TUCSON ELECTRIC POWER COMPANY
TEN YEAR PLAN
FOR YEARS
2010-2019

SUBMITTED TO THE
ARIZONA CORPORATION COMMISSION
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CONTENTS

INTRODUCTION

EHV Transmission System

Tucson Electric Power Company (TEP) is a member of the WestConnect Planning Area and the Southwest Area Transmission (SWAT) Sub-Regional Planning Group. TEP participates in various SWAT subcommittees, work groups, and task forces including: SWAT Central Arizona Transmission EHV (CATS-EHV), SWAT Central Arizona Transmission HV (CATS-HV), SWAT Colorado River Transmission (CRT), SWAT Arizona-New Mexico (AZNM), Southeast Arizona Transmission System (SATS), and SWAT Renewable Energy Transmission Task Force (RTTF). Each of these subcommittees has been involved in studying various generation and transmission projects to enhance and increase utilization of the existing system. The SATS study includes all or part of Pima, Pinal, Cochise, and Santa Cruz counties and has the largest direct impact on TEP. TEP has chaired this subcommittee since its inception and is responsible for filing the 2009 SATS Report on behalf of the SATS participants. TEP participated in the RTTF coordinated effort related to the Arizona Corporation Commission (ACC) order for each jurisdictional entity to identify its top three potential renewable transmission projects. TEP identified its top three potential renewable transmission projects in the October 31, 2009 filing with the ACC. These potential projects are:

1) Palo Verde – Pinal West – Pinal Central (500 kV)
2) Pinal Central – Tortolita (500 kV)
3) Western Apache – Tortolita Upgrade to 230 kV double circuit

TEP is a participant in the Pinal West – Pinal Central portion of the SRP Pinal West – Abel/Browning 500 kV Project. TEP plans to construct a 500 kV line between the proposed Pinal Central Switchyard and TEP's Tortolita Substation. The Pinal Central to Tortolita 500kV project, previously scheduled for 2013 has been deferred to 2014.

TEP is evaluating various EHV alternatives to increase load serving capability within TEP's control area. Capability of the EHV and 230kV lines between Greenlee and Vail will need to be increased and will be addressed as part of the SATS 2010 Study Plan. Within the TEP service territory and in addition to the potential renewable transmission projects previously identified, projects under consideration include a 345 kV line between TEP's South and Vail substations with a loop in at the Irvington Station and EHV transmission lines between TEP's Tortolita and North Loop Substations. Additional local 138kV system reinforcement alternatives are also being considered within TEP's service territory.

138kV Local Transmission System

TEP performs an annual review of its 138kV system performance over a ten-year planning horizon. This results in a schedule for new facilities and upgrades to existing facilities assuring adequate transmission capacity within TEP's service territory as the Tucson metropolitan area continues to develop. Capital improvements are proposed to be made to the TEP 138kV system to accommodate new 138/13.8kV substations, address increased line loading, and mitigate localized stability issues.

Load projection analysis focuses on distribution system needs and shows the impact of load growth at each of TEP's distribution substations. This results in identification of proposed new 138/13.8 kV substations and new 138kV transmission lines. Load projection also provides input to the power flow analysis used to identify thermal overloads as loads in Tucson continue to grow.

Power flow analysis is conducted to identify thermal overloads and voltage violations under normal and contingency conditions as required by the NERC Planning Standards and the WECC System Performance Criteria. Mitigation is then determined such that the performance measures of the NERC Planning Standards and WECC System Performance Criteria are met for Category A, B and C conditions.

Contingencies include:

- Loss of major EHV import transmission facilities
- Loss of critical local generation
- Single 138kV circuit outages
- Credible 138kV multiple circuit outages
- Critical circuits initially out of service with the system adjusted to normal conditions followed by a subsequent outage.

Violations of the NERC Planning Standards and WECC System Performance Criteria are mitigated by proposed system improvements including the following:

- New transmission lines;

- Uprate existing lines (increase conductor clearances, install larger ampacity wire, or replace station equipment);
- New local generation (when more cost effective than transmission);
- Additional 138 kV shunt capacitor banks;
- Other cost effective measures.

Stability issues are resolved through transmission system reinforcement and/or the application of Flexible AC Transmission System (FACTS) devices. For example, TEP installed a -75 to +200 MVAr Static Var Compensator at its Northeast 138 kV substation, which was placed in-service in May 2008.

Following the 2008 Biennial Transmission Assessment, the ACC issued Decision No. 70635, which required Arizona Public Service, Sulphur Springs Valley Electric Cooperative, and TEP to "perform collaborative studies … that establish a long range system plan for Cochise County that is founded on the principle of continuity of service following a transmission line outage." The Cochise County Study Group was formed under SATS to address this Decision. On behalf of the participants, Southwest Transmission Cooperative has filed the report, *Cochise County Electric Reliability Study*, along with *A Summary Report and Reference Filing of the Cochise County Technical Study Report*, under Docket Number E-00000D-00-0020 as part of their 2010 – 2019 Ten Year Plan filing. TEP incorporates these reports by reference.

TEP EHV and local area 138kV transmission systems with facility additions or uprates are shown graphically in Figures 1, 2, and 3, and followed by individual project descriptions. Note that in service dates shown as "TBD" are beyond the ten year horizon. Figure 1. *Existing and Planned EHV Transmission Facilities Map* and Figure 2. *Existing and Planned EHV Transmission Facilities One-Line Diagram* show existing and proposed EHV transmission for portions of TEP and neighboring systems. Existing TEP-owned or TEP-participant 500kV, 345kV, 230kV, and 138 kV lines are depicted as solid red, green, blue, and orange lines respectively. Proposed lines are shown in the same colors, but as thicker dashed lines. Lines owned by others are shown in the same color but as dotted lines. Proposed Substations are shown in the same color but with a black border.

