Filing Receipt

Received - 2021-08-27 04:14:15 PM
Control Number - 52485
ItemNumber - 8

DOCKET NO. _____

APPLICATION OF SOUTHWESTERN PUBLIC SERVICE COMPANY TO AMEND ITS CERTIFICATE OF CONVENIENCE AND NECESSITY TO CONVERT HARRINGTON GENERATION STATION FROM COAL TO NATURAL GAS	**§ § § § § § §**	**PUBLIC UTILITY COMMISSION OF TEXAS**

DIRECT TESTIMONY

of

ANASTACIA SANTOS *on behalf of*

SOUTHWESTERN PUBLIC SERVICE COMPANY

(*Filename:* SantosDirect.docx *Total Pages* 38)

Table of Contents

GLOSSARY OF ACRONYMS AND DEFINED TERMS

Acronym/Defined Term	Meaning
BMPs	Best Management Practices
CCN	Certificate of Convenience and Necessity
Commission or PUC	Public Utility Commission of Texas
EA	Environmental Assessment
FERC	Federal Energy Regulatory Commission
HPA	High Probability Area
MMBtu	Million British Thermal Units
NHRP	National Register of Historic Places
OTHM	Official Texas Historical Markers
POWER	POWER Engineers, Inc.
Proposed Project	Proposed conversion of Harrington Generation Station to natural gas and associated construction of natural gas pipeline
PURA	Public Utility Regulatory Act
ROW	Right of Way
SAL	State Antiquities Landmark
SHPO	State Historic Preservation Officer
SO_2	Sulfur Dioxide
SPS	Southwestern Public Service Company, a New Mexico corporation
SWPPP	Stormwater Pollution Prevention Plan
TARL	Texas Archaeological Research Laboratory

TPWD	Texas Parks and Wildlife Department
USFWS	United States Fish and Wildlife Service
USACE	United States Army Corps. of Engineers
Xcel Energy	Xcel Energy Inc.

LIST OF ATTACHMENTS

Attachment	Description
AS-1	Resume of Anastacia Santos (*non-native format*)
AS-2	Environmental Assessment (*Filename:* Harrington Repower EA 2021-08-23.docx)

DIRECT TESTIMONY
OF
ANASTACIA SANTOS

I. WITNESS IDENTIFICATION AND QUALIFICATIONS

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

A. My name is Anastacia Santos. My business address is 7600 North Capital of Texas Highway, Suite 320, Austin, Texas 78731.

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"). Xcel is a registered holding company and owns several electric and natural gas utility operating companies.[1]

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

A. I am employed by POWER Engineers, Inc. ("POWER"), a 100% employee-owned consulting and engineering firm, as Project Manager II in the Environmental Division.

Q. Please briefly outline your responsibilities as Project Manager II.

A. I am responsible for organizing, conducting, and managing various types of environmental assessment projects, and assuring that environmental impact assessments under my direction address the provisions and requirements of

[1] Xcel Energy is the parent company of four electric utility operating companies: Northern States Power Company, a Minnesota corporation; Northern States Power Company, a Wisconsin corporation; Public Service Company of Colorado, a Colorado corporation; and SPS. Xcel Energy's natural gas pipeline subsidiary is WestGas InterState, Inc. Through a subsidiary, Xcel Energy Transmission Holding Company, LLC, Xcel Energy also has three transmission-only operating companies: Xcel Energy Southwest Transmission Company, LLC; Xcel Energy Transmission Development Company, LLC; and Xcel Energy West Transmission Company, LLC, all of which are either currently regulated by the Federal Energy Regulatory Commission ("FERC") or

applicable regulations, guidelines, and standards of local, state, and federal agencies. I also have administrative and business development responsibilities.

Q. Please summarize your educational and professional background.

A. I received a Bachelor of Arts degree in Mathematics from the University of Texas at Austin in 1998, and a Bachelor of Science degree in Renewable Natural Resources from Texas A&M University in 2004.

I have over sixteen years of environmental consulting experience. I have managed multi-disciplinary teams for the purpose of obtaining licensing for energy projects. The work of these teams includes environmental and cultural field studies; siting and routing/alternatives evaluations; public scoping meetings/hearings; environmental permitting; and mitigation planning. Projects have included transmission lines, substation facilities, pipelines, natural gas storage facilities, and liquefied natural gas import terminals. These projects typically also involve preparing written testimony and testifying live before commissions to support applications to various state authorities, such as the Public Utility Commission of Texas ("PUC" or "Commission"). My resume is attached as Attachment AS-1.

Q. Have you testified before any regulatory authorities?

A. Yes. I submitted testimony in Commission Docket Nos. 47973, 47585, 46726, 46042, 45397, 45308, 44726, 38877, 50669, and 51912. I have also testified before the Public Utility Commission in Mississippi (Docket Nos. 2019-UA-176, 2019-UA-

---

expected to be regulated by FERC.

133, 2019-UA-071, 2019-UA-069, 2015-UA-193, 2015-UA-166 and 2015-UA-098) and the Public Regulation Commission in New Mexico (Docket No. 17-00143-UT).

