ORIGINAL

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Ed Beck, Superintendent
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February 3, 2006

E00000D-05-0040

Arizona Corporation Commission
Utilities Division
1210 West Washington
Phoenix, Arizona, 85007

Gentlemen:
Enclosed are fourteen copies of "Ten Year Plans" for both Tucson Electric Power Company (TEP) and UNS Electric submitted by TEP in compliance with Title 40, Chapter 2, Article 6.2 of the Arizona Revised Statutes known as Power Plant and Transmission Line Siting Committee.

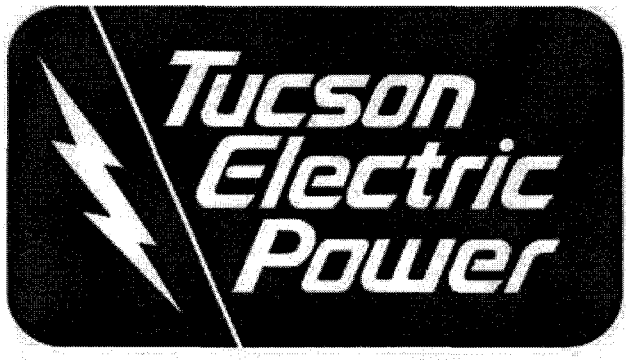
Also enclosed is TEP's RMR study. UNS Electric has not performed an RMR study for its Nogales Service Territory due to pending permitting issues for projects in Santa Cruz County. RMR studies for the Mohave area should be submitted by Western.

Please acknowledge receipt by returning a copy of this letter.

Sincerely,

Ed Beck

Ed Beck
Superintendent, Planning and Administration



A UniSource Energy Company

TUCSON ELECTRIC POWER COMPANY
TEN YEAR PLAN
FOR YEARS
2006-2015

SUBMITTED TO THE
ARIZONA CORPORATION COMMISSION
February 2006

DOCKET NO: E-00000D-05-0040

CONTENTS

INTRODUCTION

EHV Transmission System

Tucson Electric Power Company (TEP) is a member of the Southwest Area Transmission Planning Group (SWAT) and participates in various SWAT subcommittees. SWAT subcommittees that TEP participates in are: SWAT Central Arizona Transmission EHV, SWAT Central Arizona HV, SWAT Colorado River Transmission, and SWAT Arizona-New Mexico. Each of these subcommittees has been involved in studying various generation and transmission projects to enhance and increase utilization of the existing system.

TEP is a participant in the Hassayampa - Pinal West 500 kV project, which will be in service in 2008. TEP's Westwing - South 345 kV line will loop in at the new Pinal West 500/345 kV substation.

TEP is considering two projects into TEP's Tortolita Substation in the year 2012. These are competing projects and only one project is expected to be built in 2012. The first project is a 500 kV line from Pinal West to Tortolita and the second project is a 500 kV line from the proposed Pinal South substation to Tortolita.

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 Tucson continues to grow. TEP's 138kV system is improved to accommodate new 138 /13.8kV substations and increased line loading.

Load projection analysis looks at distribution system shortfalls and identifies the impact of load growth at each of TEP's distribution substations. This results in requirements for 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.

Power flow analysis looks for thermal overloads during normal and contingency operation based on WECC/NERC Level A, B and C reliability criteria. Contingencies include:

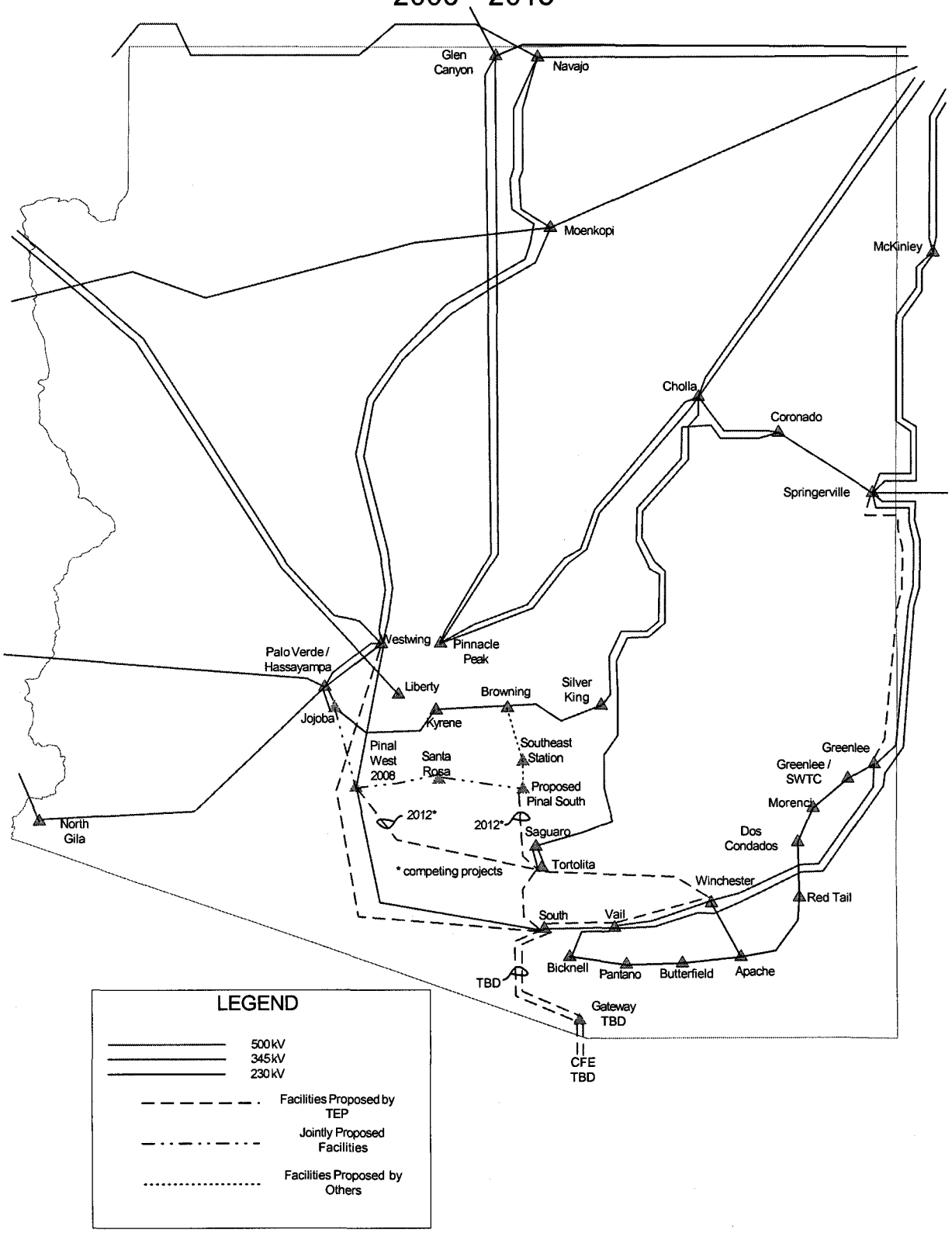
- Loss of major EHV import
- Loss of critical local generation
- Single 138kV circuit outages
- Credible 138kV multiple circuit outages
- Critical circuits initially out of service with system operating acceptably followed by a subsequent outage.