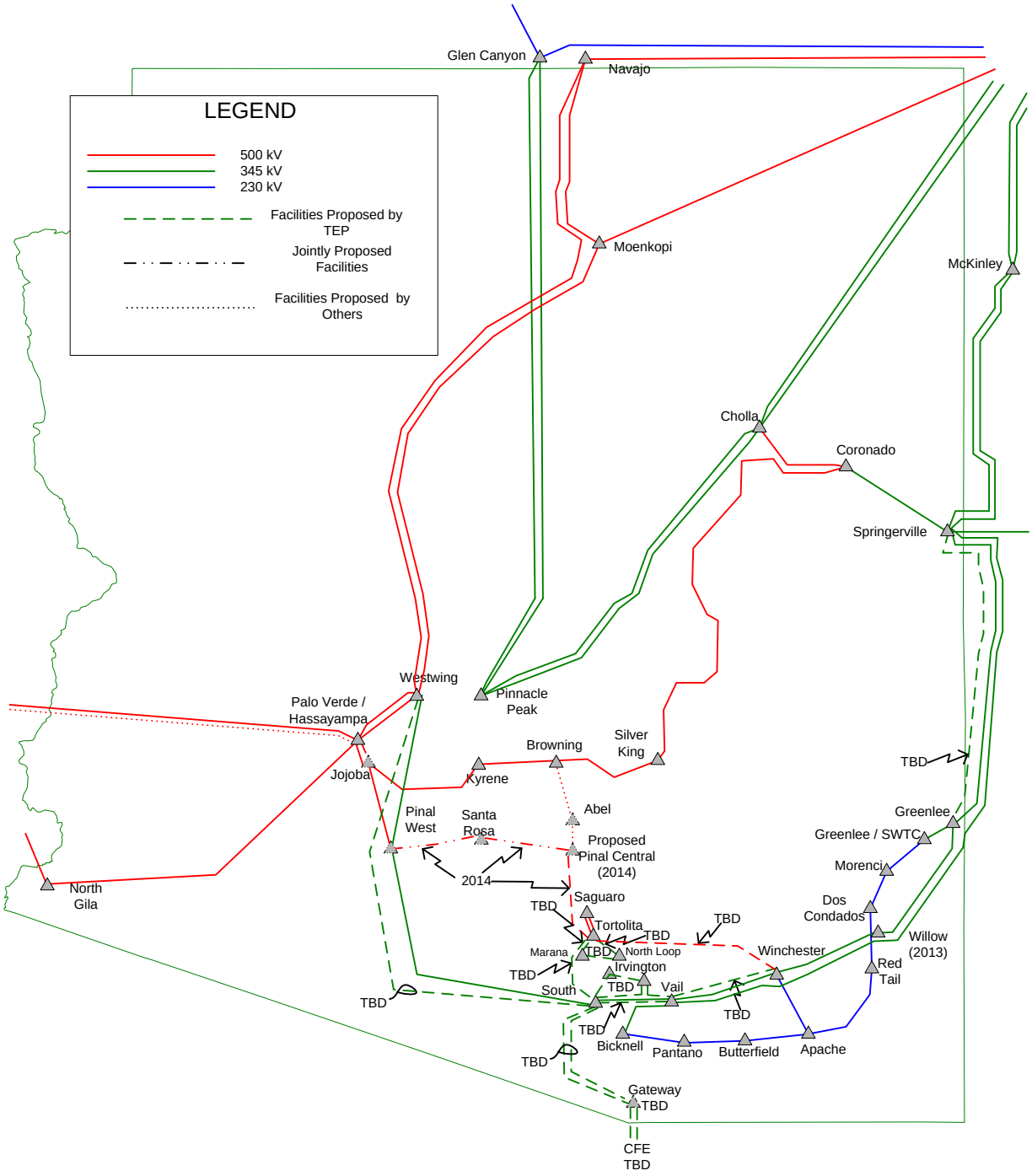

Figure 1. Existing and Planned EHV Transmission Facilities Map

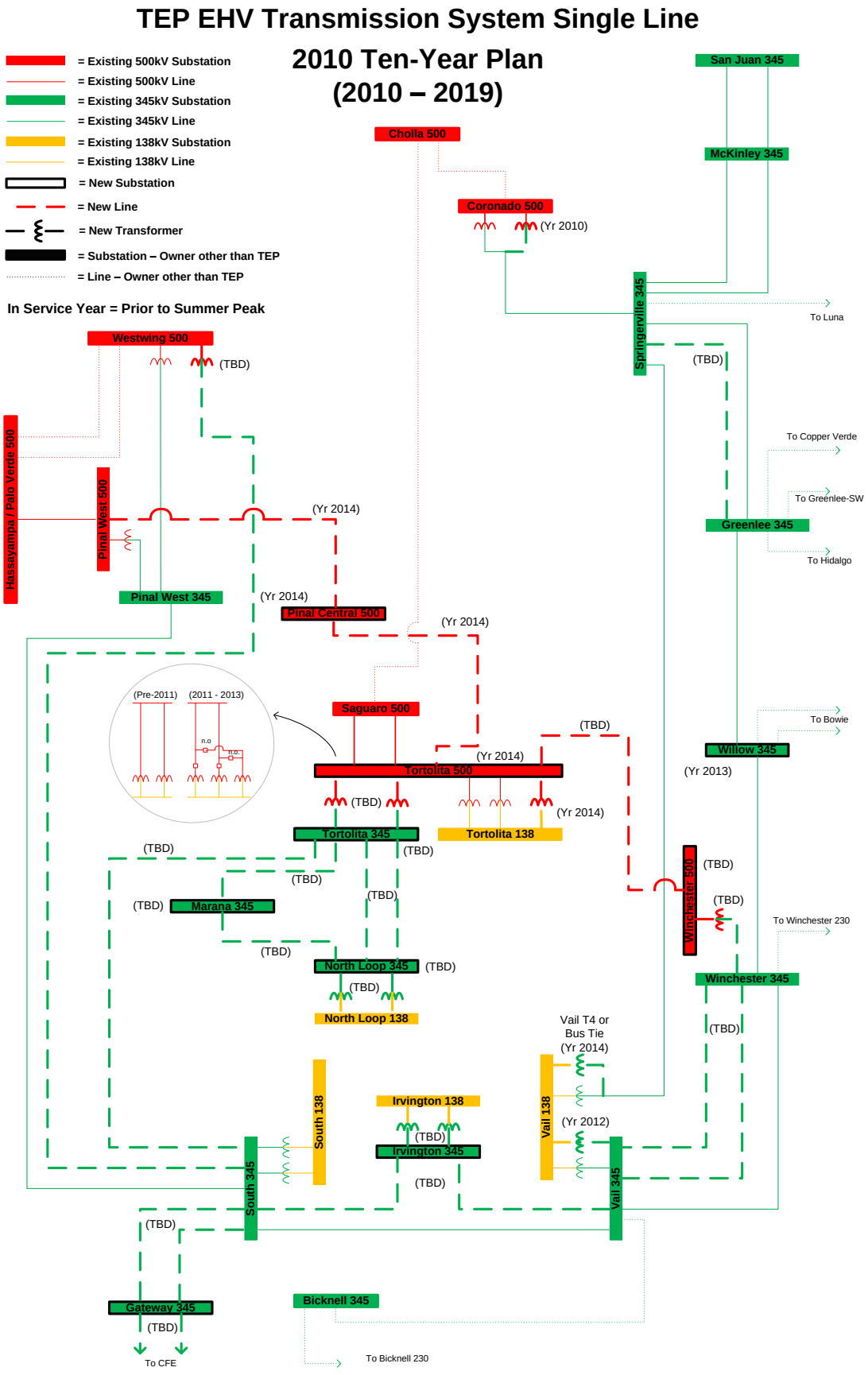

Figure 2. Existing and Planned EHV Transmission Facilities Single-Line Diagram

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Pinal West Substation to Pinal Central Substation
Size	
a) Voltage	500-kV
b) Capacity	1500 MVA
c) Point of Origin	Pinal West substation
d) Point of Termination	Future Pinal Central Substation
e) Length	Approximately 38 miles
Routing	South and east from the Pinal West substation to approximately Teel Road, then east to the vicinity of the Santa Rosa substation. From Santa Rosa easterly to approximately the Santa Rosa Wash, then generally south to approximately a half mile north of I-8 where it turns east again. Then it runs easterly to about the location of the ED2 substation (Sec 25, T6S, R7E).
Purpose	TEP is a participant in the project that will provide a higher capacity link for the flow of power from the Palo Verde area into TEP's northern service territory.
Date	
a) Construction Start	2012
b) In-Service Date	2014
Is Certificate Necessary	Case No. 126
Technical Studies	Completed

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Pinal Central Substation to Tortolita Substation
Size	
a) Voltage	500-kV
b) Capacity	System dependent
c) Point of Origin	Future Pinal Central substation
d) Point of Termination	Tortolita Substation (Sec. 14 T10S R10E)
e) Length	Approximately 38 miles
Routing	Unknown
Purpose	To reinforce TEP's EHV system and to provide a higher capacity link for the flow of power from the Palo Verde area into TEP's northern service territory.
Date	
a) Construction Start	2012
b) In-Service Date	2014
Is Certificate Necessary	Yes
Technical Studies	Completed

