**BEFORE THE NEW MEXICO PUBLIC REGULATION COMMISSION**

| | | |
|---|---|---|
| **IN THE MATTER OF THE APPLICATION OF PACIFIC WIND DEVELOPMENT LLC FOR APPROVAL OF THE LOCATION OF THE LA JOYA WIND PROJECT AND 345 KV GEN-TIE LINE IN TORRANCE COUNTY, NEW MEXICO PURSUANT TO NMSA § 62-9-3; AND RIGHT OF WAY WIDTH DETERMINATION PURSUANT TO NMSA § 62-9-3.2** | ) | **Case No. 18-00353-UT** |



# DIRECT TESTIMONY OF

# MATT DADSWELL

# ON BEHALF OF PACIFIC WIND DEVELOPMENT LLC

November 19, 2018

CASE NO. 18-_____-UT
DIRECT TESTIMONY OF MATT DADSWELL

## I. WITNESS INTRODUCTION AND QUALIFICATIONS

**Q. PLEASE STATE YOUR NAME AND BUSINESS ADDRESS.**

A. My name is Matt Dadswell. My business address is 19803 North Creek Parkway, Bothell, Washington 98011.

**Q. BY WHOM ARE YOU EMPLOYED AND IN WHAT CAPACITY?**

A. I am employed by Tetra Tech as a Social Scientist/Economist.

**Q. PLEASE DESCRIBE YOUR EDUCATIONAL BACKGROUND AND EXPERIENCE.**

A. I received a B.A. in Economics and Geography from Portsmouth Polytechnic in England, a M.A. in Geography from the University of Cincinnati, and completed two years of Ph.D. studies in Economic Geography at the University of Washington. I have more than 20 years of experience managing and conducting social and economic studies and impact analyses for energy and natural resource management projects throughout the United States, including renewable energy generation and transmission lines. A copy of my resume is included in Exhibit MD-1.

**Q. ON WHOSE BEHALF ARE YOU APPEARING IN THIS PROCEEDING?**

A. I am testifying on behalf of the applicant, Pacific Wind Development LLC ("Pacific Wind").

**Q. WHAT IS THE PURPOSE OF YOUR TESTIMONY?**

A. I will address the economic benefits to the state economy associated with the La Joya Project, including the Wind Project and the Gen-Tie Facilities described in my Report included as Exhibit MD-2. My testimony supports Pacific Wind's application to the New Mexico Public Regulation Commission for location approval.

**Q. HAVE YOU TESTIFIED BEFORE ANY REGULATORY AUTHORITIES?**

A. No.

**Q. WHAT EXHIBITS DO YOU SPONSOR AS PART OF YOUR TESTIMONY?**

A. I sponsor Exhibit MD-1, which is my resume; and Exhibit MD-2, which is my report on the Project's economic benefits.

**Q. WERE EXHIBITS MD-1 AND MD-2 PREPARED BY YOU OR UNDER YOUR SUPERVISION?**

A. Yes.

**Q. ARE EXHIBITS MD-1 AND MD-2 TRUE AND CORRECT COPIES OF THE DOCUMENTS YOU DESCRIBE IN YOUR TESTIMONY?**

A. Yes.

## II. OVERVIEW

**Q. WHAT ECONOMIC BENEFITS DO WIND PROJECTS BRING TO A COMMUNITY?**

A. Wind farms have numerous economic benefits including creation of job opportunities in the local area during both the short-term construction phase and the long-term operational phase. Short-term construction jobs include both workers at the wind farm site and jobs created along the supply chain. Long-term operational jobs include wind turbine technicians, supervisors, administrators, and supply chain jobs.

Wind developers typically lease the land for the turbines from local landowners. Only a small portion (1-2%) of the total project footprint is used for the turbines, access roads, feeder lines and substations. Lease payments made to landowners provide a steady source of long-term income to offset the uncertain income from fluctuating commodity

prices. Landowners then have additional funds to make purchases in the local economy and elsewhere, and the remaining land is still available for agricultural use.

Wind projects enhance the equalized assessed value of property within the county. Typically, wind developers pay taxes based on that improved value unless preempted by law or mutual agreement such as negotiated payments in lieu of taxes ("PILOT"). Wind farms strengthen the local tax base, helping to improve county services, schools, police and fire departments and infrastructure improvements, such as public roads.

**Q. HOW DO YOU CATEGORIZE THESE BENEFITS?**

A. The economic benefits can be categorized into direct, indirect and induced impacts. Within each category, there are one-time impacts during construction and ongoing, recurring impacts during the operating years.

**Q. PLEASE DEFINE THE DIRECT, INDIRECT AND INDUCED IMPACTS.**

A. Direct impacts during construction refer to spending on construction labor and onsite construction-related services including engineering, design, transport, legal, finance and other professional services. Direct impacts during operating years refer to the changes that occur in the onsite spending for wind turbine technicians, supervisors and other workers at the wind farm.

The initial spending on the construction and operation of the wind farm creates a second layer of impacts, referred to as "turbine and supply chain impacts" or "indirect impacts." Indirect impacts during the construction period consist of the changes in inter-industry purchases resulting from the direct changes, and include construction spending on materials and wind farm equipment and other purchases of goods and offsite services.

Induced impacts refer to the changes that occur in household spending as household income increases or decreases due to the direct and indirect effects. Local spending by employees working directly or indirectly on the wind farm project who receive their paychecks and then spend money in the community is included. Additional local jobs and economic activity are supported by these purchases of goods and services.

**Q. WILL THE LA JOYA PROJECT RESULT IN ECONOMIC BENEFITS?**

A. Yes. The La Joya Project will result in one-time economic benefits during construction of each phase of the Project, and will result in annual economic benefits during the years the Project is in operation. For the purposes of analysis, I discuss the economic benefits of the Project in two phases. The first phase will supply PNM with 166 MW of wind energy to serve Facebook's data center in Los Lunas, New Mexico. The second phase represents the remainder of the Project or full build-out, which may occur in phases but I assume for purposes of analysis will consist of 334 MW constructed in a single phase over a two-year period. I provide a summary of potential economic impacts in Table 1 and Table 2 on pages 5 and 6 of Exhibit MD-2, respectively.

**Q. PLEASE DESCRIBE THE ECONOMIC BENEFITS OF THE PROJECT DURING *CONSTRUCTION.***

A. Project construction would support temporary employment, income, and economic output in New Mexico. Construction of the first phase is estimated to result in on-site employment of approximately 139 full-time equivalent (FTE) jobs that will be filled by New Mexico residents, as well as an estimated 11 construction-related service jobs. These estimates include the in-state labor for the proposed 345-kV Gen-Tie Facilities. The second phase

of the Wind Project would result in an estimated 101 FTE jobs on-site and 22 construction-related service jobs that will be filled by New Mexico residents.

Construction of the Project is also estimated to support employment, income, and output elsewhere in the state economy. During the first phase, construction of the Wind Project and Gen-Tie Facilities is expected to support an estimated 148 turbine and supply chain (indirect) jobs in New Mexico and 65 induced jobs. Construction of the second phase is estimated to support approximately 273 turbine and supply chain jobs and 118 induced jobs.

Overall, construction of the first phase of the Project including the Gen-Tie Facilities is estimated to support 362 total (direct, indirect, and induced) jobs in the state of New Mexico and approximately $17.6 million in labor income, with total economic output of approximately $45.0 million. During the second phase, Project construction is estimated to support approximately 514 total jobs and approximately $24.8 million in labor income, with total economic output of approximately $74.7 million.

Table 4 on page 21 of Exhibit MD-2 provides a break-down of project development and on-site labor, turbine and supply chain, and induced impacts during the first phase of construction, and Table 6 on page 23 of Exhibit MD-2 provides a break-down of project development and on-site labor, turbine and supply chain, and induced impacts during full build-out construction.

**Q. PLEASE DESCRIBE THE ECONOMIC BENEFITS OF THE PROJECT DURING PROJECT *OPERATION*.**

A. Once the construction phase is complete, operation and maintenance of the Project, which I generally refer to as operation, will continue to contribute to the state economy over the

expected 40-year operating life of the Project. These annual impacts are expected to occur each year the Project operates.

Operation of the first phase of the Project is estimated to support approximately 28 total (direct, indirect, and induced) jobs in New Mexico and approximately $1.5 million in labor income, with total economic output of approximately $4.4 million. Table 5 on page 22 of Exhibit MD-2 provides a break-down of on-site labor, local revenue and supply chain, and induced annual operation impacts for the first phase of the Project.

Operation during full build-out is estimated to support approximately 49 total jobs, approximately $2.6 million in labor income, and total economic output of approximately $8.1 million. Table 7 on page 23 of Exhibit MD-2 provides a break-down of on-site labor, local revenue and supply chain impacts, and induced annual operation impacts.

## IV. METHODOLOGY

**Q. DESCRIBE HOW THE STUDY WAS CONDUCTED.**

A. This report assesses economic impacts during both construction and operation using the National Renewable Energy Laboratory's (NREL) latest JEDI Wind Model (w6-29-18), with a separate analysis prepared for construction and operation. NREL is the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research and development. The JEDI Wind Model is a spreadsheet tool that applies standard input-output multipliers and consumption patterns using state-specific multipliers obtained from the IMPLAN model. IMPLAN is a commercially available economic modeling package widely used to assess the economic impacts of renewable energy and many other types of projects.

IMPLAN models how spending in one sector of the economy is spent and re-spent in other sectors of the economy. By tracing these linkages, the model approximates the flows of initial project spending through the local economy based on the supply lines connecting the various economic sectors. These linkages vary by sector and also through regional differences in spending and employment patterns. The amount spent locally decreases with each successive transaction away from the initial expenditure due to the effects of savings, taxes, or other activities that happen outside the local economy, known as leakages. The direct investments in project construction and operation trigger successive rounds of spending that result in an overall increase in employment, income, and output in the local economy. Construction-related impacts are assessed as one-time impacts; operation-related impacts are modeled as annual impacts.

**Q. WHERE DID YOU OBTAIN YOUR DATA INPUTS?**

A. Pacific Wind provided the Project description and reviewed the costs that were estimated by the JEDI Wind Model. Estimates were reviewed with adjustments made to reflect Avangrid's actual experience with the El Cabo Wind Project.