II. ASSIGNMENT AND SUMMARY OF TESTIMONY

Q. What is your assignment in this proceeding?

A. My testimony explains POWER's evaluation of the environmental values and resource impacts that relate to SPS's proposed conversion of the Harrington Station's three coal-powered steam turbines into turbines that are fueled by natural gas and proposed pipeline ("Proposed Project"). Specifically, the testimony: (1) presents the Environmental Assessment ("EA") prepared by POWER to evaluate the Proposed Project's land use, environmental, and cultural impacts within the areas where the Proposed Project will be constructed and operated; (2) explains the EA study process and findings concerning the potential pipeline routes for the Proposed Project; and (3) addresses the following Certificate of Convenience and Necessity ("CCN") factors: community values; recreational and park areas; aesthetic and historical values; environmental integrity; and required permits. A copy of the EA is attached to my testimony as Attachment AS-2.

Q. Please summarize your testimony.

A. POWER prepared an EA on behalf of SPS that evaluates the potential land use, environmental, and cultural impacts related to the construction and operation of the Proposed Project. Specific areas examined in the EA include existing land uses; socioeconomics, cultural resources, aesthetic resources, physiography and geology, soils, water resources, ecological resources and public health and safety. For each of these resource areas, POWER considered the nature of the current environment which could be affected by the Proposed Project, focusing upon existing conditions, and the potential impacts the Proposed Project would have on these resources. Based

on these analyses, POWER concluded that the Proposed Project will not unduly impair important environmental values.

Q. Were Attachments AS-1 through AS-2 prepared by your or under your direct supervision and control?

A. Yes.

III. ENVIRONMENTAL ASSESSMENT

Q. Why did POWER prepare the Environmental Assessment?

A. SPS retained POWER to perform and prepare an environmental assessment for SPS's Proposed Project.

Q. Who participated in the preparation of this EA?

A. A team of professionals under my direction, representing various environmental disciplines, was assembled from the POWER staff and was involved in data acquisition, routing analysis, and environmental impacts assessment of the Proposed Project. As a Project Manager, I am responsible for the EA and its findings. I oversaw all elements of the preparation of the EA from baseline data acquisition through analysis.

Q. What does the EA address?

A. The EA provides a detailed description of the procedures and methodology followed; the ecological, land use, and cultural resources (collectively, "environmental") data collected; and the corresponding factors considered in developing potential pipeline routes.

Q. What information does the EA contain?

A. The EA includes information on the land use, agriculture, infrastructure, parks and recreation areas, socioeconomics, cultural resources, aesthetic values, physiography, geology, soils, surface water, ground water, floodplains, vegetation, wetlands, wildlife and fisheries, endangered and threatened species, sensitive habitats, noise, air quality, and safety. The information gathered and presented in the EA was used by POWER and SPS to delineate and evaluate potential pipeline routes.

Q. Please describe the objectives of the EA.

A. The objective of the EA was to identify potential pipeline routes and evaluate the potential land use, environmental, and cultural impacts related to the construction and operation of the Proposed Project.

Q. Please describe the tasks completed in preparing the EA.

A. The tasks performed by POWER included:

- Delineating Study Area boundaries;
- Contacting agencies and collecting data;
- Constraints mapping;
- Potential pipeline route identification;
- Consideration of open house input; and
- Alternative route analysis and impact assessment of the potential pipeline routes.

IV. INFORMATION ADDRESSING ISSUES OF COMMUNITY VALUES, RECREATIONAL AND PARK AREAS, HISTORIC AND AESTHETIC VALUES, AND ENVIRONMENTAL INTEGRITY

Q. Please briefly discuss the EA's findings and conclusions regarding the Proposed Project.

A. POWER found and concluded that the Proposed Project will have insignificant impact on the human environment and will not unduly impair any important environmental integrity.

Q. Please describe the matters that were reviewed in reaching this conclusion.

A. Specifically, POWER examined the potential impacts of the Proposed Project on: (1) Community Values, which included a review of existing and future land use and socioeconomic impacts; (2) Parks and Recreation Areas; (3) Aesthetic Values; (4) Historical (Cultural Resources) Values which included known and potential archeological sites and historic structures and (5) Environmental Integrity which included a review of the geology, soils, water resources, vegetation, wetlands, wildlife resources, potential threatened and endangered plant and wildlife resources, as well as noise and air quality. A tabulation of the results of the evaluation criteria used by POWER in evaluating the route is provided in Table 4.1 of the EA.

Q. Please describe POWER's review of the Community Values.

A. POWER's review of potential impacts to community values evaluated considered whether the Proposed Project would significantly and negatively alter the use, enjoyment, or intrinsic value attached to an important area or resource crossed by the proposed pipeline. The review focused on the impacts to existing land uses along the proposed route, including impacts on: (1) structures; (2) agricultural lands (both crop

and grazing lands); (3) parks and recreation areas facilities, and (4) socioeconomic impacts.

Q. Please summarize the findings regarding the potential impacts of the Proposed Project on Community Values.

A. The EA found that the potential pipeline routes will have minimal impact on land uses in the area. There are no structures located within 500 feet of the right of way ("ROW") centerline. The nearest residential communities are: approximately 491 feet north of the pipeline centerline on the north side of River Park Drive along potential Pipeline Route 1A; approximately 0.5 mile southwest of the Project along US Hwy 87 on the northern outskirts of the Amarillo city limits near potential Pipeline Route 2; and approximately 0.25 mile southwest of the existing Harrington Generating Station.

The routes will primarily cross pasture/range lands, however, because the ROW will not be fenced or otherwise separated from adjacent lands, there will be no significant long-term displacement of farming or grazing activities. No cropland will be impacted by the Proposed Project. Construction of the pipeline does not preclude agricultural activities from resuming after construction is completed. Due to the relatively small area affected and the short duration of construction activities at any one location, such impacts should be both minor and temporary on agricultural land uses.

