

NORTHEAST TRANSMISSION DEVELOPMENT

a Member of the LS Power Group

SWISHER HILL



In Response to the:

PJM RTEP – 2014 Project Proposal Window 1

July 28, 2014

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A. EXECUTIVE SUMMARY

Northeast Transmission Development, LLC (“NTD”), a member of the LS Power Group (“LS Power”)¹ is pleased to present Swisher Hill (the “Project”) to resolve potential reliability criteria violations identified by PJM.

The Project consists of a new Swisher Hill 345/138 kV substation connecting the Kyger Creek to DOE 345 kV transmission line to the Mercerville to Sporn 138 kV transmission line through a new 345/138 kV transformer. The Project has an estimated construction cost of approximately \$33.8 million and can be placed in service in advance of the identified need.

NTD has performed a feasibility analysis for the Project; defined technical, cost and schedule parameters; and determined the merits. After conducting a detailed technical analysis, NTD determined that the Project resolves potential reliability criteria violations for the Kyger Creek-Sporn 345 kV transmission line. The Project includes an optional Project component which increases the degree by which the potential reliability criteria violations are resolved. The optional Project component adds a 138 kV transmission line connecting Gavin substation to the new Swisher Hill substation.

NTD, as a pre-qualified Designated Entity, has demonstrated its capability to develop, finance, construct, own and operate large scale power projects, including high-voltage transmission projects. LS Power has a strong track record of success throughout the United States, including significant generation experience and the successful development, construction, and operation of hundreds of miles of high-voltage transmission. Among its broad nationwide experience, LS Power has substantial Project-applicable experience – including PJM experience totaling over 4,000 MW of generation in operation or under construction and more than 2,000 MW of generation under development.

Based on the work already completed as well as LS Power’s extensive experience, NTD is uniquely positioned to successfully complete the Project and provide the PJM system enhancement for the benefit of electricity consumers within PJM.

NTD has been pre-qualified for Designated Entity status by the Office of Interconnection. NTD’s pre-qualification information on record with PJM and as posted on PJM’s website reflects NTD’s current qualifications for Designated Entity status (pre-qualification ID is 13-06). NTD seeks to be the Designated Entity for the Project, designated by PJM to develop, construct, own, operate, maintain, and finance the Project.

¹ Located at 400 Chesterfield Center, Suite 110, St. Louis, MO 63017

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1. Project-Applicable Experience and Qualifications

LS Power has experience in developing, owning and operating transmission facilities both as a non-incumbent transmission developer and an aspect of its generation facilities. 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 transmission development efforts in 2005 with the Southwest Intertie Project in Nevada and Idaho. A portion of this project was later renamed One Nevada Transmission Line (“ON Line”) and is currently in service. In 2009, Cross Texas Transmission (“Cross Texas”), an LS Power entity, was selected by the Public Utility Commission of Texas (“PUCT”) as one of the best qualified new entrants for designation for construction of new transmission facilities; specifically, the PUCT determined that the LS Power entity was 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.” Both of these projects, totaling more than 700 circuit miles of new transmission lines, began construction in 2011 and both are currently energized. *Table 1* provides an overview of some of the transmission facility experience of LS Power.

Table 1 – LS Power Transmission Experience

Project	Location	Voltage (kV)	Length (miles)	Permitting & Development	Construction Management	Operations Management	Currently Owned
Cross Texas Transmission	ERCOT	345	240	✓	✓	✓	✓
ON Line	WECC	500	235	✓	✓		✓
Southwest Intertie Project (Phase 2)	WECC	500	260	✓			✓
Harquahala Gen-tie	WECC	500	22			✓	
Blythe Private Line	WECC	230	67			✓	
Other Generation Interconnections	PJM, WECC, MISO	Various	Various	✓	✓	✓	✓

a. Cross Texas Transmission

Cross Texas, a subsidiary of LS Power, is a rate-regulated Texas public utility operating within the Electric Reliability Council of Texas (“ERCOT”). Cross Texas was selected in early 2009 by the PUCT to construct, operate and maintain a portion of the Competitive Renewable Energy Zone (“CREZ”) Transmission Plan to enable the delivery of renewable resources. The transmission service providers were selected through a competitive process including incumbent utilities and new entrants. More recently, Cross Texas was selected to construct a new transmission line in the vicinity of College Station, TX. The Cross Texas proposal was selected by ERCOT as the best solution to solve the existing transmission constraints in this region of ERCOT.

