

STATE OF NEW YORK  
PUBLIC SERVICE COMMISSION

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APPLICATION OF NORTH AMERICA TRANSMISSION, LLC  
AND NORTH AMERICA TRANSMISSION CORPORATION FOR  
A CERTIFICATE OF ENVIRONMENTAL COMPATIBILITY  
AND PUBLIC NEED PURSUANT TO ARTICLE VII OF THE  
PUBLIC SERVICE LAW FOR AN ALTERNATING CURRENT  
TRANSMISSION UPGRADE PROJECT CONSISTING OF AN  
EDIC TO FRASER 345 kV TRANSMISSION LINE AND A NEW  
SCOTLAND TO LEEDS TO PLEASANT VALLEY 345 kV  
TRANSMISSION LINE

Case No.13-T-0454

PROCEEDING ON MOTION TO EXAMINE  
ALTERNATING CURRENT TRANSMISSION UPGRADES

Case No. 12-T-0502

ALTERNATING CURRENT TRANSMISSION  
UPGRADES COMPARATIVE PROCEEDING

Case No. 13-E-0488

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PART A DATA REQUIRED FOR NYISO ANALYSIS AND INFORMATION REQUESTED  
IN APPENDIX B OF THE DECEMBER 16 ORDER

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Lawrence Willick  
North America Transmission, LLC  
North America Transmission Corporation  
400 Chesterfield Center, Suite 110  
St. Louis, MO 63017  
E-mail: lwillick@lspower.com  
Tel: (636) 532-2200

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## INTRODUCTION

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In compliance with the Order Establishing Modified Procedures for Comparative Evaluation Issued and Effective December 16, 2014, “December 16 Order”, North America Transmission, LLC and North America Transmission Corporation (collectively “North America”) hereby submit the information requested in Appendix B and Appendix C of the December 16 Order.

The information submitted herein describes the Project submitted in North America’s September 30, 2013 Part A Application in these proceedings under Article VII of the Public Service Law of the State of New York and the implementing regulations of the New York State Public Service Commission (“PSC”) (16 NYCRR Parts 85, 86, and 88). Following the guidance of the Commission, and in an attempt to be responsive to the extensive public feedback received to date, North America has modified the Project proposal in an effort to minimize the acquisition of additional lands for rights-of-way and minimize the construction of major electrical transmission facilities that are out of scale or character with existing facilities already in the landscape.<sup>1</sup> The description herein is a summary level, with engineering data sufficient for the NYISO to begin a comparative evaluation, to be supplemented with more detailed filings on January 20, 2015 and March 2, 2015, in accordance with the December 16 Order and December 30, 2015 letter ruling on extension requests.

As with North America’s original Part A Application, North America’s proposal continues to consist of the following primary components:

- a new 345 kV overhead transmission line from Edic to Fraser with series compensation
- a new 345 kV overhead transmission line from New Scotland to Leeds to Pleasant Valley

However, the basic proposal for each of these lines is modified in a manner which reduces the right-of-way requirement for each component. In addition, in response to the guidance set forth in the Order Authorizing Modification of the Process to Allow for Consideration of Alternative Proposals issued and effective February 21, 2014, and elsewhere in this proceeding, North America has identified two alternative routes for New Scotland to Pleasant Valley which are largely in an existing right-of-way. Alternative 1 is a route which is largely in the existing I-87 highway right-of-way. Alternative 2 is a route which is largely in the existing 115 kV transmission line right-of-way. As with North America’s original submittal, both of these alternatives which may begin at either the existing New Scotland substation or the proposed Knickerbocker substation location. If a facility is built at the Knickerbocker location, it could be built either as a 345 kV-only “Switchyard”, which just ties together the 345 kV lines in the area, or there may be benefits to build it as a 345 kV/115 kV “Substation”, which includes connections to the 115 kV lines in the area and transformation from 345 kV to 115 kV. Therefore North America proposes the following alternatives:

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<sup>1</sup> December 16 Order at 39.

- New Scotland to Leeds to Pleasant Valley Alternative 1 – I-87 Right-of-Way;
  - Alternately Knickerbocker Switchyard to Pleasant Valley I-87 Right-of-Way;
  - Alternately Knickerbocker Substation to Pleasant Valley I-87 Right-of-Way;
- New Scotland to Leeds to Pleasant Valley Alternative 2 – 115 kV Right-of-Way
  - Alternately Knickerbocker Switchyard to Pleasant Valley – 115 kV Right-of-Way
  - Alternately Knickerbocker Substation to Pleasant Valley – 115 kV Right-of-Way

In addition, the Commission has invited the integration of innovative technologies to enhance transfer capability, and North America has identified several components that improve the transfer capability of the Project without the need for any additional lands for rights-of-way:

- The addition of series compensation on the existing Fraser-Gilboa 345 kV circuit
- Looping the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser substation;
- The addition of series compensation on the existing Marcy-New Scotland 345 kV circuit;
- The addition of series compensation on the existing Edic-New Scotland 345 kV circuit.

### *Proposed Portfolios*

Throughout this process it has been maintained that it is not necessary a single project or proposal from a single applicant that may be best. In the April 22, 2013 Order<sup>2</sup> in this proceeding, the Commission described the result that early screening can produce. The Commission observed that:

“The variety of project proposals suggests that there may be different approaches to increasing the transfer capacity of the system at the two interfaces of concern. It is possible that one set of projects may provide more congestion relief than another; it may be possible to identify an optimum portfolio of projects that provides the most benefit at the least cost to ratepayers. That portfolio may consist of projects currently being proposed by one developer, or it may involve projects sponsored by different entities.”

This concept was repeated again in the February 21, 2014 Order<sup>3</sup> in this proceeding:

“In addition, we are concerned that the requirement that each proposal, by itself, be capable of producing a 1,000 MW increase in transfer capability may have inhibited the offering of proposals for smaller projects that could efficiently and cost effectively contribute to the overall objective. Therefore, to allow for as broad a range of potential solutions as possible, we will accept proposals that

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<sup>2</sup> Order Establishing Procedures for Joint Review Under Article VII and Approving Rule Changes, April 22, 2013 at 5-6.

<sup>3</sup> Order Authorizing Modification of the Process to Allow for Consideration of Alternative Proposals at 5.

contribute to the level of congestion relief we have targeted even if they do not, individually, provide the full 1,000 MW of additional transfer capability.”

And again in the December 16 Order the commission recognizes it may be a project or combination of projects that is optimal.<sup>4</sup> One of the difficulties in this proceeding is to identify which projects or combinations of projects should be studied in combination.

The alternatives identified by North America have been identified and developed in an effort to a) minimize new rights-of-way and minimize other impacts and b) provide flexibility in combining potential system improvements. However, North America recognizes that the many potential transmission system elements present an unreasonable number of permutations to fully analyze. Therefore the following discussion is intended to arrive at a manageable set of portfolios for the NYISO to analyze. North America recognizes NYISO’s planning expertise and believes NYISO should use its discretion to conduct further analysis as it feels is appropriate as discussed further below.

North America is unique<sup>5</sup> in its approach of improving the parallel path of Marcy South to relieve the UPNY/SENY interface. All of the North America proposed portfolios below include the Edic-Fraser transmission line as a key component.<sup>6</sup> In addition, North America believes a new circuit between New Scotland/Knickerbocker and Pleasant Valley is required in order to achieve 1,000 MW of incremental transfer capability on UPNY/SENY, and all of the proposed portfolios include one of the North America alternatives along this path. North America has identified its original base proposal, modified in a manner to reduce the required right-of-way, and two alternative routes, each with potential connections to Knickerbocker as a switchyard or substation. This results in seven potential permutations of north-south transmission improvements proposed by North America:

1. Edic-Fraser + New Scotland-Leeds-Pleasant Valley
2. Edic-Fraser + New Scotland-Leeds-Pleasant Valley Alternative 1 – I-87 ROW
3. Edic-Fraser + Knickerbocker Switchyard-Pleasant Valley Alternative 1 – I-87 ROW
4. Edic-Fraser + Knickerbocker Substation-Pleasant Valley Alternative 1 – I-87 ROW
5. Edic-Fraser + New Scotland-Pleasant Valley Alternative 2 – 115 kV ROW
6. Edic-Fraser + Knickerbocker Substation-Pleasant Valley Alternative 2 – 115 kV ROW
7. Edic-Fraser + Knickerbocker Switchyard-Pleasant Valley Alternative 2 – 115 kV ROW

However, North America does not believe that NYISO needs to study each of these permutations in order to analyze the impacts to the system, because many of them are very

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<sup>4</sup> December 16 Order at 32.

<sup>5</sup> With the exception of some of the elements of the TOTS upgrades proposed by the NYTOs which have been approved in another proceeding.

<sup>6</sup> Of course North America would be willing to follow through on its proposal related to whichever portions of its proposal that may be selected, including a selected portfolio that does not include the Edic-Fraser transmission line.

similar, with the same system configuration and only a small impedance difference due to a different line length. NYISO should not need to study each alternative as a separate study case. Similarly, a new line in the 115 kV ROW may result in changes to the 115 kV system, but without a connection at Knickerbocker the impact on the 345 kV system and UPNY/SENY interface of 115 kV system changes will be immaterial and North America does not believe NYISO need study these as discreet cases. The portfolios identified below include 1-2 cases with each of the various alternative routes for New Scotland-Leeds-Pleasant Valley.

In addition to the seven alternatives of north-south upgrades, North America has identified a potential system enhancements in terms of series compensation on various existing circuits and other system changes, which could result in many more permutations of potential cases to study. However, North America does not intend for NYISO to have to study every combination of potential upgrades. These upgrades are intended to be complimentary. In particular, the first two enhancements should be studied together - series compensation on the existing Fraser-Gilboa 345 kV circuit and a new connection of the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser substation. The second two enhancements of series compensation on the existing Marcy-New Scotland 345 kV circuit and series compensation on the existing Edic-New Scotland 345 kV circuit also should be studied together. And while these second set of two enhancements will increase the transfer capability of the proposal on the UPNY-SENY interface, they may have negative impacts on Central East/Total East. An alternative to series compensation on Edic-New Scotland and Marcy-New Scotland would be to add or upgrade a circuit on this path. While North America is not proposing to complete such a project, other proposals in this proceeding include upgrades in this path. Therefore North America proposes that NYISO study a portfolio which includes North America's Project along with a new circuit from Edic to Princetown to Knickerbocker, as proposed by others in the comparative proceeding. Accordingly, with this circuit by others to terminate at Knickerbocker, it makes sense for a Knickerbocker Alternative of North America's proposal to be included in such a study case.

North America suggests that NYISO study the 5 portfolios identified below. In addition, the NYISO should use its discretion to add or remove components identified or other system improvements iteratively in response to elements becoming overloaded. For example, if the limiting element on the system is due to a stuck breaker contingency, which can be remedied at a relatively low cost by reconfiguring a substation, or adding an additional redundant breaker, the NYISO should assume such an upgrade to be built. If a voltage violation occurs which can be remedied by an SVC, the installation of such a device should be considered. In addition, in the event the CPV Valley project is included in the base case, there are negative impacts to these portfolios, as the CPV Valley increases loaded on the Marcy South corridor downstream of the Edic-Fraser transmission line. CPV Valley has not committed to move forward with construction. To mitigate this impact, NYISO should consider the use of a Special Protection Scheme to reduce the resulting congestion, as is used with other generation in a similar situation. Finally, North America encourages NYISO to use its planning expertise to identify a

potentially optimal portfolio on its own as it conducts its analysis. This includes an increase or decrease to the level of series compensation identified on a circuit.