As to other land use impacts, the potential pipeline routes each cross one United States Highway and one railroad. SPS will obtain road-crossing permits from TxDOT for any crossing of state-maintained roadways.

Although there will be some temporary inconvenience during construction related to noise or dust, as well as minimal disruptions of traffic flow, coordination between SPS, its contractors, local governmental agencies and landowners regarding road and ROW access and construction scheduling should minimize these disruptions. Traffic disruptions would include those associated with the movement of equipment and materials to the ROW, and slightly increased traffic flow and/or periodic congestion during the construction phase of the Proposed Project. In rural portions of the study these impacts are typically considered minor, temporary, and short-term. None of the potential pipeline routes are located in areas that are considered urban areas.

Finally, as to socioeconomic impacts of the Proposed Project, some short-term employment associated with construction is anticipated and will likely result in an increase in local retail sales due to purchases of lodging, food, fuel, and other merchandise for the duration of construction activities. SPS does not anticipate any additional staff will be required for line operations and maintenance once the Proposed Project is completed.

Q. Are any Parks and Recreation Areas impacted by the Proposed Project?

A. No.

Q. Describe the EA's review of the cultural resources potentially impacted by the Proposed Project?

A. For the EA, cultural resources were divided into three major categories: archaeological resources, architectural resources, and cemeteries.

POWER reviewed cultural resource information from the Texas Historical Commission's ("THC") restricted-access online Texas Archeological Sites Atlas and GIS shapefiles acquired from the Texas Archeological Research Laboratory ("TARL") (dated March 10, 2021) to identify and map the locations of previously recorded cultural (archeological and historical) resources within the study area. Previously recorded cultural resource site data available online from the Texas Historical Sites Atlas were also reviewed to identify the locations of designated historical sites, recorded cemeteries, National Register of Historic Places ("NRHP") properties, State Antiquities Landmarks ("SALs"), and Official Texas Historical Markers ("OTHMs") within the study area. TxDOT's historic bridges database and Historic Districts & Properties of Texas database were also reviewed for resources that are listed or determined eligible for listing on the NRHP.

Based on the file review, 53 archeological sites and two cemeteries have been recorded within the study area. No NRHP-listed properties, SALs, OTHMs, or NRHP-listed or eligible bridges are located within the study area. Of the 53 archeological sites in the study area, 42 are prehistoric, eight are historic in age, and three have both prehistoric and historic components.

No NRHP-eligible resources or National Historic Landmarks are crossed by the potential pipeline routes and no cemeteries are recorded within 1,000 feet of the potential pipeline routes. Of the cultural resources identified, only one archaeological site is crossed by the Pipeline Route 1A. The site has not been formally evaluated for inclusion on the NRHP, however, the original recorders

recommended it has potential to be designated a SAL or be determined eligible for listing on the NRHP.

Because the potential pipeline routes are located on private lands, no systematic cultural resource surveys have been conducted. Thus, the potential for undiscovered cultural resources does exist along the potential pipeline routes. To assess this potential, a review of geological, soils, and topographical maps was undertaken by a professional archeologist to identify areas along the proposed route where unrecorded prehistoric archeological resources have a higher probability to occur. These high probability areas ("HPAs") for prehistoric archeological sites were identified near playa lakes and streams, and on terraces overlooking permanent sources of water. A pedestrian survey of the ROW crossing privately held lands will be conducted once easements are obtained and prior to construction to identify any significant cultural resources within the HPAs, and if necessary, implement mitigation measures, including date recovery excavations, in cooperation with the State Historic Preservation Officer ("SHPO").

SPS will implement an unanticipated discovery procedure for artifacts discovered during construction activities, and such construction activities will cease and SPS will notify and consult with SHPO about any necessary future action.

Q. Does the Proposed Project adversely impact any visual resources?

A. No. Overall, the character of the rural landscape within the study area includes rolling prairie pasturelands scattered throughout. The residential, oil and gas developments, and wind farms within the study area have already impacted the aesthetic quality within the region from public viewpoints. Once construction is

complete, the pipeline will be below ground. Permanent impacts from the Project would be limited to views of the cleared ROW from public viewpoints including roadways, recreational areas and scenic overlooks. Construction of the Project is not anticipated to significantly impact the aesthetic quality of the landscape.

Q. Are there any significant ecological resources that will be adversely affected by the proposed Project?

A. No. Impacts to vegetation will be minimized by revegetating disturbed work areas following the completion of construction. Areas disturbed by construction that are not part of the permanent ROW will be restored as near to pre-construction conditions as practical following the completion of construction activities. Regrowth of vegetation will be allowed in order to re-establish approximate pre-construction conditions. Impacts to vegetation within the permanent ROW may be permanent depending on pre-existing land cover. Herbaceous areas that will be converted to permanent ROW will have the fewest vegetation impacts because the ROW will be maintained in an herbaceous state. Permanent vegetation cover type conversion will occur in those areas of the permanent ROW that are currently shrubland.

In addition, none of the potential pipeline routes cross National Wetland Inventory-mapped wetlands; however, unmapped wetlands have the potential to occur within the study area. In potential wetland areas, permanent conversion from forested or scrub/shrub to herbaceous wetlands would occur within the ROW. Impact minimization measures (e.g., timber matting, hand-clearing woody vegetation) will be implemented during construction to reduce wetland impacts. Additionally, SPS proposes to implement best management practices ("BMPs") as a

component of its Stormwater Pollution Prevention Plan ("SWPPP") to prevent off-ROW sedimentation and degradation of potential wetland areas.

