 138 kV transmission lines, 69 kV area transmission lines, as well as the generation units situated within the area, are the source of power for the Project Area. This means that all of the energy consumed by the residential, commercial and industrial customers in this area is delivered from these lines and generators. With the retirement of the generation units, as announced, the local generation is significantly reduced. Once the announced retirements occur, the remaining major generation in close proximity or within the area is located at Perry Nuclear Power Plant and West Lorain Generating Station. The total combined capacity of these remaining units is approximately 1,800 MW. The modeled loads in the CEI footprint are approximately 4,600 MW and, combined with the loads

in the Ohio Edison footprint, the approximate load is 7,000 MW. As such, even without normal load growth, the retirement of the generation units will create a need for import of more power into the Project Area. The increased import of power into the Project Area will increase thermal loading on the transmission lines, increase power losses due to increased thermal loading, and diminish dynamic reactive reserves due to the increased losses.

Under current conditions, all electric energy for the business, homes and communities supplied through ATSI's facilities in the Project Area can only enter into the Project Area through these existing transmission lines as described previously, and these source lines serve a large geographic area that has grown over time and presently limit the amount of power that can be imported into the area. As such, the retirement of generation within the Project Area has created a need for additional transmission capability to meet the need to import more power into the Project Area. The existing lines and related substations are not sufficient to serve the area load per planning criteria and, as such, it is now necessary to build this Project to provide additional import capability.

Recent and Projected Load on the Transmission and Distribution Systems

As explained in the following paragraphs, with the recently announced generation deactivation requests some of the Project Area Transmission System under N-1 and N-1-1 contingency conditions is currently loaded beyond the limits for which it was designed and constructed. In addition, the system will experience a shortage of reactive reserve margin. The reactive reserve margin is required to maintain voltage stability and prevent system voltage collapse under contingency conditions. Moreover, the Project Area which serves approximately 7,000 MW of load will become increasingly inadequate as load continues to grow during the coming years. In short, the 345 kV and 138 kV Project Area Transmission System must be reinforced so that business, homes and communities in the Project Area can continue to both expand and to take electric service under safe and reliable electric conditions.

Recent and Projected Load Growth in the Project Study Area

During recent years, electric demand in the Project Area increased by approximately 1% per year, even during the recent economic downturn. During certain periods prior to the economic downturn, electric demand grew at an average rate of 1.5 - 2.0% per year.

The ATSI service area – which includes the Project Area – reached an all-time system peak on July 21, 2011 of 14,032 MW. The system peak represents the hour of highest energy consumption on the ATSI Transmission System. The system is planned in a manner that can accommodate the forecasted system peak, not just typical day-to-day usage. The 2011 actual system peak load for ATSI was approximately 850 MWs higher than the 2010 actual peak load. Historical peak data between 2000 and 2012 is shown in Table 2-1.

Year	Gui é Pany	OF-	AISI	CRI	OE	ATSI
2000	4,280	5,228	12,079			
2001	4,446	5,866	13,145	3.9%	12.2%	8.8%
2002	4,561	6,370	13,299	2.6%	8.6%	1.2%
2003	4,160	5,825	12,165	-8.8%	-8.6%	-8.5%
2004	4,126	5,303	12,310	-0.8%	-9.0%	1.2%
2005	4,522	5,945	13,578	9.6%	12.1%	10.3%
2006	4,674	6,024	13,804	3.4%	1.3%	1.7%
2007	4,471	5,955	13,536	-4.3%	-1.1%	-1.9%
2008	4,295	5,579	12,972	-3.9%	-6.3%	-4.2%
2009	4,117	5,264	12,310	-4.1%	-5.6%	-5.1%
2010	4,418	5,631	13,177	7.3%	7.0%	7.0%
2011	4,649	6,185	14,032	5.2%	9.8%	6.5%
2012						
Average				0.9%	1.9%	1.5%
Average (2001-2007)				0.8%	2.2%	1.8%
Average (2009-2011)				2.8%	3.7%	2.8%

Table 2-1. Historical Peak Data

Without construction of the Project, the Project Area, already at or near maximum capacity during contingencies, faces increasing risk for voltage violations and thermal violations. In addition to resolving current contingency loading conditions, the Project will provide additional capacity margin as determined by voltage stability analysis for serving new and existing customers, and will be networked with the remainder of the 345 kV Project Area Transmission System, providing for greater reliability throughout the Project Area.

Review of Planning Criteria

The following explanation of various contingency planning criteria is provided as context for the discussion of contingency planning criteria violations that will occur in the Project Area without the addition of the Project.

The transmission system, or BES, is defined as all lines operated at voltages of 100 kV or higher, plus transformers with high-side and low-side winding voltages both greater than 100 kV. The ATSI transmission system must meet all applicable NERC, PJM, and FirstEnergy transmission planning criteria that apply to transmission systems. PJM is the registered Transmission Planner ("TP") for the ATSI system, and this review utilized the PJM Planning process to test for and meet all applicable BES criteria.

PJM Planning Process

PJM's Regional Transmission Expansion Plan ("RTEP") identifies transmission system upgrades and enhancements to provide for the operational, economic and reliability requirements of PJM customers. PJM's region-wide RTEP approach integrates transmission with generation and load response projects to meet load-serving obligations. PJM currently applies planning and reliability criteria to identify transmission constraints and other reliability concerns. Transmission upgrades to mitigate identified reliability criteria violations are then examined for their feasibility, impact and costs, culminating in one plan for the entire PJM footprint.

The rules and procedures for the RTEP process are set forth in Schedule 6 of the PJM Operating Agreement. In accordance with those rules, PJM prepares a plan for the enhancement and expansion of transmission facilities in the PJM region. Additionally, the PJM manuals describe the details of the RTEP process. In particular, PJM manuals address PJM's regional planning process. PJM's RTEP process preserves the reliability of PJM's interstate transmission system

to ensure that power continues to flow reliably to customers and to ensure robust, competitive power markets.

PJM Reliability Review

The following overview is based on publicly available information, including information from the PJM and other PJM documents and data. To the extent that there is a difference between this overview and the processes and procedures described, the PJM Tariff or other PJM documents and data, then the PJM Tariff or other PJM documents or data control.

General Description of the PJM Reliability Assessment Process

The PJM Reliability Assessment Process consists of several tests to ensure all generation capacity is deliverable to load in PJM without violating any system thermal or voltage limits. If violations are found, mitigation projects are put in place to resolve the issue(s). Limits used in the analysis are consistent with the requirements of NERC standards FAC-010 and FAC-014. The methodology used to determine system operating limits is included in PJM Manual M-14B.

PJM conducts this detailed review annually for the near-term, which consists of a detailed reliability analysis review of the current year plus 5 years out. The study years prior to the 5-years out reliability assessment are considered the "in-close" years and have already had analyses conducted in previous years' study cycles. In addition, for each of these "in-close" years, PJM updates and issues addenda to address changes as necessary throughout the year. For example, planned generation modifications or changes in transmission topology can trigger restudy and the issuance of a baseline addendum. This is referred to as a "retool study" (e.g., generators which drop from the interconnection queue cause restudy and an addendum to be issued for affected baseline analyses).

Each year during the establishment of the assumptions for the new annual baseline analysis, ATSI assesses updated assumptions of load, transmission topology and installed generation for the "inclose" range of years to validate the continued applicability of each of the "in-close" baseline analyses and resulting upgrades (including any addenda). Adjustments to the "in-close" analyses are performed as deemed necessary by PJM. Consequently, PJM annually verifies the continued need for modification of past recommended upgrades through its retool studies, reassessment of current conditions and any needed adjustments to analyses. All criteria thermal and voltage violations resulting from the near term analyses are identified using power flow analysis.

The seven steps in an annual near-term reliability review are as follows:

- I. Develop a Reference System Power Flow Case
- II. Baseline Thermal
- III. Baseline Voltage
- IV. Load Deliverability Thermal
- V. Load Deliverability Voltage
- VI. Generation Deliverability Thermal
- VII. Baseline Stability Analysis

These reliability related steps are followed by a scenario analysis that ensures the robustness of the plan by looking at impacts of variations in key parameters selected by PJM. Each of these steps in the PJM RTEP process is described in more detail in PJM Manual M-14B Generation and Transmission Interconnection Planning⁶.

I. Developing the Reference System Power Flow Case

The reference power flow case and the analysis techniques comprise the full set of analysis assumptions and parameters for reliability analysis. Each case is developed from the most recent set of Eastern Reliability Assessment Group ("ERAG") system models. PJM revises this model as needed to incorporate all of the current system parameters and assumptions. These assumptions include current loads, installed generating capacity, transmission and generation maintenance, system topology, and firm transmission transactions.

The results of capacity market auction(s) are used to help determine the amount and location of generation or demand side resources to be included in the reliability modeling. Generation or demand side resources that are cleared in the capacity market auction are included in the reliability modeling. Generation or demand side resources that either do not bid or do not clear in any

⁶ PJM: Expansion Planning Process, located at: <u>http://www.pjm.com/planning/rtep-development/expansion-plan-process.aspx.</u>

capacity market auction are not included in the reliability modeling. All such modeling comports with the capacity construct provisions approved by the FERC.

Subsequent to subregional stakeholder modeling reviews facilitated by PJM, PJM develops the final set of reliability assumptions presented to the PJM TEAC for review and comment, after which PJM finalizes the reliability review reference power flow case.

II. Baseline Thermal Analysis

The baseline thermal analysis is a thorough analysis of the reference power flow to ensure thermal adequacy based on normal (applicable to system normal conditions prior to contingencies) and emergency (applicable after the occurrence of a contingency) thermal ratings specific to the TO facilities being examined. It encompasses an exhaustive analysis of all NERC category A, B, and C events and the most critical common mode outages. Final results are supported with AC power flow solutions. The PJM Load Forecast uses a 50/50 distribution from the latest available PJM Load Forecast Report minus energy efficiency ("EE") programs. Demand response ("DR") programs are not considered in the Load Forecast.

For normal conditions (NERC category A), all facilities are loaded within their normal thermal ratings. For each single contingency (NERC Category B), all facilities are loaded within their emergency thermal ratings. After each single contingency and allowing phase shifter, re-dispatch and topology changes to be made, post-contingency loadings of all facilities are within their applicable normal thermal ratings.

For the more severe contingencies (NERC category C), along with only transformer tap and switched shunt adjustments enabled, post-contingency loadings of all facilities are within their applicable emergency thermal ratings as required by the PJM or the TO's planning criteria.

NERC Category C3 "N-1-1" analysis is also conducted as part of the annual RTEP process to determine if all monitored facilities can be operated:

American Transmission Systems, Incorporated A FirstEnergy Company

- 1) Within normal thermal and voltage limits after N-1 (single) contingency assuming redispatch and system adjustments.
- 2) Within the applicable emergency thermal ratings and voltage limits after an additional single contingency ("N-1-1") condition.

The "N-1-1" study is conducted on a 50/50 non-diversified summer peak case. All BES single contingencies as defined in NERC category C3 as well as lower voltage facilities that are monitored by PJM Operations are included in the assessment. Non-BES contingencies, defined by TOs, are included to check for greater than 300 MW load loss. Non-BES facilities that are included in the assessment will also have corresponding contingencies defined.

Areas of the system that become radial post-contingency will be excluded from monitoring, with the following exceptions:

- 1) If the radial system contains greater than 300 MW of load, or
- 2) Specific local TO planning criteria require that it be monitored.

The PJM NERC Category C3 (or "N-1-1") thermal analysis will test the outage of every single contingency (N-1 condition) for thermal violations. All violations of the applicable thermal ratings are recorded and reported and solutions are developed.

III. Baseline Voltage Analysis

The baseline voltage analysis parallels the thermal analysis. It uses the same power flow and examines voltage criteria for the same NERC category A, B, and C events. Also, voltage criteria are examined for compliance. PJM examines system performance for both a voltage drop criteria (where applicable) and an absolute voltage criteria. The voltage drop is calculated as the decrease in bus voltage from the initial steady state power flow to the post-contingency power flow. The post-contingency power flow is solved with generators holding a local generator bus voltage to a pre-contingency level consistent with specific TO specifications. In most instances, this is the pre-contingency generator bus voltage. Additionally, all phase shifters, transformer taps, switched

shunts, and DC lines are locked for the post-contingency solution. SVCs are allowed to regulate and fast switched capacitors are enabled.

The absolute voltage criteria is examined for the same contingency set by allowing transformer taps, switched shunts, and SVCs to regulate, locking phase shifters and allowing generators to hold steady state voltage criteria.

The N-1-1 voltage magnitude test procedure follows a similar method as the thermal test method, except all monitored facilities are monitored for the emergency low limit after the second contingency ("N-1-1" condition). Voltage collapse is considered to be a severe reliability violation and, consequently, each N-1-1 condition that exhibits voltage collapse is investigated, validated, and resolved with remedial actions, or network upgrades.

IV. Load Deliverability Analysis - Thermal

The load deliverability tests are a unique set of analyses designed to ensure that the transmission system provides a comparable transmission function throughout the system. These tests ensure that the transmission system is adequate to deliver each load area's requirements from the aggregate of system generation. The tests develop an expected value of loading after testing an extensive array of probabilistic dispatches to determine thermal limits. A deterministic dispatch method is used to create imports for the voltage criteria test. The transmission system reliability criterion used is one event of failure in 25 years. This is intended to design transmission so that it is not more limiting than the generation system which is planned to a reliability criterion of one failure event in 10 years.