	Portfolio 1	Portfolio 2	Portfolio 3	Portfolio 4	Portfolio 5
Edic-Fraser (with series compensation)	x	x	x	X	x
New Scotland-Leeds-Pleasant Valley	x		x		
New Scotland-Leeds-Pleasant Valley Alternative 1 – I-87 ROW		x			
Knickerbocker Switchyard-Pleasant Valley Alternative 1 – I-87 ROW					
Knickerbocker Substation-Pleasant Valley Alternative 1 – I-87 ROW					
New Scotland-Pleasant Valley Alternative 2 – 115 kV ROW				X	
Knickerbocker Substation-Pleasant Valley Alternative 2 – 115 kV ROW					
Knickerbocker Switchyard-Pleasant Valley Alternative 2 – 115 kV ROW					x
Series compensation on Fraser-Gilboa 345 kV circuit			x	x	x
Loop existing Marcy-Coopers Corner 345 kV to Fraser substation;			x	x	x
Series compensation on Marcy-New Scotland 345 kV circuit;				x	
Series compensation on the Edic-New Scotland 345 kV circuit.				x	
Edic-Princetown-Knickerbocker (as proposed by others)					X

*Organization of the Filing*

The remainder of this filing includes the information requested in Appendix B of the December 16 Order related to the New York Independent System Operators Open Access Transmission Tariff Attachment Y Sections 31.4.4.1 Developer Qualification and Timing and 31.4.5.1 Project Information Requirements, and the information requested in Appendix C of the December 16 Order. For easy reference, the selected text is provided at the beginning of each response in underlined text.

## APPENDIX B INFORMATION: DEVELOPER QUALIFICATION AND TIMING

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### 2.1 SECTION 31.4.4.1.1 INFORMATION

31.4.4.1.1 The technical and engineering qualifications and experience of the Developer relevant to the development, construction, operation and maintenance of a transmission facility, including evidence of the Developer's demonstrated capability to adhere to standardized construction, maintenance, and operating practices and to contract with third parties to develop, construct, maintain, and/or operate transmission facilities.

#### *Overview of Technical and Engineering Qualifications and Experience*

North America Transmission, LLC and North America Transmission Corporation (collectively "North America") are members of the LS Power group of companies ("LS Power"). LS Power is an experienced developer of large-scale energy projects, including several transmission projects. Since 1990, LS Power has had the technical and engineering capability to develop, own and/or operate over 32,000 megawatts ("MW") of power generation facilities and two large extra high-voltage (345 kV and 500 kV) transmission projects totaling over 700 circuit-miles. Since its inception, LS Power has raised over \$29 billion of debt and equity for investment into its projects and portfolio of subsidiary companies, including over \$900 million for the construction of the two large-scale overhead transmission line projects completed in 2013. Further information is available at [www.lspower.com](http://www.lspower.com).

LS Power has experience in developing, owning and operating transmission facilities both as an element of its experience in developing, owning and operating generation facilities and as an independent transmission developer. LS Power has found that its expertise in the development of power generation facilities translates well to the development of large-scale transmission facilities. LS Power initiated its independent transmission development efforts in 2005 with a project in Nevada and Idaho. In 2009, an LS Power entity was selected by the Texas Public Utility Commission as one of the best qualified new entrants for designation for construction of new transmission facilities, and the Texas Public Utility Commission specifically found that an LS Power entity is one of the new entrants that "possess the current and expected capabilities to adequately finance, license, construct, operate, and maintain the facilities in the most beneficial and cost-effective manner." Each of these initial independent transmission projects began construction in 2011, were completed in 2013, and are currently in operations. Although LS Power's efforts in the transmission space are relatively new, the advanced state of the transmission project pipeline speaks volumes for the Company's capabilities.

*Technical and Engineering Qualifications and Experience in Generation*

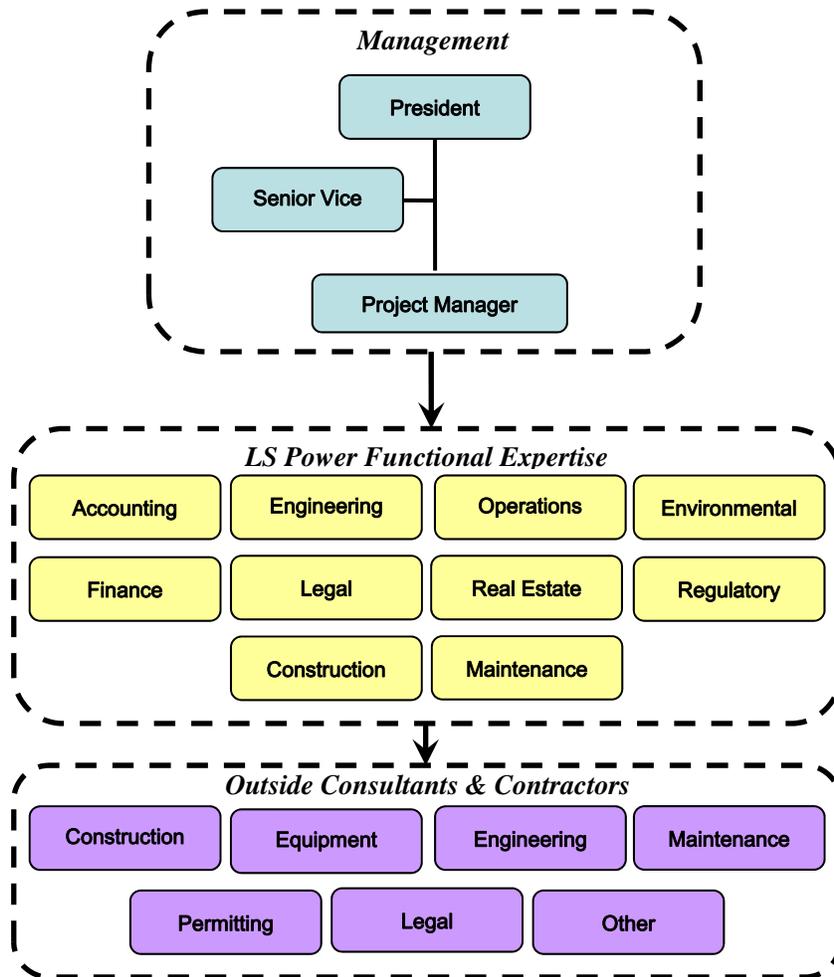
LS Power also has demonstrated the technical and engineering capability to develop, own, and/or operate the generation facilities representing listed in the table below.

<b>Project (State)</b>	<b>Capacity (MW)</b>	<b>Fuel</b>	<b>Permitting &amp; Development</b>	<b>Construction Management</b>	<b>Operation</b>	<b>Current LS Power Ownership</b>
Lockport (New York)	200	NG	X			
Whitewater (Wisconsin)	245	NG	X	X	X	
Cottage Grove (Minnesota)	245	NG	X	X	X	
Mustang (Texas)	487	NG	X	X		
Blackhawk (Texas)	230	NG	X			
Batesville (Mississippi)	837	NG	X	X		
Kendall (Illinois)	1,160	NG	X	X	X	
Plum Point (Arkansas)	665	Coal	X	X		
Sandy Creek (Texas)	890	Coal	X	X	X	X
Dover Sun Park (DE)	10	Solar	X	X	X	X
West Deptford (NJ)	738	NG	X	X	X	X
Arlington Valley Solar (Arizona)	125	Solar	X	X	X	X
Centinela (California)	175	Solar	X	X	X	X
Rocky Road (IL)	330	NG			X	X
Tilton (IL)	176	NG			X	X
University Park (IL)	840	NG			X	X
Bluegrass (Kentucky)	486	NG			X	X
Riverside (Kentucky)	836	NG			X	X
Calhoun (Alabama)	668	NG			X	X
Cherokee (South Carolina)	98	NG			X	X
Doswell (Virginia)	776	NG			X	X
Renaissance (MI)	644	NG			X	X
Wallingford (CT)	225	NG			X	X

<b>Project (State)</b>	<b>Capacity (MW)</b>	<b>Fuel</b>	<b>Permitting &amp; Development</b>	<b>Construction Management</b>	<b>Operation</b>	<b>Current LS Power Ownership</b>
DeSoto (Florida)	320	NG			X	X
Lake Lynn (WV)	52	Hydro			X	X
Seneca Pumped Storage (PA)	451	Hydro			X	X
Various Small Hydro (VA, WV, PA)	24	Hydro			X	X
Millennium (Massachusetts)	360	NG			X	
Athens (New York)	1,080	NG			X	
Covert (Michigan)	1,100	NG		X	X	
Harquahala (Arizona)	1,092	NG		X	X	
Granite Ridge (NH)	750	NG			X	
Ontelaunee (FL)	560	NG			X	
Moss Landing (CA)	2,529	NG			X	
Morro Bay (CA)	1,002	NG			X	
South Bay (CA)	700	NG			X	
Oakland (CA)	165	Oil			X	
Arlington Valley (AZ)	570	NG			X	
Griffith (AZ)	600	NG			X	
Bridgeport (CT)	490	NG			X	
Casco Bay (Maine)	520	NG			X	
Bosque (Texas)	770	NG			X	
Sugar Creek (IN)	561	NG			X	
West Georgia (GA)	613	NG			X	
Zeeland (Michigan)	903	NG			X	
Shady Hills (Florida)	469	NG			X	
Apex (AZ)	527	NG			X	
Blythe (AZ)	507	NG			X	
Safe Harbor (PA)	139	Hydro			X	

### Technical and Engineering Organization and Approach

LS Power executes its transmission projects through an efficient organization leveraging its own internal employee expertise in combination with external resources as appropriate. This approach is outlined on the organization chart below for each phase of a project development, construction and operations. LS Power assigns an individual project manager with the responsibility for overall project activities during each of the project phases. LS Power has significant development, construction, and operation functions in St. Louis, New Jersey, New York City, and San Francisco.



LS Power applies this approach to all of its project, including its past transmission development projects.

## *Technical and Engineering Qualifications and Experience – Past Transmission Projects*

LS Power has two independent transmission development projects currently operating. Cross Texas Transmission, LLC operates its high-voltage transmission system within the ERCOT grid in Texas. ON Line is a high-voltage transmission line operating in Nevada developed by Great Basin Transmission - South, LLC.

### **Cross Texas**

Cross Texas, a subsidiary of LS Power Associates, LP, is a rate-regulated Texas public utility operating within the area operated by the Electric Reliability Council of Texas. Cross Texas was selected in early 2009 by the Public Utility Commission of Texas (“PUCT”) to construct, operate and maintain a portion of the Competitive Renewable Energy Zone (“CREZ”) Transmission Plan within Texas, which is being developed to enable the delivery of renewable resources. The transmission service providers were selected through a competitive process including incumbent utilities and new entrants. The PUCT determined Cross Texas to be one of the new entrants best qualified to develop, own, and operate a portion of participate in the CREZ Transmission Plan.

