



Energia Sierra Juarez U.S. Transmission Line Project

Draft Environmental Impact Statement

Summary

August 2010

**U.S. Department of Energy
Office of Electricity Delivery and Energy Reliability
Washington, DC 20585**

**Cooperating Agency – County of San Diego
San Diego, CA**



Department of Energy
Washington, DC 20585

August 2010

Dear Sir/Madam:

Enclosed for your review and comment is the *Energia Sierra Juarez U.S. Transmission Line Project Draft Environmental Impact Statement* (DOE/EIS-0414), prepared by the Department of Energy (DOE) pursuant to the National Environmental Policy Act of 1969 (NEPA) and its implementing regulations. The County of San Diego, California, is a cooperating agency in the preparation of this Draft EIS.

The DOE proposed Federal action in the Draft EIS is the granting of a Presidential permit to Energia Sierra Juarez U.S. Transmission, LLC (ESJ), for the construction, operation, maintenance, and connection of either a 230-kilovolt (kV) or a 500-kV electric transmission line that would cross the U.S.-Mexico border in the vicinity of Jacumba, California, in eastern San Diego County. DOE has prepared this Draft EIS to evaluate the potential environmental impacts in the United States of the proposed action and the range of reasonable alternatives, including the No Action alternative. Under the No Action alternative, the Presidential permit would not be granted, and the proposed transmission line would not cross the U.S.-Mexico border. Two action alternatives were analyzed in addition to the No Action alternative: a Double-Circuit 230-kilovolt (kV) transmission line and a Single-Circuit 500-kV Transmission Line. DOE will use the EIS to ensure that it has the information it needs for informed decision-making.

You are invited to comment on this Draft EIS during the 45-day comment period that will begin when the U.S. Environmental Protection Agency publishes a notice of its availability in the *Federal Register*. Comments submitted after the close of the comment period will be considered to the extent practicable. Information on how to submit comments is provided at the end of this letter.

DOE and San Diego County will conduct public hearings in the vicinity of the proposed project during this comment period. You are invited to attend these hearings and to provide oral and written comments on the Draft EIS. Detailed information on the times, dates, and locations of these hearings will be published in the *Federal Register* and in local newspapers in the near future, and also will be available on the project's website at <http://www.esjprojecteis.org>. The Draft EIS will be on both this website and on the DOE NEPA website at http://nepa.energy.gov/draft_environmental_impact_statements.htm.

If you have any questions or comments on the Draft EIS, or would like additional copies, please contact me either by mail at the Office of Electricity Delivery and Energy Reliability, OE-20, U.S. Department of Energy, Washington, DC 20585, by telephone at 202-586-3362, by fax at 202-318-7761, or by e-mail at Jerry.Pell@hq.doe.gov. However, please note that conventional mail to DOE tends to be delayed and possibly damaged because of security screening. Also, if you have received the Summary volume but would prefer the full paper version, please contact me.

Very truly yours,

A handwritten signature in blue ink that reads "Jerry Pell".

Jerry Pell, Ph.D., CCM
Environmental Scientist
Project Manager
Office of Electricity Delivery
and Energy Reliability

COVER SHEET

Responsible Federal Agency: U.S. Department of Energy, Office of Electricity Delivery and Energy Reliability

Cooperating Agency: County of San Diego

Title: Draft Environmental Impact Statement for the Energia Sierra Juarez U.S. Transmission Line

Location: San Diego County, California

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Abstract: Energia Sierra Juarez U.S. Transmission, LLC (ESJ-U.S.), a subsidiary of Sempra Generation, has applied to the U.S. Department of Energy (DOE) for a Presidential permit to construct, operate, maintain, and connect a 1.7-mile transmission line (0.65 miles in the U.S.) across the international border between the U.S. and Mexico, near the town of Jacumba, California. A DOE Presidential permit is required before anyone can construct, operate, maintain, and connect an electric transmission line across the U.S. border. DOE must decide whether to issue a Presidential permit for the project.

DOE published a *Federal Register* "Notice of Intent to Prepare an Environmental Assessment and to Conduct Public Scoping Meetings; Baja Wind U.S. Transmission, LLC" on August 4, 2008 (73 FR 45218), held public scoping meetings in Jacumba, California, on August 28, 2008, and solicited written and electronic comments on the scope of the Environmental Assessment. Based on the comments received, DOE determined that an EIS would be the appropriate NEPA document for the proposed Presidential permit. Accordingly, on February 25, 2009, DOE issued in the *Federal Register* a "Notice of Intent to Prepare an Environmental Impact Statement; Energia Sierra Juarez U.S. Transmission, LLC" (74 FR 8517), but did not open an additional scoping period; however, it did indicate that any additional comments received would be considered to the extent practicable.

The EIS addresses the environmental impacts of the proposed transmission line and the range of reasonable alternatives. Five alternatives were identified in this EIS, three of which were carried forward for detailed analysis (the No Action Alternative, a Double-Circuit 230-kilovolt (kV) Transmission Line and a Single-Circuit 500-kV Transmission Line). DOE will use the EIS to ensure that it has the information it needs for informed decision-making. DOE invites comments on this draft EIS during the 45-day comment period that will begin when the U.S. Environmental Protection Agency publishes the Notice of Availability in the *Federal Register*. Copies of the draft EIS will be available for public review at the Jacumba and Campo-Moreno Village Branch libraries or may be obtained from Dr. Jerry Pell. The EIS also will be available via the project website (<http://www.esjprojecteis.org/>). During the 45-day comment period, public hearings will be held in San Diego, Boulevard, and Jacumba, California. Written and oral comments will be given equal weight, and any comments received after the comment period ends will be considered to the extent practicable. DOE's responses to comments received on the draft EIS will be included in the final EIS. DOE will announce its decision in a Record of Decision no sooner than 30 days after the U.S. Environmental Protection Agency publishes the Notice of Availability of the final EIS.

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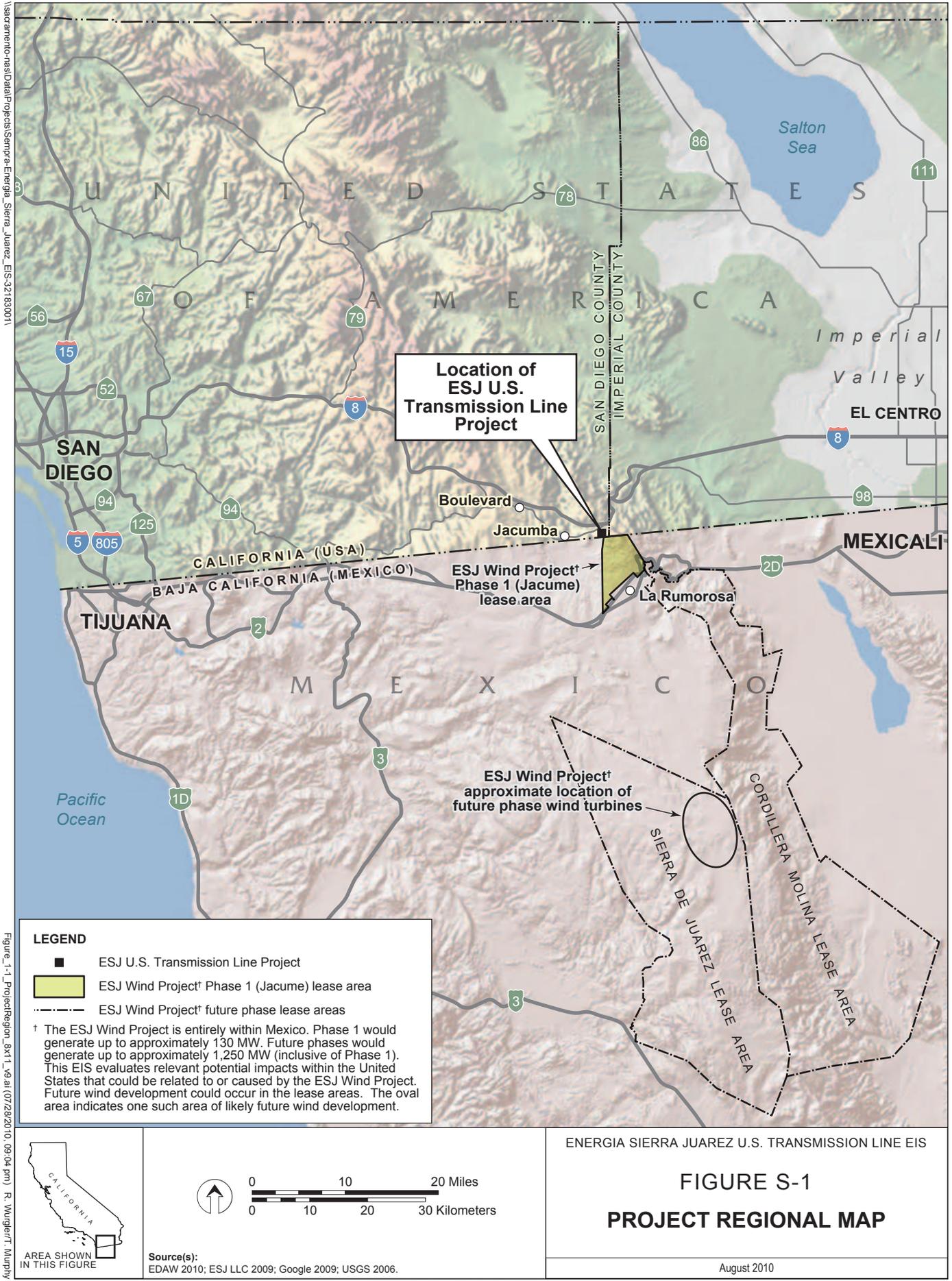
SUMMARY

S.1 BACKGROUND AND OVERVIEW

On December 18, 2007, Baja Wind U.S. Transmission, LLC (now, Energia Sierra Juarez U.S. Transmission, LLC [referred to herein as ESJ-U.S.]), a subsidiary of Sempra Generation (Sempra), applied to the U.S. Department of Energy (DOE) for a Presidential permit in accordance with Executive Orders (E.O.) 10485 and 12038, and 10 Code of Federal Regulations (CFR) §205.320 *et seq.* The Presidential permit (OE Docket Number PP-334), if issued, would authorize ESJ-U.S. to construct, operate, maintain, and connect the United States (U.S.) portion of an electric transmission line that would cross the international border between the U.S. and Mexico, near the town of Jacumba, California. The U.S. portion of the double-circuit 230-kilovolt (kV) or single-circuit 500-kV transmission line (referred to herein as the ESJ U.S. Transmission Line project) would be 0.65 mile (1.05 kilometers) in length, and would transmit up to 1,250 megawatts (MW) of wind-generated electricity (Figure S-1).

DOE has determined that issuance of a Presidential permit for this proposed project would constitute a major Federal action that may have a significant impact upon the environment within the context of the National Environmental Policy Act of 1969 (NEPA). NEPA requires that Federal agencies integrate environmental values into their decision-making processes by considering the environmental impacts of their proposed actions and the range of reasonable alternatives to those actions. DOE initially determined that the appropriate level of environmental review under NEPA for granting the requested Presidential permit was an Environmental Assessment (EA). On August 4, 2008, DOE published in the *Federal Register* its *Notice of Intent to Prepare an Environmental Assessment and to Conduct Public Scoping Meetings; Baja Wind U.S. Transmission, LLC* (73 FR 45218) (NOI). The NOI explained that if at any time during preparation of the EA DOE determined that an Environmental Impact Statement (EIS) was needed, DOE would issue an NOI to prepare an EIS in the *Federal Register*, and in that case, the scoping process for the EA would serve as the scoping process that normally would follow an NOI to prepare an EIS. Accordingly, in preparing such an EIS DOE would consider any comments on the scope of the EA received during the scoping process.

Issuance of the EA NOI opened a 30-day public comment period that closed September 3, 2008. As discussed further in Section S.8 (Public Participation), based on the comments received and the potential for significant impacts, DOE determined that an EIS would be the appropriate NEPA document. In particular, public comments indicated the following potential impacts due to the presence of transmission lines and wind turbines: impacts to biological resources including avian mortality and impacts on protected, threatened, endangered, or sensitive species of animals or plants, or their critical habitats; potential impacts to visual resources; and potential impacts to public safety related to wildfire hazards. On February 25, 2009, DOE published in the *Federal Register* a second NOI: *Notice of Intent to Prepare an Environmental Impact Statement; Energia Sierra Juarez U.S. Transmission, LLC* (74 FR 8517) (DOE/EIS-0414). The EIS NOI indicated



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Figure 1-1: Project Region Box 1, v8.ar (07/28/2010, 09:04 pm) R. Wang/rrt/Mapity

LEGEND

- ESJ U.S. Transmission Line Project
- ESJ Wind Project† Phase 1 (Jacume) lease area
- ESJ Wind Project† future phase lease areas

† The ESJ Wind Project is entirely within Mexico. Phase 1 would generate up to approximately 130 MW. Future phases would generate up to approximately 1,250 MW (inclusive of Phase 1). This EIS evaluates relevant potential impacts within the United States that could be related to or caused by the ESJ Wind Project. Future wind development could occur in the lease areas. The oval area indicates one such area of likely future wind development.



Source(s):
EDAW 2010; ESJ LLC 2009; Google 2009; USGS 2006.

0 10 20 Miles
0 10 20 30 Kilometers

ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LINE EIS

FIGURE S-1

PROJECT REGIONAL MAP

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that any additional scoping comments received by March 27, 2009, would be considered by DOE in defining the scope of the EIS, and that comments received or postmarked after that date would be considered to the extent practicable.

