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UNS Electric, Inc., through undersigned counsel, hereby files its Santa Cruz County
Continuity of Service Report for the Fiscal Year 2009.

RESPECTFULLY SUBMITTED this 24th day of February 2010.

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UNS ELECTRIC, INC.

SANTA CRUZ COUNTY CONTINUITY OF SERVICE REPORT

FOR THE FISCAL YEAR 2009

DOCKET NO. E-00000D-09-0020

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EXECUTIVE SUMMARY

In ACC Decision No. 70635 (December 3, 2008) (“Decision No. 70635”), the Arizona Corporation Commission (“Commission”) ordered that UNS Electric, Inc. (“UNS Electric” or “the Company”) “shall perform studies and shall file a report of those studies ... that establishes a long range system plan for Santa Cruz County that is founded on the principle of continuity of service following a transmission line outage.” The order was in response to the Commission’s concerns over “extended service interruptions following the loss of a single transmission line...” *Id.* The Commission went on to explain that restoring service to customers within a reasonable period of time has been a longstanding concern, and that service providers in Santa Cruz County should adopt the continuity of service principle in lieu of restoration of service. *Id.*

In particular, the Commission was addressing the 115kV radial transmission line (“the 115kV line”) UNS Electric uses to provide transmission service to Santa Cruz County. The line runs a distance of fifty three miles, from Western Area Power Administration’s (“WAPA” or “Western”) Nogales switchyard to the Valencia substation in Nogales. The 115kV line was acquired from The Citizens’ Communication Company (“Citizens”) in 2003, and is used to serve Santa Cruz County customers via the Kantor, Canez, Sonoita and Valencia substations.

Since 2003, UNS Electric has continued to improve the Santa Cruz County transmission system. These improvements include updating the Outage Restoration Plan to integrate operational control of the Company’s facilities with Tucson Electric Power’s (“TEP”) operating center, use of both TEP and UNS Electric field personnel for outage response, and procedures to improve restoration times such as interconnecting radio systems and cross-training employees. Capital investments to improve reliability include new shunt capacitors dispersed among feeders served by each of UNS Electric’s substations, black start capability at the Valencia generating station, remote control startup of the Valencia generating units and synchronization with the transmission system, as well as completion of a 46 kV emergency tie line of approximately 20 MW capacity between the TEP Canoa substation and the UNS Electric Kantor substation.

In addition to the improvements named above, the Company is in the process of upgrading the 115kV line to 138kV. This project has been underway for nearly a year, and is scheduled for completion in 2012. Upgrading this line will drastically improve continuity of service and restoration times in Santa Cruz County. Though current service interrupting outages in the area do not violate applicable North American Electric Reliability Corporation (“NERC”) Reliability Standards or Western Electricity Coordinating Council (“WECC”) System Performance Criteria, UNS Electric believes the 138kV upgrade is an important investment.

The Company has studied continuity of service in Santa Cruz County. Several options for improving continuity of service are included in this report, including constructing a second line at a cost of \$69 to \$73 million. Considering all options, UNS Electric believes the best long range system plan for Santa Cruz County is to complete the 138kV line upgrade.

INTRODUCTION

This report is in response to Decision No. 70635, wherein the Arizona Corporation Commission ordered that UNS Electric “shall perform studies and shall file a report of those studies ... that establishes a long range system plan for Santa Cruz County that is founded on the principle of continuity of service following a transmission line outage.” Following are the study findings, including the long range system plan. Elements of the long range system plan will be incorporated in the Company’s ten-year plan.

BACKGROUND

UNS Electric provides transmission service to Santa Cruz County through a 115 kV radial transmission line. This line runs a distance of fifty three miles, from Western’s Nogales switchyard to the Valencia substation in Nogales. The 115 kV line was acquired from Citizens in 2003, and is used to serve Santa Cruz County customers via the Kantor, Canez, Sonoita and Valencia substations.

UNS Electric reliably supplies Santa Cruz County a load of 100 MW or more. This is possible with the use of local generation at the Valencia substation, in addition to the 115kV line. Without local generation, the line can supply approximately 51 MW, as measured at Western’s Nogales station. Low voltage issues can arise at the Nogales switchyard when the load exceeds 49 MW, thus Reliability Must Run (“RMR”) requirements begin at this level. Due to capacity constraints on the system between the Saguaro and Apache substations, overloading issues can emerge as the Santa Cruz County load exceeds 100 MW.

The Nogales switchyard to Kantor line connects the 115 kV transmission source to service in Santa Cruz County. If an outage occurs, restoration of service can require starting the Valencia combustion turbines as well as distribution system switching to provide partial service to feeders connected to the Kantor and Canez substations via the 46kV emergency backup line to TEP. Loss of other line segments such as Kantor to Canez, Canez to Sonoita, or Sonoita to Valencia, can disconnect the downstream portion of the system and result in partial interruption of service.