The Cross Texas facilities consist of approximately 240 miles of double circuit 345 kV transmission lines and associated equipment (e.g. two new substations, series compensation, etc.) located in a seven-county area in the Texas Panhandle with a capital cost of approximately \$450 million. These Cross Texas facilities include the Gray to Tesla 345-kV transmission line, the Gray to Alibates 345-kV transmission line, the Tule Canyon to Tesla 345-kV transmission line, the Gray Substation, and the Cross Substation. Cross Texas has development and construction capabilities both in 345 kV transmission line and substation facilities. Additionally, Cross Texas has built transmission facilities necessary to connect power generators to its system. For example, Cross Texas has placed in service a new substation, named Railhead Substation, on the Gray to Alibates transmission line pursuant to serve a new interconnection customer. Beginning with its selection in 2009, Cross Texas has developed and constructed its initial Texas transmission facilities. In 2009, Cross Texas established the appropriate code of conduct practices to comply with Texas public utility laws in Texas. Consistent with its Code of Conduct, LS Power has established separate, secure space for Cross Texas operations, maintains independent books and records and conducts regular training of all company employees regarding the Code of Conduct and its requirements.

Upon selection, Cross Texas conducted extensive community outreach, obtained routing approval from the Public Utility Commission of Texas, completed engineering and executed procurement and construction contracts for the project. Cross Texas was able to reach settlement in all three of its Certificate of Convenience and Necessity proceedings, where accommodations were reached with all 73 intervening parties on an acceptable route. These intervening parties in the Texas proceeding included landowners, utilities, Public Utility Commission of Texas Staff, and the Texas Parks and Wildlife Department.

In 2010 and 2011, Cross Texas obtained the following final and non-appealable permits and approvals required for construction for all of its proposed 240 miles of double circuit 345 kV transmission lines and associated equipment and substations:

- Public Utility Commission of Texas Certificate of Convenience and Necessity;
- Texas General Land Office approvals for crossing submerged land;
- Nationwide Permit 12 (Federal Clean Water Act Section 404 Permit approval);
- Informal Consultations with US Fish and Wildlife and Texas Parks and Wildlife Department;
- Federal Aviation Administration No Hazard Determination;
- Texas Historical Commission Approval;
- Texas State Highway Crossing Approval; and
- Various Electric Utility and Pipeline Crossings Approvals.

Cross Texas Transmission Project has had numerous proceedings before the Public Utility Commission of Texas (“PUCT”). Cross Texas Transmission, LLC provided testimony supporting its Certificate of Convenience and Necessity for the Gray to Tesla 345 kV CREZ transmission line (PUCT Docket No. 37956), its Certificate of Convenience and Necessity for the Silverton to Tesla 345 kV CREZ transmission line (PUCT Docket No. 38435), and its Certificate of Convenience and Necessity for the Gray to White Deer 345 kV CREZ transmission line (PUCT Docket No. 38650).

Cross Texas Transmission obtained 240 miles of transmission line rights-of-way, predominantly on private lands. This required applying for and receiving three Certificates of Public Convenience and Necessity from the Public Utility Commission of Texas. First, Cross Texas completed routing studies and identified preferred and alternative routes, held a dozen public meetings, provided landowner notification, and negotiated provisions to minimize impacts on landowners. Cross Texas conducted landowner outreach and consultation prior to identification of proposed transmission line routes, during permitting, and after receiving final routing approval. As an integral element of its outreach program, Cross Texas consulted with landowners to gain an understanding regarding any concerns they may have as to the impact ROW. The public meetings and stakeholder outreach conducted by Cross Texas exceeded requirements as detailed in the Texas Public Utility Regulatory Act. Outreach included 12 public meetings, notices, individual landowner meetings, and meetings with state and local agencies. Cross Texas also had extensive one-on-one meetings and public presentations to local community leaders and community groups, presentations at area industry events, and sponsored local community events. Cross Texas provided notices to over 1,450 stakeholders, and negotiated nearly 400 easements.

Cross Texas utilized an efficient mix of structure types that included tubular steel for tangents and lattice steel for angles and dead-ends. Cross Texas included a new greenfield 345 kV EHV substation, one series compensation station, and associated facilities. LS Power oversaw the design of these substations including communication and control, protections, and innovative human-machine interface. The Cross Texas Project is designed for ice loads and extreme winds

in rural Texas.<sup>7</sup> Difficult access, EHV, storm runoff, oil containment, lattice towers, and conductors were all specific design issues encountered with the Cross Texas Transmission project. In addition, the design included a long span river crossing. Constructability reviews were performed to ensure the project could be efficiently constructed. The lattice tower facility underwent full-scale load testing.

Cross Texas has staff in Amarillo, Texas and Austin, Texas with support from LS Power corporate support services employees in other offices. Maintenance is conducted by Cross Texas staff with the support of third party contractors. Zachry Industrial, Inc. provides inspection and emergency response services. Cross Texas is currently registered with NERC as a Transmission Planner, Transmission Owner, and Transmission Operator. Cross Texas's initial NERC audit (related to Transmission Planning functions) had no findings of non-compliance.

### **ON-Line**

LS Power began its development of the Southwest Intertie Project ("SWIP") in 2005. The SWIP is an approximate 570-mile, 500 kV transmission line traversing from southern Idaho to southern Nevada that had been previously initiated by Idaho Power. The SWIP is being developed in two phases.

Phase 1, the One Nevada Transmission Line ("ON Line"), represents approximately 235 miles of single-circuit 500 kV overhead transmission and associated transmission facilities which recently completed construction jointly NV Energy. The 235-mile-long line connects the Harry Allen Substation (Nevada Power Company) north of Las Vegas with the newly constructed 500 kV Robinson Summit Substation located 20 miles west of Ely, Nevada. Robinson Summit also interconnects with the existing NV Energy (Sierra Pacific Power Co.) Falcon-to-Gonder 345 kV line. The newly constructed Robinson Summit Substation includes two 600 MVA 345 kV phase-shifting transformers, and two 345 kV phase-shifting transformers, and two 345 kV line terminals. One phase-shifting transformer will connect the newly reconfigured Falcon-Robinson Summit 345 kV line and the other will connect the Robinson Summit- Gonder 345 kV line. Both the 500 kV and 345 kV yards are a breaker and one-half configuration. Self-supporting steel poles and H-frame structures are used in certain areas of the line to minimize impacts on Greater Sage Grouse and the Mojave Desert Tortoise or in areas requiring heavy angles or dead-end structures.

The ON Line project enables the development of numerous renewable energy projects in Nevada, connects NV Energy's two main service areas (Nevada Power Company and Sierra Pacific Power Co.) for the first time, and enhances the overall energy-sharing efficiencies for NV Energy's power generation resources.

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<sup>7</sup> The panhandle of Northern Texas can experience heavy ice and snow as well as heavy winds. The area is NESC heavy and the design criteria included consideration of 2.5 cm radial ice loading with 65 kph win. The maximum wind design speed is 160 kph with a 1.1 safety factor. There have been no failures due to ice, wind, or other phenomenon.

Great Basin Transmission – South, LLC, the LS Power affiliate which is the co-owner of ON Line, obtained all required right-of-way grants and private easements including acquisition of all major permits and approvals required for construction such as NEPA review and Right-of-Way Grant (for 235 miles), Endangered Species Act consultation, and approval of a detailed Construction, Operation and Maintenance Plan by the Bureau of Land Management. The environmental review was prepared by BLM as the lead agency, with the involvement of the Forest Service, National Park Service, Bureau of Indian Affairs, and Bureau of Reclamation as cooperating agencies.

In August 2010, Great Basin Transmission and NV Energy entered into a Transmission Use Agreement. The Transmission Use Agreement has been approved by the Public Utilities Commission of Nevada and the Federal Energy Regulatory Commission. ON Line demonstrates LS Power’s ability to develop and construct 500 kV transmission facilities and work cooperatively with incumbent transmission owners to the benefit of all project participants. In February 2011, Great Basin Transmission arranged construction financing for its ownership in ON Line, in part through participation in the DOE’s Loan Guarantee Program. In order to qualify for the program, DOE completed extensive due diligence on LS Power’s development, construction and operating capabilities and the project permits and arrangements.

LS Power affiliates have obtained permits for construction of the majority of Phase 2 of SWIP, with commencement of construction subject to satisfactory cost recovery arrangements. The second phase of SWIP, comprised of the 275-mile single circuit 500 kV AC transmission line northern portion is known as “SWIP-North” will run from the Midpoint substation near Twin Falls, Idaho to the Robinson Summit substation near Ely, Nevada. SWIP-North has received major regulatory approvals including the completion of the Federal NEPA process. The Bureau of Land Management has approved the project’s Construction, Operation, and Maintenance Plan and issued a Notice-to-Proceed for construction for the project. In addition, LS Power affiliates are currently permitting the Harry Allen to Eldorado 500 kV line.

LS Power affiliates recently have secured approximately 515 miles of rights-of-way, including approximately 456 miles on federal lands over the past several years. For ON-Line, the entire right of way was on BLM land except for one quarter-mile segment of privately owned land. Obtaining this federal right-of-way required compliance with the National Environmental Protection Act and a full environmental review and BLM Decision Record on the entire 235 miles of the transmission line. This included development of a comprehensive Construction Operation and Maintenance Plan, a detailed document which identified the specific location of all towers in the field, along with all project disturbances during construction, operation and maintenance, including construction laydown, tensioning sites, etc. and required cultural, biological resource investigation of all affected areas, and identification of best management practices and all methods to ensure compliance with the provisions of the projects approval. The project design and construction incorporated a significant number of mitigation measures and best management practices to mitigate impacts on wildlife, avian species, archaeological, paleontological, and cultural resources and avoid the spread of invasive weeds.

The ON-Line project is located in remote areas of Nevada with difficult access. With ON-Line, LS Power has had design experience with 500 kV substations including power systems communications and control, extra high voltage system protection, and single pole relaying of lines. The ON-Line design included considerations for icing conditions that occur at higher elevations where ON-Line crossed three mountain ranges and traversed through wide basins. Ice loads, difficult access, EHV, storm runoff, oil containment, lattice towers, and conductors were all specific design issues encountered with the ON-Line project. Many of the structures on the line are an innovative tubular guyed-V design. The tubular guyed-V had all the advantages of a lattice guyed-V with the added benefits of reduced assembly cost and of specific environmental mitigation benefits to protect sensitive species (Greater Sage Grouse and Mohave Desert Tortoise). The tubular guyed-V was also selected for its constructability, and engineered for constructability with pre-cast foundations and innovative grouted earth anchors. The design included determining the structure geometry to provide adequate electrical clearances to the structures or other conductors to allow for live line maintenance. The tubular guyed-V towers underwent full scale tower testing. The lattice tower family for the project also underwent tower testing.

ON Line consists of approximately 850 total tower structures, nearly 11 million feet of conductor and 25 million pounds of steel. LS Power competitively sourced and negotiated equipment and material supply contracts and construction contracts to ensure competitive pricing. LS Power affiliates have contracted with NV Energy to provide O&M services for ON Line.

#### *Demonstrated Capability to Adhere To Standardized Construction, Maintenance, and Operating Practices*

LS Power affiliates managed the engineering, procurement and construction for the Cross Texas Transmission Project (237 miles, 345 kV double circuit transmission lines and associated substations) and the ON-Line Project (239 miles, 500 kV transmission lines and associated substations).