DOE prepared this draft EIS in compliance with the Council on Environmental Quality regulations for implementing NEPA (40 CFR Parts 1500–1508) and DOE’s NEPA regulations (10 CFR Part 1021). The preparation of an EIS includes two formal opportunities for public input: (1) the public scoping period, and (2) the draft EIS public comment period, both of which are described further in the Public Participation section of this summary. The County of San Diego is a cooperating agency in EIS preparation. Following the draft EIS public comment period, DOE, in coordination with the County of San Diego, will prepare a final EIS that will respond to oral and written comments received on the draft EIS. Other environmental review requirements are being implemented in coordination with or integrated with the NEPA process to the fullest extent possible, namely, floodplains and wetlands assessments, in accordance with E.O. 11988 and E.O. 11990, respectively (both signed on May 24, 1977) and 10 CFR Part 1022; Clean Air Act Conformity requirements; threatened and endangered species consultation required under the Endangered Species Act; and consultation under the National Historic Preservation Act.

S.2 PURPOSE AND NEED

ESJ-U.S. has applied to DOE for a Presidential permit that would allow the company to construct, operate, maintain, and connect approximately 0.65 miles (1 km) of new single-circuit 500-kV or double-circuit 230-kV transmission line in the U.S. that would cross the U.S.-Mexico border to connect with transmission to be built in Mexico.

The purpose and need for DOE’s action is to respond to the ESJ-U.S. request for a Presidential permit. DOE may issue or amend a Presidential permit if it determines that the action is in the public interest and after obtaining favorable recommendations from the U.S. Departments of State and Defense. In determining whether a proposed action is in the public interest, DOE considers the impact of the proposed action on the environment pursuant to NEPA, the proposed action’s impact on the reliability of the U.S. electric power supply system, and any other factors that DOE may consider relevant. If DOE determines that granting a Presidential permit is in the public interest, the information contained in the EIS will provide a basis upon which DOE decides which alternative(s) to authorize and which potential mitigation measures, if any, are appropriate for inclusion as conditions of the permit. A decision in the form of a Record of Decision (ROD) will be issued no sooner than 30 days after the U.S. Environmental Protection Agency’s (EPA) publication of a “*Notice of Availability of the Final EIS*” in the *Federal Register*. The Presidential permit, if approved, would be issued subsequent to the ROD.

S.3 ESJ-U.S. PROJECT OBJECTIVES

The ESJ-U.S. stated objective for the proposed transmission line is to transport electrical power generated by the ESJ Wind project in Mexico to the U.S. In its December 18, 2007, application, ESJ-U.S. indicated that all power generated by its proposed ESJ Wind project would be exported to the U.S. and that “...*the proposed transmission line is expected to reduce the region's dependence upon conventional fossil fuel fired generation plants, and improve the region's ability to meet future electrical energy requirements.*” The ESJ projects would also help

California utilities meet the renewable portfolio standards specified in California Executive Order S-14-08, which requires that by the end of 2020, 33% of retail electricity sales be generated from renewable energy sources.

S.4 COOPERATING AGENCY

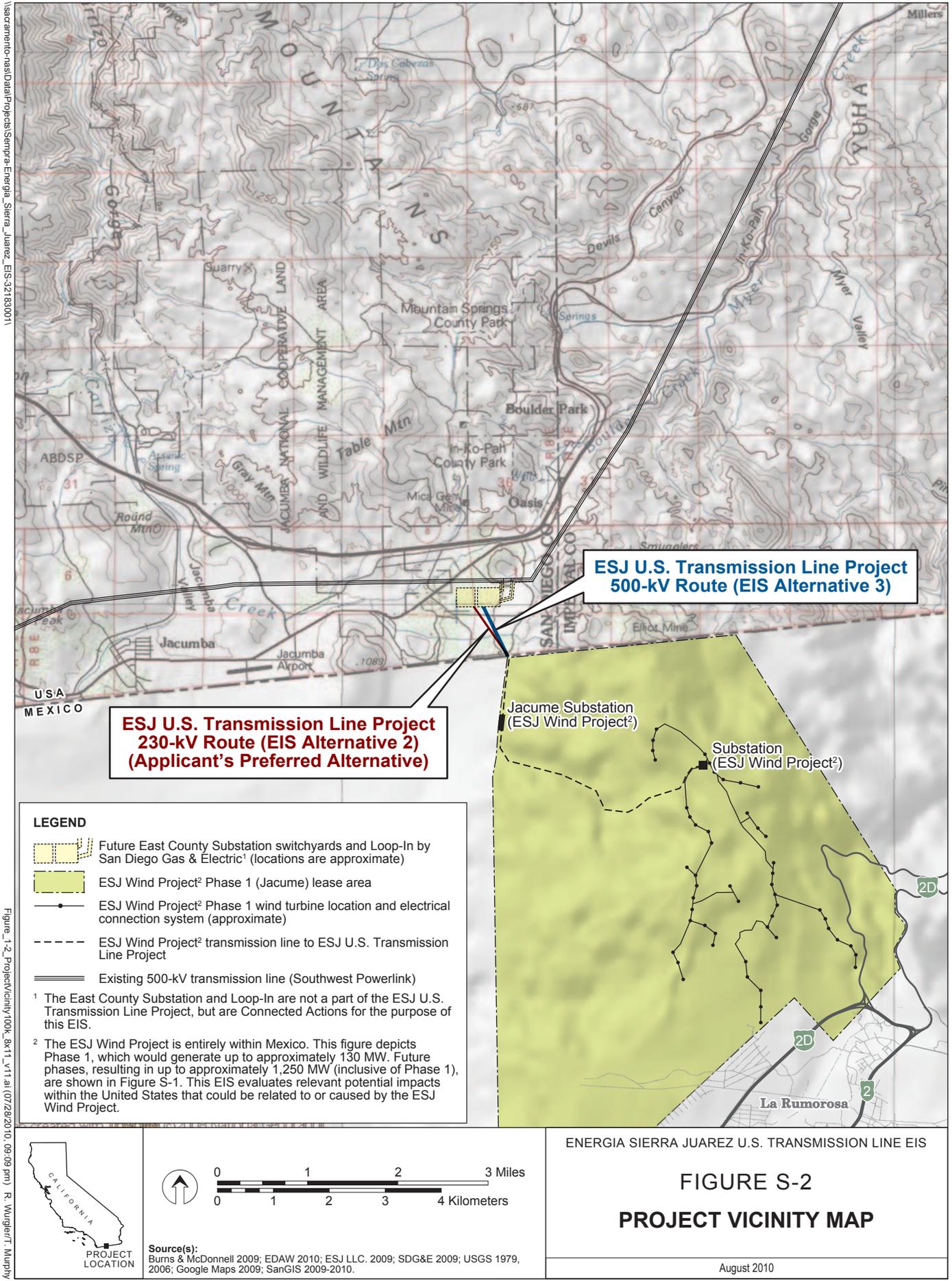
On February 1, 2010, the County of San Diego accepted DOE's invitation to be a cooperating agency for preparation of this EIS. Separate from the DOE Presidential permit application process, ESJ-U.S. has applied to the County of San Diego for a Major Use Permit (MUP) for the project, and the County must review the environmental impacts of that permit in accordance with the California Environmental Quality Act (CEQA). As a cooperating agency in DOE's NEPA EIS, the County of San Diego has provided information to DOE related to topics within the County's jurisdiction and expertise.

As a responsible agency under CEQA, the County of San Diego expects to use the East County (ECO) Substation Environmental Impact Report (EIR)/EIS for its permitting processes. The U.S. Bureau of Land Management and the California Public Utilities Commission (CPUC) are preparing the ECO Substation EIR/EIS to address San Diego Gas and Electric Company's [SDG&E] proposed ECO Substation project (including switchyards and a loop-in [connection] to the Southwest Power Link [SWPL]), Iberdrola Renewables Tule Wind Energy project, and the ESJ U.S. Transmission Line project. Following certification of the EIR/EIS by CPUC, the County would use the ECO Substation EIR/EIS to make the appropriate CEQA findings for its discretionary action under CEQA. The County of San Diego Planning Commission would consider two separate MUPs as follows: the first MUP would be for groundwater extraction (Section 6550 of the County's Zoning Ordinance) from the Jacumba Community Service District (for use of groundwater primarily during project construction); the second MUP would be for the ESJ U.S. Transmission Line project, for Major Impact Service Utility (Section 1350 of the County's Zoning Ordinance). Other County permits and approvals that ESJ-U.S. would need to build the project include County right-of-way permits for construction, excavation, and road encroachment; grading permit; and improvement plans.

S.5 ALTERNATIVES ANALYZED

The following alternatives are analyzed in this EIS:

- **No Action Alternative.** Under this alternative DOE would not issue the Presidential permit. This alternative presents the environmental impacts in the U.S. as if the line is never constructed and provides a baseline against which the impacts in the U.S. of the action alternatives can be measured.
- **Action Alternatives.** Under these alternatives DOE would issue the Presidential permit. Analysis of action alternatives below sets forth the impacts in the U.S. of constructing and operating a transmission line that would cross the U.S.-Mexico border. See Figure S-2.
 - **Alternative 2.** Double-Circuit 230-kV Transmission Line (Applicant's preferred alternative)
 - **Alternative 3.** Single-Circuit 500-kV Transmission Line



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Figure_S-2_ProjectVicinity100k_8x11_V11.ai (07/28/2010, 09:09 pm) R. Wu/gert/W. Murphy

**ESJ U.S. Transmission Line Project
230-kV Route (EIS Alternative 2)
(Applicant's Preferred Alternative)**

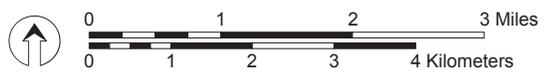
**ESJ U.S. Transmission Line Project
500-kV Route (EIS Alternative 3)**

LEGEND

- Future East County Substation switchyards and Loop-In by San Diego Gas & Electric¹ (locations are approximate)
- ESJ Wind Project² Phase 1 (Jacume) lease area
- ESJ Wind Project² Phase 1 wind turbine location and electrical connection system (approximate)
- ESJ Wind Project² transmission line to ESJ U.S. Transmission Line Project
- Existing 500-kV transmission line (Southwest Powerlink)

¹ The East County Substation and Loop-In are not a part of the ESJ U.S. Transmission Line Project, but are Connected Actions for the purpose of this EIS.

² The ESJ Wind Project is entirely within Mexico. This figure depicts Phase 1, which would generate up to approximately 130 MW. Future phases, resulting in up to approximately 1,250 MW (inclusive of Phase 1), are shown in Figure S-1. This EIS evaluates relevant potential impacts within the United States that could be related to or caused by the ESJ Wind Project.



Source(s):
Burns & McDonnell 2009; EDAW 2010; ESJ LLC. 2009; SDG&E 2009; USGS 1979, 2006; Google Maps 2009; SanGIS 2009-2010.

ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LINE EIS

**FIGURE S-2
PROJECT VICINITY MAP**

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At the time of publication of this draft EIS, DOE does not yet have a preferred alternative, but will identify its preferred alternative in the final EIS.

S.5.1 Alternative 1 – No Action

Under the No Action Alternative, DOE would not issue a Presidential permit for the ESJ U.S. Transmission Line and the line would not be built. The ESJ Wind project still could be constructed in Mexico, and the electrical generation from the wind turbines could either be confined entirely within Mexico or could enter the U.S. through a different transmission corridor. However, any alternative transmission corridor that crossed the international border would require a new Presidential permit application and would be subject to a separate NEPA review.

S.5.2 Alternative 2 – Double-Circuit 230-kV Transmission Line

Under Alternative 2, DOE would issue a Presidential permit for a double-circuit 230-kV transmission line (230-kV Route) across the U.S.-Mexico border. The total length of the 230-kV Route would be approximately 0.65 mile (1.05 km) between the proposed SDG&E ECO Substation switchyards and the international border (Figure S-3). The line would continue south of the border for approximately 1 mile (1.6 km) to the ESJ Jacume Substation, the first point of interconnection in Mexico. An overhead static ground wire running above the conductors would have a fiber optic core for communications between the ESJ Jacume Substation in Mexico and the proposed SDG&E ECO Substation switchyards in the U.S. A loop-in in the proposed ECO Substation would connect the proposed line to the existing 500-kV SWPL.

S.5.2.1 Site Access

Old Highway 80 would be the primary roadway used for construction and maintenance access to the 230-kV Route. Access from Old Highway 80 to the transmission line site would require construction of a new 28-foot (8.5-meter [m]) wide property access road within an existing 40-foot (12.2-m) easement. ESJ-U.S. has identified two options, Option A and B, for the access road from Old Highway 80. The locations and alignments for both options are shown in Figure S-3.

