



# SunZia Southwest Transmission Project

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*Engineering Manager*

**May 15, 2014**  
Phoenix, AZ

**Arizona Corporation Commission**  
***8<sup>th</sup> Biennial Transmission Assessment Workshop***

# Project Sponsors



SouthWestern Power/  
MMR Group



Shell Wind Energy



Salt River Project



Tri-State G&T



A UniSource Energy Company

Tucson Electric Power

# Project Description

## ⚡ Configuration Options:

- ~ Two 500 kV AC lines (3,000 MW)
- ~ OR one 500 kV AC and one 500 kV DC line (4,500 MW)

## ⚡ BLM Preferred Alternative is 515 miles in AZ & NM

## ⚡ 198 Miles in Arizona

- ~ State – 131 miles
- ~ Federal – 50 miles
- ~ Private/Fee – 17 miles

# Project Summary

- ⚡ 515 mile, 500 kV independent transmission project
- ⚡ Brings high-quality renewable energy to AZ and CA markets
- ⚡ WECC granted Phase 3 status in Mar 2011, which affirmed a rating of 3,000 MW for two 500kV AC lines
- ⚡ One of 7 pilot projects supported by the Federal Rapid Response Team for Transmission (RRTT), announced Oct 2011
- ⚡ Total capital cost estimated at \$2 billion
- ⚡ Commercial operation expected in 2018