All of LS Power's projects have requirements to be constructed, maintained and operated in accordance with a long list of requirements including codes and standards, such as the National Electrical Safety Code, NERC Standards, and manufacturers recommendations. LS Power does not accept completion of a facility from a construction contractor until it has been confirmed that all Good Utility Practice, RTO standards, and industry standard requirements have been met. This has been the case and is currently the case for each of the 15 large-scale construction projects overseen by LS Power as owner or manager, representing over \$8 billion in invested capital, and including two independent transmission projects.

Construction and Project Management is the critical element in ensuring that facilities are completed in a manner which is the most beneficial and cost-effective. Poor construction management can result in cost over-runs and project delays. LS Power has performed

construction and project management for all of its generation facilities and transmission facilities. Since Construction and Project Management is critical for the success of a project, it is LS Power's practice to perform its own Construction and Project Management and not trust this function to an outside Owner's Engineer.

The Construction and Project Manager will have the support of many engineers and inspectors and also draws upon other resources and experts throughout LS Power, such as legal, regulatory, and accounting. The responsibilities of the Construction and Project Manager include:

- Administer the procurement and construction contracts
- Oversee day-to-day construction
- Monitor the construction contractor's safety and hazardous materials management programs
- Implement any change orders in accordance with the change order procedures
- Ensure construction is performed in accordance with the requirements of the contracts including adherence to all standardized construction practices
- Inspect major equipment to the extent prudent and permitted during the manufacture, installation and testing of such items
- Prepare schedules and hold regular coordination meeting
- Prepare reports required under various permits and approvals
- Provide regular monitoring and monthly reporting of the status of the construction, engineering status, procurement status, safety report, and other activities relative to the schedule, with commentary on any issues that have arisen or are expected to arise in the future. Identify variances and delays and recovery plans and acceleration efforts
- Prepare monthly reports of actual expenditures vs. budget
- Review monthly progress estimates and requests by the EPC Contractor for payment; make monthly cash flow projections; make recommendations for payment and assist in preparations of draw requests
- Obtain, or assist the construction contractor in obtaining any necessary construction and building permits
- Audit quality assurance/quality control programs
- Coordinate with the construction contractor, lender's engineer, and adjacent utilities in testing and placing the facilities in service
- Review the checkout of equipment for readiness for start-up and testing and review turnover packages
- Administer the construction contract requirements for punchlists
- Upon notification by the construction contractor that it has achieved a milestone for its work or a designated portion thereof, verify, that such event has occurred in accordance with the terms of the construction contract or inform the construction contractor of any incomplete or unsatisfactory items
- Prepare a final construction cost completion report and an appropriately detailed accounting

Similarly, once construction is complete the project manager is responsible for operations and maintenance, including adherence to standardized operating and maintenance practices. LS Power operates and maintains its facilities in compliance with a long list of requirements including codes and standards, such as the National Electrical Safety Code, NERC Standards, and manufacturers recommendations. For example, Cross Texas, in its responsibilities as a Transmission Operator and Transmission Owner under NERC, and as a Transmission Service provider in ERCOT, has an extensive set of dozens of policies and procedures governing its operations and maintenance to ensure compliance, and documents and audits its compliance with these policies and procedures.

*Demonstrated capability to contract with third parties to develop, construct, maintain, and/or operate transmission facilities*

LS Power negotiated, executed, and managed dozens of contracts for the development, construction, operations and maintenance of the Cross Texas project. During development, this included contracts for Legal Services, Engineering Services, Environmental Consulting Services, Surveying, Right-of-Way Field Services, Geotechnical Investigation Services, and many others. During construction LS Power oversaw the engineering, procurement and construction of the Cross Texas Transmission Project which included contracts for Transmission Line Construction, Foundation Construction, Transmission Line Engineering, Substation Engineering Procurement and Construction, Environmental Services, Environmental Studies and Compliance, Construction Inspection, Lattice Steel Supply, Tubular Steel Supply, Series Compensation Equipment Supply, and other contracts. During operations, third party contracts are maintained for emergency response, legal services, compliance auditing, and many other ongoing service and supply contracts.

Similarly, LS Power arranged contracts to develop the ON Line Project including Engineering Services, Environmental Consulting Services, Surveying, Geotechnical Investigation Services, Legal Services, and many others. LS Power arranged the contracts to construct the ON-Line Project. This included contracts for Transmission Line Construction, Substation Construction, Foundation Construction, Telecommunications Facilities Construction, Telecommunications Equipment Supply and Engineering, Transmission and Substation Engineering, Engineering Equipment Procurement, Environmental Monitoring Services, BLM Compliance Inspection, Material Procurement including Lattice Steel Supply and Tubular Steel Supply, and other contracts.

## 2.2 SECTION 31.4.4.1.2 INFORMATION

31.4.4.1.2 The current and expected capabilities of the Developer to finance, develop and construct a transmission facility and to operate and maintain it for the life of the facility. For purposes of this criteria, the Developer shall provide the ISO a description of transmission facilities (not to exceed ten) that the Developer has previously developed, constructed, maintained or operated and the status of those facilities, including whether the construction was completed, whether the facility entered into commercial operations, whether the facility has been suspended or terminated for any reason, and evidence demonstrating the ability of the Developer to address and timely remedy any operational failure of the facilities.

The table on the next page summarizes the requested information for each of the Cross Texas Transmission, LLC project, the ON Line Project, the Southwest Intertie Project (Phase 2) and various generator interconnections developed, owned, and operated by LS Power over its history.

	Cross Texas Transmission	ON Line	Southwest Intertie Project (Phase 2)	Generator Interconnections
Description	ERCOT Transmission Service Provider with 240 mile, 345 kV transmission system in Texas	235 mile, 500 kV transmission line in Nevada	260 mile, 500 kV transmission line in Nevada and Idaho	Interconnecting transmission lines for owned generation up to 500 kV
Permitting & Development	Permitted and developed by LS Power	Permitted and developed by LS Power	Permitted and developed by LS Power	Several facilities have been permitted and developed by LS Power including in Arizona, California, New Jersey, and Mississippi
Financing	Financed by LS Power	LS Power financed its ownership share	LS Power has funded development. Construction financing not yet arranged	Financed by LS Power
Construction Management	Construction management by LS Power	Construction managed by co-owner	Construction not begun	LS Power construction management of transmission facilities including in Arizona, California, New Jersey, and Mississippi
Operations and Maintenance	Operations and maintenance by LS Power	Operations and maintenance by co-owner	Not in operations	LS Power operations and maintenance of transmission facilities including in Arizona, California, New Jersey, and other states
Completed/Status	Completed in 2013 and operating	Completed in 2013 and operating	Construction not begun	Construction complete on all facilities, operating
Suspended or Terminated Operation for Any Reason	No	No	No	No
Ability to timely remedy operational failure	Field staff supported by third-party contractor	Operations, maintenance and emergency response by co-owner	Not applicable	On-site staff supported by third-party contractor

To conduct its transmission operations, North America Transmission may rely on a combination of internal resources, corporate support services from affiliates, and third party contractors. For example, Cross Texas Transmission, which is owned by LS Power Associates, LP is a transmission service provider and public utility with transmission facilities in eight counties in the Texas Panhandle. Cross Texas conducts its operations through 26 direct employees supported by approximately 4 full-time equivalents of corporate support personnel (representing contributions of dozens of corporate support personnel). Direct employees include management, operators, field personnel, planning, compliance, accounting, and administrative personnel. Corporate support personnel provide services which include management, accounting, engineering, and other functions. Outside contractors provide expertise and resources for emergency response, legal services, and many other services. Specific details of operations for North America Transmission will vary as a function of the location, size and nature of facilities owned and operated at any particular time, as well as partnerships formed on a case-by-case basis.

The ability to address and timely remedy operational failure has several elements. First is system protection and control, which will be incorporated into any facilities developed, constructed and operated by North America Transmission in accordance with NYISO and NERC standards. The second is transmission operations including monitoring and control. And finally there is the ability to respond to an operational failure in the field including system restoration.

LS Power is capable of performing transmission operations. Its affiliate, Cross Texas, has a primary control center and a back-up control center, both in Austin, Texas. Texas Reliability Entity, Inc. has completed its review and certified the facilities in 2014 and Cross Texas is registered with NERC as a Transmission Operator and is performing its own transmission system operations. Real time system operations of future North America Transmission facilities can be conducted from the NERC certified primary and back-up control centers in Austin, Texas.

North America Transmission has no record of past reliability performance. Its affiliate Cross Texas, owned by LS Power Associates, LP, had a short but very successful operations history. While operating for a period just over one year, Cross Texas experienced no OSHA-recordable accidents, no significant reliability events, no compliance violations, no environmental events, and incurred no fines from regulatory entities. Cross Texas has had excellent reliability performance, with no material outages. During Q1 2014, the TCOF was 0.0 for Cross Texas, compared to .28 overall for all facilities under Texas Reliability Entity, and .29 for NERC overall.

The specific level of staffing for maintenance and emergency response for North America Transmission will vary depending on the scope of facilities. For example, Cross Texas has seven employees in its Amarillo field office including maintenance personnel, materials management, right-of-way management, management and administrative personnel. This

staff is supported through a service level agreement with an outside contractor with a large staff of qualified linemen in the area of the facilities.

It is likely that whatever level of internal resources developed by North America Transmission that an outside contractor will also be engaged for emergency response and maintenance. LS Power has entered into an alliance agreement with MYR Transmission Services, Inc. for transmission line maintenance, substation maintenance, vegetation maintenance, and emergency response for independent transmission projects including NYISO projects. MYR has over 120 years of experience and over 3,000 employees nationwide, including Harlan Electric Company. For more than a century, MYR Group has restored power to utility customers throughout the continental U.S. from damage caused by ice storms, wind storms, hurricanes, tornadoes, lightening and earthquakes. As one of the largest nationwide specialty electrical contractors, MYR Group has personnel and equipment resources required to quickly and efficiently respond to the needs of LS Power affiliates, including North America Transmission, LLC. Harlan Electric Company has successfully completed hundreds of substation, transmission line and distribution system projects throughout the upper Midwest and northeastern United States and has equipment and qualified crews which provide emergency restoration services.

### 2.3 SECTION 31.4.4.1.3 INFORMATION

31.4.4.1.3 The Developer's current and expected capability to finance, or its experience in arranging financing for, transmission facilities. For purposes of the ISO's determination, the Developer shall provide the ISO:

- (1) evidence of its demonstrated experience financing or arranging financing for transmission facilities, including a description of such projects (not to exceed ten) over the previous ten years, the capital costs and financial structure of such projects, a description of any financing obtained for these projects through rates approved by the Commission or a state regulatory agency, the financing closing date of such projects, and whether any of the projects are in default;
- (2) its audited annual financial statements from the most recent three years and its most recent quarterly financial statement or equivalent information, if available;
- (3) its credit rating from Moody's Investor Services, Standard & Poor's, or Fitch or equivalent information, if available;
- (4) a description of any prior bankruptcy declarations, material defaults, dissolution, merger or acquisition by the Developer or its predecessors or subsidiaries occurring within the previous five years; and
- (5) such other evidence that demonstrates its current and expected capability to finance a project to solve a Public Policy Transmission Need.