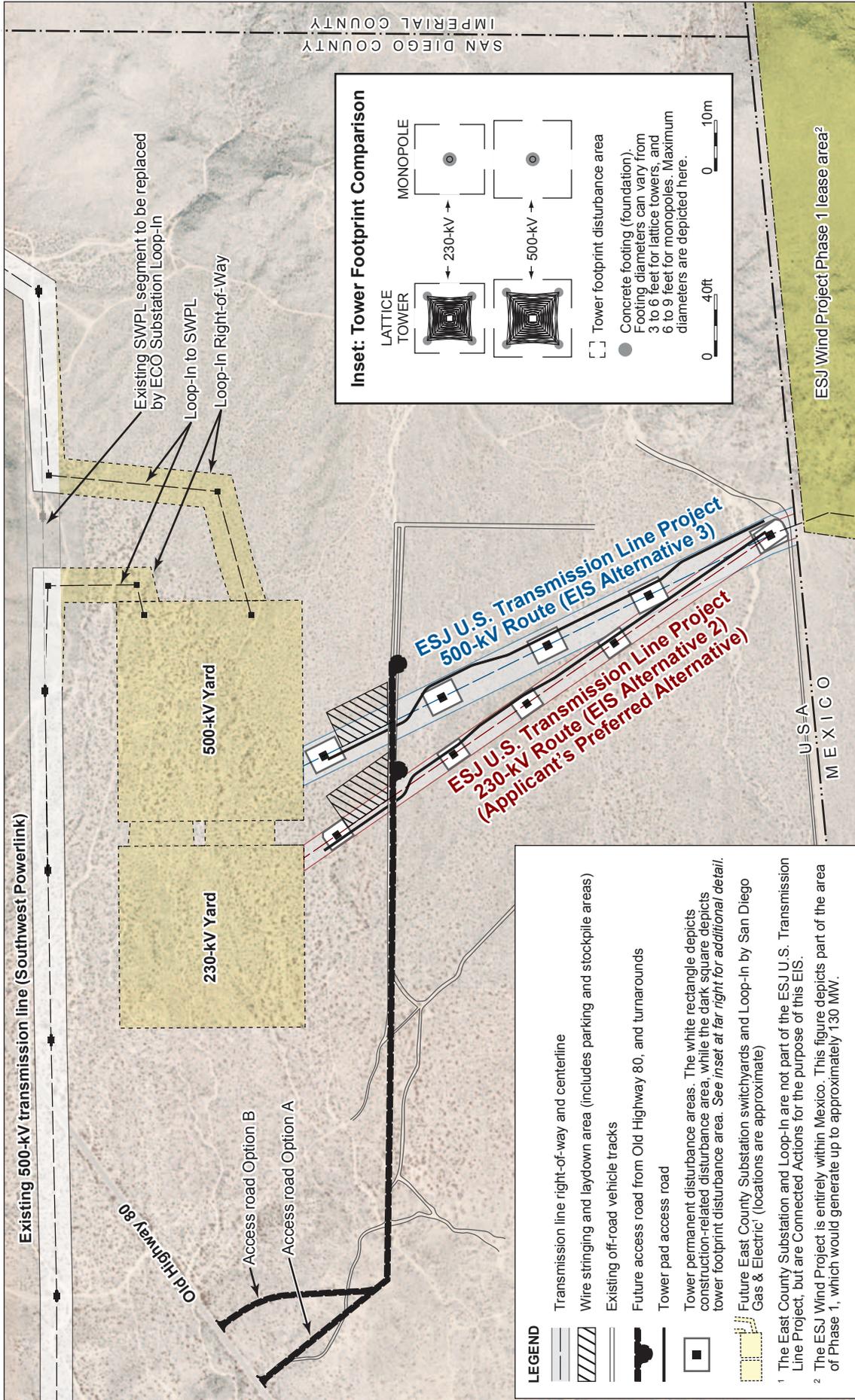
S.5.2.2 Design Features

The 230-kV Route would be constructed within a 130-foot (40-m) permanent right-of-way and consist of either three to five 150-foot (46-m) steel lattice towers or up to five 150-foot (46-m) monopoles. Although the precise locations of the lattice towers or monopoles are not yet determined, the structures would be spaced a maximum of 1,500 feet (460 m) apart, would avoid sensitive cultural resources, and would not be placed within 150 feet (46 m) of the international border.

S.5.2.3 Construction

Construction of the transmission line would include the following activities:

- Clearing, grading, and grubbing
- Access road and pad construction
- Digging and drilling for tower foundations



ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LINE EIS

FIGURE S-3

PROJECT ALTERNATIVES

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Existing 500-kV transmission line (Southwest Powerlink)

Existing SWPL segment to be replaced by ECO Substation Loop-In

Loop-In to SWPL

Loop-In Right-of-Way

500-kV Yard

230-kV Yard

Access road Option B

Access road Option A

Old Highway 80

ESJ U.S. Transmission Line Project 500-kV Route (EIS Alternative 3)

ESJ U.S. Transmission Line Project 230-kV Route (EIS Alternative 2) (Applicant's Preferred Alternative)

U-S-A

MEXICO

ESJ Wind Project (Phase 1) lease area?

LEGEND

- Transmission line right-of-way and centerline
- Wire stringing and laydown area (includes parking and stockpile areas)
- Existing off-road vehicle tracks
- Future access road from Old Highway 80, and turnarounds
- Tower pad access road
- Tower permanent disturbance areas. The white rectangle depicts construction-related disturbance area, while the dark square depicts tower footprint disturbance area. See inset at far right for additional detail.
- Future East County Substation switchyards and Loop-In by San Diego Gas & Electric (locations are approximate)

1 The East County Substation and Loop-In are not part of the ESJ U.S. Transmission Line Project, but are Connected Actions for the purpose of this EIS.

2 The ESJ Wind Project is entirely within Mexico. This figure depicts part of the area of Phase 1, which would generate up to approximately 130 MW.

0 800 1,600 2,400 Feet

0 200 400 600 Meters

PROJECT LOCATION

CALIFORNIA

Source(s): EDRAW 2010; ESJ LLC. 2009; SDG&E 2009; USGS 1998; Google Maps 2009; SanGIS 2009-2010. Burns & McDonnell. 2009.

- Pouring concrete foundations for towers
- Overhead electrical power system construction
- Final grading and site clean-up.

Prior to construction of the transmission line, a staging site would be cleared at the northern end of the route, adjacent to the transmission right-of-way and north of the property access road. This area would provide a consolidated site for construction equipment laydown, vehicle parking, and wire stringing.

Construction activities would require approximately 20 to 25 workers per day for up to six months. Approximately 5 to 15 construction vehicles would operate onsite daily during construction, with approximately 10 to 20 worker vehicles entering or leaving the site each day.

Due to fire protection requirements (Section S.8.9) there would be no revegetation of the right-of-way after completion of construction. The area would not be fenced. During operation of the facility, minimal personnel (1 or 2) would be required to patrol and visually inspect the transmission facilities on a periodic basis. Road maintenance would be done as needed, and vegetation maintenance to prevent fuel build-up in a 30-foot (9.1-m) radius clear space around the tower footings (or 10-foot [3.0-m] radius around monopoles) would be done at least once a year. Operations and maintenance related traffic would typically consist of two vehicles entering and leaving the site each week.

S.5.3 Alternative 3 – Single-Circuit 500-kV Transmission Line

Under this alternative, DOE would issue a Presidential permit for the construction of a single-circuit 500-kV Transmission Line (500-kV Route) across the U.S.-Mexico border. The site access, design, and construction features of the 500-kV Route are very similar to those described above for the 230-kV Route. This section describes the key distinctions of the 500-kV Route. Table S-1 provides a side-by-side comparison of the two routes. The 500-kV Route would be constructed within a 214-foot (65-m) wide permanent right-of-way, extending 0.62 mile (1 km) from the U.S.-Mexico border to the proposed SDG&E ECO Substation switchyards (Figure S-3). The 500-kV transmission line would be supported on either three to five 150-foot (46-m) steel lattice towers, or up to five 170-foot (52-m) steel monopoles spaced no more than 1,500 feet (460 m) apart. Although the precise locations of the lattice towers or monopoles within the right-of-way are not yet determined, the structures would be located a maximum of 1,500 feet (460 m) apart, would avoid sensitive cultural resources, and would not be placed within 150 feet (46 m) of the international border.

**Table S-1
230-kV Route and 500-kV Route Parameters**

Parameter	230-kV Alternative Interconnection	500-kV Alternative Interconnection
Maximum Capacity	1,250 megawatts	1,250 megawatts
Number of Circuits	Double-Circuit	Single-Circuit
Minimum Ground Clearance	34 feet (10.4 m)	39 feet (11.9 m)
Width of Permanent Right-of-Way	130 feet (39.6 m)	214 feet (65.2 m)
Number of Structures	3 to 5	3 to 5
Maximum Spacing Between Structures	1,500 feet (460 m)	1,500 feet (460 m)
Permanent Impacts at Each Structure¹	120 feet x 160 feet (0.44 acre; 0.18 hectare)	150 feet x 200 feet (0.69 acre; 0.28 hectare)
Permanent Impacts for All Structures (assuming 5 structures)	2.2 acres (0.89 hectare)	3.45 acres (1.4 hectares)
Area of Permanent Vegetation Removal	9.72 acres (3.9 hectares)	10.77 acres (4.4 hectares)
Construction Laydown/Parking/Stringing Area	1.98 acres (0.8 hectare)	1.88 acres (0.76 hectare)
Maximum Height of Lattice Towers	150 feet (46 m)	150 feet (46 m)
Maximum Base of Lattice Towers	29 feet x 29 feet (9 m x 9 m)	34 feet x 34 feet (10.4 m x 10.4 m)
Foundation of Lattice Towers at Each Corner	3 – 6 feet (1 – 2 m) diameter	3 – 6 feet (1 – 2 m) diameter
Maximum Height of Steel Monopoles	150 feet (46 m)	170 feet (52 m)
Foundation of Steel Monopoles	6 – 9 feet (2 – 3 m) diameter and up to 40 feet (12.2 m) deep	7 – 9 feet (2 – 3 m) diameter and up to 40 feet (12.2 m) deep

¹ In accordance with ESJ-U.S.'s Fire Plan for the project, a cleared space will be maintained around the tower or monopoles structures, and no restoration of impacted areas is proposed in the remainder of the construction area. Consequently, for planning purposes, there are no "temporary" disturbances and all land disturbances are considered permanent. ESJ-U.S. has proposed the creation of a conservation easement to address this permanent impact. The proposed location for the easement is on the eastern edge of ESJ-U.S.'s property, adjacent to an existing U.S. Bureau of Land Management (BLM) Wilderness area (Section S.8.1).

S.6 ESJ WIND PROJECT IN MEXICO AND IMPACTS IN THE UNITED STATES

ESJ-U.S. plans to construct its Mexican wind project in phases. A maximum of 52 wind turbines are planned for Phase 1, depending on the selected manufacturer and specific model, resulting in up to 130 MW of power (assuming nominally 2.5 MW per turbine; the wind turbines have not been selected by ESJ-U.S., so actual generating capacity may vary). Phase 1 would be located on the furthest north land leased by ESJ (an area referred to as the Jacume lease area), north of the town of La Rumorosa, Mexico. Figure S-1 depicts the general location of the project in eastern San Diego County and Baja California. Figure S-2 provides a more detailed map of Phase 1 of the ESJ Wind project and preliminary proposed project locations. As shown in Figure S-2, the

wind turbines nearest to the U.S. would be located no closer than approximately 0.7 mile (1.1 km) south of the U.S. border.

The present plan for the wind turbines is as follows: A typical turbine design that may be used for this project is similar to Siemens Power Generation's SWT-2.3-101 Wind Turbine (this is a 2.3 MW machine). The maximum rotational speed of turbine rotor blades averages between 6 and 16 revolutions per minute for a 2.5 MW turbine. The total height of the combined tower structure and rotor blades would likely be up to 431 feet (130.5 m), depending on the tower height and the turbine rotor blade diameters. The rotor diameter for the Siemens SWT-2.3-101 is approximately 333 feet (101 m). The total distance from blade tip at the six o'clock position to the ground surface would be at least 97 feet (29.5 m).

- Up to approximately 30 percent of the wind turbine units would be lighted (actual percentage would be dictated by Mexican regulatory requirements). It is anticipated that lighting would generally follow U.S. FAA guidelines or equivalent Mexican guidelines. Other infrastructure to support the wind turbines would include access roads, electrical substations, and transmission lines from the substations to the U.S.-Mexico border, where the lines would link to the ESJ U.S. Transmission Line, as shown in Figure S-2.

Subsequent expansion of the ESJ Wind project in Mexico, if executed, is presently planned to consist of additional phases of wind turbines, up to a maximum build-out of 1,250 MW. The timing and location for installation of subsequent phases have not been determined, but ESJ-U.S.'s current leaseholds would place the location of those subsequent phases south of the town of La Rumorosa (Figure S-1) and thus farther from the border.¹

- As discussed below in Section S.8.2, NEPA does not require an analysis of environmental impacts that occur within another sovereign nation that result from actions approved by that sovereign nation. DOE does analyze all impacts that occur in the U.S. from connected actions in a foreign country. Accordingly, DOE here considers potential impacts within the U.S. from connected transmission facilities in Mexico and from the associated ESJ Wind project in Mexico.
- DOE has identified impacts in the U.S. due to related activities in Mexico in two issue areas: biological resources and visual resources. As described further in Section S.9.1, potential impacts to biological resources in the U.S. could occur if construction or operation of the ESJ Wind project and the associated transmission lines in Mexico impeded the cross-border movement of wildlife or caused mortality to such wildlife, including birds afforded international protection under the Migratory Bird Treaty Act (MBTA). Construction and operation of the wind facilities, coupled with elevated levels of human activity from workers and visitors to the wind farm, could alter wildlife behavior, including possible avoidance of the area. Construction of the ESJ Wind project could result in the destruction or abandonment of active migratory bird nests and operation of the turbines could result in the loss of migratory birds and migratory bats

¹ This reflects the latest information provided to DOE by the applicant as of the date of publication.

that collide with the turbine blades. Future phases would increase this development footprint and thus potentially increase the impact to birds protected under the MBTA.

- ESJ has obtained an environmental permit from the Mexican government for the ESJ Wind project. This permit includes conditions that require both pre-construction and post-construction bird and bat monitoring of the project area, as well as the identification and implementation of measures to avoid and/or minimize potential collisions.

As described further in Section S.9.2, wind turbines constructed in Mexico as part of the EJS Wind project would be visible from several U.S. locations. The wind turbines would appear as an assemblage of light-colored vertical forms in a landscape predominantly natural in appearance. Predicted visual impacts from wind turbines would be moderate-to-high for viewers at observation points in the community of Jacumba and from a nearby recreational area (Table Mountain ACEC) and low-to-moderate for viewers at an observation point on Interstate 8. During clear weather, aviation safety lighting on wind turbines (if lighting is required by Mexican agencies) would also be visible from viewing points in the U.S. Future phases would increase the number of wind turbines in Mexico. Subsequent expansion of the ESJ Wind project would be located south of the town of La Rumorosa (Figure S-1), sufficiently distant from the U.S. viewing points such that visual impacts are not expected.

