DOCKET NO. 46936

APPLICATION OF SOUTHWESTERN PUBLIC SERVICE COMPANY FOR: A CERTIFICATE OF CONVENIENCE AND NECESSITY AUTHORIZING CONSTRUCTION AND OPERATION OF WIND GENERATION AND ASSOCIATED FACILITIES IN HALE COUNTY, TEXAS AND ROOSEVELT COUNTY, NEW MEXICO, AND RELATED RATEMAKING PRINCIPLES; AND APPROVAL OF A PURCHASED POWER AGREEMENT TO OBTAIN WIND GENERATED ENERGY	**§**	**PUBLIC UTILITY COMMISSION OF TEXAS**

DIRECT TESTIMONY
of
RILEY HILL

on behalf of

SOUTHWESTERN PUBLIC SERVICE COMPANY

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GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
BOP	Balance of Plant
CAR	Cost Analysis Report
CCN	Certificate of Convenience and Necessity
Commission	Public Utility Commission of Texas
Gen Tie line	Generation Tie line
GIA	Generation Interconnection Agreement
GWh	Gigawatt hour
Invenergy	Invenergy, LLC
IRS	Internal Revenue Service
KG&E	Kansas Gas & Electric
kV	Kilovolt
kW	Kilowatt
MET	Meteorological
MSA	Master Supply Agreement
MW	Megawatt
NCF	Net Capacity Factor
NextEra	NextEra Energy Resources, LLC
NMPRC	New Mexico Public Regulation Commission

Acronym/Defined Term	Meaning
NSPM	Northern States Power Company, a Minnesota corporation
O&M	Operations and Maintenance
OAA	Omnibus Appropriations Act
POD	Plan of the Day
PSA	Purchase and Sale Agreements
PSCo	Public Service Company of Colorado, a Colorado corporation
PTC	Production Tax Credits
PURA	Public Utility Regulatory Act
RFP	Request for Proposal
SMWA	Service Maintenance and Warranty Agreement
SPP	Southwest Power Pool, Inc.
SPS	Southwestern Public Service Company, a New Mexico corporation
SPS Projects	522 MW Sagamore Wind Project and 478 MW Hale Wind Project
TAC	Texas Administrative Code
TSA	Turbine Supply Agreement
Vestas	Vestas-American Wind Technology, Inc.
WTG	Wind Turbine Generator
Xcel Energy	Xcel Energy Inc.
XES	Xcel Energy Services, Inc.

LIST OF ATTACHMENTS

Attachment	**Description**
RH-1	Map of the Sagamore Wind Project (*Non-native format*)
RH-2	Map of the Hale Wind Project (*Non-native format*)
RH-3	Photos of Construction Components (*Non-native format*)
RH-4 and RH-4(HS)	Purchase and Sale Agreement for Sagamore Wind Project (*Non-native format*)
RH-5 and RH-5(HS)	Purchase and Sale Agreement for Hale Wind Project (*Non-native format*)
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RH-7(HS)	Hale Wind Project Construction Costs (*Non-native format*)
RH-8	Lawrence Berkley National Laboratory Market Report (*Non-native format*)

DIRECT TESTIMONY
OF
RILEY HILL

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

Q. Please state your name, business address, and job title.

A. My name is Riley Hill. My business address is 1800 Larimer Street, Suite 1300, Denver, Colorado 80202.

Q. On whose behalf are you testifying in this proceeding?

A. I am filing testimony on behalf of Southwestern Public Service Company, a New Mexico corporation ("SPS") and wholly-owned electric utility subsidiary of Xcel Energy Inc. ("Xcel Energy").

Q. By whom are you employed and in what position?

A. I am employed by Xcel Energy Services Inc. ("XES"), the service company subsidiary of Xcel Energy, as Senior Vice President, Energy Supply.

Q. Please summarize your educational and professional background.

A. I graduated from Wichita State University in 1989 with a Bachelor of Science Degree in Electrical Engineering. I graduated summa cum laude with university honors.

I began my employment in the utility industry with Kansas Gas & Electric ("KG&E"), which later became Westar Energy in Wichita, Kansas in 1980 as a laborer in the line department. While at KG&E, I served in many operations and support positions up to and including my last position of Senior Director of Substation engineering, construction, and operations. Additionally, while at KG&E,

I returned to school and completed my Bachelor of Science Degree in Electrical Engineering in 1989.

In 2004, I left Westar Energy and joined Xcel Energy to serve as the Director of the Denver Metro West gas and electric distribution operations for Public Service Company of Colorado, a Colorado corporation ("PSCo"). Additionally while at PSCo, I served as the Vice President of Construction, Operations and Maintenance for the gas and electric distribution and gas transmission organizations. Finally, while at PSCo, I served as the Vice President of Customer and Community Relations. In 2009, I moved to Texas to serve as the President and CEO of SPS.

In 2014, I moved into my current role of Senior Vice President of Energy Supply based in Denver, Colorado. In my current role, I am responsible for the design, construction and operations of all non-nuclear generating facilities that are used to serve customers in all of Xcel Energy's service territory in eight states.

Q. Have you testified before any regulatory authorities?

A. Yes, I provided written testimony in support of PSCo's application for approval of its Rush Creek Wind Project before the Colorado Public Utilities Commission in Proceeding No. 16A-00117E.

II. ASSIGNMENT AND SUMMARY OF TESTIMONY

Q. What are your assignments in this proceeding?

A. The purpose of my testimony is to provide a detailed overview of the 522 megawatts ("MW") Sagamore Wind Project and the 478 MW Hale Wind Project (collectively sometimes referred to as the "SPS Projects") that SPS is proposing to acquire and construct in this proceeding. In my testimony, I will describe:

- The selection of the Sagamore and Hale Wind Projects sites and key attributes of the SPS Projects;
- The acquisition of the wind development rights from Invenergy, LLC ("Invenergy") and NextEra Energy Resources, LLC ("NextEra") for the Sagamore Wind Project and the Hale Wind Project, respectively, through Purchase and Sale Agreements (individually the agreements are referred to as a "PSA");
- The major material and construction contracts SPS[1] has or expects to enter into for construction of the Sagamore and Hale Wind Projects, such as the Master Supply Agreement ("MSA") and Balance of Plant ("BOP") contract;
- The design and construction cost estimates for the SPS Projects;
- The construction schedules for the SPS Projects;
- The construction management techniques and oversight process SPS is employing to ensure the SPS Projects are developed on time and on budget;
- A comparison of the construction costs of the SPS Projects to the market for similar wind projects;
- The Generation Tie lines ("Gen Tie lines") needed to connect the SPS Projects to the interconnection tie breaker on the transmission grid; and

[1] For purposes of this testimony, references to SPS will include XES and SPS unless the terms are separately identified.

- SPS's compliance with Public Utility Regulatory Act ("PURA")[2] and the Public Utility Commission of Texas ("Commission") criteria to be granted a certificate of convenience and necessity ("CCN") for the SPS Projects.

Q. Please summarize your testimony.

A. My testimony demonstrates that in an effort to take advantage of the extension of federal Production Tax Credits ("PTC"), SPS diligently investigated whether it could add wind generation for the SPS region, which in turn would provide significant fuel cost savings for customers. After considering possible wind generation acquisition options that would qualify for the PTC benefits and after performing due diligence, SPS selected the Sagamore and Hale Wind Projects. Both SPS Projects are to be located at high-quality, viable sites for wind generation development.

SPS reasonably estimated construction costs for the SPS Projects based on its experience with the development, construction, and operation of over 850 MW of utility-owned wind generation in other service territories. My testimony presents the construction estimates for the SPS Projects and reviews the experience Xcel Energy has of constructing wind projects within budget(s) and within the construction deadline(s).

SPS sequenced the contracts to ensure qualification for PTC benefits and to acquire the wind development rights from Invenergy and NextEra for the Sagamore and the Hale Wind Projects, respectively. The agreements that currently exist are: (1) a MSA between an Xcel Energy subsidiary, Capital Services, LLC and Vestas-

[2] PURA is codified in Title II of the Texas Utilities Code Tex. Util. Code Ann. §§ 11.001–58.303 (West 2016), §§ 59.001–66.017 (West 2007 & Supp. 2016). It is not clear that SPS needs approval under PURA § 14.101 to purchase the two construction sites, but SPS is seeking that approval from the Commission out of an abundance of caution.

American Wind Technology Inc. ("Vestas") for purchase of wind turbines needed to qualify for PTC benefits;[3] (2) PSAs for wind development rights for each of the SPS Projects; and (3) a Sale of Components Agreement between Capital Services, LLC and SPS so that SPS can obtain the turbines from Capital Services, LLC.

Prospectively, SPS will also enter into: (1) Turbine Supply Agreements ("TSA") for the additional wind turbines to complete the SPS Projects; (2) BOP contracts for the installation of the wind turbines and construction of the site infrastructure; (3) Service Maintenance and Warranty Agreements ("SMWA") for Vestas to perform warranty work and three years of scheduled maintenance on the wind turbine generators after final commissioning; and (4) smaller contracts to be entered into including, but not limited to, contracts for long lead time substation transformers, engineering services, and geotechnical investigations.

Under the PSAs, Invenergy and NextEra are required to deliver construction ready sites. Included in these obligations are responsibility for securing local, state and federal permits, and any other necessary approvals or clearances for completing the development of the wind farms. Invenergy and NextEra are also responsible for obtaining real property interests such as leases, purchase options or fee title necessary to support wind farm development.

There are material risks associated with the construction of the SPS Projects. However, SPS has developed management techniques and oversight processes through experience with other projects, as well as interactions with industry

[3] SPS witness Evan D. Evans addresses the requirements to qualify for 100% PTC benefits, including what actions were necessary meet the safe harbor requirements under the OAA.

stakeholders and contractors to help mitigate these risks and ensure the SPS Projects can be built at reasonable costs and in a timely fashion. Similarly, the construction schedules for the SPS Projects allow for potential risks to be addressed while still meeting the deadlines for 100% of PTC benefits.

The costs of the Sagamore and Hale Wind Projects compare favorably to: (1) other Xcel Energy wind projects; and (2) installed cost of wind power projects in the U.S. as reported by the U.S. Department of Energy, the August 2016 Lawrence Berkley National Laboratory Market Report, provided in Attachment RH-8. In particular, at $1,581 and $1,537 per kilowatt ("kW"), the costs of the Sagamore and Hale Wind Projects, respectively, are lower than all but one of the other Xcel Energy wind projects and are lower than the capacity-weighted average installed project cost for wind power projects in the U.S. in 2015 of $1,690/kW.