LS Power has a demonstrated capability to finance large energy projects, including transmission projects. Since its inception, LS Power has raised over \$29 billion in debt and equity financings. Specific to development, LS Power affiliates have successfully developed over 9,000 MW of power generation and 470 miles of long-distance, high-voltage transmission infrastructure throughout the United States, with a combined capital cost of over \$8 billion.

The common feature of all these financings is that a project-specific subsidiary created by LS Power, like North America, raises the capital required to construct, acquire, and/or operate a power-related business, with equity support and asset management services provided by LS Power. At financial close, the equity investor irrevocably commits to provide equity capital to the project-specific company that is used as the equity component of the financing for construction of the project. All committed financings, including sponsor equity, are sized in consideration of capital cost estimates that assume a reasonable contingency for unplanned cost overruns. In addition to reasonable contingency, the size of the financing also funds the transmission project through its life cycle – development, construction and operations. This organizational model insulates each LS Power subsidiary from the financial impact and operational risk of each of the other businesses, inherently providing an assurance of discipline and financing commitment to each business's counterparties. Every LS Power-sponsored business that has been taken to the financing community has been successfully financed. LS Power has been successful in raising capital in accommodative markets, and at times of market distress. For instance, the \$1.6 billion of

Sandy Creek Energy Associates closed at the end of August 2007, as the recent credit adjustment was taking shape and other borrowers were shut out of the credit markets.

LS Power anticipates arranging financing for North America Transmission in this same manner. LS Power arranges debt in the various debt markets on a project-by-project basis based on the market conditions at the time. LS Power has excellent relationships with investors and debt providers. In 2011, LS Power raised over \$900 million for the construction of two large-scale transmission line projects, each on a project finance basis, summarized in the table below.

	Cross Texas	ON Line
Description	Financing of initial construction of high-voltage transmission system in Texas	Financing of construction of ownership share of high-voltage transmission line in Nevada
Financial Closing	July 2011	February 2011
Capital Cost	\$460 million	\$430 million
Financial Structure	Construction for Cross Texas Transmission was financed with a mix of equity and delayed draw commercial bank facilities. The commercial bank facilities were comprised of approximately \$260 million in construction/term loans, and \$10 million in working capital facilities. The balance of the financing was through equity. These construction loans were refinanced with term loans in September 2014.	Great Basin Transmission South, LLC financed its 75% undivided ownership interest in ON Line through the Federal Financing Bank, guaranteed by the U.S. Department of Energy. The debt is in the form of senior secured fixed rate notes with a final maturity of 30 years from initial draw.
Commission or state regulatory agency rate approval	The financing was in anticipation of rates to be set by the Public Utility Commission of Texas, which occurred in an initial rate case prior to the completion of construction (order issued January 2013).	The financing was supported by rates to be charged by Great Basin Transmission-South to NV Energy under a Transmission Use and Capacity Exchange Agreement which was approved by the Public Utilities Commission of Nevada and the Federal Energy Regulatory Commission.
In default	No	No

An example of LS Power's ability to finance a significant transmission investment is Cross Texas. Cross Texas was financed in July 2011 on a non-recourse project finance basis with 55% debt and 45% equity, prior to completion of its initial rate case. The financing was supported by the credit of Cross Texas as a rate-regulated transmission-only utility under the jurisdiction of the Texas Public Utility Commission. Cross Texas filed its initial rate case in August 2012, and reached a settlement with all interveners to set its initial rates and tariff. BNP Paribas was the Lead Arranger and Administrative Agent for Cross Texas Transmission.

Historically, LS Power-sponsored projects have attracted equity financing both from the LS Power Group and third-party investors such as insurance companies, private equity investors, and other institutional investors. The mix of equity investors depends on market conditions and the investment appetite of various types of equity investors at the time of financial close.

LS Power's financing and structuring expertise has been recognized with awards such as the 2006 Americas Power Deal of the Year (Project Finance International), a three-time recipient of the North American Single Asset Deal of the Year (2006, 2007, and 2012 Project Finance Magazine).

LS Power's non-public financial statements were provided to the NYISO in the qualifications submittal of North America pursuant to the NYISO OATT, as non-public financial qualification information under Section 31.4.4.1.3 and was designated as "Confidential Information." However, the confidentiality provisions in this proceeding provide for representatives of competitors to obtain confidential information under a protective order. Therefore financial statements are not being filed with this submittal, even on a confidential basis. LS Power does not have any credit rating available from Moody's Investor Services, Standard & Poor's, or Fitch.

North America has had no prior bankruptcy declarations, material defaults, dissolution, merger or acquisition. LS Power has had no history of material bankruptcy or merger transactions during the calendar years 2009 through 2014. LS Power Associates, L.P. has had a number of purchases and sale/dissolution transactions during those years, primarily related to generation facilities. The following purchases and sale/dissolutions occurred during those years related to transmission:

- January 2009: Dissolved a 50%/50% joint venture with an unaffiliated partner. Associates received cash and full ownership and development rights to the projects not related to their joint venture partner's existing operating portfolio of assets.
- February 2011: In connection with the financing of the ON Line project and under the Transmission Use and Capacity Exchange Agreement, sold to an unaffiliated third party, a 25% undivided interest in a transmission line development project and the rights to a portion of the transmission line's capacity once operational. Under the terms of the arrangement, the parties jointly construct, and own the transmission

line. The acquiring entity was responsible for their pro rata share of the construction cost of the line and pays a fee, to the Associates' subsidiary, for the use of the transmission line during operations.

- July 2011: An indirect wholly owned subsidiary of Associates admitted an unaffiliated third party as an owner and assigned to the third party a share of its equity interest. The new owner assumed a portion of Associates' capital contributions and commitments for two transmission line development projects.

## APPENDIX B: PROJECT INFORMATION REQUIREMENTS

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The project information description herein is a summary level, with engineering data sufficient for the NYISO to begin a comparative evaluation, to be supplemented with more detailed filings on January 20, 2015 and March 2, 2015, in accordance with the December 16 Order and December 30, 2015 ruling on extension requests. As clarified in the December 30, 2014 letter ruling, the total cost estimated provided in response to item (12) is North America's binding cost estimate for each project component.

### 31.4.5.1 Project Information Requirements

Any Developer seeking to offer a transmission solution for Public Policy Transmission Needs must provide, at a minimum, the following details:

#### (1) contact information;

Lawrence Willick  
Senior Vice President  
LS Power Development, LLC  
400 Chesterfield Center, Suite 110  
St. Louis, MO 63017  
[lwillick@lspower.com](mailto:lwillick@lspower.com)  
636-532-2200

#### (2) the lead time necessary to complete the project, including, if available, the construction windows in which the Developer can perform construction and what, if any, outages may be required during these periods;

Schedules, including construction, are included in Exhibit 1.

#### (3) a description of the project, including type, size, and geographic and electrical location, as well as planning and engineering specifications as appropriate;

##### *Edic-Fraser*

The Edic to Fraser ("Edic-Fraser") component of the Project consists of a new 345 kV single circuit overhead transmission line, with 25% series compensation, originating at the existing Edic Substation, located in the Town of Marcy, approximately two (2) miles north of the city of Utica in Oneida County, proceeding generally south, and terminating at the existing Fraser Substation, approximately two (2) miles northwest of the Hamlet of Fraser, in the Town of Delhi, Delaware County. The proposed alignment from Edic to Fraser is approximately 80 miles long. The Edic-Fraser component will consist of 2-1590 ACSR

“Falcon” bundled conductor with a normal rating of 1977 MVA. The series compensation equipment would be installed at or near the Edic terminal. The revised design for the transmission line is a single-circuit monopole in vertical configuration resulting in a right-of-way generally 80-100 feet wide, 80 feet wide where the line is adjacent to an existing 345 kV transmission line easement and 100 feet wide elsewhere.

#### *New Scotland-Leeds-Pleasant Valley*

The New Scotland-Leeds-Pleasant Valley component is comprised of the addition of a new 345 kV overhead transmission line from the Niagara Mohawk Power Corporation d/b/a National Grid-owned New Scotland 345 kV Substation, located in Albany County, to the National Grid-owned Leeds 345 kV Substation, located in Greene County to the Consolidated Edison, Inc.-owned Pleasant Valley 345 kV Substation located in Dutchess County. The New Scotland-Leeds-Pleasant Valley component will consist of approximately 65 miles of 2-1590 ACSR “Falcon” bundled conductor with normal rating of 1977 MVA. The revised design for the transmission line is a single-circuit monopole in vertical configuration resulting in a right-of-way generally 80-100 feet wide, 80 feet wide where the line is adjacent to an existing 345 kV transmission line easement and 100 feet wide elsewhere.

#### *New Scotland-Leeds-Pleasant Valley Alternative 1 – I-87 ROW*

One alternate route for the New Scotland to Pleasant Valley transmission line, called New Scotland to Pleasant Valley Alternative 1, begins at the New Scotland Substation in the Town of New Scotland and parallels the CSX RR ROW for 8 miles through the Town of Bethlehem and then turns down the I-87 corridor for 55 miles to Route 299 West and then turns east for 14 miles through the Towns of Lloyd and Hyde Park to the Pleasant Valley Substation in the town of Pleasant Valley. This alternative would divert from the I-87 corridor to connect to the existing Leeds 345 kV Substation. This alternate would be built within the existing I-87 ROW for approximately 62% of its length and new ROW typically 80 to 100 feet wide for the remainder.

#### *Knickerbocker Switchyard-Pleasant Valley Alternative 1 – I-87 ROW*

This alternative could connect with or originate at a new Knickerbocker Switchyard, which would be constructed by NAT and would be located near the intersection of Knickerbocker and Muitzeskill Roads in the Town of Schodack. The Knickerbocker Switchyard would be a 4 breaker ringbus connecting the existing New Scotland-Alps 345 kV transmission line with the new New Scotland-Pleasant Valley transmission line proposed by North America as identified in the substation diagram included in Appendix C. This transmission line would continue at Knickerbocker Substation, proceed west approximately two miles primarily within the CSX RR ROW, cross the Hudson River, proceed west approximately one-half mile within the Town of Coeymans, head southward the I-87 corridor for 55 miles to Route 299 West and then turns east for 14 miles through the Towns of Lloyd and Hyde Park to the

Pleasant Valley Substation in the town of Pleasant Valley. This option would not divert from the I-87 corridor for a connection to the Leeds Substation. This alternate would be built within the existing I-87 ROW for approximately 62% of its length and new ROW typically 80 to 100 feet wide for the remainder.

#### Knickerbocker Substation-Pleasant Valley Alternative 1 – I-87 ROW

This alternative could connect with or originate at a new Knickerbocker Substation, which would be constructed by NAT and would be located near the intersection of Knickerbocker and Muitzeskill Roads in the Town of Schodack. The Knickerbocker Substation would include a “breaker-and-a-half” 345 kV yard connecting the existing New Scotland-Alps 345 kV transmission line with the new New Scotland-Pleasant Valley transmission line proposed by North America and a 345 kV/115 kV transformers, and a 115 kV switchyard looping in the existing Albany Hydro to Valkin 115 kV and Shodack to Churchtown 115 kV transmission lines. This 345 kV transmission line would continue at Knickerbocker Substation, proceed west approximately two miles primarily within the CSX RR ROW, cross the Hudson River, proceed west approximately one-half mile within the Town of Coeymans, head southward the I-87 corridor for 55 miles to Route 299 West and then turns east for 14 miles through the Towns of Lloyd and Hyde Park to the Pleasant Valley Substation in the town of Pleasant Valley. This option would not divert from the I-87 corridor for a connection to the Leeds Substation. This alternate would be built within the existing I-87 ROW for approximately 62% of its length and new ROW typically 80 to 100 feet wide for the remainder.