Thermal overloads are addressed with:

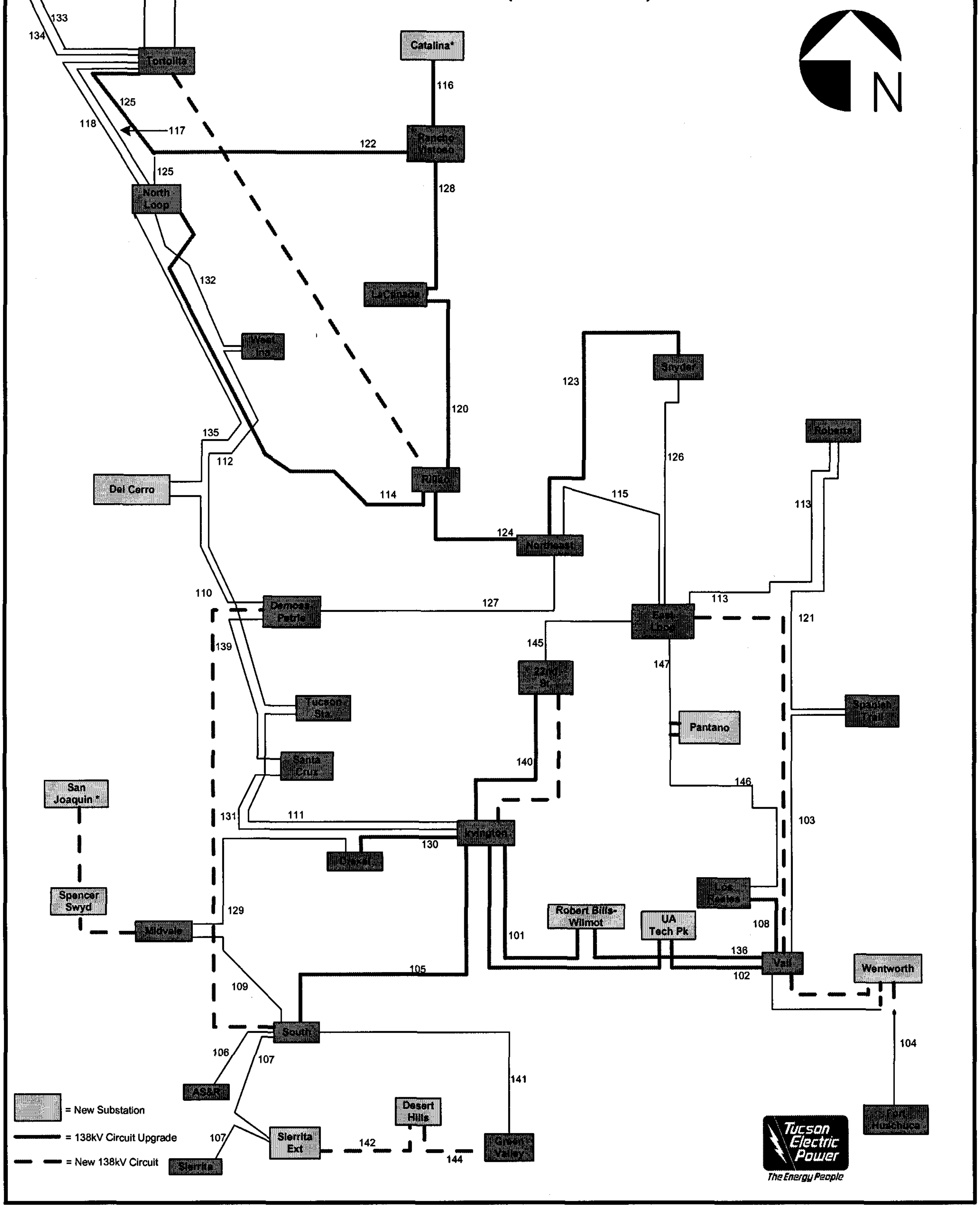
- New transmission lines
- Uprating existing lines (increase NESC clearances or larger ampacity wire)
- New generation (when more economical than transmission)
- Other cost effective measures

Transmission facilities are also added at 138kV to increase reliability at substations that are served radially.

Planned TEP EHV Transmission Facilities 2006 - 2015



138kV SYSTEM - 2006 SYSTEM REINFORCEMENT
BUDGET MAP (as of 01/30/06)



TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Interconnection of Westwing - South 345 kV with future Hassyampa - Pinal West 500 kV line[i] via new Pinal West 500/345 kV Substation
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Westwing - South Line
d) Point of Termination	Future Pinal West substation (Sec. 6 T5S R1E)
e) Length	Less than 1 mile
Routing	Adjacent to Westwing - South 345 kV line.
Purpose	To reinforce Tucson Electric Power Company's EHV system and to provide a higher capacity link for the flow of power from the Palo Verde area into TEP's service territory.
Date	
a) Construction Start	2007
b) In-Service Date	2008
Is Certificate Necessary	Siting Case #124
Technical Studies	Studies completed via CATS, WATS, and Palo Verde - Southeast Station study groups.

[i] A joint project being jointly developed with SRP as project manager

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Pinal West Substation to Tortolita Substation
Size	
a) Voltage	500-kV
b) Capacity	System dependent
c) Point of Origin	Future Pinal West substation (Sec. 6 T5S R1E)
d) Point of Termination	Tortolita Substation (Sec. 14 T10S R10E)
e) Length	Approximately 60 miles
Routing	To be determined
Purpose	To reinforce Tucson Electric Power Company'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	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SWAT and internal TEP study efforts.

Note: This is a competing project with the Pinal South – Tortolita 500 kV project and only one of the projects will be built.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Pinal South Substation to Tortolita Substation
Size	
a) Voltage	500-kV
b) Capacity	System dependent
c) Point of Origin	Future Pinal South substation
d) Point of Termination	Tortolita Substation (Sec. 14 T10S R10E)
e) Length	Approximately 30 miles
Routing	Unknown
Purpose	To reinforce Tucson Electric Power Company'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	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SWAT and internal TEP study efforts.

Note: This is a competing project with the Pinal West – Tortolita 500 kV line and only one of the projects will be built.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Tortolita Station to Winchester Station
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 Tucson Electric Power Company'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	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Siting Case No. 23
Technical Studies	Studies in progress via SWAT and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Winchester Substation to Vail Substation - 2nd circuit
Size	
a) Voltage	345-kV
b) Capacity	System dependent
c) Point of Origin	Winchester Subtation
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 Tucson Electric Power Company's EHV system and to provide additional transmission capacity from the future Winchester Station into Tucson
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Yes
Technical Studies	Studies in progress via SWAT and internal TEP study efforts.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Station to South Station – 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 Tucson Electric Power Company's EHV system and to provide additional transmission capacity between Vail and South Substations
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	No
Technical Studies	Studies in progress via SWAT 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 - 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	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Issued in 1975, 1977, 1982 and 1986
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 Tucson Electric Power Company's EHV system and to provide a high capacity link for the flow of power in Southern Arizona.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Siting Case #50
Technical Studies	Being re-evaluated as part of SWAT study

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	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Siting 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.