UNS Electric has studied options to improve continuity of service and reduce restoration of service times. The Company has determined that upgrading the 115kV line to 138kV is the most cost-effective method to reduce outages and their attendant circumstances. Though current service interrupting outages in the area do not violate applicable NERC or WECC System Performance Criteria, UNS Electric believes the 138kV upgrade is an important investment. Improvements to enhance system reliability and minimize restoration times are described in the following section.

RELIABILITY AND SYSTEM RESTORATION IMPROVEMENTS

Since 2003, UNS Electric has significantly improved operating procedures to reduce outage restoration times. In particular, UNS Electric updated its Outage Restoration Plan to include the following:

- Integrated operational control of the facilities with those at the TEP operating center;
- Use of both TEP and UNS Electric field personnel for outage response;
- Analysis and implementation of procedures to improve restoration times for transmission outages (e.g., interconnecting radio systems, cross-training employees, especially those in dispatching, field operations or field crews);
- A comprehensive vegetative management program that includes biannual patrols by air to eliminate events caused by vegetation contact with lines; and
- Completion of GIS data conversion to Smallworld software and integration with STORMS software, and OMS software.

UNS Electric has improved continuity of service by investing in and upgrading facilities. Capital investments to date include:

- Construction and operation of new shunt capacitors dispersed among feeders served by each of the UNS Electric substations;
- Addition of black start capability at the Valencia generating station, in service by 2010;
- Remote control startup of the Valencia generating units and synchronization with the transmission system;
- Completion of a 46 kV emergency tie line of approximately 20 MW capacity between the TEP Canoa substation and the UNS Electric Kantor substation;
- Remote restorative switching capability to serve Kantor and Canez substations from Canoa, and remote switching for service restoration to the Sonoita and Valencia substations via the Valencia generators; and
- Replacement of wood structures with steel poles to improve reliability of the existing 115 kV line.

By improving operating procedures and facilities, UNS Electric has reduced RMR requirements while keeping costs low for rate payers. Also, continuity of service has improved and restoration times have lowered.

Looking forward, UNS Electric plans to upgrade its transmission system by changing operation from 115kV to 138 kV. In furtherance of this plan, UNS Electric received a Certificate of Environmental Compliance (“CEC”) in ACC Decision No. 71282 (October 7, 2009) to convert the existing 115 kV transmission system to 138 kV and interconnect it to the TEP Vail substation. UNS Electric expects to be completed with the upgrade by 2012. Studies indicate that once the line is upgraded, approximately 120 MW of Santa Cruz County’s load may be supplied without the Valencia generating units and there will be no RMR requirement for the ten year planning horizon.