**Q. ARE THERE ANY LIMITATIONS TO THE STUDY?**

A. Yes. The results presented in this report are indicative, preliminary estimates based on a certain set of assumptions and estimated model inputs. These assumptions and inputs are based on the best data and information available at this stage in the Project development process. Further, this analysis does not assess net jobs, rather it presents total or gross jobs that would be supported by Project development. A person employed during Project construction could, for example, have been employed elsewhere in the state beforehand, and, as a result, not all gross jobs represent a net additional job. A net jobs analysis would

subtract job losses in other areas from the direct job gains of the new project to identify only the net increase in jobs. This type of analysis is speculative and dependent on numerous interactions and, therefore, it is more reliable and standard practice to limit the analysis to total or gross jobs created by the Project. Similarly, jobs supported elsewhere in the economy (*i.e.*, indirect and induced jobs), identified as FTEs, are not necessarily additional jobs. Secondary impacts may support workers in their existing positions, helping them retain their jobs or expand their hours.

## V. CONCLUSION

**Q. PLEASE SUMMARIZE YOUR OVERALL FINDINGS.**

A. The Project is estimated to support about 876 total jobs in the State of New Mexico during construction of all phases. During operations, the project is estimated to support about 77 total jobs. These jobs are estimated to produce about $42.4 million in earnings during construction and about $4.1 million in earnings annually during operations. Total output (the value of production of goods and services in the state similar to Gross Domestic Product) is estimated to increase about $119.7 million during construction and about $12.5 million annually during operations.

**Q. DOES THIS CONCLUDE YOUR TESTIMONY AT THIS TIME?**

A. Yes, it does.

Matt Dadswell
*Social Scientist/Economist*

## EXPERIENCE SUMMARY

Mr. Dadswell has more than 20 years of experience managing and conducting social and economic studies and impact analysis and preparing EIS and EA documents for energy and natural resource management projects throughout the United States. Specific project experience includes renewable energy generation, transmission lines, and pipelines; hydroelectric facilities; timber sales; land exchanges; military base closures; port development; and environmental restoration.

## EDUCATION

PhD Candidate, Economic Geography, 1995 to 1997, University of Washington
MA, Geography, 1990, University of Cincinnati
BA, Economics and Geography, 1988, Portsmouth Polytechnic, England

## SELECTED PROJECT EXPERIENCE

**Seneca Wind LLC, Economic and Fiscal Impact of Seneca Wind, Seneca County, OH.** Evaluated the economic and fiscal impacts of a proposed 212 MW (85 turbines) wind energy project in Seneca County, Ohio. Estimated total (direct, indirect, and induced) economic output, employment, and labor income at the county and state levels using a modified version of the DOE National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impact (JEDI) Land-based Wind Model (JEDI Wind model) and data obtained from IMPLAN. Estimated tax revenues that would be expected to accrue as a result of Project construction and operation.

**NextEra Energy Resources, LLC, Economic and Fiscal Impact Study for the Chicot Solar Energy Project, Chicot County, AR.** Evaluated the economic and fiscal impacts of a proposed 100 megawatt (MW) solar photovoltaic project on approximately 860 acres of private land in Chicot County, Arkansas. Assessed the regional economic impacts of construction and operation of the proposed facility in terms of employment, labor income, and economic output using the IMPLAN economic modeling package. Impacts were estimated separately at the local (Chicot County) and state level. Estimated local and state tax revenues that would be expected to accrue as a result of Project construction and operation.

**NextEra Energy Resources, LLC, Economic and Fiscal Impact Study for the Stuttgart Solar Energy Project, Arkansas County, AR.** Evaluated the economic and fiscal impacts of a proposed 81 megawatt (MW) solar photovoltaic project on approximately 475 acres of private land in Arkansas County, Arkansas. Assessed the regional economic impacts of construction and operation of the proposed facility in terms of employment, labor income, and economic output using the IMPLAN economic modeling package. Impacts were estimated separately at the local (Arkansas County) and state level. Estimated local and state tax revenues that would be expected to accrue as a result of Project construction and operation.

**Plains and Eastern Clean Line, LLC, and U.S. Department of Energy, Plains & Eastern Transmission Line NEPA EIS, TX, OK, AR, TN.** Evaluated the social and economic impacts of a 700 mile, overhead 600-kV high voltage direct current (HVDC) electric transmission system and associated facilities. The proposed transmission line and facilities cross 33 counties in four states (Texas, Oklahoma, Arkansas, and Tennessee). Assessed the availability of labor and impacts to housing and other local and regional socioeconomic resources. Estimated regional economic impacts using multipliers derived from the U.S. Bureau of Economic Analysis RIMS II model. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facilities. Evaluated the impacts of potential wind facilities (connected actions) using IMPLAN and NREL's JEDI Wind model.

**Ninnescah Wind Energy LLC, Economic Impact of the Ninnescah Wind Energy Project, Pratt County, KS.** Evaluated the economic impacts of a proposed 209 MW (121 turbines) wind energy project and 60-mile electric transmission line in Pratt County, Kansas. Estimated total (direct, indirect, and induced) economic output, employment, and labor income at the county and state levels using a modified version of the JEDI Wind model and data obtained from IMPLAN.

**Idaho Power, Boardman to Hemingway Transmission Line Project, Multiple Counties, OR/ID.** Evaluated the socioeconomic impacts of a proposed 300-mile-long 500-kV electric transmission line extending from Boardman, OR to south of Boise, ID. This analysis addressed the availability of labor and impacts to housing and other local and regional socioeconomic resources. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility. Assessed the regional economic impacts of the project using a multi-county input-output model developed using IMPLAN modeling software and data. Evaluated environmental justice impacts in accordance with Executive Order 12898.

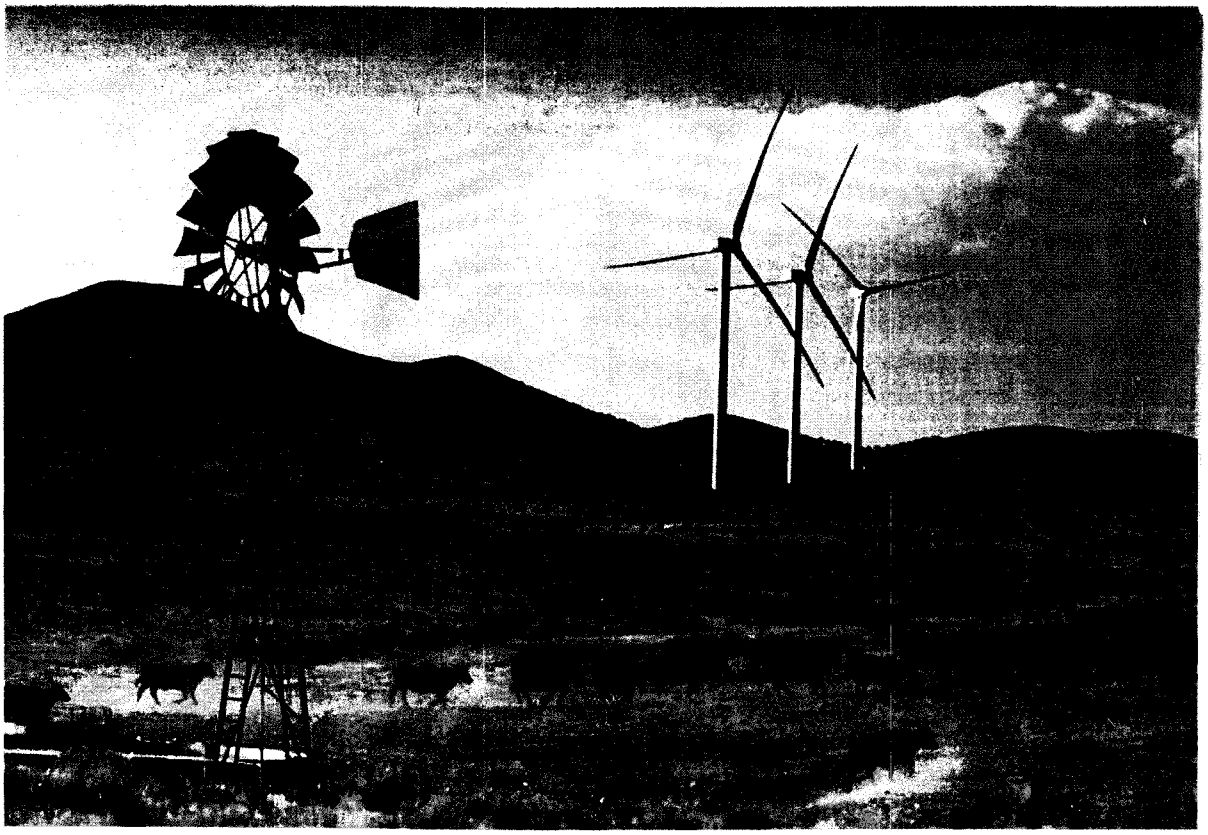
**Idaho Power and Rocky Mountain Power, Gateway West Transmission Line Project, Multiple Counties, WY/ID.** Evaluated the social and economic impacts of a 1,000-mile electric transmission extending from close to Casper, Wyoming to south of Boise, Idaho. This analysis addressed the availability of labor and impacts to housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using three separate multi-county input-output models developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility.

**Stirling Energy Services, Solar One, San Bernardino County, CA.** Prepared the socioeconomic analysis for a proposed 850-MW solar generating facility on BLM-managed land in the Mojave Desert, east of Barstow, California. This analysis addressed the availability of labor and impacts to housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using an input-output model developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility.

**Genesis Solar LLC, Genesis Solar Energy Project, Riverside County, CA.** Prepared the socioeconomic analysis for a proposed 250 MW solar generating facility in the Sonoran desert, west of the city of Blythe, California. This analysis addressed the availability of labor for the construction and operation phases of the proposed facility, the potential for workers to temporarily or permanently relocate to the project area, and the impacts this would have on housing and other local and regional socioeconomic resources. Assessed the regional economic impacts of the project using an input-output model developed using IMPLAN modeling software and data. Developed estimates of the property and sales and use taxes associated with construction and operation of the proposed facility. Assessed potential environmental justice impacts.