Finally, Gen Tie lines are needed to connect the SPS Projects to the transmission grid. For the Sagamore Wind Project, SPS estimated the Gen Tie Line to be between 4 and 5 miles in length and cost approximately $3.5 million. For the Hale Wind Project, SPS estimated the Gen Tie Line to be between 12 and 15 miles in length and cost approximately $9 million. These costs are included in the SPS Projects' total budgets.

Q. Were Attachments RH-1, RH-2, RH-3, RH-6(HS), and RH-7(HS) prepared by you or under your direct supervision and control?

A. Yes.

Q. Are Attachments RH-4, RH-4(HS), RH-5, RH-5(HS), and RH-8 true and correct copies of the documents you have described in your testimony?

A. Yes.

III. SPS PROJECT DESCRIPTIONS AND SELECTION

Q. What topic do you discuss in this section of your testimony?

A. In this section of my testimony, I provide descriptions of the Sagamore and Hale Wind Projects, with a particular focus on why, from an engineering perspective, SPS selected these two projects for development and ownership.

Q. Why, from an engineering perspective, were the Sagamore and Hale Wind Projects selected?

A. After evaluating several options, the Sagamore and Hale Wind Projects were selected for several key reasons.

First, each project was advantageously located near substations that would allow interconnection at a sufficient injection point on the Southwest Power Pool, Inc. ("SPP") transmission grid at a reasonable cost. In particular, the Hale Wind Project was located approximately 12 to 15 miles from the TUCO substation and the Sagamore Wind Project was located approximately 4 to 5 miles from the Crossroads substation.

Second, the topography where the SPS Projects are located makes the sites well-suited for new large scale wind development. In addition, the SPS Projects' proximity to the other successful wind farms operating in this area: (1) supported that the SPS Projects' ability to successfully harness the strong wind energy resource that exists in the areas; and (2) provided SPS with experience with wind resources in this region, including access to extensive data and forecasting capabilities.

Third, the selection of the Sagamore and Hale Wind Project sites allowed SPS to partner with two industry leaders and well-established wind power generation

companies – Invenergy for the Sagamore Wind Project and NextEra for the Hale Wind Project.

Q. Please provide a description of the Sagamore Wind Project.

A. The Sagamore Wind Project will be a 522 MW facility located in Roosevelt County, New Mexico. To develop the Sagamore Wind Project, SPS will install a combination of Vestas model 2.0 MW V110 and V116 wind turbines to produce 522 MW. Site infrastructure will include access roads, foundations, electrical cable collection systems, and collection system substations.

Pending the outcome of the SPP's study, which is discussed in the direct testimony of SPS witness William A. Grant, generation output is expected to tie into the SPP transmission system by installing a Gen Tie line from the Sagamore Wind Project collector station to the interconnection tie breaker at the Crossroads substation. Mr. Grant discusses the process to determine what type of transmission upgrades are needed to interconnect the Sagamore Wind Project to the SPP transmission grid in his direct testimony.

A proposed map of the Sagamore Wind Project is provided as Attachment RH-1. As discussed in more detail by Mr. Evan D. Evans, the Sagamore Wind Project will be completed in time to qualify for the full value of federal PTCs, therefore maximizing the available cost savings to SPS customers.

Q. Please provide a description of the Hale Wind Project.

A. The Hale Wind Project will be a 478 MW facility located in Hale County, Texas. To develop the Hale Wind Project, SPS will install a combination of Vestas model 2.0 MW V110 and V116 wind turbines to produce 478 MW. Site infrastructure will

include access roads, foundations, electrical cable collection systems, and collection system substations.

Similar to the Sagamore Wind Project, generation output will tie into the SPP transmission system through a Gen Tie line from the Hale Wind Project collector station to the interconnection tie breaker at the TUCO substation (i.e., the SPP transmission grid point). Mr. Grant discusses the process to determine what type of transmission upgrades are needed to interconnect the Hale Wind Project to the SPP transmission grid in his direct testimony.

A proposed map of the Hale Wind Project is provided as Attachment RH-2. As discussed in more detail by Mr. Evans, the Hale Wind Project will be completed in time to qualify for the full value of federal PTC, therefore maximizing the available cost savings to SPS customers.

Q. Explain further the value of partnering with Invenergy and NextEra.

A. Invenergy is a well-established Independent Power Producer. Invenergy is North America's largest independent wind power generation company, with a strong track record of success having developed 68 wind farms across the United States, Canada and Europe, totaling over 7,654 MW. Similarly, NextEra is one of the largest generators of renewable energy from wind and sun in North America, with 117 wind farms in 20 states and Canada, totaling over 13,850 MW.

The opportunity to partner with Invenergy and NextEra on the acquisition of the Sagamore and Hale Wind Project sites allowed the combination of Xcel Energy's construction and operations expertise with the wind development expertise of these two developers, which provided great confidence in having "construction-ready" sites

of this scale within the timeframe necessary to take advantage of full PTC benefits for SPS's customers.

With respect to Invenergy, Xcel Energy has previously partnered with them on a 600 MW wind project through a similar "construction–ready" acquisition in Colorado, as well as other "Build Own Transfer" wind projects for Northern States Power Company—Minnesota ("NSPM"). To date, the partnership has been successful and has allowed Xcel Energy to gain beneficial experience that supports pursuing a partnership with Invenergy in the SPS service territory.

In summary, Invenergy and NextEra originally acquired the rights to the respective sites because, based on their extensive wind development expertise, they saw the ability to harness strong wind resources and develop both projects at their respective sites. SPS picked the SPS Projects to acquire and develop for the same reasons.

Q. Did SPS rely on any third parties to verify that Sagamore and Hale Wind Project sites were viable options?

A. Yes. A significant component of this due diligence effort involved a detailed third party analysis of the proposed wind resources, which was performed by Mr. David DeLuca of AWS Truepower.

Q. Why did SPS choose AWS Truepower?

A. AWS Truepower is a recognized leader in weather instrumentation and industrial monitoring and was selected due to their significant expertise in this area. Moreover, Xcel Energy has previously worked with AWS Truepower on other projects.

Q. Please describe AWS Truepower's analysis further.

A. AWS Truepower performed a wind resource assessment to verify the quality of the wind resource at Sagamore and Hale Wind Project sites. In particular, SPS contracted with AWS Truepower to perform a third-party analysis of the Sagamore and Hale Project site wind data.

As explained in the direct testimony of Mr. DeLuca, as part of the wind resource assessment, for the Sagamore Wind Project, AWS Truepower reviewed and confirmed Invenergy's site meteorological ("MET") tower data taken over the past five to six years and compared that data to available industry information to develop models of the wind energy resource. For the Hale Wind Project, AWS Truepower utilized available wind resource data for the region to analyze the potential of the wind farm. In addition to the estimate of expected generation, AWS Truepower undertook an uncertainty analysis, in which uncertainty of every step of the process is considered and modeled to make output predictions at various probability levels.

AWS Truepower concluded that by using the proposed Vestas model 2.0 MW V110 and V116 wind turbines, the expected net generation at Sagamore Wind Project is 2,389 Gigawatt hour ("GWh")/year with a net capacity factor ("NCF") of 52.2% and the expected net generation at the Hale Wind Project is 2,077 GWh/year with a NCF of 49.6%.[4]

[4] NCF characterizes the efficiency of the plant and is derived from taking what the plant is expected to generate and dividing it by the amount the plant could generate if operated at full output for an entire year based on a 50% or P50 industry recognized number.

Q. Are the analyses to be performed by AWS Truepower finished?

A. No. AWS Truepower is in the process of completing a detailed MET tower data model for the Hale Wind Project to be utilized for further siting and development activities. AWS Truepower will also assist in micro-siting for both SPS Projects, which involves optimizing the specific location of each wind turbine.

Q. Did SPS also perform its own due diligence activities for the Sagamore and Hale Wind Projects?

A. Yes.

Q. How did SPS undertake its due diligence?

A. SPS based its due diligence for the Sagamore and Hale Wind Projects on answering questions and gathering information regarding nine general areas: (1) transmission and interconnection; (2) land control; (3) wind turbine supply; (4) wind data; (5) siting and permitting; (6) technical attributes; (7) financial considerations; (8) legal; and (9) environmental. The approach was similar to the due diligence approach taken by NSPM. NSPM owns over 850 MW of wind generation and started using this due diligence approach in 2008 with its acquisition of the Grand Meadow Wind Farm and has continued to follow this approach with NSPM's acquisition of the Nobles, Pleasant Valley, Border Winds, and Courtenay wind farms. PSCo also has used this approach for its Rush Creek Wind Project.

Based on the answers and information gathered, SPS personnel determined whether significant issues exist that could threaten the development of a project.

These groups of SPS personnel also reviewed Invenergy and NextEra's documents and data to identify any questions and/or issues with the SPS Projects to

date. SPS also contracted with third party consultants where appropriate to verify the developer's information.

The ultimate goal of the due diligence undertaken by SPS was to ensure that a proposed project has been properly developed and is "shovel ready" or "construction ready" in industry terminology.

Q. Have SPS's due diligence efforts to date identified any significant issues that would halt the development of the Sagamore or Hale Wind Projects?

A. No. Based on the results of the due diligence process, the risks of the SPS Projects are considered low and are expected to remain low throughout the acquisition, design, engineering, permitting, and construction phases. For example, the environmental evaluation identified low risk with regard to area wetlands, presence of endangered species, avian impacts, and cultural and historical resources.

Q. Are due diligence efforts continuing?

A. Yes. The due diligence actions will continue for the two SPS Projects. For example, additional lower risk studies and assessments will be conducted throughout the summer of 2017, such as cultural resource, microwave beam path, wildlife, detailed turbine siting, and soil/geotechnical studies. Additionally, project performance and wind data was independently verified to confirm its acceptability for the SPS Projects.

By the fall of 2017, I expect that 80% of the outstanding studies will be complete. The timing and progression of these studies and site assessments is typical for a construction project prior to securing regulatory approvals.