# All Alternatives Studied (2009-2013)

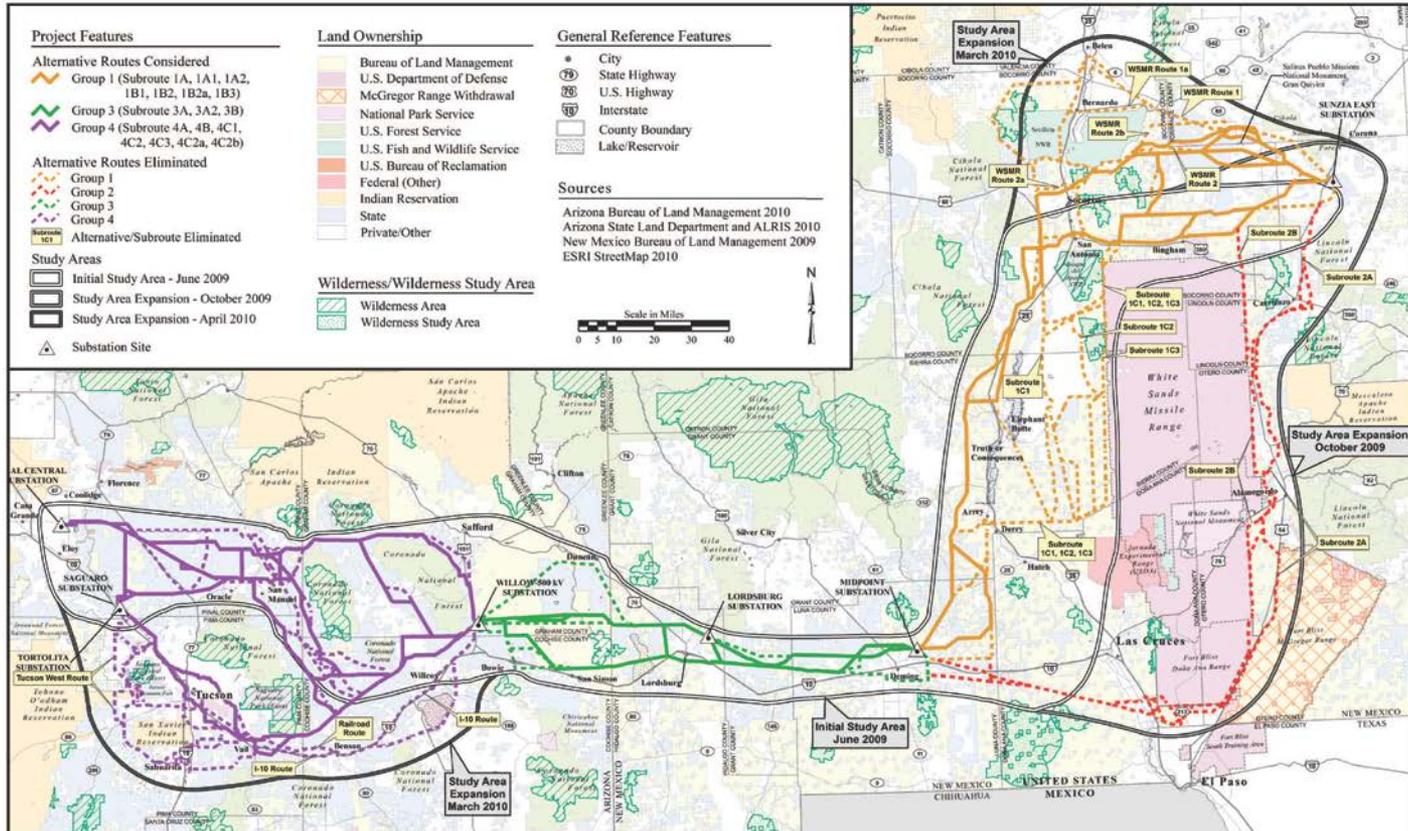


Figure 2-7. Alternatives Considered but Eliminated

# BLM Preferred Alternative

## (June 2013)

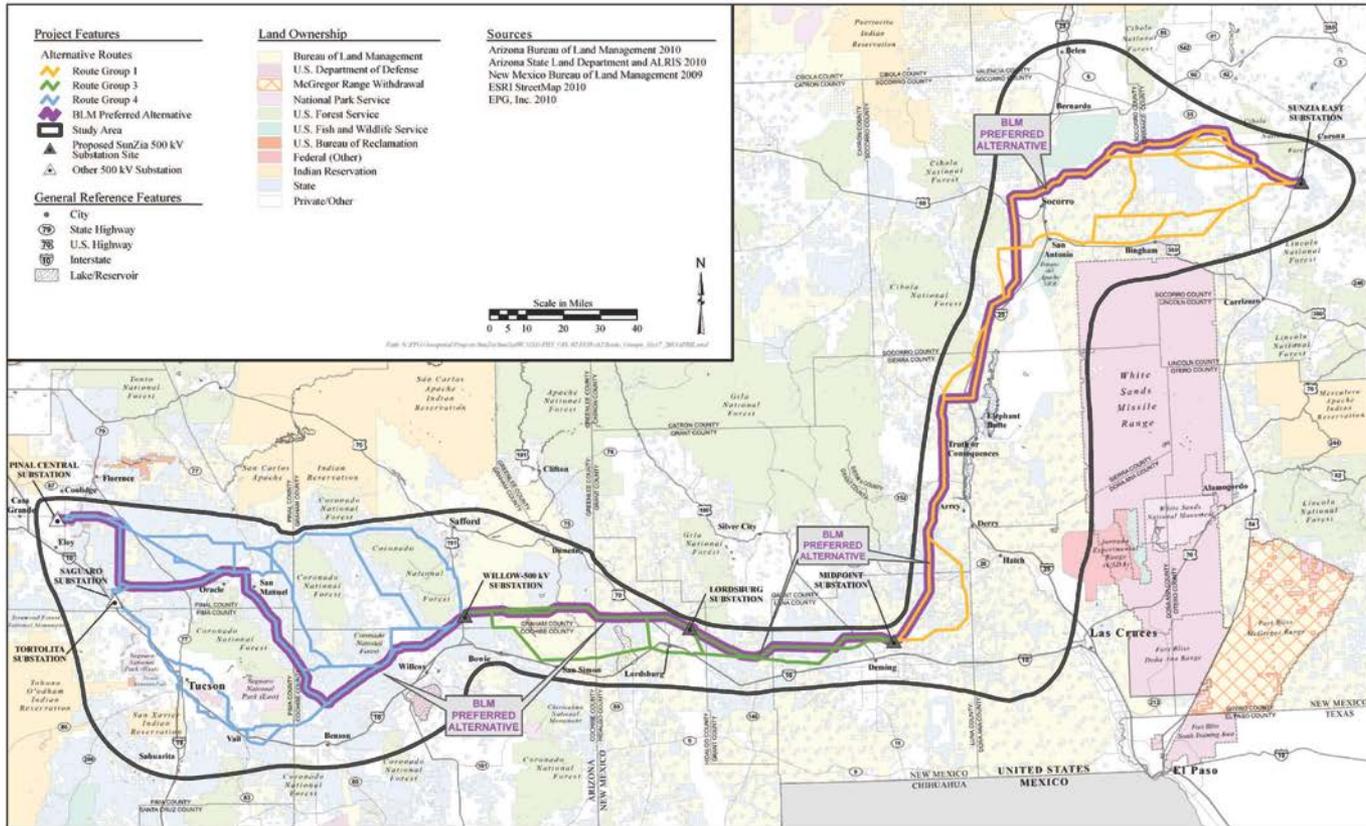


Figure 2-3. Alternative Routes

### Solar Thermal Resource

Direct Normal Insolation  
(kilowatt-hours/SqMeter/Day)

Below 6.5      7.0 - 7.5

6.5 - 7.0      7.5 +

 Solar Energy Zones  
(2010 DOE Programmatic EIS)