**Champlin GEI Wind Holdings, LLC, Na Pua Makani Wind Project, Oahu, HI.** Prepared the socioeconomic analysis for a proposed 26 MW wind project on the island of Oahu. Assessed potential project impacts on property values, recreation and tourism businesses, and residential solar energy and photovoltaic system installation. Used the JEDI Wind model to develop baseline estimates of project-related expenditures, economic output, jobs and income during construction and operation of the facility. Assessed the availability of labor for the construction and operation phases of the proposed facility, the potential for workers to temporarily or permanently relocate to the project area, and the impacts this would have on housing and other local and regional socioeconomic resources.

# ECONOMIC IMPACT STUDY OF THE LA JOYA PROJECT TORRANCE COUNTY, NEW MEXICO



El Cabo Wind Farm, Torrance County, New Mexico (Tetra Tech 2017)

**November 2018**

Prepared for: AVANGRID RENEWABLES

Prepared by: TETRA TECH

350 Indiana Street, Suite 500, Golden, CO, 80401

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# 1.0 PROJECT SUMMARY AND OVERVIEW OF MAJOR FINDINGS

Pacific Wind Development LLC (Pacific Wind), a wholly-owned subsidiary of Avangrid Renewables, LLC (Avangrid), proposes to develop and construct the La Joya 345-kilovolt (kV) Transmission Generation Tie Line (the Gen-Tie Line) together with the La Joya Substation and the Torrance Switching Station (collectively, the Gen-Tie Facilities) in Torrance County, approximately 10 miles west of Encino, New Mexico. The Gen-Tie Facilities would interconnect up to 500 megawatts (MW) of wind-generated electricity from the proposed La Joya Wind Energy Project (Wind Project) into the electric transmission grid. The Wind Project Area, within which the wind generation facilities will be located, and an approximately 18-mile long 1,000-foot wide Gen-Tie Corridor, within which the Gen-Tie Facilities will be located, are collectively referred to as the La Joya Project (Project), and are shown on Figure 1.

The Wind Project is located south of Avangrid's existing El Cabo Wind Energy Project (Figure 1). The La Joya Project is not related to the El Cabo Wind Project, which is an existing facility that supplies a different off-taker via a separate electric transmission line and under a separate Interconnection Agreement with Public Service Company of New Mexico (PNM) PNM.

The proposed Gen-Tie Corridor will be approximately 18 miles long, 1,000 feet wide, and will run north from the proposed La Joya Substation to the general area of the El Cabo Substation (but not connecting), and then run parallel to the El Cabo Gen-Tie line north to the interconnect at the proposed Torrance Switching Station (Figures 1 and 2). Historical and current land use within the Project area is primarily agricultural.

The Project will be built in phases. The first phase will supply PNM with 166 MW of wind energy to serve Facebook's data center in Los Lunas, New Mexico. The New Mexico Public Regulation Commission approved the Power Purchase Agreement (PPA) between PNM and Facebook in Case No. 18-00009-UT. Construction of the first phase of the Project is expected to begin in the third or fourth quarter of 2019 and be completed by December 2020. The proposed Gen-Tie Facilities will be built as part of Phase I.

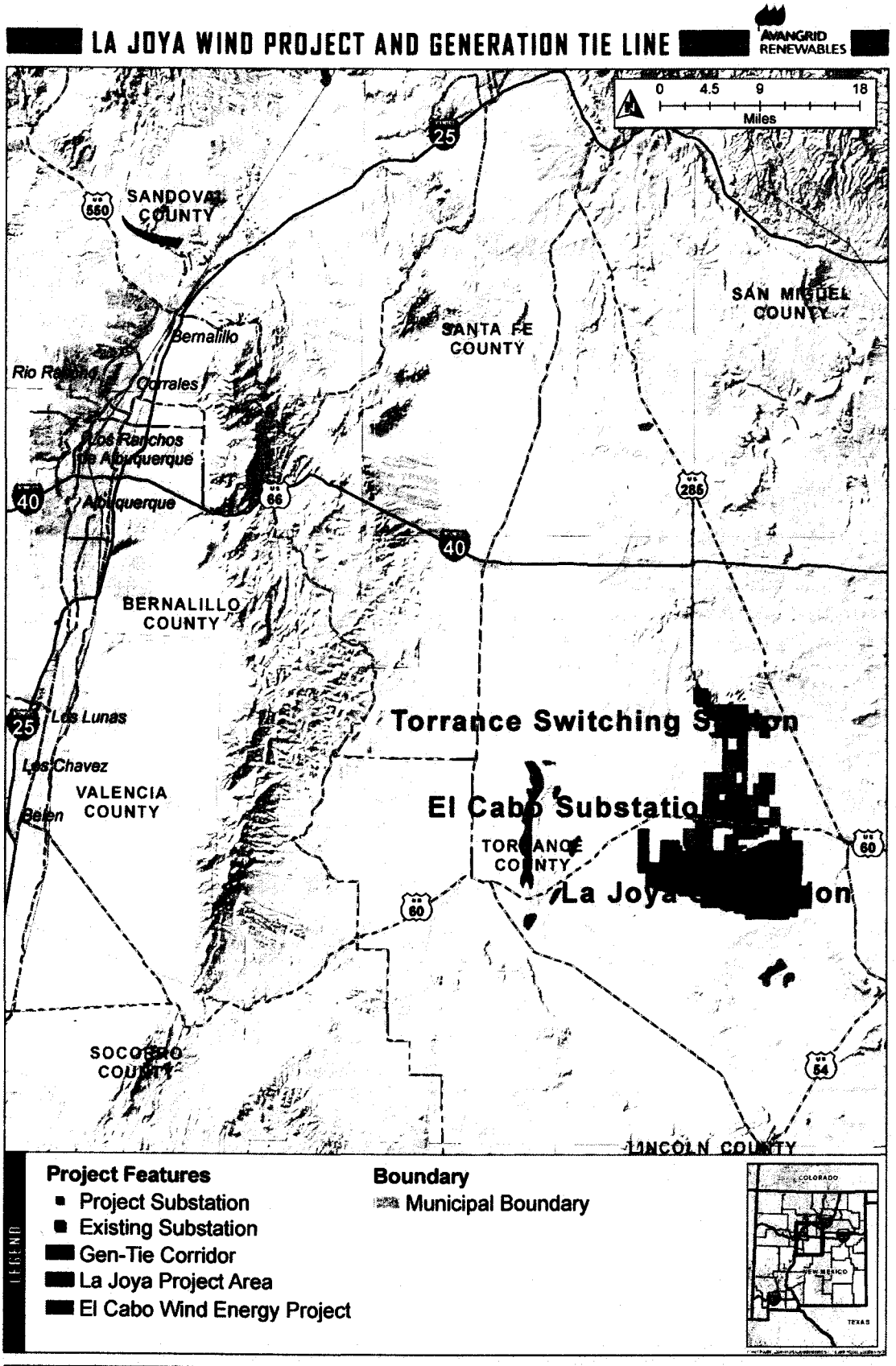


Figure 1 : Project Location

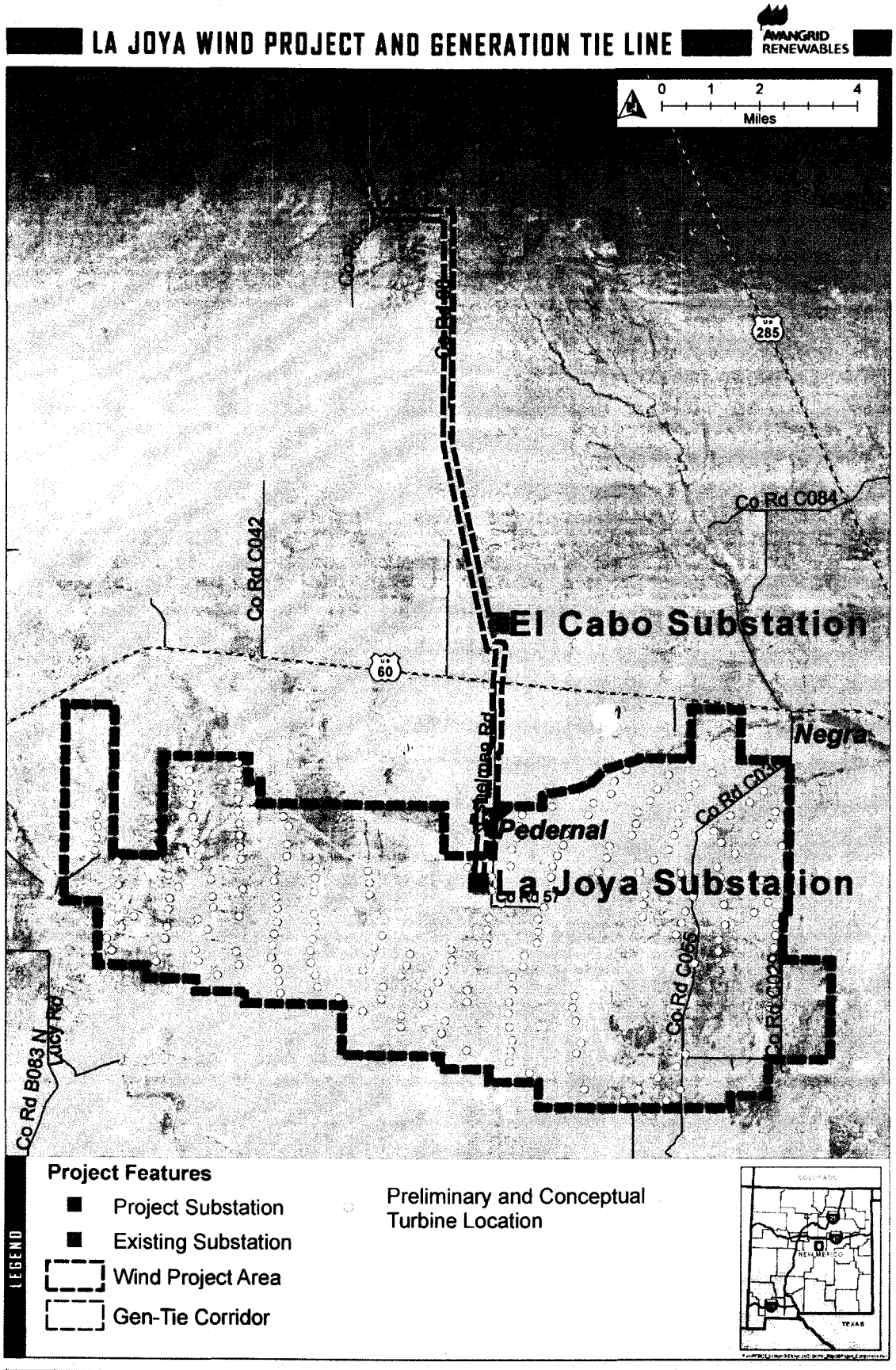


Figure 2: Project Components

Avangrid is currently pursuing market opportunities for other, future phases of the Project. Avangrid has indicated that while there may be some variation, the total for all phases of the Project will not exceed 500 MW, and all phases will be located within the Project Area shown in Figures 1 and 2. Later phases will be constructed and put into operation in response to timing and agreements with off-takers. Phase II for the purposes of this analysis is assumed to consist of 334 MW that would be constructed in a single phase spread over a two-year period. This scenario represents full development of the Project site, recognizing that actual development in terms of generation capacity (MW), turbine locations, and timing may differ depending on market opportunities and agreements with off-takers.