#### New Scotland-Pleasant Valley Alternative 2 – 115 kV ROW

New Scotland to Pleasant Valley Alternative 2, begins at the New Scotland Substation in the Town of New Scotland and parallels the CSX RR ROW for 8 miles through the Towns of Bethlehem and Coeymans to the location of the Greenbush to Churchtown 115kV corridor in the Town of Schodack; then turns south and follows the Greenbush to Churchtown and Churchtown to Pleasant Valley 115kV corridor for the remaining 54 miles to Pleasant Valley. This Alternative involves demolition of the existing 2 x 115 kV transmission lines<sup>8</sup> and replacement with a new structure that includes the new 345 kV transmission circuit with 2 x 115 kV circuits on the same new towers. These new towers would be no wider than the existing structures and generally the same height as the existing structures, although the new towers may need to be up to 5 to 10 feet taller in some areas to maintain safety clearances. This also requires a reconfiguration of the 115 kV system south of Churchtown as described in the Appendix C information. North America is willing to work with the existing transmission owners related to co-ownership of the new 345 kV/115 kV transmission line resulting from this proposal. This route would be built primarily within the CSX RR ROW and completely within the existing 115kV corridor for nearly its entire length.

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<sup>8</sup> In some cases each of these 115 kV lines are double circuit towers, resulting in 4 circuits. Where there are 2 circuits, North America will be replacing them with 2 circuits. Where there are 4 circuits, North America will be replacing them with 2 circuits. This is described in more detail in the Appendix C information.

#### Knickerbocker Switchyard-Pleasant Valley Alternative 2 – 115 kV ROW

This alternative could connect with or originate at a new Knickerbocker Switchyard, which would be constructed by NAT and would be located near the intersection of Knickerbocker and Muitzeskill Roads in the Town of Schodack. The Knickerbocker Switchyard would be a 4 breaker ringbus connecting the existing New Scotland-Alps 345 kV transmission line with the new New Scotland-Pleasant Valley transmission line proposed by North America. The new 345 kV transmission line begins at Knickerbocker going south and follows the Greenbush to Churchtown and Churchtown to Pleasant Valley 115kV corridor for the remaining 54 miles to Pleasant Valley. This Alternative involves demolition of the existing 2 x 115 kV transmission lines and replacement with a new structure that includes the new 345 kV transmission circuit with 2 x 115 kV circuits on the same new towers. These new towers would be no wider than the existing structures and generally the same height as the existing structures, although the new towers may need to be 5 to 10 feet taller in some areas to maintain safety clearances. This also requires a reconfiguration of the 115 kV system south of Churchtown as described in the Appendix C information. This route would be built primarily within the CSX RR ROW and completely within the existing 115kV corridor for nearly its entire length.

#### Knickerbocker Substation-Pleasant Valley Alternative 2 – 115 kV ROW

This alternative could connect with or originate at a new Knickerbocker Substation, which would be constructed by NAT and would be located near the intersection of Knickerbocker and Muitzeskill Roads in the Town of Schodack. The Knickerbocker Substation would include a “breaker-and-a-half” 345 kV yard connecting the existing New Scotland-Alps 345 kV transmission line with the new New Scotland-Pleasant Valley transmission line proposed by North America and a 345 kV/115 kV transformers, and a 115 kV switchyard looping in the existing Albany Hydro to Valkin 115 kV and Shodack to Churchtown 115 kV transmission lines. The new 345 kV transmission line begins at Knickerbocker going south and follows the Greenbush to Churchtown and Churchtown to Pleasant Valley 115kV corridor for the remaining 54 miles to Pleasant Valley. This Alternative involves demolition of the existing 2 x 115 kV transmission lines and replacement with a new structure that includes the new 345 kV transmission circuit with 2 x 115 kV circuits on the same new towers. These new towers would be no wider than the existing structures and generally the same height as the existing structures, although the new towers may need to be 5 to 10 feet taller in some areas to maintain safety clearances. This also requires a reconfiguration of the 115 kV system south of Churchtown as described in the Appendix C information. This route would be built primarily within the CSX RR ROW and completely within the existing 115kV corridor for nearly its entire length.

#### Series Compensation on Fraser-Gilboa

This consists of the installation of 50% series compensation on the existing Fraser-Gilboa 345 kV circuit at the Fraser terminal. In the event of potential sub-synchronous resonance on existing generators, thyristor controlled series compensation could be one alternative modification.

#### Loop existing Marcy-Coopers Corner 345 kV to Fraser substation

This involves connecting the existing Marcy-Coopers Corner 345 kV circuit to the existing Fraser substation in the Town of Delhi.

#### Series Compensation on Marcy-New Scotland

This consists of the installation of 25% series compensation on the existing Marcy-New Scotland 345 kV circuit at the Marcy terminal.

#### Series Compensation on Edic-New Scotland

This consists of the installation of 30% series compensation on the existing Edic-New Scotland 345 kV circuit at the Edic terminal.

#### (4) evidence of a commercially viable technology;

All of the technology proposed for each of the alternatives consists of equipment and technology that has been used throughout the United States and the world for high-voltage transmission. For example, LS Power has experience with the installation of 345 kV transmission lines and 345 kV series compensation in its Cross Texas project.

#### (5) a major milestone schedule;

Schedules, including major milestones, are included in Exhibit 1.

#### (6) a schedule for obtaining any required permits and other certifications;

The required permitting schedule information is provided in Exhibit 1, including permitting schedules for Edic-Fraser and New Scotland-Pleasant Valley, including the proposed alternatives thereto. It is anticipated that permitting for the alternatives to New Scotland-Pleasant Valley would require the same schedule as for the proposed line since the same major permitting processes are required regardless of which route/alternative is implemented.

As reflected in the permitting schedules, the time required for completing the permitting activities after submittal of the Part B application is estimated at approximately 25 months for the transmission components and approximately 15 months for series compensation that would not require additional ROW.

(7) a demonstration of Site Control or a schedule for obtaining such control;

North America does not currently have site control for the proposed right-of-way (ROW) and easement areas. North America Transmission Corporation is a transportation corporation under New York law with the same rights to acquire ROW as existing utilities. North America estimates approximately 9 months to obtaining the required site control after issuance of the Certificate of Environmental Compatibility and Public Need (Certificate) for the Project.

(8) status of any contracts (other than an Interconnection Agreement) that are under negotiations or in place;

No material contracts under negotiations or in place for construction or financing the Project at this stage of project development as no such contracts are necessary. Services agreements are in place with various consultants and service providers for legal services, engineering services, environmental consulting services, etc.

(9) status of ISO interconnection studies and interconnection agreement;

North America's interconnection request for Edic-Fraser is NYISO Queue number 391 and is in the SRIS stage. North America's interconnection request New Scotland-Leeds-Pleasant Valley is NYISO Queue number 414 and has completed its FES.

(10) status of equipment availability and procurement;

Material and equipment acquisition is expected to commence approximately one year prior to the start of physical construction in the field. Based on our experience with other similar projects this is sufficient lead time to obtain all materials of construction and equipment without negative impact to the Project schedule. Procurement activities will commence after issuance of the Certificate for the Project.

(11) evidence of financing or ability to finance the project;

Please see the information provided in response to item 31.4.4.1.3 above.

(12) capital cost estimates for the project;

The table below summarizes the total binding capital cost estimate for each potential component of the Project. A detailed cost estimate will be provided in the Part A proposal to be submitted by March 2, 2015, but the sum of the detailed cost estimate line items will be the same as the binding estimate shown below.

North America affirmatively states that it accepts the risk sharing proposal set forth in the December 16 order, and that any cost overruns greater than the cost estimates shown below will only be recoverable in its ratebase in an amount of 80% of the cost overrun, with North America bearing 20% of any cost overrun.<sup>9</sup> North America also accepts that the bid price below would cap the costs that may be proposed to FERC for incentives.

In addition, North America proposes the following alternative risk-sharing proposals in this bid:

1. North America will not seek FERC incentive rate adders greater than 100 basis points in total. This will provide significant annual cost savings to ratepayers compared to an alternative with a greater level of incentives and correspondingly higher equity return and allowance for federal income tax.
2. North America takes the approved risk sharing model a step further, in support of its confidence in its cost estimates. North America agrees to bear 25% of any cost overrun greater than 20% of the capital cost estimates shown below<sup>9</sup>.

Component	Capital Cost (\$ Millions)
Edic-Fraser	260
New Scotland-Leeds-Pleasant Valley Base Proposal	201
New Scotland-Leeds-Pleasant Valley Alternative 1 – I-87 ROW	397
Knickerbocker Switchyard-Pleasant Valley Alternative 1 – I-87 ROW	413
Knickerbocker Substation-Pleasant Valley Alternative 1 – I-87 ROW	438
New Scotland-Pleasant Valley Alternative 2 – 115 kV ROW *	518
Knickerbocker Substation-Pleasant Valley Alternative 2 – 115 kV ROW *	559
Knickerbocker Switchyard-Pleasant Valley Alternative 2 – 115 kV ROW *	534
Series compensation on Fraser-Gilboa 345 kV circuit	17.6
Loop existing Marcy-Coopers Corner 345 kV to Fraser substation;	8.0
Series compensation on Marcy-New Scotland 345 kV circuit;	16.8
Series compensation on the Edic-New Scotland 345 kV circuit.	16.8
Edic-Princeton-Knickerbocker (as proposed by others)	

\*Does not include compensation to existing 115 kV transmission line owner (net of salvage value), as these costs are unknown and unknowable at this time. North America is willing to work with the existing transmission owners related to co-ownership of the new 345 kV/115 kV transmission line resulting from this proposal.

<sup>9</sup> Subject to increase to reflect additional identifiable and verifiable costs associated with government-imposed modifications and mandates, the cost of which the developer could not have anticipated in formulating the initial bid price and which result in an increase in cost greater than 5%.

Note that the cost estimates do not include any potential system upgrades and improvements beyond those directly required by the interconnection of the facilities to the system, as the scope of any such improvements is not known. These cost estimates also do not include AFUDC and financing costs, as such costs are not direct capital costs and do not appear to be included in the total capital cost estimates requested in the December 16 Order.

(13) a description of permitting or other risks facing the project at the stage of project development, including evidence of the reasonableness of project cost estimates all based on the information available at the time of the submission; and

At the current stage of project development, the most significant risk is the risk of approval or denial of components of the Project in this proceeding. The reasonableness of Project cost estimates will be documented along with the cost estimate information to be provided in the Part A proposal to be submitted by March 2, 2015.

## APPENDIX C INFORMATION

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### IDENTIFIED DATA REQUIRED FOR POWERFLOW MODELING

#### AC Transmission

The following data is provided for the new circuit from Edic-Fraser:

##### ***New Edic - Fraser 2nd Circuit***

- From Bus: Edic 345 kV
- To Bus: Fraser 345 kV
- Base kV: 345 kV
- R, X: 0.002077, 0.037726
- B: 0.700340
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: This circuit will not share any common towers with any other circuits in the same corridor.