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	TEP-Unisource Energy Services 345 kV Interconnection Line--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 Unisource Energy Services in Nogales, Arizona pursuant to ACC order.
Date	
a) Construction Start	Dependent upon permitting
b) In-Service Date	Dependent upon permitting
Is Certificate Necessary	Siting 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	Siting Case #111
Technical Studies	See record of Siting Case No. 111

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	9 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 Tucson Electric Power Company'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 St. to East Loop Substation
	Phase 3 - Under Review	2nd Circuit of Phase I
Is Certificate Necessary	Siting Case #66	

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail Substation to East Loop Substation (through Houghton Loop Switching Station*, Spanish Trail and Roberts Substations).	
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	22 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 Tucson Electric Power Company's service area and to reinforce the local transmission system.	
Date		
a) Construction Start	1976	
b) In-Service Date	Phase 1 - 1977 (Completed)	Spanish Trail Substation to East Loop and Vail Substation
	Phase 2 - 1983 (Completed)	Roberts Substation and associated 138-kV lines
	Phase 3 – Under Review	Third 138-kV line from Vail to East Loop Substation
Is Certificate Necessary	Siting Case #8	

*Houghton Loop switching station has been removed from TEP's plans. Name retained for reference only.

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	13 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 Tucson Electric Power Company'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 (Interim line in service. Final completion date dependent upon public improvements)
Is Certificate Necessary	Siting 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 (formerly Sweetwater) 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; west on Camino del Cerro into future Del Cerro Substation.
Purpose	To provide additional electric service to the western part of Tucson Electric Power Company's service area and to reinforce the local distribution system.
Date	
a) Construction Start	2006
b) In-Service Date	2007
Is Certificate Necessary	Siting Case #62

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

[Note: This project has been completed]

Line Designation	Loop existing Irvington Station to Vail Substation #1 line through Robert Bills -Wilmot (formerly Littletown) Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail - Irvington Corridor (Sec. 36 T15S R14E)
d) Point of Termination	Robert Bills - Wilmot Substation (Sec. 23 T15S R14E)
e) Length	Approximately 3 Miles of double-circuited line.
Routing	Loop existing north line west of Vail Substation along the west side of Wilmot Road approximately 1.5 miles into future Robert Bills - Wilmot Substation
Purpose	To provide additional electric service to the south-central part of Tucson Electric Power Company's service area.
Date	
a) Construction Start	2004
b) In-Service Date	Placed in-service August 26, 2005
Is Certificate Necessary	Siting Case #123

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Loop existing Vail Substation to East Loop Substation line through future Pantano and Los Reales Substations.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Phase 1: Sec. 24, T15S R15E Phase 2: Sec. 28, T14S R15E
d) Point of Termination	Phase 1: Sec. 24, T15S R15E Phase 2: Sec. 28, T14S R15E
e) Length	Substations are less than one span from the existing line.
Routing	Phase 1 Loop existing line east of Houghton Road and south of Valencia Road through Los Reales Substation. Phase 2 Loop existing line east of Pantano Road and south of Golf Links through Pantano Substation.
Purpose	To provide additional electric service to the eastern part of Tucson Electric Power Company's service area and to reinforce the local distribution system.
Date	
a) Construction Start	Phase 1 - 2001 Phase 2 - 2006
b) In-Service Date	Phase 1 - Completed Phase 2 - 2007
Is Certificate Necessary	No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Extend 138-kV line from Midvale Substation through future Spencer Switchyard to future San Joaquin Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Midvale Substation (Sec. 3 T15S R13E)
d) Point of Termination	Future San Joaquin Substation (physical location to be determined)
e) Length	Approximately 20 miles
Routing	Reviewing use of common utility corridor and existing subtransmission
Purpose	To provide additional electrical service to the far western portion of Tucson Electric Power Company's service area and to reinforce the local distribution system.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Under Review (dependent upon use of federal and/or Tohono r/w)

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	South Substation to DeMoss Petrie Substation
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	South Substation (Sec. 36 T16S R13E)
d) Point of Termination	DMP Substation (Sec. 35 T13S R13E)
e) Length	Approximately 18 miles
Routing	Unknown
Purpose	To reinforce Tucson Electric Power Company's 138kV system and to provide additional service to the western part of Tucson Electric Power Company's service area.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Yes

Line Designation	South Substation to Cyprus Sierrita Extension Switchyard through future Canoa Ranch (formerly Desert Hills) 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	Cyprus-Sierrita Extension Switchyard (Sec. 10 T18S R12E)
e) Length	Approximately 24 miles
Routing	Reviewing use of existing subtransmission route.
Purpose	To provide additional electrical service to southern area of Tucson Electric Power Company'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 — 138-kV line from Green Valley to future Canoa Ranch Substation site Phase 2b- under review — Extend 138-kV line from Canoa Ranch Substation site to future Cyprus-Sierrita substation
Is Certificate Necessary	Siting Case #84 (Extension to Certificate being sought due to delayed load growth and condemnation issues)

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Loop Green Valley to Cyprus-Sierrita line through Canoa Ranch (formerly Desert Hills) Substation.
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Green Valley to Cyprus-Sierrita Corridor (Sec. 3 T19S R13E)
d) Point of Termination	Canoa Ranch Substation (Sec. 3 T19S R13E)
e) Length	Fewer than 3 spans
Routing	Tap future 138-kV line from Green Valley Substation to Cyprus-Sierrita substation into Canoa Ranch Substation
Purpose	To provide additional electric service to the south-central part of Tucson Electric Power Company's service area.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	No

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Rancho Vistoso Substation to future Catalina 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 Catalina Substation (physical location to be determined)
e) Length	Approximately 3.5 Miles
Routing	Reviewing use of WAPA corridor
Purpose	To provide additional electrical service to far northern area of Tucson Electric Power Company's service area and to reinforce the local distribution system.
Date	
a) Construction Start	2008
b) In-Service Date	2009
Is Certificate Necessary	Under Review

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 (physical location to be determined)
e) Length	Approximately 5 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 Tucson Electric Power Company's service area.
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	Tortolita – Rillito 138 kV
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Tortolita 138 kV Substation
d) Point of Termination	Rillito 138 kV Substation
e) Length	24.5 miles
Routing	Unknown
Purpose	Required to fully utilize increased import capability of additional EHV capacity into Tortolita Substation (Pinal West – Tortolita or Pinal South – Tortolita).
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Yes

TUCSON ELECTRIC POWER COMPANY

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Vail - Wentworth 138 kV – two circuits
Size	
a) Voltage	138-kV
b) Capacity	System dependent
c) Point of Origin	Vail 138 kV Substation
d) Point of Termination	Wentworth 138 kV Substation
e) Length	7.5 miles
Routing	Existing Vail-Los Reales-Spanish Trail-Fort Huachuca Corridor
Purpose	Required to serve load at the new Wentworth 138/13.8 kV Substation locate approximately 7.5 miles due east of the Vail Substation **Circuit 1**: utilize conductor that was installed in the past but left de-energized, install ~ 3.0 miles of new conductor east from Vail on existing structures to make connection to this existing conductor **Circuit 2**: tap the existing Vail-Fort Huachuca or Vail- Spanish Trail line
Date	
a) Construction Start	2009
b) In-Service Date	2010
Is Certificate Necessary	Yes

UNS Electric

Ten-Year Plan
For Years

2006-2015

SUBMITTED TO THE
ARIZONA CORPORATION COMMISSION
February 2006

Docket No: E-00000D-05-0040

Table of Contents

Introduction

The following ten-year plan pursuant to A.R.S. § 40-360.02 is submitted by UNS Electric. Included with this plan are transmission facilities planned for both the Mohave and Santa Cruz County service territories.