This report prepared on behalf of Avangrid assesses the economic impact the Project using the National Renewable Energy Laboratory's (NREL's) Jobs and Economic Development Impact (JEDI) Land-based Wind Model (JEDI Wind Model). Impacts are estimated separately for Phase I and Phase II and presented in terms of employment, income, and economic output.

**One-time Impacts Related to Project Construction**

Economic impacts related to Project construction are considered one-time impacts because they are limited to the construction period. Project construction would support temporary employment, income, and economic output in New Mexico.

- Construction of Phase I is estimated to result in on-site employment of approximately 139 full-time equivalent (FTE) jobs that will be filled by New Mexico residents, as well as an estimated 11 construction-related service jobs. These estimates include the in-state labor for the proposed 345-kV Gen-Tie Facilities. Phase II construction would result in an estimated 101 FTE jobs on site and 22 construction-related service jobs that will be filled by New Mexico residents.

- Construction of the Project is also estimated to support employment, income, and output elsewhere in the state economy. During Phase I, construction of the Wind Project and Gen-Tie Facilities is expected to support an estimated 148 turbine and supply chain (indirect) jobs in New Mexico and 65 induced jobs. Phase II construction is estimated to support approximately 273 turbine and supply chain jobs and 118 induced jobs.

- Overall, construction of Phase I of the Project including the Gen-Tie Facilities is estimated to support 362 total (direct, indirect, and induced) jobs in the state of New Mexico and approximately $17.6 million in labor income, with total economic output of approximately $45.0 million. During Phase II, Project construction is estimated to support approximately 514 total jobs and approximately $24.8 million in labor income, with total economic output of approximately $74.7 million.

### Annual Impacts Related to Project Operation

Once the construction phase is complete, operation and maintenance of the Project, generally referred to as operation in this report, will continue to contribute to the state economy over the expected 40-year operating life of the Project. These annual impacts are expected to occur each year the Project operates.

- Operation of Phase I of the Project is estimated to support approximately 28 total (direct, indirect, and induced) jobs in New Mexico and approximately $1.5 million in labor income, with total economic output of approximately $4.4 million. Operation of Phase II is estimated to support the approximately 49 total jobs, approximately $2.6 million in labor income, and total economic output of approximately $8.1 million.

### Summary of Potential Economic Impacts

Tables 1 and 2 provide an overview of the potential economic impacts estimated to occur during Phase I and Phase II of the Project, respectively.

**Table 1. Overview of Estimated Economic Impacts from Phase I of the La Joya Project**

| Impact Type/Measure | Jobs (FTE) | Earnings ($ million) | Output ($ million) |
|---|---|---|---|
| **Construction – One-Time Impacts** | | | |
| Project Development and On-site Labor Impacts | 149 | $7.4 | $8.4 |
| Turbine and Supply Chain Impacts | 148 | $7.2 | $26.3 |
| Induced Impacts | 65 | $3.0 | $10.3 |
| **Total Impacts** | **362** | **$17.6** | **$45.0** |
| **Operation – Annual Impacts** | | | |
| On-site Labor Impacts | 10 | $0.6 | $0.6 |
| Local Revenue and Supply Chain Impacts | 13 | $0.7 | $3.0 |
| Induced Impacts | 5 | $0.2 | $0.8 |
| **Total Impacts** | **28** | **$1.5** | **$4.4** |

Note:
1/ Numbers may not sum due to rounding.

**Table 2. Overview of Estimated Economic Impacts from Phase II of the La Joya Project**

| Impact Type/Measure | Jobs (FTE) | Earnings ($ million) | Output ($ million) |
|---|---|---|---|
| **Construction – One-Time Impacts** | | | |
| Project Development and On-site Labor Impacts | 123 | $6.3 | $8.4 |
| Turbine and Supply Chain Impacts | 273 | $13.2 | $48.0 |
| Induced Impacts | 118 | $5.3 | $18.3 |
| **Total Impacts** | **514** | **$24.8** | **$74.7** |
| **Operation – Annual Impacts** | | | |
| On-site Labor Impacts | 15 | $0.8 | $0.8 |
| Local Revenue and Supply Chain Impacts | 25 | $1.4 | $5.8 |
| Induced Impacts | 9 | $0.4 | $1.5 |
| **Total Impacts** | **49** | **$2.6** | **$8.1** |

Note:
1/ Numbers may not sum due to rounding.

## 2.0 WIND INDUSTRY OVERVIEW

### U.S. Wind Energy Growth and Development

The American Wind Energy Association (AWEA) identified a total of 88,973 MW of installed wind capacity in the United States at the end of 2017 (AWEA 2018a). Figure 3 shows the annual growth in installed capacity and the cumulative total capacity for 2001 through 2017. The cumulative total capacity increased from 4,195 MW in 2001 to 88,973 MW in 2017, a more than 20-fold increase. Annual growth has varied by year, with the largest annual increase (13,288 MW) taking place in 2012. The U.S. wind industry installed a total of 6,968 MW of new wind power capacity during 2017.

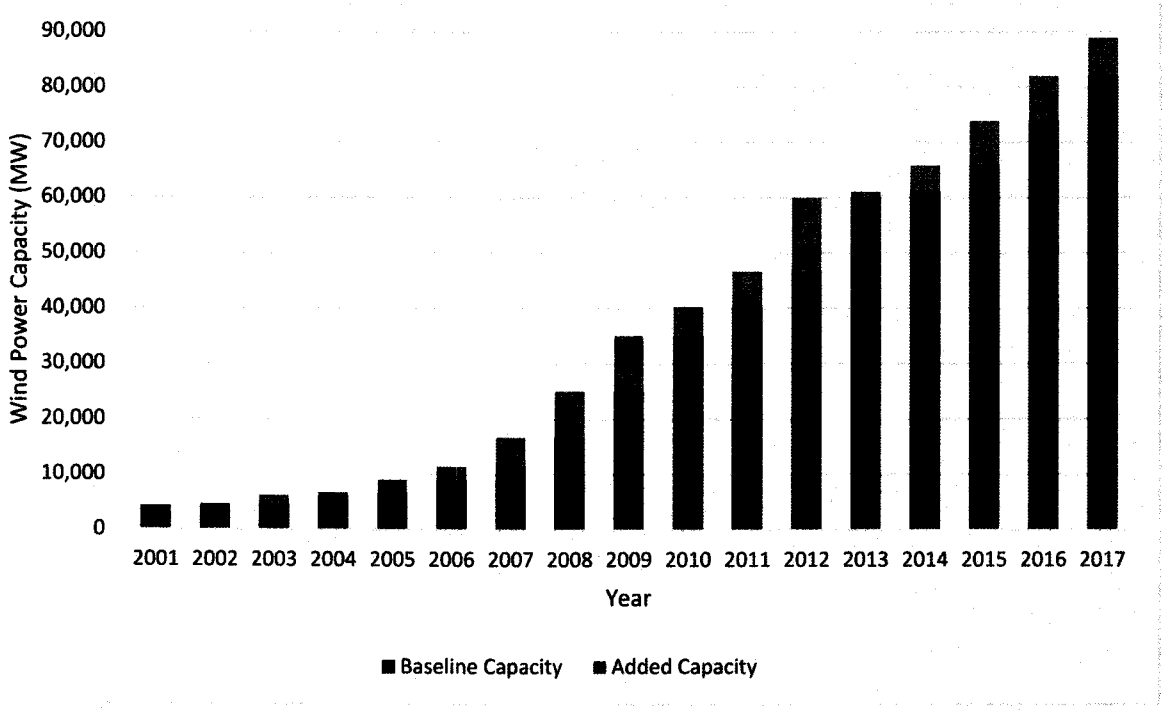


**Figure 3.** U.S. Annual and Cumulative Wind Power Capacity Growth, 2001 to 2017

Source: AWEA 2018a

Figure 4 shows total installed wind capacity by state, for the top 18 states. These data were compiled for the second quarter of 2018. The top 18 states shown in Figure 4 together accounted for 90 percent of the total installed capacity in 2018, with Texas alone accounting for 26 percent of the total. New Mexico was ranked 15 in terms of total installed capacity, with 1,682 MW of installed capacity, approximately 2 percent of the national total.