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Substation to North Loop circuit #1 and #2
Size	
a) Voltage	345-kV or 500-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita Substation (Sec. 14 T10S R10E)
d) Potential Interim Point	SWTC Marana Substation
e) Point of Termination	North Loop Substation
f) Length	Approximately 15 miles
Routing	Unknown
Purpose	To reinforce TEP's EHV system and to provide a new tie between TEP's HV and EHV systems.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SATS, SWAT and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Interconnection of Greenlee – Winchester 345 kV with future Willow 345 kV Substation
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Greenlee - Winchester
d) Point of Termination	Future Willow substation
e) Length	Less than 1 mile
Routing	Adjacent to Greenlee - Winchester 345 kV line.
Purpose	To accommodate interconnection of Bowie Power Station.
Date	
a) Construction Start	2012
b) In-Service Date	2013
Is Certificate Necessary	CEC was obtained by Southwestern Power Group – Case number 118
Technical Studies	SATS and Interconnection Studies per TEP OATT.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Substation to Irvington Substation
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Vail Substation (Sec. 4 T16S R15E)
d) Point of Termination	Irvington Substation (Sec. 03 T15S R14E)
e) Length	Approximately 11 miles
Routing	Unknown
Purpose	To reinforce TEP's EHV system and to provide a new tie between TEP's HV and EHV systems.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SATS, SWAT and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Irvington Substation to South Substation
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Irvington Substation (Sec. 03 T15S R14E)
d) Point of Termination	South Substation (Sec. 36 T16S R13E)
e) Length	Approximately 16 miles
Routing	Unknown
Purpose	To reinforce TEP's EHV system and to provide a new tie between TEP's HV and EHV systems.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SATS, SWAT and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Substation to Winchester Substation
Size	
a) Voltage	500-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita Substation (Sec. 14 T10S R10E)
d) Point of Termination	Winchester Substation
e) Length	Approximately 80 miles
Routing	As described in Siting Case No. 23
Purpose	To reinforce TEP's EHV system and to provide a higher capacity link for the flow of power from the Palo Verde area into TEP's eastern transmission system.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Case No. 23
Technical Studies	Studies in progress via SWAT, SATS and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Winchester Substation to Vail Substation – circuits #2 and #3
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Winchester Substation
d) Point of Termination	Vail Substation (Sec. 4 T16S R15E)
e) Length	Approximately 40 miles
Routing	Parallel to existing Winchester – Vail Line
Purpose	To reinforce TEP's EHV system and to provide additional transmission capacity from the Winchester Station into Tucson
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SWAT, SATS and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Substation to South Substation – 2nd circuit
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Vail Substation (Sec. 4 T16S R15E)
d) Point of Termination	South Substation (Sec. 36 T16S R13E)
e) Length	14 miles
Routing	Parallel to existing Vail – South Line
Purpose	To reinforce TEP's EHV system and to provide additional transmission capacity between Vail and South Substations
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	No
Technical Studies	Studies in progress via SWAT, SATS and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Springerville Substation to Greenlee Substation - 2nd circuit
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Springerville Substation (Sec. 34 T11N R30E)
d) Point of Termination	Greenlee Substation (Sec. 29 T5S R31E)
e) Length	110 Miles total; 27 Miles in Arizona.
Routing	Parallel to existing Springerville to Greenlee line.
Purpose	To deliver power and energy from major TEP interconnections in the Four Corners and Eastern Arizona regions.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Case numbers 12, 30, 63 and 73
Technical Studies	Studies conducted in coordination with neighboring utilities formed the basis for the design of TEP's original EHV system in the 70's. This project is based on that original work. Detailed studies will be developed in the future upon a determination of need for this project by TEP.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Substation to South Substation.
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita Substation (Sec. 23 T10S R10E)
d) Point of Termination	South Substation (Sec. 36 T16S R13E)
e) Length	68 Miles
Routing	From Tortolita Substation south through Avra Valley to existing Westwing-South 345-kV transmission line right-of-way, then parallel to existing Westwing – South line to South Substation.
Purpose	To reinforce TEP's EHV system and to provide a high capacity link for the flow of power in Southern Arizona.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Case #50
Technical Studies	Studies conducted in coordination with neighboring utilities formed the basis for the design of TEP's original EHV system in the 70's. This project is based on that original work. Detailed studies will be developed in the future upon a determination of need for this project by TEP.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Westwing Substation to South Substation – 2nd circuit
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Westwing Substation (Sec. 12 T4N R1W)
d) Point of Termination	South Substation (Sec. 36 T16S R13E)
e) Length	178 Miles
Routing	Parallel to existing Westwing to South line.
Purpose	To deliver power and energy from major TEP interconnections in the Northwest Phoenix region.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD
Is Certificate Necessary	Case # 15
Technical Studies	Studies conducted in coordination with neighboring utilities formed the basis for the design of TEP's original EHV system in the 70's. This project is based on that original work. Detailed studies will be developed in the future upon a determination of need for this project by TEP. To be reviewed in SWAT, SATS and internal TEP studies.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	TEP-UNS Electric 345 kV Interconnection -- South Substation to future Gateway Substation (2 ckts.)
Size	
a) Voltage	345-kV
b) Capacity	500 MW
c) Point of Origin	South Substation (Sec. 36 T16S R13E)
d) Points of Termination	Gateway Substation in (Sec. 12 T24S R13E)
e) Length	Approximately 60 Miles
Routing	Southerly from South Substation, near Sahuarita Arizona to Nogales area.
Purpose	To provide an alternate transmission path to UNS Electric in Nogales, Arizona pursuant to ACC Order.
Date	
a) Construction Start	Dependent upon permitting
b) In-Service Date	Dependent upon permitting
Is Certificate Necessary	Case #111
Technical Studies	See record of Siting Case No. 111

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Gateway Substation to Comision Federal de Electricidad (CFE) (2 ckts.)
Size	
a) Voltage	345-kV
b) Capacity	500 MW
c) Point of Origin	Gateway Substation (Sec. 12 T24S R13E)
d) Points of Termination	Arizona-Sonora boundary (Sec. 13 T24S R13E)
e) Length	Approximately 2 Miles
Routing	Southerly from Gateway Substation, in or near the Nogales area.
Purpose	To interconnect to the Comision Federal de Electricidad in Sonora, Mexico.
Date	
a) Construction Start	Dependent upon permitting
b) In-Service Date	Dependent upon permitting
Is Certificate Necessary	Case #111
Technical Studies	See record of Siting Case No. 111

The TEP 138kV existing and planned local area transmission system is shown in Figure 3. *TEP Local Area 138kV Ten Year Transmission Plan*. Existing substations and lines are shown as green blocks and solid black lines respectively. Proposed substations are shown as yellow blocks and proposed lines are in red. Uprated lines are in subdued red.