S.7 ALTERNATIVES CONSIDERED BUT DISMISSED FROM DETAILED ANALYSIS

S.7.1 Alternative Transmission Line Route

During the initial planning and siting process for the transmission line, ESJ-U.S. considered one additional route alternative for an overhead transmission line. The route considered was located west of and parallel to the routes of Alternatives 2 and 3 and terminated at an alternative substation location on the north side of Old Highway 80, east of Jacumba. It extended approximately 1 mile (1.6 km) north across U.S. land and required a slightly longer line in Mexico than Alternatives 2 and 3. This concept was developed by ESJ-U.S. prior to SDG&E's application filing for the ECO Substation Project. Given the current proposed location of the SDG&E ECO Substation, and the distance between this route and the substation, this alternative is no longer considered feasible or practical and is not considered a reasonable alternative.

S.7.2 Underground Transmission Line

It is technically feasible to install transmission lines underground, and underground transmission lines are often considered in dense urban areas where overhead routes may not be feasible. Commenters on the scope of this EIS and the County of San Diego, which is a cooperating agency for this EIS, requested that the EIS consider the alternative of placing the proposed transmission line underground for its entire length from the Mexican substation to the proposed SDG&E ECO Substation. The commenters stated that an underground transmission alternative would have less environmental impact, including lower visual impacts and lower fire risk, than an aboveground transmission line. The County also stated that an underground line would reduce impacts to biological resources, visual resources, recreation, public health and safety, fire and fuels management, and geology and soils.

An underground transmission line would avoid most of the potential visual resource impacts associated with an overhead line that used either the lattice tower or monopole designs. An underground line also would be more reliable, e.g., less susceptible to weather-related outages. However, this benefit is offset to some extent by the fact that a failure underground can be difficult to locate and is relatively more difficult to repair.

This alternative would require significantly greater ground disturbance and associated environmental impacts than the proposed towers or monopoles, as underground construction would require trenching throughout the entire length of the transmission line route. Trenching along the entire length of the line would result in more disturbance to biological resources, soils, and cultural resources during construction than an overhead transmission line and would afford less opportunity to avoid sensitive resources. During operation, fire and fuel management would be less a concern for an underground transmission line than for an overhead line, but the land above and in the vicinity of the line would have to be kept free of shrubs to avoid direct interference by roots, and access roads would be needed along the entire length of the line in order to provide access to repair outages.

Placing the transmission line underground may reduce public exposure to electric and magnetic fields (EMF) because studies indicate that underground cables produce no electric field; however, magnetic field strengths from alternating current (AC) power lines buried underground are similar to magnetic strengths for power lines above ground, and exposure levels at ground level can be greater for underground AC lines due to the closer distance between the buried cables and the ground surface, as compared to aboveground lines. Therefore, EMF exposure under this alternative would potentially be greater than exposure from the 230-kV Route and 500-kV Route alternatives.

A potential method to minimize ground disturbance in installation of an underground line is to use horizontal directional drilling techniques. Horizontal directional drilling uses a directional boring technique over relatively long distances compared to conventional boring techniques. Horizontal directional drilling minimizes the total ground disturbance required. However, due to its high cost, this method is typically used only at major infrastructure or sensitive resource crossings where trenching and conventional boring techniques are not feasible (e.g., to cross under highways or major streams). The cost of undergrounding has been shown to be substantially higher than placing aboveground wires. Recent studies indicate that underground 230-kV lines cost up to 15 times the amount required to build an overhead line. According to ESJ-U.S., undergrounding of the ESJ U.S. Transmission Line is estimated to cost \$20.3 million, while the same stretch of overhead line is projected to cost less than \$2 million.

Based on these considerations, DOE does not consider the construction of an underground transmission line to be a reasonable alternative, and no further analysis is provided.

S.8 PUBLIC PARTICIPATION

DOE conducted two scoping meetings on August 26, 2008, in the town of Jacumba, California, during the public comment period following the NOI for EA preparation. The meetings provided the public with the opportunity to learn more about the proposed project and to provide comments on potential environmental issues associated with the project. A total of 18 people spoke at the meetings. In addition, DOE received scoping comments in the form of 8 letters from

private citizens, government agencies, and non-governmental organizations. The following key issues were identified during the scoping process:

- visual impacts;
- avian mortality;
- impacts on protected, threatened, endangered, or sensitive species of animals or plants, or their critical habitats;
- impacts on cultural or historic resources;
- impacts on human health and safety, with particular focus on wildfire hazards due to presence of the proposed transmission line;
- impacts on air quality and water resources;
- impacts on land use; and
- impacts from development of wind generation.

In addition, several commenters stated that an EA was not adequate, and that an EIS should be prepared.

Based on the comments received and the potential for significant impacts, DOE determined that an EIS would be the more appropriate NEPA document as discussed above. The second, EIS NOI was also sent to Federal, state and local agency representatives; tribes; conservation organizations; local libraries and newspapers; and local stakeholder organizations and individuals in the vicinity of the proposed project. In response to the EIS NOI, DOE received 7 letters or emails from private citizens, government agencies, and non-governmental organizations, including one letter from a Native American tribe (Quechan Tribe).

DOE also sent letters to various Federal and California state agencies specifically requesting their input. Several agencies have responded to these letters, providing recommendations for the EIS and/or indicating an interest in reviewing the draft EIS and participating in project meetings.

A project website maintained for DOE (<http://www.esjprojecteis.org/>) provides background information on the proposed action and DOE's NEPA process. All agency letters and comments received in response to both NOIs are available on the website. An additional opportunity for public participation will be provided during the public comment period on this draft EIS. At that time, interested or potentially affected agencies, tribes, organizations, and members of the public can comment on the draft EIS (this document) and participate in public hearings.

S.8.1 Issues Within the Scope of this EIS

The issues summarized below were raised by commenters during scoping and are addressed in the draft EIS.

Visual Resources. Commenters raised concerns about changes in the visual character of the project area due to the placement of industrial facilities in a rural, open space setting. Specific concerns were raised regarding the daytime and nighttime views of the proposed wind turbines

along prominent ridgelines of the Sierra Juarez Mountains; the proposed ESJ U.S. Transmission Line; and other planned projects that would place new infrastructure in the project area, including the ECO Substation switchyards and related transmission line improvements.

Birds. Commenters raised concerns about avian mortality due to transmission line and wind turbine construction and operation. They also suggested that birds protected by the Migratory Bird Treaty Act (MBTA) should be addressed in the impact analysis.

Protected or Sensitive Species and Critical Habitats. Commenters suggested that the analysis should discuss critical habitat and wildlife movement for protected species in the project area, including Peninsular bighorn sheep, Quino checkerspot butterfly, and California condor; and include measures to mitigate potential impacts to these species and their habitats. Commenters also expressed concerns related to potential impacts on present and potential future preserve lands within the Las Californias Binational Conservation Initiative and suggested avoidance of land that would be necessary to meet preserve objectives.

Cultural and Historic Resources. Cultural resource concerns raised by commenters related to potential disturbance to buried archeological resources in the project area and consideration of the broader cultural landscape. DOE has consulted with the Quechan Tribe and the Campo Band.

Human Health and Safety, Fire Hazards, and Homeland Security. Commenters suggested that the project would introduce a new fire hazard area in a remote area of existing high fire hazards. Concerns were also expressed regarding increased electric and magnetic fields, road construction that could lead to increased illegal activity related to the U.S.-Mexico border, and vulnerability of the transmission line to damage due to illegal border activity. In accordance with DOE NEPA guidance, the EIS also considers potential consequences of intentional destructive acts such as sabotage and terrorism.

Air Quality. Commenters suggested that the analysis address traffic-induced dust due to increased off-road vehicle traffic and increased U.S. Border Patrol traffic, as well as greenhouse gas emissions.

Water Resources. Commenters indicated that groundwater is scarce in the project area and suggested that the analysis should address groundwater impacts and groundwater impact minimization measures.

Land Use. Commenters indicated that the County of San Diego is in the process of updating its General Plan, and the County intends for the project area to remain rural. The comments suggested that the ESJ U.S. Transmission Line project and other proposed development projects could alter the rural character of the project area by introducing industrial development, and that these projects should be reviewed for consistency with the applicable General Plan (including the Mountain Empire Subregional Plan), codes and ordinances.

Connected Actions. Commenters asked for the EIS to include assessment of the impacts of SDG&E's ECO Substation project as a connected action. The proposed SDG&E ECO Substation Project has several elements, including the ECO Substation switchyards; a loop-in to the existing SWPL transmission line; an approximately 13.3-mile (21.4 km) 138-kV transmission line to Boulevard Substation; and associated upgrades to the Boulevard Substation (located west of the

project area near the community of Boulevard). DOE has assessed the ECO Substation switchyards and SWPL Loop-In components of the project as connected actions because the ESJ U.S. Transmission Line would interconnect directly to the ECO Substation facility and Loop-In.

S.8.2 Issues Outside the Scope of this EIS

DOE has determined that the following issues that were raised by commenters during scoping are outside the scope of the EIS.

Emergency Outage Plans. Commenters requested that emergency outage plans be examined as part of the EIS, particularly in relation to homeland security issues. The development of emergency outage response plans is the purview of local public safety officials and is outside the scope of the EIS. Also, outside of the NEPA process, DOE will perform an electric reliability study to ensure that the existing U.S. power supply system would remain fully operational upon the sudden loss of power, regardless of the cause of the outage.

Impacts in Mexico. Several commenters asked DOE to evaluate the impacts associated with the construction and operation of wind turbines and associated development activities on the environment in Mexico, not just in the U.S. DOE does not agree that such an analysis is appropriate for several reasons.

First, the Federal action evaluated in the EIS is not the building of the wind turbines, but the permitting of the construction, operation, maintenance, and connection of an electric transmission facility at the U.S. international border.

Secondly, NEPA does not require an analysis of environmental impacts that occur within another sovereign nation that result from actions approved by that sovereign nation. E.O. 12114 (January 4, 1979) requires Federal agencies to prepare an analysis of significant impacts from a Federal action in certain defined circumstances and exempts agencies from preparing analyses in others. The E.O. does not require Federal agencies to evaluate impacts outside the U.S. when the foreign nation is participating with the U.S. or is otherwise involved in the action [Section 2-3(b)]. The Mexican government has been involved in the evaluations of the environmental impacts associated with the wind project in Mexico. Further, the ESJ Wind project would be constructed in accordance with all applicable Mexican laws, standards, rules, and regulations. The agencies in Mexico with potential jurisdiction over the activities proposed within Mexico include the Comisión Federal de Electricidad, Comisión Reguladora de Energía, Secretaría de Medio Ambiente y Recursos Naturales, and Instituto Nacional de Ecología.

Finally, the Federal action would not affect the global commons (e.g., outer space, Antarctica), and the Federal action would not produce a product, emission, or effluent that is “prohibited or strictly regulated by Federal law in the U.S. because its toxic effects on the environment create a serious public health risk” or which involves regulated or prohibited radioactive materials.

Sunrise Powerlink Project. Several commenters suggested that SDG&E’s application for construction of the Sunrise Powerlink project should be assessed as a connected action to the ESJ U.S. Transmission Line project. The CEQ NEPA regulations require EISs to assess the environmental impacts of connected actions. Connected actions are actions closely related to the

proposed action addressed in an EIS. They are further defined (in 40 CFR 1508.25(a)1) as actions that:

- Automatically trigger other actions that may require environmental impact statements;
- Cannot or will not proceed unless other actions are taken previously or simultaneously; or
- Are interdependent parts of a larger action and depend on the larger action for their justification.

Commenters suggested that the Sunrise Powerlink is a connected action because the ESJ U.S. Transmission Line project would depend upon construction of the Sunrise Powerlink to provide adequate electrical transmission line capacity (i.e., due to the currently inadequate capacity of the existing SWPL). While the Sunrise Powerlink and ESJ U.S. Transmission Line projects are complementary in that they would facilitate the operation of the electricity-generating facilities in Mexico, they are independent actions that serve distinct objectives and that can proceed separately.² The Sunrise Powerlink was the subject of a separate EIR/EIS prepared for BLM under NEPA and the CPUC under CEQA. The Sunrise Powerlink is planned for operation in 2012. In this EIS, impacts of the Sunrise Powerlink are considered as cumulative impacts for the ESJ U.S. Transmission Line project.

SDG&E ECO Substation Project Additional Infrastructure. As noted above, the proposed SDG&E ECO Substation Project has several elements, including the ECO Substation switchyards, a loop-in to SWPL, an approximately 13.3-mile (21.4 km) 138-kV transmission line to Boulevard Substation; and associated upgrades to the Boulevard Substation. DOE considers the ECO Substation switchyards and the loop-in to SWPL to be connected actions for the purpose of this EIS because the ESJ U.S. Transmission Line would interconnect directly to this facility. Several commenters suggested that additional proposed infrastructure associated with SDG&E's application for construction of the ECO Substation Project should also be assessed as connected actions to the ESJ U.S. Transmission Line project because the ESJ U.S. Transmission Line project would depend upon interconnection to the SWPL and/or to Sunrise Powerlink. Only

² In its May 30, 2008, letter to DOE, Sempra provided the following explanation regarding the relationship between the ESJ U.S. and Sunrise Powerlink projects:

Although one of the attributes of the Sunrise project is that it would address the previously discussed SPS [Special Protection System] limitation, this would benefit all potential generators seeking interconnection to SWPL or the Imperial Valley Substation, including renewable projects located in Imperial Valley. These Sunrise benefits will occur regardless of whether the generation associated with Baja Wind U.S. [now ESJ] is built or not. Thus, the decision to build the Sunrise project will be made regardless of the potential existence or not of Baja Wind U.S. [now ESJ] or its associated generation.