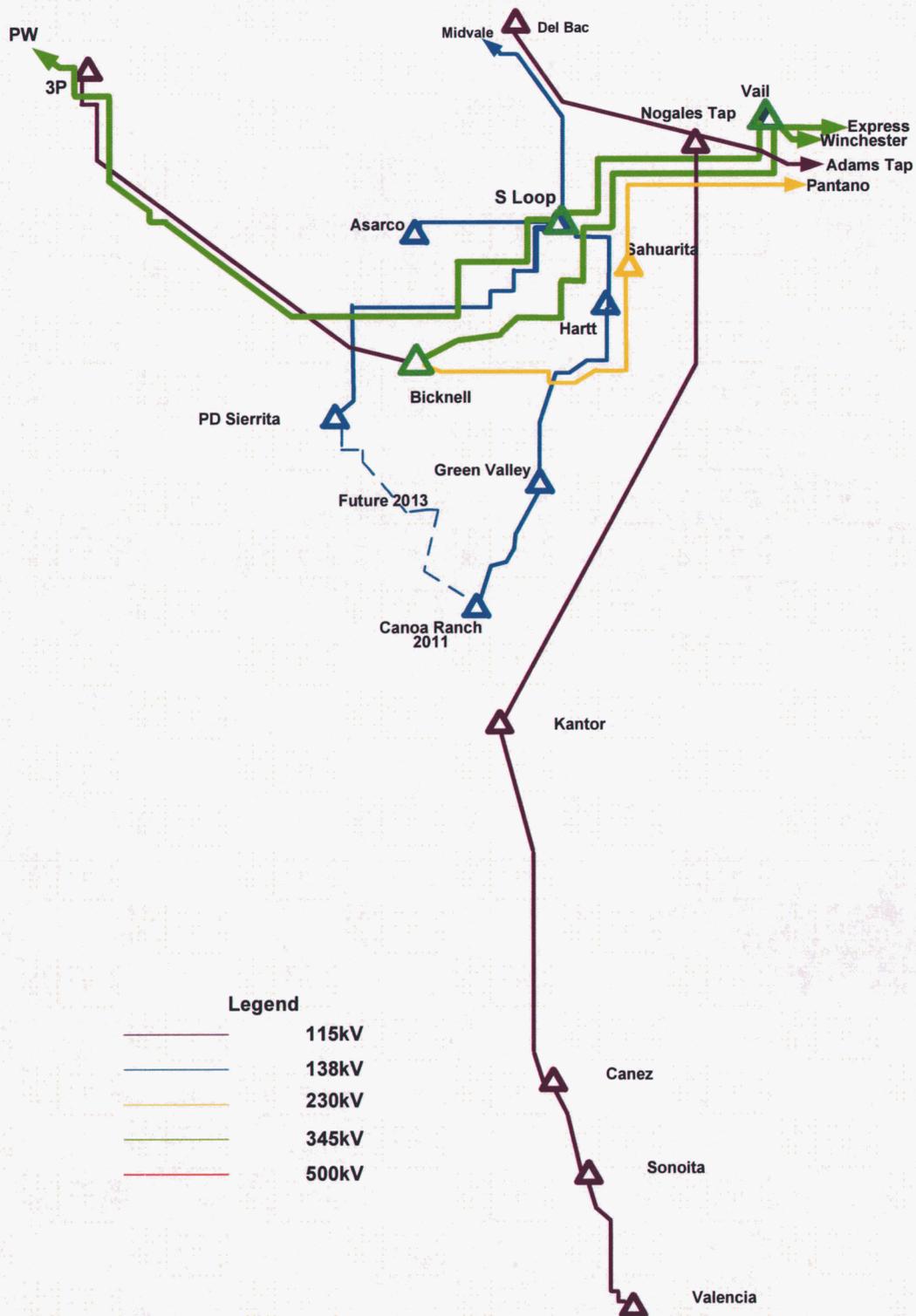


Figure 1: Santa Cruz County 115 kV Transmission System with Southern Tucson

Figure 1 shows the portion of the 115 kV transmission network that supplies Santa Cruz County under a Network Integrated Transmission Service (“NITS”) agreement between Western and UNS Electric. It also includes TEP’s 345 kV and 138 kV transmission facilities along with Southwest Transmission Cooperative’s (“SWTC”) 230 kV transmission.

METHODOLOGY AND STUDY PROCESS

The methods used to conduct this study included reviewing the improvements made by UNS Electric since acquiring the Santa Cruz system from Citizens; revising the area load forecast; conducting and documenting the current RMR study; evaluating alternatives to significantly improve reliability; developing capital cost estimates with associated preliminary rate impact analyses; and preparing a recommended plan. The study process included a power flow analysis to evaluate the performance of the alternatives.

PEAK DEMAND FORECAST

Figure 2 depicts the peak demand experienced in Santa Cruz County from 1995 through 2009. As the chart indicates, significant growth took place after 2005, with peak demand exceeding 75 MW in 2007 and 2008. Peak demand declined in 2009 due to the downturn in the economy.

