



UNS Electric

2009-2018

TEN-YEAR PLAN

SUBMITTED TO THE
ARIZONA CORPORATION COMMISSION
JANUARY 2009

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Introduction

The 2009-2018 Ten-Year Plan is submitted by UNS Electric, Inc. (UNSE) pursuant to A.R.S. § 40-360.02. Included with this plan are transmission facilities planned for both the Mohave and Santa Cruz County service territories.

UNSE plans include several transmission projects in the next ten years. The majority of the system upgrades are planned for the Santa Cruz service territory, while one planned substation facility and two transmission projects are identified for the Mohave County region.

Previously reported facilities that have been completed, canceled, or deferred beyond the upcoming ten-year period are not included. Projects that have in-service dates of To Be Determined (TBD) or are Under Review are projects that are being considered but their in-service dates are currently beyond the ten-year planning horizon but may become candidates for earlier deployment in subsequent studies.

This report includes system maps depicting the existing transmission networks and planned or contemplated projects followed by individual project descriptions. The maps and descriptions are intended to be general planning level documents to explain projects conceptually. Therefore the maps and descriptions do not suggest specific routings or facility locations.

UNSE¹ participates in local, sub-regional and regional organizations to ensure adequate coordination among neighboring systems as well as to maintain planning consistency within the Western Interconnection. These organizations include the following:

- Southeast Arizona Transmission Study (SATS);
- Colorado River Transmission (CRT);
- Central Arizona Transmission Study (CATS)
- Central Arizona Transmission Study – High Voltage (CATS-HV)
- Joint Planning Agreement (JPA) with Western Area Power Administration (Western)
- Southwest Area Transmission Planning Group (SWAT)
- Southeast Arizona Transmission Study (SATS)
- WestConnect Regional Planning (WestConnect)
- Western Electricity Coordinating Council (WECC)

UNSE will be analyzing transmission needs in Santa Cruz County in 2009 to develop transmission plans that address the recommendations in the 2008 Biennial Transmission Assessment (BTA) related to continuity of service.

UNSE will also be working with stakeholders in northwestern Arizona through the Colorado River Transmission (CRT) study group to improve planning coordination and to develop a report in response to the recommendations in the 2008 BTA.

These plans are tentative information only, and pursuant to A.R.S. § 40-360.02 (F) are subject to change.

¹ TEP represents UNSE in all transmission planning activities.

The following projects are proposed for the Mohave County Region:

- Griffith-North Havasu Transmission
- Golden Valley 230 kV Transmission Line Project McConnico/Harris - Mineral Park Substation
- White Hills Substation

The following projects are proposed for the Santa Cruz County Region:

- Nogales Transmission Line #2
- Upgrade existing 115kV transmission line to Nogales
- Valencia 115kV Substation Expansion
- Gateway 345/115 kV or 345/138 kV Substation
- Gateway – Sonoita 138 kV Transmission Line

Service Territories

Following this brief discussion of activities in the service territories are maps of the planned facilities and details of the proposed projects.

Mohave County

UNSE still considers the Griffith – North Havasu 230kV line as a viable alternative, and currently has an approved CEC (Case #88) for this line addition. UNSE has received an extension to the expiration date of this CEC to 2012. The timing for construction of this project is predicated on results of load growth in conjunction with limitations on the ability of the Western transmission system to support this load growth. A portion of this project (North Havasu to Franconia) was completed in 2007 and is currently energized at 69kV for distribution needs at Franconia. As directed in the fifth Biennial Transmission Assessment (BTA) UNSE will work with the CRT to address issues in Mohave County.

In 2008 UNSE added two 45MW combustion turbines at the new Black Mountain Generating Station, which is connected to the 69kV system associated with the Griffith 230/69kV substation.