UNS Electric 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 facility upgrade and one project are identified in the Mohave County region. Previously reported facilities that have been completed, canceled, or deferred beyond the upcoming ten-year period are not included. These plans are tentative information only, and pursuant to A.R.S. § 40-360.02 (F) are subject to change.

The following projects are proposed for the Mohave County Region:

- North Havasu – Griffith Transmission Line

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

- Nogales 115kV Transmission Line #2
- Gateway 345/115 kV Substation
- Valencia 115 kV Substation Expansion

In addition to planning UNS Electric transmission facilities, UNS Electric is actively involved in the following regional Arizona Transmission planning activities:

- Central Arizona Transmission Study (CATS)
- Central Arizona Transmission Study – High Voltage (CATS-HV)
- Joint Planning Agreement (JPA) with Western
- Southwest Area Transmission Planning Group (SWAT)

Service Territories

Following the short discussion of activities in the service territories are the maps of the planned facilities and schematic for several of the proposed projects.

Mohave County

UNS Electric still considers the Griffith – North Havasu 230kV line as an alternative for consideration, and currently has a CEC (Order #88) for this line addition. The timing for construction of this project is predicated on results of studies being performed by Western that may show that the existing Western system is capable of meeting additional needs of UNS Electric in the near term. UNS Electric has requested an extension to the CEC expiration for this project based on information from Western indicating that the capacity of the existing system may have increased due to a re-conductor project that is underway. A portion of this project will be completed in 2007.

Santa Cruz County

The UNS Electric long-term plan to improve reliability for the Santa Cruz service territory is to construct a redundant transmission line to Valencia substation from the new Gateway substation, per Line Siting 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.

Additionally by the summer of 2006, UNS Electric will have installed an additional gas turbine at Valencia Substation in Nogales to provide peaking capability as well as additional support for Nogales during outages.

Also plans are under development for conversion of the existing 115kV line to 138kV with a future interconnection to TEP's Vail Substation.

Mohave County

UNS Electric

10 YEAR PLAN

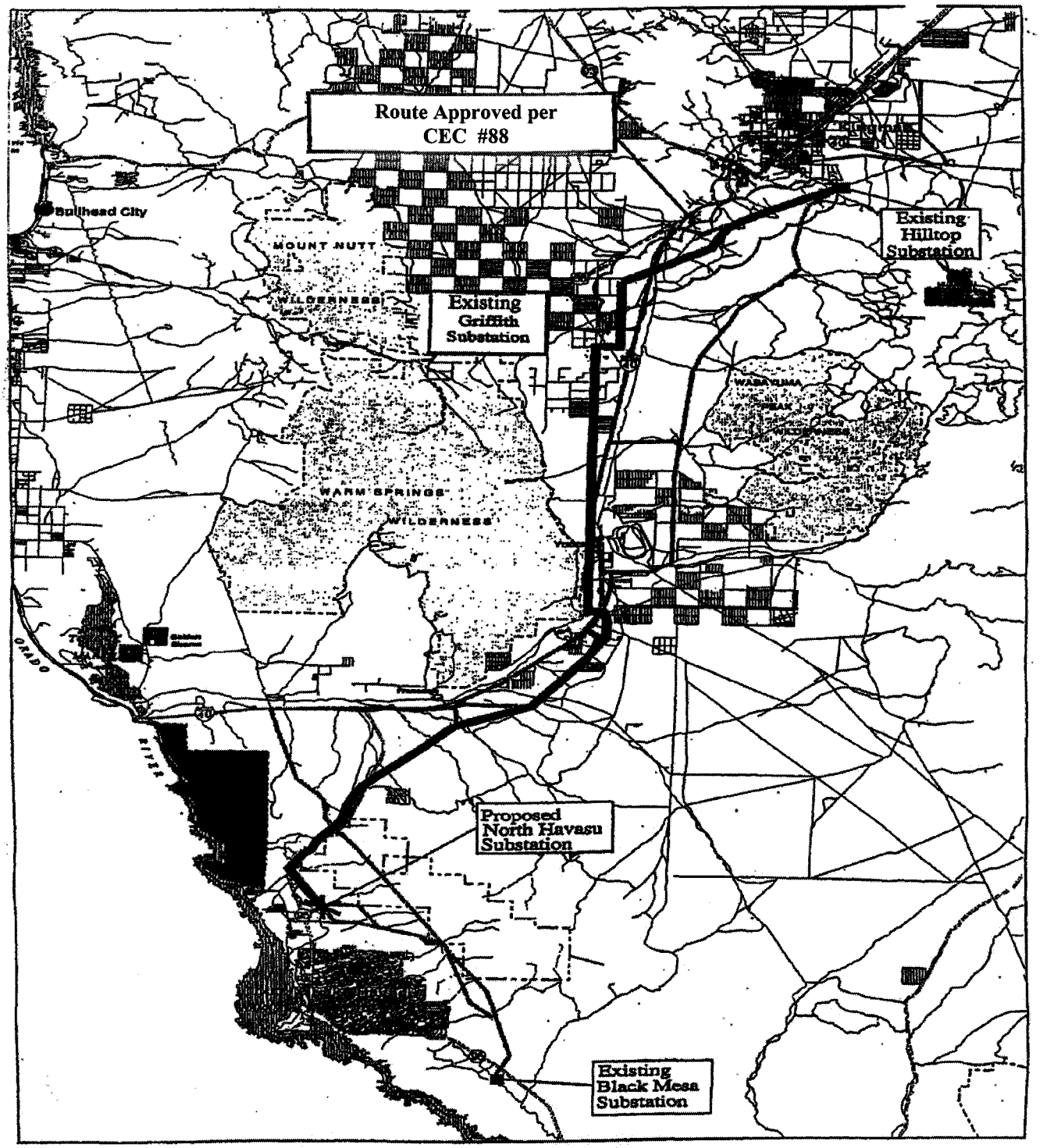
TRANSMISSION FACILITIES

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 Gem Acres 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 UNS Electric load centers in Mohave County.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary requested	Siting Case # 88[1] An extension has been from the ACC

Technical Studies Studies completed via CATS, WATS, and Palo Verde – Southeast Station study groups.

[1] Hilltop to Griffith portion of line already completed.