With the use of avoidance and minimization measures, significant impacts on wetlands are not anticipated. SPS will coordinate with the United States Army Corps of Engineers ("USACE"), if necessary, and complete construction activities in compliance with all Section 404 CWA permit regulations.

Q Describe the EA's review of the biological resources for the Proposed Project?

A. Data and information on ecological resources within the study area were obtained from a variety of sources, including aerial photograph interpretation, correspondence with the United States Fish and Wildlife Service ("USFWS"), the Texas Parks and Wildlife Department ("TPWD"), and published literature and technical reports. For this routing study, emphasis was placed on obtaining documented occurrences of special status species (both plant and wildlife) and/or their designated critical habitat within the study area. The documented occurrences of species of concern and/or other unique vegetative communities within the study area were also reviewed. The EA found that the Proposed Project does not cross any known occupied habitat or designated critical habitats for federally or state listed plant and wildlife species, and that the Proposed Project will have only minimal impacts on other biological resources identified within the study area. Potential long-term impacts include those resulting from habitat modifications and/or fragmentation. During the routing process, POWER attempted to minimize potential brushland and shrubland habitat fragmentation by paralleling existing linear features where feasible.

As to threatened and endangered species, construction of the proposed route is not anticipated to impact any state or federally designated threatened or endangered plant or wildlife species. POWER reviewed known element occurrence data for the study area obtained from the TPWD Texas Natural Diversity Database; current county listings for federal and state listed threatened and endangered species and USFWS designated critical habitat locations as part of its biological assessment and concluded that there have been no documented occurrences along the proposed route. POWER also reviewed several published sources to review life histories and habitat requirements of species identified in the EA.

Q. Will SPS have practices in place to ensure that, in the event federally or state-listed endangered or threatened species are encountered during construction of the proposed pipeline, such species are not adversely impacted?

A. Yes. If potential suitable habitat is identified or federally- or state-listed animal species are observed during a field survey of the pipeline alignment, if necessary, SPS may further coordinate with the TPWD and USFWS to determine avoidance and/or mitigation strategies.

Q. Does SPS have practices in place to mitigate potential adverse effects to other wildlife impacted by the proposed Project?

A. Yes. SPS proposes to complete all ROW clearing and construction activities in compliance with the Migratory Bird Treaty Act to avoid and/or minimize potential impacts to the extent practical during bird nesting seasons. In addition, implementation of a SWPPP and best management practices will minimize these potential impacts to aquatic systems.

Q. Will POWER conduct further ecological resource studies?

A. Yes. Because pedestrian surveys for threatened and endangered species have not been completed for the proposed route, suitable habitat for these species might occur within the ROW of the proposed route. A field survey of potential suitable habitat for all listed species will be completed after CCN approval, and SPS will consult with the USFWS and TPWD regarding mitigation measures if habitats are identified.

Q. What were the EA's findings regarding other environmental resources potentially impacted by the location of the Proposed Project?

A. The EA also examined the physiography, geology, soils, and water resources in its assessment of the potential impacts to the environment from the Proposed Project. As to physiography and geology, no geological hazards were identified and construction is not anticipated to have any significant adverse effects on these resources. Further, while soil erosion, compaction, sedimentation, and reduction of soil quality by mixing topsoil with subsoil or by bringing excess rock to the surface are potential impacts primarily during the construction phase of the Proposed Project, these impacts will be minimized with the development and implementation of a SWPPP and no long-term effects to soil resources are anticipated. In addition, conversion of prime farmland soils is not anticipated for the Proposed Project. SPS will revegetate and stabilize all disturbed work areas following the completion of construction and the right-of-way will be inspected during and post construction to ensure the appropriate BMPs are implemented and maintained.

Finally, two perennial streams and several intermittent streams were identified that would be crossed by the proposed pipeline routes. In addition, one

known water well or spring was identified within 200 feet of each of the potential pipeline routes. During construction activities, potential impacts for both surface water and groundwater resources is related to inadvertent fuel and/or other chemical spills. Standard operating procedures and spill response specifications relating to petroleum product storage, refueling, and maintenance activities of equipment will be included as a component of the SWPPP to avoid and minimize potential contamination of water resources. SPS will take all necessary and available precautions to avoid and minimize the occurrence of such spills. Any accidental spills would be promptly addressed in accordance with state and federal regulations. Operation of the Project will not result in impacts to surface water resources unless maintenance activities require work in or around streams. Prior to construction, SPS will coordinate with the USACE to acquire the necessary permits.

Q. What were the EA's findings regarding air and noise potentially impacted by the location of the proposed natural gas pipeline?

A. Project pipeline activities do not include construction or modification of any permanent stationary sources; therefore, noise impacts are not anticipated due to the operation of the pipeline. However, short-term, temporary noise impacts associated with construction activities will primarily result from the use of heavy construction equipment and machinery. Noise levels will vary throughout construction depending on the phase of work, number and locations of operating equipment, distance of the noise receptor from the noise source, and any intervening topography or barriers (e.g., walls, buildings, vegetation).

Project pipeline activities do not include construction or modification of any permanent stationary sources; therefore, long-term air quality impacts are not anticipated. Temporary emissions of combustion-related pollutants and fugitive particulate matter due to the use of construction equipment will result from construction. Construction activities will also result in the temporary generation of fugitive dust due to disturbance of the surface and other dust generating actions (e.g., land clearing, grading, excavation, and vehicle traffic). The amount of fugitive dust generated will be a function of construction activities, silt and moisture contents of the soil, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics.