Each load area's deliverability target transfer level to achieve the transmission reliability criterion is separately developed using a probabilistic modeling of the load and generation system. The load deliverability tests measure the design transfer level supported by the transmission system for comparison to the target transfer level. Transmission upgrades are specified by PJM to achieve the target transfer level as necessary. Details of the load deliverability procedure can be found in PJM Manual M-14B.

The thermal test examines each load deliverability area where the deliverability area is under the stressed conditions of a 90/10 summer load forecast (i.e. a forecast that only has a 10% chance of being exceeded) and demand response is implemented (energy efficiency is removed from all areas). The areas not under the test are at the conditions of a 90/10 summer load forecast. The transfer limit to the load is determined for system normal and all single contingencies (NERC category A and B criteria) under ten thousand (10,000) load study area dispatches with calculated probabilities of occurrence. The dispatches are developed randomly based on the availability data for each generating unit. This results in an expected value of system transfer capability that is compared to the target level to determine system adequacy. As with all thermal transmission tests conducted by PJM the applicable TO's normal and emergency ratings are applied. The steady state and single contingency power flows are solved consistent with the similar solutions described for the baseline thermal analyses.

V. Load Deliverability Analysis – Voltage

This testing procedure is similar to the thermal load deliverability test except that voltage criteria are evaluated and a deterministic dispatch procedure is used to increase study area imports. The voltage tests and criteria are the same as those performed for the baseline voltage analyses.

VI. Generation Deliverability Analysis – Thermal

The generator deliverability test for the reliability analysis ensures that, consistent with the load deliverability single contingency testing procedure, the transmission system is capable of delivering the aggregate system generating capacity at peak load (50/50 load level in all areas) with all firm transmission service modeled. Energy efficiency is removed from all areas and demand response is not exercised. The procedure ensures sufficient transmission capability in all areas of the system to export an amount of generation capacity at least equal to the amount of certified capacity resources in each area. Areas, as referred to in the generation deliverability test, are unique to each study and depend on the electrical system characteristics that may limit transfer of capacity resources. For generator deliverability, areas are defined with respect to each transmission element that may limit transfer of the aggregate of certified installed generating

capacity. The cluster of generators with significant impacts on the potentially limiting element is the area for that element. The starting point power flow is the same power flow case set up for the baseline analysis. Thus the same baseline load and ratings criteria apply. The same contingencies used for load deliverability apply and the same single contingency power flow solution techniques also apply. Details of the generation deliverability procedure can be found in PJM Manual M-14B.

One additional step is applied after generation deliverability is ensured consistent with the load deliverability tests. The additional step is required by system reliability criteria that call for adequate and secure transmission during certain NERC category C common mode outages. The procedure mirrors the generator deliverability procedure with somewhat lower deliverability requirements consistent with the increased severity of the contingencies.

The details of the generator deliverability procedure including methods of creating the study dispatch can be found in PJM Manual M-14B.

VII. Baseline Stability Analysis

PJM ensures generator and system stability during its interconnection studies for each new generator. In addition, analysis is performed on the RTEP baseline stability cases. These analyses ensure the system is transiently stable and that all system oscillations display positive damping. Generator stability studies are performed for critical system conditions, which include light load and peak load for three phase faults with normal clearing, plus single line to ground faults with delayed clearing. Also, specific TO designated faults are examined for plants on their respective systems. Finally, PJM also initiates special stability studies on an as needed basis. The trigger for such special studies commonly includes, but is not limited to, conditions arising from operational performance reviews or major equipment outages or deactivations.

FirstEnergy Planning Criteria

Voltage Stability Requirements

The FE transmission system will be developed such that it can be operated at the expected peak and at lower load levels such that the system will maintain voltage stability with the most severe combination of a generating unit and a transmission line removed from service.

PV analysis is used as the method of testing voltage stability. This analysis is performed using a system model with an initial load equal to the 50/50 load forecast, incrementing system load (incremental load is to be added at 0.85 power factor), simulating the contingency, and then recording voltages at transmission buses. The process of incrementing load, simulating the contingency and recording voltages is repeated until the power flow will no longer converge. The 50/50 summer peak case represents a forecasted load level for ATSI in which there is a 50% chance that the actual summer peak load will be higher than the forecasted load, and a 50% chance the actual peak will be lower.

In order for the system to be considered stable, the system load must be able to be incremented to the 90/10 forecasted peak prior to any voltage instability. The 90/10 summer peak case represents a forecasted load level for ATSI in which there is a 90% chance that the actual summer peak will be less than the forecasted load and only a 10% chance it will be higher.

Power Flow Criteria

FirstEnergy has developed power flow criteria for the elements of its transmission system that define the maximum normal and emergency rating for major pieces of equipment. The criteria for the major equipment elements of the system are summarized below:

Transmission Lines

Normal and emergency thermal ratings should not be exceeded during normal and contingency conditions, respectively. The ultimate transmission circuit capacity may be

limited by either the line conductor itself or by other elements such as breakers, switches, or relays.

Bulk Power Transformers

Normal and emergency thermal ratings should not be exceeded during normal and contingency conditions, respectively. Bulk power transformers on ATSI's system typically have 345 kV "high side" and 138 kV "low side" nominal voltages. Normal load ratings for each specific bulk power transformer are developed based on seasonal conditions considering loss of life (i.e. shortens the useful life of the component) and thermal stresses and should not be exceeded during normal conditions. Transformers loaded above their rating are likely to become overheated which results in an acceleration of the breakdown of insulating materials in the transformer, which shortens the transformer operating life.

Emergency load ratings specific to each bulk power transformer are also based on seasonal assessments and should not be exceeded during contingency conditions. The emergency ratings are predicated on the peak permissible loading during the period when the emergency condition may occur and would result in increased transformer loading. Emergency condition time frames considered in this analysis may extend for several months to account for situations where the emergency condition is caused by the failure of another bulk transformer or other critical piece of equipment that would require a lengthy time period to repair or replace. Operating measures may be necessary in order to maintain transformer loadings within emergency ratings and might include interruptions to specific customers.

Area Transmission Transformers

Normal and emergency thermal ratings should not be exceeded during normal and contingency conditions, respectively. Area transmission transformers on ATSI's system typically have 138 kV "high side" and 69 kV or less "low side" nominal voltages. Ratings specific to each area transmission transformer are based on seasonal conditions considering loss of life and thermal stresses and should not be exceeded during normal

conditions. Emergency ratings specific to each area transmission transformer are also based on seasonal conditions and should not be exceeded during contingency conditions. The emergency rating is tolerated up to 24 hours, assuming a mobile or spare transformer is available and can be installed while awaiting a permanent transformer repair or replacement. Otherwise, the emergency rating applied corresponds to the period (months) utilized for bulk transformers. Operating measures may be necessary in order to maintain transformer loadings within emergency ratings and might include certain customer interruptions.

Bus Voltage Criteria

Normal substation bus voltages can range from 0.95 per unit to 1.05 per unit of nominal during on-peak and off-peak conditions. The minimum contingency voltage is 0.92 per unit for all 345 kV, 0.92 per unit for networked 138 kV, and 0.90 per unit for all remaining transmission voltages. The maximum pre-to-post contingency voltage change is 0.08 per unit for 345 kV transmission substations, and 0.10 per unit for the remaining transmission substations.

Current and Projected Conditions on the Bulk Transmission System

The effect of recent announced generation retirements and projected load growth on the Project Area Transmission System can be measured by means of several different metrics, or methodologies. For purposes of this Application, the reliability of the Project Area as it relates to voltage stability is used to evaluate present and projected conditions on the Transmission System. Other metrics used to evaluate system performance, such as capacity, voltage, and thermal performance of the system following the retirement of announced plant retirements, could not be addressed until the collapse conditions were mitigated by the Project.

System Conditions - Reliability

The term "reliability" is used to describe outages on the bulk or local electric system, or, in other words, to describe "zero voltage events." As discussed above in system conditions, should

system load increase beyond the limits of the PV curve or exhaust dynamic reactive reserves in the Project Study Area, load must be shed to ensure the reliability of the system. The addition of the Project ensures that under contingency conditions, load shed is not required to maintain voltage stability at PJM's forecasted 90/10 load level for the 2015 study year. The ATSI system exceeded the forecasted PJM 90/10 load level in both 2010 and 2011. Figure 2-3 below shows the performance of the 345kV voltage at Juniper Substation, which was chosen as the monitored bus due to its central location in the Project Area.

Figure 2-3. Cleveland Area PV Analysis: Perry Out and the Loss of the Perry – Ashtabula



– Erie West 345 kV Line.

Perry Offline Scenarios: Base, Project Juniper 345kV Bus Voltage (pu)
The Base model used for the Project Study Area PV analysis above is representative of the Project Area Transmission System with the addition of projects scheduled to be in-service prior to 2015. The generation retirements, without the proposed Bruce Mansfield – Glenwillow 345 kV line and Glenwillow Transmission Switching Substation would put the Project Study Area at risk of potential voltage collapse for N-1-1 conditions as shown in Figure 2-3. Voltage collapse did occur at approximately 14,200 MW as depicted in Figure 2-3 above, and is apparent when dynamic reactive reserves in the area have been exhausted, as depicted in Figure 2-4.

Figure 2-4. Cleveland Area Dynamic Reactive Reserves: Perry Out and the Loss of the Perry – Ashtabula – Erie West 345 kV Line.



The PV analysis for the Base plot shows that without the Project, the contingency combination of the worst generator and transmission line combination fails to reach a valid solution at the 2015

90/10 load level being studied. This is a violation of the FirstEnergy Voltage Stability Requirements Criteria. Note that this plot assumes all high risk peaking units are on-line at maximum output, and the actual dispatch of generation as well as unplanned facility outages on the system will produce less stable results. Conversely, when this Project is integrated with the 2015 projects detailed on page 7 of the May 2012, TEAC Recommendations to the PJM Board, the system stability increases by 1,200 MW, as can be seen in the 2015 Projects plot shown in Figure 2-3.

(3) Load Flow Studies

ATSI and PJM conducted studies of the Project Area Transmission System for the PJM 2013 and 2015 Forecast summer peak load conditions, with varying amounts of generation available and with and without the proposed Project as well as other additional identified projects. These studies included evaluation of the effects of various contingency conditions such as an outage of a transmission line(s), transformer(s), multiple elements (N-2+ Contingency), and are described in the following cases. Table 2-2 below lists the applicable system load levels evaluated in the load flow analysis.

T	able 2-2. PJM Loa	d Forecast
Year	Load Level	Applicable System
2013	13,435 MW	ATSI
2015	13,875 MW	ATSI

The process of identifying PJM required reinforcements to accommodate the announced generation retirements was a collaborative effort between the ATSI and PJM Planning organizations. It was determined early in the planning review process that the load flow models would not converge (i.e. reach valid solution) with all retired units removed from service. As an outcome of the analysis using the PJM developed 2013 case, it indicated that Eastlake Unit 4 and Unit 5 could be removed from service after the summer of 2012, provided that Eastlake Units 1-3, Lakeshore Unit 18, and Ashtabula Unit 5 remained as Reliability Must Run ("RMR") Units.

Normal Conditions

Under normal operating conditions, with the announced generation retirements, the existing system cannot support the load as forecasted. System upgrades are required in order to operate the system under normal operating conditions. ATSI has proposed, and PJM has confirmed, that the conversion of several generator units at the Eastlake and Lakeshore Plants to synchronous condensers will provide the required dynamic reactive support to the Project Area under normal system conditions.

Study results based upon the PJM 2015^7 forecast indicate that the 345 kV and 138 kV transmission systems under normal conditions for loads in 2015 planning year with the proposed synchronous condensers, but without installation of the Project, is adequate to maintain reliability. The case study indicates that without the Project, the transmission system in 2015 operates appropriately under normal conditions, but there is insufficient capacity to operate reliably under contingency conditions.

N-1 Conditions

PJM, through various generator retirement studies, has determined that several system reinforcements are required to meet or exceed the applicable PJM and NERC criteria, including N-1 outages. PJM TEAC Recommendations to the PJM Board, PJM Staff Whitepaper⁸ contains a complete list of the transmission projects required to meet applicable planning criteria.

FirstEnergy completed sensitivity analysis to test the performance of the Bulk Transmission System with and without the Project at both 50/50 and 90/10 load levels with the Perry Plant offline as a stressed system condition. Results of this analysis indicate that the Project directly mitigates seven contingency thermal violations based on the PJM forecasted 50/50 load level for 2015. Additionally, the Project mitigates 26 contingency thermal violations based on the PJM

⁷ Note: 2015 is the planned in-service date.

⁸ Available at: http://www.pjm.com/committees-and-groups/committees/teac.aspx), May 2012 and provided in Appendix 2-1.

