

Please note: Missing pages contain figures which can be found in the “Figures” folder on the San Luis Rio Colorado Project Draft Environmental Impact Statement compact disc (CD). Some of the figures were removed from this file to decrease file size for ease of downloading and/or viewing.

S SUMMARY

The U.S. Department of Energy (DOE) received applications from North Branch Resources, LLC (NBR) and Generadora del Desierto S.A. de C.V. (GDD) for the proposed San Luis Rio Colorado Project (Proposed Project). GDD and NBR (collectively termed the Applicants) are each wholly owned subsidiaries of North Branch Holding, LLC. GDD applied to the Office of Electricity Delivery and Energy Reliability (OE), an organizational unit within DOE, for a Presidential permit to construct, connect, operate, and maintain a double-circuited 500,000-volt (500-kilovolt [kV]) electric transmission line across the United States-Mexico international border. NBR submitted a request to Western Area Power Administration (Western), another organizational unit within DOE, to interconnect the proposed transmission line to Western's Gila Substation. The proposed transmission line would originate at the San Luis Rio Colorado (SLRC) Power Center, interconnect with Western's existing Gila Substation, and continue to Arizona Public Service Company's (APS') North Gila Substation. The Proposed Project would require an expansion of Gila Substation and additional equipment at North Gila Substation; all of the proposed transmission components would be located in Yuma County, Arizona. Depending on the route ultimately selected, the total length of the 500-kV transmission system within the United States would be approximately 25.7 miles—21 miles from the United States-Mexico border to Gila Substation and 4.7 miles from Gila Substation to North Gila Substation. Portions of the proposed transmission line would cross lands owned and/or managed by U.S. Bureau of Reclamation (Reclamation); U.S. Department of the Navy (Navy), a branch within the U.S. Department of Defense; State of Arizona lands; and privately-owned land. Inside Mexico, GDD plans to construct and operate the SLRC Power Center, a new 550-Megawatt (MW) nominal (605-MW peaking) natural gas-fired, combined-cycle power plant located approximately 3 miles east of San Luis Rio Colorado, State of Sonora, Mexico, and about 1 mile south of the international border. While this facility is not subject to the United States' regulatory requirements, Western evaluated impacts within the United States from its operation as part of the impact analysis. The Proposed Project would require a short (approximately 1-mile-long) double-circuit 500-kV transmission line to interconnect the SLRC Power Center to the proposed transmission components at the United States-Mexico border.

The Applicants propose that within the United States, Western would construct, own, operate, and maintain the double-circuit 500-kV transmission components at the Applicants' expense. These components would consist of a double-circuit 500-kV transmission line between the Point of Change of Ownership near the international border and Western's existing Gila Substation; a 500/69-kV addition adjacent to the Gila Substation; and a double-circuit 500-kV transmission line between Gila Substation and APS' North Gila Substation. Western is favorably considering the proposal to construct, own, operate, and maintain the transmission components; the acceptance of this proposal is contingent under a separate agreement, related to the interconnection request, between Western and the Applicants.

S.1 Purpose and Need for Agency Action

The National Environmental Policy Act (NEPA) and associated regulations are designed to address discretionary decisions that are made by a Federal agency. The purpose and need for the decisions of the Federal agencies regarding the Proposed Project are discussed below.

Western Area Power Administration

Western's decision is to grant or deny an interconnection request at its Gila Substation under the provisions of its Open Access Transmission Services Tariff, which complies with the intent of Federal Energy Regulatory Commission (FERC) Orders for providing nondiscriminatory transmission access.

Office of Energy Delivery and Electricity Reliability

OE's decision, under Executive Order 10485, as amended by Executive Order 12038, is to grant or deny a Presidential permit for the construction, operation, maintenance, and connection of the proposed 500-kV transmission line that would cross the United States-Mexico border. In addition, under Section 202(e) of the Federal Power Act, DOE must determine whether to grant or deny authorization to export electricity from the United States to Mexico.

U.S. Bureau of Reclamation

Although formal right-of-way (ROW) applications have not yet been filed, Reclamation's purpose and need for agency action is to respond to the ROW requests for portions of the proposed transmission line route crossing Reclamation managed lands.

U.S. Bureau of Land Management

The Proposed Project does not require a Federal action involving BLM; however, BLM is participating as a cooperating agency with special expertise under NEPA in the EIS process for the Proposed Project. The Proposed Project would cross the flat-tailed horned lizard Yuma Desert Management Area. As a constituent of the Flat-tailed Horned Lizard Interagency Coordinating Committee, BLM has jurisdiction by special expertise with respect to environmental impacts in the flat-tailed horned lizard management area.

U.S. Department of the Navy

The Navy's purpose and need for agency action is to respond to an easement request for a portion of the proposed transmission line route crossing the northwestern boundary of the Barry M. Goldwater Range (BMGR). Although much of the day-to-day responsibility for managing the BMGR West, the portion of the BMGR located west of the Gila Mountains, has been delegated to the Commanding Officer of the Marine Corps Air Station (MCAS) Yuma, ultimately the Secretary of the Navy is responsible to the public and Congress for managing the resources and administering real estate licenses on the BMGR West.

S.2 Applicants' Purpose and Goals

Analyses that have been performed regarding power requirements show that additional power sources will soon be required in the southwestern United States and Mexico. These studies indicate that additional peak power will be needed by 2009, although recent events indicate that the power is likely to be needed sooner.

The Yuma Transmission Import Constraint Area was identified as a load pocket (area consuming electricity) within Arizona in the *Second Biennial Transmission Assessment 2002-2011* (ACC 2002), approved by the Arizona Corporation Commission (ACC) in December 2002. In addition, the ACC identified the Yuma area as having insufficient local generation and a constrained transmission system. The Yuma load pocket represents a need for additional local generation and a need to relieve reliance on the existing small, older, less efficient, and higher polluting "reliably must run" (RMR) generation facilities in the Yuma area. Currently, a number of generating units in Arizona are designated as RMR because they are required to run during certain conditions for the load-serving utility to provide reliable service to its retail customers in that load pocket. One of the ACC's goals is to mitigate or eliminate RMR conditions within Arizona to ensure reliability of power supplies. Similarly, the region in Mexico near the proposed power plant (Sonora and Baja) has a significant deficit of power (3,000-MW deficit that is growing 7 percent annually), and the Proposed Project could also supply power to Mexico.