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The Cross Texas facilities consist of approximately 240 miles of double-circuit 345 kV transmission lines and associated equipment, including two new substations and a series compensation station, located in a seven-county area in the Texas Panhandle with an estimated capital cost of approximately \$470 million. The Cross Texas facilities are primarily comprised of the Gray to Tesla 345 kV transmission line, the Gray to Alibates 345 kV transmission line, the Tule Canyon to Cross 345 kV transmission line and the Cross to Tesla 345 kV transmission line, the Gray Substation, Railhead Substation and the Cross Series Compensation Station. Additionally, Cross Texas is processing interconnection requests for several generation interconnection customers and is currently expanding some of their existing facilities to connect additional power generation to its system. As previously mentioned, Cross Texas is in the early stages of development of a new 60 to 70 mile double circuit 345kV line in the vicinity of College Station, TX.

Cross Texas conducted extensive community outreach, obtained routing approval from the PUCT, 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 intervening parties (73 total interveners) on acceptable routes. These intervening parties included landowners, utilities, PUCT 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 of 240 miles of double-circuit 345 kV transmission lines and associated facilities:

- PUCT 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.

In addition, Cross Texas obtained project financing legal opinions that Cross Texas had appropriately identified and obtained the necessary development permits appropriate for the planning and construction phase of the Cross Texas facilities. Cross Texas closed on its construction financing in July 2011, acquired right-of-way from over 300 landowners, and has completed construction of its facilities – on-schedule and under-budget. Notably, Cross Texas was the only CREZ participant to complete construction of its transmission line facilities under the cost estimate provided by ERCOT.

The following is a representative list of major contractors, consultants and suppliers utilized for the Cross Texas transmission projects. In addition to its internal resources, LS Power has established strong

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working relationships with these contractors, consultants, and suppliers, which provided additional technical and engineering support for the Project.

Cross Texas has staff in Amarillo, Texas and Austin, Texas with support from LS Power corporate support services employees in other offices. Operations and maintenance is conducted by Cross Texas staff with the support of third party contractors. Zachry Industrial, Inc. provides inspection and emergency response services and South Texas Electric Cooperative provides real-time operations and control services. Cross Texas also has agreements with other major transmission line contractors for additional emergency response support if necessary. Cross Texas is currently registered with NERC as a Transmission Planner and had no findings of non-compliance in its initial audit. Cross Texas is registered with North American Electric Reliability Corporation ("NERC") as a Transmission Owner and Transmission Planner and successfully completed its initial audit with no adverse findings. Cross Texas is currently completing construction of its own real time operations center in Austin, TX and expects this facility to be operational in the Fall of 2014. CTT has hired all qualified staff needed to operate and support these facilities. The key personnel have an average of over 25 years of operating and compliance experience in ERCOT and other RTOs in North America.

From a broader regulatory perspective, Cross Texas established its Code of Conduct in accordance with the Texas public utility regulatory requirements in 2009. Consistent with its Code of Conduct, LS Power has established separate, secure space for Cross Texas operations, maintains independent books and

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records and conducts regular training of all company employees regarding the Code of Conduct and its requirements. LS Power also ensures compliance with the FERC Standards of Conduct for transmission related businesses outside of ERCOT.

In addition to confirming LS Power's ability to develop, construct, operate and maintain transmission facilities, the success of Cross Texas demonstrates LS Power's ability to do so in a highly cost effective manner. *Table 2* illustrates current estimates reported to the PUCT for the installed cost per mile of all double-circuit 345 kV CREZ transmission lines currently under construction by similarly situated utilities.

Table 2 - CREZ Capital Costs by Participant

Transmission Service Provider	Capital Cost for Double-Circuit 345 kV (\$/Mile)
Cross Texas Transmission (LS Power affiliate)	\$1,570,000
Oncor	\$1,640,000
Lone Star (NextEra affiliate)	\$1,720,000
Wind Energy Transmission Texas (Brookfield / Isolux affiliate)	\$1,900,000
Electric Transmission Texas (AEP / MidAmerican affiliate)	\$ 1,990,000
Sharyland	\$ 2,010,000
Lower Colorado River Authority	\$ 2,290,000

Based on values reported in CREZ Progress Report No. 11 (April 2013 Update)
Prepared by RS&H for the Public Utility Commission of Texas

b. ON Line / Southwest Intertie Project

LS Power began its development of large-scale transmission facilities in 2005 with the Southwest Intertie Project ("SWIP"). The SWIP is a 500 kV transmission line traversing approximately 570 miles from southern Idaho to southern Nevada that is expected to have a Western Electricity Coordinating Council-approved path rating of approximately 2,000 MW. The SWIP is being developed in two phases.