Griffith – North Havasu Transmission Project



Santa Cruz County

UNS Electric

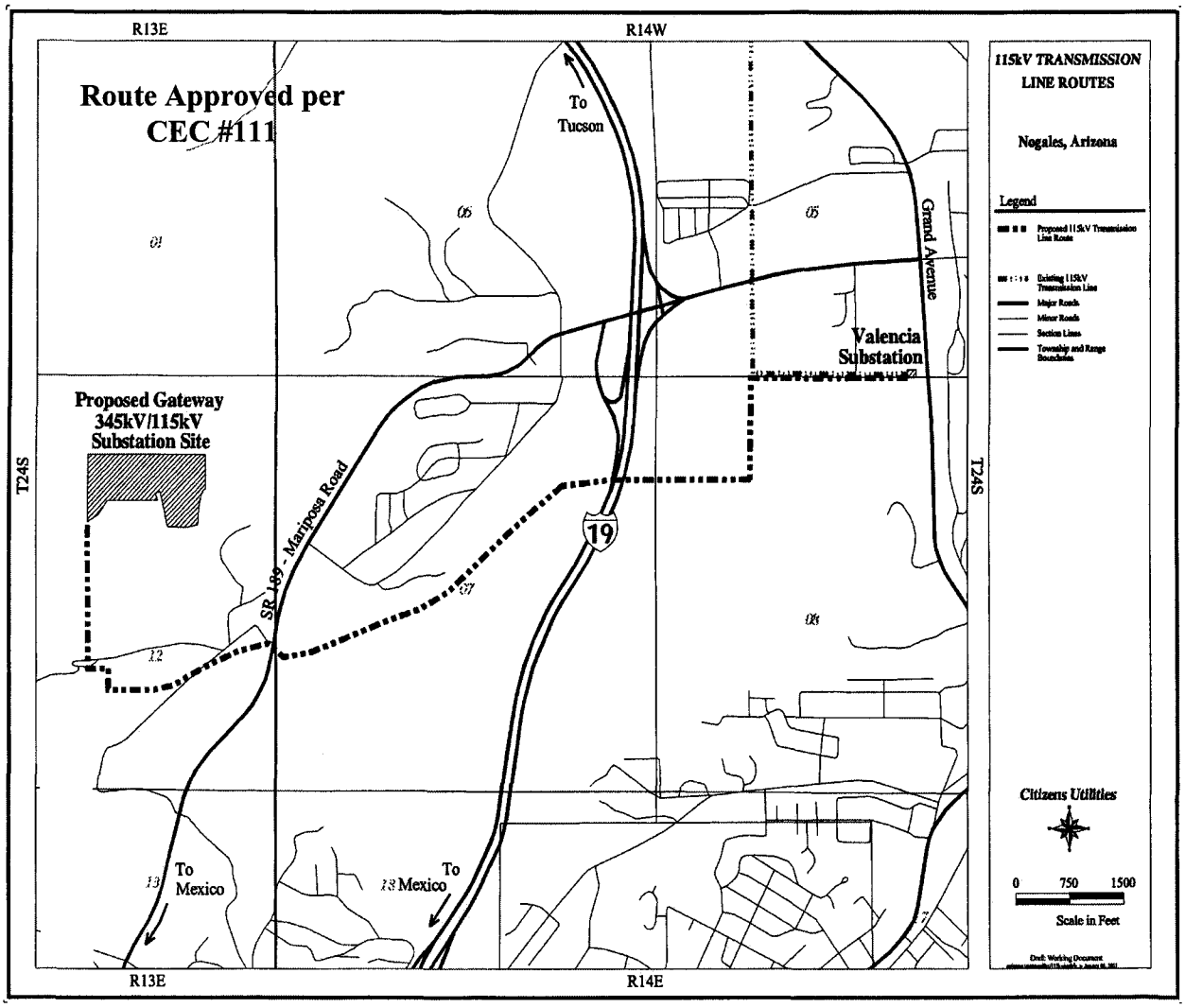
10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Nogales Transmission Line #2
Size	
a) Voltage	115 kV
b) Capacity	110 MVA (thermal)
c) Point of Origin	Gateway 345/115 kV substation (new)
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 UNS Electric Santa Cruz Service Area.
Date	
a) Construction Start	Under Review
b) In-Service Date	Under Review
Is Certificate Necessary	Siting Case # 111

Technical Studies SWAT and internal TEP studies.

Nogales Transmission Line #2



UNS Electric

10 YEAR PLAN

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 Subtation
d) Point of Termination	Gateway Substation
e) Length	Approximately 60 miles
Routing	Generally South and West from TEP's Vail 345 kV substation to UNS Electric's Valencia substation
Purpose	The upgrade of the transmission line increases transmission system reliability and provides additional load serving capacity to UNS Electric Santa Cruz Service Area.
Date	
a) Construction Start	2009
b) In-Service Date	2012
Is Certificate Necessary	Yes

Technical Studies Studies being finalized.

UNS Electric

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Valencia 115kV Substation Expansion
Size	
a) Voltage	Operating voltages include 115 kV and 13.2 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 UNS Electric's second transmission line to UNS Electric's 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	Siting Case # 111

Technical Studies Studied in SWAT and internal TEP study efforts.

UNS Electric

10 YEAR PLAN

TRANSMISSION FACILITIES

Line Designation	Gateway 345/115 kV Substation
Size	
a) Voltage	Operating voltages include 345, 115 and 13.2kV
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 UNS Electric's second transmission line to UNS Electric's 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	Siting case # 111 (Also see TEP 10 year plan)

Technical Studies Studied in SWAT and internal TEP study efforts.

TUCSON CONTROL AREA

RELIABILITY MUST-RUN GENERATION AND EXTREME CONTINGENCES

FOR THE YEARS 2008, 2015, INCLUDING

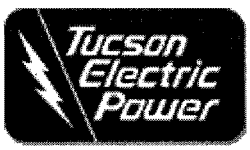
N-1-1 CONTINGENCIES

FOR THE YEAR 2006

PREPARED FOR THE ARIZONA CORPORATION COMMISSION

Mary Ann Tilford
Transmission System Planning
Tucson Electric Power

February 3, 2006



A UniSource Energy Company

TEP OPERATING CRITERIA AND OUTAGE RESPONSE

The TEP control area has historically been voltage stability constrained. Local VAR-responsive steam units and combustion turbines can be committed in the Tucson load area to supply reactive support and to lower imports as necessary. In addition, TEP has an automated remedial action scheme that responds to selected single and double contingencies with pre-determined automatic switching of reactive devices and / or direct load tripping amounts. This remedial action scheme was designed assuming a fast collapse, and all actions take place in a maximum of 0.7 seconds after breakers open. As of this study, the RMRs for the years 2008 and 2015 have thermal constraints; EHV planning studies are ongoing, both within TEP's EHV Planning Department and the SWAT committee, to determine the best local system and region-wide improvements to relieve RMR constraints.

Approximately forty percent of customer load is available for arming for direct tripping, and there are three fast-switched reactive Remedial Action Devices (RADs) available for arming. The fast-switched RADs are the line reactor on the South end of the Westwing-South transmission line; two 44 MVar banks of capacitors on the 13.8 tertiary of the Vail 345/138 kV transformer T1; and a 138kV, 41.6 MVar capacitor at Northeast Substation. These are the only arm-able reactive devices.

For single contingencies, the most economical combination of local generation and RADs is utilized to ensure that contingencies meet WECC / NERC voltage stability and reliability criteria, and TEP's internal voltage criterion of .98 per unit post-outage 138 kV average voltage.

For multiple contingencies, including N-1-1 and N-2, TEP's automated direct load tripping scheme may be utilized in addition to, or in place of, the RADs, as appropriate. The amount of direct load tripping is pre-determined by contingency and bus load, based on both annual and ongoing operating studies.

RMR generation is in response to the reliability criterion defined by the Second Biennial Transmission Assessment, 2002-2011, which states "...reliability practices are founded on the principle of continuity of service for single contingency outages (N-1) of transmission lines." It should be noted that Tucson Electric Power Co. plans and operates its system to meet the WECC / NERC Reliability Criteria for not only Category B, but also Category C, as well as the WECC Regional Difference and Voltage Stability Criteria. TEP's common corridor outages are all N-2, WECC Regional Difference. In addition, TEP's Internal Criteria require that the TEP system survive Category D double contingencies, with no overloads or voltage collapse on the TEP system, and with no cascade on systems outside of TEP that would cause collapse on the TEP system.