Tucson Electric Power Company
2010 – 2019 Ten-Year Transmission Plan
Local Transmission System Single Line

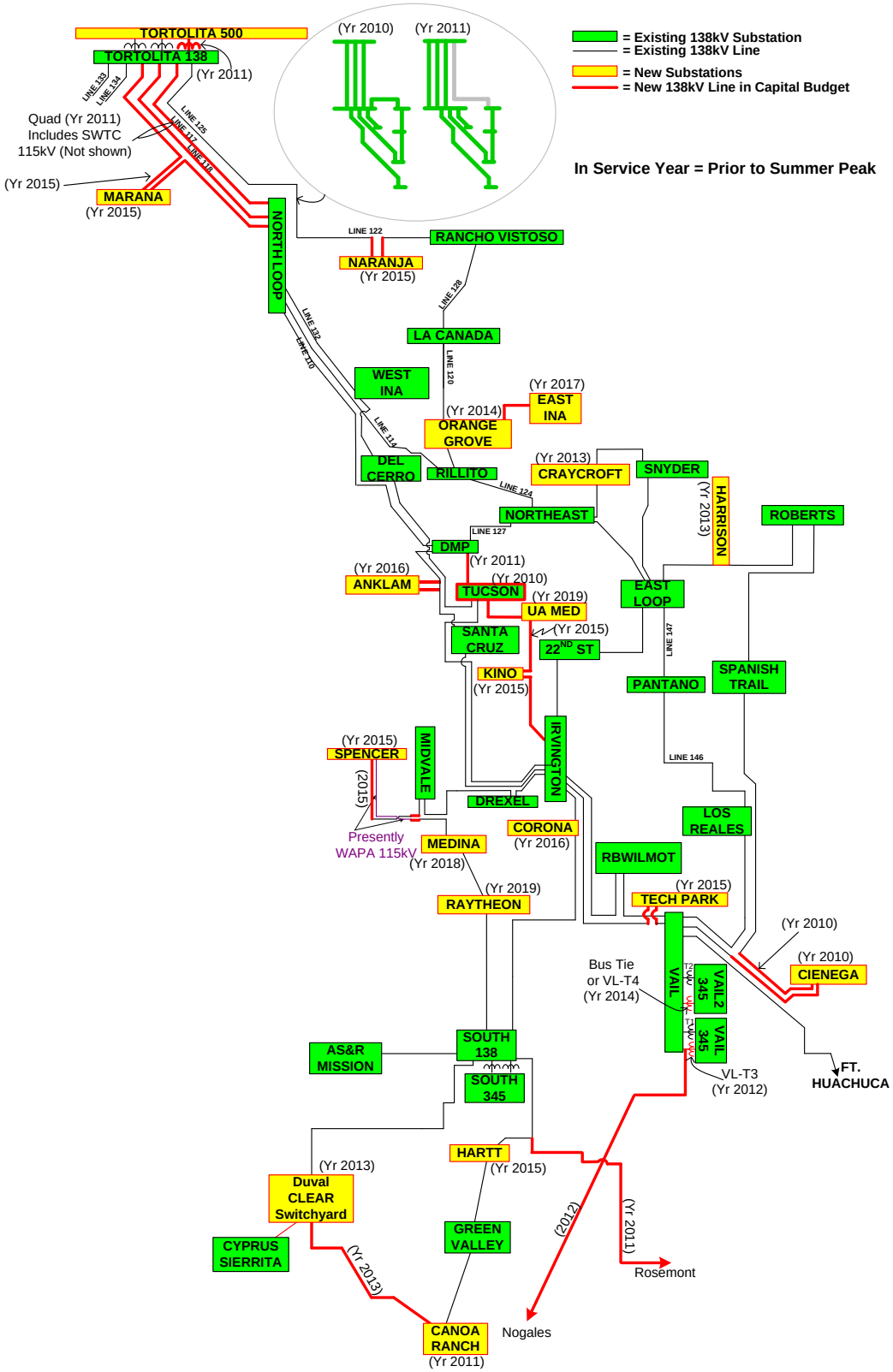

Figure 3. TEP Local Area 138kV Ten Year Transmission Plan

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Irvington Substation to East Loop Substation (through 22nd Street Substation).	
Size		
a) Voltage	138-kV	
b) Capacity	System dependent	
c) Point of Origin	Irvington Substation (Sec. 03 T15S R14E)	
d) Point of Termination	East Loop Substation (Sec. 08 T14S R15E)	
e) Length	Irvington – East Loop – 9 Miles	
	Phase 1: Irvington Station to 22nd Street Substation – 4 miles	
	Phase 2: 22nd Street to East Loop Substation – 5 miles	
Routing	North and East of Irvington Substation, through 22nd Street Substation, then East and North to East Loop Substation.	
Purpose	To provide additional electric service to the central area of TEP's service area and to reinforce the local transmission system.	
Date		
a) Construction Start	1985	
b) In-Service Date	Phase 1 – 1994 (Completed)	Irvington Station to 22nd St. Substation
	Phase 2 – 2000 (Completed)	22nd Street to East Loop Substation
	Phase 3 – TBD	2nd Circuit of Phase I