OPSB APPLICATION

forecasted 90/10 load level for 2015. Table 2-3 below details the results of the thermal contingency analysis.

l		· ·							
						Glenwillow-M	ansfield	Glenwillow-N	lansfield
						Project Inc	luded	Project Rei	noved
						o :	0		0
					•	ភ្	- Ē	្រ ភ្.	÷.
						ò	ė	ė	ė
					RATING	ND -	Ø	n 1	6
FROM	FROM	TO	TO	CONTINGENCY	VALUE	15	15	15	15
NAME	KV	NAME	KV	DESCRIPTION	USED	20	20	50	20
02HANNA	345	02JUNIPE	345	line 02HANNA to 02CHAMBR 345 ck 1	1554.0	0.917	0.969	1.128	1.219
02HANNA	345	02JUNIPE	345	line 02HARDIN to 02CHAMER 345 ck 1	1554.0	0.847	0.898	1.063	1.139
02HANNA	345	02JUNIPE	345	line 02JUNIPE to 02STAR 345 ck 1	1554.0	0.791	0.838	0.985	1.059
02HANNA	345	02JUNIPE	345	line 05SCANTO to 02HARMON 345 ck 1	1554.0	0.797	0.846	0.970	1.051
02HANNA	345	02JUNIPE	345	line 02HARMON to 02STAR 345 ck 1	1554.0	0.765	0.810	0.931	1.000
02BRUSH	136	02WAKRON	138	line 02HARDIN to 02CHAMBR 345 ck 1	146.0	0.855	0.938	1.040	1.143
02BRUSH	5 138	02WAKRON	~138	line 02JUNIPE to 02STAR 345 ck 1	^r 146.0	0.889	0.975	1.063	1.170
02BRUSH	138	02WAKRON	5 138	line 02JUNIPE to 02HANNA 345 ck 1	⁶ 146.0	0.876	0.966	1.065	1.185
02BRUSH	138	02WAKRON	138	tran 02.JUNIPE 345 to 02.JNPRQ4 138 ck 3	⁷ 146.0	0.918	0.980	1.023	1.099
02BRUSH	138	02WAKRON	~ 138	line 02WAKRON to 02PV Q2 138 ck 1	146.0	0.819	0.922	0.958	1.069
02BRUSH	138	02WAKRON	138	line Q-22-PV-OEA 138 ck 1	146.0	0.831	0.922	0.970	1.070
02BRBRTN	138	02CLVRDL	138	line 02HARMON to 02STAR 345 ck 1	212.0	0.927	0.971	1.005	1.068
02BRBRTN	138	02WAKRON	138	line 02JUNIPE to 02STAR 345 ck 1	332.0	0.854	0.895	0.938	1.003
02BRBRTN	138	02WAKRON	138	line 02STAR to 02WADS 138 ck 1	332.0	0.883	0.935	0.931	1.000
02AVON	139	02CW TP3	138	line Q-1-AV-FW-X 138 ck 1	316.0	0.831	0.929	0.876	1.002
02CLVRDL	138	02STAR	138	line 02HARMON to 02STAR 345 ck 1	212.0	0.900	0.941	0.981	1.039
02BRUSH	138	02HKQ-21	138	line 02HARDIN to 02CHAMBR 345 ck 1	146.0	0.782	0.906	0.966	1.106
02BRUSH	138	02HKQ-21	138	line 02JUNIPE to 02STAR 345 ck 1	146.0	0.816	0.939	0.990	1.130
02BRUSH	138	02HKQ-21	138	line 02JUNIPE to 02HANNA 345 ck 1	146.0	0.803	0.933	0.993	1.148
02BRUSH	138	02HKQ-21	138	tran 02JUNIPE 345 to 02JNPRQ4 138 ck 3	146.0	0.841	0.935	0.946	1.053
02BRUSH	138	02HKQ-21	138	line 02WAKRON to 02PV Q2 138 ck 1	146.0	0.746	0.896	0.885	1.039
02BRUSH	138	02HKQ-21	138	line Q-22-PV-OEA 138 ck 1	146.0	0.758	0.894	0.897	1.038
02HKQ-21	138	02PV Q4	138	line 02HARDIN to 02CHAMBR 345 ck 1	143.0		0.644	0.879	1.041
02HKQ-21	138	02PV Q4	138	line 02JUNIPE to 02STAR 345 ck 1	143.0	0.725	0.871	0.903	1.059
02HKQ-21	138	02PV Q4	138	line 02JUNIPE to 02HANNA 345 ck 1	143.0	0.715	0.869	0.910	1.085
02STAR	138	02WADS	138	line 02WAKRON to 02BRBRTN 138 ck 1	262.0	0.868	0.948	0.905	1.000

Table 2-3. N-1 Contingency Thermal Results

N-1-1 Conditions

FirstEnergy Planning Criteria states that the ATSI system must remain stable for the worst combination of a generator and a transmission line/facility at the forecasted 90/10 load level. As indicated in Figures 2-3 and 2-4 above, the ATSI base case which includes the announced generator retirements, fails to meet or exceed the 2015 PJM 90/10 load level. Additionally, as shown in Figures 2-3 and 2-4, the addition of the Bruce Mansfield – Glenwillow 345 kV Transmission Line, Glenwillow Transmission Switching Substation, as well as other 2015 projects detailed on page 7 of the May 2012, TEAC Recommendations to the PJM Board, provides voltage stability beyond the 2015 PJM 50/50 and 90/10 load levels.

Installing the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line and Glenwillow Transmission Switching Substation – in addition to a number of other projects identified by PJM – removes the N-1-1 contingency planning violations upon installation. Further, the Project adds capacity to the Cleveland area for future growth. With the addition of these Projects, all voltages and loading are within acceptable levels. Any voltage violations that are identified prior to the completion of the proposed Project will be mitigated with a combination of operating procedures and minor substation upgrades in the appropriate areas of concern.

PJM Analyses

PJM analyses that have been completed and posted to PJM's website⁹ are as follows:

1. N-1 Common Mode Voltage Violations:

• 10 low voltage violations on the 138 kV system

2. N-1-1 Thermal Violations:

- Six 138 kV thermal violations in the Allegheny Power zone
- 30 138 kV and 345 kV thermal violations in the ATSI zone
- Two 230 / 115 kV thermal violations (transformers) in the Penelec zone
- Ten 138 kV thermal violations in the AEP zone

3. N-1-1 Voltage Violations:

• 92 low voltage violations in the ATSI zone

⁹ FirstEnergy Deactivation Report, located at: <u>http://pjm.com/planning/generation-retirements/~/media/planning/gen-retire/20120425-fe-jan-2012-generator-deactivation-request-study-results-required-upgrades.ashx</u> (see Appendix 2-1).

PJM White Paper, located at: <u>http://www.pjm.com/~/media/committees-groups/committees/teac/20120614/</u> 20120614-pjm-board-whitepaper.ashx (p. 7) (see Appendix 2-1).

PJM TEAC Reliability Analysis Update Conference, located at: <u>http://www.pjm.com/~/media/committees-groups/committees/teac/20120427/20120427-teac-reliability-analysis-update-conference-call.ashx</u> (p. 52) (see Appendix 2-1).

OPSB APPLICATION

4. Generator Deliverability Violations:

- 26 138 kV and 345 kV overloaded facilities in the ATZI zone
- One 138 kV overload facility in the Allegheny Power zone
- Seven 115 kV and 345 kV overloaded facilities in the Penelec zone
- Eight 345 kV and 138 kV overloads in the AEP zone

5. Load Deliverability Violations:

- One voltage collapse violation observed in the ATSI zone
- One 345 kV overload on an AEP / ATSI facility

6. FirstEnergy Deactivation Report⁹

(4) Power Flow Base Case Model Data

An electronic copy of the Applicant's load flow data, in the form of load flow case with the proposed facility, is provided under seal to the OPSB Staff as it contains confidential trade secret and critical energy infrastructure information ("CEII").

(5) Base Case Data for Natural Gas Transmission Line

The Applicant does not propose to construct, own, or operate any natural gas transmission lines or facilities as part of or in conjunction with the Project. Consequently, Administrative Code Rule 4906-15-02(A)(5) does not apply to this Application and, accordingly, no base-case data for any natural gas transmission line(s) are filed in this docket.

(B) EXPANSION PLANS

(1) Long-Term Forecast and Regional Planning

The Project was not included in the Company's most recent Long Term Forecast Report ("LTFR"). The Project was not included in the Applicant's 10-year forecast which is required by Administrative Code Rule 3901-5-5 and is filed annually with The Public Utilities Commission of Ohio (Case No. 12-0504-EL-FOR). The FES generation retirement announcements were made on January 26, 2012, while neighboring generation owners announced retirement of additional generation in February and March of 2012. PJM formally presented the proposed portfolio of projects to mitigate the identified issues at a PJM TEAC meeting on April 27, 2012. Formal PJM Board of Directors approval was received on May 17, 2012. The identification and approval of these projects took place after the submission of the LTFR and therefore there were no details at the time of submission to include within the filing. There are potential other projects to be identified through PJM analysis due to neighboring generation unit retirement, and transmission owners/developers which have submitted additional projects for review which could potentially impact the ATSI footprint. These studies are currently underway. There has been some follow-up activity and subsequent filings related to the LTFR (Case No. 12-0504-EL-FOR) and provision of additional information related to the generation deactivation announcements.

PJM, as the entity with responsibility under federal law for conducting independent regional planning for the electric transmission system at 100 kV and above, conducts an annual study of "needs" that exist or that may come into existence on the regional electric transmission system. Where a need is identified, PJM stakeholders develop a transmission project that, if constructed, will address and resolved the identified need. The process for performing these studies is described in the PJM tariffs as the RTEP. Each year PJM issues a report (the "RTEP report") that described all projects that have been identified through the RTEP process as necessary to resolve issues on the regional electric transmission system. This substation Project is currently a baseline RTEP project in PJM and is identified as RTEP Project Number b1923 and the

associated transmission line is RTEP Project Number b1924 (Bruce Mansfield – Glenwillow 345 kV Transmission Line).

The Project will be constructed and operated in compliance with all applicable mandatory reliability standards or other standards that are promulgated by NERC.

(2) Gas Transmission Lines and Associate Facilities

The Applicant does not propose to construct, own or operate any natural gas transmission lines or facilities as part of or in conjunction with the Project. Consequently, Administrative Code Rule 4906-15-02(B)(2) does not apply to this Application and, accordingly, no long-term forecasts for construction or operation or natural gas transmission line(s) or associated facilities are filed in this docket.

(C) PROJECT IMPACT ON ELECTRIC SYSTEM ECONOMY AND RELIABILITY

Completion of the Project will resolve planning criteria violations on the Project Area Transmission System for the years studied thus far by PJM. ATSI has determined that bringing the Project on-line will not adversely impact any of ATSI's other existing transmission facilities, or the transmission facilities and equipment of neighboring utilities. Overall performance on the Project Area Transmission System will be improved significantly as a result of the construction of the Project and other proposed improvements. Thermal overages, capacity limitations and voltage violations will be corrected by this Project, allowing ATSI to continue to provide safe, efficient and reliable electricity to its customers.

(D) ANALYSIS OF ALTERNATIVES

In 2012, ATSI and PJM determined that loading and voltages in the Project Area Transmission System would exceed system limits due, in part, to the retirement of certain generating units within the ATSI footprint. In order to address this issue, ATSI and PJM initiated work on options for serving existing and projected load in the Project Area. This work included analysis of transmission and non-transmission alternatives. The results of this analysis are described in the following paragraphs.

Analysis of Transmission Alternatives

ATSI and PJM surveyed a range of options and performed extensive analysis on those options that were both short-term fixes and longer-term fixes for the applicable area. Initial analysis established that completion of multiple projects are needed in order to resolve all of the capacity and voltage planning criteria violations on the 345 kV and 138 kV Systems. Moreover, there was not one transmission alternative which resolved these issues completely; rather, it required a combination of several projects in order to meet the necessary results.

Options analyzed include:

- 1. Beaver Valley Leroy Center #1 and Mansfield Leroy Center #1 345 kV lines
- 2. Beaver Valley Leroy Center #2 and Mansfield Leroy Center #2 345 kV lines
- 3. Star Juniper #2 345 kV line
- 4. Cabot Ashtabula 500 kV line

None of these projects could be completed within the necessary time frame to ensure reliability. Furthermore, these options would result in additional cost and greater environmental and social impacts. As such, these alternatives were rejected.

Analysis of Non-Transmission Alternatives

Two different types of non-transmission alternatives were considered: (i) energy efficiency alternatives and (ii) demand-side management alternatives. As explained in the following paragraphs, although certain features of each non-transmission alternative were attractive, no single non-transmission alternative resolved all of the capacity, thermal and voltage violations on the Transmission Systems. Accordingly, the non-transmission alternatives were rejected.

Energy Efficiency

Conservation and energy efficiency programs involve actions taken on the customer side of the meter that reduce the customers' overall energy requirements energy efficiency. Energy efficiency actions focus on using energy more efficiently without sacrificing customer comfort or convenience. These actions usually involve installing more efficient equipment or changing processes to conserve energy. Energy efficiency and conservation programs usually provide financial incentives for customers to purchase and install energy efficient equipment and/or educate consumers on the efficient use of energy. Energy efficiency also requires customer cooperation – a utility cannot force customers to participate in energy efficiency programs. The reduction in peak load would be less than what is necessary to relieve the capacity problems on the 345 kV and 138 kV system. Further, conservation and energy efficiency programs will not provide the transmission infrastructure that is needed throughout Cleveland area. A new transmission line and substation, similar to the proposed Project, along with other projects identified by PJM in their analysis would remain needed to solve the capacity constraint. Accordingly, this option was rejected.