Conversely, if Sunrise is not built, Sempra Generation would seek to have the CAISO [California Independent System Operator] and SDG&E evaluate alternative transmission to accommodate Sempra Generation's interconnection requests. Order No. 888 requires transmission facility owners to offer transmission to generators to their interconnection to grid. The Sunrise and Baja Wind [now ESJ] projects have different purposes and justifications, are proposed by different entities, have independent utility and different triggers and actions are necessary to implement projects. In conclusion, the Sunrise and Baja Wind U.S. [now ESJ] projects are completely independent projects and decisions to proceed with each project will be made separately and independently of the outcome of the other.

the first point of interconnection with the U.S. electrical transmission grid is a connected action for the ESJ U.S. Transmission Line project. The additional SDG&E ECO Substation Project components beyond the switchyards and loop-in are independent of the ESJ U.S. Transmission Line project; that is, the ESJ U.S. Transmission Line project does not depend on these components, and these components are neither triggered by nor dependent on the project. Therefore, these elements are not connected actions for the purpose of this EIS, but are considered as potential sources of cumulative impacts.

Cumulative Impacts from Speculative Future Renewable Energy Projects. Commenters requested that the cumulative impact analysis in the EIS consider the impacts of numerous potential renewable energy projects, particularly projects to be sited in northern Baja, Mexico, that have been announced by various developers or mentioned in media accounts. Guidance from the CEQ on conducting cumulative impact assessments recommends that the consideration of impacts from future projects be limited to projects that are reasonably foreseeable. DOE has limited its identification of reasonably foreseeable projects to those proposals with the potential to be executed within the next 10 years; that is, they are funded for future implementation or are included in firm near-term plans. Projects predicted to be developed after 10 years are generally presumed to be speculative and thus are not reasonably foreseeable.

Use of the Proposed Transmission Line for Non-Renewable Energy Projects. Commenters expressed concern that the proposed transmission line could eventually be used to support non-renewable energy generation projects in Mexico that would have additional effects in the U.S. (e.g., impacts due to the construction and operation of natural gas-fired power plants in Mexico that might use the proposed transmission line to export electricity to the U.S.). Commenters pointed out that Sempra has constructed other infrastructure in Mexico near the project area (including a natural gas pipeline from its Natural Gas Liquids facility in Ensenada and a water pipeline) that could facilitate such development. ESJ-U.S. has indicated to DOE that the proposed electrical transmission line is intended to be used only for renewable generation. Accordingly, any alternative future use of the transmission corridor would require a new or revised Presidential permit application to be filed with DOE and would be subject to a separate NEPA review. Therefore, the possible use of the line for non-renewable energy is outside the scope of this EIS.

S.9 COMPARISON OF POTENTIAL ENVIRONMENTAL IMPACTS AMONG ALTERNATIVES

The following discussion summarizes the environmental implications of the action alternatives, organized by resource area. Both temporary impacts during construction and long-term impacts during operation of the proposed transmission line are considered. The ESJ-U.S. proposal incorporates various measures that are designed to avoid or minimize potential impacts related to construction and operation of the transmission line. Descriptions of these applicant-proposed measures (APMs) are included in the discussion. APMs were considered as part of the project in determining the potential for impacts. Additional mitigation measures that could be implemented to further reduce potential impacts of the two action alternatives and, which could be considered for adoption in DOE's Record of Decision, are also discussed. Under the No-Action Alternative, the transmission line would not be built, and there would be no changes to existing conditions in the various resource areas.

Following this discussion is Table S-2, which is organized by resource area and compares the potential impacts for the three alternatives and lists potential additional mitigation measures for the two action alternatives.

S.9.1 Biological Resources

Both the 230-kV Route and 500-kV Route alternatives would result in permanent disturbance to approximately 10 acres of natural vegetation and wildlife habitat. The areas that would be affected are classified in two habitat types: Sonoran Mixed Woody Scrub and Peninsular Juniper Woodland and Scrub. These habitats support a wide range of plants and wildlife, including special status wildlife that has been observed onsite or that has the potential to occur onsite. Due to fire safety concerns, there would be no revegetation or restoration of areas disturbed by the proposed project.

Under the 230-kV Route alternative, construction of the double-circuit transmission line would result in the loss of up to 9.72 acres (3.9 hectares) of vegetation and wildlife habitat. These permanent impacts would be offset by a proposed conservation easement (in accordance with County of San Diego Guidelines), described below. Construction of the transmission line would also potentially result in minor temporary disturbances to wildlife and breeding birds due to traffic and increased noise along the right-of-way. Construction activities would also increase the potential for introduction of non-native invasive species, which is a known concern in the desert region. Following completion of construction activities, the presence of the transmission line could result in a minor potential increase in avian collisions, but would also result in a long-term minor beneficial impact to raptors by providing additional roosting area on structures. Operation of the transmission line would also result in long-term and major impacts to vegetation and wildlife habitat in the event of a transmission line-caused wildfire.

The analysis of special-status species addressed potential impacts to plant and wildlife species that meet one or more of the following criteria: listed or proposed for listing as threatened or endangered under the federal Endangered Species Act or the California Endangered Species Act; protected under the federal Migratory Bird Treaty Act (MBTA) or Bald and Golden Eagle Protection Act (BGEPA); listed on the California Native Plant Society's (CNPS) Inventory of Rare and Endangered Vascular Plants of California; considered by the County of San Diego to be rare, endangered, or threatened or sensitive; included on the County of San Diego's lists of sensitive animal species; or designated by California Department of Fish and Game as a Species of Special Concern, Watch List, Specially Protected Mammal, or a California Fully Protected species.

No special-status plants were observed in the survey area during rare plant surveys. Therefore, no impacts to special status plant species are anticipated. Four special-status wildlife species were observed during the project surveys or have a high potential to occur: northern red diamond rattlesnake, California horned lark, loggerhead shrike, and San Diego black-tailed jack rabbit. Vegetation clearance would remove potential foraging and nesting habitat for nesting birds, including California horned lark and loggerhead shrike. Construction is not expected to affect the northern red diamond rattlesnake population. Construction would remove cover and foraging habitat for the San Diego black-tailed jackrabbit and could destroy active burrows if present.

Five other federally-listed wildlife species were identified by USFWS as potentially occurring in the vicinity of the project: Quino checkerspot butterfly, arroyo toad, southwestern willow flycatcher, California condor, least Bell's vireo, and Peninsular bighorn sheep. The project site lacks suitable riparian and woodland habitat for arroyo toad, southwestern willow flycatcher, and least Bell's vireo; therefore, these species are considered to have a low potential to occur onsite and no impacts are expected to occur as a result of construction activities. Designated critical habitat for the Quino checkerspot butterfly is approximately 3.6 miles (5.8 km) west of the most westerly portion of the proposed project and would not be affected by project construction. Project site surveys did not document the presence of any Quino checkerspot butterfly or populations of host plants used at the larval stage by the species. As a result, the species is not expected to occur in the project area and would not be impacted by the project.

The project site is within the range of the California condor; however, this species is considered to have a very low probability of occurring in the project area based on limited distribution within its historic range and the absence of recent sightings in the project vicinity (with the exception of a 2007 sighting near Jacumba). Construction of the project is not expected to adversely affect California condors.

The designated critical habitat and known populations of the Peninsular bighorn sheep are approximately 2 miles (3.2 km) from the project site; thus, project construction would not affect the designated critical habitat for this species. However, vegetation clearing within the right-of-way and the main access road would result in permanent impacts to potential forage material for this species.

Under the 500-kV Route alternative, construction of the single-circuit transmission line would result in the loss of up to 10.77 acres (4.4 hectares) of vegetation and wildlife habitat which would be offset by the proposed conservation easement. All other impacts would be as described for the 230-kV Route.

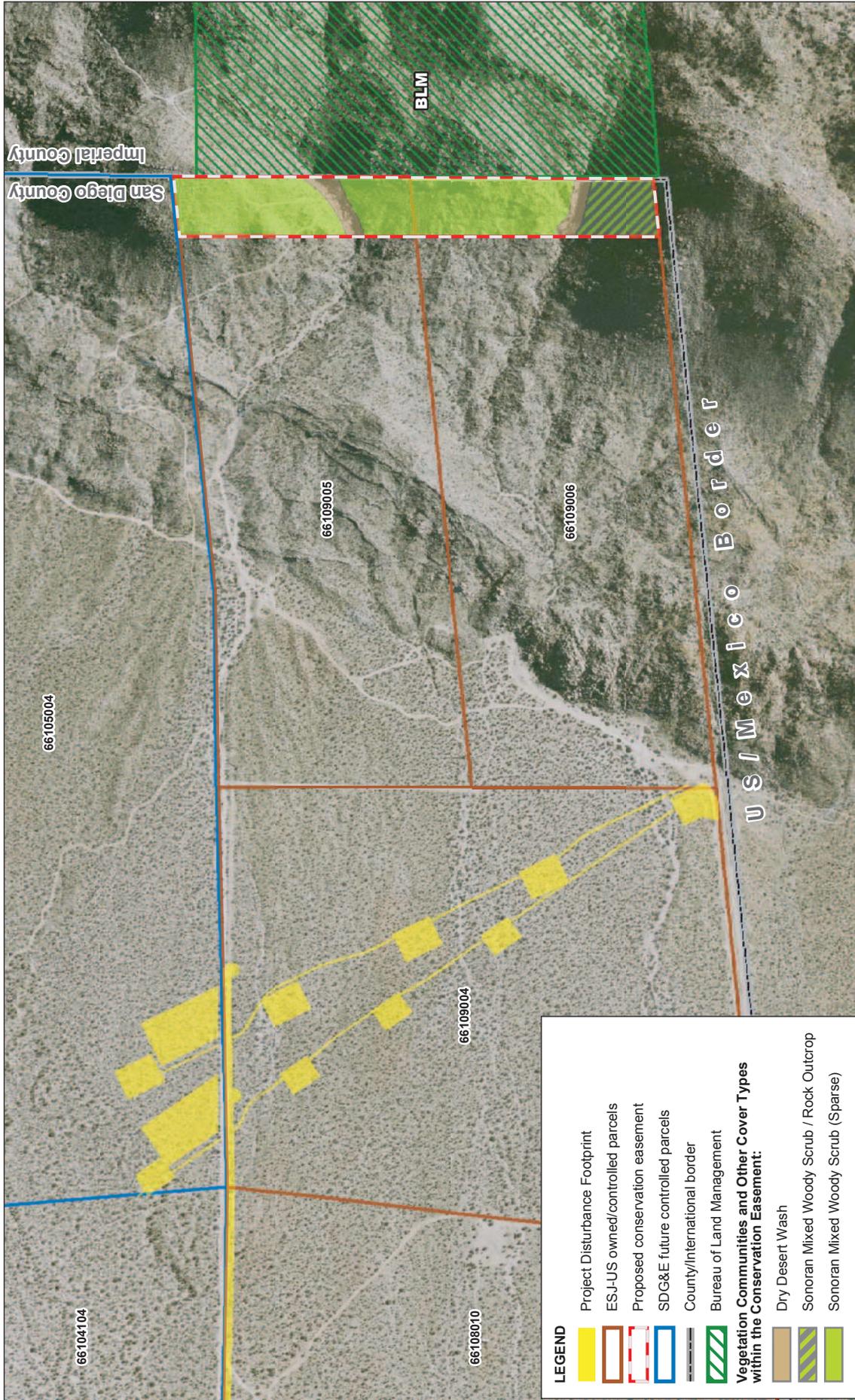
Under both the 230-kV Route and 500-kV Route alternatives, there could be impacts to biological resources in the United States if construction or operation of the proposed ESJ Wind project and the associated transmission lines in Mexico impeded the cross-border movement of wildlife or caused mortality to such wildlife, including birds afforded international protection under the MBTA. The wind development area in Mexico would not be fenced, so the ESJ Wind project would not impede cross-border movement of terrestrial wildlife. However, wildlife movement is currently impeded by the U.S.-Mexico Border Fence, where present. In addition, the construction and operation of the wind facilities, coupled with elevated levels of human activity from workers and visitors to the wind farm, could alter wildlife behavior, including possible avoidance of the area.

Neither the proposed transmission line segment in Mexico nor the ESJ Wind project turbines would be located within known major migration corridors or habitats such as major wetlands and riparian areas that would support large concentrations of birds, but construction of the Phase 1 wind turbines could impact up to 7,500 acres (3,035 ha) of chaparral, pine forest, and possibly some desert communities in Mexico that may support birds protected under the MBTA. Future phases would increase this development footprint and thus potentially increase the impact to birds protected under the MBTA. Construction of the ESJ Wind project could result in the

destruction or abandonment of active migratory bird nests and operation of the turbines could result in the loss of migratory birds and migratory bats that collide with the turbine blades. Migratory raptors, in particular, may be vulnerable to collisions with wind turbines when hunting prey. ESJ has obtained an environmental permit from the Mexican government for the ESJ Wind project. This permit includes conditions that require both pre-construction and post-construction bird and bat monitoring of the project area, as well as the identification and implementation of measures to avoid and/or minimize potential collisions.

APMs that are intended to minimize impacts to biological resources and are considered in assessing impacts of both transmission line alternatives are:

- To compensate for the loss of native scrub habitat that would be disturbed during construction and would not be revegetated or restored after construction due to fire protection considerations, ESJ-U.S. would place a portion of the project property under a conservation easement for preservation. ESJ-U.S. proposes placing the easement on a portion of its property east of the proposed transmission line (Figure S-4). This preserved area would adjoin a large open space tract of land to the east (Jacumba Wilderness) under ownership of BLM. The mitigation ratio and specific location of the preserved area would be subject to review and approval by the County of San Diego and possibly other resource agencies. Depending on the alternative and property access road option selected, the compensatory mitigation site could be up to 15 acres (6.1 hectares) in size.
- ESJ-U.S. has prepared a Conceptual Resource Management Plan (CRMP) for management of the conservation easement area. The plan provides a framework and specific measures for the interim and long-term management of the easement until such time that a formal land management entity can assume the long-term management of the land. The CRMP is written with the assumption that BLM or a non-profit organization would be the long-term Land Manager of the easement. At the time of this EIS preparation, ESJ-U.S. is coordinating with BLM to have the Federal agency assume management responsibilities for the easement. In the event that BLM does not assume the role of long-term Land Manager of the compensation site, the CRMP would remain in effect and would be implemented by ESJ-U.S., until a non-profit organization is found to serve as the long-term Land Manager.
- Prior to construction or vegetation clearing on any site, suitable nesting habitat and trees within 500 feet (152 m) of the construction work area would be surveyed for breeding activity to determine if raptors or other sensitive wildlife species (such as California horned lark or loggerhead shrike) are nesting. If nesting is confirmed, no construction activity would occur within 500 feet (152 m) of raptor nests or sensitive species nests, unless measures are implemented to reduce noise levels below 60 A-weighted decibel (dBA) hourly equivalent level (L_{eq}) to minimize disturbance to those species. If measures are implemented to reduce noise levels, noise monitoring would be conducted to determine that measures are effective to reduce noise to below 60 dBA hourly L_{eq} .