The Applicants' purpose and need is to develop and construct a power generation and transmission project that would serve these identified regional power needs. To remain economically viable, the Applicants are basing their Proposed Project on the power plant site already owned by GDD and reasonable transmission alternatives connecting this site to the existing Gila and North Gila substations. These are the closest substations in the U.S. transmission system that would be capable of handling the generation from the proposed SLRC Power Center. The Applicants' power plant site is near enough to the border to allow for private ownership and control of the transmission line section in Mexico.

The Applicants have a number of objectives that they intend to achieve with their Proposed Project. These include:

- Generation of electrical power on the site in Mexico owned by GDD that will go through the permitting process by the Mexican government.
- Construction of a modern natural gas-fired power plant using best available technology and operated to U.S standards, including air emissions.
- Transmission of power across the international border into the United States.
- Interconnection with the Mexican Comision Federal de Electricidad (CFE) national power system for sale of generated power in Mexico.
- Interconnection with Western's Gila Substation and APS' North Gila Substation to allow transmission and sale of the Applicants' generated power in the United States.
- Construction and operation of a transmission link that meets N-1 reliability criteria (N-1 reliability criteria ensures that the loss of any single piece of equipment would not result in the loss of electrical load).

- Minimization of costs through a reasonably direct transmission path to Gila and North Gila substations, close proximity to an existing CFE substation, proximity to a suitable natural gas supply, and contracts for the use of effluent from the San Luis Rio Colorado wastewater treatment plant to be used for cooling water at the SLRC Power Center.
- A proposed power plant that has the support of the Mexican government, approval for export of power out of Mexico on transmission lines controlled by the Applicants, and acceptable tax treatment.
- Construction and operation of a technically feasible and economically viable project.

S.3 Public Involvement

The Applicants' Proposed Action (figures S-1 through S-4, described in section S.4) was presented at stakeholder and scoping meetings to provide a basis for discussion of issues and to assist with identifying potential alternatives to be evaluated in the EIS. The alternatives presented in this document were either identified in response to public issues and concerns or were directly recommended by the public or stakeholders.

Stakeholder Meetings

Western held stakeholder meetings in February 2006 prior to scoping meetings to create an early and ongoing outreach effort with potentially interested parties within the Proposed Project area. Table S-1 lists the dates, locations, and attendees of stakeholder meetings.

Table S-1. Stakeholder Meetings

Date	Location	Attendees
February 6, 2006	Reclamation – Yuma Area Office	Reclamation, Western, NBR
	Booth Machinery	Yuma Irrigation District, North Gila Irrigation District, Landowners, Western, NBR
	APS – Yuma Office	APS, Western, NBR
	Border Patrol – Yuma Sector Headquarters	Border Patrol, Western, NBR
	Yuma Mesa Irrigation and Drainage District	Yuma Mesa Drainage and Irrigation District, Western, NBR
February 7, 2006	Yuma County Water Users' Association	Yuma County Water Users' Association, Wellton-Mohawk Irrigation and Drainage District, Western, NBR
	International Boundary and Water Commission – Yuma Office	International Boundary and Water Commission, Western, NBR
	Yuma County – Department of Development Services	Yuma County Planning Department, City of San Luis Planning Department, Western, NBR
February 8, 2006	MCAS Yuma	MCAS Yuma, Western, NBR
	Yuma County Chamber of Commerce	Chamber of Commerce, Western, NBR
	City of Yuma – City Hall	City of Yuma, Western
	BLM – Yuma Field Office	BLM, Western

The purpose of the meetings was to create awareness and inform stakeholders of the Proposed Project, solicit comments, and assist in identifying issues. The meetings assisted with identifying

additional key stakeholders, preferences for public involvement opportunities, key community issues, and recommendations for alternatives. Stakeholder comments are included in Table S-2, Scoping Comment Summary; recommendations for alternatives were combined with other recommendations for alternatives that were received during scoping and are depicted in figure S-5. Coordination with stakeholders continued throughout the scoping period.

Notice of Intent

The “Notice of Intent to prepare an Environmental Impact Statement and to conduct public scoping meetings; notice of floodplains and wetland involvement” was published in the *Federal Register* (71 FR 7033) on February 10, 2006. The Notice of Intent (NOI) included information on the Proposed Project, time and location of the February 28 and March 1, 2006, scoping meetings, and contact information for questions pertaining to the Proposed Project.

Public Scoping Meetings

Four public scoping meetings were hosted by Western during the public scoping process. The February 28 and March 1, 2006, meetings were announced in the *Federal Register*, local NOI newsletter, and advertisements in the *Yuma Sun* and *Bajo El Sol*, the regional Spanish-language news publication. Additional meetings, March 9 and March 10, 2006, were announced in a second notice mailing and advertisements in the *Yuma Sun* and *Bajo El Sol*. A local NOI newsletter mailing was provided in both English and Spanish to a distribution list that included local government officials, agencies, tribes, potentially affected landowners, and individuals. Scoping meetings were held using an open house format to allow for an informal one-on-one exchange of information. The same information was available at each meeting.

Comments

Comments received during scoping on the Proposed Project are summarized in table S-2. Comments were used to identify issues and potential transmission line routing segment options (figure S-5) to be evaluated in this draft environmental impact statement (DEIS). A scoping update, including comment summary and frequently asked questions for the Proposed Project in both English and Spanish, was mailed to a distribution list that included local government officials, agencies, tribes, potentially affected landowners, and individuals in June 2006.