Demand-Side Management

Demand-Side Management ("DSM") programs generally involve actions taken on the customer side of the meter that have the intention and effect of reducing the customers' requirements during peak times. DSM programs typically involve utility incentives that are provided to consumers in exchange for reduction or curtailment of customer load at specific times (usually system peak times, but also can be used to address locational peak times). Load management and demand response incentives are most often provided and renewed on an annual basis. Further, DSM also requires customer cooperation – a utility cannot force customers to participate in DSM programs. DSM will not provide the needed transmission infrastructure needed in the Cleveland area. This would leave the Cleveland area capacity constrained. A new transmission line and substation, similar to the proposed Project, along with other projects identified by PJM in their analysis would remain needed to solve the capacity constraint.

Given the circumstances that prevail on ATSI's 345 kV and 138 kV Systems, DSM would be effective only if it achieved a negative growth scenario. This represents an extremely ambitious objective when compared to other utilities' experiences. Although arguably possible for ATSI to develop and launch a large DSM program, the time frame to address current need, as well as the scale of the program required for success, is not consistent with the experience of those of utilities and others who have managed successful programs. It is clear that DSM can make only a small contribution – far less than what is necessary – to relieving the capacity problems on the 345 kV and 138 kV System. Accordingly, this option was rejected.

PJM already incorporates energy efficiency ("EE") and demand response ("DR") into their forecast and analysis. PJM offers three types of load response:

- Emergency Capacity (DR)
- Emergency Energy Only
- Economic

Only the Emergency Capacity (DR) product is modeled in PJM planning studies. Demand Response is an emergency procedure initiated by PJM with which compliance is mandatory. PJM anticipates that demand response and energy efficiency resources that clear through the Reliability Pricing Model ("RPM") process will be available for their committed planning year(s). Beyond the commitment period (three years), demand response and energy efficiency amounts are held constant. Forecasted demand response and energy efficiency are summarized in the tables in the PJM Load Forecast Report.

Forecast load levels across PJM are reduced by the amount of energy efficiency that cleared in the RPM for both load and generation deliverability tests. For demand response and Price Responsive Demand ("PRD"), there is no impact on generation deliverability test (not an emergency condition). For the Capacity Emergency Transfer Limit ("CETL") calculation, the forecasted 90/10 load level in the area under test is reduced by the amount of demand response and PRD that cleared in RPM, except in situations where 90/10 load minus demand response and PRD would be less than 50/50 load. In those instances, 50/50 load levels will be used in the area under test.

New Generation

Placing a new generation source such as a power plant in the Project Area would generally help capacity issues in the Project Area. However, new generation will not provide relief unless it is located within the Cleveland area near where existing, soon-to-be-retired generation is located. Locating new generation within the ATSI zone of PJM will not provide relief unless additional transmission infrastructure is constructed to provide relief to the constraints in the greater Cleveland area. A new transmission line and substation, similar to the proposed project would remain needed to solve the capacity constraint.

Further, ATSI does not build or own generation and can only plan for transmission. In 2001, the State of Ohio made a policy decision to deregulate electric utilities. Through this deregulation, the State of Ohio mandated that transmission and generation must remain in legally separate and independent companies. As such, ATSI does not build or own generation and can only plan for transmission.

PJM Interconnection is a regional transmission organization ("RTO"), an entity authorized by the federal government to manage the reliability of the electric transmission system and the operation of the wholesale electricity market in a defined control area. PJM's RTEP process determines what changes and additions to the grid are needed to maintain reliability in the future. The process systematically evaluates proposed transmission and generation projects to ensure that compliance with reliability criteria is maintained. The process also includes a mechanism to mandate necessary grid improvements. Under PJM agreements, transmission owners are obligated to build transmission projects that are needed to maintain reliability standards and that are approved by the board. Accordingly, the option for ATSI to construct generation was rejected.

To ensure the future availability of the generating capacity and other resources that will be needed to keep the regional power grid operating reliably for consumers, PJM developed and implemented the RPM. The PJM process does not include a mechanism to mandate new generation be constructed. The RPM system continues to follow a market approach to obtaining

the capacity needed to ensure reliability, but includes incentives that are designed to stimulate investment both in maintaining existing generation and in encouraging the development of new sources of capacity – resources that include not just generating plants, but Demand Response and energy-efficiency programs. Investors need sufficient long-term price signals to encourage the maintenance and development of generation and other resources. The RPM plan, based on making capacity commitments three years ahead, creates long-term price signals to attract needed investments in reliability in the PJM region. Proposals to construct generation within the PJM market are submitted and reviewed by PJM as part of the Transmission Expansion Planning process defined in M-14 series of PJM manuals.

(E) PROJECT SELECTION RATIONALE

The Project was selected because it is the most efficient path to resolve a portion of the capacity and voltage problems that exist on the 345 kV and 138 kV Systems in the Project Area. As noted herein, all of the other transmission and non-transmission alternatives either would not resolve all of the capacity and voltage problems or, if all such problems would be resolved, the alternatives would: (i) cost more money, (ii) have greater environmental and social impacts, or (iii) both cost more money and have greater environmental and social impacts.

The Project – in conjunction with others identified by PJM in their analysis – also brings additional benefits to resolving the existing voltage and capacity problems on the 345 kV and 138 kV and 69 kV systems. Specifically, construction of the Project will provide operating flexibility to survive contingency conditions through the PJM Planning process which incorporates NERC, PJM and the Applicant's planning criteria. Moreover, construction of the Project adds another source of power to the Project Area affording greater flexibility for future load growth and system maintenance. Finally, the addition of the Project provides the additional operational benefits that accrue by adding another power source from the eastern side of the Project Area, ensuring that the businesses, homes and communities in the greater Cleveland metropolitan area will have ready access to safe and reliability energy for many years to come.

(F) FACILITY SCHEDULE

(1) Schedule Bar Chart

The Applicants have developed a project schedule which is depicted on Figure 2-5. As reflected on that schedule, the Applicants propose to complete construction and bring the Project on-line by not later than June 1, 2015.

(2) Delays

Critical delays in construction or other processes necessary to bring the Project on-line will impact the Applicant's customers on the 345 kV, 138 kV and 69 kV systems by exposing customers to ongoing reliability issues until such time as the Project is brought on-line.

The Project is needed to ensure the ATSI BES system meets or exceeds all applicable NERC Transmission Planning Limits ("TPL"), PJM and FE planning criteria as applied through the PJM Planning process. Specifically, this project is intended to reinforce the interconnected transmission system following the announced retirement of several coal-fired power plants in the ATSI territory, which is located in both Ohio and Pennsylvania.

OPSB APPLICATION

OPSB CASE NO. 12-1727-EL-BSB

Figure 2-5. Project Schedule

ACTIVITY	20	2					201	3						2014				5	15		
	eb Mar Apr May Jun Ju	Aug Sep Oc	t Nov De	c Jan F	eb Mar	Apr	unrk	in Au	gSep	ž Oct	ov Det	Jan	FebM	lar Ap	r May	Jun	Jan Fe	b Ma	r Apr	way.	۳
Preparation of the Application																			_		
Submit Application									L		<u> </u>			i							
OPSB Review of Application																					
Issuance of OPSB Certificate						+															
Acquire Substation Property																					-
Substation Engineering																					
Order Major Equipment																					
Substation Construction																					-
Placement of the Facility In- service																				*	
ATSI.	PROJEC	T SCHED	ULEF	OR T	HEGL	ENW -	ILLO	RE 2 W TI	-5 -5	SMIS	OIS	ິນ N	WIT(CHIN	16.8	UB(STA'	TION	-		

American Transmission Systems, Incorporated A FirstEnergy Company

4906-15-03 SITE AND ROUTE ALTERNATIVES ANALYSES

SECTION SUMMARY

The Siting Team conducted a Site Selection Study to identify a Preferred and Alternate site for a new 345 kV switching substation (the Glenwillow Transmission Switching Substation). The Site Selection Study was conducted in conjunction with a Route Selection Study for the Bruce Mansfield – Glenwillow 345 kV Transmission Line in response to the identified need for a new 345 kV transmission switching substation in the vicinity of the existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines, which converge in Summit and Cuyahoga counties, Ohio. This new 345 kV transmission switching substation will serve as the northern terminus of the Bruce Mansfield – Glenwillow 345 kV Transmission Line and through extensions of the existing Eastlake – Juniper and Perry – Inland 345 kV transmission line to the existing transmission grid and provide additional support for the Bulk Electric System ("BES") in the Project Area. This section describes the site identification, evaluation, and selection process.

(A) SITE SELECTION RATIONALE

The Louis Berger Group, Inc. ("LBG") was retained by American Transmission System, Incorporated ("ATSI") to perform the Site Selection Study for the proposed Project. A multidisciplinary Siting Team, consisting of members of ATSI and LBG, conducted a comprehensive Site Selection Study to establish a Preferred and Alternate Site for the proposed switching substation. The Site Selection Study was done in conjunction with a route selection study for the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line Project, which is the subject of OPSB Case No. 12-1726-EL-BLN. Using established siting guidelines, the Siting Team identified constraints and opportunity features within the Study Area that would minimize impacts to the natural and human environment and minimize the distance between the new switching substation and the existing 345 kV transmission lines. The Siting Team acquired environmental and engineering data from various sources and assembled the information into a geographic information system ("GIS") database superimposed on aerial photography. Potential Sites were field checked from publically accessible locations to validate the aerial imagery and to assess the viability of the Potential Sites based on conditions observed on the ground. The Potential Sites were adjusted as necessary based on information gathered in the field.

The Siting Team evaluated the advantages and disadvantages of Potential Sites based on the established routing and siting criteria, an inventory of land use, environmental, and cultural factors on and in the vicinity of the Potential Sites, and additional local knowledge and professional judgment and experience. Based on this review, less favorable Potential Sites were eliminated from further consideration and a more detailed analysis. The Siting Team evaluated the remaining Potential Sites in more detail and selected four to present at public meetings for comment. Following the public input process, the Siting Team conducted additional field reconnaissance to review comments collected at the public meetings and finalize routing/siting decisions. This iterative process resulted in the identification of the Preferred and Alternate Sites proposed in this Application.

(1a) Description of the study area or geographic boundaries selected and rationale for selection

The Study Area is that area in which switching substation site alternatives can be sited to feasibly meet the Project's functional requirements and, at the same time, minimize environmental impacts and project costs. The boundaries of the Study Area for this Project were determined by the location of the parallel section of the existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines. Both lines converge approximately 0.3 mile west of Interstate 271 just south of the Cuyahoga and Summit County border and parallel each other for approximately 18 miles in a general northeast direction until reaching the Mayfield Substation in Geauga County, Ohio. As discussed in Section 1, the goal of the Project is to construct and operate a new 345 kV switching substation to connect to the existing 345 kV transmission system as well as provide another 345 kV transmission source into northeastern Ohio. The Study Area was intended to encompass all reasonable Potential Sites in the vicinity of the existing 345 kV transmission lines.

Given these considerations, the Siting Team identified a preliminary Study Area encompassing approximately 20.7 square miles within Summit, Cuyahoga and Geauga counties, Ohio. ATSI initially considered this preliminary Study Area along the entire 18-mile parallel segment, which is generally bound by the Town of Chesterland in Geauga County to the north; the West Woods Nature Center in Novelty, Geauga County to the east; the Village of Glenwillow to the south; and the Cuyahoga-Summit county border near the intersection of Interstates 480 and 271 to the west, but later limited the Study Area based on the results of the concurrently completed Route Selection Study for the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. As the transmission Route Selection Study identified several potential transmission line routes that maximized reliance on existing infrastructure by utilizing existing transmission lines with available open arm positions or the potential to rebuild existing single circuit lines for double circuit operation, ATSI limited the Project Study Area to locations that were consistent with the Transmission Line Project Route Selection Study. Further, based on the initial review of the potential substation locations, points farther northeast within the preliminary Study Area would have added unnecessary additional construction, thereby unnecessarily increasing impacts. Finally, as no existing transmission infrastructure is located in Geauga County traversing northsouth that can provide an existing corridor between the Chamberlin – Mansfield 345 kV Transmission Line open arm segment and potential switching substation locations in the northeast, this area was removed from the Study Area.

The refined switching substation Study Area (approximately 12.3 square miles) evaluated sites in the vicinity of the first (i.e., westernmost) 7.5 miles of parallel 345 kV transmission line, beginning at the intersection of Interstates 480 and 271 in the Village of Oakwood, Cuyahoga County and ending at the intersection of the lines with Route 422 in the City of Solon, Cuyahoga County. The initial potential route network for the transmission line evaluated routes parallel to Route 422 and the Norfolk Southern Railroad that would terminate at points adjacent to the existing 345 kV transmission lines within the City of Solon. Field reconnaissance identified numerous constraints that made these options less feasible. Therefore, the ideal location for the new switching substation is in the vicinity of the first 4.5 miles of parallel transmission line in Summit and Cuyahoga counties. Using this established Study Area, the Siting Team began its efforts to determine potential sites for the switching substation.

(1b) Study Area Map depicting general routes, route segments, and sites evaluated

The proposed Study Area is identified in Figure 3-1. The initial Potential Sites are identified in Figure 3-2 and described in Part A.4 of this Section.