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Substation to East Loop Substation through Spanish Trail and Roberts Substations, tapping the Roberts-East Loop line for new Harrison Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail Substation (Sec. 4 T16S R15E)
d) Point of Termination	East Loop Substation (Sec. 8 T14S R15E)
e) Length	Phase 1: Vail Substation to East Loop Substation - 22 Miles Phase 2: East Loop – Roberts – 7 miles Spanish Trail to Roberts – 5.75 miles Phase 3: Vail Substation to East Loop Substation - 22 Miles Phase 4: East Loop – Harrison – approximately 3 miles Roberts – Harrison – approximately 4 miles
Routing	East and north from Vail Substation along existing transmission line to Irvington and Houghton Roads, then north along Houghton Road to Speedway Boulevard, then east and north to Roberts Substation and west along Speedway to East Loop Substation.
Purpose	To provide additional electric service to the eastern portion of TEP's service area and to reinforce the local transmission system.
Date	
a) Construction Start	1976
b) In-Service Date	Phase 1 - 1977 Spanish Trail

	(Completed)	Substation to East Loop and Vail Substation
	Phase 2 - 1983 (Completed)	Roberts Substation and associated 138-kV lines
	Phase 3 – TBD	Third 138-kV line from Vail to East Loop Substation
	Phase 4 - 2013	Harrison Substation tap of Roberts-East Loop 138 kV line
Is Certificate Necessary	Case #8	

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	East Loop Substation to Northeast Substation (through Snyder Substation)	
Size		
a) Voltage	138-kV	
b) Capacity	System dependent	
c) Point of Origin	East Loop Substation Sec. (8 T14S R15E)	
d) Point of Termination	Northeast Substation Sec. (28 T13S R14E)	
e) Length	East Loop – Northeast - 14 Miles	
	East Loop Substation to Snyder Substation – 8.7 miles	
	Snyder Substation to Northeast Substation – 5.3 miles	
Routing	North and west of East Loop Substation, then south and west to termination point.	
Purpose	To provide additional electric service to the northeastern area of TEP's service area.	
Date		
a) Construction Start	1985	
b) In-Service Date	Phase 1 - 1987 (Completed)	Snyder Substation and 138-kV line to East Loop Substation
	Phase 2 – 1999-2005	138-kV line from Snyder Substation to Northeast Substation
	2009 – Completed final public improvement portions of the project.	

Is Certificate Necessary	Refer to Case #47

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Loop existing West Ina Substation to Tucson Station line through Del Cerro Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Sec. 20 T13S R13E
d) Point of Termination	Sec. 20 T13S R13E
e) Length	Less than one mile
Routing	Loop existing line at Camino del Cerro and Santa Cruz River; east along Camino del Cerro alignment into future Del Cerro Substation. Sec. 17 T13S R13E
Purpose	To provide additional electric service to the western part of TEP's service area and to reinforce the local distribution system.
Date	
a) Construction Start	2007
b) In-Service Date	2009 - Completed
Is Certificate Necessary	Refer to Case #62

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Interconnection of South – Midvale 138 kV circuit with future Spencer, Raytheon, Medina 138kV substations
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Midvale 138 kV Substation
d) Interim Points	Phase 1: Future Spencer Substation (Sec. 2 T15S R12E) Phase 2: Future Medina 138kV Substation Phase 3 : Future Raytheon 138 kV Substation
e) Termination Point	South 138kV Substation
f) Length	Phase 1: Midvale-Spencer, approximately 8 miles of double-circuit 138 kV Phase 2: Spencer – Medina – approximately 5 miles Medina – South – approximately 11 miles Phase 3: Medina – Raytheon – approximately 3 miles Raytheon – South – approximately 8 miles
Routing	Phase 1: West of Midvale Substation along Valencia Road, then north on Spencer Road alignment. Phase 2: Medina Substation will be adjacent to existing Midvale - South 138kV circuit

	Phase 3: Raytheon Substation will be adjacent to existing Midvale - South 138kV circuit
Purpose	Phase 1: To provide additional electrical service to the far western portion of TEP's service area and to reinforce the local distribution system. Phase 2: Required to serve load at the new Medina 138 kV Substation Phase 3: Required to serve load at the new Raytheon 138 kV Substation
Date	
a) Construction Start	Phase 1: 2014 Phase 2: 2017 Phase 3: 2018
b) In-Service Date	Phase 1: 2015 Phase 2: 2018 Phase 3: 2019
Is Certificate Necessary	Phase 1: TBD (dependent upon use of Federal and/or Tohono r/w) Phase 2: No Phase 3: No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	South Substation to Duval CLEAR Switchyard through future Canoa Ranch Substation and Green Valley Substation	
Size		
a) Voltage	138-kV	
b) Capacity	System dependent	
c) Point of Origin	South Substation (Sec. 36 T16S R13E)	
d) Point of Termination	Duval CLEAR Switchyard (Sec. 10 T18S R12E)	
e) Length	South – Green Valley – Approximately 15 miles Green Valley – Canoa Ranch – Approximately 3.5 miles Canoa Ranch – Duval CLEAR Switchyard – Approximately 7.5 miles	
Routing	Uses existing transmission, sub-transmission, and overhead distribution route.	
Purpose	To provide additional electrical service to southern area of TEP's service area and to reinforce the local transmission & distribution system.	
Date		
a) Construction Start	1995	
b) In-Service Date	Phase 1 -1997 (Completed)	South 138-kV line to Green Valley.
	Phase 2a -2006 (Completed)	138-kV line from Green Valley to future Canoa Ranch Substation site