Table S-2. Scoping Comment Summary

Topic	Comment/Concern/Issue	Treatment in the EIS
Agriculture	<ul style="list-style-type: none"> ● Pest control compromises because of the structure height, resulting in reduced crop yields ● Food safety because the line will attract larger bird populations ● Increases to ground preparation and cultivation costs due to structures 	<p>Western evaluated the opportunity to consolidate some of the existing transmission lines with the proposed transmission lines. In this instance, the number of wires would not increase and the distance between poles may increase, creating fewer obstructions. These issues are evaluated in the Land Use sections (3.6 and 4.6).</p>
Air Quality	<ul style="list-style-type: none"> ● Air quality impacts on the city and county of Yuma ● Impacts to human health from particulate matter smaller than 10 microns 	<p>These issues are evaluated in the Air Quality sections (3.3 and 4.3) of the EIS.</p>
Aviation Safety	<ul style="list-style-type: none"> ● Impact of the Proposed Project on future development of the existing Rolle Airstrip ● Impacts to military aviation operations on the BMGR ● Impacts to flight safety at the Marine Corps Air Station/ Yuma International Airport 	<p>These issues are evaluated in the Land Use (3.6 and 4.6) and Transportation (3.7 and 4.7) sections. Western coordinated with MCAS Yuma to identify potential alternatives and mitigation measures to minimize potential impacts to aviation.</p>
Cost	<ul style="list-style-type: none"> ● Interest in commercial costs and rates for the power and energy from the Proposed Project 	<p>The SLRC Power Center would be an independent power producer and would sell on the wholesale power market compared with a regulated utility providing electrical service at retail commercial and residential rates (section 2.1.2).</p>
Cumulative Impacts	<ul style="list-style-type: none"> ● Impacts to Wellton-Mohawk Title Transfer lands near North Gila Substation ● Relationship of this Proposed Project to APS’ proposal for the Palo Verde to North Gila Transmission project; any cumulative impacts, growth-inducing impacts or need to expand the North Gila Substation ● Cumulative impacts related to the Area Service Highway proposal and the Arizona Clean Fuels pipeline and refinery proposal ● Cumulative impacts related to the flat-tailed horned lizard 	<p>Depending on the approach needed to go into the proper bay at North Gila Substation, a small portion of Wellton-Mohawk Title Transfer lands could be crossed by the proposed transmission line. Cumulative impacts are discussed in chapter 5.</p>
Environmental Process	<ul style="list-style-type: none"> ● Concern that the National Environmental Policy Act compliance process does not apply to activities that occur in Mexico ● Interest in understanding how the analysis is being conducted 	<p>Action on Mexican land is outside U.S. jurisdiction and is not addressed in the EIS. Emissions data was reviewed and used to determine impacts within the United States.</p> <p>The EIS was developed according to the Council on Environmental Quality’s Regulations for Implementing the Procedural Provisions of NEPA (40 CFR parts 1500-1508) and the DOE NEPA Implementing Procedures (10 CFR part 1021).</p>

Table S-2. Scoping Comment Summary

Topic	Comment/Concern/Issue	Treatment in the EIS
		The EIS documents the analyses conducted with respect to the Proposed Project.
Health & Safety	<ul style="list-style-type: none"> ● Impacts of the Proposed Project on radio, television, cell phones, and satellite dishes ● Impacts to human health from electric and magnetic fields ● Potential for cancer caused by high-voltage transmission lines ● Electromagnetic interference with existing Marine Corps operations, particularly at Cannon Air Defense Complex 	<p>Transmission lines normally do not affect the operation of radios, TVs, cell phones or satellite signal reception unless there is a hardware problem on the transmission line such as a loose connection or damaged insulator. Once identified, these problems are nearly always easily corrected (sections 3.12.3).</p> <p>Impacts to human health from electric and magnetic fields and the potential for cancer is addressed in the Health and Safety sections (3.12 and 4.12).</p> <p>After reviewing Proposed Project information, MCAS Yuma determined that the Proposed Project does not appear to present interference problems for MCAS operations (Section 4.6 Land Use).</p>
Land Use	<ul style="list-style-type: none"> ● Compatibility of the Proposed Project in a 1-mile buffer zone along the BMGR ● Impacts to populations along the transmission line alignment, including residential development between the BMGR and Gila Substation ● Impacts to use at the BMGR ● Impacts to existing live-fire small arms and demolition ranges on the BMGR ● Impacts to a proposed road in the vicinity of the A Canal ● Impacts to future development and land use plans as outlined in Yuma’s General Plan, the city and county Joint Land Use Plan, and the County 2010 Comprehensive Plan 	<p>These issues are addressed in the Land Use sections (3.6 and 4.6).</p>
Paleontology	<ul style="list-style-type: none"> ● Impacts to paleontological resources 	<p>Impacts to paleontological resources are evaluated in the Geology, Soils, Paleontology, and Seismicity sections (3.1 and 4.1).</p>
Power Marketing	<ul style="list-style-type: none"> ● Western’s role, if any, in marketing the power from Mexico to the Yuma area residents ● If not Western, who will market the resources from Mexico? 	<p>Western will not have a role in marketing power from the SLRC Power Center. The Applicants will independently market these generation resources. This topic is not discussed further in this EIS.</p>

Table S-2. Scoping Comment Summary

Topic	Comment/Concern/Issue	Treatment in the EIS
Power Supply	<ul style="list-style-type: none"> ● Source of natural gas ● Interest in full discussion and assessment of electric power needs and supply within purpose and need section 	<p>The source of the natural gas is discussed in the Activities Outside the United States section (2.1.2).</p> <p>Power need and supply is discussed in chapter 1.</p>
Project Description	<ul style="list-style-type: none"> ● Replacement of both lines between the Gila and North Gila substations ● Need for the Gila to North Gila line ● Scope of the Proposed Project – transmission lines or generating facility? ● Potential for transmission of electricity into Mexico 	<p>These issues are discussed in chapters 1 (Purpose and Need) and 2 (Alternatives).</p>
Safety	<ul style="list-style-type: none"> ● Concern about the potential for increased risk of electric shock ● Need for the transmission line crossing roads to have orange ball markers 	<p>Risk of electric shock is evaluated in the Health and Safety sections (3.12 and 4.12).</p>
Threatened, Endangered, and Special Status Species	<ul style="list-style-type: none"> ● Impacts to the flat-tailed horned lizard management area ● Concern that the flat-tailed horned lizard should be treated as a listed species ● Concern that alternatives should avoid the flat-tailed horned lizard management area ● Concern that route alternatives avoid big-horn sheep habitat in the Gila Mountains ● Propose evaluating impacts to the Sonoran population of the desert tortoise from the Proposed Project ● Impacts to rare plants within 5 miles of the Proposed Project including the sand food, Schott’s wire lettuce, and Pierson’s milkvetch ● Recommend obtaining species list from Arizona Game and Fish Department, U.S. Fish and Wildlife Service, U.S. Bureau of Land Management 	<p>These issues are discussed in the Biological Resources sections (3.4 and 4.4).</p>
Transmission Line Route and Configuration	<ul style="list-style-type: none"> ● Yuma Proving Grounds accepts the proposed transmission line route ● City of Yuma opposes the proposed route ● Recommend the use of 3E as a north-south corridor because 4E is too sandy for equipment; soil is more compacted on 3E ● Recommend the line from Gila Substation move east to the Gila 	<p>These comments were taken into consideration to help identify potential alternatives and are discussed in chapter 2 (Alternatives).</p>