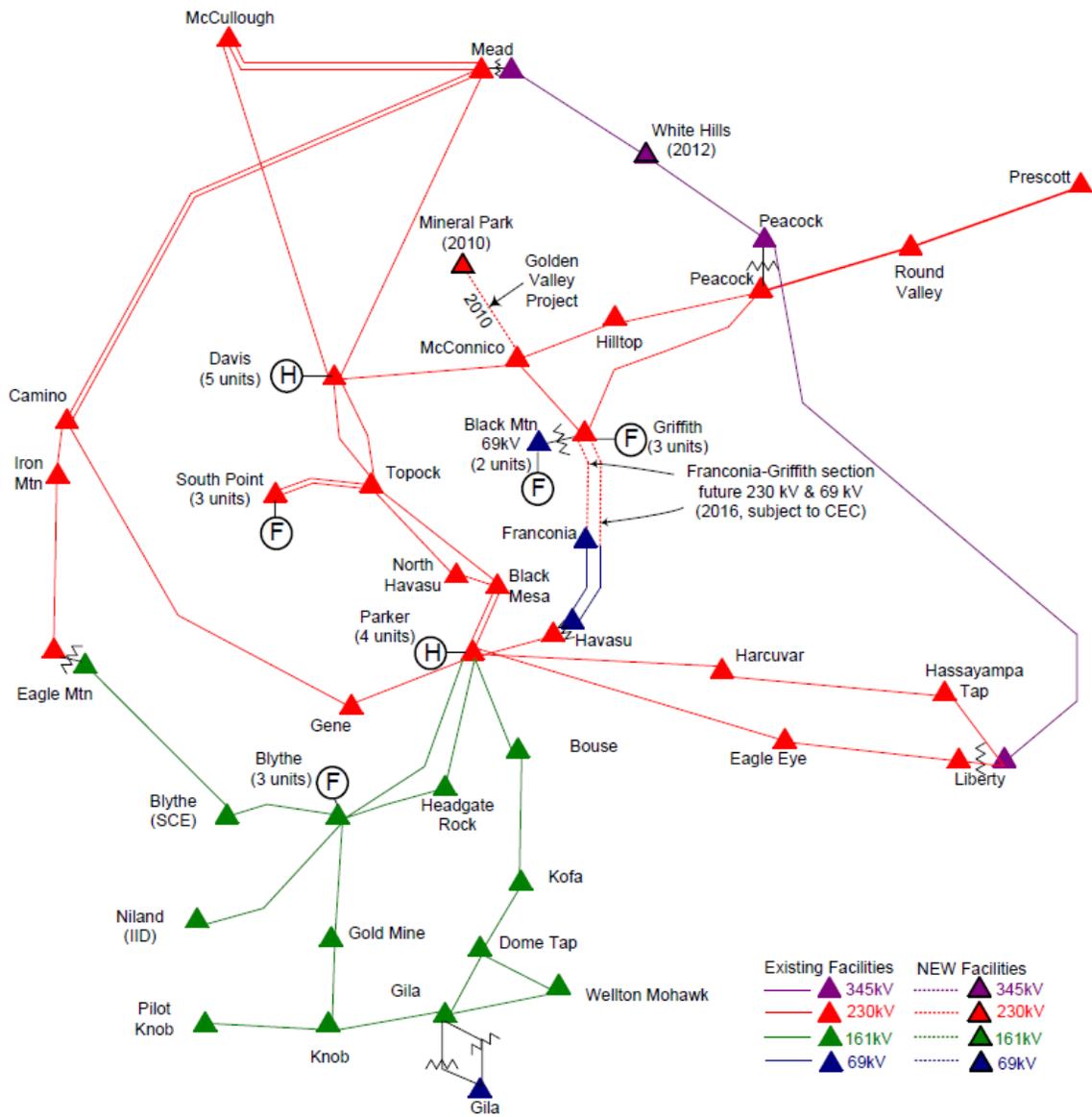
Santa Cruz County

As of the submittal of this ten-year plan the UNSE long-term plan to improve reliability for the Santa Cruz service territory is to construct a redundant transmission line to the Valencia Substation from the new Gateway Substation per Case #111. The construction of this line is pending the receipt of permits from the Department of Energy, the U.S. Forest Service and the Bureau of Land Management.

As directed in the fifth Biennial Transmission Assessment (BTA) UNSE will perform studies and file a report of those studies for the 2010 BTA. This will update UNSE's long range plans for Santa Cruz County. Alternatives including, the Gateway project and generation resources at Valencia, and other alternatives will be evaluated in the study from both technical and economic perspectives.

UNSE is currently finalizing an application for a Certificate of Environmental Compatibility (CEC) to convert the existing 115kV line between Western's Nogales switchyard and the UNSE Valencia substation to 138kV. Part of this project includes transferring the point of interconnection of UNSE from Western's Nogales switchyard to a future interconnection in TEP's Vail Substation.

Mohave County



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10 YEAR PLAN
TRANSMISSION FACILITIES

Line Designation	Griffith-North Havasu Transmission
Size	
a) Voltage	230 kV, 69 kV (double circuit)
b) Capacity	300 MVA (thermal)
c) Point of Origin	Griffith Substation
d) Point of Termination	North Havasu Substation
e) Length	Approximately 40 miles
Routing	West of and parallel to I-40 to Santa Fe Ranch Rd. interchange. Diagonal southeast to the Parker Davis line at Highway 95. Parallel to PD-1 to North Havasu Substation site southeast of the Lake Havasu City airport. Routing to be within corridor as approved and described in CEC Order #88.
Purpose	Reinforce the existing transmission grid and provide interconnection between UNSE load centers in Mohave County.
Date	
a) Construction Start	North Havasu to Franconia, 2007
b) In-Service Date	North Havasu to Franconia, 2007 [Complete]
	Franconia to Griffith, 2016 subject to CEC extension
Is Certificate Necessary	Case # 88 ² -- An extension was approved by the ACC
Technical Studies	Studies completed via CATS, WATS, and Palo Verde–Southeast Station study groups and is part of the WestConnect Transmission Plan.