The following data is provided for the new circuit from New Scotland to Leeds to Pleasant Valley under North America's base proposal (not either alternative route):

##### ***New New Scotland – Leeds(Base Proposal)***

- From Bus: New Scotland
- To Bus: Leeds
- Base kV: 345kV
- R, X: 0.00068795, 0.012527088
- B: 0.232551423
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

##### ***New Leeds-Pleasant Valley (Base Proposal)***

- From Bus: Leeds
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.0010585884, 0.019224596
- B: 0.356883188
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA

- STE Rating: 2446 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

The following data is provided for the new circuit from New Scotland to Leeds to Pleasant Valley under North America's Alternative 1 proposal, the I-87 route:

***New New Scotland – Leeds (Alternative 1 I-87 route)***

- From Bus: New Scotland
- To Bus: Leeds
- Base kV: 345kV
- R, X: 0.0007513, 0.013645751
- B: 0.2533181
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

***New Leeds-Pleasant Valley (Alternative 1 I-87 route)***

- From Bus: Leeds
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.001446, 0.026154
- B: 0.4855115
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

The following data is provided for the new circuit from New Scotland to Pleasant Valley under North America's Alternative 2 proposal, the 115 kV ROW route, without the construction of any Knickerbocker facility:

***New New Scotland - Pleasant Valley (Alternative 2)***

- From Bus: New Scotland
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.00192363, 0.031504
- B: 0.595459
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The line is routed to a point approximately 8 miles south of the Green Bush substation along the 115 kV corridor connecting Green Bush to Valkin. Common towers will be

utilized starting at this location to allow the 115 kV circuits to be underbuilt on the new 345 kV structures so that the existing right of way can be utilized for the newly proposed 345 kV line.

In cases where the Knickerbocker Substation or Switchyard is built, there would be modifications to the existing New Scotland-Alps line, breaking it into New Scotland-Knickerbocker and Knickerbocker-Alps. The following data is provided for the modified circuit from New Scotland to Alps:

***New Scotland - Knickerbocker***

- From Bus: New Scotland
- To Bus: New Knickerbocker Substation
- Base kV: 345kV
- R, X: 0.000353, 0.006363
- B: 0.110729
- Normal Rating: 1204 MVA
- LTE Rating: 1326 MVA
- STE Rating: 1685 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

***Knickerbocker- Alps***

- From Bus: New Knickerbocker Substation
- To Bus: Alps
- Base kV: 345kV
- R, X: 0.000487, 0.008787
- B: 0.152911
- Normal Rating: 1204 MVA
- LTE Rating: 1326 MVA
- STE Rating: 1685 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

In cases where the Knickerbocker Substation or Switchyard is built, and a line begins at New Scotland there would be a new New Scotland to Knickerbocker circuit. For Alternative 1, I-87 alternative, this line would continue from Knickerbocker to Leeds to Pleasant Valley. For Alternative 2, the 115 kV ROW, this line would continue with a circuit to Pleasant Valley. The following data is provided for the alternatives of this new line:

***New New Scotland - Knickerbocker ckt 2 (Alternative 1 I-87 route & Alternative 2 115 kV ROW)***

- From Bus: New Scotland
- To Bus: New Knickerbocker Substation
- Base kV: 345kV
- R, X: 0.000342432, 0.005608069
- B: 0.105999814
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA

- Common Tower: The circuits will not share any common towers within the same corridor.

***New Knickerbocker - Pleasant Valley (Alternative 2 115kV ROW)***

- From Bus: New Knickerbocker Substation
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.001581197, 0.025895521
- B: 0.489459108
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

***New Knickerbocker - Leeds (Alternative 1 I-87 Route)***

- From Bus: New Knickerbocker Substation
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.000592, 0.010753
- B: 0.199611
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: None

***New Leeds-Pleasant Valley (Alternative 1 I-87 route)***

- From Bus: Leeds
- To Bus: Pleasant Valley
- Base kV: 345kV
- R, X: 0.001446, 0.026154
- B: 0.4855115
- Normal Rating: 1977 MVA
- LTE Rating: 2305 MVA
- STE Rating: 2446 MVA
- Common Tower: The circuits will not share any common towers within the same corridor.

***Loop in Marcy-Coopers Corners at Fraser***

The Marcy - Coopers Corner existing circuit will be cut and connected through the Fraser 345 kV station converting the single line into two segments shown below.

***Marcy-Fraser***

- From Bus: Marcy

- To Bus: Fraser
- Base kV: 345 kV
- R, X: 0.002209, 0.022854
- B: 0.731162
- Normal Rating: 1345 MVA
- LTE Rating: 1345 MVA
- STE Rating: 1434 MVA
- Common Tower: None

***Fraser-CC***

- From Bus: Fraser
- To Bus: Coopers Corners
- Base kV: 345
- R, X: 0.001721, 0.017808
- B: 0.569781
- Normal Rating: 1345 MVA
- LTE Rating: 1345 MVA
- STE Rating: 1434 MVA
- Common Tower: None

The Knickerbocker Substation will include connections to the 115 kV system described below:

***Loop in Albany Hydro - Valkin and Shodack – Churchtown at new Knickerbocker 115 kV Substation***

The Albany Hydro – Valkin and Shodack - Churchtown existing circuits will be cut and connected through the new Knickerbocker 115 kV station converting the single line into four segments shown below.

***Albany Hydro - New Knickerbocker 115kV Substation***

- From Bus: Albany Hydro
- To Bus: Knickerbocker
- Base kV: 115kV
- R, X: 0.002621, 0.012636
- B: 0.001657
- Normal Rating: 186 MVA
- LTE Rating: 214 MVA
- STE Rating: 237 MVA
- Common Tower: None

***New Knickerbocker 115kV Substation to Valkin***

- From Bus: Knickerbocker
- To Bus: Valkin
- Base kV: 115kV
- R, X: 0.004099, 0.019764
- B: 0.002593
- Normal Rating: 186 MVA

- LTE Rating: 214 MVA
- STE Rating: 237 MVA
- Common Tower: None

***Shodack - New Knickerbocker 115kV Substation***

- From Bus: Shodack
- To Bus: Knickerbocker
- Base kV: 115kV
- R, X: 0.005244, 0.025269
- B: 0.003312
- Normal Rating: 186 MVA
- LTE Rating: 214 MVA
- STE Rating: 237 MVA
- Common Tower: None

***New Knickerbocker 115kV Substation to Churchtown***

- From Bus: Knickerbocker
- To Bus: Churchtown
- Base kV: 115kV
- R, X: 0.004099, 0.019764
- B: 0.002593
- Normal Rating: 186 MVA
- LTE Rating: 214 MVA
- STE Rating: 237 MVA
- Common Tower: None

***Modifications to 115 kV system at Churchtown(115 kV ROW)***

Changes to the area 115 kV system are proposed to allow the new 345 kV circuits to share right of way with existing 115 kV corridors. The use of a common 345 kV structure with 115 kV underbuild is proposed to facilitate the shared right of way. For additional descriptive purposes, a single line diagram has been included in Exhibit 2 to clarify the required modifications.

The following circuits are removed from service to be replaced two underbuilt 115 kV circuits as described below:

- Pleasant Valley to Adams Milling
- Pleasant Valley to Blue Str
- Pleasant Valley to Blues 8
- Pleasant Valley to Milan
- Blue Stores to Churchtown
- Milan to North Catskill
- Buckleys Corner to Blue Stores

The removed circuits will be replaced with following new circuits (as shown in Exhibit 2):

***Churchtown - Blues 8***

- From Bus: Churchtown
- To Bus: Blues-8
- Base kV: 115kV
- R, X: 0.005896, 0.036697
- B: 0.005524
- Normal Rating: 208 MVA
- LTE Rating: 239 MVA
- STE Rating: 253 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

#### ***Churchtown – Blue Stores***

- From Bus: Church Town
- To Bus: BL STR E
- Base kV: 115kV
- R, X: 0.005896, 0.036697
- B: 0.005524
- Normal Rating: 208 MVA
- LTE Rating: 239 MVA
- STE Rating: 253 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

#### ***Blues 8 - Milan***

- From Bus: Blues-8
- To Bus: Milan
- Base kV: 115kV
- R, X: 0.007381, 0.045938
- B: 0.006915
- Normal Rating: 208 MVA
- LTE Rating: 239 MVA
- STE Rating: 253 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

#### ***Milan - Pleasant Valley***

- From Bus: Milan
- To Bus: Pleasant Valley
- Base kV: 115kV
- R, X: 0.014376, 0.089473

- B: 0.013469
- Normal Rating: 208 MVA
- LTE Rating: 239 MVA
- STE Rating: 253 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

***Blue Stores - Pleasant Valley***

- From Bus: BL STR E
- To Bus: Pleasant Valley
- Base kV: 115kV
- R, X: 0.021757, 0.135411
- B: 0.020384
- Normal Rating: 208 MVA
- LTE Rating: 239 MVA
- STE Rating: 253 MVA
- Common Tower: The 345 kV circuit will share towers with the existing 115 kV circuits within the corridor travelling south towards pleasant valley. The 115 kV circuits will be underbuilt on new structures allowing the use of shared right of way.

***Adams Mill - Churchtown***

- From Bus: Adams Mill
- To Bus: Churchtown
- Base kV: 115kV
- R, X: 0.004239, 0.020424
- B: 0.002677
- Normal Rating: 129 MVA
- LTE Rating: 157 MVA
- STE Rating: 192 MVA
- Common Tower: None

***N. Cat - Churchtown***

- From Bus: N. Cat
- To Bus: Churchtown
- Base kV: 115kV
- R, X: 0.012080, 0.05680
- B: 0.007080
- Normal Rating: 129 MVA
- LTE Rating: 182 MVA
- STE Rating: 211 MVA
- Common Tower: None

***Churchtown - Buckleys Corner***

- From Bus: Churchtown

- To Bus: INDC+BKL
- Base kV: 115kV
- R, X: 0.004452, 0.021453
- B: 0.002811
- Normal Rating: 186 MVA
- LTE Rating: 214 MVA
- STE Rating: 237 MVA
- Common Tower: None

### **Series Compensation**

#### ***25% Compensation on Edic-Fraser***

- Circuit: The proposed Edic - Fraser circuit 2
- Location: Adjacent to the Edic 345 kV station, providing the termination point for the new line at Edic. The compensation station can be located anywhere along the length without impact on performance.
- X: The line is compensated at 25%
- Normal Rating: 1977 MVA
- Summer LTE: 2305 MVA
- Summer STE: 2446 MVA

#### ***40% Compensation on Fraser-Gilboa***

- Circuit: Gilboa to Fraser 345 kV line
- Location: At Fraser Substation
- X: The line will be compensated at 40%
- Normal Rating: 1428 MVA
- Summer LTE: 1605 MVA
- Summer STE: 1793 MVA

#### ***25% Compensation on Marcy - New Scotland***

- Circuit: Marcy to New Scotland 345 kV line
- Location: At Marcy Substation
- X: The line will be compensated at 25%
- Normal Rating: 1487 MVA
- Summer LTE: 1650 MVA
- Summer STE: 1970 MVA

#### ***30% Compensation on Edic - New Scotland***

- Circuit: Edic to New Scotland 345 kV line
- Location: At Edic Substation
- X: The line will be compensated at 30%
- Normal Rating: 1331 MVA
- Summer LTE: 1538 MVA

- Summer STE: 1724 MVA

### **Transformers**

The only transformers will be in scenarios with a Knickerbocker Substation, which will have the following transformer:

- From Bus: Knickerbocker 115 kV
- To Bus: Knickerbocker 345 kV
- Voltage Ratio: 345/115 kV
- R, X: 0.000810, 0.048740
- Control Type: Voltage
- Fixed Taps: 17
- Vmax, Vmin: 1.03, 1.00
- Normal Rating: 396 MVA
- LTE Rating: 450 MVA
- STE Rating: 450 MVA

### **Substations**

See Exhibit 2 for substation diagrams for Edic, Fraser, Leeds, New Scotland, Pleasant Valley, Knickerbocker Substation, Knickerbocker Switchyard, Marcy, 115 kV system modifications, and the Churchtown 115 kV station.