### Qualified Resource Area (QRA)

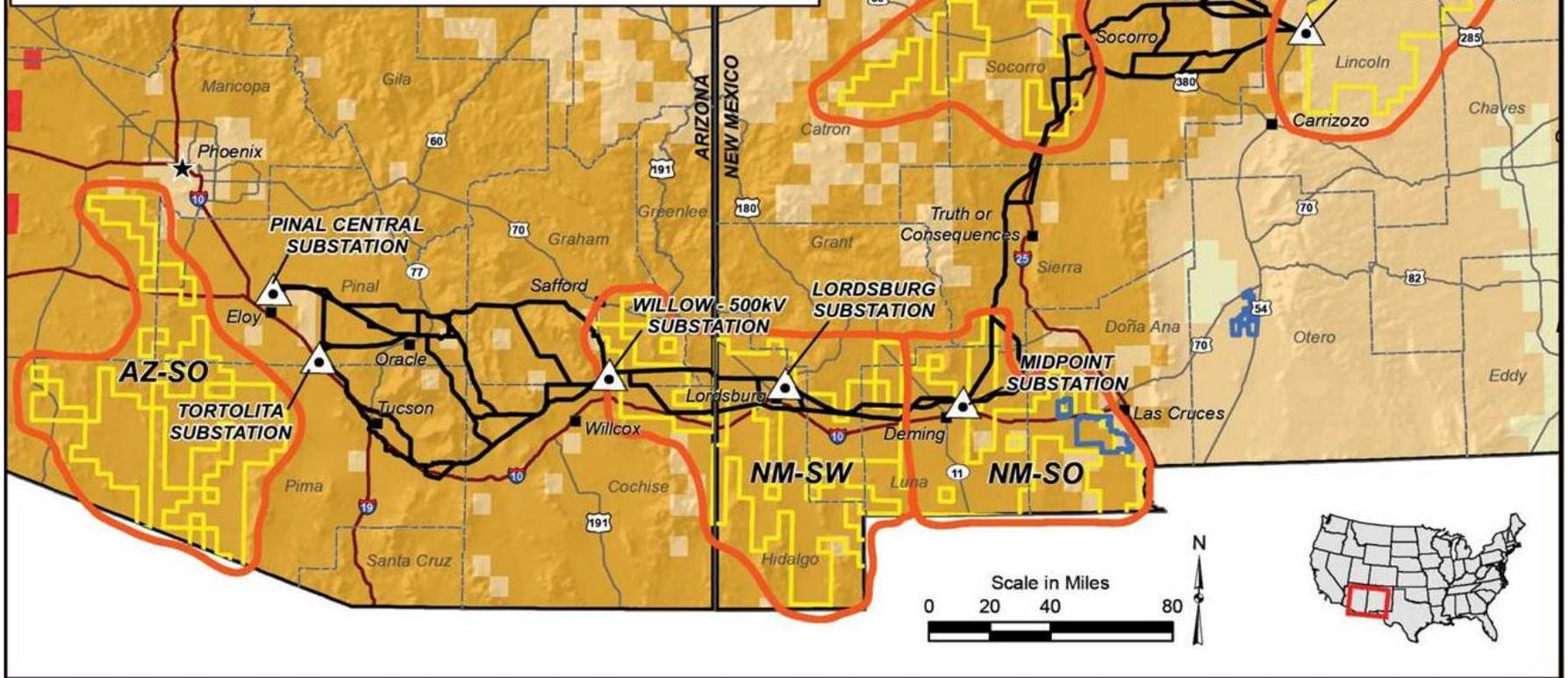


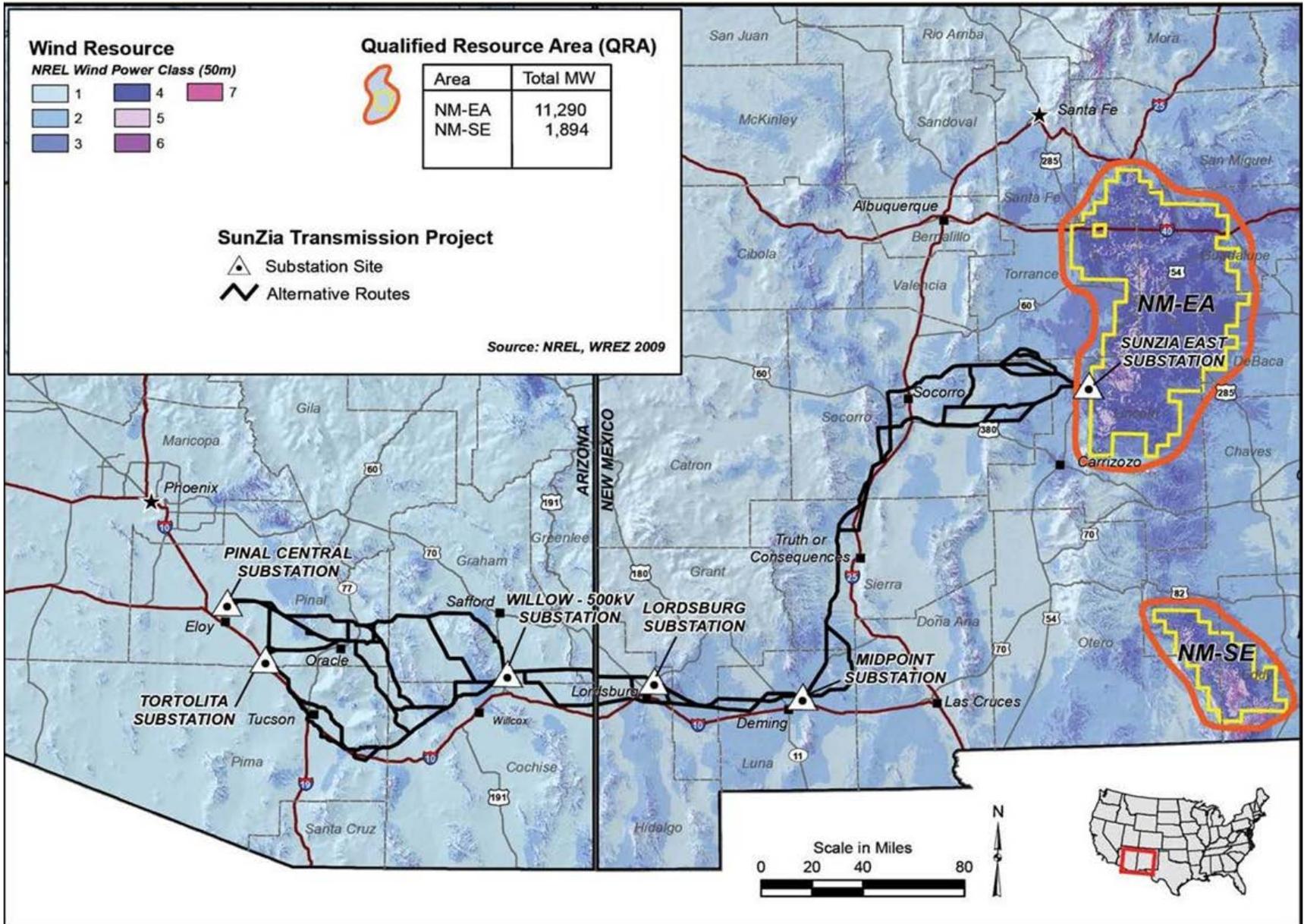
Area	Total MW
NM-CT	3,183
NM-SO	4,347
NM-SW	6,149
NM-EA	83
AZ-SO	6,623

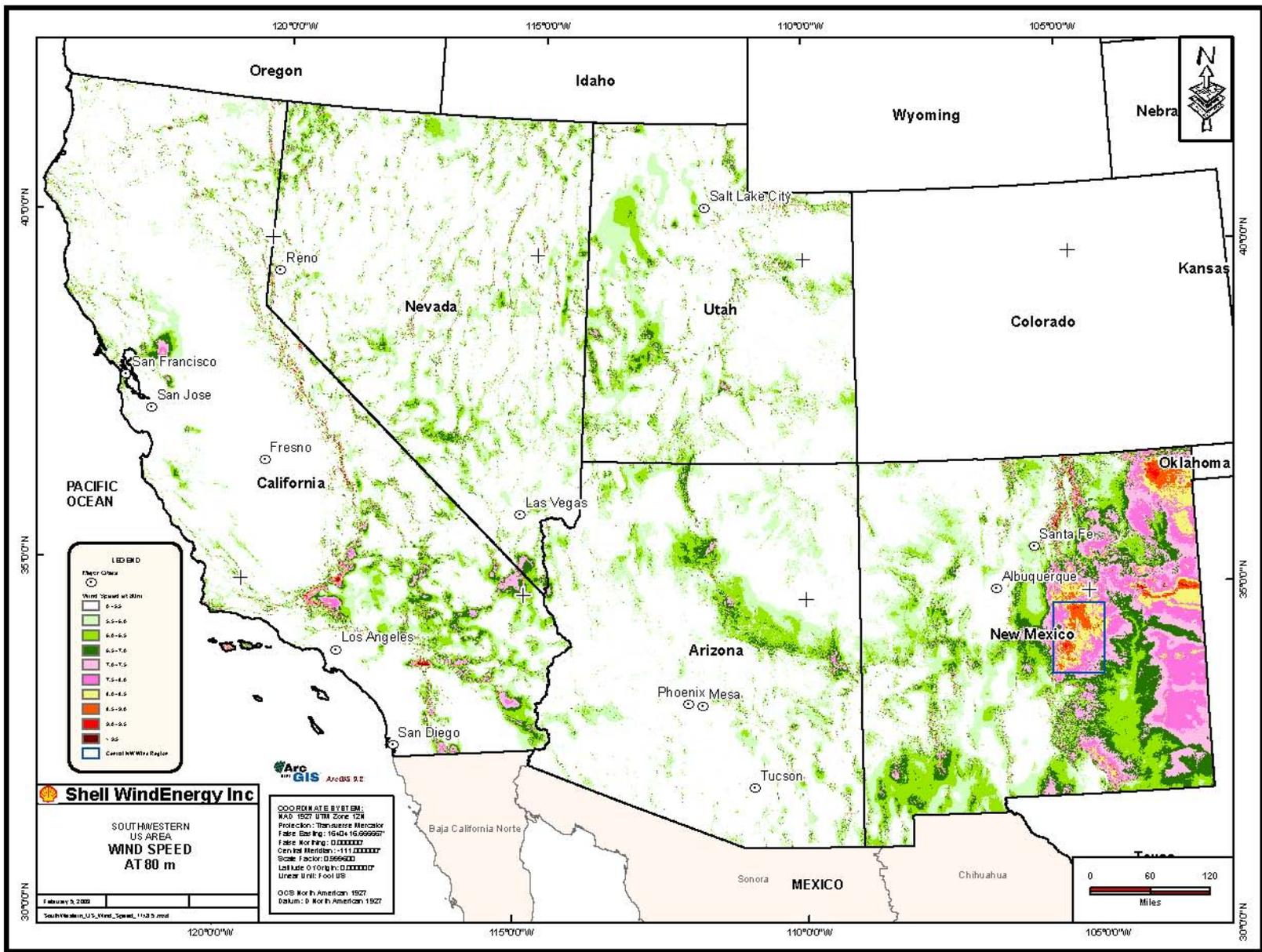
### SunZia Transmission Project

-  Substation Site
-  Alternative Routes

Source: NREL, WREZ 2009







# Customer Arrangements

- ⚡ Obtained Declaratory Order from FERC in May 2011 (Docket No. EL11-24-000)
- ⚡ FERC Order allows the merchant owners to commit 50% of capacity to anchor tenant and 50% must be sold in an open season
- ⚡ Commenced anchor tenant process in November 2011
  - ~ Negotiations with anchor tenants is ongoing
- ⚡ Letter of Intent with First Wind for up to 1,500 MW of transmission capacity was signed during August 2013

# WECC Accepted Rating of 3,000 MW

- ⚡ **December 2006:** Initiated the WECC 3-Phase Rating Process
- ⚡ **July-August 2009:** Phase 2 status was achieved and WECC Project Review Group (PRG) was formed
- ⚡ **February 2011:** PRG completed the *SunZia Accepted Path Rating Phase 2 Study Report*
- ⚡ **March 2011:** WECC granted SunZia a 3,000 MW Accepted Rating for two 500 kV AC lines
- ⚡ **June 2013:** BLM issues Final EIS. A change in the Preferred Alternative limited interconnection opportunities to the Luna Substation in southwest NM
- ⚡ **September 2013:** Path 47 operator raised concerns with SunZia's planned interconnections to the Luna and Hidalgo substations.