The first phase, the One Nevada Transmission Line or ON Line, consists of approximately 235 miles of single-circuit 500 kV overhead transmission and associated transmission facilities that began commercial operations on January 1, 2014. The ON Line is jointly-owned with NV Energy, with LS Power affiliate Great Basin Transmission South, LLC (Great Basin) owning 75%. The project connects the Harry Allen Substation (Nevada Power Company) north of Las Vegas with the newly constructed 500 kV Robinson Summit Substation located near Ely, Nevada. Robinson Summit also interconnects with the existing NV Energy (Sierra Pacific Power Co.) Falcon-Gonder 345 kV line and includes two 600 MVA 345 kV phase-shifting transformers. One phase-shifting transformer connects the newly reconfigured Falcon-Robinson Summit 345 kV line and the other connects the Robinson Summit-Gonder 345 kV line. Both the 500 kV and 345 kV yards are a breaker and a half configuration. This substation encompasses an area of approximately 77 acres with spacing designed to accommodate an ultimate build out of up to seven 500 kV line positions and up to nine 345 kV line positions. The majority of the line uses tubular steel guyed-

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V structures to minimize impacts to certain species of concern, while self-supporting steel poles, steel lattice and steel H-frame structures are used for 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.

LS Power obtained all required right-of-way grants and private easements as well as acquisition of all major permits and approvals required for construction, which include NEPA review, Bureau of Land Management ("BLM") Right-of-Way Grant, Endangered Species Act consultation and approval of a detailed Construction, Operation and Maintenance Plan by the BLM. The NEPA 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 and Capacity Exchange Agreement (TUA). The TUA was 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 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.

ON Line consists of approximately 850 transmission 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. POWER Engineers, Great Basin's engineer, procurement agent, and construction manager, assisted in developing and reviewing the proposed technical and commercial terms to ensure all terms were reasonable and appropriate, resulting in cost-effective and reliable performance by the contractors and suppliers. Under the TUA, NV Energy is providing all O&M services for ON Line.

The following is a representative list of major contractors, consultants and suppliers utilized for the ON Line. In addition to its internal resources, LS Power has established strong working relationships with these contractors, consultants, and suppliers, which may provide additional technical and engineering support for the Project.

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Construction of ON Line was completed in 2013 and is currently energized. Despite the discovery during construction of a transmission structure design issue beyond Great Basin's control, the final project cost was within 2% of the budget estimation at the time of financing. This demonstrates LS Power's ability to react at any project stage to dynamic conditions to meet project goals. In spite of these unforeseen circumstances, ON Line cost per mile is significantly less than similar high-voltage transmission projects in the same region during the same period, as shown in *Table 3*.

Table 3 - Recent Transmission Projects in the Western U.S.

Transmission Service Provider	Approximate Length (miles)	Capital Cost (\$MM/mile)
ON Line 500 kV (LS Power, NV Energy)	235	\$2.3
Pinal Central-Tortolita 500 kV (Tucson Electric Power)	40	\$2.7
Mona-Aquirrh 345/500 kV (MidAmerican)	100	\$4.4
Devers-Colorado River (Edison)	153	\$4.6
Populus-Terminal 345 kV (MidAmerican)	135	\$6.1
Tehachapi (1-3) (Edison)	82	\$7.3
Tehachapi (4-11) [Above Ground Portion Only] (Edison)	173	\$11.2
Sunrise [Above Ground Portion Only] (Edison)	112	\$13.6

Information taken from project websites, other sources

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In addition to its success with ON Line, LS Power affiliates have obtained permits for construction of the majority of Phase 2 of SWIP, which is comprised of two components: (i) SWIP North, which will run approximately 275 miles from the Midpoint substation near Twin Falls, Idaho to the Robinson Summit substation near Ely, Nevada; and (ii) a 60-mile southern portion known as the Southern Nevada Intertie Project (SNIP) which will run from the Harry Allen substation to the Eldorado substation both near Las Vegas, NV. Federal National Environmental Protection Act ("NEPA") review has been completed for SWIP North the final NEPA Decision for SNIP is expected in 2014.

c. Right-of-Way Procurement Experience

Cross Texas obtained approximately 240 miles of transmission line rights-of-way, predominantly on private lands over the past several years. This required applying for and receiving three Certificates of Public Convenience and Necessity from the PUCT. To initiate the process, 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 provided notices to over 1,450 stakeholders, and acquired over 300 easements.