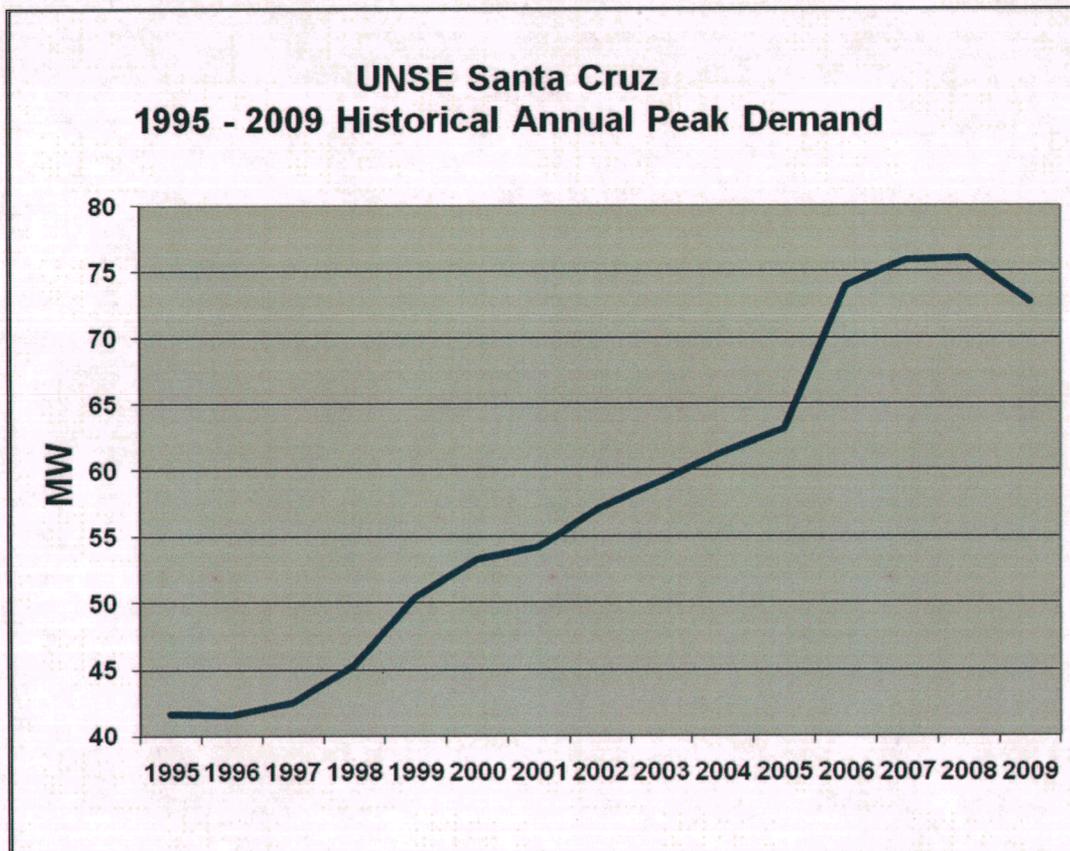


Figure 2: Santa Cruz County 1995-2009 Historical Annual Peak Demand

UNS Electric conducted a study in 2008, on behalf of Western in conjunction with its conversion from Point-to-Point ("PtP") to Network Integrated Transmission Service

("NITS"). The result was a change in operating practices wherein RMR would begin when the Santa Cruz County load exceeded 49 MW (or 51 MW as metered at the Western Nogales point of interconnection).

UNS Electric conducted its studies based on its February 2009 peak demand forecast as shown in Figure 3. Current evaluations are more accurate, thus the forecast in Figure 3 is higher than will be predicted once forecasts are revised for 2010.