## **EXHIBIT 1 – SCHEDULES**

## Major Milestone Schedule: Edic - Fraser

Task Name	Year 1				Year 2				Year 3				Year 4				Year 5			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	
<b>1 Siting and Preliminary Engineering</b>			▶────────────────▶																	
<b>2 Part B Article VII</b>				▶──▶																
<b>3 Joint Application to USACE and NYSDEC</b>										▶────────────────▶										
<b>4 Procurement</b>										▶────────────────▶										
<b>5 Construction</b>														▶────────────────▶						
<b>6 Proposed In Service Date</b>																				▶

## Permitting Schedule: Edic - Fraser

Task Name	Year 1				Year 2				Year 3				Year 4					
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4		
<b>1 Siting and Preliminary Engineering</b>			▶────────────────▶															
<b>1.1 Remote Sensing</b>			▶────────▶															
Data Collection			■															
Data Analysis				■														
<b>1.2 Evaluation of alternatives</b>				■														
<b>1.3 Preliminary Engineering</b>				■──────────────────■														
<b>1.4 Site Reconnaissance</b>				■														
<b>2 Part B Article VII</b>				▶────────────────▶														
<b>2.1 Preapplication Meeting w/DPS and DEC</b>						◆												
<b>2.2 Preliminary Agency Consultations</b>						▼												
USFWS																		
USACOE																		
SHPO																		
<b>2.3 Prepare Application</b>				▶────────────────▶														
2.3.1 Studies and Analysis				■──────────■														
2.3.2 Review of Draft Sections and Finalize						■												
Submit Application							◆											
<b>2.4 Application Review Process</b>						■───												
Public Statement Hearing																		
<b>2.5 Hearings and Decision</b>						■──────────────────■												
Commission Decision											◆							
<b>2.6 Environmental Management &amp; Construction Plan</b>											▶────────────────▶							
Prepare EM&CP											■───							
Submit EM&CP												◆						
Review and Approval Process											■───							
Approval of EM&CP													◆					
Final ROW and acquisition											■──────────────────■							
<b>2.7 Field Surveys</b>											■──────────────────■							
<b>2.8 Agency Consultations</b>															▶────────▶			
USFWS															■───			
SHPO															■───			
SPDES Stormwater NOI																◆		
<b>3 Joint Application to USACE and NYSDEC</b>											▶────────────────▶							
<b>3.1 Prepare Application</b>											▶────────▶							
Prepare Draft											■───							
Review of Draft Application											■───							
Finalize Application											■							
Submit Application													◆					
<b>3.2 Agency Review Process</b>											▶────────────────▶							
Final USACE Permit											■──────────────────■							

## Major Milestone Schedule: New Scotland - Pleasant Valley

Task Name	Year 1				Year 2				Year 3				Year 4				Year 5			
	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	
<b>1 Siting and Preliminary Engineering</b>				▶	▶															
<b>2 Part B Article VII</b>		▶																		
<b>3 Joint Application to USACE and NYSDEC</b>											▶	▶								
<b>4 Procurement</b>														▶	▶					
<b>5 Construction</b>																				▶
<b>6 Proposed In Service Date</b>																				◆

## Permitting Schedule: New Scotland - Pleasant Valley and Alternatives 1 and 2

Task Name	Year 1				Year 2				Year 3				Year 4			
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4
<b>1 Siting and Preliminary Engineering</b>			▶													
<b>1.1 Remote Sensing</b>			▶													
Data Collection			■													
Data Analysis				■												
<b>1.2 Evaluation of alternatives</b>				■												
<b>1.3 Preliminary Engineering</b>				■												
<b>1.4 Site Reconnaissance</b>				■												
<b>2 Part B Article VII</b>				▶												
<b>2.1 Preapplication Meeting w/DPS and DEC</b>					◆											
<b>2.2 Preliminary Agency Consultations</b>					■											
USFWS																
USACOE																
SHPO																
<b>2.3 Prepare Application</b>				▶												
2.3.1 Studies and Analysis				■												
2.3.2 Review of Draft Sections and Finalize						■										
Submit Application								◆								
<b>2.4 Application Review Process</b>						■										
Public Statement Hearing																
<b>2.5 Hearings and Decision</b>							■									
Commission Decision										◆						
<b>2.6 Environmental Management &amp; Construction Plan</b>										▶						
Prepare EM&CP										■						
Submit EM&CP												◆				
Review and Approval Process											■					
Approval of EM&CP													◆			
Final ROW and acquisition										■						
<b>2.7 Field Surveys</b>											■					
<b>2.8 Agency Consultations</b>															▶	
USFWS															■	
SHPO															■	
SPDES Stormwater NOI																◆
<b>3 Joint Application to USACE and NYSDEC</b>										▶						
<b>3.1 Prepare Application</b>										▶						
Prepare Draft										■						
Review of Draft Application											■					
Finalize Application											■					
Submit Application													◆			
<b>3.2 Agency Review Process</b>										▶						
Final USACE Permit											■					



## Major Milestone Schedule: New Scotland - Pleasant Valley Alt 2

Task Name	Year 1				Year 2				Year 3				Year 4				Year 5						
	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	
<b>1 Siting and Preliminary Engineering</b>				▶	▶																		
<b>2 Part B Article VII</b>	▶																						
<b>3 Joint Application to USACE and NYSDEC</b>										▶	▶												
<b>4 Procurement</b>													▶	▶									
<b>5 Construction</b>														▶	▶	▶	▶	▶	▶	▶	▶		
<b>6 Proposed In Service Date</b>																					◆		

## Major Milestone Schedule: Series Compensation\*

Task Name	Year 1				Year 2				Year 3				Year 4				Qtr 1
	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	
<b>1 Siting and Preliminary Engineering</b>			▶														
<b>2 Part B Article VII</b>				▶													
<b>3 Joint Application to USACE and NYSDEC</b>										▶							
<b>4 Procurement</b>										▶							
<b>5 Construction</b>														▶			
<b>6 Proposed In Service Date</b>																	◆



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### Permitting Schedule: Series Compensation\*

Task Name	Duration	Start	Finish	Year 1				Year 2				Year 3				
				Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	Qtr 1	Qtr 2	Qtr 3	Qtr 4	
<b>1 Siting and Preliminary Engineering</b>	<b>159 days</b>	<b>Tue 9/1/15</b>	<b>Fri 4/8/16</b>													
<b>1.1 Remote Sensing</b>	<b>75 days</b>	<b>Tue 9/1/15</b>	<b>Mon 12/14/15</b>													
Data Collection	30 days	Tue 9/1/15	Mon 10/12/15													
Data Analysis	45 days	Tue 10/13/15	Mon 12/14/15													
<b>1.2 Evaluation of alternatives</b>	30 days	Mon 12/7/15	Fri 1/15/16													
<b>1.3 Preliminary Engineering</b>	90 days	Mon 12/7/15	Fri 4/8/16													
<b>1.4 Site Reconnaissance</b>	10 days	Tue 12/15/15	Mon 12/28/15													
<b>2 Part B Article VII</b>	<b>121 days</b>	<b>Tue 12/29/15</b>	<b>Wed 6/15/16</b>													
<b>2.1 Preapplication Meeting w/DPS and DEC</b>	0 days	Fri 4/8/16	Fri 4/8/16													
<b>2.2 Preliminary Agency Consultations</b>	<b>2 days</b>	<b>Mon 4/11/16</b>	<b>Tue 4/12/16</b>													
USFWS	2 days	Mon 4/11/16	Tue 4/12/16													
USACOE	2 days	Mon 4/11/16	Tue 4/12/16													
SHPO	2 days	Mon 4/11/16	Tue 4/12/16													
<b>2.3 Prepare Application</b>	<b>120 days</b>	<b>Tue 12/29/15</b>	<b>Mon 6/13/16</b>													
2.3.1 Studies and Analysis	90 days	Tue 12/29/15	Mon 5/2/16													
2.3.2 Review of Draft Sections and Finalize	30 days	Tue 5/3/16	Mon 6/13/16													
Submit Application	0 days	Wed 6/15/16	Wed 6/15/16													
<b>2.4 Application Review Process</b>	60 days	Wed 6/15/16	Tue 9/6/16													
Public Statement Hearing	1 day	Wed 9/7/16	Wed 9/7/16													
<b>2.5 Hearings and Decision</b>	180 days	Thu 9/8/16	Wed 5/17/17													
Commission Decision	0 days	Tue 5/16/17	Tue 5/16/17													
<b>2.6 Environmental Management &amp; Construction Plan</b>	<b>91 days</b>	<b>Wed 5/17/17</b>	<b>Wed 9/20/17</b>													
Prepare EM&CP	60 days	Wed 5/17/17	Tue 8/8/17													
Submit EM&CP	0 days	Tue 8/8/17	Tue 8/8/17													
Review and Approval Process	31 days	Wed 8/9/17	Wed 9/20/17													
Approval of EM&CP	0 days	Wed 9/20/17	Wed 9/20/17													
Final ROW and acquisition	46 days	Wed 5/17/17	Wed 7/19/17													
<b>2.7 Field Surveys</b>	46 days	Wed 5/17/17	Wed 7/19/17													
<b>2.8 Agency Consultations</b>	<b>23 days</b>	<b>Wed 7/19/17</b>	<b>Fri 8/18/17</b>													
USFWS	23 days	Wed 7/19/17	Fri 8/18/17													
SHPO	23 days	Wed 7/19/17	Fri 8/18/17													
SPDES Stormwater NOI	0 days	Fri 8/18/17	Fri 8/18/17													
<b>3 Joint Application to USACE and NYSDEC</b>	<b>76 days</b>	<b>Wed 6/7/17</b>	<b>Wed 9/20/17</b>													
<b>3.1 Prepare Application</b>	<b>30 days</b>	<b>Wed 6/7/17</b>	<b>Tue 7/18/17</b>													
Prepare Application	30 days	Wed 6/7/17	Tue 7/18/17													
Submit Application	0 days	Tue 7/18/17	Tue 7/18/17													
<b>3.2 Agency Review Process</b>	<b>46 days</b>	<b>Wed 7/19/17</b>	<b>Wed 9/20/17</b>													
Final USACE Permit	46 days	Wed 7/19/17	Wed 9/20/17													

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**EXHIBIT 2 – SUBSTATION DIAGRAMS**

**REDACTED**

**CONTAINS CONFIDENTIAL CEII INFORMATION**