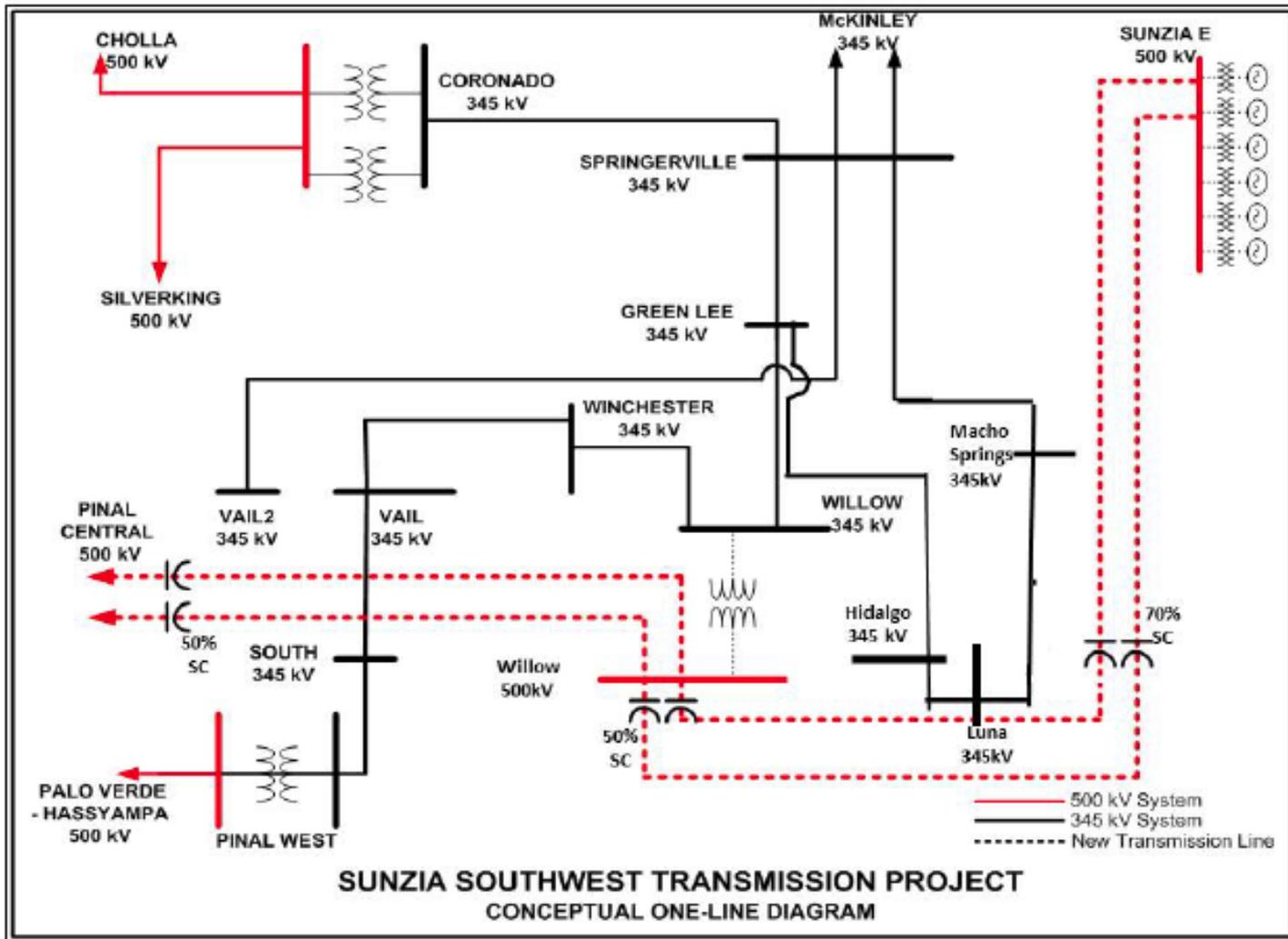
# Modified Plan of Service (MPOS)

- ⚡ No interconnections to the Luna and Hidalgo substations
- ⚡ Loop-in at the proposed SunZia South (Midpoint) Substation
- ⚡ SunZia will have one intermediate interconnection at the proposed Willow 500 kV Substation in southeastern AZ
- ⚡ The SunZia PRG is in the process of determining if the MPOS can maintain the 3,000 MW rating
  - ~ PRG is reviewing a Draft Report on the Path Rating Re-Study of the MPOS. Study results indicate the MPOS is adequate to maintain the accepted path rating of 3,000 MW
  - ~ Final Report to WECC PCC expected by May 30th

# SunZia PRG Members

- ⚡ Arizona Public Service Company
- ⚡ Arizona G&T Cooperatives
- ⚡ Bonneville Power Administration
- ⚡ California Independent System Operator
- ⚡ El Paso Electric
- ⚡ PacifiCorp
- ⚡ Pacific Gas & Electric
- ⚡ Power Engineers
- ⚡ Public Service Company of New Mexico
- ⚡ Salt River Project
- ⚡ Sacramento Municipal Utility District
- ⚡ Southern California Edison
- ⚡ Southwestern Power Group
- ⚡ Southline Transmission Project
- ⚡ Trans West
- ⚡ Tri-State Generation & Transmission
- ⚡ Tucson Electric Power
- ⚡ USE Consulting
- ⚡ Western Area Power Administration
- ⚡ Western Electricity Coordination Council
- ⚡ Xcel Energy

# SunZia Transmission Network



# Project Conception to Operation

## 12 Years +

MILESTONE	DATE	DURATION
✓ Concept formed in regional planning	Starting 2006	<b>Pre-Permitting</b> 2 years
✓ Sponsors sign MOA	April 2008	
✓ Submit BLM SF-299 ROW Application	Sept 2008	<b>Federal Permitting</b> 5.5 years (estimate)
✓ Initiate Scoping	May 2009	
✓ Draft EIS	May 2012	
✓ Final EIS	June 2013	
✓ Record of Decision	Q3 2014	
✓ State permits	Q1 2015	<b>State Permitting</b> 1 year (estimate)
✓ Financial Close	2015	
✓ Final Design, ROW Acquisition, Procurement, Construction	2015	
✓ COD	2018	