	Phase 2b- 2013	Extend 138-kV line from Canoa Ranch Substation site to future Duval CLEAR Switchyard
Is Certificate Necessary	Case 84 (Extension approved in 2006 ACC Order # 69680, docketed 6/28/07)	

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Rancho Vistoso Substation to future Sun City Substation
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Rancho Vistoso Substation (Sec. 36 T11S R13E)
d) Point of Termination	Future Sun City Substation (Sec. 18 T11S R14E)
e) Length	Approximately 3.5 Miles
Routing	Existing Western Area Power Administration corridor
Purpose	To provide additional electrical service to far northern area of TEP's service area and to reinforce the local distribution system.
Date	
a) Construction Start	TBD
b) In-Service Date	TBD, deferred indefinitely from previously planned 2011 in-service date.
Is Certificate Necessary	No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Loop existing Irvington Station to Vail Substation #2 line through future University of Arizona Tech Park Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail – Irvington Corridor
d) Point of Termination	Future U of A Tech Park Substation approximately (Sec. 28 T15S R15E)
e) Length	Approximately 2 miles of double-circuited line
Routing	Loop existing Irvington – Vail #2 line into future U of A Tech Park substation
Purpose	To provide additional electric service to the U of A Tech Park expansion and the southern part of TEP's service area.
Date	
a) Construction Start	2014
b) In-Service Date	2015
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Substation – North Loop Substation, North Loop Substation – Rancho Vistoso Substation and Tortolita – Rancho Vistoso 138 kV corridor expansion and reconfiguration
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Points of Origin	Tortolita 138 kV Substation North Loop 138 kV Substation
d) Points of Termination	North Loop 138 kV Substation Rancho Vistoso 138 kV Substation
e) Length	Tortolita – North Loop – approximately 14 miles North Loop – Rancho Vistoso – approximately 11 miles
Routing	Phase 1: Re-configure Tortolita – Rancho Vistoso line as a third Tortolita - North Loop line utilizing existing 138 kV stub out of North Loop. Build new bay at North Loop to accommodate North Loop – Rancho Vistoso line utilizing existing 138 kV pole-line along Tangerine Rd. Phase 2: A joint project with SWTC to construct a new four-circuit pole-line to replace existing single-circuit structures on the Tortolita-North Loop 138 kV corridor. The four-circuit structures will accommodate the two existing Tortolita-North Loop lines, a new Tortolita – North Loop line and SWTC's Saguaro – Camino de Manana 115 kV circuit. Reconfigure the Tortolita – North Loop #3 and North Loop –

	Rancho Vistoso 138 kV lines as Tortolita – Rancho Vistoso 138 kV.
Purpose	Required to meet reliability criteria.
Date	
a) Construction Start	2008
b) In-Service Date	Phase 1: 2008- Completed
	Phase 2: 2011
Is Certificate Necessary	Phase 1: No
	Phase 2: Case #149

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Substation – Cienega Substation – Spanish Trail Substation 138 kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail 138 kV Substation
d) Interim Point	Future Cienega 138kV Substation (Sec 16 T16S R16E)
e) Point of Termination	Spanish Trail 138 kV Substation
f) Length	Approximately 12 miles
Routing	Utilize the existing Vail-Fort Huachuca/ Vail-Spanish Trail 138 kV corridor between Vail Substation and seven spans east of Wentworth Rd., then new double-circuit 138 kV northeast approximately 2 miles to proposed Cienega site.
Purpose	Required to serve load at the new Cienega 138/13.8 kV Substation located approximately 7.5 miles east-southeast of the Vail Substation.
Date	
a) Construction Start	2009
b) In-Service Date	2010
Is Certificate Necessary	Case number 137

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Northeast – Snyder 138kV – tap for Craycroft-Barril Substation
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Northeast 138 kV Substation
d) Interim Point	Future Craycroft-Barril 138kV Substation
e) Point of Termination	Snyder 138 kV Substation
f) Length	Northeast – Craycroft-Barril – approximately 8 miles Snyder – Craycroft-Barril – approximately 4 miles
Routing	Existing Northeast-Snyder Corridor requires 1 span of wire to drop into station.
Purpose	Required to serve load at the new Craycroft-Barril 138/13.8 kV Substation located approximately 3 miles northeast of the Northeast Substation
Date	
a) Construction Start	2012
b) In-Service Date	2013
Is Certificate Necessary	No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Interconnection of Tortolita – North Loop 138 kV with future TEP Marana 138 kV Substation
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita 138 kV Substation
d) Interim Point	Future Marana 138kV Substation
e) Point of Termination	North Loop 138 kV Substation
f) Length	Tortolita–Marana-North Loop – approximately 22 miles Tortolita – Marana – approximately 13 miles Marana – North Loop – approximately 9 miles
Routing	Tap the Tortolita- North Loop corridor at the Trico-Marana Rd. alignment and extend approximately 4 miles of double-circuit pole-line west across I-10 to proposed Marana substation site near Sanders Rd.
Purpose	Required to serve load at the new Marana 138/13.8 kV Substation located approximately 9 miles south-southeast of the Tortolita Substation
Date	
a) Construction Start	2014
b) In-Service Date	2015
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Substation - Rancho Vistoso Substation 138kV tap for new Naranja Substation
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita 138 kV Substation
d) Interim Point	Future Naranja 138 kV Substation
e) Point of Termination	Ranch Vistoso 138 kV Substation
f) Length	Tortolita – Naranja – approximately 22 miles Naranja – Ranch Vistoso – approximately 17 miles
Routing	Tap the Tortolita – Rancho Vistoso line and extend approximately 3 miles of new double circuit pole-line south of Tangergine Rd. along Thornydale Rd. to the substation site
Purpose	Required to serve load at the new Naranja 138/13.8 kV Substation located in the vicinity of Thornydale Rd. and Lambert Ln.
Date	
a) Construction Start	2014
b) In-Service Date	2015
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	DeMoss Petrie Substation – Tucson Station 138 kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	DeMoss Petrie 138 kV Substation
d) Point of Termination	Tucson 138 kV Substation
e) Length	2.2 miles
Routing	Unknown
Purpose	Required to meet reliability criteria of a localized voltage instability specific to loss of both the North Loop-West Ina and Irvington-Tucson 138 kV circuits.
Date	
a) Construction Start	2010
b) In-Service Date	2011
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Irvington Substation – Corona Substation – South Substation 138kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Irvington 138 kV Substation
d) Interim Point	Future Corona 138 kV Substation
e) Point of Termination	South 138kV Substation
f) Length	Irvington – Corona – approximately 16 miles Corona – South – approximately 4 miles
Routing	Tapping the existing Irvington – South 138kV circuit.
Purpose	Required to serve load at the new Corona 138/13.8 kV Substation
Date	a) Construction Start 2015
	b) In-Service Date 2016
Is Certificate Necessary	TBD