Table S-2. Scoping Comment Summary

Topic	Comment/Concern/Issue	Treatment in the EIS
	<p>Mountains</p> <ul style="list-style-type: none"> • Propose evaluating alternate routes that cross the international border immediately north of the proposed generation facility, then turn northeast to the BMGR boundary, proceed north paralleling County 4E to the intersection of East County 14½ then turning northeast parallel to A Canal where the line would resume its currently proposed route • Request that a 230-kV alternative be considered • Recommend routing the transmission line through barren, unusable land and avoiding developed areas • Concerns about a utility corridor adjacent to the proposed Area Service Highway; an overpass is required at County 19th • Consider a Fortuna Wash alignment • Recommend avoiding high-value land north of the BMGR; state lands are not a favorable location for power lines; do not disproportionately place lines on state land • Route transmission lines along the gas pipelines for the generating facility • Avoid the A Canal; use the Area Service Highway alignment and move east along the MCAS boundary • Consider an alternative around development at the North Gila Substation • Consider a 230-kV alternative that would tie into the existing Sonora Substation • Recommend the ASH to south side of the A Canal alignment because it would have the least impact to the Ocotillo Master Plan 	
Visual	<ul style="list-style-type: none"> • Impacts on views of the BMGR and Gila Mountains from private property • Propose evaluating impact of using single steel pole structures instead of steel lattice structures to reduce physical footprint and visual impact 	<p>These issues are discussed in the Visual Resources sections (3.8 and 4.8).</p>
Water	<ul style="list-style-type: none"> • Request a letter from Comision Nacional del Agua and the Mexican International Boundary and Water Commission verifying the approved legal use of water for the generating facility 	<p>Comment noted. Water use within a 5-Mile Zone on either side of the border is under regulation by the International Boundary and Water Commission (IBWC). Water use within Mexico in the 5-Mile Zone of the border is under regulation by the</p>

Table S-2. Scoping Comment Summary

Topic	Comment/Concern/Issue	Treatment in the EIS
		Comisión Internacional de Limites y Aguas (CILA). Permits obtained in Mexico for the Proposed Project are summarized in an appendix to the EIS.
Out of Scope Issues	<ul style="list-style-type: none"> • How can the Federal government ensure compliance with the “promised” air quality standard? 	An overview of the generating facility’s permitting requirements and the associated environmental impact analysis performed by the Mexican government is included as an appendix to the EIS. Emissions data was modeled and used to determine impacts within the United States.
	<ul style="list-style-type: none"> • Impacts to cultural resources in Mexico 	Action on Mexican land is outside U.S. jurisdiction and is not addressed in the EIS. However, the Applicants’ have committed to voluntarily conduct cultural resources surveys in Mexico prior to construction activities on the power plant site and transmission line ROW. The reports from these surveys would be available to interested tribes.
	<ul style="list-style-type: none"> • What is the potential for Mexico cutting off power to the United States? 	DOE performed an electric reliability study to ensure that the existing U.S. power supply system would remain operational upon a sudden loss of power regardless of the outage cause.
	<ul style="list-style-type: none"> • Concern about a generation facility in Mexico 	Action on Mexican land is outside U.S. jurisdiction and is not addressed in the EIS.
	<ul style="list-style-type: none"> • Consider a solar component, photovoltaic, as part of the portfolio 	The Federal action to be evaluated in the EIS is not what kind of power plant to build, but rather for Western to determine whether to grant a transmission interconnection request and for DOE to determine whether to grant a Presidential permit.
	<ul style="list-style-type: none"> • A Mexican plant site does not provide benefits to Yuma 	The Federal action to be evaluated in the EIS is not what kind of power plant to build, but rather for Western to determine whether to grant an interconnection request and for DOE to determine whether to grant a Presidential permit. APS could contract to purchase power from the Proposed Project for local use. The Applicants could construct the San Luis Rio Colorado Power Center and supply power only within Mexico.

S.4 Alternatives

The Applicants' Proposed Action was presented at stakeholder and scoping meetings to provide a basis for discussing issues and to assist with identifying potential alternatives to be evaluated in the EIS. The alternatives presented in this document were either identified in response to public issues and concerns or were directly recommended by the public or stakeholders.

Applicants' Proposed Action

The total length of the Applicants' Proposed Action within the United States would be approximately 25.7 miles, 21 miles from the international border to Gila Substation and 4.7 miles from Gila Substation to North Gila Substation (figure S-1). The proposed transmission line would use steel monopole support structures. As part of the system impact study, Western will evaluate opportunities to consolidate existing transmission between the Gila and North Gila substations with the proposed transmission line. If existing transmission is consolidated, a single-circuit 69-kV transmission line may need to be underbuilt on the proposed transmission support structures; this would increase the height of the structures by 30 feet and require additional transmission support structures.

Modifications to Gila Substation would be necessary to interconnect the proposed 500-kV transmission lines into the substation. These modifications would be located on a federally-owned, 20-acre parcel north of the existing substation boundary and would include a 500/69-kV transformer and associated equipment.

Modifications to North Gila Substation would be necessary to interconnect the 500-kV transmission line. These modifications would be made through an agreement with APS and would occur within the existing substation boundary.

The SLRC Power Center description provided in this DEIS presents a complete picture of the project proposal. This DEIS assesses potential impacts that could occur in the United States from SLRC Power Center construction and operation. This DEIS does not address alternatives to the SLRC Power Center or its location, as that part of the Proposed Project would be located in Mexico and is not subject to NEPA.

The proposed SLRC Power Center would be a new 550-MW nominal (605-MW peak) natural gas-fired, combined-cycle power plant located approximately 3 miles east of San Luis Rio Colorado, State of Sonora, Mexico, and about 1 mile south of the international border. GDD would construct the SLRC Power Center to comply with applicable United States environmental standards in addition to those of Mexico's Instituto Nacional de Ecología. The planned power plant would be equipped with advanced air emissions control technology, including Dry Low Nitrogen Oxides (DLN) Combustion System technology, a Selective Catalytic Reduction (SCR) system for oxides of nitrogen, and catalytic oxidizers for carbon monoxide (CO) emissions control. The proposed power plant would use a wet-dry cooling system to reduce the consumptive use of water as compared with an all wet cooling system. The Applicants would construct an approximately 1-mile-long transmission line between the SLRC Power Center and the Point of Change of Ownership near the United States-Mexico international border.