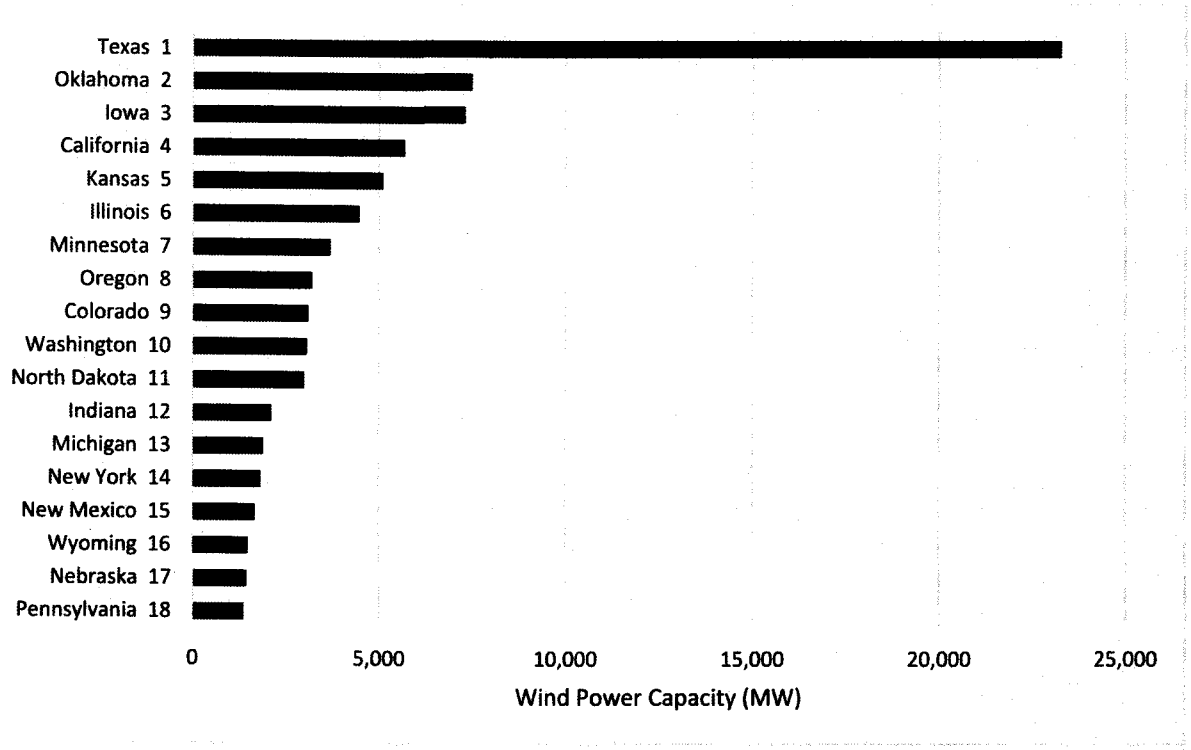


**Figure 4.** U.S. Installed Wind Power Capacity, Top States, 2018

Source: AWEA 2018a

### New Mexico Wind Industry Growth and Development

Figure 5 shows the annual and cumulative growth of installed wind capacity in New Mexico from 2004 to 2017. The cumulative total capacity increased from 266 MW in 2004 to 1,682 MW in 2017. Annual growth has varied by year, with the largest annual increase taking place in 2017. New Mexico added a total of 571 MW of installed capacity in 2017, a 51 percent increase over the total installed capacity in 2016, making it the fastest growing state in the nation (AWEA 2018b). The increase in installed capacity in 2017 included the El Cabo Wind Farm, near Encino in Torrance County, and the Broadview Wind Energy facility in Curry County.[1] In 2017, wind energy made up 13.5 percent of in-state energy production in New Mexico, generating enough power to supply 422,100 homes (AWEA 2018b).

[1] The Broadview Wind Energy project consists of two wind farms along the state line, one in Curry County, New Mexico, and the other in Deaf Smith County, Texas (Pattern Energy 2018).

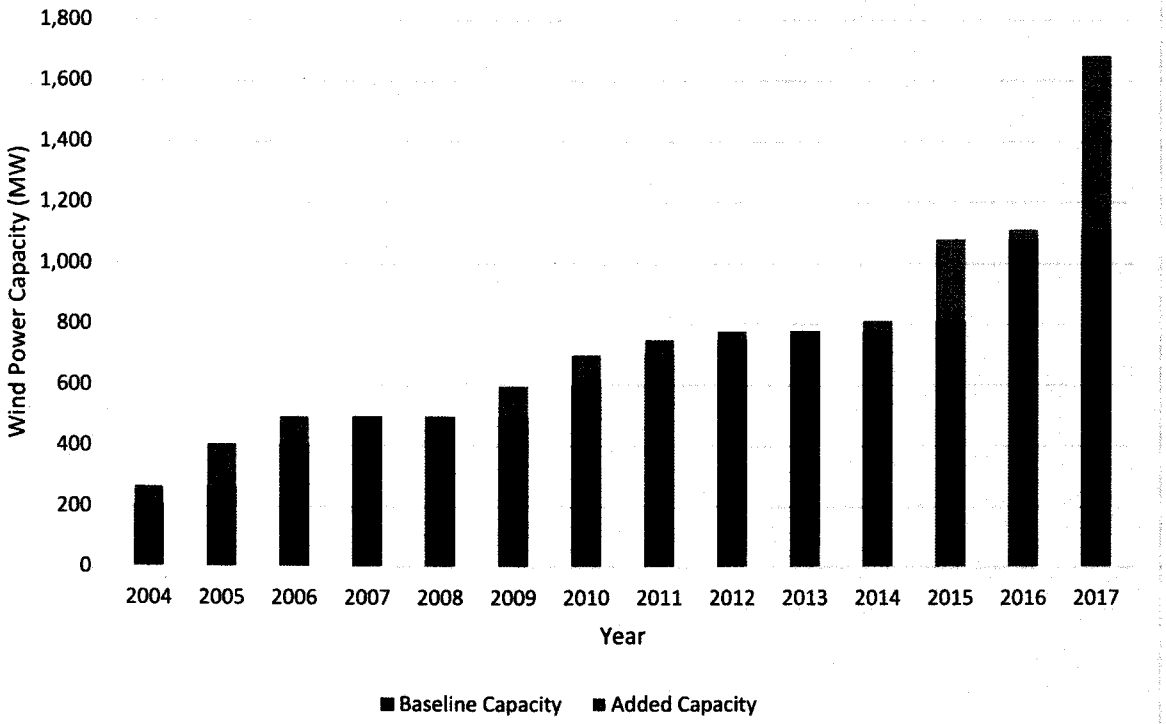


**Figure 5.** New Mexico Annual and Cumulative Wind Power Capacity Growth, 2004 to 2017

Source: AWEA 2018b, Strategic Economic Research, LLC 2017

### *El Cabo Wind Farm*

The El Cabo Wind Farm, noted above, was developed by the same team that is developing the La Joya Project. Like the El Cabo Wind Farm, the La Joya Project will be located in Torrance County (Figure 1). Completed in 2017/2018, the El Cabo Wind Farm consists of 142, 2.1 MW Siemens Gamesa wind turbines with a total capacity of 298.2 MW, making it the largest wind facility in New Mexico. Spread over approximately 56,000 acres of state and private lands, the 142 turbines occupy about 2 percent of the total project area, allowing livestock and wildlife to continue to use the area, as shown in the photograph on the cover of this report (Robinson-Avila 2018). Summary information provided here for the El Cabo Wind Farm illustrates the economic benefits of wind development by providing actual data compiled during project construction and operation. These data were also used to adjust default average values generated by the JEDI Wind Model to more accurately characterize potential Project impacts. Methodology and the JEDI Wind Model are discussed in more detail in Section 4 of this report.

Initial planning and roadwork for the El Cabo Wind Farm took place in 2014, with plant construction beginning in late 2015 and continuing through 2016, 2017, and 2018. Employment during plant construction followed a bell-shaped curve, peaking near the middle of the

construction period (Figure 6). Total employment peaked in May 2017, with 411 workers directly employed on site. Local hires accounted for 93 jobs or 23 percent of this total. Local in this context refers to the area within a 100-mile radius of the project, with the area expanded slightly in this case to include Albuquerque. Viewed in terms of FTE jobs [2], overall project construction involved a total of 336 FTE jobs, with 91 of these FTE jobs, 27 percent of the total, filled by local workers (Avangrid 2018a). Project construction employed 14 local companies and generated secondary economic benefits in the local economy through project-related expenditures, with overall local project expenditures of $27.7 million, primarily for materials and worker per diems (Avangrid 2018a, 2018b).

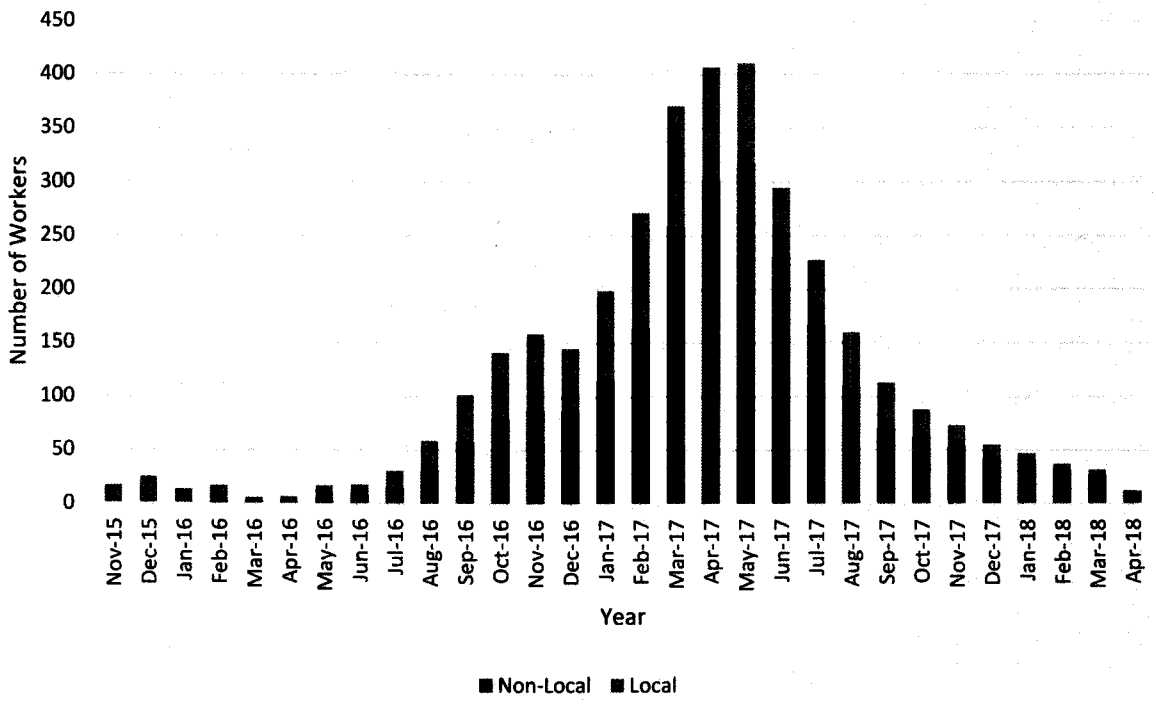


**Figure 6.** El Cabo Wind Farm Construction Employment

Source: Avangrid 2018a
Notes:
1/ Numbers of workers are head counts on site and are not expressed in FTEs.
2/ Initial planning and roadwork that took place in the first part of 2014 is not shown here. This initial work phase peaked with 18 local and 3 non-local workers.