(1c) Description of qualitative and quantitative siting criteria, factors, or constraints utilized by the applicant, including any evaluation criteria or weighting values assigned to each

ATSI conducted a siting analysis to determine a location for the new 345 kV switching substation that best balances social, environmental, engineering and economic considerations. The goal of the siting study was to select an appropriate site for a new 345 kV switching substation to connect two existing 345 kV transmission lines as well as the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. An appropriate site was defined as a site that minimized the impact of the switching substation, while avoiding sites with high or unnecessary costs, and non-standard design requirements, to the extent possible. This analysis included the initial efforts to identify an appropriate Study Area, the compilation of an environmental inventory, identification and analysis of potential sites and finally, selection of a Preferred and Alternate site.

Siting Guidelines and Criteria

Many of the initial siting considerations for a transmission switching substation are dictated by the system planning requirements. System planning considerations typically dictate the regional need and general location of the switching substation as well as the necessary transmission interconnections needed to promote system reliability. Once these key system requirements are identified, the engineers and environmental planners identify potential sites and evaluate the potential engineering obstacles, construction logistics, potential operational constraints, and potential environmental and human impacts associated with each potential site.

American Transmission System, Incorporated A FirstEnergy Company





Identifying a site that minimizes impacts and costs and optimizes all opportunities requires a balancing and prioritizing of many varied factors. For example, a site with minimal impacts on wildlife habitat may have greater impacts on residential resources, and vice versa. In addition, federal and state laws and input from federal, state, and sometimes local regulatory agencies may affect siting decisions.

Once the Study Area was identified, the Siting Team met in February 2012 to develop basic site selection criteria that would be used to select and analyze potential Alternative Sites. The recommendations for the Project siting contained in this Application are based on the objective stated above and the following criteria and technical guidelines (the listed criteria are not in order of importance or weight). The following list provides a summary of the switching substation siting criteria from system, engineering, environmental, and human environment perspectives.

System Planning

- *Electrical Load Center:* Identified sites must meet the electrical need and requirements identified by the system planners and do so in an economic and reliable manner.
- Transmission Access: Proximity to the extra high voltage ("EHV") transmission lines that are to connect into the substation. The existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines and the new Bruce Mansfield – Glenwillow 345 kV Transmission Line will need to be routed into the proposed switching substation site.

Engineering/Operations

- Space Requirements: Based on current engineering requirements for needed electrical equipment, the size of the graded and fenced site must be a minimum of approximately 480 feet by 495 feet. In addition, buffer areas for cuts, fills, and screening must be available outside this fenced area on the property.
- Access Requirements: Due to the heavy equipment access needed at the site, consideration of bridge/public roadway weight limits is necessary. Access to the

site should be via roads with a reasonable grade, length, and turning radius. Joint access to public roads with other private owners should be avoided.

- *Geotechnical Considerations*: Consideration should be given to soil types and soil stability. Soils with excessive restrictions on engineering and construction factors should be avoided, including areas prone to slips, slides, large rock outcrops, evidence of coal mining, and karst features. Sites in close proximity to quarries should be avoided.
- Substation Electric Needs: Proximity to the distribution and sub-transmission systems should be considered for main and back-up station service power supplies to avoid lengthy, costly extensions of lines to serve the new facilities.
- *Cost*: Relative site development and construction costs should be part of the overall analysis.

Natural and Human Environment Impacts

- *Terrain/Slope Considerations*: Sites should not be located on excessively steep terrain that will require extensive grading work and have increased potential for erosion and sedimentation effects. Low-lying sites prone to flooding should be avoided. Allowance should be provided for excavation cuts and fills, drainage and detention ponds, construction disturbed areas, and material lay-down areas.
- *Historic and Archaeological Concerns*: Sites should be reviewed for any impact to historic or archeological features and these impacts should be minimized.
- *Hazardous wastes*: Sites should be reviewed for the potential for hazardous materials, and avoided where possible.
- *Public Use Facilities*: Where possible, sites in close proximity to schools, churches, community buildings, and parks should be avoided.
- *Recreational Areas*: Recreational areas should be avoided during site selection. Aesthetic impacts should be reviewed to avoid conflicts with these uses.

- Aesthetics: Consideration should be given to the aesthetics of the area when locating the substations. Vegetation and terrain should be either available or easily planted to screen the facilities from extended views from nearby residents and travelers, if possible.
- Residential Land Use: Vacant lands are the preferred location for substation sites, and high-density residential areas should be avoided during preliminary site selection if possible and practical.¹ Consideration should be given to all dwellings located in proximity to the sites. Whenever possible, the number of individual property owners involved should be minimized. However, line routing (both transmission and distribution) to and from the site should be observed for current needs and future station equipment expansion.
- *Utility Lines*: Consideration should be given to the presence of underground gas or water pipelines, other utilities, and proposed adjacent development plans.
- *Water Resources/Wetlands*: The site should not be located in floodplains or near high quality streams or reservoirs if possible. Sites with substantial amounts of jurisdictional wetlands should be avoided if possible. If such wetlands are present, substation design should maximize avoidance of the wetland resource and any impacts should be properly mitigated.

Identification of Siting Opportunities

The Siting Team defined siting opportunities as locations where the proposed switching substation might be located with fewer or limited impacts. Siting opportunities were identified and evaluated by:

- Field investigation of the project area
- Reviews of aerial photography and other available mapping data, including Geographic Information System ("GIS") data layers
- Meetings with landowners and other stakeholders

¹ This is not always the case, because the electrical need for the switching substation site location may actually require the substation to be placed in a residential area.

- Federal, state, and local agency consultations
- Project input from ATSI staff
- Siting Team experience with similar projects.

Practical siting opportunities considered in the Study Area included the following:

- Sites adjacent to one or both of the existing Eastlake Juniper and Perry Inland 345 kV transmission lines and reasonable potential entrance points for the Bruce Mansfield
 Glenwillow 345 kV Transmission Line
- Undeveloped industrial or commercial zoned property
- Sites with reasonable access from public roadways
- Individual parcels at least 12 acres in size.

Within the Study Area, several undeveloped large parcels were identified adjacent or in close proximity to the existing 345 kV lines.

Identification of Siting Constraints

The Siting Team identified and mapped siting constraints in the Study Area. Constraints were defined as specific areas that should be avoided to the extent feasible during the route selection process. Constraints are generally divided into two groups based on the size of the geographic area encompassed by the constraint: large area constraints and small area constraints. The first group (large area constraints) includes constraints that cover large areas of land in the Study Area. Large area constraints are avoided to the extent possible and were considered unfavorable by the Siting Team for developing potential sites.

The final list of large area constraints for the Project consisted of:

- Heavily developed residential areas
- National Parks, including the Cuyahoga Valley National Park
- National Register Historic Districts and adjacent areas
- U.S. Department of Defense sites

- Recreational areas including parks and large recreational reservoirs
- Large streams, wetlands, or unique natural resource features
- Large mining areas
- Airports
- Critical habitat areas
- Designated State Forests, State Parks, Wildlife Management Areas, and other natural and conservation areas.
- Areas with the potential to have a significant impact on the natural and human environment as identified previously in the *Siting Guidelines and Criteria* section.

After Potential Sites were identified that avoided these large area constraints, the Potential Sites were reviewed to the extent possible to ensure avoidance of small area constraints. Small area constraints encompass other environmental or land use features that have a smaller geographic footprint, or are limited to site-specific locations. Small area constraints generally consisted of:

- Individual residences (including houses, anchored mobile homes, and multi-family buildings)
- Commercial and industrial buildings
- Cemeteries
- Churches
- Schools
- Hospitals
- Recorded sites of designated historic buildings and sites, including any specified buffer zone around each site
- Small wetlands
- Specific recreational sites, facilities, and trails
- Communications towers
- Heliports and landing strips
- Landfills, including inactive landfills
- Designated scenic vista points.

The Siting Team attempted to identify sites that could avoid all or most of these small area constraints. However, in some instances complete avoidance of small area constraints was not possible because of the large numbers of these constraints in some areas of the Project (e.g., wetlands). Specific constraints are described under each resource area in Part B.

Environmental Data Collection

Multiple sources of information were consulted to develop data for the Site Selection Study, including:

Aerial Photography

The following sources for aerial photography were used:

- Imagery from the National Agricultural Inventory Project ("NAIP") was obtained from the United States Department of Agriculture that covered the entire Study Area in Ohio (dated 2011)
- Environmental Systems Research Institute ("ESRI") imagery, which is provided through Aerials Express (dated 2009)
- Bing imagery, which ranges in date depending on location.

The NAIP photography was formatted electronically at a scale of 1 inch to 500 feet as a set of 18-inch by 32-inch map sheets covering the Study Area. Updated information such as the location of residences and other buildings was annotated on the photography or electronically as database notes, as discovered and verified during field inspections.

Maps

Maps reviewed for the Site Selection Study included United States Geological Survey ("USGS") 7.5-minute topographic quadrangle maps, existing County-level and park-level natural resource maps, state and county road maps, transmission line map information and land ownership maps.

GIS Data Sources

Extensive use was made during the Site Selection Study of information from existing GIS data. This information was obtained from many sources, including Federal, State, and County governments. Much of this information was obtained through official agency GIS data access websites, some was provided directly by government agencies, and some was created by the Siting Team by either digitizing information from paper-based maps or through aerial photo interpretation.

The use of GIS data allows for the consideration and efficient use of a wide variety of information that would otherwise be unavailable or impractical to consider for a planning effort of this scope. GIS information is a highly effective tool when utilized for broad level planning studies, identifying and characterizing landscape level constraints and features, and developing environmental inventory information useful for comparisons between planning alternatives.

However, GIS data sources vary widely with respect to their accuracy and precision, and presentation, analysis, and calculations derived from these data sources require careful consideration when used for planning purposes. Therefore, GIS-based calculations and maps presented in this Application should be considered reasonable approximations of the resource or geographic feature they represent, and not absolute measures or counts. They are presented to allow for general comparisons between alternatives with the assumption that the level of any inherent errors or inaccuracies would be generally equal across all alternatives. A list of the major GIS data sources gathered, used, or otherwise considered in this routing study is listed below in Table 3-1.

Field Inspections

Siting Team members conducted field inspections throughout the Study Area. The team members examined potential sites by automobile from points of public access and correlated observed features to information shown on aerial photography, USGS 7.5 minute topographic maps, road maps, locally available development sketch maps, and other information. Relevant features were viewed, verified, and recorded on laptop

computers displaying aerial photography using GIS software supported by real-time Global Positioning System ("GPS") tracking for positional information in each vehicle. Detailed field reconnaissance was conducted in February and March 2012 to review the Potential Sites and identify constraints within 1,000 feet of the parcel boundary. Subsequent field visits were conducted in May and June 2012.

Field wetland delineation and Indiana bat habitat assessments were conducted within the Preferred and Alternative sites in July 2012. This information was used to assess potential environmental impacts associated with the Preferred and Alternative sites and is described in detail in Section 7.

Agency Contacts

The Siting Team contacted various federal, state, and local agencies to inform them of the Project and to request data used in the site planning process. The agencies contacted are listed below. Copies of correspondence with federal and state agencies are provided in Appendix 6-2.

Federal Agencies

• United States Fish and Wildlife Service

State Agencies

- Ohio Department of Natural Resources
- Ohio Historic Preservation Office

Local

- County Governments, including Summit and Cuyahoga counties
- Cleveland MetroParks
- MetroParks, Serving Summit County
- Municipal Governments, including:
 - Summit County: Cities of Macedonia and Twinsburg; Townships of Northfield Center, Sagamore Hills, and Twinsburg; Village of Northfield
 - o Cuyahoga County: Villages of Glenwillow, Oakwood, and Walton Hills.