Q. What were the EA's findings regarding air quality related to the conversion of the Harrington Station?

A. The maximum sulfur content for natural gas specified in the Harrington Generating Station Air Permit 5129 is 20 grains of sulfur per 100 standard cubic feet which equates to a sulfur dioxide ("SO_2")emission rate of 0.056 lb SO_2/million British thermal units ("MMBtu") for combustion of natural gas. Switching from coal to natural gas will provide a 95% potential reduction in SO_2 emissions on a maximum hourly basis. The average SO_2 emission rate for natural gas combustion provided in the Acid Rain Reporting Rules, 40 CFR Part 75, Appendix D, is 0.006 lb SO_2/MMBtu. Switching from coal to natural gas is anticipated to provide a significant potential reduction in SO_2 emissions on an annual basis.

In addition to SO_2 emission reductions, switching from coal to natural gas also provides reductions in greenhouse gas emissions. Based on the default

greenhouse gas emission factors from the Mandatory Greenhouse Gas Reporting Rules in 40 CFR Part 98, Subpart C, switching from subbituminous coal to natural gas will result in a 45% reduction in greenhouse gases.

Q. In your opinion, will granting SPS's requested CCN amendment adversely affect the environmental integrity of the land crossed by the proposed Project?

A. No. The area is characterized by rolling prairie topography, with little vegetation and few major water features. The proposed Project will cause only minimal and short-term impacts to soil, water, ecological resources, air, and noise.

V. PERMITS

Q. Will any permits be required for the construction and operation of the proposed Project?

A. Yes. Table 1-1 of the EA is a list of all the necessary permits that would be required for the construction and operation of the proposed Project.

Q. Does SPS expect that all required permits will be obtained prior to construction?

A. Yes.

VI. SUMMARY AND CONCLUSION

Q. Please summarize your testimony and conclusions.

A. Due to the rural location of the Project, relatively sparse population of the immediately surrounding area, and absence of recreational, park, or historic sites in proximity to the potential pipeline routes, it is not expected that the Project will have a significant adverse impact on community values, recreational and park areas, or historical and aesthetic values.

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

A. Yes.

AFFIDAVIT

STATE OF TEXAS)
)
COUNTY OF TRAVIS)

ANASTACIA SANTOS, first being sworn on his oath, states:

I am the witness identified in the preceding testimony. I have read the testimony and the accompanying attachment(s) and am familiar with the 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.

ANASTACIA SANTOS

Subscribed and sworn to before me this 23rd day of August, 2021 by ANASTACIA SANTOS

Notary Public, State of Texas

DIANNA WYNN DAVIS
My Notary ID # 129070486
Expires July 30, 2024

My Commission Expires: July 30, 2024

CERTIFICATE OF SERVICE

I certify that August 27, 2021 this instrument was filed with the Public Utility Commission of Texas and a true and correct copy of it was served on the Staff of the Public Utility Commission of Texas, the Office of Public Utility Counsel, and all parties in SPS's current base rate proceeding, PUC Docket No. 51802, by hand delivery, Federal Express, certified mail, electronic mail, or facsimile transmission.

ANASTACIA SANTOS
PROJECT MANAGER

YEARS OF EXPERIENCE
17

EDUCATION
- B.S., Renewable Natural Resources, Texas A&M, 2004
- B.A., Mathematics, University of Texas at Austin, 1998

AREAS OF EXPERTISE
- Project management
- Schedule and budget management
- State utility siting applications
- Expert testimony
- Environmental planning
- Routing and siting studies
- Environmental studies and documents
- Environmental compliance, approvals, permits, and strategy
- Public involvement and agency coordination

SPECIAL TRAINING
- FERC Environmental Training Seminars—Environmental Report Preparation and Post-Certificate Environmental Compliance

LANGUAGES
- Spanish

EXPERIENCE SUMMARY

Ms. Santos has experience in environmental permitting and project management of large energy-related capital development and compliance initiatives, with an emphasis on regulated onshore natural gas pipeline and electric transmission projects from initial routing design through construction. She has managed the preparation of numerous environmental documents including the National Environmental Policy Act (NEPA) Environmental Impact Assessments (EA), Environmental Impact Statements (EIS), and Federal Energy Regulatory Commission (FERC) environmental reports. She has obtained numerous environmental permits/clearances in compliance with the Clean Water Act, Endangered Species Act, and the National Historic Preservation Act.

Tennessee Gas Pipeline, Southwest Louisiana Supply Project, Louisiana

Project Manager responsible for overseeing and managing a FERC 7(c) application for modifications to Kinder Morgan's existing Tennessee Gas Pipeline system to transport an additional 295,000 Dth/d (dekatherms per day) of natural gas to the Cameron Pipeline. The Project involves the construction of 3.8 miles of new pipeline, along with the construction of five new meter stations, one new compressor station, and modifications to one existing compressor station. The project included comprehensive federal and state environmental permitting including an individual permit with the USACE Vicksburg district along with biological and cultural resource surveys.

Natural Gas Pipeline Company of America, Love Lateral, Oklahoma

Project Manager responsible for overseeing and managing a desktop environmental routing and siting analysis to identify potential environmental and regulatory "critical issues" associated with construction of a new approximately 9-mile, 6-inch-diameter interconnect (lateral) natural gas pipeline and two areas of pipeline that will be disconnected as a result of the abandonment by sale of 92 miles of 20-inch pipeline.