[2] One FTE job equates to one full-time job for one year or 2,080-hour units of labor. Part-time or temporary jobs constitute a fraction of a job. For example, if an engineer works just 3 months on a wind project, that would be considered one-quarter of an FTE job. FTEs are also sometimes referred to as job-years.

The El Cabo Wind Farm has 17 permanent employees, including three wind technicians trained at Mesalands Community College's Wind Energy Technology Program in Tucumcari, New Mexico (Avangrid 2018a, Robinson-Avila 2018). In addition, project operation will also generate economic benefits through annual payments in lieu of taxes (PILOT) and payments for leases with eight private landowners, amounting to at least $60.5 million over the next 25 years (Avangrid 2018b).

# 3.0 STATE AND LOCAL CONTEXT

## Demographic Overview

Torrance County is located in central New Mexico. The county is approximately 3,350 square miles in size, the majority of which (about 87 percent) is agricultural land (U.S. Census Bureau 2018a, U.S. Department of Agriculture 2012). Torrance County had a total estimated population of 15,506 in 2017, ranking 23 out of the 33 counties in New Mexico in terms of population. The county is sparsely populated with a population density of less than 5 persons per square mile (U.S. Census Bureau 2018a). The majority (95 percent) of the population resides in the western part of the county (Mid-Region Council of Governments 2018). There are five incorporated communities in Torrance County (Encino, Estancia, Moriarty, Mountainair, and Willard), which together account for about one-third (31 percent) of the population (U.S. Census Bureau 2018c). A growing number of Torrance County residents live in newly developed subdivisions in the western part of the county and commute daily to Albuquerque and Santa Fe for work (Mid-Region Council of Governments 2018).

Torrance County grew in the 1990s, with population increasing by almost two-thirds from 1990 to 2000 (Mid-Region Council of Governments 2018). Population has since declined, dropping by about 3 percent from 2000 to 2010, and by a further 5.4 percent (877 people) from 2010 to 2017 (U.S. Census Bureau 2018b, 2018e). The overall loss of people from 2010 to 2017 was the result of net out-migration (more people left than moved to the county), with the county experiencing a modest net gain (71 people) through natural increase (more births than deaths) (U.S. Census Bureau 2018d).

The state of New Mexico had a total estimated population of 2.09 million in 2017. Statewide, the population increased by about 13 percent from 2000 to 2010, and by a further 1.4 percent from 2010 to 2017 (U.S. Census Bureau 2018b, 2018e). Like Torrance County, New Mexico experienced net out-migration from 2010 to 2017, but the gain from natural increase more than offset this loss (U.S. Census Bureau 2018d).

## Employment and the Economy

The local economy in Torrance County has been traditionally dominated by farming and ranching. Non-agricultural activities have increased in recent years, but agriculture still accounts for about 13 percent of jobs in the county compared to just 3 percent statewide. Other sectors accounting for relatively large shares of employment include retail trade and government, especially local government (Table 3).

Torrance County is one of four counties that form the Albuquerque Metropolitan Statistical Area (MSA). MSAs represent larger communities that form regional markets for labor, products, and information and typically include an urbanized node and economically related surrounding counties (Office of Management and Budget 2017). Torrance County accounts for just 2 percent of the total Albuquerque MSA population of more than 900,000. Almost half of workers in Torrance County travel to jobs in other counties, with more than a third commuting to jobs in adjacent Bernalillo County, which includes Albuquerque (U.S. Census Bureau 2018f).

**Table 3. Employment by Economic Sector, 2016**

| Economic Sector | Torrance County | | State of New Mexico | |
|---|---|---|---|---|
| | Number of Jobs | Percent of Total | Number of Jobs | Percent of Total |
| Agriculture | 675 | 13 | 29,657 | 3 |
| Forestry, fishing, and related | (D) | na | 5,557 | 1 |
| Mining | (D) | na | 31,103 | 3 |
| Utilities | (D) | na | 4,807 | 0 |
| Construction | 280 | 5 | 59,381 | 5 |
| Manufacturing | 144 | 3 | 33,334 | 3 |
| Wholesale trade | 237 | 4 | 29,365 | 3 |
| Retail trade | 677 | 13 | 115,080 | 10 |
| Transportation and warehousing | (D) | na | 26,837 | 2 |
| Information | 30 | 1 | 15,901 | 1 |
| Finance and insurance | 78 | 1 | 34,611 | 3 |
| Real estate | 127 | 2 | 40,855 | 4 |
| Professional, scientific, and technical services | (D) | na | 79,035 | 7 |
| Management of Companies | 25 | 0 | 6,111 | 1 |
| Administrative, waste management, remediation | (D) | na | 53,157 | 5 |
| Arts, entertainment, and recreation | (D) | na | 24,445 | 2 |
| Accommodation and food services | (D) | na | 92,634 | 8 |

**Table 3. Employment by Economic Sector, 2016 (continued)**

| Economic Sector | Torrance County | | State of New Mexico | |
|---|---|---|---|---|
| | Number of Jobs | Percent of Total | Number of Jobs | Percent of Total |
| Education | 112 | 2 | 17,542 | 2 |
| Health care and social assistance | 427 | 8 | 134,766 | 12 |
| Other services | 284 | 5 | 56,161 | 5 |
| Government | 1,036 | 19 | 208,921 | 19 |
| **Total Employment** | **5,320** | **100** | **1,099,260** | **100** |

Notes:
na – not applicable
(D) Not shown to avoid disclosure of confidential information; estimates for this item are, however, included in the totals.
1/ Employment estimates include self-employed individuals. Employment data are by place of work, not place of residence, and, therefore, include people who work in the area but do not live there. Employment is measured as the average annual number of jobs, both full- and part-time, with each job counted at full weight.
Source: U.S. Bureau of Economic Analysis 2018

Annual unemployment rates for Torrance County, the state of New Mexico, and the United States are presented in Figure 7. Unemployment in Torrance County peaked in 2010, with an annual unemployment rate of 11.6 percent, substantially higher than the corresponding statewide (8.1 percent) and national averages (9.6 percent). The unemployment rate in Torrance County has gradually declined since 2011, but remained substantially above the state and national averages in 2017. New Mexico also had a higher rate than the national average, with the second highest statewide rate in the country (U.S. Bureau of Labor Statistics 2018).

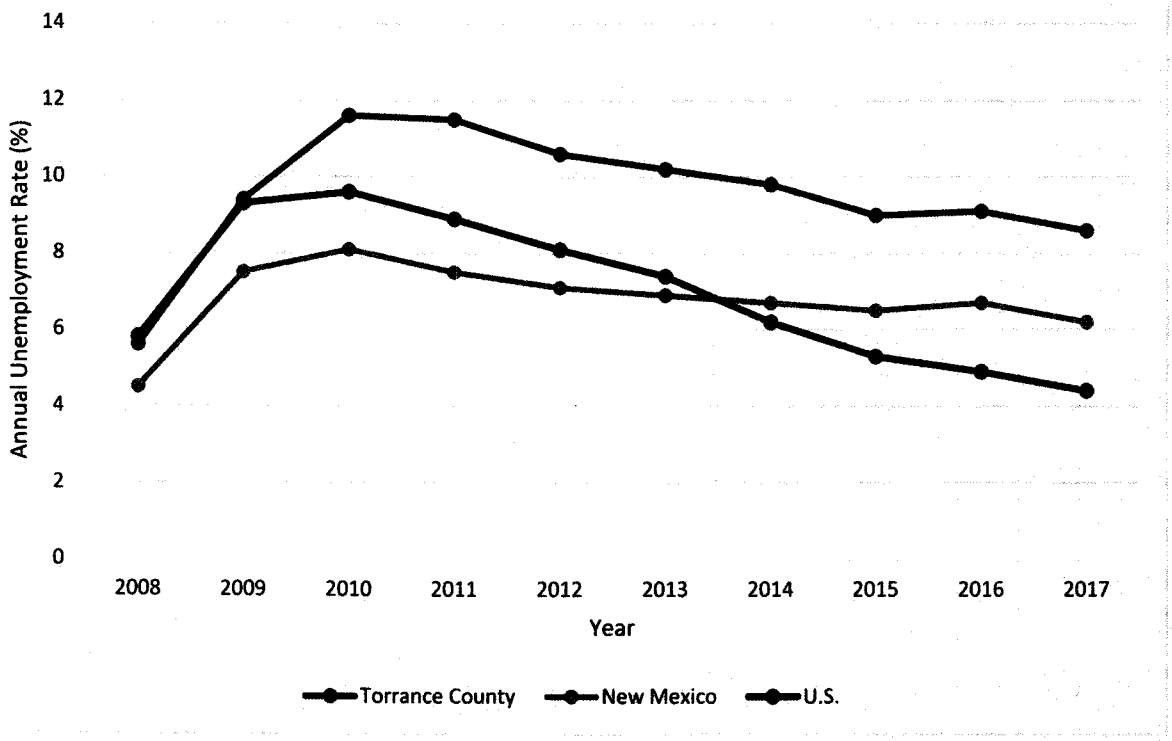


**Figure 7.** Annual Unemployment Rates, 2008 to 2017

Source: New Mexico Department of Workforce Solutions 2018

## 4.0 METHODOLOGY

The economic impact of the Project will occur in two phases: 1) the initial construction phase; and 2) following construction, the operations and maintenance phase. This report assesses both phases using NREL's latest JEDI Wind Model (w6-29-18), with a separate analysis prepared for each phase. NREL is the U.S. Department of Energy's primary national laboratory for renewable energy and energy efficiency research and development. Construction and operation of the Project will generate economic benefits in local economies through direct expenditures for materials and services in the local area and new payroll income. Benefits will also result from payments to landowners and tax payments to local governments.

### The JEDI Model

The JEDI Wind Model is a spreadsheet tool that applies standard input-output multipliers and consumption patterns using multiplier data derived from the IMPLAN model. IMPLAN is a commercially available economic modeling package widely used to assess the economic impacts of renewable energy and many other types of projects.