Q. What if the continuing due diligence efforts identify issues of concern?

A. To the extent issues are identified, SPS fully expects it can mitigate any risks through project design. For example, the available acreage at both the Sagamore and Hale Wind Project sites allows for final turbine siting to avoid any undesirable soil conditions, geotechnical conditions or isolated cultural resource locations that may be identified during detailed studies. As provided in the PSAs, both Invenergy and NextEra will obtain additional sites for the turbines to allow SPS to react to the possible issues noted above. Having access to preselected additional sites is typical in the industry, and gives us flexibility to mitigate potential issues through siting and project design.

Q. In addition to the due diligence performed by SPS and AWS Truepower, did Invenergy and NextEra perform wind resource assessments of the Sagamore and Hale Wind Projects?

A. Yes. Developers typically analyze a wind farm site's wind resource by using wind data collected on-site and correlating it to publicly available long-term data sets to show the estimated performance of the site projected over the wind farm's estimated life. Invenergy and NextEra performed these activities for the Sagamore and Hale Wind Projects, respectively.

As part of the final engineering and design phase, SPS and Invenergy (for the Sagamore Wind Project) and SPS and NextEra (for the Hale Wind Project) along with Vestas (the turbine supplier) will continue to optimize the production by performing a production analysis. The production analysis will evaluate turbine

locations and revise the site(s) layout to increase the production of the site while also controlling construction costs.

Q. What NCF did SPS use in its cost analysis of the SPS Projects?

A. SPS used data from AWS Truepower and then modified that data to reflect the following Project-specific specifications:

1. The long-term availability used by AWS Truepower are averages for all manufacturers of turbines that reflect equipment failures related to earlier equipment used in the industry. In contrast, the equipment being supplied for the SPS Projects today is more mature, so the reliability and performance of the equipment has improved.

2. Next, the contract with Vestas has an uprate factor for the performance of the turbines that is not public and was not available to AWS for its wind resource assessment. SPS, along with Vestas, applied this performance to the AWS Truepower NCF values.

3. Currently, there is uncertainty regarding the exact mix of V110 (i.e., the safe harbor turbines) and the V116 turbines that will be supplied for the SPS Projects. As a result, SPS made a modification in NCF to account for this optionality, along with another minor reduction for contingency.

4. SPS modified AWS Truepower's NCF values to account for expected losses, based on the estimated length of the SPS Projects' Gen Tie lines.

The resulting NCF estimated for the SPS Projects at the point of interconnection are 53.8% and 51% for the Sagamore and Hale Wind Projects, respectively. As noted above, these modifications are higher than AWS Truepower's estimated NCF of 52.2% and 49.6% for the Sagamore and Hale Wind Projects, respectively.[5]

[5] The difference between AWS Truepower's estimated NCF and the Project-specific NCF is the combined effect of the specifications I have described and the total percentage adjustment cannot be attributed solely to one specification.

SPS used those Project-specific NCFs in its cost analyses presented in SPS witness Jonathan Adelman's direct testimony. In his direct testimony, Mr. DeLuca discusses the AWS Truepower data that was provided to SPS.

Q. What activities will Vestas perform for due diligence purposes?

A. Similar to AWS Truepower, Vestas will also perform a production analysis. The production analysis is being provided at no additional cost as part of the relationship between Vestas and SPS. SPS will use the Vestas production analysis to further evaluate the turbine locations and finalize the site(s) layout to help maximize production output while also controlling construction costs.

Q. Based on the site selection process and due diligence conducted to date, do you think the Sagamore and Hale Wind Projects are strong projects?

A. Yes. These are low-risk sites with high quality wind resources, and as I discuss further below, the Sagamore and Hale Wind Projects compare favorably from a cost perspective with other similar wind projects in the market. The benefits from a well thought out project with a strong wind resource and favorable price will flow to SPS customers, and the Sagamore and Hale Wind Projects satisfies these criteria.

IV. CONSTRUCTION AND OTHER SPECIFICS OF THE SPS PROJECTS

Q. What topic do you discuss in this section of your testimony?

A. I discuss how Xcel Energy constructs a wind generation project and how Xcel Energy's prior experience with similar projects provides the requisite skills to develop the Sagamore and Hale Wind Projects. I will also address the contracts SPS has entered into or intends to enter into to develop the Sagamore and Hale Wind Projects.

A. The Wind Farm Construction Process

Q. Please describe what is involved in building a wind generation project, including the major construction components of the Sagamore and Hale Wind Projects.

A. Constructing a wind generation project such as the Sagamore and Hale Wind Projects, generally involves seven main components: turbine access roads; turbine foundations; tower erection; collector system; collector substation; high voltage generation tie line; and an operations and maintenance ("O&M") building. These components are described below and shown in the corresponding numbered photos included as Attachment RH-3, which provide some visual context for each of these construction components. Although the components outlined below represent the typical construction sequence for any wind farm, some or many of these activities can occur simultaneously.

1. Road Construction: The first step in the construction sequence is to construct access roads to the turbine sites and substation locations to allow equipment and material delivery during construction. Roads will be designed with proper grading and drainage, and will be specifically constructed to support heavy machinery and construction materials. Following construction, the roads will continue to be used to access each turbine for ongoing maintenance and operation purposes.

2. Turbine Foundations: Foundations will be constructed at each tower site location using a typical foundation design of reinforced concrete consisting of layers of steel rebar and a centrally located anchor bolt cage design to support the Vestas loading requirements.

3. Tower Erection: Once the foundations have been constructed and backfilled, the approximately 80-meter turbine towers comprised of three sections, the Nacelle and the blades (3 per turbine) will be unloaded adjacent to each foundation and erected using a crane. Turbine component deliveries will be scheduled a few weeks in advance of the actual tower and turbine erection to assure that there is an adequate "inventory" of turbine components staged on site and allow for unimpeded turbine erection. The first two tower sections are set with a smaller crane. Then a larger crane is brought in to set the top tower section. Next, the nacelle is then raised and bolted to the top of the tower; the nacelle houses all of the generating components in a wind turbine, including the main shaft, gearbox, generator, and transformer. The hub and three 54-meter-long blades will then each be raised and attached to the nacelle. These components constitute the hub assembly.

4. Collector System: An electrical collector system will be trenched (or possibly plowed) in underground to bring each turbine's electrical output to the collector substation described in #5 below. The collector cable sizes will be determined by the final engineering design.

5. Collector Substation: A collector substation will be constructed to accept the underground collection cables from each circuit and combine them prior to the voltage being stepped up by transformers from the turbines' 480 volt generation voltage to 34.5 kilovolt ("kV") collection system voltage to transmission interconnection 230 or 345 kV voltage.

6. High Voltage Generation Tie Line: The high voltage generation tie line is constructed, which connects from the high side of the Collector Substation transformers to the breaker located at the transmission grid connection point.

7. Operations & Maintenance Building: An Operations & Maintenance building will be constructed on each site to house the facility office, maintenance crews, computer systems for plant operations, spare parts storage, repair and maintenance shop areas and equipment storage.

Q. Please generally address Xcel Energy's role in the construction process.

A. For the Sagamore and Hale Wind Projects, XES (and SPS) personnel will assume overall project management responsibility. I have great confidence in the XES (and SPS) personnel's collective ability to provide the overall project management based

on the history of their successful project management of much larger and more complex projects in recent years.

In addition to internal personnel, both Vestas and the selected BOP contractor(s) will have project management and engineering personnel on site. Vestas and the BOP contractor ultimately selected will be highly invested in the success of the Sagamore and Hale Wind Projects and will work hand in hand with XES and SPS management to ensure the SPS Projects are brought on-line safely, on time and on budget. Vestas and any of the BOP contractors being considered are major developers in the wind farm industry and know that the success of the Sagamore and Hale Wind Projects is essential to their future opportunities in the industry.

Q. How is Xcel Energy's previous construction and project development experience relevant to this proceeding?

A. Xcel Energy has a long and successful history in all aspects of large scale generation projects, including wind farm projects. To provide some overall perspective, currently the electric systems of all four of the Xcel Energy operating companies are comprised of approximately 18,000 MW of generating capacity (6,566 MW of wind), 19,523 miles of transmission, 1,219 substations, and 48,068 miles of overhead and 26,580 miles of underground distribution. Therefore, Xcel Energy has constructed, operated, and maintained tens of thousands of megawatts of generating units of all fuel types and sizes including wind turbine generators and tens of thousands of miles of transmission and distribution lines, as well as over a thousand substations. All of Xcel Energy's non-wind related generating stations that utilize combustion turbines,

combined cycle units, and coal fired units are significantly more complex than wind turbine generators. Traditional generating units have hundreds to thousands of components (e.g., pumps, motors, boilers, and coal mills) not found on wind turbines.

Most importantly, Xcel Energy performs these projects safely and currently has an Occupational Safety and Health Administration rate in the top quartile of the industry.

Q. How does Xcel Energy's previous construction and project development experience specifically apply to the construction of the Sagamore and Hale Wind Projects?

A. Based on the seven main construction components I outlined above, SPS views the construction of the Sagamore and Hale Wind Projects as very similar to construction of SPS's typical transmission projects, which primarily includes building roads into an open field, setting foundations, erecting towers, pulling/burying wire, building substations, and connecting to the transmission grid. SPS and XES are very skilled at each of these construction components because of their similarity to the type of work done across the SPS (and other operating companies) service territory.

For example, the collector system of a wind farm is basically an underground distribution system that is nearly identical (a collector system utilizes a higher voltage than SPS's typical residential distribution systems) to an underground distribution system widely used across SPS's service territory to serve residential subdivision customers. Similarly, the substations, transformers, and transmission line are all identical to infrastructure in place all across our service territory.

Furthermore, the commissioning process for the collector system, transmission and substation facilities is identical to the commissioning of any other substation, transmission, and distribution project on SPS's system. The commissioning of the wind turbines is much simpler than the commissioning of a gas combustion turbine, combined cycle, or gas/coal fired steam generating station as there are significantly fewer moving parts and systems. As part of their contract to supply the turbines, Vestas will commission the wind turbines for SPS once construction is completed. Commissioning wind turbine generators includes, among other things: calibrations; UPS battery checks; blade pitch; yaw checks; and equipment alignments. When all testing and commissioning has been completed, SPS declares the facility commercial and turns its operation over to Xcel Energy's commercial operations group to dispatch.