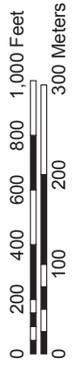


ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LINE EIS

FIGURE S-4

**PROPERTY BOUNDARIES AND
PROPOSED CONSERVATION
EASEMENT AREA**

August 2010



LEGEND

- Project Disturbance Footprint
- ESJ-US owned/controlled parcels
- Proposed conservation easement
- SDG&E future controlled parcels
- County/International border
- Bureau of Land Management

Vegetation Communities and Other Cover Types within the Conservation Easement:

- Dry Desert Wash
- Sonoran Mixed Woody Scrub / Rock Outcrop
- Sonoran Mixed Woody Scrub (Sparse)



Sources(s): SanGIS 2008-2010; Figure adapted from EDAW 2010 (sources cited in EDAW 2010: DigitalGlobe 2008, Sempra Energy 2009, SANGIS 2008).

- Repair of heavy equipment, if necessary, would occur as far away as practicable from areas where nesting raptors or other sensitive species may be present; manufacturers' standard noise control devices would be equipped on all construction equipment (including generators and compressors); and the construction contractor would maintain all construction vehicles and equipment in proper operating condition and provide mufflers on all equipment.
- Noise analyses would be performed during construction activities adjacent to sensitive habitats or potential active nests of raptors or other sensitive species, and temporary noise attenuation barriers would be erected to reduce construction-related noise to below 60 dBA hourly L_{eq} at the location of the habitat or potential activity nests if necessary.
- Flagging or construction fencing would be installed to restrict encroachment into biologically sensitive areas and to minimize the potential establishment of non-native species.
- In accordance with County of San Diego guidelines, ESJ-U.S. has prepared a Stormwater Management Plan (SWMP) that provides for the installation of several construction best management practices (BMPs) to avoid and minimize impacts to natural communities of special concern (i.e., Sonoran Mixed Woody Scrub and Peninsular Juniper Woodland and Scrub); special status plants (if found during pre-construction surveys), and special status animals (such as northern red diamond rattlesnake, California horned lark, loggerhead shrike, and San Diego black-tailed jack rabbit).
- Vegetation removal would occur prior to the start of breeding season of sensitive species (generally February 1 to September 15), and construction activities that coincide with raptor breeding season (generally February 1 to September 30) would be monitored. If project activities are determined through monitoring to adversely affect raptor foraging and/or nesting, then either construction activities would be modified to reduce or eliminate the identified effects, or construction would be halted until it is determined that nesting is complete or the affected raptors abandon their nest.
- If any habitat for the California horned lark or San Diego black-tailed jackrabbit, or any foraging habitat for raptors is unavoidably disturbed, the additional acreage of disturbance would be included in the conservation easement described above.

Potential mitigation measures in addition to the APMs described above as having the potential to further minimize potential impacts to biological resources are:

- Worker training for contractor personnel to ensure that construction workers are aware of the sensitive biological resources that potentially occur in the construction areas and the protection measures that should be followed within these areas;
- Measures to prevent entrapment of San Diego black-tailed jackrabbit and other wildlife, including covering of excavations at the end of each work day; and
- Development and implementation of a weed control plan to minimize the potential for weed introduction during construction, and to address post-construction maintenance and weed control procedures during the operational life of the project.

S.9.2 Visual Resources

Under the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in permanent potentially moderate-to-major adverse visual impacts due to land scarring. In addition, views of construction equipment and activity from surrounding recreational areas and highways would result in a temporary moderate adverse impact. Following completion of construction activities, the presence of the transmission line would result in long-term moderate adverse impacts to visual resources. The visual resource analysis compares the visual impacts of lattice towers and monopoles. In general, the overall visual quality at key observation points is expected to diminish more if monopoles are erected than if lattice towers are erected. This is because the steel latticework of the towers would be partially absorbed by the grey tones and rough texture of the backdrop, whereas the opaque mass of the monopoles would contrast with the existing backdrop.

Wind turbines constructed in Mexico as part of the EJS Wind project would be visible from several U.S. locations, including locations in or near the communities of Jacumba and Boulevard; Interstate 8; Old Highway 80; Anza-Borrego Desert State Park; and BLM-administered lands, including Table Mountain Area of Critical Environmental Concern (ACEC), Jacumba Wilderness, and certain lands in the Yuba Desert. The numerous wind turbines would appear as an assemblage of light-colored vertical forms in a landscape predominantly natural in appearance. Predicted visual impacts from wind turbines would be moderate-to-high for viewers at observation points in Jacumba and Table Mountain ACEC and low-to-moderate for viewers at an observation point on Interstate 8. During clear weather, aviation safety lighting on wind turbines (if lighting is required by Mexican agencies) would also be visible from viewing points in the U.S.

Future phases of the ESJ Wind project, if executed, would increase the number of wind turbines in Mexico. Subsequent expansion would be located south of the town of La Rumorosa (Figure S-1), sufficiently distant from the U.S. viewing points such that visual impacts are not expected.

Potential mitigation measures not proposed as APMs that could reduce potential visual impacts from the transmission line are: (1) reducing the reflectivity and visual contrast of construction equipment and towers and (2) reducing the color contrast and views of land scars by avoiding landform alteration and implementing measures such as contour grading to blend graded surfaces with existing terrain. These measures could reduce potential impacts to minor levels.

S.9.3 Land Use

No adverse land use impacts are anticipated under either the 230-kV Route or 500-kV Route alternatives. Construction and operation of the proposed transmission line is a permitted use under the County's existing and proposed General Plan designation, and under the existing zoning (with a Major Use Permit). No mitigation measures are indicated. The County of San Diego would make the final determination of consistency with the General Plan, the Mountain Empire Subregional Plan, and Zoning Ordinance. Additional mitigation measures may be imposed by the County during its review.

S.9.4 Recreation

Because both the 230-kV Route and 500-kV Route alternatives are on private land and are not adjacent to state or Federal wilderness or recreation areas, there would be no direct effects on recreation. However, users of public recreation areas in the vicinity (identified in Section S.8.2 above) could be affected indirectly by increased traffic, noise, and visual changes. Construction of the transmission line would result in minor temporary increases in vehicle traffic and travel times to and from nearby recreation areas. However, roadways have enough capacity to accommodate the increased traffic without affecting level of service, so recreational users would not experience adverse effects. Following completion of construction activities, the presence of the transmission line would result in long-term minor indirect impacts to recreational areas due to alterations to existing scenic vistas and increases in ambient noise levels during foul weather (due to corona noise described in Section S.8.6 below). Although the transmission line would encroach upon the views and compromise the integrity of the largely intact desert setting, the overall change to the views from recreation areas would be low. Similarly, based on the distances from the transmission line, no increases in ambient noise levels are anticipated to occur at any other nearby recreational facilities due to corona effect during foul weather. No mitigation measures are indicated.

S.9.5 Cultural Resources

ESJ-U.S. commissioned the preparation of an Archaeological and Historical Investigations Report to investigate the potential presence of significant resources within the project area and vicinity. There are 11 known prehistoric archaeological sites in the area potentially affected by project construction. ESJ-U.S. has incorporated measures into its project design to eliminate potential impacts to these sites. Under the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in the potential for minor impacts to currently unknown cultural resources and/or human remains. ESJ-U.S. would comply with legal requirements related to protection of these resources and has committed to several APMs to reduce or avoid potential impacts. If human remains are discovered, ESJ-U.S. would stop work within 50 feet (15 m) of the discovery; ESJ-U.S. would also contact the County of San Diego coroner and a professional archaeologist to determine the significance of the discovery. Depending on the recommendations of the coroner and/or archaeologist, ESJ-U.S. would consult with the County of San Diego to establish additional feasible and appropriate mitigation measures to be implemented into the project.

APMs intended to avoid potential impacts to cultural resources are as follows:

- Avoidance of impacts to significant cultural resources that have been identified at the project site through redesign of the project, where feasible, or by redirecting workers and vehicles away from known sites during construction and facility operation.
- Monitoring of ground-disturbing activities by a qualified archaeologist. A Native American representative would be invited to participate in site monitoring.
- Implementation of a testing program and data recovery prior to ground-disturbing activities at identified significant sites.

- Avoidance of cultural resource sites by redirecting pedestrian and vehicular traffic away from the site during construction and facility operation.
- Significance testing of any incidental discoveries during construction, as outlined in applicable agency guidelines.
- Additional field surveys for any areas that may be disturbed due to project changes.

A potential mitigation measure not proposed as an APM that would further minimize the potential for cultural resources impacts during construction is worker training of contractor personnel to ensure that construction workers are aware of the potential for archaeological discoveries during construction. To achieve its goals, the employee training session should be conducted by a qualified archaeologist and should include a description of the kinds of cultural resources that may be encountered during construction and the steps to be taken if such finds are unearthed.

Operation of a transmission line under either alternative would not involve ground disturbance; therefore, no impacts to cultural resources are anticipated during operation.

S.9.6 Noise

Both the 230-kV Route alternative and the 500-kV Route alternative would introduce new sources of sound into a rural environment where sound is generated by wind and other natural sources, traffic on nearby roadways, occasional air traffic, and activities at a shooting range approximately 1 mile to the west. Average sound levels generally are below 50 dBA during daytime hours and below 40 dBA at night.

Under the 230-kV Route alternative, construction of the double-circuit transmission line would result in minor temporary increases in ambient noise levels; however, construction would occur during the hours of the day allowed by the County of San Diego ordinance and, thus, would be consistent with the County's requirements. The nearest noise-sensitive receptor is a residence (unoccupied) located approximately 1,600 feet (490 m) west of the construction area. During construction, the sound level at this location would be approximately 60 dBA, which is well below the County's 75-dBA threshold for daytime construction noise impacts. Construction-related truck traffic along existing roadways would also generate increases in sound levels. However, because of the existing high traffic levels on Interstate-8, the increase in sound levels from trucks accessing the project in the vicinity of that roadway would not be perceptible.

Once operational, increased sound levels from transmission lines are due primarily to corona discharge, which is a small electrical discharge along the wire that produces crackling and hissing sounds as well as small amounts of light. These discharges result from electrical energy passing over surface irregularities that occur along the transmission lines, such as scratches, nicks, dust, or water drops that can affect a conductor's electrical surface gradient. The resulting noise caused by corona discharge varies depending on conductor size and configuration. Minor temporary increases in ambient noise level caused by corona noise during infrequent foul weather events are anticipated during operation of the transmission line. A noise analysis conducted for the project determined that both of the possible configuration options for conductors on a 230-kV line would meet the County of San Diego's nighttime property line sound level limit of 45 dBA (the model results indicate a maximum 8.8 dBA at the property line

for the 230-kV configuration options). Therefore, the impact of corona-generated sound during operation of the project would be minor, but would occur sporadically for the life of the project. No mitigation measures are indicated.

Under the 500-kV Route alternative, construction impacts would be as described for the 230-kV Route. However, the corona effect increases with voltage, and analysis of potential corona noise determined that only two of the four possible configuration options for conductors on a 500-kV line would meet the County of San Diego's nighttime property line sound level limit of 45 dBA (the model results indicate a maximum 35.4 and 38.8 dBA at the property line for the two 500-kV configuration options that would meet the County's noise standard). ESJ-U.S. has committed to choosing only those options which would meet the criterion; therefore, the level of corona-generated sound would be somewhat larger than described for the 230-kV Route, but would meet the county criteria. No additional mitigation measures are indicated.

S.9.7 Transportation and Traffic

Under both the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in a minor temporary increase in traffic on local roadways, a minor potential for adverse impacts to traffic safety at the project's ingress/egress, and a short-term minor potential for roadway damage. These minor impacts would be avoided with the implementation of a traffic control plan, as required by the County of San Diego prior to issuance of a MUP for transmission line construction and prior to approval of construction or grading permits. ESJ-U.S. is working with the County of San Diego to develop road improvements at the site entrance in accordance with the County's traffic safety design standards.

Under either alternative, operation of the transmission line would result in a minor potential for adverse impacts to air traffic safety with U.S. Border Patrol's aircraft patrol along the U.S.-Mexico border. Consultation with the U.S. Border Patrol prior to starting construction is a potential mitigation measure (not proposed by the applicant) that could minimize this impact.

S.9.8 Public Health and Safety

There would be little potential to expose the public to hazardous materials or contaminated soil as a result of project construction for either the 230-kV Route or the 500-kV Route alternatives. However, construction would require the routine transport, handling, and onsite storage of petroleum products such as fuel and lubricating oil and hazardous materials such as paints, as well as waste products with these constituents. A Spill Prevention and Control Plan implemented as an APM would outline measures to prevent, control, and minimize impacts from a spill of petroleum substances, hazardous materials, or wastes during construction. Construction materials that pose a potential contamination risk to storm water would be managed to minimize potential storm water contact. Solid and liquid waste would be reused and/or recycled to the extent practicable, or disposed of properly if deemed not reusable or recyclable. The small amounts of hazardous waste (primarily vehicle fuels and lubricants) that could be produced as byproducts of construction would be disposed of in accordance with local, state, and Federal regulations. The hazardous materials would also be stored aboveground and in secondary containment to prevent offsite discharges. Portable sanitary facilities would be used by all construction personnel, would be located on non-paved areas, 50 feet (15 m) away from drain inlets, and would be serviced regularly.