Route Alternative

The proposed transmission line route alternative (figure S-6) was identified in response to public and stakeholders' comments and potential issues associated with the Applicants' Proposed Action. The Route Alternative is a combination of the Applicants' Proposed Action route and potential transmission line routing segment options.

The total length of the Route Alternative within the United States would be approximately 26.1 miles, 21.2 miles from the international border to Gila Substation and 4.9 miles from Gila Substation to North Gila Substation. The proposed transmission line would use steel monopole support structures. As part of the system impact study, Western will evaluate opportunities to consolidate existing transmission between the Gila and North Gila substations with the proposed transmission line. If existing transmission is consolidated, a single-circuit 69-kV transmission line may need to be underbuilt on the proposed transmission support structures; this would increase the height of the structures by 30 feet and require additional transmission support structures.

Modifications to the Gila Substation would be necessary to interconnect the proposed 500-kV transmission lines into the substation. These modifications would be located on a federally-owned, 20-acre parcel north of the existing substation boundary and would include a 500/69-kV transformer and associated equipment.

Modifications to the North Gila Substation would be necessary to interconnect the 500-kV transmission line. These modifications would be made through an agreement with APS and would occur within the existing substation boundary.

230-kV Alternative

A double-circuit 230-kV transmission line was identified as an alternative that would meet the Proposed Project objectives for transporting electric power and creating additional transmission into the Yuma area and would provide additional benefits. Although the conductor span length between structures would be similar, the 230-kV Alternative would require less ROW and shorter structures than the proposed 500-kV transmission line, resulting in reduced environmental impacts and construction costs. Figure S-7 shows a comparison of a typical 230-kV structure and a 500-kV structure. In addition, the 230-kV Alternative would be consistent with APS' Ten-Year Plan (APS 2003), prepared for the Arizona Corporation Commission.

The 230-kV Alternative would use either the Applicants' Proposed Action route or the Route Alternative and respective access to structures. The 230-kV Alternative would require a 150-foot-wide ROW, which is 25 percent less ROW area than that needed for a project constructed to 500 kV, and would require substation modifications to 230-kV standards instead of 500 kV.

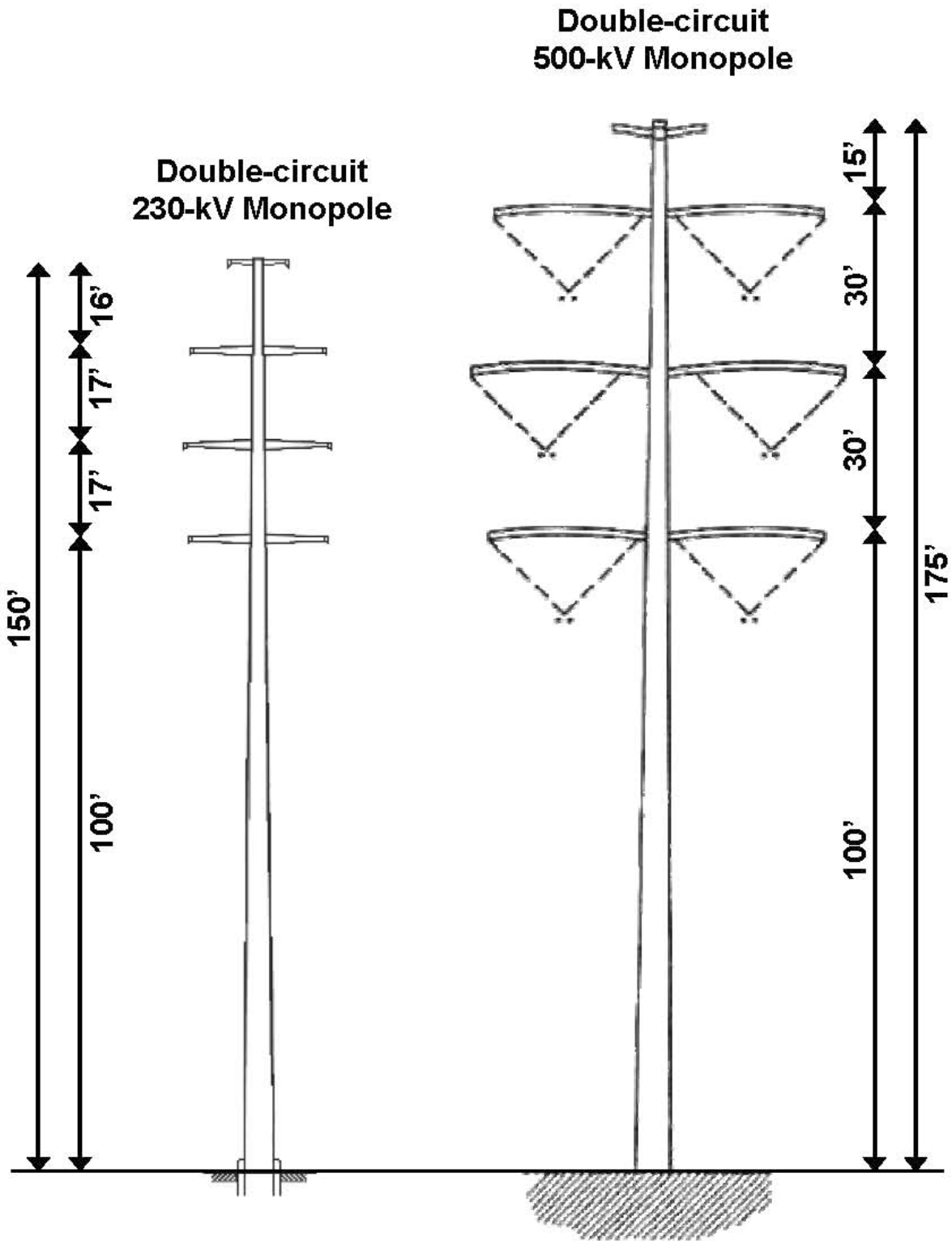


Figure S-7. Comparison of 500-kV and 230-kV Steel Monopole Structures

No Action Alternative

Under the No Action alternative, Western would not approve an interconnection agreement and/or DOE would not issue a Presidential permit; therefore, the proposed transmission lines and access roads within the United States would not be constructed, and the environmental impacts associated with their construction and operation would not occur.