Q. Please briefly address Xcel Energy's specific experiences with other wind farm construction.

A. With regard to specific wind farm construction on Xcel Energy's system, in recent years, NSPM contracted to have its Pleasant Valley Wind Project and Border Winds Project built through a build own transfer, commonly known as a "BOT", structure. In this structure, NSPM had the developer perform construction up to the point of "handing us the keys." However, NSPM was not a passive participant or merely a buyer of the projects. Rather, NSPM was very involved in the oversight of the projects and gained a great deal of expertise during the respective processes.

For NSPM's latest project - the Courtenay Wind Farm in North Dakota - NSPM transitioned to a more hands on approach. NSPM purchased the Courtenay

site from the developer as a "construction ready" site, under which the developer had completed upfront development activities including, among other things: permitting; lease agreements; and preliminary design work. Once purchased from the developer, NSPM took over control and management of all aspects of the project. This approach is nearly identical to the approach proposed for the Sagamore and Hale Wind Projects. I note that the Courtenay Wind Project was completed in November of 2016, was on schedule, and came in at 5% under the estimated budget.

In addition, PSCo is currently constructing a 600 MW Rush Creek Wind Project. Similar to the Courtney project for NSPM, for the Rush Creek Wind Project, PSCo purchased the Rush Creek sites from the developer as a "construction ready" site. Also, similar to the Courtney Wind Project, the developer for the Rush Creek Wind Project completed upfront development activities including, but not limited to: permitting; lease agreements; and preliminary design work.

Due to the Pleasant Valley Wind Project and Border Winds Project, as well as the more recent Courtenay and Rush Creek projects, Xcel Energy has learned a significant amount about constructing a new wind farm, and perhaps most importantly, learned that it possesses the skills to build, operate and maintain wind farms successfully. I am very confident in Xcel Energy's ability to complete the Sagamore and Hale Wind Projects safely, within budget, and on time.

Q. What contracts have SPS or other Xcel Energy affiliates entered into with regard to the Sagamore and Hale Wind Projects?

A. There are several major contracts associated with the Sagamore and Hale Wind Projects:

1. First, Capital Services, LLC entered into a MSA with Vestas for model 2.0 MW V110 and V116 Vestas wind turbines. The MSA ensured that sufficient turbines were purchased to comply with the safe harbor requirements under the Omnibus Appropriations Act ("OAA") for PTC benefits.

2. Second, SPS entered into two similar PSAs to acquire the wind development rights from Invenergy and NextEra for the Sagamore Wind Project and the Hale Wind Projects respectively for the acquisition of the Sagamore and Hale Wind Projects. Under the PSAs, the developers are required to provide sites ready for SPS to begin construction. The PSAs are included as Attachment RH-4 and RH-4(HS) and Attachment RH-5 and RH-5(HS) for the Sagamore and Hale Wind Projects, respectively.

3. SPS entered into a Sale of Components Agreement with Capital Services, LLC to purchase the wind turbines that were purchased to comply with the safe harbor requirements under the OAA.

The Sale of Components Agreement is addressed by Mr. Evans, including the reasonableness of the agreement. For this reason, my testimony will not separately discuss the Sale of Components Agreement any further. The other contracts are discussed further below.

Q. What contracts will SPS enter into prospectively with regard to the Sagamore and Hale Wind Projects?

A. There will be several future agreements:

1. Under the scope of the MSA, and pending receipt of necessary regulatory approvals, SPS will execute specific TSAs with Vestas to purchase the additional turbines needed to complete the development of the SPS Projects and deliver the turbines to the SPS Projects' sites.

2. SPS will also enter into fixed price BOP construction contracts for the installation of the wind turbines and construction of the sites' infrastructure.

3. Another major contract is the SMWA, which will also be with Vestas. The SMWA has a term of three years and is addressed further in the testimony of SPS witness Mr. William P. Zawacki.

These contracts are discussed further below.

Q. Before you discuss the contracts further, explain how SPS determined the sequence of contracts for the SPS Projects?

A. SPS moved forward systematically through an established system of prioritization in executing these contracts. The MSA was entered into first to ensure sufficient turbines were purchased to comply with the safe harbor requirements of the OAA. Next, the PSAs were executed so SPS could possess development rights on the real property at the Sagamore and Hale Wind Projects sites.

Once regulatory approvals are received, the TSAs will be executed to purchase additional turbines necessary to complete the SPS Projects and deliver the turbines to each SPS Project's site, as well as establish the design criteria of the sites' infrastructure. The SMWA will be executed as part of the TSA process. Similarly, the affiliate sales agreement between Capital Services, LLC and SPS will be executed once regulatory approvals are received.

SPS will move forward to bid out and secure the BOP contract by the fourth quarter of 2017, which will cover the construction of the site, roads, foundations, tower erection, and collector system. Finally, I note there will also be a few smaller contracts to be entered into including, but not limited to, contracts for long lead time substation transformers, engineering services, and geotechnical investigations.

B. Master Service Agreement

Q. Please describe the MSA.

A. On September 15, 2016, Capital Services, LLC entered into the fixed price MSA with Vestas, a leading international wind turbine supplier with manufacturing operations in Colorado. The MSA governs the purchase of turbines from Vestas by

Capital Services, LLC. The MSA also governs the delivery, inspection, storage, and maintenance of the turbines, as well as the timelines for completion of the turbines and qualification for PTC benefits.

The MSA was entered into with Vestas after Xcel Energy obtained pricing from both Vestas and other major international wind turbine manufacturers, as part of an analysis for potential wind projects for the Xcel Energy operating companies. Xcel Energy determined that the Vestas proposal offered more favorable pricing and conditions, and the MSA is the result of comprehensive negotiations between Xcel Energy and Vestas. Moreover, the Vestas pricing and contract terms offered Xcel Energy the best opportunity to control schedule and costs because, in SPS's experience, local manufacturing significantly reduces delivery schedule and cost risks as it eliminates long duration sea or rail transportation, and minimizes delivery delays.

Q. Where will the turbines be manufactured?

A. Vestas is an international manufacturer and supplier of wind turbines, but the majority of the nacelles, towers, and blades of the Sagamore and Hale Wind Project turbines (i.e., the major components) are expected to be manufactured in the United States (Colorado).

Q. Why did Capital Services, LLC enter into the MSA with Vestas?

A. As discussed further by Mr. Evans, to receive 100% PTC benefits, the developer must have made expenditures of 5% of the total cost of the project by December 31, 2016, and the project must be in service by December 31, 2020. However, at that time the OAA was enacted, SPS had not completed negotiations with NextEra and

Invenergy, and, therefore, it did not know how many turbines it would need to purchase. Because SPS was not in a position to purchase the turbines and other assets from Vestas in 2016, Capital Services, LLC made those purchases for the benefit of SPS and its customers.

C. Purchase and Sale Agreements

Q. Describe the PSAs for the SPS Projects.

A. On March 9, 2017 and on March 6, 2017, SPS entered into two similar PSAs with Invenergy and NextEra respectively for the acquisition of the Sagamore and Hale Wind Project sites. The PSAs spell out the requirements that Invenergy and NextEra must complete to have the sites construction ready before March of 2018. This deadline will allow SPS to construct the Hale Wind Project by June 2019 and the Sagamore Wind Project by May 2020 to qualify for the full PTC benefit.

Generally speaking, the transactions are structured as a "develop-transfer.," under which a project company subsidiary of Invenergy and NextEra will perform the development activities, after which SPS will buy the project company from Invenergy and NextEra -- complete with all project contracts, permits and other assets for which Invenergy and NextEra are responsible. The closing of the PSAs will occur once: (1) Invenergy and NextEra have performed its development obligations; (2) regulatory approvals and other permits have been obtained; and (3) certain other closing conditions have been met.

Below is a non-exhaustive list of the most critical development activities that Invenergy and NextEra must perform with regard to the Sagamore and Hale Wind Projects:

- Obtain all real property rights necessary for the siting and construction, including certain lease amendments to clarify the calculation of project output-based payments to landowners;

- Manage negotiations with landowners prior to closing, including landowner meetings as appropriate;

- Manage zoning and permitting, including all permits necessary to complete the development of the Project;

- Manage title issues, including title commitments and curative work;

- Complete the microwave beam path analysis;

- Complete the FAA flight path study; and

- Assist with site layout, including turbine locations and alternate locations to optimize the project's performance.

Invenergy and NextEra are responsible for making the site "construction ready," while SPS is responsible for construction, including roads and procurement of turbines or other equipment under the MSA or future TSAs.

D. Turbine Supply Agreements

Q. Please describe the TSAs that will be executed if regulatory approval is received.

A. As discussed above, the MSA is between Vestas and Capital Services, LLC. Pricing is fixed under the MSA for subsequent wind turbine deliveries that will occur under TSAs that will be executed in the future between SPS and Vestas if regulatory approvals are received. The TSAs will enable the purchase of the additional turbines needed to complete the SPS Projects' construction and deliver the turbines to the SPS Projects' sites.

Q. Please describe the TSAs further.

A. The TSAs incorporate various risk mitigation measures. For example, material cost obligations are incurred once regulatory approvals are received. The TSAs also: (1)

incorporate typical turbine performance terms; (2) require timely manufacturing production and delivery; (3) include standard industry warranties and a supplier parent guaranty; and (4) incorporate liquidated damages clauses for failure to achieve the contractual milestones.

E. Service Maintenance and Warranty Agreements

Q. What is the SMWA?

A. As discussed in more detail by SPS witness William P. Zawacki, it is a contract that, when executed, will obligate Vestas to perform warranty work and three years of scheduled maintenance on the wind turbine generators after final commissioning. The defect warranty period for each turbine will run for approximately two years. SMWA costs are not capital costs, but rather are classified as an O&M cost of facility operation for ongoing maintenance of each Project.

Q. When do you expect the SMWA being executed?

A. As I mentioned earlier, SMWA will be executed as part of the TSA process. Both are conditioned on SPS receiving the necessary regulatory approvals.

F. Balance of Plant Contracts

Q. Please describe the BOP contract.

A. The BOP contract(s) for the SPS Projects will also be fixed price-contracts and similar to the MSA will minimize schedule and cost risk. The BOP contracts are expected to be awarded later this year and will be conditioned on regulatory approval of the Sagamore and Hale Wind Projects.

The scope of the BOP contract(s) will include installation of the wind turbines and construction of the site(s) infrastructure. Site infrastructure includes access roads, foundations, electrical cable collection systems, collection system substations, and O&M buildings. After completion of preliminary engineering later this spring, SPS anticipates issuing a firm price Request for Proposals ("RFP") to qualified contractors in the summer, enter into negotiations, and obtain firm pricing by the fourth quarter of 2017.