² Hilltop to Griffith portion of line already completed.

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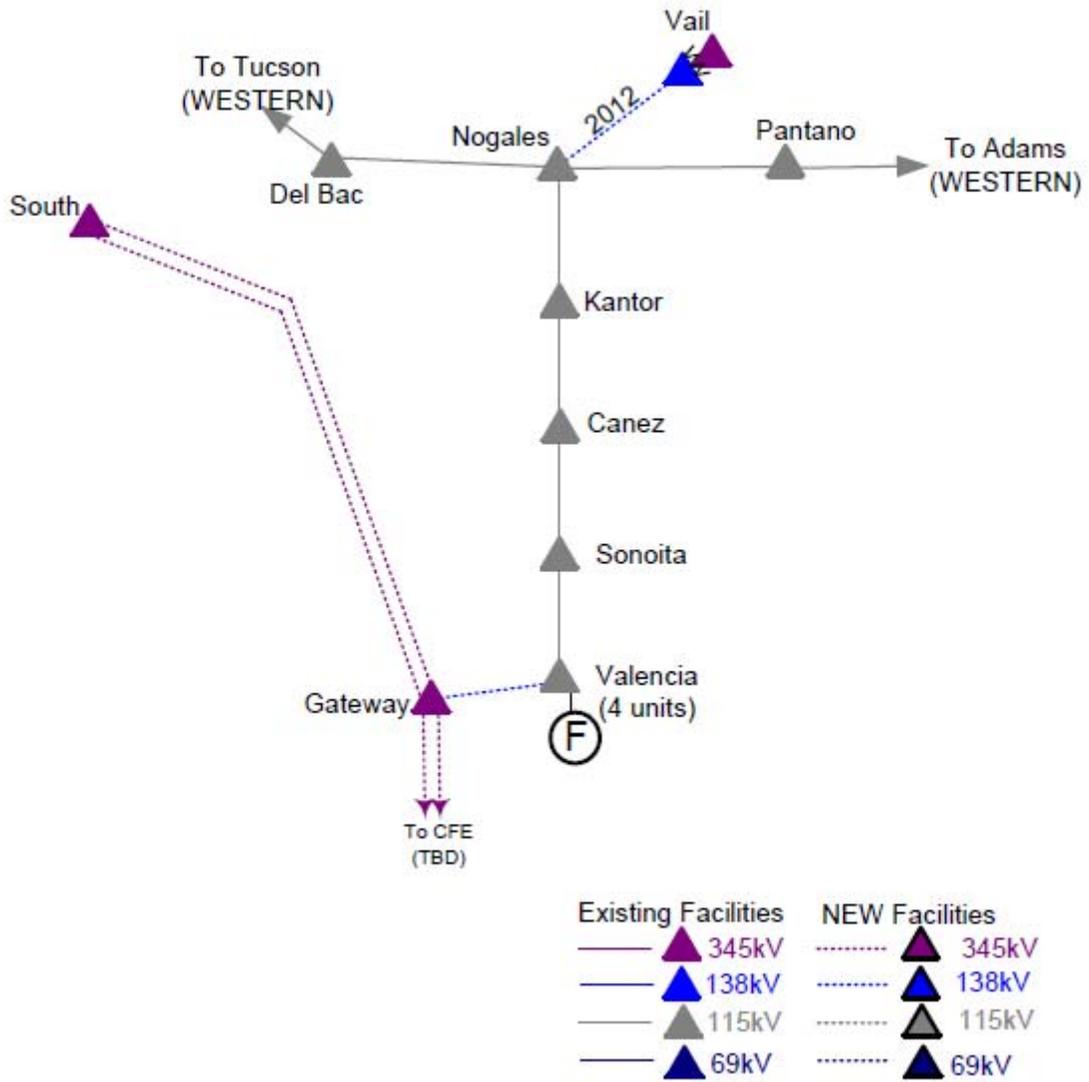
TRANSMISSION FACILITIES