# Questions?



**[www.sunzia.net](http://www.sunzia.net)**

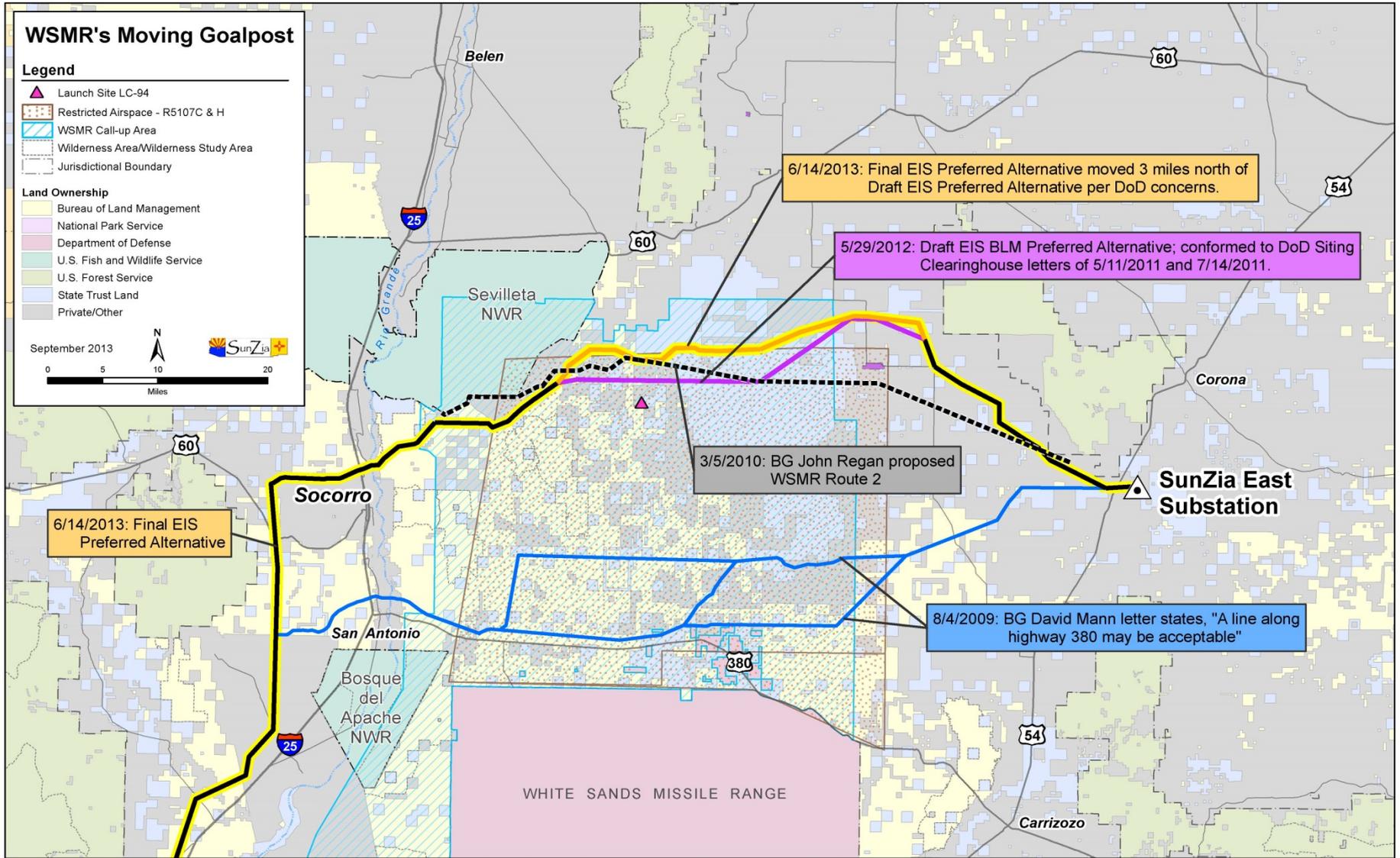
Tom Wray

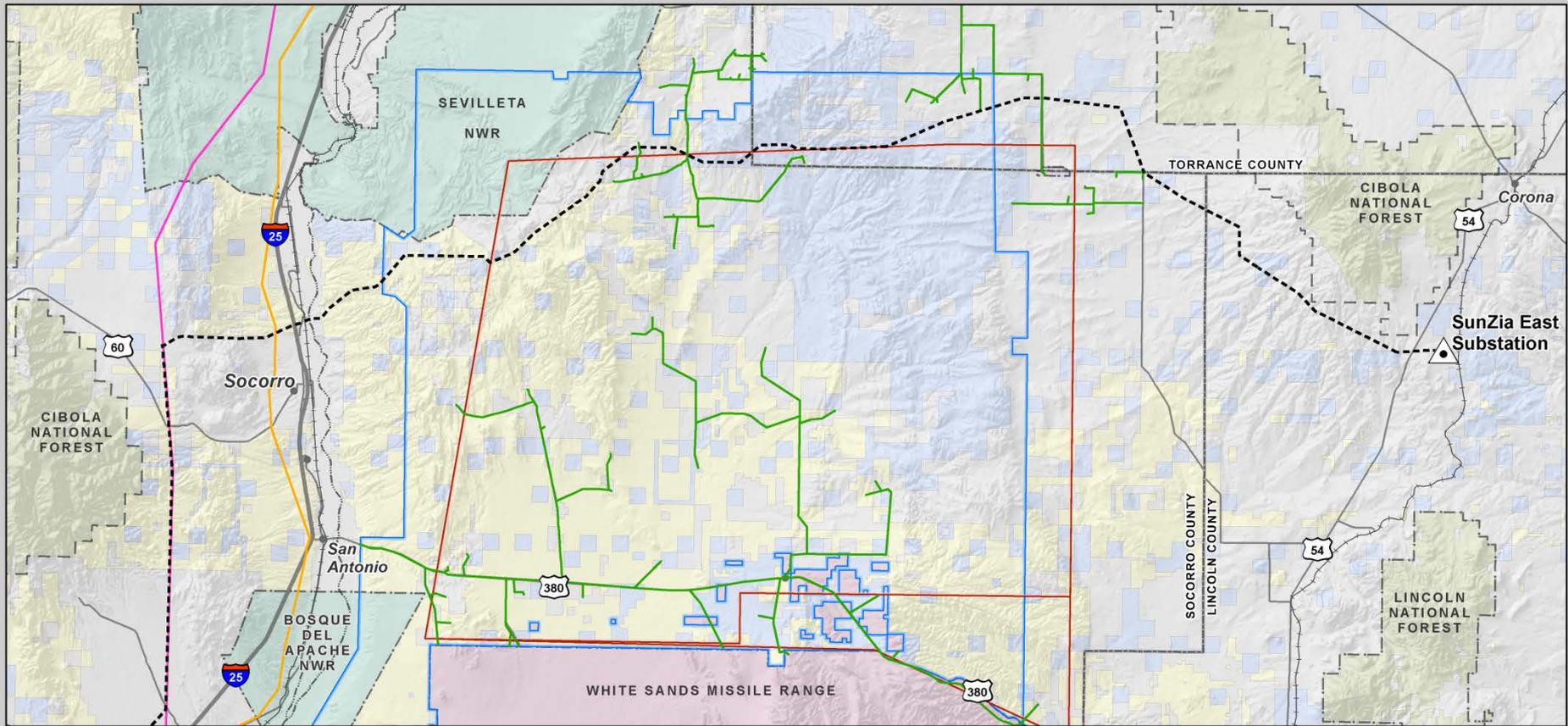
E-mail: [twray@southwesternpower.com](mailto:twray@southwesternpower.com)