For the ON Line and Southwest Intertie Project, LS Power affiliates have secured approximately 515 miles of rights-of-way, including approximately 456 miles on Federal lands. The ON Line right-of-way is entirely located on BLM lands except for one segment of privately owned land. Obtaining right-of-way on Federal land required compliance with NEPA and a full environmental review and BLM Decision Record on the full length of the 235-mile transmission line. LS Power developed a comprehensive Construction Operation and Maintenance Plan, which detailed 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. In addition to the Federal land right-of-ways, LS Power has negotiated easements with private landowners on a mutually agreeable basis.

LS Power successfully acquired the real estate for all of its generation projects, which has included real estate for dozens of project sites and over 120 miles of linear infrastructure including transmission lines, rail lines, gas pipelines and water pipelines easements. For these competitive generation projects, the rights-of-way were negotiated with landowners without the ability to use eminent domain.

d. Project Cost and Schedule Management Experience

LS Power has successfully managed the development and construction of 15 large-scale power generation and transmission projects representing over \$8 billion in invested capital. Over the past few years, LS Power has been managing the construction of four power generation projects and two transmission projects totaling approximately \$5 billion in invested capital. Four of these projects have been placed in service within the past year, with the remainder scheduled to be in service later in 2014.

LS Power employs a detail-oriented and hands-on philosophy to all of its development, construction and asset management activities. LS Power employees directly oversee all project development activities

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including siting, permitting, community relations, real estate acquisition, engineering, and contracting. LS Power self performs a considerable amount of the development activities, while managing consulting firms for portions of the work that are specialized (e.g. surveying, environmental studies).

LS Power has used both an owner-managed and a lump sum, turn-key approach for the detailed engineering, procurement, and construction of its projects. In either case, LS Power performs its own construction management; directly overseeing the contractors to ensure compliance with the cost, schedule, and design of the project. LS Power will have a dedicated project director, on-site construction managers and inspectors, and its entire support team available to assist in managing the various scopes of construction to ensure performance. LS Power does not accept completion of a facility from a construction contractor until it has been confirmed that all requirements have been met.

e. Financial Capability

LS Power's financial position has long been considered one of its strengths, and it is highly respected within the financial community. Since 2005, LS Power has raised more than \$25 billion in debt and equity for project financing, acquisitions or investment purposes within the power sector. The common feature of all these financings is that a subsidiary created by LS Power 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. Every LS Power sponsored project that has been taken to the financing community has been successfully financed. *Figure 2* provides an overview of the financing activity undertaken by the LS Power Group since 2005.

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Each LS Power developed project has been financed on the basis of a strong structure which includes project permits, real estate rights, and project documents such as long-term off-take contracts. LS Power has successfully developed power generation and transmission facilities throughout the United States and been able to satisfy the credit requirements of numerous investor owned utilities, municipal utilities and electric cooperatives.

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

In addition to accolades from the financial press, LS Power's disciplined development and project finance approach has attracted a broad spectrum of investors and lenders. Every LS Power-sponsored business that has been taken to the financing community has been successfully financed, even at times of market distress. For instance, the \$1.6 billion of Sandy Creek Energy Associates closed at the end of August 2008, as the financial crisis was taking shape and other borrowers were shut out of the credit markets. As evidenced by the Letter of Intent provided by BNP Paribas and included as Appendix D, LS Power has established a strong reputation and long-standing, productive relationships within the financing community.

I. Additional LS Power Experience

Since its inception in 1990, LS Power has remained a leader among independent power producers by continuing to provide highly competitive, flexible, and innovative product offerings for its customers.

LS Power has successfully permitted and developed over a dozen greenfield domestic power generation totaling in excess of 8,000 megawatts of electrical output and 470 miles of high-voltage transmission facilities, representing a total capital investment of over \$8 billion.

In 2005, LS Power launched LS Power Equity Advisors, a private investment vehicle focused on the power industry. To date, LS Power Equity Partners has acquired forty power generation plants with over 20,000 MW of generation capacity located in various markets across the United States.

LS Power provides a full range of asset management services for the power generation projects it develops or acquires. These services include the management of all construction, operational, commercial, financial, legal and regulatory issues for the projects. The firm has managed more than 30,000 MW of power generation under construction or in operations. *Figure 3* summarizes LS Power's experience permitting, developing, constructing, owning and operating generation in the U.S., totaling over 50 facilities with a total capacity in excess of 30,000 MW.