No contaminated soils or potential areas of contamination have been identified in areas that would be disturbed by construction. However, a potential mitigation measure (not proposed by the applicant) to reduce the possibility of public exposure to previously unidentified contaminated soils is training of construction personnel to identify potential contamination prior to beginning work (e.g., through odor detection and visual observation of discolored soils or oil sheens).

During operation of the transmission line under both the 230-kV Route and 500-kV Route alternatives, there would be a minor potential for public exposure to induced currents and electrical field interference. To reduce the potential impact, ESJ-U.S. would incorporate grounding features into the project design in accordance with industry design standards for electrical transmission structures. Maintenance workers and members of the public who are present in the immediate vicinity of the line would be temporarily exposed to the EMF generated by the transmission line, but because there are no public trails, recreational areas, or other developments to cause visitors to linger near the line, there would be little public exposure to EMF. EMF levels would be higher for the 500-kV Route alternative than for the 230-kV Route alternative because electric fields increase in strength as voltage increases. At the nearest residence (an unoccupied mobile home about 1,600 feet [490 m] west of the 230-kV Route and about 2,000 feet [610 m] west of the 500-kV Route), EMF levels from the line under either alternative would be below typical household levels.

DOE considered the potential for impacts from intentionally destructive acts. The aboveground electrical transmission lines and supporting structures would be located within an unfenced utility right-of-way and would, therefore, be accessible to those desiring to damage the system. The transmission line support structures would be constructed on footings in the ground and would be difficult to dislodge. In general, the proposed transmission line would present no greater target for intentional destructive acts than any other high-voltage transmission line in the U.S. Past experience along the thousands of miles of electrical transmission lines in the country suggests that intentional destructive acts against the proposed structures would be unlikely. If such an act were to occur and succeed in destroying towers or other project-related equipment, the main consequence for the public would be disruption of electrical service.

S.9.9 Fire and Fuels Management

Both the 230-kV Route and 500-kV Route alternatives would result in major increases in wildfire hazards during construction and operation of the transmission line. Factors leading to increased wildfire hazard would include introduction of new ignition sources; potential introduction of invasive nonnative plants that can change wildfire frequency, timing, and spread; and creation of a potential obstacle to firefighting. Impacts from operation of the transmission line would be reduced to some extent by the implementation of an APM, the project's Fire Protection Plan. The Fire Protection Plan (developed in coordination with the San Diego Rural Fire Protection District) specifies measures to prevent fires caused by operation of the transmission line. For example, to reduce potential fuel, there would be no revegetation of the right-of-way.

Potential mitigation measures in addition to the APM described above that would further reduce potential fire impacts are:

- Development and implementation of a Construction Fire Prevention Plan specifying measures to be implemented during project construction.
- Coordination of ESJ-U.S. activities with emergency fire suppression activities. To help minimize impacts on fire-fighting ability associated with construction and operation of the transmission line, ESJ-U.S. could coordinate fire suppression activities with appropriate fire agencies, and implement routine maintenance and inspections of the towers and conductors to remove any potential fire hazards.
- Removal of hazards (brush and dead or decaying vegetation) from work areas prior to starting construction or maintenance work.

Another potential mitigation measure, described above in Section S.8.1, is the development and implementation of a weed control plan to minimize the potential for weed introduction during construction, and to address post-construction maintenance and weed control procedures during the operational life of the project.

S.9.10 Air Quality and Climate Change

Under both the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in minor increases in several criteria pollutants or their precursors (reactive organic gases that contribute to ozone formation; carbon monoxide; nitrogen oxides; sulfur oxides; and particulate matter [PM₁₀] due to fugitive dust) and greenhouse gases. Most of San Diego County is currently designated a federal attainment or unclassifiable area for all criteria pollutants except ozone (8-hour), for which the project area is classified as nonattainment. With regard to state criteria, the project area is currently classified as a “serious” ozone nonattainment area and a nonattainment area for particulates measured as PM₁₀ and PM_{2.5}. Maximum construction emissions of criteria pollutants are estimated to be well below applicable thresholds, including general conformity thresholds, except for daily fugitive PM₁₀. The temporary increase in fugitive dust from construction activity would be minimized by complying with the San Diego Air Pollution Control District’s Rule 55 – Fugitive Dust Control. This rule requires development and implementation of a Dust Control Plan. The Plan will specify several dust control measures including: use of water or non-toxic soil stabilizers on all unpaved access roads, parking areas, and staging areas with sufficient frequency to maintain an effective level of soil moisture or cohesion; suspension of construction grading on days when the wind gusts exceed 25 mph (40 kilometers per hour [kph]); use of rattle plates (grizzlies) to minimize mud and dust from being transported onto paved roadway surfaces from dirt or gravel roads; covering all trucks hauling soil and other loose material; limiting vehicle speeds to 15 mph (24 kph) on unpaved roads; street sweeping and vehicle washing; and covering or stabilizing exposed stockpiles. The Dust Control Plan would emphasize water conservation by limiting water application strictly to necessary quantities.

Because it would transmit electricity from wind turbines, operation of the transmission line would potentially result in a long-term reduction of greenhouse gas emissions. This electricity

transmission would aid in reducing the need to generate electricity within the U.S. using fossil fuel, which could indirectly lead to reduced emissions from fossil fuel-fired power plants.

The minor impacts from air emissions during construction and operation could be further minimized by implementing additional potential mitigation measures (not identified by the applicant); these potential mitigations include: using low-emission construction equipment, minimizing vehicle idling, and encouraging carpooling among construction personnel.

S.9.11 Water Resources

Water resources impacts would be the same for both the 230-kV Route and 500-kV Route alternatives. Construction of the proposed transmission line would result in temporary minor impacts to groundwater supply due to use of groundwater for dust abatement, cleaning construction equipment, and concrete production for tower foundations. Because the total water requirement of 2.4 acre-feet (2,950 cubic m) would be less than 0.1 percent of the estimated annual groundwater recharge of 2,700 acre-feet/year (3.3 million cubic m/year), project water use would not impact the locally available water supply. Since water resources are generally scarce in the project area, this short-term minor impact could be further reduced by the potential mitigation measure (not identified by the applicant) of preferentially selecting non-potable water sources for project-related uses to the extent practicable.

Surface water resources in the vicinity of the corridors consist of ephemeral creeks and washes that flow only in response to rainfall events. Onsite investigations identified three minor ephemeral drainage features in the area of the alternative corridors. Land disturbance for the project would have minimal impact on surface water flows in and near the right-of-way.

An APM that would contribute to minimizing the potential water quality impacts of construction is the implementation of the SWMP that ESJ-U.S. has prepared for the project. The SWMP is designed to manage the quality of stormwater runoff from the land disturbance activities associated with the project in accordance with the requirements of the Clean Water Act (CWA) and County of San Diego's guidelines. The BMPs outlined in the SWMP would be implemented prior to commencement of field construction activities. BMPs would be maintained during and after construction and until final stabilization of the soil is accomplished at the site. According to the SWMP, the minimum temporary erosion and sediment control practices that would be used include: stockpile management, maintenance of the construction entrance/exit, silt fence, wind erosion prevention measures, street sweeping and vacuuming on existing paved roads, and sandbag barriers. Temporary silt fence and sandbag cross barriers would be placed on the downhill side of the entire right-of-way to capture any silt during the construction phase of the project. Although it is not anticipated that the design would include clearing or grading of any slopes that are more than 3 feet in height, if such activity is required, ESJ-U.S. would implement slope protection measures. Onsite construction workers would remove litter at the end of each day. All waste material generated during construction would be deposited in dumpsters or covered bins that would be removed from the project site by a licensed waste hauler for proper disposal. Portable toilets would be provided for use by the construction workers. These facilities would be installed and removed from the site by a licensed portable sanitation company and the waste material would be disposed of at an approved facility.

A final site cleanup and inspection would be conducted by ESJ-U.S., in coordination with local agencies, at the completion of construction. Post-construction erosion and sediment control BMPs, as well as final soil stabilization and cleanup BMPs, would be implemented.

No impacts to surface water or groundwater are anticipated during the operation of the transmission line.

S.9.12 Geology and Soils

Under both the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in a minor temporary increase in soil disturbance and erosion, which would be minimized by implementation of the project's SWMP. There is a potential for erosion impacts after completion of construction due to improperly controlled site runoff; these impacts would be minor provided that the control measures outlined in the SWMP are left in place, inspected, and maintained until final stabilization has occurred. The potential for soil erosion could be further reduced by limiting modifications to the access road to the extent practical in areas that are sensitive to disturbance and that have a high erosion potential. This additional potential mitigation measure (not identified by the applicant) would reduce potential erosion both during and after construction.

Onsite soils have a high potential to corrode steel, but potential impacts of corrosion on operation of the transmission line would be largely avoided by not placing uncoated steel in contact with onsite soils and by a proposed inspection, maintenance, and repair program that would be planned to identify and remedy corrosion problems before they result in a structural failure. During operations there would be a minor potential for structure failure/damage of project facilities due to seismic ground-shaking from earthquakes associated with one of the major faults in the region (such as the magnitude 7.2 earthquake which occurred on a fault located 54 miles [87 km] southeast of the corridor on April 4, 2010). Although such seismically induced groundshaking could damage project facilities, the overhead transmission lines and their support structures would be designed for dynamic loading under variable wind conditions that exceed earthquake loads. This design feature minimizes the potential for seismically-induced groundshaking to cause significant damage.

S.9.13 Socioeconomics

Under both the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in minor temporary beneficial impacts to local businesses through increased expenditure of wages for goods and services. During operation of the transmission line, minor short-term adverse impacts to property values due to visual impacts are anticipated. Research indicates that while there is some evidence that overhead transmission lines have the potential to reduce the value of nearby property, any effects are usually smaller than anticipated and difficult to quantify due to the individuality of properties/neighborhoods, differences in personal preferences of individual buyers/sellers, and the weight of other factors that contribute to a person's decision to purchase a property. Other factors (e.g., neighborhood factors, square footage, size of lot, irrigation potential) are more likely than overhead transmission lines to be major determinants of the sales price of property. No mitigation measures are indicated.

S.9.14 Environmental Justice

No disproportionately high or adverse impacts to low-income or minority populations are anticipated under either the 230-kV Route or the 500-kV Route alternatives. More than 50 percent of the residents in the areas surrounding the alternative corridors are classified as minorities, indicating the presence of a minority population. Poverty levels in the areas surrounding the alternative corridors are not, however, high enough for the local area to be considered to contain low-income populations.

Construction and operation of the proposed transmission line would not expose the minority population to disproportionately high and adverse impacts. These activities would not result in major adverse health and safety, air quality, noise, socioeconomic, or other impacts on local communities. The distance between the right-of-way and the nearest residents (2 miles to the nearest occupied residence) means that the identified minor impacts would not disproportionately affect nearby minority populations in comparison to the general public. Additionally, no information suggests that there are differential patterns of consumption or use of natural resources that would cause minority populations to experience substantially different impacts than the general population. Therefore, there is no potential for the operation of the transmission line to cause disproportionately high or adverse impacts to minority or low-income populations in comparison to the general population. No mitigation measures are indicated.

S.9.15 Services and Utilities

Under both the 230-kV Route and 500-kV Route alternatives, construction of the transmission line would result in temporary minor increased demand for solid waste utilities and for law enforcement at the U.S.-Mexico border. The temporary minor increased demand for solid waste utilities during construction would be minimized by complying with the County of San Diego construction and demolition debris ordinance. The effect of increased demand for border law enforcement could be minimized by the additional mitigation measure (not identified by the applicant) of coordinating with the U.S. Border Patrol and local law enforcement to ensure the construction site is secure and to identify site-specific security measures.

Operation of the transmission line would not result in added population; therefore, it would not result in an increased demand for public services or utilities. See Section S.8.9 (Fire and Fuels Management) for information on increased demand for fire protection.

S.10 CONNECTED ACTIONS

The construction and operation of the proposed ECO Substation switchyards and SWPL Loop-In are connected actions for the ESJ U.S. Transmission Line.

Potential impacts of construction and operation of the ECO Substation switchyards and SWPL Loop-In were assessed based on recently completed analyses conducted jointly by the CPUC and BLM (as part of the Sunrise Powerlink Project environmental documentation published in 2008), as well as SDG&E. The results of the evaluation indicate the following unavoidable potentially moderate or major impacts:

- Construction of the ECO Substation switchyards and SWPL Loop-In would result in permanent removal of 14.5 acres (9.3 ha) of mixed desert scrub and 74.3 acres (30.1 ha)

of juniper woodland vegetation. Under County of San Diego Guidelines, such vegetation removal would require compensatory mitigation to offset the permanent impacts.

- The presence of the ECO Substation switchyards and SWPL Loop-In would result in potentially moderate and unavoidable adverse impacts to visual resources as viewed by motorists on Old Highway 80.
- The presence of the ECO Substation switchyards and SWPL Loop-In would result in a long-term ongoing source of potential ignitions that could be a hazard to firefighting. This is considered a major and unavoidable impact.
- Construction of the ECO Substation switchyards and SWPL Loop-in would result in potentially major and unavoidable air quality impacts due to emissions of fugitive dust and nitrogen oxides.

Operation of the facilities would also result in minor air quality impacts from carbon monoxide emissions. Potential fugitive release of the greenhouse gas sulfur hexafluoride (SF₆) during switchyard operation is estimated as equivalent to 684 metric tons of carbon dioxide per year, but SDG&E has committed to measures to minimize the release of this chemical.

All other identified potential impacts are considered minor or would be reduced to minor levels with the implementation of SDG&E's proposed measures and other mitigation measures recommended by CPUC and BLM and identified in the prior analyses of the ECO Substation as contained in the Sunrise Powerlink Project environmental documents published in 2008.