The IMPLAN model divides the economy into 536 sectors including government, households, farms, and various industries, and models the linkages between the various sectors. The linkages are modeled through input-output tables that account for all dollar flows between different sectors of the economy. Using national industry and state-level economic data derived from the U.S. Bureau of Economic Analysis, U.S. Census, and other government sources, IMPLAN models how spending in one sector of the economy is spent and re-spent in other sectors of the economy. By tracing these linkages, the model approximates the flows of initial project spending through the local economy based on the supply lines connecting the various economic sectors. These linkages vary by sector and also through regional differences in spending and employment patterns. The amount spent locally decreases with each successive transaction away from the initial expenditure due to the effects of savings, taxes, or other activities that happen outside the local economy, known as leakages.

The economic relationships modeled by IMPLAN are embedded in the multipliers used by the JEDI Wind Model, which allows the user to estimate the overall change in the economy that would result from construction and operation of a wind generating facility. The dollars spent on a project's construction and operation within a state are analyzed to determine the total economic impact within the local area. The direct investments in project construction and operation trigger successive rounds of spending that result in an overall increase in employment, income, and output in the local economy. Construction-related impacts are assessed as one-time impacts; operation-related impacts are modeled as annual impacts.

The JEDI Wind Model combines user inputs and industry-average values to develop overall project costs and allocate expenditures among different sectors of the economy. NREL developed the industry average values used in the model from extensive interviews with power generation project developers, state tax representatives, and others in the appropriate industries. The model allows the user to modify the default average values to incorporate project-specific data, including construction material and labor costs, estimated payments to landowners, and local tax payments, as well as the shares of specific expenditures expected to occur within the analysis area.

The standard JEDI model assesses potential impacts at the state level, using corresponding state-level multipliers derived from IMPLAN. The current version of the JEDI Wind Model (w6-29-18) uses 2016 multipliers, which are the most recent multipliers available from IMPLAN. Using Project-specific inputs, this model was used to estimate impacts at the state level for New Mexico. Project-specific inputs were developed in consultation with Avangrid using actual employment and local expenditure data compiled during construction of the nearby El Cabo Wind Project (see Section 2), along with other Project-specific estimates, including estimated construction costs for the Gen-Tie Facilities, which were included as part of the Phase I analysis.

## Impact Types

Total economic impacts reported by the JEDI Wind Model consist of three components.[3] These components are reported separately for the construction and operation phases of the Project.

### Construction Impact Types:

- ***Project Development and On-Site Labor Impacts:*** This component consists of expenditures on labor (wages and salaries and associated impacts) for workers engaged in on-site construction and people providing professional services in support of the Project. Typical on-site workers include road builders, concrete-pouring companies, construction companies, tower erection crews, and crane operators. Typical professional services include project developers, and environmental and permitting consultants.
- ***Turbine and Supply Chain Impacts:*** This component includes the materials and equipment necessary for the Project (e.g., turbines, blades, and towers), and the smaller components that make up the balance of the system (e.g., wiring, inverters, mountings, and transformers), as well as the supply chain of inputs required to produce these materials.
- ***Induced Impacts:*** These impacts result from the spending of households associated either directly or indirectly with the Project. Workers employed during construction, for example, will use their income to purchase groceries and other household goods and services. Workers at businesses that supply the Project during construction will do the same. Induced effects are sometimes referred to as "consumption-driven" impacts.

### Operation Impact Types:

- ***On-Site Labor Impacts:*** This component consists of expenditures on labor (wages and salaries and associated impacts) for workers engaged in on-site operation of the Project, including site technicians, administration, and management.

[3] These categories have been re-labeled in more recent versions of the JEDI Wind Model "to reflect a more accurate description of these impacts and facilitate user interpretation of model results" (NREL 2017). Project Development and On-Site Labor Impacts were previously labeled Direct Impacts. Turbine/Local Revenue and Supply Chain Impacts were identified as Indirect Impacts. The original naming conventions are more consistent with IMPLAN and other input-output models. The first category presented here does, however, differ from the typical Direct Impacts reported by IMPLAN and other input-output models because it is based on labor expenditures only and does not include direct expenditures on materials, which are included as part of the second category reported by the JEDI Wind Model.

- ***Local Revenue and Supply Chain Impacts:*** This component includes expenditures on goods and services by suppliers who provide goods and services to the Project, as well as payments related to landowner leases and property tax or PILOT payments.
- ***Induced Impacts:*** These impacts result from the spending of households associated either directly or indirectly with the Project.

**Impact Measures**

Impacts are assessed using the following measures as reported by the JEDI Wind Model:

- ***Employment:*** Jobs are expressed in the JEDI Wind Model as FTEs, or 2,080-hour units of labor (one job equates to one full-time job for one year). Part-time or temporary jobs constitute a fraction of a job.
- ***Earnings (or labor income):*** Earnings are expressed as the sum of employee compensation and proprietary income.
- ***Output***: Output represents the total value of goods and services produced as a result of the Project and serves as a broad measure of economic activity.

**Model Inputs**

***Construction***

The following analysis assumes that the Project will be built in two phases. The first phase consists of 166 MW, with construction expected to begin in the third or fourth quarter of 2019, with an anticipated completion date of December 2020. This represents the first phase of the Project, which will supply PNM with 166 MW of wind energy to serve Facebook's data center in Los Lunas, New Mexico.

The second phase of the Project, for the purposes of this analysis, is assumed to consist of 334 MW, with a completion date of December 2022. Avangrid is currently pursuing additional market opportunities for later phases and seeking approval for up to 500 MW of wind generation for the Project as a whole. Later phases would be constructed and put into operation in response to market opportunities and agreements with off-takers. The second phase, as modeled here, represents full development of the site, recognizing that actual development in terms of generation capacity (MW) and timing may shift depending upon market demand and agreements.

Total construction costs for this analysis were estimated using the JEDI Wind Model and reviewed by Avangrid. The largest share of the overall construction cost is the purchase and transportation of the equipment (turbines, blades, and towers) to the Project site. The JEDI Wind Model default average values assume that this component accounts for approximately 70 percent

of the total construction costs. None of the expenditures related to this construction component are expected to occur in New Mexico.

Balance of plant activities make up a second broad cost category. Balance of plant activities assessed in the model include materials, labor, and development and other costs. The materials portion includes concrete, rebar and other construction materials as well as the electrical components and cabling required to prepare the site and connect the turbines. The labor component includes the site work, foundations, electrical, erection, and other associated workforce needed to construct the Project. Development and other costs, as defined by the model, include legal fees, engineering, site certificates, and other miscellaneous expenditures. The shares of these expenditures expected to be made locally (i.e., in-state) are estimated by the JEDI Wind Model using default average values. These estimates were reviewed with adjustments made to reflect Avangrid's actual experience with the El Cabo Wind Farm. Local employment and expenditure information compiled for the El Cabo project was assumed to be representative of total in-state employment and spending for the purposes of this analysis and may have the effect of understating the in-state share. Additional information on the El Cabo Wind Farm is presented above in Section 2.

The Phase I construction analysis also includes local employment and expenditures associated with the proposed Gen-Tie facilities, including the proposed 18-mile-long Gen-Tie Line (Figures 1 and 2). Project-specific information provided by Avangrid was used in conjunction with default average values from the JEDI Transmission Line Model (rel-tl12-23-16) to allocate estimated costs by category (i.e., materials, labor, and development and other costs) and identify the shares of these expenditures expected to be made locally. The resulting cost estimates were incorporated into the Phase I JEDI Wind Model analysis.

***Operation***

Once the construction phase is complete, operation and maintenance of the Project will continue to contribute to the local economy. The Project will provide direct operation-related employment and Project-related operation expenditures will generate economic benefits in the local economy. Direct operation employment includes skilled technician jobs that represent well-paid local employment opportunities for New Mexico residents. Typical local operation-related expenditures include vehicle-related expenditures, such as fuel costs, site maintenance, replacement parts and equipment, and miscellaneous supplies.

Lease payments to landowners will also generate annual benefits to the local economy over the expected 40-year operating life of the Project. These payments represent a net increase in income for the landowner. Each turbine occupies a relatively small footprint when compared to the site as a whole and landowners can usually continue farming and livestock operations on

their property, as shown with respect to the El Cabo Wind Farm on the cover of this report. Estimated payments provided by Avangrid were used to modify the default average values estimated by the JEDI Wind Model, which assesses these payments as an increase in household income.

Wind energy projects enhance the assessed value of property within a county, and wind developers typically make payments based on that improved value, either as property tax payments or in accordance with a mutually agreed upon PILOT arrangement. Property tax requirements related to wind projects vary by state. The El Cabo Wind Farm entered into a PILOT agreement with Torrance County, as noted in Section 2, above, and Avangrid anticipates that they will take a similar approach with the Project. These payments will help strengthen the local tax base and may be used to support local services and infrastructure.

**Study Limitations**

The results presented in this report are indicative, preliminary estimates based on a certain set of assumptions and estimated model inputs. These assumptions and inputs are based on the best data and information available at this stage in the Project development process. Direct Project inputs including workforce estimates and Project-related expenditures are preliminary estimates, with high-level estimates allocated based on industry standards. Other key modeling inputs include the share of expenditures expected to occur in the analysis area (i.e., New Mexico), as well as the share of workers expected to be hired in-state. These shares were estimated using actual data from the nearby El Cabo Wind Farm that was recently completed by the same development team. The share of equipment, materials, and labor procured locally could, however, vary depending on the general contractor selected to build the Project, with different contractors having different approaches with respect to local procurement. A general contractor has not yet been selected and the estimated local shares could, therefore, vary from those used in this analysis.

This analysis does not assess net jobs, rather it presents total or gross jobs that would be supported by Project development. A person employed during Project construction could, for example, have been employed elsewhere in the state beforehand, and, as a result, not all gross jobs represent a net additional job. A net jobs analysis would subtract job losses in other areas from the direct job gains of the new project to identify only the net increase in jobs. This type of analysis is speculative and dependent on numerous interactions and, therefore, it is more reliable and standard practice to limit the analysis to total or gross jobs created by the Project. Similarly, jobs supported elsewhere in the economy (i.e., indirect and induced jobs), identified as FTEs, are not necessarily additional jobs. Secondary impacts may support workers in their existing positions, helping them retain their jobs or expand their hours.