OPSB APPLICATION	OPSB CASE NO. 12-1727-EL-BSH
Astri Tine av	Trolle A Self Serie Sources Data Source
Aerial Imagery	Imagery was obtained from the following sources: the NAIP was obtained from the United States Department of Agriculture ("USDA") that covered the entire Study Area in Ohio (dated 2011); ESRI imagery, which is provided through Aerials Express (dated 2009); and Bing imagery, which ranges in date depending on location.
Administre uxe County Boundaries	2012 ESRI file containing boundaries and census data for all counties in the United States.
Municipality Boundaries	Based on township layer downloaded for the Ohio Department of Transportation ("ODOT") in conjunction with information from Cuyahoga and Summit counties to include cities and villages that were listed as "URBAN" in the ODOT file.
Rivers and Lakes	National Hydrography Dataset ("NHD") - The NHD is a comprehensive set of digital spatial data prepared by the USGS and USEPA that contains information about surface water features such as lakes, ponds, streams, rivers, springs and wells.
Water Quality Use Designations, High Quality Waters, Outstanding State Waters, Primary Contact Recreation Class "A" Streams	The Ohio Environmental Protection Agency ("Ohio EPA") has designated water quality use designations, high quality waters and recreation waters. This information was obtained from Ohio EPA (2010).
Wetlands	The National Wetlands Inventory ("NWI") of the U.S. Fish & Wildlife Service ("USFWS") - The NWI produces information on the characteristics, extent, and status of the Nation's wetlands and deepwater habitats. The National Wetlands

American Transmission System, Incorporated A FirstEnergy Company

03-15



~
0
Ē
F
-
ت
Ē
A .
\mathbf{A}
8
02
A
0

located within Ohio (2012).	
ODNR provided a list of federal and state parks, forests and nature preserves	State Parks, Forests, and Nature Preserves
(2012), Redlands, California, USA.	
federal lands, public parks, and landmark areas were incorporated from ESRI	
("PAD-US") (2011) forms the majority of the data. Additional data representing	
conservation easements. The Protected Areas Database of the United States	
and local governments; non-government agencies ("NGOs"); and private	
A combination of data sources was used to determine lands owned by federal, state,	Public Lands
	conservation and
Subwatershed (12-digit) 6th level for the State of Ohio (2008).	
NRCS"). This data set is a complete digital hydrologic unit boundary layer to the	
Department of Agriculture Natural Resource Conservation Service ("USDA-	
Hydrologic Unit Code ("HUC")-12 boundaries were obtained from the U.S.	Watershed Boundaries
database.	
("ESRI") rivers file and the Ohio Department of Natural Resources scenic river	
The scenic river layer is based on a 2010 Environmental Systems Research Institute	Scenic Rivers
Flood Insurance Program ("NFIP") maps (2001).	
illustrated on the Federal Emergency Management Agency ("FEMA") National	
Natural Resources. This coverage represents the 100-year floodplain boundary as	
Data on 100-year flood hazard areas was acquired from the Ohio Department of	100-Year Flood Hazard
Wetland Inventory (OWI) (1991).	
distribution for planning purposes. The NWI layer was checked against the Ohio	
institutions, U.S. Congress, and the private sector for reviewing general wetland	
Inventory information is used by Federal, State, and local agencies, academic	
Data Su co	and the second secon
Table 5-1 G.S.Data Soliton	

American Transmission System, Incorporated A FirstEnergy Company

03-16

Glenwillow Transmission Switching Substation Project November 2012

ICATION
E
APPI
OPSB

Active A. L. CIS Data Sources - Active Active -	A few Ohio counties, including Cuyahoga County (2010), have county-level layers that identified the locations of county and other location parks. Most, if not all, of these parks are also identified in the ODNR or Geographic Names Information System ("GNIS") data.	Private conservation easements from the National Conservation Easement Database which is comprised of voluntarily reported conservation easement information from land trusts and public agencies.	The locations of various points of interest were derived from Institutions layer from the ESRI, (2012) Redlands, California, USA and the United States Geological Survey's GNIS. This dataset includes the locations of cemeteries, churches,	nospitals, parks, and schools. Information from the 2010 US Census was used to determine population, average household size, and median income in the municipalities and cities traversed.	Residential and other buildings were identified through a combination of aerial imagery and field observations.	Parcel boundaries and property ownership information was obtained from Summit and Cuyahoga counties GIS or Auditor's department (2012). Subdivision information was also obtained from Cuyahoga (2012).	Airfields and heliports were identified through the United States Geological Survey's GNIS and ESRI (2012) and the Federal Aviation Administration (FAA) database (4/2012).
	County Parks	Easements	Points of Interest	Population, Average Household Size, and Median Income	Residences and Commercial/Industrial Buildings	Parcel Boundaries, Ownership Information and Subdivisions	Airfields and Heliports

Category	The S-L GIS have use the second se
Transportation	U.S. road and railroad data prepared by ESRI, (2012) Redlands, California, USA.
Existing Transmission Lines and Substations	Existing transmission line and substation information provided by FirstEnergy and adjusted based on aerial photography.
LIBIOR SCOULCES A CONTRACT OF A CONTRACT	
Historic Sites and Districts	Sites and districts listed on the National Register of Historic Places ("NRHP") acquired through the National Park Service and sites listed on the Ohio Historic
	Inventory (OHI) database maintained by the Ohio Historic Preservation Office (OHPO) (2012).
Land U.C.	
Land Use/Land Cover	The National Land Cover Database 2006 ("NLCD 2006") compiled by the Multi-
	Resolution Land Characteristics ("MRLC") Consortium (including the U.S. Geological Survey. Environmental Protection Agency. U.S. Forest Service.
	National Oceanographic and Atmospheric Association, National Aeronautics and
	Space Administration, Bureau of Land Management, National Park Service, Natural
	classes of land cover from Landsat satellite imagery.
Agricultural District Lands	Property designated as an Agricultural District Land was obtained from Summit and Cuyahoga counties Auditor's department (2012).
Sensitives) settes	
Federal Threatened or Endangered Species	The USFWS identified federally threatened or endangered species known or suspected to be within the vicinity of the substation sites (2012).

American Transmission System, Incorporated A FirstEnergy Company

l

03-18

Glenwillow Transmission Switching Substation Project November 2012

TION
LICA'
APP
OPSE

The 632., Gits De Starros Dans Searros	State listed threatened or endangered species within 1/2 mile of existing transmission lines were obtained from the ODNR, Biodiversity Database (2012).	Information on the location of known threatened, endangered and rare species locations within Liberty Park and Natural Preserve area was provided by Summit County. This data is based on surveys and information reported to ODNR (2012).	Identification and descriptions of physiographic regions and bedrock were obtained from the Ohio Department of Natural Resources, Division of Geological Survey.	U.S. Geologic Survey ("USGS") 7.5 24:000 topographic quadrangle maps (various dates).	Soil associations crossed by the routes were extracted from the United States Department of Agriculture, Natural Resources Conservation Service Soil Survey Geographic ("SSURGO") Database (2002).
	State Listed Threatened or Endangered Species	Liberty Park Threatened, Endangered and Rare Species Information	Geology	Topographic Contours	Soils

03-19

Glenwillow Transmission Switching Substation Project November 2012

(1d) Description of the process by which the applicant utilized the siting criteria to determine the preferred and alternate routes and sites

Potential Site Development

The objective of the proposed Glenwillow Transmission Switching Substation siting effort was to find a site that most effectively met the electrical requirements and purpose, fell within the engineering constraints of substation design, and minimized impacts on the natural and human environment. The electrical requirements for the substation narrowed the initial scope of the site search by dictating that the site be located in the vicinity of the existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines and allow for an interconnection with the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. As a result of these requirements, 11 sites were identified by the engineering team and reviewed by the engineering and environmental teams as potential switching substation sites. These initial 11 sites are identified on Figure 3-2.

The Siting Team developed the initial Potential Sites to meet system planning and engineering requirements as well as maximize opportunities and avoid known large and small area constraints. Several large, undeveloped parcels were identified in close proximity to the existing 345 kV lines. Many of the Potential Sites were adjacent to the existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines and/or a potential Bruce Mansfield – Glenwillow 345 kV transmission link under consideration. Initially seven sites were identified. After further field investigation and discussion with ATSI project team staff, four additional sites were evaluated. Brief descriptions of each of the 11 Potential Sites are provided below.

<u>Site 1</u>

Site 1 is an irregular shaped, vacant parcel located in the Village of Glenwillow in Cuyahoga County south of Pettibone Road along Diamond Parkway. The property is approximately 121.2 acres in size and zoned as industrial district A. Approximately half of the Site is cleared and includes a constructed cul-de-sac and retention pond in the western portion of the Site. The remaining portion of the Site is forested. Site 1 is bordered by commercial development to the north; residential development within the City of Solon to the east; vacant land and residential development within Summit County to the south; and commercial development to the west. Site 1 is not adjacent to the

existing 345 kV transmission lines. The existing lines would need to connect to the Site by traversing from the west across an inactive landfill or from the north between the Village of Glenwillow municipal building and residential development within the City of Solon. Both the Preferred and Alternate routes for the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line involve rebuilding the single circuit Eastlake – Juniper 345 kV Transmission Line for double circuit operation. Therefore, the new transmission line would also enter the Site from the west across the inactive landfill.

Site 2

Site 2 is an irregular shaped parcel located in the Village of Oakwood located at the intersection of Oak Leaf Road and Belmar Lane. The property is approximately 21.7 acres in size and zoned as Industrial 2 – production and distribution. The existing Mayfield – Northfield 138 kV transmission lines traverse the southern boundary of the site. The majority of Site 2 is cleared with a small patch of forested area to the west. An industrial or commercial business operates on the eastern portion of the property. Site 2 is bordered by an industrial or commercial property to the north; Interstate 271 to the east; Waste Management facilities to the south; and a railroad track and the Northfield Substation to the west. Site 2 is not located adjacent to the existing 345 kV transmission lines or the Preferred Bruce Mansfield – Glenwillow 345 kV Transmission Line route. The existing 345 kV lines would likely need to traverse through residential properties adjacent to Interstate 271 and cross Interstate 271 to enter Site 2. The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line would likely need to rebuild the existing Eastlake – Juniper 345 kV Transmission Line into Site 4.

<u>Site 3</u>

Site 3 is a half-moon shaped, vacant parcel within the Village of Glenwillow located south of Beaver Meadow Parkway. Site 4 is approximately 23.9 acres in size and zoned as Industrial District A. The entire property is forested and no road access presently exists into the site. Beaver Meadows Creek, a tributary to Tinkers Creek, flows on a portion of the site and generally follows the path of the adjacent railroad track. Site 3 is bordered to the north, east and west by the Wheeling and Lake Erie Railroad and to the south by the existing Mayfield – Northfield #1 & #2 138 kV transmission lines and the
Eastlake – Juniper, Perry – Inland, and Perry – Harding 345 kV transmission lines. A conservation easement developed as part of the Emerald Valley Business Park is located on the industrial properties south of the site. The conservation easement encompasses the existing 345 kV transmission ROW. Beyond the railroad, Site 3 is bordered by the City of Solon Wastewater Treatment Facility and the Solon Police Department shooting range to the north; residential property within the City of Solon to the east; and a vacant industrial lot to the west. Site 3 is adjacent to both the existing 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line that must tie into the new switching substation.

Site 4 (the Preferred Site)

Site 4 is located adjacent to several existing EHV electric transmission lines on an irregular shaped, vacant parcel within the Village of Glenwillow east of the intersection of Austin Powder Drive and Cochran Road. The parcel is approximately 24.8 acres in size and zoned by the Village of Glenwillow as Industrial District A. The majority of the Site is cleared, with a small area of forested land on the eastern border. A portion of Beaver Meadows Creek, a tributary to Tinkers Creek, is located in the northeast corner of the Site 4. The northern portion of Site 4 is traversed by three existing 345 kVtransmission lines: Eastlake - Juniper, Perry - Inland, and Perry - Harding. In addition, the Mayfield – Northfield #1 & #2 138 kV transmission lines and the Longfield 138 kV Substation border the Site to the north. All of the adjacent properties are also zoned for industrial use and include the Longfield 138 kV Substation, the Dirt Devil headquarters, and a vacant forested property to the north (i.e., Site 9, the Alternate Site); the Wheeling and Lake Erie Railroad and a vacant forested property to the east; and Cochran Road and vacant lots to the south and west. The vacant, forested property to the east is part of a conservation easement developed as part of the Emerald Valley Business Park. Site 4 is adjacent to both the existing 345 kV transmission lines and the proposed Bruce Mansfield - Glenwillow 345 kV Transmission Line that must tie into the new switching substation.

<u>Site 5</u>

Site 5 is a triangular shaped, vacant industrial parcel approximately 22.4 acres in size located in the Village of Oakwood south of Golden Oak Parkway. The existing Eastlake

- Juniper, Perry – Inland, and Perry – Harding 345 kV transmission lines traverse the southern boundary of the site. There is currently no direct public roadway access to Site 5. However, an existing access road traverses the southern portion of the site. Site 5 is cleared of vegetation with the exception of a few scattered trees along the northeastern and northwestern site boundaries. Site 5 is bordered by commercial properties to the northeast and southeast and an air landing strip and vacant land to the south. The proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line also would traverse the southern boundary of Site 5.

Site 6

Site 6 is an irregular shaped parcel within the Village of Oakwood located adjacent to Interstate 271 north of North Bedford Road. Site 6 is approximately 24.6 acres in size and zoned as residential property. The site appears to be used for agricultural purposes. Based on aerial imagery, the majority of the site consists of agricultural fields. The northeast corner of the site is forested and one structure is located on the site adjacent to Macedonia Road. The site is bordered by residential properties to the north, east, and south and by Interstate 271 to the west. Site 6 is not adjacent to the existing 345 kV transmission lines or the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. All three 345 kV lines would need to connect to Site 6 by traversing through residential properties adjacent to Interstate 271.

Site 7

Site 7 is located within the Village of Glenwillow at the intersection of Richmond and Ravenna roads. Site 7 is approximately 40.3 acres in size and zoned as Country Home District property. The majority of the site is forested and, based on aerial imagery, several wetlands could be present onsite. Site 7 is bordered to the north, east, south, and west by residential property. The existing Eastlake – Juniper, Perry – Inland, and Perry – Harding 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line also border the site to the south.

<u>Site 8</u>

Site 8 consists of several adjoining parcels located adjacent to Interstate 271 and in between North Freeway Drive and Norfolk Southern railroad in the City of Macedonia in Summit County. Site 8 is approximately 64.2 acres in size and zoned General Industrial District. A crane rental business is located on the northern two parcels that comprise Site 8. The existing Eastlake – Juniper, Perry – Inland, and Perry – Harding 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line traverse the northern portion of the site. The remaining portion of Site 8 is forested. According to the 2003 Summit County Natural Resources Study prepared for the Summit County Department of Community and Economic Development by Davey Resource Group, the majority of Site 8 consists of wetland areas. Site 8 is bordered to the north by America's Body commercial business; to the east by Interstate 271; to the south by CSD-Ceiling Systems District commercial business; and to the west by the Norfolk Southern railroad.