Line Designation	Golden Valley 230 kV Transmission Line Project McConnico/Harris - Mineral Park Substation (previously Mercator Mill Substation) Transmission
Size	
a) Voltage	230 kV single circuit, including combining some segments with the existing 69kV in a double circuit configuration
b) Capacity	400 MVA (thermal) based on future extension of this circuit as part of the looped 230 kV system
c) Point of Origin	McConnico or Harris Substation
d) Point of Termination	Mineral Park Substation (previously Mercator Mill Substation)
e) Length	Approximately 23 miles
Routing	North of the McConnico/Harris stations then northwest along Route 93, then northeast along Mineral Park Rd. to the Mineral Park Substation.
Purpose	Serve mining load at Mercator's Mineral Park Mine and the NUCOR facility
Date	
a) Construction Start	2009
b) In-Service Date	2010
Is Certificate Necessary	Yes
Technical Studies	TBD by Western

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 TRANSMISSION FACILITIES

Line Designation	White Hills Substation
Size	
a) Voltage	345 kV, 69 kV
b) Capacity	300 MVA (transformer capacity)
c) Point of Origin	n/a
d) Point of Termination	n/a
e) Length	n/a
Routing	n/a
Purpose	To provide service to developments anticipated in Northwestern Mohave County.
Date	
a) Construction Start	2011
b) In-Service Date	2012, development has been delayed from 2011 due to economic conditions
Is Certificate Necessary	No, this substation will be built adjacent to WAPA transmission line
Technical Studies	Studies completed 6/27/08 by Western as required through the Open Access Transmission Tariff process.

Santa Cruz County



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 TRANSMISSION FACILITIES

Line Designation	Nogales Transmission Line #2
Size	
a) Voltage	115 kV or 138 kV
b) Capacity	110 MVA (thermal)
c) Point of Origin	Future Gateway Substation
d) Point of Termination	Valencia Substation
e) Length	Approximately 3 miles
Routing	Generally South and East from TEP's proposed Gateway 345 kV substation crossing Interstate 19 and traversing private ROW. Routing to be within the corridor as described in the CEC.
Purpose	The additional transmission line increases transmission system reliability and provides additional load serving capacity to UNSE Santa Cruz Service Area.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Case # 111
Technical Studies	SWAT and internal UNSE studies.

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 TRANSMISSION FACILITIES

Line Designation	Upgrade existing 115kV transmission line to Nogales
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail Substation
d) Point of Termination	Valencia Substation
e) Length	Approximately 60 miles
Routing	Generally South and West from TEP's Vail Substation to UNSE's Valencia Substation.
Purpose	The upgrade of the transmission line increases transmission system reliability and provides additional load serving capacity to UNSE's Santa Cruz Service Area.
Date	
a) Construction Start	2009
b) In-Service Date	2012
Is Certificate Necessary	Yes
Technical Studies	Internal UNSE studies.

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 TRANSMISSION FACILITIES

Line Designation	Valencia 115kV Substation Expansion
Size	
a) Voltage	Operating voltages include 115 kV and 13.2 kV. Future voltage will be 138 kV
b) Capacity	110 MVA (line capacity)
c) Point of Origin	n/a
d) Point of Termination	n/a
e) Length	n/a
Routing	n/a
Purpose	The proposed substation facilities provide an interconnection and source for UNSE's second transmission line to its Santa Cruz Service Area and a future distribution substation, as provided for in CEC.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Case # 111
Technical Studies	Internal UNSE studies.

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 TRANSMISSION FACILITIES

Line Designation Substation	Gateway 345/115 kV or 345/138 kV
Size	
a) Voltage 138,	Operating voltages include 345, 115 or and 13.2 kV
b) Capacity	100 MVA
c) Point of Origin	n/a
d) Point of Termination	n/a
e) Length	n/a
Routing	Unknown
Purpose	The proposed substation facilities provide an interconnection and source for UNSE's second transmission line to its Santa Cruz Service Area and a future distribution substation, as provided for in CEC.
Date	
a) Construction Start	Subject to permitting
b) In-Service Date	Subject to permitting
Is Certificate Necessary	Case # 111 (see also TEP 10-year plan)
Technical Studies	Internal UNSE studies.

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 TRANSMISSION FACILITIES

Line Designation Transmission Line	Gateway – Sonoita 138 kV
Size	
a) Voltage	138 kV
b) Capacity	System Dependent
c) Point of Origin	Gateway Substation
d) Point of Termination	Sonoita Substation
e) Length	Approximately 10 miles
Routing	Unknown
Purpose	To provide additional transmission capacity in the Nogales area.
Date	
a) Construction Start	Under Review
b) In-Service Date	Subject to Gateway permitting
Is Certificate Necessary	Yes
Technical Studies	Internal UNSE studies.