Phone: (602) 808-2004



# Supplemental Material





- Project Features**
- Proposed Substation
  - BLM Preferred Alternative
- Electrical Transmission and Distribution Lines**
- < 115 kV Distribution Lines
  - 115 kV Transmission Lines
  - 345 kV Transmission Lines

- Military Features**
- Restricted Airspace (R5107C & H)
  - WSMR - Extension Area

- Land Ownership**
- Bureau of Land Management
  - National Park Service
  - U.S. Forest Service
  - U.S. Fish and Wildlife Service
  - Military
  - State Trust
  - Private/Other

- Reference Features**
- Highway
  - Interstate
  - Railroad
  - River/Stream
  - County Boundary
  - State Boundary
  - Jurisdiction Boundary

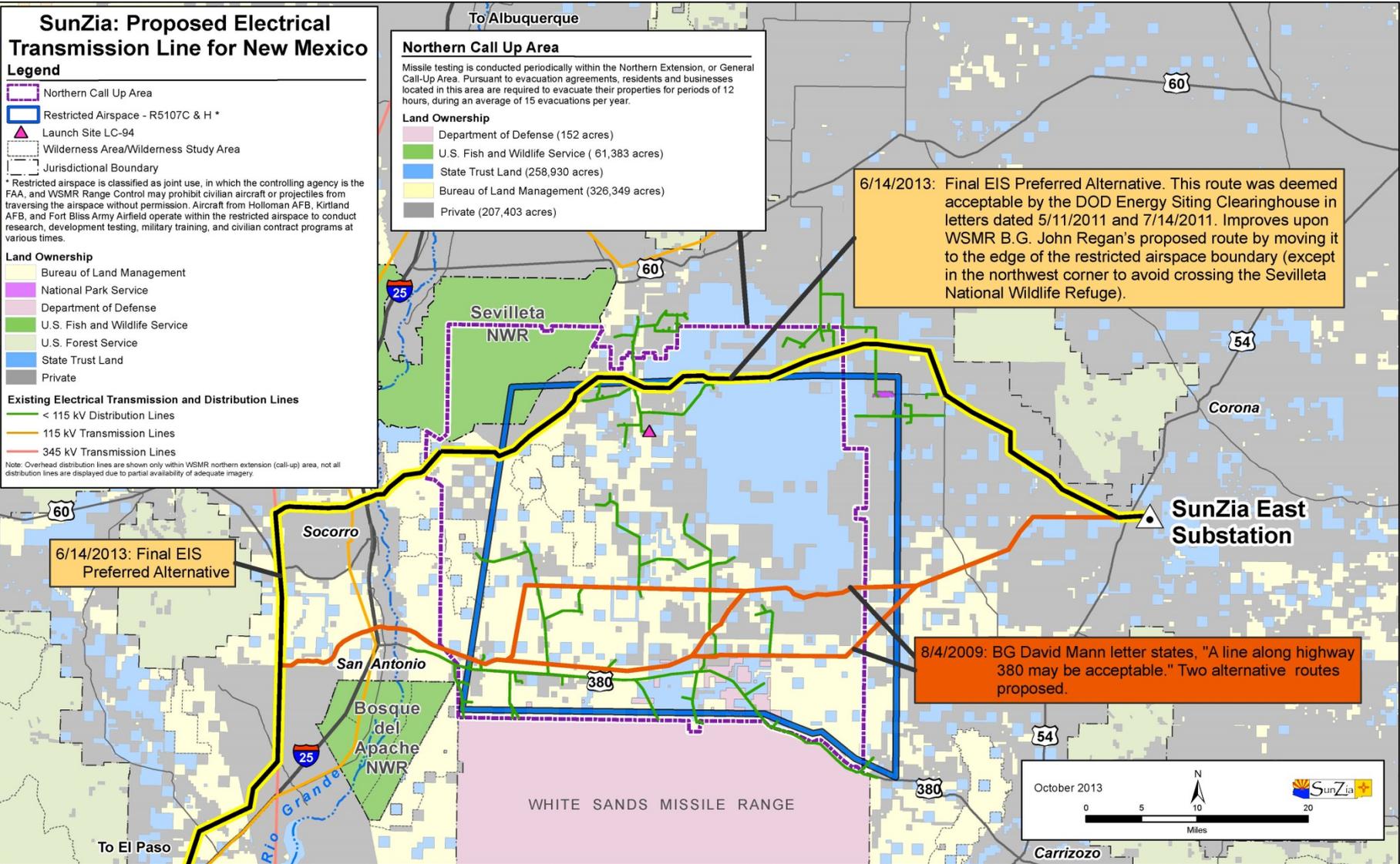
**SUNZIA SOUTHWEST TRANSMISSION PROJECT**  
**WSMR Extension Area Distribution Lines**



September 2013

Note: Overhead distribution lines are shown only within WSMR northern extension (call-up) area, not all distribution lines are displayed due to partial availability of adequate imagery.

Sources: Aerial Imagery (8/22/2011), photo interpretation; BLM GIS services; Socorro Electric Cooperative (Highway 380, 14.4 kV, 9/12/13); ESRI, 2012; DoD, 2010