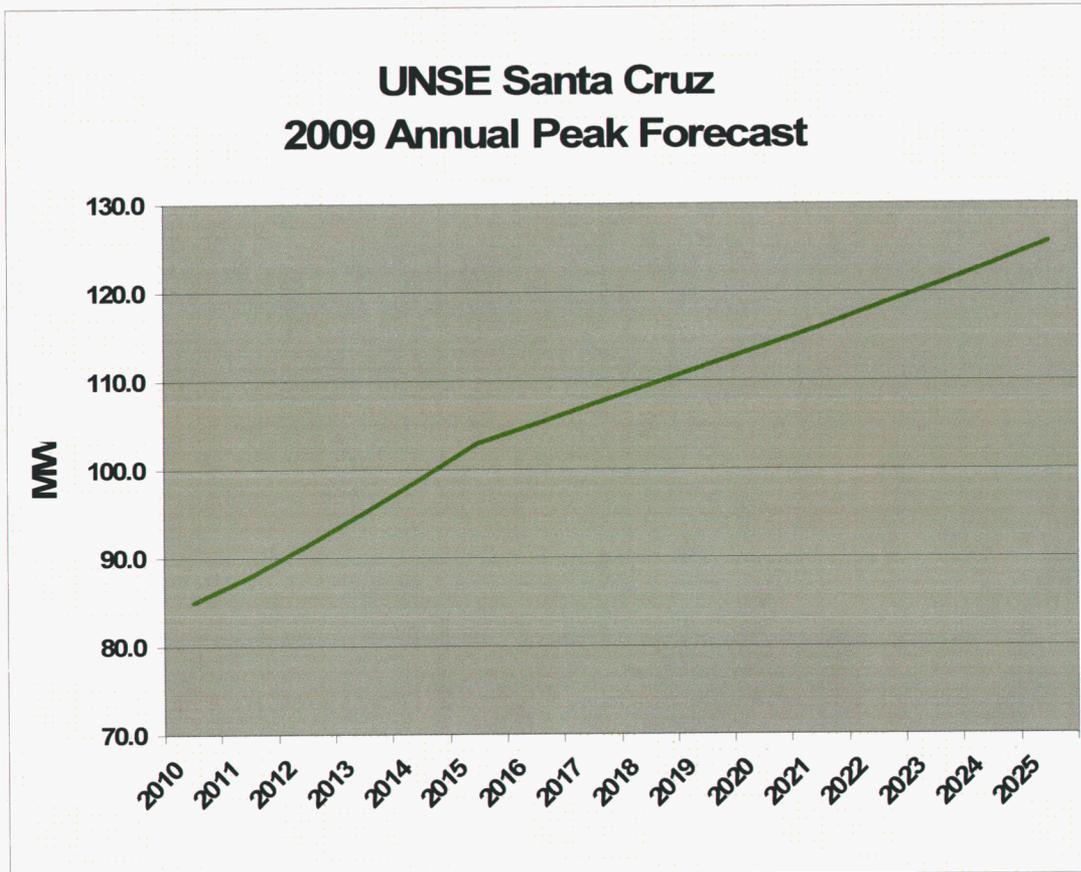


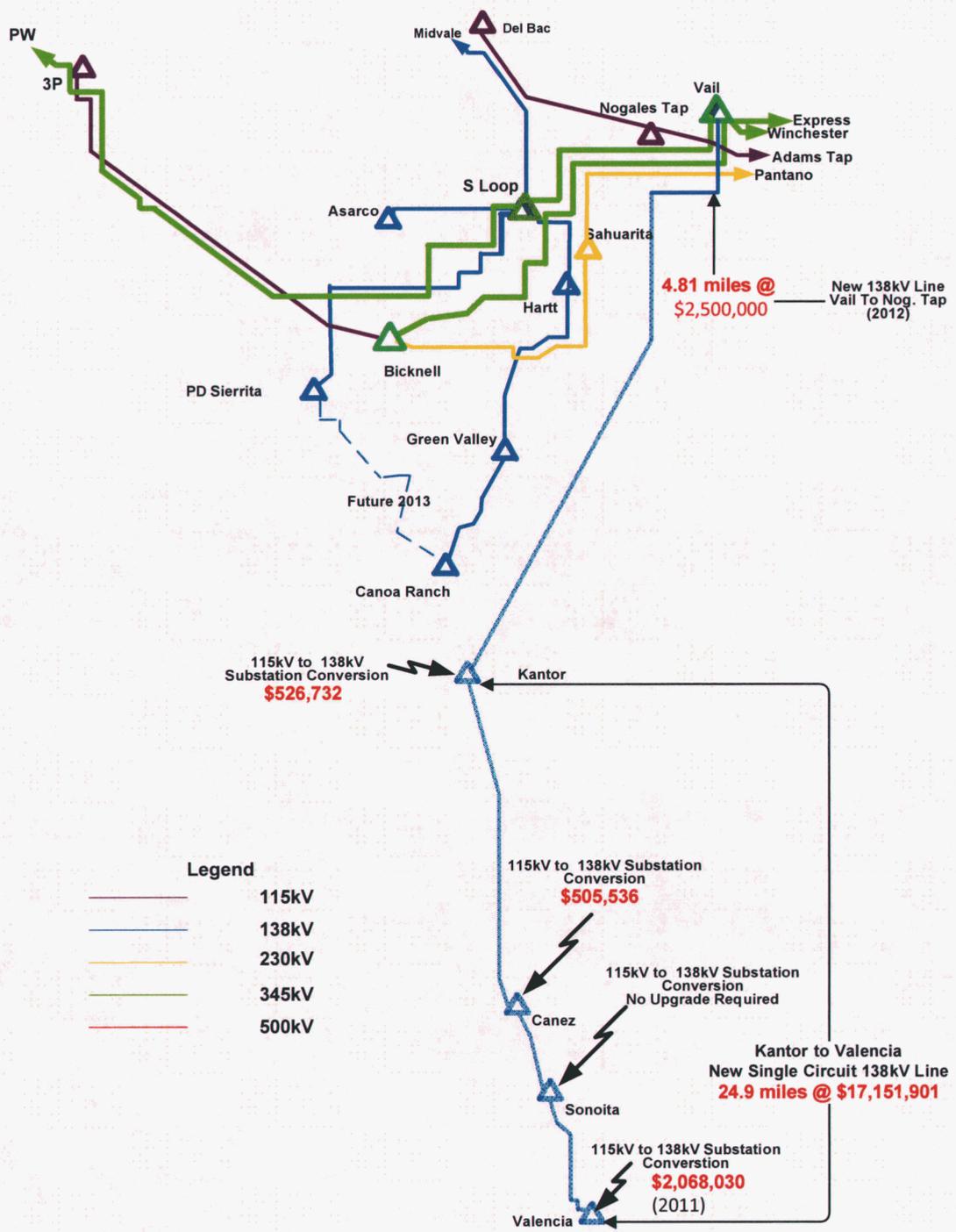
Figure 3: Santa Cruz County 2010-2025 Annual Peak Forecast

Load forecast uncertainty is a reality for Santa Cruz County, and must be accounted for with any long term plan. For the near-term, perhaps as long as three years, it is reasonable to assume that peak demand will trend considerably lower than the 2009 forecast indicates. Long-term plans need to be flexible so that the Company can accommodate changes in demand, whether it's from continual decline or increased economic activity.