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Much of LS Power's success in executing these generation projects can be attributed to an efficient organization and internal expertise in combination with external resources as appropriate. As with generation, successful and cost effective transmission development and construction requires strong internal capabilities and careful management of a large number of major contractors, consultants, and suppliers. Possessing these capabilities through its extensive experience uniquely positions NTD to successfully complete the Project and provide the PJM system enhancement for the benefit of electricity consumers within PJM.

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C. PROPOSED PROJECT CONSTRUCTABILITY INFORMATION

Major project components can be grouped into three broad categories: (i) a new Swisher Hill 345/138 kV substation; (ii) 345/138 kV transmission improvements, and (iii) an optional 138 kV transmission line connecting Gavin substation to the new Swisher Hill substation.² Figure 4 below shows the general location of the Project. A more detailed map depicting the representative route used as the basis of this Proposal can be found in Appendix A. The following sections describe the technical aspects of each major Project component.

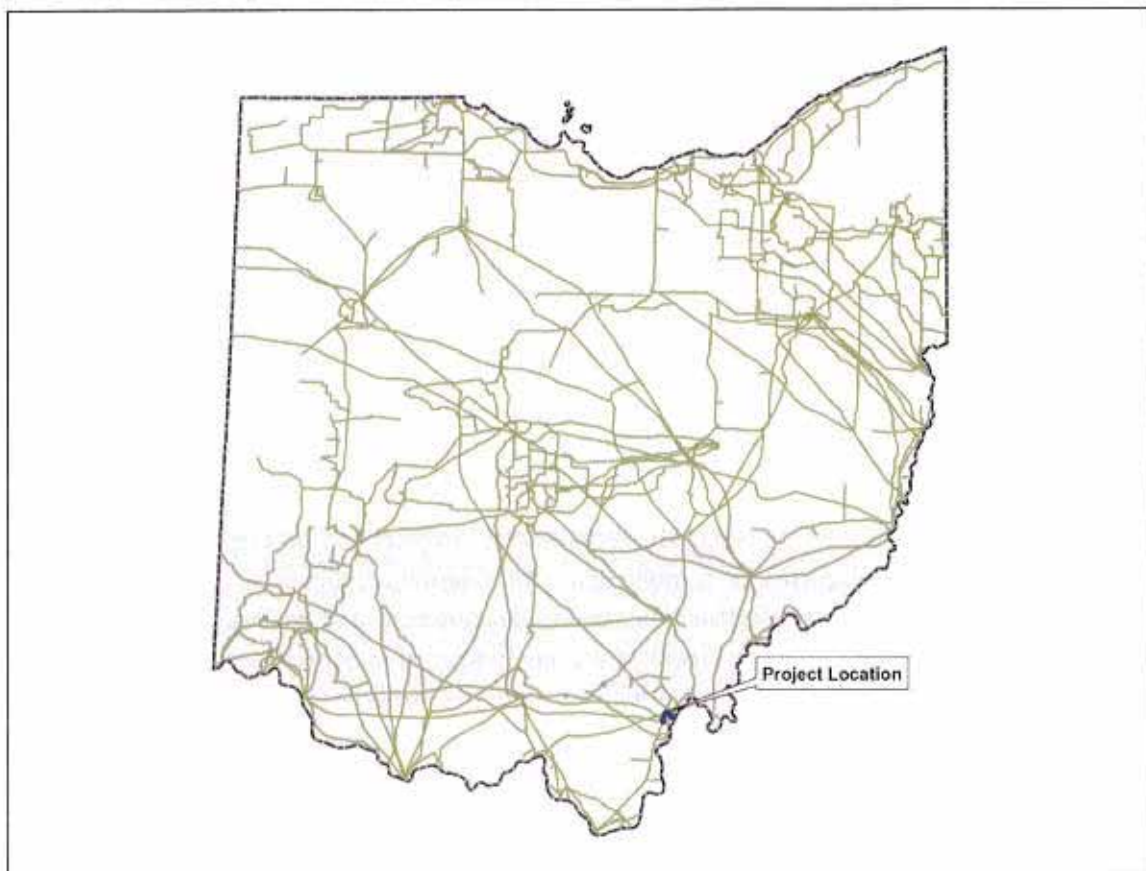


Figure 4 – Project Location

² The optional 138 kV transmission line Project component increases the degree by which the potential reliability criteria violations are resolved relative to the base proposal.