Tennessee Gas Pipeline, Broad Run System Expansion Project, Multiple States

Project Planner responsible for assisting with development of the cumulative impacts analysis to support a FERC 7c Application for construction of four greenfield compressor stations and modifications at two existing compressor stations.

Kinder Morgan, Midcontinent Expansion Project, Texas, Louisiana, Mississippi

Project Manager responsible for overseeing and managing a FERC 7(c) application for a 1.2-mile 16-inch pipeline lateral with one (1) greenfield meter station and upgrades to four existing compressor stations. The project included comprehensive federal and state environmental permitting along with biological and cultural resource surveys.

Kinder Morgan, Midcontinent Express Pipeline Amendment Project, Texas, Mississippi

Project Manager responsible for overseeing and managing a FERC 7(c) amendment application for the relocation and reconfiguration of 2 existing compressor stations. The project included comprehensive federal and state environmental permitting along with biological and cultural resource surveys.

Sempra Energy, Integrated Environmental Compliance Program, Cameron LNG Facility, Louisiana

Trainer responsible for development of an environmental compliance program including presenting a 40-hour training course for LNG operations and maintenance employees of a new LNG facility.

Williams, Gulfstream Station 95 Project, Alabama

Project Manager responsible for overseeing and managing a FERC blanket certificate and comprehensive federal and state environmental permitting for construction of a 26-inch lateral interconnect line.

Spectra Energy/CenterPoint Energy Joint Venture, Southeast Supply Header Project, Louisiana, Mississippi, Alabama

Project Manager responsible for overseeing and managing a FERC 7(c) application of 270-mile, 42-inch and 36-inch pipeline with three greenfield compressor stations, two greenfield booster stations, 13 interconnects and seven laterals along with comprehensive federal and state environmental permitting including two separate individual permit applications submitted to USACE and development of a mitigation plans for federally listed gopher tortoise and state listed pitcher plant. The project included biological and cultural resource surveys with species specific surveys for the Louisiana black bear and gopher tortoise.

Sempra Energy, Integrated Environmental Compliance Program, Energía Costa Azul LNG Facility, Mexico

Trainer responsible for development of an environmental compliance program including presenting a 40-hour training course for LNG operations and maintenance employees of a new LNG facility. Training presentation and materials were provided in Spanish.

Duke Energy, Egan SWD6 Project, Louisiana

Project Manager responsible for overseeing and managing a FERC blanket certificate and comprehensive federal and state environmental permitting for

a replacement deep-injection saltwater disposal well and associated piping and ancillary facilities. The project included biological surveys.

FERC Third Party, EIS, Georgia

Deputy Project Manager responsible for assisting with the management and authoring sections of an EIS for the expansion of the existing Elba Island LNG Terminal adding two 200,000 m3 LNG storage tanks, and expansion and modifications to LNG ship unloading berth and turning basin, LNG unloading and vapor return arms, vaporization facilities, and control and maintenance buildings; as well as an associated 188-mile, 42-inch pipeline (73 miles of greenfield pipeline), new compressor station, and ancillary facilities. Other responsibilities included development and assisting with public scoping meetings.

Duke Energy, Egan Horsepower Reconfiguration Project, Louisiana

Deputy Project Manager responsible for assisting with the management of a FERC 7(c) amendment application and comprehensive federal and state environmental permitting for a reconfiguration of a previously-certificated compressor station upgrade at existing Egan Hub Storage facility. The project included biological surveys.

International Paper, IP Springhill Pipeline Abandonment Project, Louisiana, Arkansas

Deputy Project Manager responsible for assisting with the management of a FERC 3(b) application for a 7-mile pipeline abandonment project.

Kinder Morgan, Midcontinent Express Pipeline Project, Oklahoma, Texas, Louisiana, Mississippi, Alabama

Task Manager responsible for permits and Notice to Proceed Requests as part of a FERC 7(c) application project for a 507-mile, 42-inch and 36-inch diameter pipeline including comprehensive federal and state environmental permitting. The project included biological and cultural resource surveys.

Xcel Energy, State Line to Hobbs 345 kV Routing Study, New Mexico

Project Manager responsible for overseeing and managing the preparation of Certificate of Convenience and Necessity (CCN) application for a 36-mile 345 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Approximately 8 miles of the Project crossed state lands managed by the New Mexico State Land Office (NMSLO). Xcel Energy contracted POWER to route a 345 kV transmission line project in eastern New Mexico. POWER prepared the Alternative Route Analysis/ Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the New Mexico Public Regulation Commission (PRC). POWER coordinated with the NMSLO to locate the line on state lands. POWER will provide post-filing support and expert witness testimony for this project.

Xcel Energy, TUCO to Yoakum Line 345 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 106-mile 345 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Xcel Energy contracted POWER to route a 345 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the Public Utilities Commission of Texas (PUCT). POWER provided post-filing support and expert witness testimony for this project, which was successfully approved.

Xcel Energy, Rush Creek 345 kV Transmission Line Project, Colorado

Project Manager for the routing and permitting of approximately 83 miles of 345 kV transmission line associated with Xcel Energy's 600 MW Rush Creek wind facility in Cheyenne, Elbert, Kit Carson, and Lincoln counties, Colorado. The facility consists of two wind farms, Rush Creek I and Rush Creek II. POWER was responsible for the environmental assessment/routing and siting study; land use permits to construct the transmission line, including 1041 and Special Use permits for Arapahoe and Elbert counties; and a Use by Special Review and Development Permit for Lincoln County.