VAIL TO VALENCIA 138 kV CONVERSION

The proposed conversion, scheduled for completion by 2012, will convert the existing 115 kV transmission system to 138 kV and interconnect it to the TEP Vail substation. The project consists of replacing transmission line structures and hardware; replacing 115 kV transformers with dual voltage 138/115 kV associated substation equipment; adding a new 345/138 kV transformer and substation equipment at the Vail substation; and extending the existing line approximately 5 miles from the Nogales switchyard to the Vail point of interconnection. UNS Electric received a CEC for this project in Decision No. 71282.

Once the line is upgraded, approximately 120 MW of Santa Cruz County's load may be supplied without the local generation, thus there will be no RMR requirement for the ten year planning horizon. Additionally, the upgrade will dramatically increase System Import Limit ("SIL") and Maximum Load Serving Capability ("MLSC"), as shown in the following tables. Reliability will also improve due to the replacement of old poles. The cost estimates shown in Figure 4 include land, environmental, and permitting costs. A summarized table of the costs can be found on page 9, herein.



*All Costs are estimates and are intended for Transmission Planning and not budgeting.
 **Not included in the Total: Land and Environmental Costs

Figure 4: Vail to Valencia 138 kV Conversion & Connection to Vail

A summary of the Vail to Valencia project cost appears in Table 1 below.

Project Element	Cost Estimate
Transmission Line	
Vail to Nogales Switching Station 138 kV Line	\$3,797,000
Nogales Switching Station to Kantor 138 kV Conversion	Completed
Kantor to Valencia 138 kV Conversion	\$23,775,000
Transmission Line Total	\$27,572,000
Substations	
Vail Substation	\$2,064,707
Kantor Substation Conversion	\$526,454
Canez Substation Conversion	\$505,484
Valencia Substation Conversion	\$2,068,253
Substations Total	\$5,164,898
Total Project	\$32,736,898

**Table 1: Vail to Valencia 138 kV Conversion Cost Estimate
(Cost Includes Right-of-Way Estimates)**

RELIABILITY MUST RUN STUDIES

The RMR results in this report were extracted from the RMR study done by UNS Electric in preparation for its 2010 BTA filing. There are many benefits of the Vail to Valencia conversion project, but the two most important are (1) improved reliability due to replacement of old wood poles; and (2) the increased SIL and MLSC capability with the elimination of RMR through 2019. The RMR study results are shown in Table 2 below.

Year	Peak Forecast	Study System Load	Metric	Metric Value	Valencia Dispatch
2010	85 MW	49 MW	SIL	51 MW	0 MW
		130 MW	MLSC	130 MW	62 MW
		89 MW	RMR	24 MW	24 MW
2013	95 MW	120 MW	SIL	127 MW	0 MW
		190 MW	MLSC	190 MW	62 MW
		100 MW	RMR	0 MW	0 MW
2019	112 MW	120 MW	SIL	127 MW	0 MW
		190 MW	MLSC	190 MW	62 MW
		117 MW	RMR	0 MW	0 MW

Table 2: 2010 RMR Study

The RMR study results in Table 2 represent a worst case scenario for 2010 because the high load forecast previously shown in Figure 2 was used. It indicates that for the 2010 case the SIL would be 51 MW. This is the maximum load that could be imported from the Nogales switching station and metered at the Nogales point of delivery to the UNS

Electric system for Santa Cruz County. Local generation would be needed to serve loads in Santa Cruz County above this level. The amount of generation needed to serve the forecasted load of 85 MW would be 24 MW. If all local 62 MW of generation at Valencia were to be dispatched, then a total of 130 MW, or MLSC, could be served.

SIL and MLSC show marked improvement in the 2013 and 2019 cases due to the 138 kV conversion and interconnection to the TEP system at Vail. The RMR requirement is completely eliminated.

ALTERNATIVES STUDIED

Of the alternatives studied, the 138kV line upgrade was the most cost-effective way to decrease outages and restoration times. In studying continuity of service, the Company could not find a method capable of withstanding single transmission line contingencies (with no load interruption) that did not also include extensive and costly construction of new lines and substations.

An example can be found in Figure 5, which shows new construction of a 66-mile long 138 kV transmission line from the South substation to Valencia. The costs, outlined in Table 4 below, are based on the Vail to Valencia single circuit costs and include land plus the incremental costs associated with adding sectionalizing switching stations at Kantor, Canez, and Valencia. The Sonoita station has existing sectionalizing that was assumed to be adequate. The total project cost, including land for the South to Valencia line, would be approximately \$69 million. This would be in addition to the \$33 million already committed to the Vail to Valencia 138 kV upgrade. Moreover, some means to limit voltage deltas following line trips and/or switching is required, adding as much as another \$4 million to the total estimate below.