The Fourth BTA has a requirement to address and document:

1. Compliance with single contingency criteria overlapped with the bulk power system facilities maintenance (N-1-1) (for the first year of the BTA analysis period) as required by WECC and NERC.
2. Extreme contingency outages studied for Arizona's major generation hubs and major transmission stations and associated risks and consequences documented if mitigating infrastructure improvements are not planned.

The study results for the Extreme and N-1-1 contingencies are from base cases in which all of TEP's local generation is on line, as a screening study. For actual operation, TEP's Load Shed Tables have a Required Local Generation for each load level (interpolated in 50 MW increments) that, along with Direct Load Tripping amounts specified by outage, allow Category D double contingencies to be survived.

There exist some issues with neighboring systems that TEP is addressing with those entities; some overloads on neighboring utilities' systems have been ignored as limiting factors for N-1-1 contingencies since increasing TEP's local generation or direct load tripping has little effect on alleviating those overloads. These overloads are specifically addressed in the contingency results tables and discussions.

BASE CASE DESCRIPTIONS:

All base cases used were co-developed by APS, SRP, TEP, WAPA, and SWTC. Planned system configurations for all these utilities were used to develop the various cases. Cases were developed and approved by the SWAT committee. TEP subsequently made some detail changes to its zone 160, including 138kV configuration updates and planned capacitor additions.

PLANNED FACILITIES:

For planned facilities please refer to the 10-year Plan submitted in conjunction with this report. Peak loads represented in base cases are planner's best estimate.

IMPORT TRANSMISSION ELEMENTS BY YEAR:

Year	From	KV	To	KV	CK	30 Minute Rating
2006	Saguaro	500	Tortolita	500	1	806 MVA (xfmr)
	Saguaro	500	Tortolita	500	2	806 MVA (xfmr)
	Springerville	345	Vail	345	1	806 MVA (xfmr)
	Winchester	345	Vail	345	1	1858 Amp (CT/relay)
	Westwing	345	South	345	1	806 MVA (xfmr)
2008	Saguaro	500	Tortolita	500	1	806 MVA (xfmr)
	Saguaro	500	Tortolita	500	2	806 MVA (xfmr)
	Springerville	345	Vail	345	1	806 MVA (xfmr)
	Winchester	345	Vail	345	1	1858 Amp (CT/relay)
	Westwing	345	Pinal West	345	1	806 MVA (xfmr)
	Pinal West	500	Pinal West	345	1	806 MVA (xfmr)
2015	Saguaro	500	Tortolita	500	1	806 MVA (xfmr)
	Saguaro	500	Tortolita	500	2	806 MVA (xfmr)
	Springerville	345	Vail	345	1	806 MVA (xfmr)
	Winchester	345	Vail	345	1	1858 Amp (CT/relay)
	Westwing	345	Pinal West	345	1	806 MVA (xfmr)
	Pinal West	500	Pinal West	345	1	806 MVA (xfmr)
	Pinal-South	500	Tortolita	500	1	806 MVA (xfmr)

SIMULTANEOUS IMPORT LIMIT (SIL) FOR 2008, 2015:

Year	SIL MW	MW Losses	Total MW	Critical Outage	Nature of Constraint
2008	1825	111	1936	Winchester – Vail 345 kV Line	Voltage Stability
2015	2350	151	2501	Winchester – Vail 345 kV line	Voltage Stability

DISCUSSION:

In 2008, the limiting outage for the SIL is the Winchester-Vail 345 kV line; at loads higher than the SIL, the outage fails to solve. There are no WECC voltage drop violations at the SIL load, and QV curves indicate compliance with the WECC Voltage Stability Criteria.

In 2015, the limiting outage for the SIL is the Winchester-Vail 345 kV line; at loads higher than the SIL, the outage fails to solve which indicates potential stability problems. There are no WECC voltage drop violations at the SIL load, and QV curves indicate compliance with the WECC Voltage Stability Criteria.

There are no known particular external system load or generation patterns that impact the local SIL or RMR conditions.

PEAK LOAD: ANNUAL RMR CONDITIONS FOR 2008, 2015:

Year	PEAK MW	MW Losses	Total MW	RMR MW	Critical Outage	Nature of Constraint
2008	2310	151	2461	160	Saguaro-Tortolita #1 (or #2)	Loss of one Saguaro-Tortolita tie overloads the other at 100 %
2015	2779	169	2948	300	Winchester-Vail 345 kV line	Loads Vail T2 at 100% of emergency rating

DISCUSSION:

The addition of the South T3 transformer has eliminated the thermal constraint reported in the previous RMR study caused by loss of the South T2 transformer, which overloaded the 138 kV Irvington – Vail lines. The new South T3 transformer was determined to be the best solution to this constraint, rather than the previously-planned up-rating of the Irvington / Vail transmission lines.

Unit commitment with minimum MW required, as well as least cost, was determined for the peak loads of the years studied. Below is a table showing the results. The least cost combination of units is shown in this table. Other generator combinations and attendant results are in the Generation Sensitivity Analysis section.

SUNDT UNIT COMMITMENT, PEAK LOADS, 2008, 2015:

Year	Sundt #4	Sundt #3	Sundt #2	Sundt #1	Sundt #4 MW Output	Sundt #3 MW Output	Sundt #2 MW Output	Sundt #1 MW Output	TOTAL Sundt Unit MW
2008	ON	ON			100	60			160
2015	ON	ON	ON		120	105	75		300

GENERATION SENSITIVIY ANALYSIS:

The effectiveness of the various generating units on relieving RMR conditions is similar for this study, with small differences in loading due primarily to location of the resources. Generation location sensitivity was done with more expensive (than RMR) unit combinations, including gas turbines as necessary, to achieve the same total MW generation on line. Sundt Units #1 and #2 are equivalent in cost, so Sundt #1 was not substituted for #2 as a comparison.

2008 RMR Condition:

The table below shows the RMR 160 MW generation level with various Sundt units on line other than the Units 3 and 4 that are the RMR units. Sundt Units #1 and #2 have a combined possible total MW output of only 150 MW, so to achieve the RMR MW it was necessary to have the DMP gas turbine on line.

It is not possible in real operation to get exactly 160 MW on the combination of gas turbines; the "gts" case shown below does not represent an actual scenario, since DMP cannot be run at less than 40 MW. The

"gts167" case has seven "extra" MW, in terms of the RMR MW, but it reflects an actual possible operating condition.

Generation Sensitivity, 2008 RMR condition:

Case Name	Sundt#1 MW	Sundt #2 MW	Sundt #3 MW	Sundt #4 MW	DMP MW	Sundt CT MW	NL CT MW	% Loading on Saguaro-Tort, emerg rate
12d	60	60			40			99.3
24		60		100				99.6
23		60	100					99.7
gts					33	44	83	97.7
gts167					40	44	83	97.4

Discussion:

Although each of the generation sensitivity cases loads Saguaro-Tortolita at slightly less than the 100% in the RMR case, the variation is less than three percent. The RMR units were chosen because of their being least cost to operate.