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Madison County for a six-mile 230 kV electric transmission line including field reconnaissance. Expert witness testimony as part of Mississippi Public Service Commission (MPSC) Docket 2019-UA-069 was provided for this project, which was successfully approved.

Entergy, University Mississippi Medical Center 115 kV Transmission Line Project, Mississippi

Project Manager responsible for overseeing and managing the preparation of Critical Issues Analysis in Hinds County for a 5-mile 115 kV electric transmission line including field reconnaissance. Expert witness testimony as part of MPSC Docket 2019-UA-071 was provided for this project, which was successfully approved.

Entergy, Madison/Hinds Improvement 230 kV Transmission Line Project, Mississippi

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Madison and Hinds counties for a 28-mile 230 kV electric transmission line including field reconnaissance. Expert witness testimony as part of MPSC Docket 2015-UA-098 was provided for this project, which was successfully approved.

Entergy, Southwest Reliability Improvement 230 kV Transmission Line Project, Mississippi

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Adams, Claiborne, Franklin, Jefferson and Warren counties, for a 63-mile 230 kV electric transmission line including field reconnaissance. Expert witness testimony

as part of MPSC Docket 2015-UA-166 was provided for this project, which was successfully approved.

Entergy, Franklin-McComb 230 kV Transmission Line Project, Mississippi

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Franklin, Lincoln, Amite and Pike counties, for a 28-mile 230 kV electric transmission line including field reconnaissance. Expert witness testimony as part of MPSC Docket 2015-UA-193 was provided for this project, which was successfully approved.

Electric Transmission Texas, LLC (ETT), Stewart Road 345 kV Transmission Line Environmental Assessment and Alternative Routing Analysis and CCN Application, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 5-mile 345 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. ETT contracted POWER to route a 345 kV transmission line project in South Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT. POWER provided expert witness testimony in support of the settlement route, which was successfully approved.

Sharyland Utilities LP, Clearfork - Doghouse 345-kV Transmission Line Routing Study/EA and CCN Application, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 10-mile 345 kV electric transmission line, including environmental assessment, and routing. Sharyland contracted POWER to route a 345 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT which was successfully approved.

Pattern Development, Western Spirit 345 kV Transmission Line and Switchyard Project, New Mexico

Project Manager responsible for overseeing and managing the preparation of an environmental impacts summary for potential reroutes. Pattern proposed to construct an approximately 140-mile 345 kV transmission line in Sandoval, Bernalillo, Valencia, Socorro, and Torrance Counties. POWER conducted a desktop evaluation to identify critical issues and major constraints on reroutes considered for developing the 345 kV transmission line route and prepared an environmental impacts summary report. POWER also performed a viewshed analysis and developed photo simulations for key observation points associated with the project.

Pattern Development, Northern Spirit 345 kV Transmission Line Fatal Flaw Analysis, New Mexico

Project Manager responsible for overseeing and managing with the preparation of an environmental fatal flaw analysis. Pattern proposed to construct a 55-mile 345 kV transmission line in Torrance and San Miguel Counties. POWER conducted a desktop evaluation to identify critical issues and major constraints for developing the 345 kV transmission line route and prepared an environmental fatal flaw analysis.

Sharyland Utilities LP, North Edinburg-Loma Alta (Palmito) 345 kV Transmission Line Routing Study/EA and CCN Application, Texas

Project Manager responsible for overseeing and managing the preparation of the CCN application for this project in the Rio Grande Valley area in southern Texas. The ERCOT critical new double-circuit capable 345 kV transmission line is approximately 96 miles long. POWER prepared the Alternative Route Analysis / Environmental Assessment Report and supported preparation of Electric Transmission Texas and Sharyland Utilities' application for a CCN to the PUCT. Work included collection and analysis of study area data, developing a constraints map, developing preliminary links, and participation in the public outreach program, which included six public meetings and alternative route development and analysis. POWER provided post-filing support and expert witness testimony for this project, which was successfully approved. POWER also coordinated agency meetings with local Irrigation, Drainage and Water Districts and obtained a license from the International Boundary and Water Commission.

Clean Line Western Spirit LLC, Western Spirit 345 kV Transmission Line Routing Study, New Mexico

Project Manager responsible for overseeing and managing the preparation of an alternatives analysis and siting report for an approximately 180-mile 345 kV electric transmission line in New Mexico. The client tasked POWER with developing alternative routes with geographic diversity. POWER selected feasible and geographically diverse alternative routes for analysis and then ranked the routes using a number of evaluation criteria to determine potential impacts to existing land use and environmental resources.

Southern California Edison, EMF Basic and Detailed Field Management Plan Developments, California

Project Manager working with Southern California Edison's (SCE) Electric & Magnetic Fields (EMF) Program Manager of the Corporate Health & Safety team to direct POWER's internal Power Delivery, SCADA and Analytical Services team in preparing multiple basic and detailed Field Management Plans (FMPs). These FMPS are being used to document SCE projects and illustrate how they will use the California Public Utilities Commission's (CPUC) "no-cost and low-cost" measures to mitigate EMF generated by generation, transmission, and distribution systems throughout the Edison territory. POWER's assistance in preparing FMP documentation is enabling SCE to be consistent with the CPUC EMF policy and with the direction of leading national and international health agencies.

South Texas Electric Cooperative, Tilden-Reveille 138 kV Transmission Line Routing, Texas

Project Manager for a routing study and environmental assessment to support a CCN application for STEC's Tilden-Reveille 138 kV Transmission Line project. The project is an approximate 47-mile 138 kV double circuit transmission line extending between STEC's existing Tilden Substation and the proposed Reveille Substation. POWER identified preliminary alternative route segments, which were presented at two public meetings. POWER completed the public input analysis and conducted an alternative route comparison as part of the Routing Study/EA and CCN application document.