Site 9 (the Alternate Site)

Site 9 is located on an adjacent irregular shaped parcel located south of Beaver Meadow Parkway within the Village of Glenwillow. Site 9 is located directly north of the existing 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line. The parcel is approximately 23 acres in size and zoned by the Village of Glenwillow as industrial property. The majority of the parcel is forested, and Beaver Meadows Creek, a tributary to Tinkers Creek, traverses the eastern portion of the property. An electric distribution line originating from the adjacent Longfield 138 kV Substation bisects the parcel. Site 9 is bordered by the Solon Police Department gun range and the City of Solon Wastewater Treatment Facility to the north; the Wheeling and Lake Erie Railroad and a vacant forested lot to the east (Site 3); vacant lots to the south (including Site 4), and the Dirt Devil headquarters to the west.

<u>Site 10</u>

Site 10 is an L-shaped parcel located within the Village of Glenwillow adjacent to the intersection of Pettibone Road and Pinecrest Lane. Site 10 is approximately 37.6 acres in size and zoned as Country Home District property. Site 10 is vacant and primarily

forested. The Eastlake – Juniper, Perry – Inland, and Perry – Harding 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line traverse the eastern portion of the parcel. Site 10 is bordered by vacant forested land residential properties to the north; residential property to the east; residential and commercial property to the south; and vacant forested land to the west.

Site 11

Site 11 is an irregular shaped parcel zoned as Industrial District A located in the Village of Glenwillow south of the intersection of Austin Powder Drive and Pettibone Road. Site 11 was confirmed in the field to be an inactive landfill and was therefore dismissed as a potential location for a new 345 kV switching substation.

After the initial Potential Sites were identified, key members of the Siting Team conducted field inspections of the sites. These inspections involved the visual examination of the Potential Sites from road crossings and other points of public access. The Potential Sites were examined in the field between February and June 2012. The team utilized a GPS unit, along with the mapped coordinates of the Potential Sites superimposed on road/street mapping software, to track precise locations and record the path of the field work. Residences (i.e., single family, multi-family, modular homes, and mobile homes), commercial buildings, and other potential Site were noted. The Siting Team also noted the location of outbuildings (e.g., garages, sheds, barns, etc.) where that information seemed pertinent or helpful to the team in analyzing the sites. At various points, for example in locations where homes or structures are located near the Potential Site or potential 345 kV transmission connections into and out of the switching substation, areas of environmental concern were noted and various other siting and routing challenges were identified.

The Potential Sites were initially compared against key system planning, engineering and operations, and natural and human environment siting criteria. These factors are summarized in Table 3-2 and discussed in the subsequent sections.



Potential Site Analysis

Based on the field investigations and additional desktop review, seven Potential Sites (Sites 1, 2, 5, 6, 8, 10, and 11) that did not conform to the siting objectives or criteria were eliminated from further consideration. Primary factors for removing a site from further consideration generally fell in one of three categories: proximity to existing 345 kV transmission lines, existing development and land use impacts, or probable wetland impacts. Each primary factor is discussed below.

Tebl	\mathbf{v}_{0}	UELS.		પ્લર્ગ				÷9.	
Criwini 💷	2 ¹		<u>n a t</u>	SHEN	00000 6. 7	8	9	10	
System Planning Criteria									
Adjacent to existing 345 kV									
Adjacent to potential Bruce Mansfield – Glenwillow 345 kV transmission line route ²					i				
Engineering and Operations Criteria									
Size suitable for switching substation without unusual design or rights needed through adjacent parcel									
Accessible from public roadway									
Site for sale									
Natural/Human Environment Criteria									
Currently undeveloped									
Zoned industrial									i i
Adjacent land use zoned industrial/commercial									
Large portion of site cleared of trees					-				
Minimal wetland/stream features based on available sources									
Probable tree buffer between site and residential development		١	NA			NA	NA		

¹ Only adjacent to Perry – Inland 345 kV Transmission Line ² Based on the initial potential route network

Proximity to Existing 345 kV Transmission Lines

Sites located closer to the existing 345 kV lines reduce costs for siting, designing, and constructing new transmission line segments to connect into the new switching substation and typically minimize potential human and environmental impacts. In addition, construction of new transmission line segments require coordinated transmission outage events to ensure electric reliability.

Sites 1, 2, 6, and 11 are the only sites that are not located adjacent to both the Eastlake – Juniper and Perry – Inland 345 kV Transmission Lines. Site 1 would require construction of a minimum of 0.8 mile of new transmission line for both 345 kV lines. The shortest path would require construction across an inactive landfill (Site 11). A longer alternative would be to construct in between a residential development and around a business park into Site 1. Site 1 is also bordered to the east and south by residential development. Site 2 is located adjacent to the Perry – Inland 345 kV Transmission Line, but is not adjacent to the Eastlake – Juniper line. Site 2 would require construction of approximately 0.9 mile of new transmission line to connect the Eastlake – Juniper and proposed Bruce Mansfield - Glenwillow 345 kV line into the site. Site 6 would require construction of approximately 0.6 mile of new transmission line through residential development to connect to the site. Further, Site 6 was observed to have a residence and associated outbuildings located in the northeast corner of the property. The remaining portion of the property appears to be farmed. Site 11 would require approximately 0.3 mile of new transmission line construction to connect the existing 345 kV lines into the site. Although this is a relatively short distance, Site 11 was observed in the field to be an inactive landfill, which presents significant development concerns due to settling, environmental monitoring and other factors associated with former landfills. In addition, the new transmission line would require a new crossing of Tinkers Creek.

Existing Development and Land Use

Whenever possible, it is preferable to site a new switching substation on undeveloped property. This eliminates the need to remove or significantly interfere with existing residences, commercial, or industrial structures. In addition, operation of a switching substation is inherently more compatible with industrial or commercial zoned property than with residential properties. The Site Selection Study sought to identify industrial zoned properties that also have

adjacent industrial or commercial uses. In cases where residential development cannot be avoided, efforts are made to ensure there is a tree buffer between the proposed switching substation and adjacent residential properties.

Both existing 345 kV transmission lines traverse the southern boundary of Site 5. Although Site 5 is conveniently located adjacent to these transmission lines, it is not directly accessible from a major road. An existing access road traverses from North Bedford Road, through the adjacent property and into Site 5. ATSI would need to secure access rights through this adjacent property in order to utilize Site 5. Because the transmission lines traverse the southern portion of the property, the actual constructible space is only approximately 11 acres. Furthermore, the irregular shape of the parcel presented design challenges. In addition, residential property borders Site 5 to the south, and it appears that a private landing strip may be present on this property. As discussed previously, Site 6 was observed to have an existing residence, and Site 11 is an inactive landfill. Site 8 is located adjacent to both existing 345 kV lines and in an industrial area. However, a crane rental business is operated on the cleared portion of Site 8. The remaining portion of the property is forested and appears to have significant wetlands based on aerial imagery, the Summit County Natural Resource Inventory, and field observations. Site 8 would only be feasible if the crane business could be relocated. Even then, a portion of the forested area would need to be cleared and it is likely that wetlands could be impacted. Site 10 is currently undeveloped forested land. However, the parcel is currently zoned as Country Home and adjacent to residential properties, including Glenwillow Community Park.

Wetland and Stream Impacts

The Siting Team attempted to avoid large wetland and stream features to the maximum extent practical in order to minimize impacts to these features. Potential features were identified based on the NHD, NWI, and OWI GIS shapefiles, aerial imagery, potential wetland shapefiles from the Summit County Natural Resource Plan, and observations from public roadways. Field wetland delineations were only conducted on the Preferred and Alternate switching substation sites after the initial Site Selection Study was completed (see Section 7 of this Application). Based on aerial imagery, field observations, and the Summit County data, more than 50 percent of Site 8 may contain wetland features. Although the northernmost portion of Site 8 is presently cleared and operated as a crane rental company, additional area would be required to construct

the new switching substation. Further, if the crane rental company was not interested in relocating, significantly more vegetated land and wetland features would be impacted. Wetland and stream features were identified on most of the other potential sites. However, at this stage in the Site Selection Study it did not appear that these features would render the site impractical.

After comparing all 11 sites against the key system planning, engineering and operations, and natural and human environment siting criteria, as well as the three primary factors for removing a site from further consideration discussed above, the Siting Team retained Sites 3, 4, 7, and 9 for further consideration and analysis.

Potential Site Analysis Results

The Siting Team met on May 14, 2012, to discuss the remaining Potential Sites (Sites 3, 4, 7, and 9). These Potential Sites were considered in greater detail and labeled A through D and presented to the public for comment during four open house meetings held in Ohio between June 18 and 21, 2012, including one meeting in Macedonia, near the Village of Glenwillow. The format and content of open house meetings is described in Section 6.

All four sites are located adjacent to the existing 345 kV transmission lines and are presently undeveloped. Sites A (the former Site 3), B (the former Site 9), and C (the former Site 4) are zoned for industrial use and are generally bordered by properties also zoned for industrial use. All three sites are identified in the Village of Glenwillow Master Plan (2009) as properties with industrial development potential. Site C is the only site generally cleared of vegetation. Sites A, B, and D are primarily forested. Site D (the former Site 7) is a forested property presently zoned Country Home District and located adjacent to residential properties. Further, this parcel is identified in the Village of Glenwillow Master Plan (2009) as a potential development area. Due to the large area (40 acres), it is possible that the site could be configured to maximize the distance between adjacent residences and provide a tree buffer. However, wetland and stream features may be present on this site, including a stream that bisects the site, which could impact the location of the fenced area. Based on these potential human and environmental impacts, Site D was ultimately removed from further consideration.

Sites B and C were considered generally the best sites for the construction of the proposed Glenwillow Transmission Switching Substation. Both sites are well suited for connection to the existing 345 kV transmission lines and proposed Bruce Mansfield - Glenwillow 345 kV Transmission Line. Site C is also considered suitable due the presence of consistent land uses in the area, the absence of adjacent residential properties, the existing grading and area cleared of trees, and the lack of wetland or stream features that would be located within the switching substation fence line. In addition, Site C was observed to be for sale and while Site B was not actively listed for sale, the landowner was willing to consider selling the property. Site B is considered suitable due to the presence of consistent land uses in the area and the absence of adjacent residential properties. However, use of Site B would require ATSI to acquire approximately 400 to 800 feet of new, 150-foot-wide transmission ROW through the adjacent parcel (Site A) in order to connect the existing Eastlake – Juniper and Perry – Inland 345 kV transmission lines into the new substation. The existing 345 kV transmission ROW south of Site A is located within a conservation easement created as part of the Emerald Business Park development. Site B includes more wetland and stream features that would potentially be impacted by the switching substation fence line. Site A was considered less favorable as the switching substation site because there is no direct access from a roadway, the site is bordered by the Wheeling & Lake Erie Railway, the site is closer to residential properties to the east, and significant wetland and stream features are present onsite. Both sites A and B are forested and include significantly more wetland and stream features than Site C based on field delineation.

As a result, the Siting Team initially selected Site C as the Preferred Site and Site B as the Alternate Site for construction and operation of the proposed Glenwillow Transmission Switching Substation. The Preferred and Alternate sites are shown on Figure 3-3.

(2) Constraint Map

A constraint map at no less than 1:24,000 scale showing both the Glenwillow Transmission Switching Substation Project Preferred and Alternate sites is presented as Figure 4-1.



(B) SUMMARY TABLE

Switching Substation Review and Selection

Following the initial selection of Sites C and B as the Preferred and Alternate sites, respectively, ATSI conducted a more comprehensive desktop analysis and field survey on each site. Potential constraint impacts for the proposed Project at Site B and C are identified in Table 3-3.

Tables-3 Summary of Site Selection Partons								
Site Size and Location Factors								
	Site B –	Site C –						
	Alternate Site	Preferred Site						
Total Parcel Acreage	23	24.8						
Adequate Fence Line Area and Property	Yes	Yes						
Distance from 345 kV lines (ft)	0	0						
Distance from Bruce Mansfield – Glenwillow Line (ft)	0	0						
Evaluated Criteria								
Land Use								
Current Land Use of Switching Substation Site	Undeveloped	Undeveloped						
Current Zoning	Industrial District A	Industrial District A						
Nearest Residence to Site Boundary (feet)	1,025	870						
Residences within 1,000 Feet of Site Boundary	0	4						
Residences within 100 Feet of the Site Boundary	0	0						
Commercial/Industrial Buildings within 1,000 Feet of Site Boundary	7	5						
Commercial/Industrial Buildings within 100 Feet of Site Boundary	0	0						
Institutional Land Uses within 1,000 Feet of Site Boundary	1	1						
Institutional Land Uses within 100 Feet of the Site Boundary	1	0						
Other Sensitive Land Uses within 1,000 feet of Site Boundary	0	2						

Table 3-3 Summary of Site Selection Factors							
Other Sensitive Land Uses within 100 feet of Site Boundary	0	0					
Agricultural District Status of Site	Not Agricultural	Not Agricultural					
Ecological							
Forested Area (acres)	16.7	5					
Delineated Wetlands on Site (acres)	2.53	2.94					
Documented Threatened and Endangered Species within 1,000 feet of Site Boundary	0	0					
Delineated Streams on Site (acres)	1.12	0.20					
NHD Streams within 1,000 feet (linear feet)	5,233	6,006					
NHD Streams within 100 feet (linear feet)	1,615	521					
NWI Wetlands within 1,000 feet (acres)	22.4	26.6					
NWI Wetlands within 100 feet (acres)	9.6	5.6					
Steep Slopes >20 percent (acres)	1.9	2.1					
Cultural/Archaeological							
Documented Archaeology Sites within 1,000 Feet of Site Boundary	0	2					
Documented Archaeology Sites within 100 Feet of Site Boundary	0	1					
Ohio Historical Inventory Structures within 1,000 Feet of Site Boundary	0	1					
Ohio Historical Inventory Structures within 100 Feet of Site Boundary	0	0					
Cemeteries within 100 feet of Site Boundary	0	0					
National Register of Historic Places Sites within 1,000 Feet of Site Boundary	0	0					
Land Availability							
Site Current Owner	Milstein Land Group, LLC	First Industrial Limited Partnership					
Site Currently for Sale	Yes	Yes					
Number of Parcels included in Site	21	12					

¹ Site B would require acquisition of transmission rights through the adjacent property, Site A. ² On September 28, 2012, ATSI and the current owner signed a Purchase Agreement that provides for ATSI's acquisition of the Preferred Site.