SPS will leverage the previous work done by the other Xcel Energy operating companies in selecting the list of BOP contractors to solicit bids from, as well as support the evaluation taking into account the work done by some of these BOP contractors on previous Xcel Energy projects.

V. DESIGN AND CONSTRUCTION COST ESTIMATES

Q. What topic do you discuss in this section of your testimony?

A. I discuss the design and construction cost estimates for the Sagamore and Hale Wind Projects and provide the bases for the overall estimates.

Q. What is the estimated cost of construction for the Sagamore Wind Project?

A. $825 million.

Q. What is the estimated cost of construction for the Hale Wind Project?

A. $735 million.

Q. Please provide a high-level breakdown of the projected total construction costs for the Sagamore and Hale Wind Projects.

A. There are six major categories of items making up these costs, which are provided in Attachments RH-6(HS) and RH-7(HS). Tables RH-1 and RH-2 below: (1) provide a breakdown of the construction costs for each Project; and (2) reflect four categories of costs, as opposed to six, for confidentiality reasons, but have the same total(s) as provided in Attachments RH-6(HS) and RH-7(HS).

Table RH-1 Estimated Construction Costs for the Sagamore Wind Project

Description	Value
Turbines, Development, and Construction	$748,515,585
Landowner Payments, Consulting Fees, Taxes, and Insurance	55,359,059
Project Management and Associated Costs	11,274,576
General Project Contingency	10,000,000
Total	**$825,149,220**

Table RH-2 Estimated Construction Costs for the Hale Wind Project

Description	Value
Turbines, Development, and Construction	$702,349,925
Landowner Payments, Consulting Fees, Taxes, and Insurance	11,016,698
Project Management and Associated Costs	11,170,987
General Project Contingency	10,000,000
Total	**$734,537,610**

Q. Please address how the items in the first line in Tables RH-1 and RH-2 were determined.

A. The amounts reflect the firm price contracts that either SPS or Capital Services, LLC entered into with Invenergy, NextEra, or Vestas. Attachments RH-6(HS) and RH-7(HS) provide the individual contract totals, whereas Tables RH-1 and RH-2 combined the costs for confidentiality reasons.

In addition, the first line items also include the BOP construction contract estimates for the SPS Projects. I discuss how SPS developed this estimate further below. This combination is the only difference between Attachments RH-6(HS) and RH-7(HS) and Tables RH-1 and RH-2.

Q. Please address how BOP construction contract estimates were determined.

A. SPS developed cost estimate(s) as the contracts are not yet executed. For estimation purposes, SPS started with the BOP contract estimate from the fixed cost BOP contract (which was competitively bid) for the NSPM Courtenay Wind Farm wind project. This contract is reasonably indicative of the current market for BOP services and represents a reasonable starting point to develop the BOP contract cost estimate for the Sagamore and Hale Wind Projects.

Q. What steps did SPS take to develop the BOP contract cost after considering the BOP contract estimate for the Courtenay Wind Project?

A. Because the Sagamore and Hale Wind Projects are significantly larger in nameplate capacity than the Courtenay Wind Project (i.e., 200 MW versus 522 MW and 478 MW, respectively), SPS took the Courtenay Wind Project BOP contract price as a foundation for developing the SPS Projects' BOP estimates. More specifically, SPS applied the fixed BOP cost for the Courtenay Wind Farm as a "per 200 MW" cost structure to develop a starting baseline cost estimate for the 522 MW Sagamore and 478 MW Hale Wind Projects. This new base estimate was modified for known scope of work differences between the Courtenay Wind Project and the Sagamore and Hale Wind Projects and then scaled up the estimates for the desired MW output for the Hale and Sagamore sites.

SPS then modified the BOP line items from this base estimate to account for locality specific construction issues in Texas and New Mexico based on past experience, such as local geology, availability of road base, and labor. SPS also discussed these Texas and New Mexico-centric construction issues with the North Dakota-based contractor for the Courtenay Wind Project, Mortenson Construction Company, who also has experience with wind farm construction in Texas and New Mexico, to obtain their insights on these issues and factor them into our estimate.

SPS also discussed with Invenergy and NextEra specific options for design and cost estimates for items such as roads and collection lines to get their general estimates for specific line items in the BOP contract estimate. SPS contacted

transformer manufacturers to get pricing estimates on various sizes and options along with delivery estimates.

Finally, SPS looked at approximately 25 total risks and estimated contingencies for these risks, then applied them to the relevant construction category. This information resulted in further modification to the BOP contract estimate.

Q. Referring again to Tables RH-1 and RH-2, please address the items in the second line regarding Landowner Payments, Consulting Fees, Taxes, and Insurance.

A. This line item is premised on BOP-estimated lengths for access roads and collection cables. The leases allow for the SPS Projects and associated transmission to be sited.

The estimate also includes amounts for the possible additional leases and associated costs that SPS might need to enter into prior to commercial operation. The estimated landowner payments during construction for the Sagamore and Hale Wind Projects amount to approximately $6.4 million and $4.5 million, respectively.

Tax estimates of approximately $2.3 million for the Hale Wind Project are based on payments for equipment that is not specifically used for the generation and distribution of electricity. The tax estimates for Sagamore are approximately $43.2 million and based on current New Mexico rules. These taxes were developed in consultation with Xcel Energy's tax group. The taxes are based on point of delivery and are county-specific or municipality-specific.

Consulting fees estimates of $3.3 million (each) for the Sagamore and Hale Wind Projects are based on contracts SPS has either entered into or expects entering into for necessary services such as geotechnical and storm water engineering services.

Insurance and risk avoidance fees are approximately $2.4 million for the Sagamore Wind Project and $0.9 million for the Hale Wind Project.

All of the amounts above combine into the second line item cost estimates for the Sagamore and Hale Wind Projects in Tables RH-1 and RH-2.

Q. How did SPS estimate the items in the third line in Tables RH-1 and RH-2, Project Management and associated costs?

A. The $11.3 and $11.2 million estimate for both the Sagamore and Hale Wind Projects, respectively: (1) consists of internal time for SPS and XES personnel; and (2) reflects the developed staffing plan for both SPS Projects. Accordingly, the costs in the third line item include an estimate for all of the internal labor SPS expects to allocate towards managing the development and ownership of both SPS Projects.

The costs in the third line item also include external labor and contract staff, such as safety personnel and construction management, and these external personnel estimates are developed hourly based on a 50- to 60-hour work week. This is a standard work week for these types of contractors.

Q. Please address the General Project Contingency estimates in the fourth line in Tables RH-1 and RH-2.

A. This is a General Project Contingency for mitigating uncertainties created by unforeseen events or circumstances. This contingency allowance is approximately 1.2% of the project cost for the Sagamore Wind Project and 1.4% for the Hale Wind Project because separate design, construction, and scope contingency allowances will be applied to individual elements of the BOP and TSA contracts.

VI. CONSTRUCTION SCHEDULES FOR THE SPS PROJECTS

Q. What topic do you discuss in this section of your testimony?

A. I discuss the construction schedules for the Sagamore and Hale Wind Projects.

Q. Please provide an overview of the construction schedule, including key milestones.

A. SPS will manage the overall projects' schedule by coordinating between Vestas' fabrication, delivery, and commissioning efforts and the BOP construction tasks. Both Vestas and the BOP contractor will provide the necessary input to allow for schedule optimization and risk reduction. The SPS Projects' current estimated schedules were initially developed in consultation with Vestas to allow them to schedule their turbine fabrication activities. The schedules will be reviewed with the selected BOP contractor(s) during contract negotiations to allow for input and concurrence. Any efficiency noted by the BOP contractor(s) during this process that requires a schedule adjustment will be coordinated with Vestas. This process will allow continual schedule improvement and reduce schedule and cost risks. The current construction schedule is set forth in Table RH-3 below for the Sagamore Wind Project and Table RH-4 below for the Hale Wind Project, subject to potential changes as the contracting process moves forward.

Table RH-3 Estimated Construction Schedule for the Sagamore Wind Project

Activity Description	Completion Date
Award BOP Construction Contract	December 2017
Mobilize for Construction	April 2019
Windfarm Engineering and Design	February 2019
Construct Roads, Access and Laydown Areas	November 2019
Construct Foundations	January 2020
Complete Collection System & Substations	January 2020
Install Transmission Lines	January 2019
Deliver and Offload – Turbines	March 2020
Install Wind Turbine Generators	April 2020
Wind Turbine Generator Commissioning	May 2020

Table RH-4 Estimated Construction Schedule for the Hale Wind Project

Activity Description	Completion Date
Award BOP Construction Contract	December 2017
Mobilize for Construction	May 2018
Windfarm Engineering and Design	September 2018
Construct Roads, Access and Laydown Areas	December 2018
Construct Foundations	January 2018
Complete Collection System & Substations	April 2018
Install Transmission Lines	February 2018
Deliver and Offload – Turbines	April 2018
Install Wind Turbine Generators	May 2018
Wind Turbine Generator Commissioning	June 2018

Q. What is the status of equipment procurement needed to construct the SPS Projects?

A. The MSA has been signed and fabrication of the PTC components – meaning that portion of the turbine components valuing 5% of the total project cost – have been constructed and are in storage. The MSA allowed the SPS Projects to qualify for the safe harbor requirements under the OAA, which is discussed further by Mr. Evans.

Fabrication of the remaining wind turbines, i.e., the non-safe harbor turbines, is conditioned on both the Sagamore and Hale Wind Projects receiving necessary regulatory approvals. Vestas has tentatively assigned fabrication slots in their production schedule to allow the remaining wind turbines to be delivered in the fourth quarter of 2018 or 2019 and the first quarter of 2019 or 2020 for the Hale and Sagamore Wind Projects, respectively. Contractually, SPS must give a notice to proceed of at least 9 months before turbines would be available for these time slots.

Beyond turbine fabrication, commodity materials will also need to be procured for construction of the Sagamore and Hale Wind Projects. Commodity materials such as concrete, rebar, electric cable, and substation components will be procured by the selected BOP contractor. Based on our experience, there is low risk with delivery of these commodity materials and it is unlikely to impact the anticipated June 2019 commercial operation date for the Hale and the May 2020 commercial operation date for Sagamore Wind Projects. Collector system transformers, which will be procured by SPS, have an estimated 60 week delivery

cycle. The RFP for these components will be in late 2017 and the contracts are expected to be awarded in first quarter 2018 pending regulatory approval.