Entergy, Fancy Point-Horseshoe 230 kV Transmission Line Project, Louisiana

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in East Feliciana, West Feliciana, and East Baton Rouge Parishes, for a 7-mile 230 kV electric transmission line including field reconnaissance.

Entergy, Waterford-Churchill 230 kV Transmission Line Project, Louisiana

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in St. Charles and Jefferson Parish, for a 27-mile 230 kV electric transmission line including field reconnaissance.

Xcel Energy, TUCO to Amoco to Hobbs 345/115 kV Routing, New Mexico and Texas

Project Manager responsible for overseeing all project components. Xcel Energy contracted POWER to prepare the Initial Alternative Route Analysis for new 345 kV and 115 kV transmission lines stretching across Texas into New Mexico. The client tasked POWER with developing alternative routes with geographic diversity. POWER selected feasible and geographically diverse alternative routes for analysis and then ranked the routes using a number of evaluation criteria to determine potential impacts to existing land use and environmental resources. The final route evaluation produced 32 primary alternative routes for the TUCO to Amoco 345 kV segment and 33 primary alternative routes for the Amoco to Hobbs 115 kV segment.

Xcel Energy, Wheeler to Coburn 115 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for an 11-mile 115 kV electric transmission line including development of the public involvement program, environmental assessment, routing and field reconnaissance of habitat for Lesser Prairie Chicken. Xcel Energy contracted POWER to route a 115 kV transmission line project in West Texas. The approved 115 kV transmission line is approximately 11 miles. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT.

Xcel Energy, Lesser Prairie Chicken Presence/Absence Surveys, Texas and New Mexico

Project Manager responsible for overseeing aerial Lesser prairie-chicken (LPC) lek surveys for six substations in Texas and New Mexico. Xcel Energy contracted POWER to conduct LPC lek surveys during the 2015 LPC breeding season to determine the need for implementation of conservation measures while constructing this Project during this nesting season.

Sharyland Utilities LP, Stiles to Coates 138 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 7-mile 138 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Xcel Energy contracted POWER to route a 138 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to PUCT. POWER provided expert witness testimony in support of the settlement route, which was successfully approved.

Sharyland Utilities LP, Tall City to Glass 138 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 13-mile 138 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Xcel Energy contracted POWER to route a 138 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT. POWER provided expert witness testimony in support of the settlement route, which was successfully approved.

Sharyland Utilities LP, Sale to Natural Dam 138 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 17-mile 138 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Xcel Energy contracted POWER to route a 138 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT. POWER provided expert witness testimony in support of the settlement route, which was successfully approved.

Xcel Energy, Yoakum to State Line 345 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 27-mile 345 kV electric transmission line, including development of the public involvement program, environmental assessment, and routing. Xcel Energy contracted POWER to route a 345 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of

Xcel's application for a CCN to the PUCT. POWER also submitted expert witness testimony in support of the settlement route.

Entergy, Nelson-Graywood 230 kV Transmission Line Project, Louisiana

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Calcasieu Parish for a 70-mile 230 kV electric transmission line including field reconnaissance.

Entergy, Leucadia-Lake Charles 230 kV Transmission Line Project, Louisiana

Project Manager responsible for overseeing and managing the preparation of Environmental Assessment and Routing Study in Calcasieu Parish for a 7-mile 230 kV electric transmission line including field reconnaissance.

Xcel Energy, TUCO-Stanton-New Deal Project, Texas

Project Manager responsible for overseeing and managing the preparation of a routing study for a 35-mile 345/115 kV electric transmission line including field reconnaissance.

Xcel Energy, Mustang to Shell CO2 115 kV Routing Study, Texas

Project Manager responsible for overseeing and managing the preparation of CCN application for a 9-mile 115 kV electric transmission line, including environmental assessment, and routing. Xcel Energy contracted POWER to route a 115 kV transmission line project in West Texas. POWER prepared the Alternative Route Analysis/Environmental Assessment Report and supported preparation of Xcel's application for a CCN to the PUCT.

Xcel Energy, TUCO to Texas/Oklahoma Interconnect Project, Texas, Oklahoma

Project Manager responsible for overseeing and managing the preparation of the CCN application for a 178-mile 345 kV electric transmission line including development of the public involvement program, environmental assessment, routing, field reconnaissance of potential routes and submitting written testimony to the PUCT.

Tri-State Generation and Transmission Association, Inc., Burlington-Wray 230 kV Transmission Project, Colorado

Task Manager responsible for managing the public involvement program for a 70-mile 230 kV transmission project. The project included coordination and financial assistance through United States Department of Agriculture's Rural Utilities Service (RUS) and a NEPA EA.

Wind Energy Transmission Texas, LLC, CREZ Project, Texas

Project Manager responsible for overseeing and managing the public involvement program for 286-miles of 345 kV transmission line and coordination of field reconnaissance of potential routes by ground and helicopter. The project included three CCN applications.

Confidential Client, Natural Gas Liquids Pipeline Feasibility Study, North Dakota, Montana, Wyoming, Colorado

Project Manager responsible for overseeing and managing an environmental feasibility study for a 605-mile 10-inch natural gas liquids pipeline and 7 pump stations.

Texas Harrington CCN

Attachment AS-2(V)(CD)