Project Element	Cost Estimate
Transmission Line	
South to Valencia 138 kV Line	\$49.1 Million
Land Estimate	\$13.2 Million
Transmission Line Total	\$62.3 Million
Substations/Switching Stations	
South Substation and Switching Station	\$4 Million
Valencia Switching Station	\$0.75 Million
Kantor Switching Station	\$0.75 Million
Canez Switching Station	\$0.75 Million
Sonoita Switching Station	Not Needed
Substations and Switching Station Total	\$6.25 Million
Total Project	\$68.55 Million

Table 4: Cost Estimate for New South – Valencia 138kV Line in Gateway Route

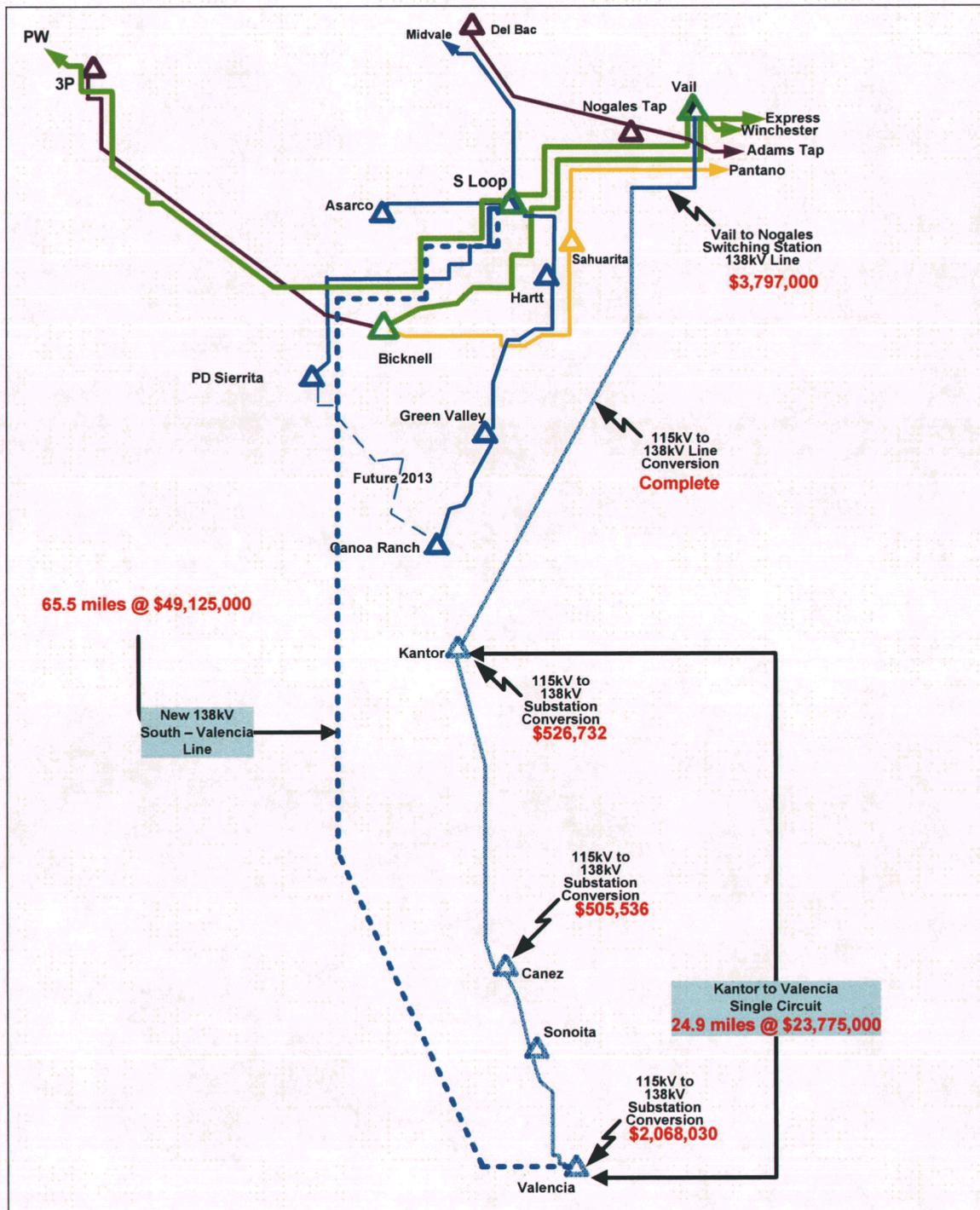


Figure 5: New South – Valencia 138kV Line in Gateway Route

This alternative depicts construction of a 66-mile long 138 kV transmission line from the South substation to Valencia. The diagram assumes that construction along the preferred

route, previously designated for the Gateway 345 kV double circuit line, is possible. This option necessitates expanding the South substation to accommodate a new 345 kV breaker-and-a-half bay for a new 345/138 kV transformer, which would be in a transformer terminated line configuration similar to Vail, and needed to comply with TEP Two County bond requirements.