ROUTE GROUP 1:  
SunZia East Substation to Midpoint Substation

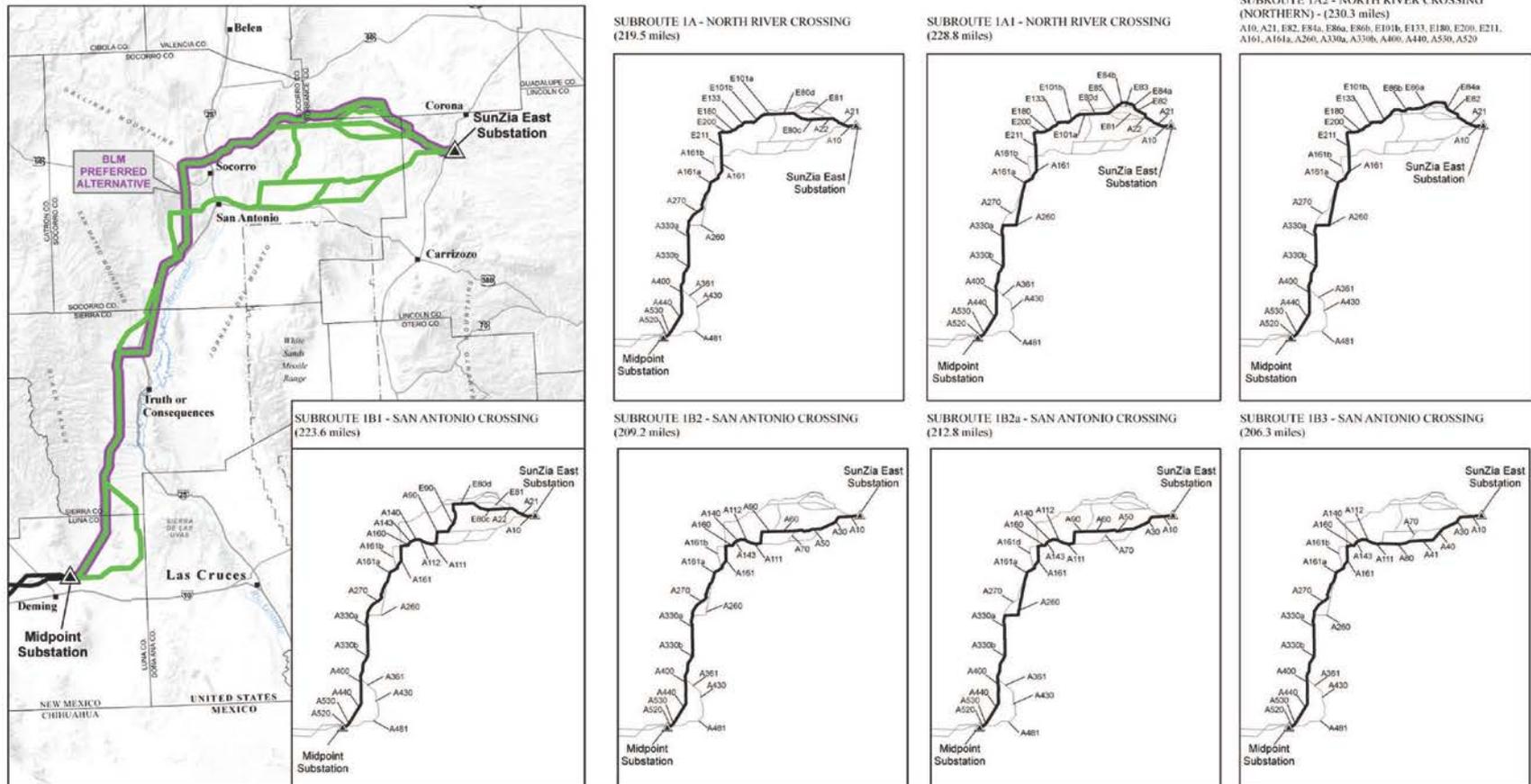


Figure 2-4. Route Group 1: SunZia East Substation to Midpoint Substation

ROUTE GROUP 3: Midpoint Substation to Willow-500 kV Substation

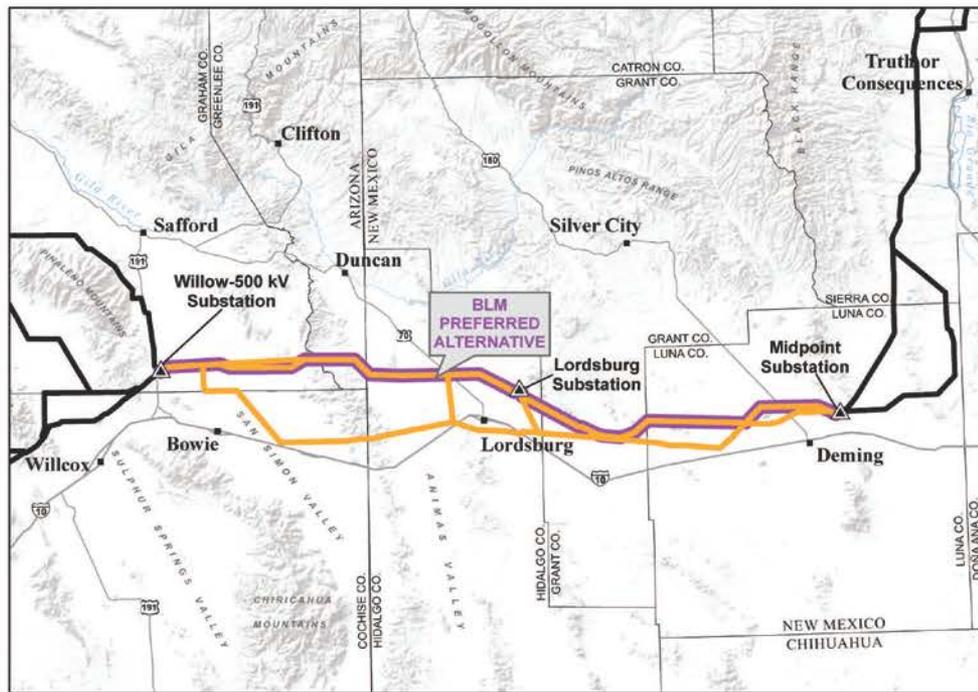
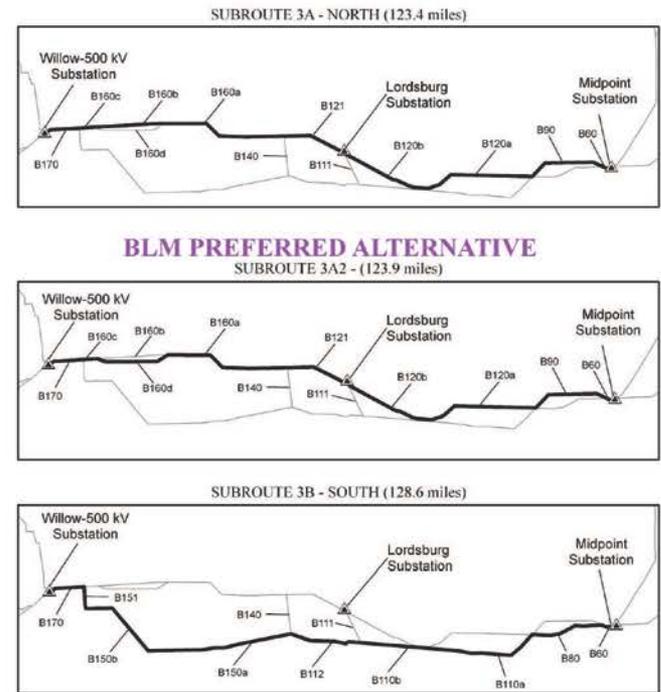
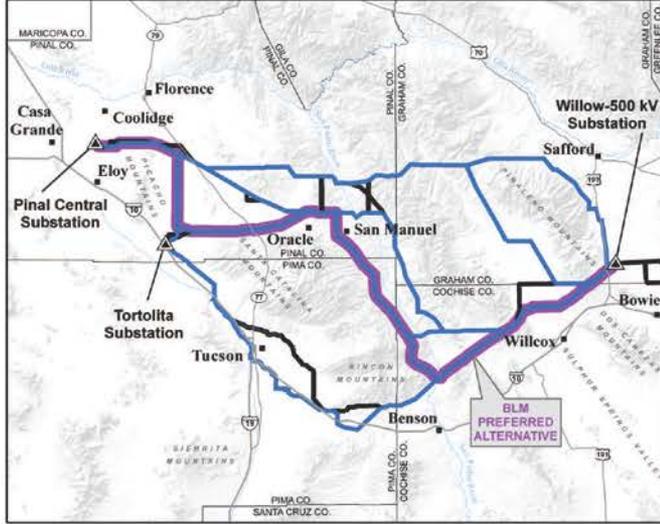