Q. Are there any construction progress and logistics issues you wish to address?

A. Yes. Invenergy and NextEra have reached out to local communities and landowners at or near Sagamore and Hale Wind Project sites as part of the development process to date. SPS will engage these same communities along with other stakeholders as part of an outreach program with this filing.

SPS, NextEra, Invenergy and the future BOP contractor will continue the outreach, education and collaborative process throughout the project timeline. Keeping these clear lines of communication will allow SPS to identify potential construction issues in advance of the selected BOP contractor's mobilization to the respective sites. One key area for coordination will be the timing of ongoing local and county road repairs as construction progresses. The BOP contract will have specific requirements for adequately maintaining all public roads.

Q. How does SPS plan to monitor progress and quality issues during construction?

A. SPS's construction management team will review and audit quality documents. Quality documents are contractor internal documents that generally provide testing results for construction-related activities at the site. For example, if the contractor inspects a weld, personnel complete a form and sign off on said inspection. As another example, if the contractor pours concrete, personnel take temperature, slump, and other measurements and submit reports to document whether the work meets all applicable specifications. Our team will review all of these quality documents when

completed to stay current on progress and any issues encountered at the site. SPS's construction management team will also monitor wind turbine fabrication by Vestas by conducting frequent inspection and observation visits to the fabrication facilities. This is discussed later in my testimony and provides assurance that purchased equipment is fabricated in accordance with the agreed upon technical specifications.

Q. What obligations do Invenergy and NextEra have between signing the PSAs and closing the transactions?

A. For the period of time leading up to the closing, Invenergy and NextEra (as well as its respective affiliates) must meet closing conditions that are set forth in Section 2.7, as well as other sections and schedules of the PSAs. In addition, they must assist SPS in achieving successful closing of the transactions. In addition, the costs for Invenergy and NextEra to complete their obligations are partially funded by deposit payments from SPS. These deposit payments are installments of the PSAs and come out of the total PSA costs. SPS makes these payments to Invenergy and NextEra, which funds some of the work conducted by Invenergy and NextEra to satisfy outstanding obligations under the PSAs. Given the "develop-transfer" structure of the transaction, SPS fully anticipates cooperation in these tasks as it is in the developers' best interests that the transaction closes to receive final payments.

Q. What happens between receipt of final regulatory approval and closing of the transactions?

A. Invenergy and NextEra (and its affiliates) must obtain additional land leases and amendments, complete the reports identified in the PSAs, and be available to SPS to

keep working on the SPS Projects to complete necessary activities to deliver construction ready sites. SPS has the right to terminate the PSAs in the event SPS is unable to obtain necessary regulatory approvals, as regulatory approval is a condition to closing the PSAs. In addition, SPS is authorized to cancel the SPS Projects with minimal financial exposure if regulatory approval(s) are not obtained. The BOP contracts will be similarly structured.

VII. RISK MANAGEMENT AND COST CONTROLS

Q. What topic do you discuss in this section of your testimony?

A. I discuss construction management techniques and oversight processes that Xcel Energy has developed through experience with other projects, interactions with others in the industry, and work with contractors. In this section, I also describe why these processes are integral to help ensure that the Sagamore and Hale Wind Projects are developed on time and on budget. I further describe the comprehensive risk mitigation and well-developed and deployed cost controls in place, and explain why I am confident the Sagamore and Hale Wind Projects can be constructed within their respective budgets.

A. Material Risks and Risk Management

Q. What are the material risks you have identified relating to the construction of the Sagamore and Hale Wind Projects?

A. There are two categories of material risks that SPS needs to manage in constructing the projects: (1) the construction timing risk, and (2) the construction cost risk. SPS has plans in place to adequately address each of these risks.

Q. Please describe the construction timing risk regarding PTC qualification and how SPS has planned to help ensure customers receive the benefits.

A. Timing of construction has two aspects, both of which are intended to ensure the SPS Projects receive 100% of the PTC benefits. First, enough turbines were constructed and stored prior to January 1, 2017 to meet the 5% construction cost "safe harbor"

requirement per the Internal Revenue Service ("IRS") rules, which ensures that the Sagamore and Hale Wind Projects qualify for 100% PTC requirements.

In addition to the construction and storage of turbines, it is important that construction of the SPS Projects be completed to ensure qualification for the full 100% PTC benefit. As discussed by Mr. Evans, the IRS will allow four years for projects to be completed (i.e., by December 31, 2020) to qualify for the PTC at 100%. To comply with this deadline, the MSA allows for adequate turbines to be supplied to the SPS Projects in both 2019 and 2020 to meet the December 31, 2020 commercial operation date deadline.

Q. Does the timing of the construction schedules help ensure the SPS Projects will qualify for 100% PTC benefits?

A. Yes. The construction schedules account for the fact that the late summer and fall of 2018 are very favorable construction periods with respect to weather. By beginning in middle 2018 and completing roads and foundations by late 2018, this scheduling option eliminates possible delays and inefficiencies due to adverse weather during that time period.

Second, the SPS Projects' construction schedules assume the initiation of the sites' preparation work can begin in middle 2018, including foundation construction for the turbines and installing the underground collection system(s) at the same time. This work sequencing maximizes the likelihood of timely completion and also provides a more efficient and lower-cost deployment schedule by eliminating stacking of work and trades. For example, wet weather conditions could result in

delays for the road construction crew, which in turn could result in delays to the foundation construction crew if their schedules were 'stacked' or overlapping. By properly sequencing the construction schedules, the sites are less congested and construction crews can work around timing delays more easily and efficiently.

Q. Will SPS engage in regular meetings to help ensure the SPS Projects are constructed in time to obtain 100% PTC benefits?

A. Yes. The SPS construction management team plans to meet daily with the BOP contractor in what are typically referred to as "Plan of the Day" ("POD") meetings. These POD meetings identify and address any safety, coordination, or schedule issues in real time. The POD meetings also allow for timely responses and immediate mitigation of any quality related issues on site such as adding protective coverings, or heating foundation areas before and after concrete pours. SPS will also hold summary weekly meetings with the BOP contractor to review safety trends and longer term schedule items.

In addition, monthly management meetings will take place with the BOP contractor and turbine supplier (Vestas) to summarize the status of the work and resolve any commercial issues pending. This extensive contact and communication with contractors is one reason Xcel Energy has been so successful with major capital projects in the past.

Q. Please describe the construction cost risks and their likelihood.

A. As with any major construction project, there is the risk that costs could increase above what has been projected. SPS's analyses and budgeting for both of the SPS

Projects has taken this risk into account. The single largest cost component(s) of Sagamore and Hale Wind Projects is the purchase of the wind turbines under the MSA. The MSA is a fixed price contract with little potential for change orders[6] or other cost increases. Additionally, SPS negotiated the MSA to avoid any potential schedule delays. As a result, the MSA (and future TSAs) costs are not likely to be subject to any significant cost increase pressure.

Similarly, the purchase prices under the PSAs with Invenergy and NextEra are fixed amounts that are not subject to change orders or cost increases. SPS could potentially incur some downstream consulting fees from Invenergy or NextEra for additional project development support not contemplated in the PSAs or other consulting fees for environmental reviews, land surveying or civil design reviews. However, any such amount would be minor and would not materially change the overall cost profile.

The BOP contract cost could potentially increase depending on various circumstances, but there are also specific milestone requirements and liquidated damages provisions as I discuss later in my testimony. Most notably, if weather or other events delays the construction schedules, construction costs could increase. The amount of any increase in costs would be dependent on the length of the delay.

Finally, some of the other costs identified for the Sagamore and Hale Wind Projects are not under fixed price contracts and could be subject to some increase.

[6] Change orders are used to make modifications to components, assemblies, associated documentation and other types of product information.

However, SPS's assessment of costs includes a modest contingency to account for these potential construction cost increases.

Q. Will Xcel Energy schedule delivery of turbines and construction activities in consideration of construction cost risks?

A. Yes. The TSAs will allow the delivery of turbines in the fourth and first quarters of a year. This timing: (1) allows field construction schedules to be in the summer and fall and turbine erection in the late fall and winter; and (2) means predictable good weather for the construction of roads and foundations. This timing reduces the likelihood of construction cost risks.

In addition, cable, collector station(s) and turbine erection will occur in the colder months. These months tend to provide milder wind days, which is a benefit as more extreme wind days can create more risk.

Q. If change orders occur and the SPS Projects fall behind schedule are there techniques and processes SPS can use to gain back time?

A. Yes. For the Sagamore Wind Project, the commercial operation date is a year later than the Hale Wind Project. SPS plans to move the mobilization and field construction work much earlier in the year (i.e., summer/fall of 2020) so that turbine delivery and erection will be late fall and winter. As a result, there is a cushion of time built into the schedule and SPS could work through short weather periods as necessary.

In addition, while SPS has commercial obligations to put the Hale Wind Project in service by June of 2019 and the Sagamore Wind Project by May of 2020,

the deadline established by the Internal Revenue Service for the PTC is December 31, 2020. This creates a cushion of time to meet the PTC deadline. In addition, SPS could have Vestas increase turbine commissioning personnel or perform some early pre-commissioning activities so that the turbines can be commissioned more quickly. Both of these approaches could help make up time in the event that construction falls behind schedule.

The BOP contract will also have specific milestones that are the BOP contractor's responsibility to meet these deadlines or, if these deadlines are not met, the BOP contractor will be subject to liquidated damages. Accordingly, there is a significant financial incentive for the BOP contractor to stay on schedule and find ways to make up time if construction falls behind. It is also relevant that the contractors that SPS will seek BOP contract bids from all have significant experience in wind farm construction. Over the years, the contractors have developed strategies to make up time and expedite construction when necessary and appropriate to avoid incurring liquidated damages and to stay on schedule. I have a high degree of confidence in these BOP contractors and their ability to meet their deadlines.