However, the construction and operation of interconnection transmission lines to a CFE substation within Mexico would allow the SLRC Power Center to be constructed, maintained, and operated to deliver power to areas within Mexico. In this scenario, impacts from the operation of the SLRC Power Center similar to those described in this DEIS would occur in the United States. This scenario is not subject to United States regulation because all of the project-related activities would occur within Mexico.

S.5 Impacts

Table S-3 presents a summary of the finding of impacts for each of the alternatives discussed in the DEIS. The table addresses impacts that would result from each of the alternatives after mitigation measures included as part of the Proposed Project design are put into place.

The resources/environmental components evaluated for potential impacts are:

- Geology, soils, paleontology, and seismicity
- Water resources
- Air quality
- Biological resources
- Cultural resources
- Land use and recreation
- Transportation
- Visual resources
- Noise
- Socioeconomics
- Environmental justice
- Health and safety

After reviewing the impacts for each of the alternatives, DOE identified the Route Alternative and 230-kV Alternative as the environmentally preferred alternatives. With this approach, the Proposed Project would use the route from the Route Alternative and construct the Proposed Project to 230-kV standards. The combination of these two alternatives also constitutes DOE's agency preferred alternative.

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
Geology, paleontology, and seismicity	There are no unique or important geologic features within the Proposed Project area. The use of sand and gravel for the Proposed Project would be minimal compared to the known abundance of federally- and privately-owned sand and gravel resources available in Yuma County. The Proposed Project would have a less than significant impact on geological resources, including availability of minerals. Impacts to paleontology would be less than significant because the Proposed Project area is not likely to contain scientifically important fossil resources and fossil resources are not expected to be encountered. The Proposed Project area is within a seismic Zone 4 and the proposed facilities would be constructed and maintained to Federal Uniform Building Code standards for Zone 4 areas; therefore, impacts associated with seismicity would be less than significant.			Current environmental conditions and trends would continue.
Soils¹	<p><u>Temporary disturbance:</u> 134.1 acres for proposed transmission line structures and 5 acres for cable-pulling sites</p> <p><u>Permanent disturbance:</u> 20 acres for Gila Substation modifications and 0.76 acres for proposed transmission line structures, a portion of which would be offset by removal of existing 69-kV H-frame structures between Gila and North Gila substations</p> <p>The Proposed Project would not result in appreciable soil erosion. Impacts would be less than significant.</p>	<p><u>Temporary disturbance:</u> 135.9 acres for proposed transmission line structures and 7 acres for cable-pulling sites</p> <p><u>Permanent disturbance:</u> 20 acres for Gila Substation modifications and 0.77 acres for proposed transmission line structures, a portion of which would be offset by removal of existing 69-kV H-frame structures between Gila and North Gila substations</p> <p>The Proposed Project would not result in appreciable soil erosion. Impacts would be less than significant.</p>	<p><u>Temporary disturbance:</u> Similar for either the Applicants' Proposed Action route or the Route Alternative when combined with the 230-kV Alternative</p> <p><u>Permanent disturbance:</u> 20 acres for Gila Substation modifications and 0.34 acres for proposed transmission line structures, a portion of which would be offset by removal of existing 69-kV H-frame structures between Gila and North Gila substations</p> <p>The Proposed Project would not result in appreciable soil erosion. Impacts would be less than significant.</p>	Current environmental conditions and trends would continue.
Water resources	Groundwater within the 5-Mile Zone of Mexico would be obtained by converting an existing groundwater use (estimated at 300 gallons per minute) to use for potable water at the proposed power plant; therefore, the consumptive use of groundwater would not change and not result in any impact. Cooling water (estimated at 6,336 gallons per minute) for the proposed power plant would come from the San Luis Rio Colorado municipal wastewater treatment plant. All alternatives would span the Gila River and would not place structures within the 100-year floodplain. Temporary dewatering may be necessary during construction in the Gila Valley due to high groundwater levels. Surveys for Water of the United States would be conducted prior to constructing any Proposed Project components, impacts are expected to be less than significant. Impacts to all water resources would be less than significant.			Current environmental conditions and trends would continue.
Air quality	Activities within the United States Fugitive dust from construction and vehicle emissions would be generated during construction and maintenance of the proposed transmission line. With proposed dust control mitigation, these impacts would be temporary and minor; these activities would not affect long-term air quality. Impacts within the Yuma PM ₁₀ non-attainment area would be			Current environmental conditions and trends would continue.

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>below 100 tons per year, thus there would be no conformity issues; therefore, impacts would be less than significant</p> <p>SLRC Power Center The proposed SLRC Power Center located in Mexico would not be a major source of air pollution per the Prevention of Significant Deterioration (PSD) criteria. Anticipated SLRC Power Center emissions combined with the existing background levels would be well below most ambient air quality guidelines. Anticipated SLRC Power Center PM₁₀ emissions combined with the existing background levels would be 75 percent of the guideline due to high existing background levels from both U.S and Mexican sources; however, this amount would still be below the limit. Impacts on air quality within the United States from operation of the SLRC Power Center would be less than significant.</p>			
<p>Biological resources</p> <p>Vegetation and wildlife</p>	<p>Creosotebush – White Bursage (community type/habitat) <u>Permanent disturbance:</u> 0.47 acres (92 instances of 0.0051 acres each) for proposed transmission line, and 20 acres for Gila Substation modifications</p> <p>The Proposed Project would span the Gila River; therefore no new structures would be placed within riparian areas.</p> <p>Impacts would be less than significant.</p>	<p>Creosotebush – White Bursage (community type/habitat) <u>Permanent disturbance:</u> 0.46 acres (91 instances of 0.0051 acres each) for proposed transmission line, and 20 acres for Gila Substation modifications</p> <p>The Proposed Project would span the Gila River. The Route Alternative would cross 0.3 mile of an area containing saltcedar that was mapped as riparian vegetation near Yuma Lakes (Redondo Pond). This habitat has been highly disturbed by recreational use and does not support wildlife species typically found within southwestern riparian zones. Disturbance in this area caused by the Applicant's Route Alternative would not result in a loss of riparian habitat.</p> <p>Impacts would be less than significant.</p>	<p>Creosotebush – White Bursage (community type/habitat) <u>Permanent disturbance:</u> 0.21 acres (91 or 92 instances of 0.0023 acres each) for either proposed transmission line route, and 20 acres for Gila Substation modifications</p> <p>Impacts within riparian areas would be the same as those described for either of the route alternatives.</p> <p>Impacts would be less than significant.</p>	<p>Current environmental conditions and trends would continue.</p>
<p>Special Status Species</p>	<p>Flat-tailed Horned Lizard Management Area (FTHL MA) <u>Permanent disturbance:</u> 0.15 acres permanent disturbance for steel</p>	<p>Flat-tailed Horned Lizard Management Area (FTHL MA) <u>Permanent disturbance:</u> 0.15 acres permanent disturbance for steel</p>	<p>Flat-tailed Horned Lizard Management Area (FTHL MA) <u>Permanent disturbance:</u> 0.07 acres permanent disturbance for steel</p>	