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1. Component Scope

a. Swisher Hill 345/138 kV Substation

The main component of the Project is a new Swisher Hill 345/138 kV Substation connecting the Kyger Creek to DOE 345 kV and Mercerville to Sporn 138 kV transmission line through a new 345/138 kV transformer. NTD has performed a preliminary engineering and design study to determine the technical specifications required for the interconnection to resolve potential reliability criteria violations as defined in PJM's RTEP 2014 Project Proposal Window 1 Problem Statement ("Problem Statement").

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Technical Project specifications which NTD implemented in its power flow simulations for the Project are shown in *Table 4*.

Table 4 – Project Parameters

Proposed Facility	Impedance		Rating* (MVA)
	R	X	
Swisher Hill 345/138 kV Transformer	0.002	0.02	560/560

* Normal/Emergency (Rate A/Rate B)

b. 345/138 kV Transmission Improvements

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c. Optional 138 kV Transmission Line

The optional Project component adds a new approximately 4 mile 138 kV transmission line between the existing Gavin substation and the new Swisher Hill substation. *Figure 6* contains a preliminary sketch of the proposed configuration at Gavin substation with the optional Project component. *Figure 7* contains a preliminary sketch of the proposed configuration at Swisher Hill substation with the optional Project component. Existing equipment is shown in the aerial photography and equipment proposed for the Project with the optional Project component is shown in red.

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Technical Project specifications which NTD implemented in its power flow simulations for the optional Project component are shown in *Table 45*.

Table 5 – Optional 138 kV Transmission Line Parameters

Proposed Facility	Impedance			Rating* (MVA)
	R	X	B	
<i>Clinch River to West Fork 138 kV Line</i>	0.00089	0.00956	0.00608	468/621

* Normal/Emergency (Rate A/Rate B)

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d. Project Merits

NTD has completed an extensive modeling effort to evaluate the merits of the Project. The model results demonstrate that the Project will resolve potential reliability criteria violations as identified in *Table 6*.

Table 6 – Potential Reliability Criteria Violations Resolved

Constrained Element	Contingency
Kyger Creek-Sporn 345 kV Transmission Line	'349_B2_TOR21' (single), '6190_B3_05SPORN 345- 4_WOMOAB' (single)

e. Project One-line Diagram

Using available aerial imagery and FERC data, NTD has reviewed the configuration of existing substations to generate the Project one-line diagrams shown in *Figure 8* and *Figure 9*. Existing equipment is depicted in blue; equipment to be constructed as part of the Project is shown in red.

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f. Environmental, Permitting and Land Acquisition

NTD has prepared a detailed Project execution plan for all Project components which outlines all major Project development, construction and operations activities. Additionally, NTD identified, evaluated and subsequently dismissed potential fatal flaws for the Project, confirming preliminary feasibility of the Project.

LS Power will assign a Project Director to oversee the Project through development, construction and operations/maintenance. Appendix C contains an organizational chart depicting the management structure NTD intends to implement the Project. The following sections summarize each of the major activities during the development, construction, and operations and maintenance phases of the Project.

f.1 Site Selection Analysis

NTD will conduct a detailed site selection analysis to identify preferred and alternative substation sites taking into consideration factors such as safety, environmental impacts and land use. The detailed site selection analysis will include data collection, field evaluation, environmental review, engineering analysis, right-of-way review and agency and public review. The detailed site selection analysis will identify all information necessary to support development of the application for a Certificate of Environmental Compatibility and Public Need in Ohio ("Certificate").

f.2 Community and Landowner Engagement

NTD will identify and engage stakeholders, such as community officials and landowners within the Project area, early in the process and maintain an active dialogue throughout. Public meetings may be held to offer a venue for landowners and other interested community members to learn about the Project and for NTD to learn more about specific landowner and community preferences. NTD plans to make information available on its website and provide notification of public meetings to landowners within the Project area as required in the siting approval process.

f.3 Permitting

As with all of LS Power's development projects, LS Power employees will directly oversee all Project permitting activities. From senior management to project managers and environmental, electrical and project engineers to support services including legal, administrative, regulatory and others, the Project will benefit from LS Power's detail-oriented and hands-on philosophy. In addition to LS Power personnel, NTD will utilize qualified third-party firms to support permitting and development efforts. In its experience, LS Power has found that working with local consultants and legal counsel provides both invaluable insight and the benefit of established relationships with permitting agencies. Additionally, LS Power has strong working relationships with numerous equipment manufacturers, suppliers, contractors and engineers to provide specialized technical data as necessary to support permitting; such information includes, for example, the most current equipment offerings and respective performance data, construction techniques to minimize impacts and permitting complexity and procurement and installation schedules. NTD has already held preliminary discussions with third-party support firms to confirm expectations on schedule and feasibility for permitting processes, procurement and construction, which information is incorporated in this Proposal. NTD will be involved in each step of