2015 RMR Condition:

The table below shows the RMR 300 MW generation level with various Sundt units on line other than Units 2, 3, and 4 that are the RMR units. Generation location sensitivity was done with more expensive unit combinations, including gas turbines as necessary, to achieve the same total MW generation on line as the 2015 RMR MW. Other generation combinations and generator locations have a variation of slightly more than two percent in thermal overloads, as shown in the table below.

Generation Sensitivity, 2015 condition:

Case Name	Sundt #1 MW	Sundt #2 MW	Sundt #3 MW	Sundt #4 MW	DMP MW	Sundt CT MW	NL CT MW	% Loading on Vail T2, emerg rate
123gt	58	75	105		40	22		99.7
124d	65	75		120	40			100.0
34gt			96	120	40	44		99.9
24gt		57		120	40	44	39	100
23gt		72	105		40	44	39	99.7
12gt	58	75			40	44	83	102

Discussion:

In some circumstances the location of the generation slightly improves the RMR condition, but these combinations were not chosen as the RMR generators due to greater cost.

Gas turbines alone are insufficient to meet the RMR condition for 2015, so that combination is not included in the generation sensitivity study.

N-1-1 CONTINGENCIES, 2006:

TEP's "business as usual" operating criteria include operating procedures to ensure that all EHV N-1-1 and N-2 contingencies will be survived at peak loads. TEP's Load Shed Tables have Fast-Switched Reactive Device and/or Direct Load Trip arming data in a look-up format for any and all problematic contingencies that would require such action. All N-2 contingencies were studied from the 2006 base case condition, with

all local generation on line, as a screening tool. Since N-2 is a more severe condition to survive than N-1-1, the fact that all N-2 can be survived at peak is considered sufficient for the N-1-1 study. All N-2 contingencies solved in powerflow, meeting the .98 p.u. TEP voltage criterion. There do exist some overloads after some contingencies, and TEP is in discussion with neighboring utilities regarding these issues.

Outages associated with outage numbers are on the next page.

Outage 718:
For the Bicknell transformer overload, SWTC studies show that a Bicknell trip will not cause a cascade on their system. TEP operates its transmission system so that it will also survive a Bicknell trip in addition to the causing outage.

Outage 181:
For the Avra-Marana and Avra-Sandario overloads, once again, SWTC and TEP studies show that opening one of these lines (which relieves overloads also on the other one) does not cause a cascade. TEP is in discussion with SWTC regarding these overloads.

Outage 292:
The GREEN-SW transformer is included in a Phelps-Dodge load shedding scheme that operates on overload.

Outage 533:
The New Mexico overloads caused by outage 533 (of which only one line belongs to TEP) are new and may be peculiar to this base case.

Output data is on next page.

Case Name: d:\upslf131\studies\acc rmr 2006\06\06-pk-allgen.sav

THERMAL LINE INFORMATION									THERMAL RATING INFORMATION			
FROM	FROMNAME	kV	TO	TONAME	kV	CKT	FREQ	PCT_OL	LOAD	RATING	UNIT	WORST OUTAGE #
17089	SNDARIO	115.0	17003	AVRA	115.0	1	4	104.7	414.90	396.11	Amps	181
17012	MARANA	115.0	17003	AVRA	115.0	1	15	117.4	465.21	396.11	Amps	181
17010	GREEN-SW	345.0	17009	GREEN-SW	230.0	1	4	126.5	244.13	193.00	MVA	292
17005	BICKNELL	345.0	17004	BICKNELL	230.0	1	4	130.6	252.01	193.00	MVA	718
12073	SOCORROP	115.0	12028	EL_BUTTE	115.0	1	1	113.1	340.71	301.23	Amps	533
12073	SOCORROP	115.0	12008	BERNARDO	115.0	1	1	112.2	440.06	392.10	Amps	533
12008	BERNARDO	115.0	12007	BELEN_PG	115.0	1	1	116.9	458.31	392.10	Amps	533

Outage numbers: (there were no other problematic outages)

181 LINE 14004 "SAGUARO" 500 16001 "TORTLIT2" 500 1
XFMR 16217 "TORTOLIT" 138 16000 "TORTOLIT" 500 1

292 LINE 16101 "PYOUNG" 345 16109 "WINCHSTR" 345 1
LINE 16101 "PYOUNG" 345 16900 "COPPERVR" 345 1

718 LINE 16109 "WINCHSTR" 345 16105 "VAIL" 345 1
XFMR 16106 "VAIL2" 345 16220 "VAIL" 138 1

533 LINE 16104 "SPRINGR" 345 16101 "PYOUNG" 345 1
LINE 16104 "SPRINGR" 345 11093 "LUNA" 345 1

EXTREME CONTINGENCIES:

2008:

The Extreme contingencies studied are loss of all EHV transformers at a substation; the substations that have EHV transformers are Tortolita, Vail, and South. In 2008 there are two transformers at each substation. TEP's normal mode of operating is to run Required Local Generation sufficient to survive the worst Category B, C, or D contingency, which would include these Extreme contingencies. For screening purposes a base case was prepared with all local generation on line, and the Extreme contingencies were studied. For 2008, the limiting contingency was the double of Vail 138/345 kV T1 and the Springerville - Vail 345 kV line, loading the Irvington – South 138kV line to its emergency limit.

Outages associated with outage numbers are on the next page.

Outage 1:
Please see the 2006 N-1-1 for comments on the Avra-Marana line.
The Oracle-Sag.East overload has not been seen before and may be a base case peculiarity. However, TEP will study this further to make a determination.

Outage 2:
It is noted that the Shiprock transformer is overloaded for a large number of outages that could occur (based on large screening study) and TEP believes that this is a system problem, and not an overload caused by a TEP outage per se.

Output data is on next page.

Case Name: D:\upslf131\studies\acc rmr 2006\08\peak\c d\08-pk-allgen.sav

THERMAL LINE INFORMATION								THERMAL RATING INFORMATION			
FROM	FROMNAME	kV	TO	TONAME	kV	CKT	FREQ	PCT_OL	LOAD	RATING	UNIT	WORST OUTAGE#
79064	SHIPROCK	345.0	79063	SHIPROCK	230.0	1	1	105.9	381.07	360.00	MVA	2
19057	ORACLE	115.0	14356	SAG.EAST	115.0	1	1	115.6	606.40	524.64	Amps	1
17012	MARANA	115.0	17003	AVRA	115.0	1	1	103.0	408.12	396.11	Amps	1

Outages:

1 LINE 14004 "SAGUARO" 500 16000 "TORTOLIT" 500 1
LINE 14004 "SAGUARO" 500 16001 "TORTLIT2" 500 1
2 XFMR 16105 "VAIL" 345 16220 "VAIL" 138 1
XFMR 16106 "VAIL2" 345 16220 "VAIL" 1

2015:

For 2015, since Required Local Generation for TEP's Load Shed Tables is determined using Category D double contingencies, the Extreme contingency of loss of all three transformers at Tortolita substation would not be protected against using existing Internal Criteria. However, if TEP should decide to protect against this Extreme contingency for 2015 at Peak, a screening study running all available local generation, with appropriate direct load tripping, shows that TEP can survive it, with no overloads occurring that were not already present in the base case. The other Extreme contingencies, i.e., loss of both EHV transformers at Vail or South substations, are survived with direct load tripping using the current philosophy and would be included in TEP's Load Shed Tables.