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	La Canada Substation – Orange Grove Substation– Rillito Substation 138kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	La Canada 138 kV Substation
d) Interim Point	Future Orange Grove 138 kV Substation
e) Point of Termination	Rillito 138kV Substation
f) Length	La Canada – Orange Grove – approximately 4 miles Orange Grove – Rillito – approximately 2 miles
Routing	Tapping the existing La Canada - Rillito 138kV circuit and drop into new station adjacent to the right-of-way at La Canada Blvd. and Orange Grove Rd.
Purpose	Required to serve load at the new Orange Grove 138/13.8 kV Substation
Date	
a) Construction Start	2013
b) In-Service Date	2014
Is Certificate Necessary	TBD

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Future Orange Grove Substation – Future East Ina Substation 138kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Future Orange Grove 138 kV Substation
d) Point of Termination	Future East Ina 138kV Substation
e) Length	Approximately 4 miles
Routing	Unknown
Purpose	Required to serve load at the new East Ina 138/13.8 kV Substation
Date	
a) Construction Start	2016
b) In-Service Date	2017
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	South Substation – Hartt Substation– Green Valley Substation 138kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	South 138 kV Substation
d) Interim Point	Future Hartt 138 kV Substation
e) Point of Termination	Green Valley 138kV Substation
f) Length	South – Hartt – approximately 11 miles Hartt – Green Valley – approximately 4 miles
Routing	Tapping the existing South – Green Valley 138kV circuit and drop into new station adjacent to the right-of-way approximately 1 mile south of Old Nogales Hwy and Duval Mine Rd.
Purpose	Increase load serving and reliability of existing 46/13.8 facilities near this site.
Date	
a) Construction Start	2014
b) In-Service Date	2015
Is Certificate Necessary	No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Del Cerro Substation – Anklam Substation – Tucson Station 138kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Del Cerro 138 kV Substation
d) Interim Point	Future Anklam 138 kV Substation
d) Point of Termination	Tucson 138kV Substation
e) Length	Del Cerro – Anklam – approximately 5 miles Anklam – Tucson – approximately 3 miles
Routing	Anklam to tie into the existing Del Cerro – Tucson 138kV circuit with approximately two mile extension of double circuit 138 kV pole-line.
Purpose	Required to serve load at the new Anklam 138/13.8 kV Substation
Date	
a) Construction Start	2015
b) In-Service Date	2016
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	TEP system to Rosemont Substation 138 kV
Size	
a) Voltage	138-kV
b) Capacity	> 120 MVA
c) Point of Origin	Tap of the TEP South – Green Valley 138 kV Line
d) Point of Termination	Future Rosemont Substation (approximately Sec. 6 T19S R16E)
e) Length	Approximately 24 Miles
Routing	Unknown
Purpose	To provide electrical service to large mine load located ~ 17 miles east-southeast of Green Valley, AZ
Date	
a) Construction Start	2010
b) In-Service Date	2011
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Irvington Substation –Tucson Station #2 138 kV
Size	
a) Voltage	138-kV
b) Capacity	System Dependent
c) Point of Origin	Irvington Substation
d) Interim Point	New Kino Substation
e) Interim Point	New UA Med Substation
f) Point of Termination	Tucson Station
g) Length	Phase 1: Irvington – Kino – approximately 6 miles Kino – Tucson – approximately 5 miles Phase 2: Kino – UA Med – approximately 6 miles UA Med – Tucson – approximately 3 miles
Routing	Unknown
Purpose	To increase load serving capability and reliability in Central Tucson.
Date	
a) Construction Start	2014
b) In-Service Date	Phase 1 - 2015 Irvington Substation to new Kino Substation to

		Tucson Station 138 kV lines
	Phase 2 - 2019	Loop Kino Substation to Tucson Station Substation 138-kV line into UA Med Substation
Is Certificate Necessary	Yes	