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the development process, carefully managing and reviewing work to ensure the various aspects of the Project fit together upon completion, ultimately being financeable and constructible.

f.4 Siting Approval

In Ohio, NTD will be required to obtain a Certificate of Environmental Compliance and Public Need from the Ohio Power Siting Board (“OPSB”). Through the Certificate process, the OPSB implements its mission to support sound energy policies that provide for the installation of energy capacity and transmission infrastructure for the benefit of the Ohio citizens, promoting the state’s economic interests, and protecting the environment and land use.

To begin the Certificate application process, NTD plans to hold pre-application meetings with the OPSB and PUC to introduce NTD and the Project, as well as confirm its understanding of the process. Shortly thereafter, NTD will simultaneously begin collecting siting data and start its outreach efforts so that public siting input is incorporated at the earliest stages of the Project. Once NTD identifies a preferred site and at least one viable alternative site, NTD will carry out the environmental and detailed engineering work described in the Site Selection Analysis section above in order to establish a highly-detailed Project plan to support the Certificate applications. Additionally, NTD intends to utilize the PJM market efficiency modeling results to demonstrate the Project need, based on the efficient and reliable operation of the PJM. By providing substantially more benefits to ratepayers than the overall Project cost, the Project promotes economic development and its completion is in the public interest.

The process begins with a completeness review, which is to last no more than 60 days. If the application is deemed complete, public notice of the application is published and the application is made available for public review. OPSB Staff reviews the application within 60 to 90 days and issues its report in advance of holding adjudicatory and public hearings to collect testimony regarding the Project. The OPSB then considers the testimony to determine the Project’s consistency with eight statutory criteria which generally focus on the need for and benefits of the Project, along with the acceptable minimization of Project impacts. Similar to in Pennsylvania, the OPSB certificate covers most local zoning and siting approvals necessary for the Project.

f.5 Wetlands and Waterways

It is possible that the Project’s will impact a limited number of wetlands and waterways. If so, NTD expects the Project will be subject to regulation under certain permitting programs, namely Section 404 of the Clean Water Act, Section 10 of the Rivers and Harbors Act, and Section 401 of the Clean Water Act.

In Ohio, wetlands permitting (for projects associated with Waters of the U.S.) falls under the jurisdiction of the USACE. NTD expects minimal impacts, if any, from the Project thereby allowing it to be eligible for Nationwide Permit (“NWP”) 12 – Utility Line Activities. The permit application takes the form of a NWP Pre-Construction Notification (“PCN”), which contains generally the same information as Pennsylvania’s joint permit application (i.e., proposed wetlands impacts, threatened and endangered species and cultural resources evaluations, etc.). Once the PCN is submitted, USACE has 30 days to

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determine if the application is complete. Upon determination that a PCN is complete, USACE's Pittsburgh District has 45 days to complete its review of the proposed wetlands impacts. USACE will issue a PCN verification letter for the proposed construction after a determination that impacts are minimal. The authorization is valid for a period of the sooner of two years or the expiration of the NWP.

f.6 Airspace Clearance

The Federal Aviation Administration ("FAA") requires that construction projects meeting certain criteria related to height and proximity to airports or heliports submit a notice of proposed construction. NTD will file Obstruction Evaluations with FAA for certain structures if needed. Preparation of the forms is straightforward and simple, requiring structure descriptions, locations and heights. FAA gives an estimated timeframe for a determination of 45 days although NTD has found the timing can be significantly less if, as expected for the Project, structures do not substantially exceed the notice thresholds. Once issued, Determinations of No Hazard to Air Navigation valid for 18 months and may be extended once for an additional 18 months.

f.7 Stormwater/Erosion and Sedimentation Control

NTD expects the Project stormwater permit will be issued by the Ohio Environmental Protection Agency as a General Permit Authorization for Stormwater Discharges Associated with Construction Activity under the National Pollutant Discharge Elimination System. NTD will apply for coverage under aforementioned program via submission of a Notice of Intent ("NOI"), which first requires development of a Storm Water Pollution Prevention Plan. Thereafter, the NOI requires general project information such as location, owner and contact information in addition to stormwater specific information including total disturbance area and construction schedule.

f.8 Various Minor Permits

In addition to the permits described above, NTD has identified other permits which may be required for the construction of the Project. NTD considers these permits to be minor due to the more limited effort to prepare applications and the less intensive permitting processes which follow. The following is a brief description of these minor permits.