MAXIMUM LOAD SERVING CAPACITY (MLSC), 2008, 2015:

Year	MLSC MW	MW Losses	Total MW	MW Gen	Critical Outage	Nature of Constraint
2008	2650	154	2804	542	Saguaro-Tortolita #1 (or #2)	Loss of one Saguaro-Tortolita tie overloads the other
2015	3075	166	3241	683	No outage	All Lines In Service flows overload series comp on Springerville-Vail 345 kV line

DISCUSSION:

The MLSC for 2008 is determined by outage of one of the Tortolita 500/138 kV transformers, which loads the remaining transformer to its emergency rating.

The MLSC for 2015 is a base case flow limit that loads the series compensation on the Springerville-Vail line to 100% of its normal rating.

EFFECTIVENESS OF ALTERNATIVE SOLUTIONS:

The planning process for 2015 is not complete, in terms of finding the best transmission addition solution to alleviate the RMR condition for 2015. Studies are ongoing in SWAT and in TEP's EHV Planning department. If the solution used in calculating the MLSC for 2015 is brought into service, it is likely that an upgrade of the series capacitors on the Springerville-Vail line will be considered; however, since the next limiting element is loss of Winchester-Vail loading of the Vail T2, at 25 MW higher bus load, an upgrade of the series capacitors would not gain much.

COMPARATIVE ANALYSIS OF ALTERNATIVE SOLUTIONS:

TEP is in the process of a comprehensive voltage stability study that will determine whether the addition of an SVC is cost-beneficial as compared to purchasing and running new local generation, for a 20-year time frame. Being compared are MLSCs of planned and prospective EHV configurations, with local generation and 138kV up-rate costs. These studies are expected to be complete in 2006, with and without SVC.

Of the combinations of local generating units that provided solutions to the RMR conditions, there is no significant difference in system losses, because the MW import variation is small among the choices, and the flows into the service area are nearly the same.

Summary SIL, MLSC, and Costs for dispatch to mitigate the annual RMR conditions, 2008, 2015:

Incremental RMR Generation Costs	2008	2015
SIL	1825	2350
MLSC	2650	3075
Peak Load	2310	2779
RMR	589	1334
Annual Total	$1,368,703	$3,112,622

Local Generating Units Data

Base Loadable	Min Dispatch	Max Dispatch	Qmin	Qmax
Sundt Unit #1	10 MW	75 MW	-15 MVar	80 Mvar
Sundt Unit #2	10 MW	75 MW	-15 Mvar	80 Mvar
Sundt Unit #3	15 MW	105 MW	-15 Mvar	65 Mvar
Sundt Unit #4	20 MW	125 MW	-30 Mvar	120 Mvar
DMP GT #1*	40 MW	73 MW	-15 Mvar	57 Mvar
DMP GT #2	40 MW	73 MW	-15 Mvar	57 Mvar
DMP GT #3	40 MW	73 MW	-15 Mvar	57 Mvar

Peaking	Min Dispatch	Max Dispatch	Qmin	Qmax
Sundt GT #1	22 MW	22 MW	-10 MVar	15 MVar
Sundt GT #2	22 MW	22 MW	-10 MVar	15 MVar
N. Loop GT #1**	17 MW	17 MW	0 MVar	0 MVar
N. Loop GT #2	22 MW	22 MW	-10 MVar	15 MVar
N. Loop GT #3	22 MW	22 MW	-10 MVar	15 MVar
N. Loop GT #4	22 MW	22 MW	-10 MVar	15 MVar

* DMP GTs are included as dispatchable units as opposed to peaking units because the MVar capacity combined with location has a significant benefit for voltage stability.

** N. Loop GT #1 is a jet engine with little MVar capacity.

Sundt Unit MW minimums and maximums have been adjusted to reflect operation on McKinley Coal.

TEP UNIT MAINTENANCE SCHEDULE:

UPDATED							
11/2/2005							
(T) - Tentative							
	2006	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**
TEP PLANTS							
Four Corners #4	--------	4/24-5/11	10/3-10/12	--------	1/12-4/12	--------	--------
#5	11/7-11/16	--------	1/19-4/5	10/24-11/1	--------	unit 5 minor	--------
Navajo #1	--------	--------	1/1-3/31	--------	--------	unit 1 major	--------
#2	--------	1/27-2/25	--------	--------	1/30-3/29	--------	--------
#3	2/11-3/12	--------	--------	1/3-3/2	--------	--------	unit 3 minor
San Juan #1	10/7-10/29	--------	9/12-11/2	--------	10/2-10/24	--------	10/6-10/28
#2	--------	2/17-3/14	--------	2/14-3/29	--------	3/6-3/27	--------

Springerville	**#1**	10/28-11/20	--------	3/15-4/13	--------	4/3-4/25	--------	--------
	#2	--------	3/19-4/18	--------	3/7-4/5	--------	3/4-3/27	--------
H.W. Sundt	**#1**	--------	--------	1/12-3/5	--------	2/13--2/28	--------	2/11--2/26
	#2	--------	1/13--1/28	--------	2/7--2/22	--------	2/12--3/27	--------
	#3	--------	2/17-4/1	--------	3/7--3/22	--------	4/12--4/24	--------
	#4	3/18-4/16	--------	--------	1/10-2/1	--------	--------	3/3--4/15
San Juan	**#3**	4/1-5/14	--------	--------	--------	--------	--------	--------
	#4	--------	--------	--------	--------	--------	--------	--------
Palo Verde	**#1**	--------	3/31-5/3	--------	--------	--------	--------	--------
	#2	9/30-11/2	--------	--------	--------	--------	--------	--------
	#3	4/1-5/4	9/29-12/13	--------	--------	--------	--------	--------
Sundt GT	**#1**	10/01-10/07	9/30-10/06	10/05-10/11	10/04-10/10	10/03-10/09	--------	--------
	#2	10/08-10/14	10/07-10/13	10/12-10/18	10/11-10/17	10/10-10/16	--------	--------
N. Loop GT	**#1**	10/15-10/21	10/14-10/20	10/19-10/25	10/18-10/24	10/17-10/23	--------	--------
	#2	10/22-10/28	10/21-10/27	10/26-11/01	10/25-10/31	10/24-10/30	--------	--------
	#3	10/29-11/04	10/28-11/03	11/02-11/08	11/01-11/07	10/31-11/06	--------	--------
	#4	11/05-11/11	10/04-10/10	11/09-11/15	11/08-11/14	11/07-11/13	--------	--------
DMP GT	**#1**	2/12-2/25	1/28-2/3	2/10-0/16	2/08-2/14	2/07-2/13	--------	--------

Total emission pollutants produced by the lowest local generation dispatch mitigating the annual RMR condition, 2008, 2015:

Environmental Summary

Annual pollutants are based on estimated RMR output as defined by the ACC request, and not the incremental difference between the possible market alternatives.

2008 RMR Environmental Output	Estimated SO2	Estimated NOx	Estimated PM	Estimated CO
Sundt Steam Gas (lbs)	504	168,270	4,414	99,802,971

2015 RMR Environmental Output	Estimated SO2	Estimated NOx	Estimated PM	Estimated CO
Sundt Steam Gas (lbs)	387	129,167	3,388	76,610,350