B. Cost Controls and Reporting

Q. Does SPS or Xcel Energy have processes and procedures in place to control and track project costs?

A. Yes.

Q. Please generally describe these cost controls.

A. For all of our major projects, SPS first develops a detailed project schedule, a cost analysis report ("CAR") (which serves as a cost tracking tool), monthly cash flow projections, a contracting strategy, labor resource loading strategies, design criteria, and a project organization chart. This occurs early in the development phase of our projects, and these tools become the basis for our comprehensive project management process. Throughout construction, SPS regularly revisits and updates these tools and strategies to reflect what is encountered at the site and reported from personnel in the field. This ensures the cost control processes are as up-to-date and robust as possible.

Additionally, SPS utilizes numerous reporting requirements up through the various levels of SPS and Xcel Energy. Any proposed scope changes are carefully evaluated by each project manager and the Director of Regional Capital Projects to help ensure that they are consistent with the original intent of the project. There is no scope change cost threshold to trigger this review process; rather, all changes are recorded and approved by the project manager and Director of Regional Capital Projects.

Also, each major contract is competitively bid -- whether it is for equipment or construction. Bids are evaluated by the project team based on criteria including safety, capital costs, ongoing O&M costs, and the ability to perform the work and scope as required. With regard to evaluating a bidder's ability to perform the work, SPS focuses on the bidder's past experience and safety record. The safety review is

an integral piece of our evaluation. After conducting this review, the proposal that offers the best overall value based on a comprehensive evaluation of these criteria is selected by SPS.

Q. Are there any cost control processes in place for turbine fabrication?

A. Yes. Frequent inspections by the Project teams, including the engineering and quality groups, will be made at fabrication facilities to assure that purchased equipment is fabricated in accordance with the agreed upon technical specifications. These inspections and observations are intended to ensure that the manufacturer is following the requirements of the TSAs, as well as appropriate industry codes and standards. SPS and XES management personnel will monitor construction in the field to verify compliance with specifications and standards. Invoiced costs are reviewed by the Project teams to assure compliance with contract terms.

Q. Does SPS have ongoing reporting and reviews related to cost controls?

A. Yes. A monthly report is generated that outlines the current status of the projects, significant progress achieved, as well as schedule and budget status. These reports contain monthly cost forecasts and compare them to actual costs. The reports also show the overall Project budget and discuss projected changes and adjustments to the overall construction budget. These reports are distributed to the Director of Regional Capital Projects, the Vice President of Engineering and Construction, and me as the Senior Vice President of Energy Supply.

Moreover, monthly review meetings are held with the Director of Regional Capital Projects to conduct a detailed review of safety, the construction budget, and

construction schedule. Significant variations in project scope, cost and schedule will be discussed in these meetings. When changes in overall project budgets are identified, a change order will be executed to adjust the respective budget. These changes are then reflected in monthly and overall project cost forecasts. In addition, the Financial Performance Team and president of SPS review the reasons for variations in project monthly cash flow and yearly forecasts on a regular basis.

Q. Are there specific cost control manuals that SPS will used for the Sagamore and Hale Wind Projects?

A. Yes. SPS has a standard CAR used in its major capital projects. The CAR is a compilation of all cost tracking reports needed to effectively manage a major project. This includes, without limitation, the overall detailed cost estimates, monthly variances to expected spend, change order tracker by contract, procurement tracker for status of deliverables, staff resource loading, invoice tracker, and progress trending curves.

Q. Is this reporting and review process and overall cost control methodology similar to processes used by Xcel Energy for other construction projects?

A. Yes. Xcel Energy has used these tools in successfully completing various construction projects. Major examples include the implementation of over $2 billion of construction projects in Colorado in response to the Clean Air-Clean Jobs Act, completing the coal-fired electric generating unit, Comanche 3 and the successful completion of the Jones 3 and Jones 4 combustion turbine projects in SPS. The experience with these projects gave Xcel Energy an opportunity to refine and

improve cost control methodologies. Xcel Energy also uses similar tools in all regions to have consistent approaches across all service territories with regard to cost control.

Q. Is SPS confident that it can deploy the Sagamore and Hale Wind Projects at the construction cost estimates when considering the risks you described above?

A. Yes.

VIII. SITING, PERMITTING, LAND RIGHTS ACQUISITION FOR THE SAGAMORE AND HALE WIND PROJECTS

Q. What is the purpose of this section of your testimony?

A. The purpose of this section of my testimony is to describe the siting, permitting and land rights acquisition for the Sagamore and Hale Wind Projects. As I discuss below, Invenergy and NextEra are required to deliver construction ready sites as set forth in the two PSAs it has entered into with SPS.

Q. Please provide an overview of the siting, permitting, and land rights acquisition activities for the Sagamore and Hale Wind Project sites to date.

A. As I discussed earlier, SPS has entered into two similar PSAs with Invenergy and NextEra for the acquisition of "construction ready" wind generation sites at both projects.[7] Per the terms of each PSA, prior to closing, Invenergy and NextEra are responsible for securing local, state, and federal permits, and any other necessary approvals or clearances for completing the development of the wind farms. Invenergy and NextEra are also responsible for obtaining real property interests such as leases, purchase options or fee title necessary to support wind farm development. Included in these land leases are sufficient land rights and permits to construct the Gen-Tie lines required to interconnect the Sagamore and Hale Wind Project sites to the SPP transmission grid. Local land use permits are the most significant permitting requirement associated with the SPS Projects. The counties impacted by both the SPS Projects and their respective Gen-Tie lines are: (1) for the Hale Wind Project,

[7] The term "construction ready" is formally defined in the PSA.

Hale County, Texas; and (2) for the Sagamore Wind Project, Roosevelt County, New Mexico.

Q. What is your understanding of the status of siting and land rights activities for the SPS Projects?

A. Consistent with the terms of each PSA, Invenergy and NextEra have made substantial progress acquiring land rights at both Project sites. Invenergy has two siting plans that have been developed to anticipate avoidance of environmentally sensitive areas.

SPS, AWS Truepower, Invenergy and NextEra will also start collaborating on "micro-siting" at each site, which involves optimizing the specific location of each wind turbine considering local land constraints and setbacks, power output and construction costs. This turbine micro-siting process in turn will inform the siting of access roads, gathering lines, substations, transmission lines and ancillary facilities. This is an iterative process that will continue as permitting and land acquisition activities progress.

Q. Will SPS need to acquire any permanent easements or land for the Sagamore and Hale Wind Project sites?

A. Yes. Invenergy and NextEra are using a "Wind Lease and Easement Agreement" to secure all land rights necessary for all development activities including wind turbines, overhead and underground electrical distribution, collection, transmission and communication lines, electric transformers, electric substations, roads, wind measurement equipment, and other ancillary facilities, as well as construction activities and uses.

Although the Wind Lease and Easement Agreements grant the right to construct Gen Tie lines and substations, the agreements also allow for the possibility for SPS to purchase fee title for property where the collector substations and O&M buildings are located. These rights would more clearly define the location and extent of each facility and avoid the possibility of future title issues.

Under each PSA, once Invenergy and NextEra have completed its site development obligations, it will transfer all land rights to SPS.

Q. Once SPS takes equity ownership of the SPS Projects, will it comply with applicable local governments' land use regulations in constructing and operating the projects?

A. Yes.

Q. SPS witness William P. Zawacki references your testimony for support for the estimated O&M lease payments for the projects. How did SPS make these estimates?

A. Lease payments are made for both SPS Projects pursuant to formulas. For the Hale Wind Project, lease payments are made to the Hale Partnership Pool. The payments are made for use of the land, for example, establishment of roads, placement of cables, placement of turbines, transmission lines, etc. To arrive at the annual lease payments owed, the total nameplate generation of the Hale Wind Project (478 MW) is multiplied by a 4.0% fee schedule[8] that is then multiplied by 8,760 hours, then is

[8] The 4.0% fee schedule escalates over time.

multiplied by $/MWh value from a schedule. The total dollar value creates a "pool" of money that is then paid out to each participating land owner based on the percent of land each one brings to the pool. A $500/year fee is also paid to each specific land owner that has a Wind Turbine Generator ("WTG") specifically located on its land. This fee escalates over time based on a schedule.

For the Sagamore Wind Project, a formula is used to determine lease payments. The formula applies dollar amounts for various project items that require use of the land. For example, substations, roads, collector substations, and transmission lines. Each specific land owner that has a WTG on its land also gets $500/year and that escalates over time, as well.

In addition to the above individual estimates, SPS also added yearly inflation rates to items not specifically escalated in the contracts and summed the total over 25 years. The values for the estimated lease payments along with other O&M payments are shown in Mr. Zawacki's direct testimony.

IX. COST COMPARISON

Q. What topic do you discuss in this section of your testimony?

A. In this section of my testimony I discuss the cost comparison with similar wind resources in the market that SPS conducted in evaluating the Sagamore and Hale Wind Projects.

Q. Has SPS compared the construction costs of the Sagamore and Hale Wind Projects to similar wind projects?

A. Yes.

Q. What other specific projects were used in the comparison?

A. The construction costs of the Sagamore and Hale Wind Projects were compared to three other wind projects developed by Xcel Energy affiliates that are currently under construction or were recently placed in service: (1) the Pleasant Valley Wind Project, a 200 MW facility near Hayfield, Minnesota that began operating in 2015; (2) the Border Winds Project, a 150 MW facility near Rolette, North Dakota that also began operating in 2015; and (3) the Courtenay Wind Farm, which is a 200 MW facility near Jamestown, North Dakota that was recently completed in 2016. This comparison was appropriate because there are accurate construction cost data on these wind farms and they are recently completed construction.

Q. Please describe the process used to conduct this comparison and the relevant results.

A. I derived a cost per kW installed ($/kW) based upon the costs of each wind farm and compared the construction cost estimates of the Sagamore and Hale Wind Projects to these figures. The cost per kW installed of the Sagamore Wind Project, based on the estimated construction cost of $825 million, is $1,581/kW installed. The cost per kW installed of the Hale Wind Project, based on the estimated construction cost of $735 million, is $1,537/kW installed. This method of using the project nameplate capacity in determining the cost per kW installed is typical in the industry. These costs do not include the allowance for funds used during construction, but do include all other costs.