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>monopoles <u>New access: 4.4 miles during construction</u> <u>Adjacency to FTHL MA boundary: 7.9 miles</u></p> <p>The Proposed Project would avoid construction at the Gila River crossing during Yuma clapper rail and southwestern willow flycatcher nesting season and would incorporate mitigation identified in the FTHL Rangewide Management Strategy, impacts to special status species would be less than significant.</p> <p>No adverse effects to other special status species or their habitats are expected.</p>	<p>monopoles <u>New access: 2.8 miles during construction</u> <u>Adjacency to FTHL MA boundary: 5.2 miles</u></p> <p>The Proposed Project would avoid construction at the Gila River crossing during Yuma clapper rail and southwestern willow flycatcher nesting season and would incorporate mitigation identified in the FTHL Rangewide Management Strategy, impacts to special status species would be less than significant.</p> <p>No adverse effects to other special status species or their habitats are expected.</p>	<p>monopoles <u>New access: Similar to the route alternative that would be used</u> <u>Adjacency to FTHL MA boundary: Similar to the route alternative that would be used</u></p> <p>The Proposed Project would avoid construction at the Gila River crossing during Yuma clapper rail and southwestern willow flycatcher nesting season and would incorporate mitigation identified in the FTHL Rangewide Management Strategy, impacts to special status species would be less than significant.</p> <p>No adverse effects to other special status species or their habitats are expected.</p>	
Cultural resources	<p>Impacts to cultural resources, such as prehistoric properties, historic properties, and cultural landscapes, cannot be determined until a 100-percent Class III survey is completed. Western's preferred mitigation is to avoid any identified sites. Currently, a Programmatic Agreement is being developed among Western, the State Historic Preservation Office, affected Federal agencies, Applicants, and all interested Native American Tribes. Compliance with the Programmatic Agreement provisions would ensure that section 106 requirements are met.</p>			<p>Current environmental conditions and trends would continue.</p>
Land use and recreation	<p>The only recreational area within the Proposed Project area is the Yuma Lakes (Redondo Pond); impacts would be less than significant.</p> <p>The proposed transmission line would conflict with a City of Yuma resolution opposing a 500-kV transmission line adjacent to the south side of the A Canal and between the proposed ASH and Interstate 8. This would result in a significant impact. No measures are</p>	<p>The only recreational area within the Proposed Project area is the Yuma Lakes (Redondo Pond). The Route Alternative would not traverse the RV and trailer park area; therefore impacts would be less than the Applicants' Proposed Action and less than significant.</p> <p>The proposed transmission line would conflict with a City of Yuma resolution opposing a 500-kV transmission line adjacent to the</p>	<p>Impacts would be similar in context to the route that would be used. However, the intensity would be less because the 230-kV Alternative would require 25 percent less ROW than a 500-kV transmission line.</p>	<p>Current environmental conditions and trends would continue.</p>

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>recommended to mitigate this impact for the following reasons.</p> <ul style="list-style-type: none"> • The developer of the master-planned community (Ocotillo) identified the south side of the A Canal as the location that would pose the fewest impacts to the planned community because that area was not included in development plans. • A route adjacent to the A Canal provides the greatest potential for joint use of ROW with other linear facilities including the A Canal and Gila-Sonora Transmission Line. • The East Yuma Freeway, a four-lane travel route, is proposed in the City of Yuma Major Roadways Plan 2005 to be located on the south side of the A Canal from the proposed ASH, cross Interstate 8, and terminate at a point east of Avenue 9E. The portion of the East Yuma Freeway between the proposed ASH and Interstate 8 has been removed from future land use planning efforts by City Council actions. <p>Additional impacts:</p> <ul style="list-style-type: none"> • Area of engineering constraint at the intersection of County 19th and Avenue 4E. Engineering constraint at the intersection of County 19th and Avenue 4E 	<p>south side of the A Canal and between the proposed ASH and Interstate 8. This would result in a significant impact. No measures are recommended to mitigate this impact for the following reasons.</p> <ul style="list-style-type: none"> • The developer of the master-planned community (Ocotillo) identified the east side of the proposed ASH for a north-south route between County 13th and the A Canal through the planned community because that location that would pose the fewest impacts to the planned community based on development plans. • The developer of the master-planned community identified the south side of the A Canal between Avenue 6½E and Old Highway 80 as the location that would pose the fewest impacts to the community because that area was not included in development plans. • A route adjacent to the A Canal provides the greatest potential for joint use of ROW with other linear facilities including the A Canal, Gila-Sonora Transmission Line, and proposed ASH. • The East Yuma Freeway, a four-lane travel route, is proposed in the City of Yuma Major Roadways Plan 2005 to be 		

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>would require building the transmission support structures higher to comply with safety clearances for the proposed overpass. This would conflict with military aviation operations within this area; shorter structures to comply with military aviation operations would conflict with the proposed overpass. A sand and gravel operation is located on the southwest corner of the intersection. The BMGR small arms firing ranges and safety zone are located on the northeast corner of the intersection.</p> <ul style="list-style-type: none"> • Condemnation of existing residences between Avenue 6E and Avenue 6½E adjacent to both sides of the A Canal. • Encroachment of development along the existing transmission line approach to the North Gila Substation within the Yuma Lakes. 	<p>located on the south side of the A Canal from the proposed ASH, cross Interstate 8, and terminate at a point east of Avenue 9E. The portion of the East Yuma Freeway between the proposed ASH and Interstate 8 has been removed from future land use planning efforts by City Council actions.</p> <p>The Route Alternative would avoid the additional impacts that would result from the Applicants' Proposed Action, as detailed in the adjacent column.</p>		
Transportation	<p>Use of local highways during construction would result in a less than 1 percent increase in annual average daily traffic; impacts would be less than significant. The Proposed Project would not result in an impact to rail services.</p> <p>The proposed route would place structures in a civilian-use aviation corridor created by open space between the areas of restricted airspace associated with the MCAS Yuma/Yuma International Airport and the BMGR. However, the Proposed Project would not result in the re-routing of air traffic because the height of the structures would be</p>	<p>The Route Alternative would avoid the potential impacts that would result from the Applicants' Proposed Action.</p>	<p>Impacts would be similar in context to the route that would be used; however, the intensity would be less because structures would be 25 feet shorter than the 500-kV structures.</p>	<p>Current environmental conditions and trends would continue.</p>