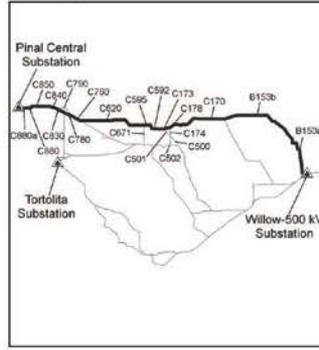
Figure 2-5. Route Group 3: Midpoint Substation to Willow-500 kV Substation



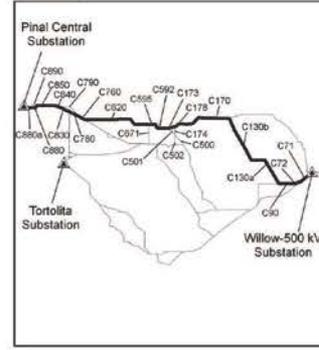
**ROUTE GROUP 4: Willow-500 kV Substation to Pinal Central Substation**



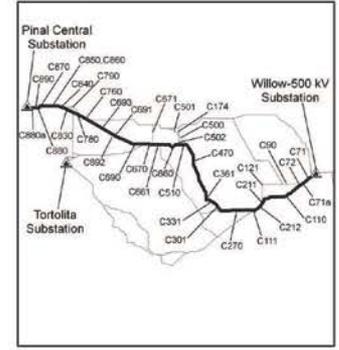
**SUBROUTE 4A - NORTH OF MT. GRAHAM (132.9 miles)**



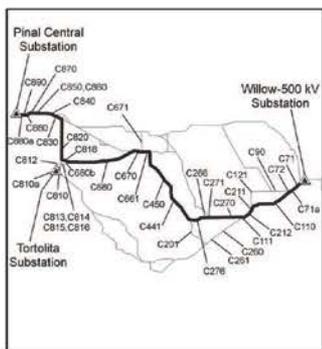
**SUBROUTE 4B - SULPHUR SPRINGS VALLEY (133.0 miles)**



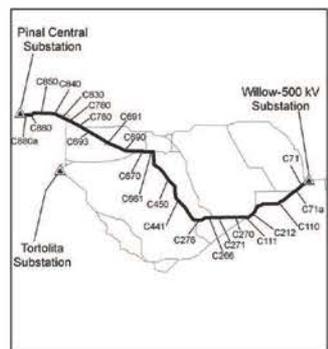
**SUBROUTE 4C1 - EAST OF SAN PEDRO VALLEY (139.0 miles)**



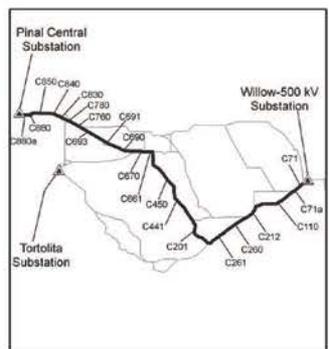
**SUBROUTE 4C2 - WEST OF SAN PEDRO VALLEY (151.8 miles)**



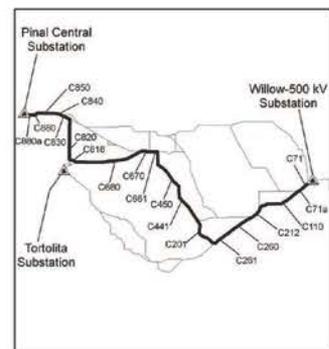
**SUBROUTE 4C2a - WEST OF SAN PEDRO VALLEY (137.8 miles)**



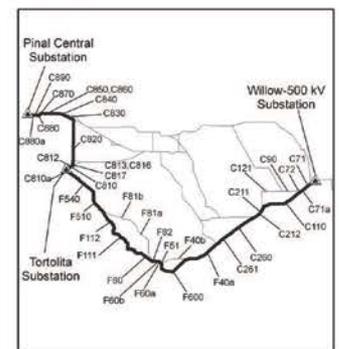
**SUBROUTE 4C2b - WEST OF SAN PEDRO VALLEY (147.2 miles)**



**SUBROUTE 4C2c - WEST OF SAN PEDRO VALLEY (161.2 miles)**



**SUBROUTE 4C3 - TUCSON (172.9 miles)**



**BLM PREFERRED ALTERNATIVE**

**Figure 2-6. Route Group 4: Willow-500 kV Substation to Pinal Central Substation**

# Economic Benefits during Construction

SunZia Alone	+	Renewable Projects	=	AC/AC 		AC/DC 	=	Renewable Projects	+	SunZia Alone
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6,200	+	36,700	=	<b>42,900</b>		<b>46,260</b>	=	39,700	+	6,560
<b>JOBS</b>										

\$ 425M	+	\$ 2.15B	=	<b>\$ 2.6B</b>		<b>\$ 2.7B</b>	=	\$ 2.3B	+	\$ 454M
<b>WAGES &amp; SALARIES</b>										

\$ 90M	+	\$ 150M	=	<b>\$ 240M</b>		<b>\$ 286M</b>	=	\$ 157M	+	\$ 129M
<b>STATE &amp; LOCAL TAXES</b>										

<sup>3</sup> The 3,000 MW generation scenario assumes 24 renewable energy projects totaling 2,420 MW of capacity and 520 MW of “other” generation. The potential contributions are underestimated since the analysis did not analyze contributions for the “other” generation. The estimated construction cost of the 24 renewable projects is \$8.34 Billion.

<sup>4</sup> The 4,500 MW generation scenario assumes 42 renewable energy projects totaling 4,210 MW of capacity and 290 MW of “other” generation. The potential contributions are underestimated since the analysis did not analyze contributions for the “other” generation. The estimated construction cost of the 42 renewable projects is \$11.36 billion.

# Economic Benefits during O&M (per year)

SunZia Alone	Renewable Projects	AC/AC 	AC/DC 	Renewable Projects	SunZia Alone
120	+ 480	= <b>600</b>	 <b>JOBS</b>	710	= 570 + 140
\$ 8M	+ \$ 29M	= <b>\$ 37M</b>	 <b>WAGES &amp; SALARIES</b>	<b>\$ 44M</b>	= \$34.5M + \$ 9.5M
\$ 10M	+ \$ 60M	= <b>\$ 70M</b>	 <b>PROPERTY TAXES</b>	<b>\$ 107M</b>	= \$ 90M + \$ 17M

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