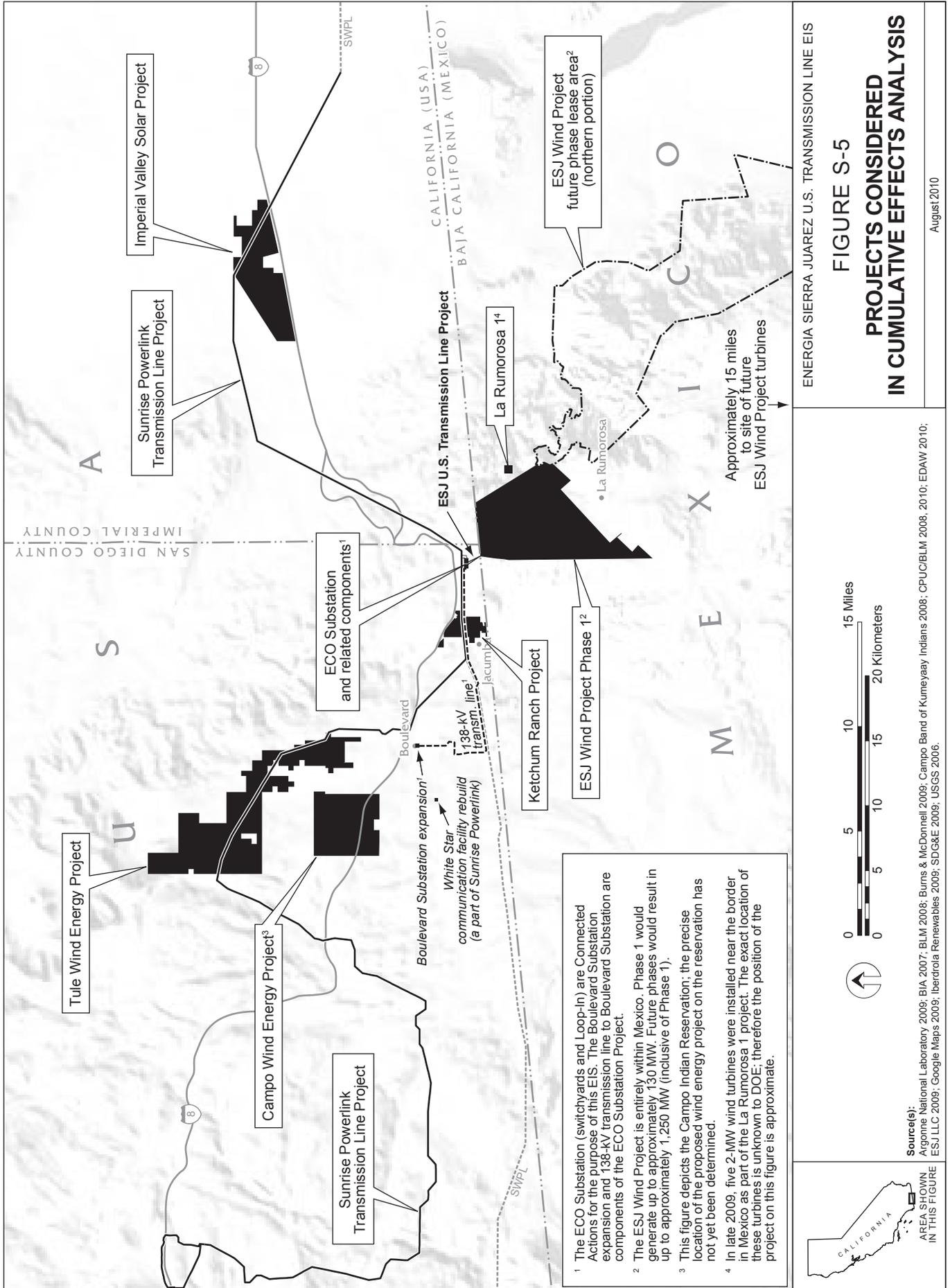
S.11 CUMULATIVE IMPACTS

Cumulative impacts that could occur as a result of the ESJ U.S. Transmission Line project when combined with the impacts of other past, present, and reasonably foreseeable future actions were evaluated for both the construction and operation period. The region of influence varies for each resource area and depends primarily on the distance a potential impact could reach.

The following actions were evaluated in the cumulative impacts analysis: Sunrise Powerlink Transmission Line project, all elements of the SDG&E ECO Substation Project, Iberdrola Renewables Tule Wind Energy project, Campo Wind Energy project, Imperial Valley Solar project, and Ketchum Ranch residential development project (Figure S-5). In addition, the assessment evaluated the potential cumulative impacts associated with implementation of the following regional plans: County of San Diego General Plan Update, South Coast Resource Management Plan Revision, Eastern San Diego County Resource Management Plan Revision, East County Multiple Species Conservation Plan, and Solar Energy Development Plan.

Long-term and major cumulative impacts were identified with regard to visual resources, recreation, and fire and fuels management. Potential short- and long-term cumulative impacts to all other resource areas are considered minor.

With regard to visual resources, the combined presence of the actions considered in the cumulative analysis would result in an increase in industrialization of the landscape, diminished visual quality, and an increase in visual contrast in eastern San Diego County and western



ENERGIA SIERRA JUAREZ U.S. TRANSMISSION LINE EIS
FIGURE S-5

**PROJECTS CONSIDERED
 IN CUMULATIVE EFFECTS ANALYSIS**

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1 The ECO Substation (switchyards and Loop-In) are Connected Actions for the purpose of this EIS. The Boulevard Substation expansion and 138-kV transmission line to Boulevard Substation are components of the ECO Substation Project.
 2 The ESJ Wind Project is entirely within Mexico. Phase 1 would generate up to approximately 130 MW. Future phases would result in up to approximately 1,250 MW (inclusive of Phase 1).
 3 This figure depicts the Campo Indian Reservation; the precise location of the proposed wind energy project on the reservation has not yet been determined.
 4 In late 2009, five 2-MW wind turbines were installed near the border in Mexico as part of the La Rumorosa 1 project. The exact location of these turbines is unknown to DOE; therefore the position of the project on this figure is approximate.

Source(s):
 Argonne National Laboratory 2009; BIA 2007; BLM 2008; Burns & McDonnell 2009; Campo Band of Kumeyaay Indians 2008; CPUC/BLM 2008, 2010; EDAAW 2010; ESJ LLC 2009; Google Maps 2009; Iberdrola Renewables 2009; SDG&E 2009; USGS 2006.



Imperial County. The combined size and character of introduced structures associated with each action would result in considerable structure contrast, view blockages, and skylining in the region and would cumulatively cause long-term, major impacts to the existing visual character of the region. However, the ESJ U.S. Transmission Line project would be a relatively small contribution to the overall effect to visual resources and is considered a minor but long-term contribution to the visual change.

To the extent that distant views of the surrounding landscape are a valuable component of recreational use of the region, then any diminishment of this character is considered an indirect and potentially major impact to recreational resources. Accordingly, once operational, the ESJ U.S. Transmission Line project structures, in combination with the other actions considered in the analysis, would result in indirect impacts on recreational use of BLM-managed lands. However, the ESJ U.S. Transmission Line project structures in and of themselves would not substantially change the character of views from these areas due to the tendency of transmission towers to blend in with the surrounding desert landscape when viewed from a distance, and because the new towers would be substantially similar in appearance to the existing SWPL transmission towers. Therefore, the ESJ U.S. Transmission Line project would have a minor but long-term contribution to this major adverse cumulative impact.

With regard to fire and fuels management, the cumulative presence of the overhead transmission lines associated with the actions considered in this analysis would create multiple ongoing sources of potential wildfire ignitions for the life of each respective action. Line faults can be caused by such unpredictable events as conductor contact by floating debris, gun shots, and helicopter collisions; these events are rare but would be unavoidable. This is considered a cumulatively major long-term impact. Implementation of the Fire Protection Plan proposed by ESJ-U.S. would reduce the probability of igniting a wildfire and reduce the impacts of fires when they occur; however, the potential for ignition would remain. Therefore, the ESJ U.S. Transmission Line project would have a major and unavoidable contribution to this cumulative impact.

**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures¹
Biological Resources	No impacts to habitat/vegetation, sensitive species or breeding birds would occur.	<p>Permanent removal of up to 9.72 acres of Sonoran Mixed Woody Scrub and Peninsular Juniper Woodland and Scrub habitat/vegetation (would be offset by conservation easement)</p> <p>Potential for long-term major impacts to habitat in the event of a fire</p> <p>Minor temporary disturbances to wildlife and breeding birds during construction (noise and traffic increases)</p> <p>Minor potential for introduction of non-native invasive species during construction and operations</p> <p>Potential for avian collisions</p> <p>Minor beneficial impact to raptors (potential for roosting on structures)</p>	<p>Permanent removal of up to 10.77 acres of Sonoran Mixed Woody Scrub and Peninsular Juniper Woodland and Scrub habitat/vegetation (offset by conservation easement)</p> <p>All other impacts would be the same as described for the 230-kV Route</p>	<p>Worker training</p> <p>Measures to prevent wildlife entrapment</p> <p>Weed Control Plan</p>

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**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures¹
Visual Resources	No impacts to visual resources would occur	<p>Permanent moderate to major adverse impacts due to land scarring from excavation</p> <p>Temporary moderate adverse impacts due to views of construction equipment and activity</p> <p>Moderate long-term adverse impacts to visual resources during operation of transmission line</p>	Impact would be the same as described for the 230-kV Route	<p>Reduce color contrast and views of land scars</p> <p>Reduce visual contrast of towers and conductors</p>
Land Use	No impacts to land use would occur	No adverse impacts are anticipated	No adverse impacts are anticipated	None indicated
Recreation	No impacts to recreation would occur	<p>Minor temporary indirect impacts during construction from increased traffic</p> <p>Minor long-term indirect impacts during operation from changes to views from recreational areas</p>	Impacts would be the same as described for the 230-kV Route	None indicated
Cultural Resources	No impacts to cultural resources would occur	<p>No adverse impacts to known cultural resources are anticipated</p> <p>Minor potential for impacts to unknown cultural resources</p>	Impacts would be the same as described for the 230-kV Route	Worker training to reduce potential for impacts to unknown cultural resources

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**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures ¹
Noise	No changes in the noise environment	<p>Minor temporary increases in ambient noise levels during construction (about 60 dBA at the nearest dwelling unit) but below County of San Diego thresholds</p> <p>Minor temporary increases in ambient noise level during operations, caused by corona noise during foul weather but below County of San Diego thresholds (45 dBA at the property line)</p>	Impacts would be the same as described for the 230-kV Route	None indicated
Transportation and Traffic	No impacts to transportation and traffic would occur	<p>Minor temporary increase in traffic on local roadways during construction</p> <p>Minor potential for adverse impacts to traffic safety at ingress/egress during construction</p> <p>Short-term minor potential for roadway damage during construction</p> <p>Long-term minor potential for adverse impacts to air traffic safety during operation</p>	Impacts would be the same as described for the 230-kV Route	Consult with and inform U.S. Border Patrol to avoid adverse impacts to air traffic safety for their activities

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**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures¹
Public Health and Safety	No impacts to public health and safety would occur	Minor long-term potential for public exposure to induced currents and electrical field interference during operation	Impacts would be the same as described for the 230-kV Route	None indicated for public exposure to induced currents and electrical field interference Evaluate unanticipated contamination sites to prevent exposure to contaminated soils during construction
Fire and Fuels Management	No impacts to fire and fuels management would occur	Major temporary increase in fire hazards during construction Major permanent increase in unavoidable ignition source and fire hazards during operation Major permanent adverse impacts to fire-fighting ability during operation	Impacts would be the same as described for the 230-kV Route	Develop and implement Construction Fire Prevention Plan Coordinate with emergency fire suppression activities Remove hazards from work area

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**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures¹
Air Quality and Climate Change	No impacts to air quality or climate change would occur	<p>Minor temporary increase in criteria pollutants (reactive organic gases, carbon monoxide, nitrogen oxides, sulfur oxides, and fugitive dust) and greenhouse gases during construction</p> <p>Minor short-term increase in criteria pollutants during operation</p> <p>Potential long-term reduction in greenhouse gas emissions during operation (beneficial)</p>	Impacts would be the same as described for the 230-kV Route	<p>Use low-emission construction equipment</p> <p>Minimize vehicle idling</p> <p>Encourage carpooling</p>
Water Resources	No impacts to water resources would occur	Temporary minor impacts to water supply due to water use during construction	Impacts would be the same as described for the 230-kV Route	Use non-potable water
Geology and Soils	No impacts to geology and soils would occur	<p>Minor temporary increase in soil disturbance and erosion during construction</p> <p>Minor long-term potential for erosion during operation</p> <p>Minor long-term potential for adverse impacts to structures due to corrosive soils</p> <p>Minor long-term potential for structure failure/damage due to seismic ground-shaking</p>	Impacts would be the same as described for the 230-kV Route	Limit modifications of access road in areas which are very sensitive to disturbance

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**Table S-2
Summary of Impacts by Resource Area**

Resource Area	Alternative 1 No Action	Alternative 2 Double-Circuit 230-kV Route	Alternative 3 Single-Circuit 500-kV Route	Potential Mitigation Measures¹
Socioeconomics	No socioeconomic impacts would occur	<p>Minor temporary beneficial impacts to local businesses during construction</p> <p>Minor long-term beneficial impacts to county revenue (property taxes)</p> <p>Minor short-term adverse impacts to property values due to visual impacts</p>	Impacts would be the same as described for the 230-kV Route	None indicated
Environmental Justice	No changes in impacts to low-income or minority populations would occur	No disproportionately high or adverse impacts to low-income or minority populations are anticipated	Impacts would be the same as described for the 230-kV Route	None indicated
Services and Utilities	No impacts to services and utilities would occur	<p>Temporary minor increased demand for law enforcement services during construction</p> <p>Temporary minor increased demand for solid waste utilities during construction</p>	Impacts would be the same as described for the 230-kV Route	Coordinate with local enforcement agencies and secure construction site

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S.12 REFERENCES

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