- **Road crossings.** NTD expects that Federal highway, ODOT and Township road crossings will require permitting.
- **Utility and railroad crossings.** The project may cross linear facilities, such as overhead and underground utility corridors and railroads, which may require the owner's consent for the proposed occupation.

f.9 Right-of-Way Acquisition

The Project will be located primarily on new right-of-way to be acquired by NTD predominately in the form of easements. NTD will assign a Right-of-Way Manager to oversee all real estate related activities for the Project including appraisals, title work, surveying, land acquisition and restoration.

A land valuation study will be prepared to establish acreage values for the Project area to serve as the basis for consistent offers for securing easements. Title work will be prepared for each parcel and

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provided to the survey team for use in preparing legal descriptions for each easement. A right-of-way agent will contact each property owner in person to explain the Project and, as necessary, secure permission to conduct surveys, archaeological studies, etc. Right-of-way agents will be the primary point of contact and negotiate with property owners to acquire the easements on a mutually agreeable basis. To the extent that negotiations reach an impasse, NTD will be able to pursue eminent domain through provisions in the Ohio Constitution. The right-of-way agents will continue to act as a liaison with the property owners during construction and through the restoration process.

f.10 Project Construction

NTD intends to follow the same approach for construction as was most recently used to construct the Cross Texas Transmission facilities in Texas. NTD will assign a Construction Manager, an Engineering Manager and a Permit/Compliance Manager to oversee, construction, engineering and compliance activities. This will include quality assurance, field inspectors, coordination activities, outage planning, document control, and various specialists. Appendix C provides an organizational structure depicting NTD's planned management arrangement.

NTD will use a combination of owner-managed and lump sum turn-key approaches for engineering, procurement and construction of the transmission line and substation equipment.

NTD will retain an owner's engineer to complete all detailed transmission line engineering and to support construction planning, scheduling, bid document preparation, and related activities. At this time, NTD plans to directly procure the Project transmission structures, conductors, and optical ground wire and associated hardware. NTD will enter into a line construction contract for the procurement of the remaining materials and construction of the transmission line including all access development, clearing, foundation construction, structure erection, and conductor, shield wire and OPGW stringing.

For the new switching station, NTD will likely enter into a turn-key contract for the design, engineering, procurement, construction, start-up and testing of the substation equipment.

2. Project Component Cost Estimates

NTD completed a preliminary engineering and design study using the representative route as the basis for estimating Project costs. A summary of major Project cost categories as requested by PJM is provided in *Table 7*. Additionally, NTD has generated a more detailed Project cost estimate included as Appendix B that categorizes costs per Project component.

3. Schedule

A milestone schedule for each proposed Project component is provided in *Figure 10* below. The Project Schedule identifies major Project activities as requested by PJM. Inclusion of the optional 138 kV transmission line Project component is not expected to affect the project schedule. As demonstrated below, NTD's schedule allots sufficient time to complete each aspect of the Project to meet the required in-service date of June 1, 2019 without risking a delay if unforeseen issues would arise.

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4. On-going Transmission Facility Items

For all Project components, NTD intends to follow the same approach for operations and maintenance as is being used for the Cross Texas Transmission Facilities in Texas. NTD will maintain a reliable system and ensure safety and compliance with all applicable codes and standards. NTD will assign a Planning and Operations Manager to oversee the planning, maintenance, real-time operations, and emergency response activities. NTD will actively monitor the condition of the Project, perform condition based maintenance activities and replace equipment as needed. Appendix C provides an organizational structure depicting NTD's planned management arrangement.

a. Operational Plan

NTD will have a transmission operations center to provide 24/7 monitoring of the Project to monitor and control voltage levels, power flows, or other parameters of the Project, as well as implement procedures needed for emergency or planned maintenance.

b. Maintenance Plan

NTD will implement an active, thorough inspection and maintenance program for the Project consistent with industry practices including transmission line inspections, vegetative and right-of-way maintenance, and substation maintenance.

5. Assumptions

The key assumptions used in preparing the estimated costs and schedules are detailed above and in the attachments.