Q. What were the results of this comparison?

A. The following Table RH-5 shows the results of the comparison.

Table RH-5 Comparative Analysis

Wind Farm	*Cost ($/kW installed)*
Pleasant Valley Wind Project	1,680
Border Winds Project	1,764
Courtenay Wind Project	1,465
Sagamore Wind Project	1,581
Hale Wind Project	1,537

Q. What are your conclusions after conducting this comparison to other Xcel Energy wind projects?

A. With regard to Xcel Energy's affiliate projects, the construction costs of the Sagamore and Hale Wind Projects are reasonable as compared to all three comparable projects. The Sagamore and Hale Wind Projects construction cost of $1,581/kW and $1,537/kW respectively, installed is less than the cost of the Pleasant Valley Wind Project and the Border Winds Project. Although both SPS Projects estimated construction costs are higher than the Courtenay Wind Farm costs, this is in part due to the interconnection costs for the SPP. Thus, my analysis of these costs leads me to conclude that the Sagamore Wind Project construction costs are reasonable in comparison to the costs of these similar projects considering the differences with the interconnection costs and the current market.

Q. Did you conduct any other comparative analysis?

A. Yes. I also looked more generally for cost information in industry publications. I identified an August 2016 report from the Lawrence Berkeley National Laboratory within the U.S. Department of Energy, which is included with my testimony as Attachment RH-8. This study compiled data on the installed cost of wind power projects in the U.S. from 1997 up to and including 44 projects completed in 2015. For 2015, this data included 5,772 MW of wind power capacity installed in that year (67% of the capacity installed in 2015) and overall, the data set included 789 projects

completed in the U.S. totaling 60,032 MW (81% of wind power installed by the end of 2015).

The report derives a capacity-weighted average installed project cost for each year, and the capacity-weighted average installed project cost for 2015 was roughly $1,690/kW installed. This was slightly lower than 2014, but is $640/kW less than peak costs in 2009 and 2010. Further, "[e]arly indications from a limited sample of 18 projects (totaling 3.4 GW) currently under construction and anticipating completion in 2016 suggest no material change in capacity-weighted average installed costs in 2016."[9]

Table RH-6 Comparative Analysis

Wind Farm	*Cost ($/kW installed)*
Lawrence Berkeley National Laboratory Report	1,690
Sagamore Wind Project	1,581
Hale Wind Project	1,537

Q. What are your conclusions regarding the comparison to the Lawrence Berkeley National Laboratory Report data?

A. The Lawrence Berkeley National Laboratory information is instructive in the cost comparison. The report caveats that "reported project costs reflect turbine purchase and installation, balance of plant, and any substation and/or interconnection expenses. Data sources are diverse, however, and are not all of equal credibility, so emphasis

[9] Attachment RH-8, at 65.

should be placed on overall trends in the data rather than on individual project-level estimates."[10] Looking at the overall trend, the cost per kW installed of both the Sagamore and Hale Wind Projects are reasonable when compared to the national 2015 average of $1,690/kW installed.

[10] Attachment RH-8, at 64-65.

X. GEN TIE COSTS

Q. What topic do you discuss in this section of your testimony?

A. I discuss the Gen Tie lines from the SPS Projects' collector stations to the interconnection tie breaker on the transmission grid.

Q. Are the Gen Tie lines all that are needed for the SPS Projects to be interconnected to the SPP transmission system footprint?

A. No. A connection is still needed from the interconnection tie breaker to the SPP transmission system. For the Hale project, this breaker is already installed at the TUCO substation. For Sagamore, SPP is analyzing the impact to the system to inject power equal to the generator nameplate at the interconnection point to evaluate the need for possible network upgrades and required interconnection facilities. SPS witness William A. Grant addresses the upgrades necessary to allow the generators to connect to the SPP transmission grid.

Q. How long are the Gen Tie lines for the Sagamore and Hale Wind Projects and their associated construction costs?

A. For the Sagamore Wind Project, SPS estimated the Gen Tie Line to be between 4 and 5 miles in length and cost approximately $3.5 million. For the Hale Wind Project, SPS estimated Gen Tie Line to be between 12 and 15 miles in length and cost approximately $9 million. These costs are included in the project total budget discussed earlier in my testimony.

Q. How did SPS estimate the lengths and costs of the Generation Tie Lines for the Sagamore and Hale Wind Projects?

A. The developers have preferred routes for the Gen Tie lines, as well as preferred locations for the substations. These locations were based on preliminary layouts along with current land leases that are signed. Final sitings will come after the micro siting of the turbines, roads and cable layouts. The cost for the Gen Tie lines were developed based on a review of Gen Tie lines from previous projects.

Q. Earlier you mentioned GIA interconnection costs. Have either of the developers begun the process of having the SPP study what GIA interconnection costs may be required?

A. Yes. As discussed by Mr. Grant, both developers have already begun the process for determining the transmission upgrades needed to interconnect the Sagamore and Hale Wind Projects to the SPP transmission grid.

Q. Are any of the GIA interconnection costs known at this time?

A. Yes. The process is complete for the Hale Wind Project. The cost is a component of the PSA for the Hale Wind Project and is $1.5 million. At this time, SPP has not completed its study of the request by Invenergy for the Sagamore Wind Project. If the GIA interconnection costs exceed $44.4 million, then SPS can terminate the PSA with Invenergy.

XI. REQUIREMENTS FOR CCN APPROVAL OF THE HALE WIND PROJECT

Q. What is the Commission's statutory requirement for granting a CCN?

A. Section 37.056(a) of PURA provides that the Commission may approve an application and grant a CCN only if the Commission finds that the certificate is necessary for the service, accommodation, convenience, or safety of the public. PURA §37.056(c) provides that the Commission shall grant a CCN on a nondiscriminatory basis after considering:

(1) the adequacy of existing service;

(2) the need for additional service;

(3) the effect of granting the CCN on SPS and any electric utility serving the proximate area;

(4) other factors, such as

- community values,
- recreational and park areas,
- historical and aesthetic values,
- environmental integrity,
- the probable improvement of service or lowering of cost to consumers, and
- to the extent applicable, the effect of granting the certificate on the ability of the State to meet the renewable goal established in PURA §39.904(a).

Q. What is the Commission's rule for granting a CCN?

A. 16 Texas Administrative Code ("TAC") § 25.101, "Certification Criteria," states that the Commission may grant a CCN only if it finds that the certificate is necessary for

the service, accommodation, convenience, or safety of the public, and complies with the statutory requirements in PURA § 37.056. The Commission's rule, 16 TAC § 25.101(b), states specifically that a CCN or CCN amendment is required for a new generating unit constructed, owned, or operated by a bundled electric utility. SPS is a bundled electric utility.

Q. Is there a PUCT form or guideline for a CCN application for a generating unit?

A. No.

Q. What issues does SPS address in this CCN application?

A. SPS presents, through direct testimony and the attachments to that testimony, evidence addressing the requirements of PURA § 37.056 and 16 TAC § 25.101.

Q. Why was Hale Wind Project's site chosen as the location for the wind farm?

A. As I discussed in Section III of my testimony, the site was selected after significant due diligence was performed by SPS, AWS Truepower, and NextEra. The wind data demonstrates that the Hale Wind Project is expected to provide significant energy production at its proposed site.

Q. Is SPS's requested CCN necessary for the service, accommodation, convenience, or safety of the public?

A. Yes. As explained by Mr. Adelman, the requested CCN is necessary to provide significant fuel cost savings for SPS customers. Thus, the CCN is necessary for the convenience of SPS customers as it is estimated to provide significant benefits.

Q. What would be the effect, if any, of granting the CCN to SPS and on utilities serving the proximate area?

A. The Hale Wind Project would provide significant fuel cost savings to SPS customers. It would have no interference with or adverse effect on other electric utilities in the area.

Q. How, if at all, would community values be affected by granting the CCN?

A. This topic is addressed by SPS witness Eldon Lindt.

Q. How, if at all, would recreational and park areas be affected by the CCN?

A. This topic is addressed by Mr. Lindt.

Q. How, if at all, would historical areas and aesthetic values be affected by granting the CCN?

A. This topic is addressed by Mr. Lindt.

Q. How would granting the CCN affect environmental integrity?

A. This topic is addressed by Mr. Lindt.

Q. Is it probable that granting the CCN will improve service or lower costs to the customer?

A. Yes. A primary driver of the Hale Wind Project acquisition is the fuel savings that are estimated to result. Thus lowering costs to customers is the primary benefit of granting the CCN. Mr. Adelman discusses the fuel cost savings further in his direct testimony.

Q. What would be the effect of granting the requested CCN on the ability of the State to meet the renewable goal established in PURA § 39.904(a)?

A. This criterion is not applicable. While the acquisition of wind generation is beneficial from an environmental perspective as there will be no emissions resulting from the production of wind generation, the acquisition is not needed by SPS to meet its renewable portfolio standard requirements.

Q. Have you attached to your testimony a general highway map that illustrates the general location of the Hale Wind Project?

A. Yes, please refer to Attachment RH-1, which shows the location of the Hale Wind Project on a Hale County map.

Q. Please list all municipalities and counties that would be involved or affected by the Hale wind facility.

A. The Hale Wind Project will be located in Hale County, Texas. The nearest municipalities to the Hale wind facility are Abernathy, Petersburg, and Hale Center, the nearest of which is Petersburg. The southeast portion of the Hale Wind Project will be approximately one mile from the northeast side of the Petersburg city limits.

Q. Will the Hale Wind Project be located in the certificated service area of another electric utility?

A. Yes. SPS expects to obtain retail electric service for the Hale Wind Project from Lighthouse Electric Cooperative, Inc.

Q. Does this conclude your pre-filed direct testimony?

A. Yes.

AFFIDAVIT

STATE OF COLORADO)
)
COUNTY OF DENVER)

RILEY HILL, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachments and am familiar with their contents. Based upon my personal knowledge, the facts stated in the testimony are true. In addition, in my judgment and based upon my professional experience, the opinions and conclusions stated in the testimony are true, valid, and accurate.

Riley Hill
RILEY HILL

Subscribed and sworn to before me this 13th day of March, 2017 by RILEY HILL.

LISA ANNE SCHWAIG
NOTARY PUBLIC - STATE OF COLORADO
Notary Identification #20154041264
My Commission Expires 10/20/2019

Lisa Anne Schwaig
Notary Public, State of Colorado
My Commission Expires: October 20, 19

CERTIFICATE OF SERVICE

I certify that on March 21, 2017, this instrument was filed with the Public Utility Commission of Texas, and a true and correct copy of it was served by hand delivery on the Staff of the Public Utility Commission of Texas and the Office of Public Utility Counsel, and by hand delivery, next business day courier delivery, or first class mail on each party of record in SPS's most recent base rate case, Docket No. 45524.