# 5.0 RESULTS

## Construction Impacts from Phase I of the La Joya Wind Project

Phase I of the Project consists of 166 MW, with construction expected to begin in the third or fourth quarter of 2019, with an anticipated completion date of December 2020. Phase I also includes local employment and expenditures associated with the proposed Gen-Tie Facilities. Overall employment during Phase I construction is expected to follow a bell-shaped curve similar to the pattern of construction employment for the El Cabo Wind Farm (Figure 5), with total employment peaking near the middle of the construction period in 2020.

Estimated impacts for Phase I are summarized in Table 4. These estimates are one-time impacts developed using the JEDI Wind Model for New Mexico. Job estimates are presented in FTEs, with each identified job representing 12 months (2,080 hours) of employment. Construction of Phase I of the Project is expected to involve 139 on-site FTE jobs that would be filled by New Mexico residents. On-site jobs expected to be filled by New Mexico workers include those associated with site work, foundations, electrical, tower erection, and other associated labor needed to construct the wind farm and Gen-Tie Facilities. In addition, an estimated 11 construction-related service positions would be filled by New Mexico workers. Jobs falling under the category of construction-related services include civil and electrical engineers, attorneys, and permitting specialists. Additional on-site positions that would be filled by out-of-state workers are not included in these estimates.

The JEDI Wind model does not estimate the number of positions that would be filled by out-of-state workers. However, Avangrid's experience with the El Cabo Wind Farm suggests that Phase I wind farm construction would involve an estimated 120 on-site FTE jobs that would be filled by out-of-state workers. These jobs would be in addition to the jobs that would be filled by New Mexico workers. Additional out-of-state workers, not estimated here, would be employed to construct the Gen-Tie Facilities.

Construction of the Project would also support employment, income, and output elsewhere in the state, with turbine and supply chain impacts expected to support 149 jobs in New Mexico and induced impacts expected to support 65 jobs (Table 4). Overall, construction of Phase I of the Project is expected to support 362 total jobs in New Mexico and approximately $17.6 million in earnings, with total output of approximately $45.0 million. Total in-state impacts include project development and on-site labor impacts, turbine and supply chain impacts, and induced impacts (Table 4).

**Table 4. Construction Impacts from Phase I of the La Joya Project**

| Impact Type/Measure | Jobs[1/2/] | Earnings ($ million)[2/3/] | Output ($ million)[2/3/] |
|---|---|---|---|
| **Project Development and On-site Labor Impacts** | | | |
| Construction and Interconnection Labor | 139 | $7.0 | |
| Construction Related Services | 11 | $0.5 | |
| Total | 149 | $7.4 | $8.4 |
| Turbine and Supply Chain Impacts | 148 | $7.2 | $26.3 |
| Induced Impacts | 65 | $3.0 | $10.3 |
| **Total Impacts** | **362** | **$17.6** | **$45.0** |

Notes:
1/ Jobs are full-time equivalent (FTE) for a period of one year (1 FTE = 2,080 hours). Product development and on-site labor jobs and earnings include only those positions that would be filled by New Mexico residents. Positions filled by out-of-state workers are not included in these estimates.
2/ Numbers may not sum due to rounding.
3/ Earnings and output are expressed in millions of dollars in Year 2018 dollars.

**Annual Operation Impacts from Phase I of the La Joya Wind Project**

Estimated operation phase impacts are summarized in Table 5. These estimates are annual average impacts developed using the JEDI Wind Model for New Mexico. Operation of Phase I of the Project is expected to provide direct employment for 10 workers, all of whom would reside in New Mexico. Operation of Avangrid's existing El Cabo Wind Farm employs 17 on-site workers and there may be some sharing between the two projects due to their proximity to one another (Exhibit 1). Operation of the facility would also support employment, earnings, and output elsewhere in the state, with local revenue and supply chain impacts expected to support 13 jobs in New Mexico and induced impacts expected to support 5 jobs (Table 5). Overall, operation of the Project is expected to support 28 total jobs in New Mexico and approximately $1.5 million in earnings, with total output of approximately $4.4 million. These annual average impacts are expected to occur over the life of the Project, which is expected to be 40 years.

**Table 5. Annual Operation Impacts from Phase I of the La Joya Project**

| Impact Type/Measure | Jobs[1/2/] | Earnings ($ million)[2/3/] | Output ($ million)[2/3/] |
|---|---|---|---|
| On-site Labor Impacts | 10 | $0.6 | $0.6 |
| Local Revenue and Supply Chain Impacts | 13 | $0.7 | $3.0 |
| Induced Impacts | 5 | $0.2 | $0.8 |
| **Total Impacts** | **28** | **$1.5** | **$4.4** |

Notes:
1/ Jobs are full-time equivalent (FTE) for a period of one year (1 FTE = 2,080 hours).
2/ Numbers may not sum due to rounding.
3/ Earnings and output are expressed in millions of dollars in Year 2018 dollars.

**Construction Impacts from Phase II of the La Joya Wind Project**

Avangrid is seeking approval for up to 500 MW of wind generation capacity for the Project as a whole. Phase II for the purposes of this analysis is assumed to consist of 344 MW that would be constructed in a single phase spread over a two-year period. This scenario represents full development of the site, recognizing that actual development in terms of generation capacity (MW) and timing may shift depending upon actual market demand and agreements with off-takers. Similar to Phase I, construction employment under this scenario would be expected to follow a bell-shaped curve, comparable to the actual employment pattern for the El Cabo Wind Farm (Figure 6).

Construction of Phase II of the Project is expected to involve 101 on-site FTE jobs and 22 construction-related service positions that would be filled by New Mexico residents (Table 6). Estimates are lower for Phase II than for Phase I because there would be no need to build Gen-Tie Facilities as part of this phase. Additional on-site and construction-related service positions that would be filled by out-of-state workers are not included in these estimates. The JEDI Wind model does not estimate the number of positions that would be filled by out-of-state workers. However, Avangrid's experience with the El Cabo Wind Farm suggests that Phase II wind farm construction would involve an estimated 250 on-site FTE jobs that would be filled by out-of-state workers. These jobs would be in addition to the jobs that would be filled by New Mexico workers.

Construction of the Project would also support employment, income, and output elsewhere in the state, with turbine and supply chain impacts expected to support 273 jobs in New Mexico and induced impacts expected to support 118 jobs (Table 6). Overall, construction of Phase II of the Project is expected to support 514 total jobs in New Mexico and approximately $25 million in earnings, with total output of approximately $75 million. Total in-state impacts include project development and on-site labor impacts, turbine and supply chain impacts, and induced impacts (Table 6).

**Table 6. Construction Impacts from Phase II of the La Joya Wind Project**

| Impact Type/Measure | Jobs[1/2] | Earnings ($ million)[2/3] | Output ($ million)[2/3] |
|---|---|---|---|
| **Project Development and On-site Labor Impacts** | | | |
| Construction and Interconnection Labor | 101 | $5.4 | |
| Construction Related Services | 22 | $0.9 | |
| Total | 123 | $6.3 | $8.4 |
| Turbine and Supply Chain Impacts | 273 | $13.2 | $48.0 |
| Induced Impacts | 118 | $5.3 | $18.3 |
| **Total Impacts** | **514** | **$24.8** | **$74.7** |

Notes:
1/ Jobs are full-time equivalent (FTE) for a period of one year (1 FTE = 2,080 hours). Product development and on-site labor jobs and earnings include only those positions that would be filled by New Mexico residents. Positions filled by out-of-state workers are not included in these estimates.
2/ Numbers may not sum due to rounding.
3/ Earnings and output are expressed in millions of dollars in Year 2018 dollars.

**Annual Operation Impacts from Phase II of the La Joya Wind Project**

Operation of Phase II of the Project is expected to provide direct employment for 15 workers, all of whom would reside in New Mexico (Table 7). As noted with respect to Phase I, there may also be some sharing of operation workers with the nearby El Cabo Wind Farm. Operation and maintenance of Phase II of the Project would also support employment, earnings, and output elsewhere in the state, with local revenue and supply chain impacts expected to support 25 jobs in New Mexico and induced impacts expected to support 9 jobs (Table 7). Overall, operation of the Project is expected to support 49 total jobs in New Mexico and approximately $2.6 million in earnings, with total output of approximately $8.1 million. These annual average impacts are expected to occur over the life of the Project, which is expected to be 40 years.

**Table 7. Annual Operation Impacts from Phase II of the La Joya Project**

| Impact Type/Measure | Jobs[1/2/] | Earnings ($ million)[2/3] | Output ($ million)[2/3] |
|---|---|---|---|
| On-site Labor Impacts | 15 | $0.8 | $0.8 |
| Local Revenue and Supply Chain Impacts | 25 | $1.4 | $5.8 |
| Induced Impacts | 9 | $0.4 | $1.5 |
| **Total Impacts** | **49** | **$2.6** | **$8.1** |

Notes:
1/ Jobs are full-time equivalent (FTE) for a period of one year (1 FTE = 2,080 hours).
2/ Numbers may not sum due to rounding.
3/ Earnings and output are expressed in millions of dollars in Year 2018 dollars.

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**VERIFICATION**

STATE OF DISTRICT OF COLUMBIA

COUNTY OF WASHINGTON

Matt Dadswell, first being sworn on his oath, states:

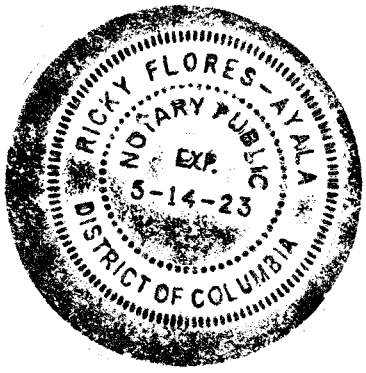
I am the witness identified in the foregoing Direct Testimony of Matt Dadswell. I hereby verify that I have read the foregoing Direct Testimony of Matt Dadswell and the statements contained therein are true and correct to the best of my knowledge and belief.

Matt Dadswell

Subscribed, sworn to, and acknowledged before me on this 14 day of November, 2018.

Notary Public

My commission expires 05/14/23




RICKY FLORES-AYALA
NOTARY PUBLIC DISTRICT OF COLUMBIA
My Commission Expires May 14, 2023