As summarized in Table 3-3, both sites have adequate space for construction of the substation fence line and are located adjacent to the existing 345 kV lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line that must connect to the new substation. However, the Alternate Site would require the acquisition of approximately 400 to 800 feet of 150-foot-wide transmission ROW in order to route the existing Eastlake – Juniper and Perry – Inland 345 kV lines into the new substation. Both sites are located in areas zoned for industrial use and no residences are located within 100 feet of the property boundaries; however, none of these residences are located within 1,000 feet of the proposed fence line. Furthermore, these residences are located west of the Wheeling & Lake Erie Railway, Cochran Road and Austin Powder Drive. No residences are located within 1,000 feet of the property boundary or fence line of the Alternate Site.

Vegetation on the Preferred Site generally consists of open fields, with approximately 5 acres of forested area along the eastern property boundary. The majority of the Alternate Site is vegetated with dispersed areas of shrub-scrub vegetation or wetland areas. Therefore, less site grading and limited tree clearing will be required to accommodate the new substation on the Preferred Site compared to the Alternate Site, which would require more significant grading and tree clearing. The Preferred Site has fewer delineated streams and wetlands than the Alternate Site. In addition, features on the Preferred Site are confined to the eastern portion of the property and can for the most part be avoided, as described in subsequent sections.

Based on a qualitative review of information obtained from GIS data, existing property ownership, field reconnaissance, and public outreach as well as engineering and financial estimates for this Project, ATSI confirmed the selection of Site C as the Preferred Site and Site B as the Alternate Site.

Site C provides the necessary transmission interconnection, access roads and grading. At the same time, Site C is compatible with existing land use, is generally cleared of trees, has no houses located within 1,000 feet, has no known cultural or historic resource concerns, and has minimal wetland and stream features onsite. Based on preliminary engineering, the substation fence line can be designed to minimize tree clearing and wetland impacts on the Site C. In

addition, the substation and 345 kV realignments can be conducted entirely within Site C without requiring new ROW through adjacent properties. As a result, ATSI signed a purchase agreement with the owner of the Preferred Site on September 28, 2012.

(C) SITE SELECTION STUDY

ATSI's rationale for selecting Site C as the Preferred Site and Site B as the Alternate Site for the Glenwillow Transmission Switching Substation Project has been presented in the preceding sections. A separate Site Selection Study report has not been attached to this Application.

4906-15-04 TECHNICAL DATA

(A) SECTION SUMMARY

This section of the Application provides technical data for the Project, including data on location, major features, and the topographic, geologic, and hydrology in the vicinity of the site of the Project. The Preferred Site is located on an irregular shaped parcel east of the intersection of Austin Powder Drive and Cochran Road. The Alternate Site is located off of Beaver Meadow Parkway on an adjacent irregular shaped parcel located north of the existing 345 kV transmission lines. This section also provides data on the layout and construction of the substation and provides information on proposed substation equipment.

(1) Geography and Topography

A map at 1:700 scale, showing the Preferred and Alternate sites is presented as Figure 4-1. This map includes the area 1,000 feet around the proposed fence line as well as the parcel boundaries for the Preferred and Alternate sites for the Project. The map was developed from Aerials Express Imagery of Cleveland (2009). The aerial imagery is overlain with 10-foot topographic contours developed from the National Elevation Dataset ("NED") digital elevation model ("DEM") (2010).

The information on the map was updated through review of aerial photography, property parcel data from the Cuyahoga County Auditor, and field investigations or surveys conducted between February and June 2012.

(a) **Proposed Transmission Line Alignments**

The Preferred Site for the Project is located east of the intersection of Austin Powder Drive and Cochran Road in the Village of Glenwillow, Cuyahoga County, Ohio. The Alternate Site is located adjacent to the Preferred Site to the north. The northern portion of the Preferred Site is traversed by the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line and three west-to-east trending existing 345 kV transmission lines: the single circuit constructed Eastlake – Juniper 345 kV transmission line and the double circuit constructed Inland – Perry and



Harding – Perry 345 kV transmission lines¹. In addition, the Mayfield – Northfield #1 & #2 138 kV transmission lines border the Preferred Site to the north. In the area near and west of the Project, ATSI plans to rebuild the existing single circuit constructed Eastlake – Juniper transmission line as a double circuit constructed transmission line supporting both the Eastlake – Juniper transmission line and the proposed Bruce Mansfield-Glenwillow 345 kV Transmission Line. In addition to connecting the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line to the new Glenwillow Transmission Switching Substation, ATSI also plans to extend the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines to the proposed new Glenwillow Transmission Line and the extensions of the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines to the proposed new Glenwillow 345 kV Transmission Line and the extensions of the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines to the proposed new Glenwillow Transmission Line and the extensions of the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines to the proposed Preferred Site are being proposed in a Letter of Notification application submitted to the Board in OPSB Case No. 12-1726-EL-BLN.

(b) Substation Location

The Preferred and Alternate sites for the Project are shown on Figure 4-1.

(c) Major Highway and Railroad Routes

<u>Preferred Site</u>: The Preferred Site is not located adjacent to any major highways. Cochran Road borders the Site to the west and the Wheeling & Lake Erie Railway borders the Site to the east. The Wheeling & Lake Erie Railway is also located approximately 525 feet west of the Site boundary. The nearest major highway is US Interstate 271, which is located approximately 3.1 miles southwest of the Site.

<u>Alternative Site:</u> The Alternate Site is not located adjacent to any major highways. The Alternate Site is bordered by Beaver Meadow Parkway to the north and the Wheeling & Lake Erie Railway to the east. US Interstate 271, which is located approximately 3.7 miles southwest of the Site, is the nearest major highway.

¹ Single circuit constructed and double circuit constructed indicates that the transmission line structures were designed to support one and two transmission lines respectively.

(d) Air Transportation Facilities

According to the Federal Aviation Administration's ("FAA's") Office of Aeronautical Information Services, 5 airports and 20 heliports are located in Cuyahoga County. None of these facilities are located within 0.5 miles of the Preferred or Alternate Sites. The closest of these facilities, the St. Vincent Charity Medical Center Solon Heliport, is located approximately 2 miles from the Preferred Site and 1.7 miles from the Alternate Site.

(e) Utility Corridors

As mentioned previously, the existing Eastlake – Juniper, Inland – Perry, and Harding – Perry 345 kV transmission lines traverse the northern boundary of the Preferred Site and the southern boundary of the Alternate Site. ATSI plans to connect the existing Eastlake – Juniper and Inland – Perry 345 kV transmission lines and the proposed Bruce Mansfield – Glenwillow 345 kV Transmission Line into the new Glenwillow Transmission Switching Substation.

(f) Proposed Permanent Access Roads

The Preferred Site would be accessed from Cochran Road and the Alternate Site would be accessed from Beaver Meadow Parkway. Based on the preliminary site layout, the proposed access road for the Preferred Site would consist of a short loop that begins approximately 150 feet southeast of the intersection of Cochran Road and Austin Powder Drive. The road would extend approximately 130 feet into the beginning of the fenced area. The road would continue through the northwest corner of the fenced area and loop back out to Cochran Road.

(g) Lakes, Ponds, Reservoirs, Streams, Canals, Rivers, and Swamps

A full description of the lakes, ponds, reservoirs, streams, canals, rivers, and swamps (i.e. wetlands) located within 1,000 feet of the Preferred and Alternate Sites is provided in Section 7 (4906-15-07) of this Application. A map at 1:700 scale showing water bodies in the Study Area is included as Figure 4-1.

(h) Topographic Contours

Topographic contours of the Study Area, provided at 5-foot contour intervals, are shown on Figure 4-1. A summary of the topography for the Preferred and Alternate Sites is provided below.

<u>Preferred Site:</u> The topographic relief of the Preferred Site can generally be characterized as gently rolling terrain with elevation ranging from 950 to 1,010 feet above mean sea level. Onsite elevation gradually rises from the field area in the middle of the site to the edge of the forested area located in the eastern portion of the site. Steep slopes are located within the forested area as the elevation drops down toward the Wheeling & Lake Erie Railway. Approximately 2.1 acres of steep slopes (greater than 20 percent slope) are located on the Preferred Site. The highest elevation is 1,010 feet above mean sea level located on the northwestern portion of the Site.

<u>Alternate Site:</u> The topographic relief of the Alternate Site can be characterized as moderate to steeply sloped, with flatter areas in the floodplain and the forested area adjacent to the existing transmission ROW. Elevation generally ranges from 1,000 to 1,030 feet above mean sea level. The highest elevation is 1,030 feet above mean sea level located on the southeastern portion of the Site. Approximately 1.9 acres of steep slopes (greater than 20 percent slope) are located on the Preferred Site.

(i) Soil Association

<u>Preferred Site:</u> According to the USDA soils data², the Mahoning-Ellsworth (s6130) is the only soil association located on the Preferred Site. The following soil series are located within the Preferred Site: Ellsworth silt loam, 6 to 8 percent slopes (EIC), Ellsworth silt loam, 25 to 70 percent slopes (EIF), Mahoning silt loam, 2 to 6 percent slopes (MgB), and Orrville silt loam, frequently flooded (Or). ElC and MgB comprise the majority of the Site. Figure 4-1 shows the soil associations in the area.

² U.S. Department of Agriculture [USDA], Web Soil Mapper, 2012. Available online: <u>http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx</u>

<u>Alternate Site:</u> According to the USDA soils data³, the Mahoning-Ellsworth (s6130) is the only soil association located on the Alternate Site (see Figure 4-1). The following soil series are located within the Alternate Site: Ellsworth silt loam, 6 to 8 percent slopes (EIC), Ellsworth silt loam, 25 to 70 percent slopes (EIF), Wadsworth silt loam, 2 to 6 percent slopes (WaB), and Orville silt loam, frequently flooded (Or). EIC and Or comprise the majority of the Site.

(j) Population Centers and Legal Boundaries

Population centers and legal boundaries within the vicinity of the Project are shown on Figure 4-1. The Preferred and Alternate sites are located in the Village of Glenwillow, Cuyahoga County, Ohio.

(2) Slope and Soil Mechanics

Approximately 5.9 acres of both the Preferred and Alternate sites are greater than 12 percent slope. Soil mechanics will not cause significant problems during construction of the Project.

(a) Description of soils in areas where slope exceeds twelve percent

Approximately 5.9 acres of both the Preferred and Alternate sites are greater than 12 percent slope. Maps of slopes exceeding 12 percent (as calculated from the USGS Digital Elevation Model of the area) are provided on Figure 4-1.

(b) Suitability of Soils for Foundation Construction

Some of the onsite soil series are rated as having high risk for uncoated steel corrosion. One of the soil series found on the Alternate Site is identified as frequently flooded. Engineering design would need to consider these and other soil condition factors. No slope or soil conditions were found that would prevent construction of the proposed Project at either the Preferred or Alternate Site.

(B) LAYOUT AND CONSTRUCTION

(1) Site Activities

The following paragraphs provide data on the layout, engineering design process, and construction of the Project.

(a) Surveying and Soil Testing

ATSI is in the process of surveying the Preferred Site. Soil tests will be conducted at the Preferred Site, as foundations for equipment are necessary. Auger borings shall be made by a machine driven auger at least 4 inches in diameter. Soil samples shall be obtained at approximately 2.5-foot intervals for the first 10 feet and 5-foot intervals below 10 feet, and at any change in strata in earth. Sampling shall include split barrel samples in non-cohesive soils and thin walled tube samples in cohesive soils. Typically, the testing will performed to a depth of 30 to 40 feet. If rock is encountered, a carbide-tipped bit will be drilled 5 to 10 feet into the rock. Similar soils tests would be performed at the Alternate Site if it were Certificated by the Board.

(b) Grading and Excavation

Grading and excavation will be required regardless of which site is selected. The Preferred Site topography can be characterized as gently rolling, with elevation gradually rising from the field area in the middle of the site to the beginning of the forested area located in the eastern portion of the site. Steep slopes are located within the forested area as the elevation drops down toward the Wheeling & Lake Erie Railway. The preliminary landscaping and grading plan for the Preferred Site is shown on Figure 4-2. Details will be provided in construction plans developed for the Preferred Site.