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>less than the minimum altitude for civilian flight; therefore, impacts would be less than significant.</p> <p>Engineering constraint at the intersection of County 19th and Avenue 4E would require building the transmission support structures higher to comply with safety clearances for the proposed overpass. This would conflict with military aviation operations within this area; shorter structures to comply with military aviation operations would conflict with the proposed overpass. Either of these conflicts would result in a significant impact.</p>			
Visual resources	<p>For a majority of the proposed route, changes would remain subordinate within the existing visual landscape; therefore, impacts to visual resources would be less than significant.</p> <p>An area of increased viewer sensitivity was identified near the northwest corner of the BMGR. Steel monopoles would be used because they are less massive and draw less attention. The Applicants' Proposed Action would be closer to the area of increased sensitivity and would appear larger than the Route Alternative.</p>	<p>For a majority of the proposed route, changes would remain subordinate within the existing visual landscape; therefore, impacts to visual resources would be less than significant.</p> <p>An area of increased viewer sensitivity was identified near the northwest corner of the BMGR. Steel monopoles would be used because they are less massive and draw less attention. The Route Alternative would be farther from the area of increased sensitivity and appear smaller and less noticeable than the Applicants' Proposed Action.</p>	<p>Impacts would be similar in context to the route that would be used; however, intensity would be less because structures would be 25 feet shorter and less massive than 500-kV structures.</p>	<p>Current environmental conditions and trends would continue.</p>
Noise	<p>Transmission line Distance to nearest existing residence: 420 feet Estimated construction noise level at</p>	<p>Transmission line Distance to nearest existing residence: 145 feet Estimated construction noise level at</p>	<p>Impacts would be similar in context and intensity to the route that would be utilized.</p>	<p>Current environmental conditions and trends would continue.</p>

Table S-3. Summary Comparison of Environmental Impacts

Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
	<p>nearest existing residence: 65.6 dBA</p> <p>Substation modifications Distance to nearest existing residence: 642 feet Estimated construction noise level: 61.9 dBA</p> <p>Construction noise levels would be temporary and are within EPA recommendations, there would be no perceivable permanent impact from noise; therefore, impacts from noise would be less than significant.</p>	<p>nearest existing residence: 74.8 dBA</p> <p>Substation modifications Impacts would be the same as the Applicants' Proposed Action.</p> <p>If construction activities occurred adjacent to the nearest existing residence, estimated construction noise levels at 145 feet would be greater than EPA recommendations. However, construction noise levels at existing residences would remain below 70 dBA by ensuring that construction activities would occur a minimum of 260 feet away. This can be accomplished by designing the transmission line such that a structure would not be constructed adjacent to the residence.</p> <p>By ensuring that construction activities would occur a minimum of 260 feet from an existing residence, there would be no perceivable permanent impact from noise; therefore, impacts from noise would be less than significant.</p>		
Socioeconomics	<p>Due to the small construction workforce (30 to 40 workers) and availability of existing resources, Proposed Project-related impacts to population, housing, employment and pay rates, governmental services, and infrastructure services would be less than significant.</p> <p>An increase to the local economy of an estimated \$4.7 million, combining \$3.2 million for payroll and \$1.5 million for materials for the year of construction.</p>			<p>Current socioeconomic conditions and trends would continue.</p>
Environmental Justice	<p>Minority and low-income groups within the census tracts crossed by Proposed Project facilities do not meet the Council on Environmental Quality's (CEQ's) definition/criteria for minority or low-income populations. No minority or low-income populations were identified based on CEQ criteria; therefore there would be no disproportionately high or adverse impacts to minority or low-income populations.</p>			<p>No impact.</p>

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Resource	Applicants' Proposed Action	Route Alternative	230-kV Alternative	No Action Alternative
<p>Health and Safety</p>	<p>EMF No Federal regulations have been established specifying environmental limits on the strengths of electric and magnetic fields (EMFs) from electric transmission lines. During normal operation, magnetic fields at the edge of the ROW would be well below the recommended guidelines of the International Commission on Non-Ionizing Radiation (833 milligauss [mG]) and the American Conference of Governmental Industrial Hygienist (1,000 mG); however, the levels would be approximately 1 mG higher than the recommended National Academy of Sciences guidelines (0.1 to 3.0 mG). During periodic maintenance activities, the magnetic field at the edge of the ROW would be slightly higher; however, this would be less than 1 percent of the time, and the resulting EMF would still be comparable with other existing transmission lines of similar voltage. While extensive research has been conducted to determine if exposure to electric or magnetic fields may cause or promote adverse health effects, the National Institute of Environmental Health Sciences (NIEHS) concluded that “the scientific evidence suggesting that extremely low frequency (ELF)-EMF exposures pose any health risk is weak” and that “the probability that EMF exposure is truly a health hazard is currently small” (NIEHS 1999). Based on this assessment, human health and safety impacts from EMF are expected to be less than significant.</p> <p>Worker Worker health and safety impacts from the construction, operation, and maintenance of the Proposed Project would be related to typical work-related injuries and fugitive dust. Risk associated with construction, operation, and maintenance activities would be minimized through facility design, safe work practices, and continuous maintenance in compliance with Occupational Health and Safety Administration’s (OSHA’s) and State of Arizona regulations. Impacts to worker health and safety would be less than significant.</p> <p>Public Temporary fences would be placed wherever feasible to control public access to construction areas. In addition, construction equipment would be secured at night. Therefore, the potential for injury due to trespassing in construction areas would be minimal. Impacts to public health and safety would be less than significant.</p>			<p>Current EMF levels and health and safety considerations from existing transmission lines in the area would continue.</p>
<p>1 Information presented assumes that transmission between Gila and North Gila would be consolidated and a 69-kV circuit would be underbuilt on the proposed transmission line. This approach is conservative and identifies the greatest amount of disturbance.</p>				