Figure 6, shown below, is a conceptual design for 138 kV switching stations based on a ring bus configuration.

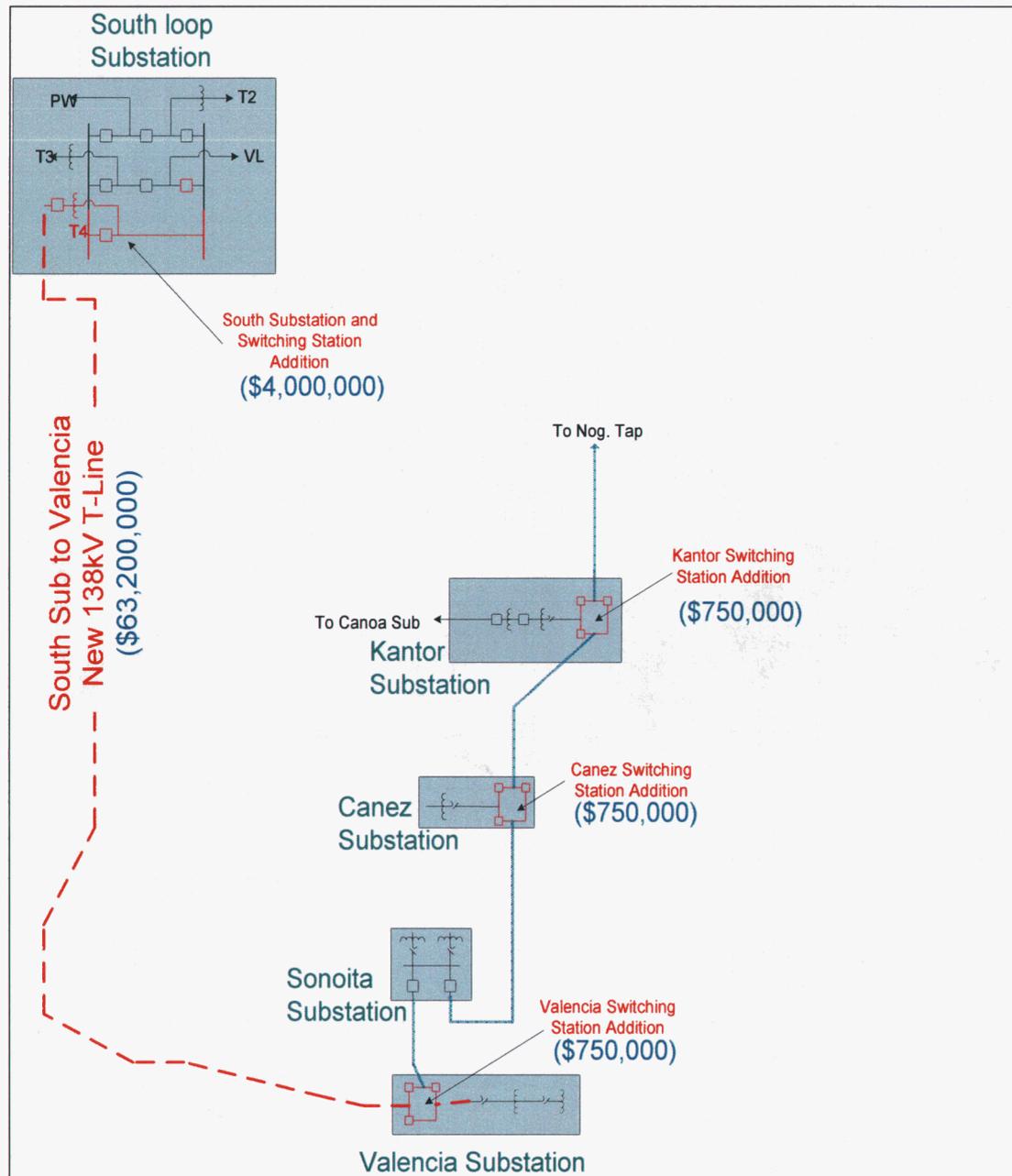


Figure 6: Conceptual Substation & Switching Station Required for No Interruption (Estimate shown for New Transmission line includes a preliminary land estimate)

FACTORS CONSIDERED BY THE COMPANY IN ITS STUDY

There are a number of factors UNS Electric considered before determining that the 138kV line upgrade is the most cost-effective method for improving continuity of service. First, the Company used a broad definition of continuity of service. Outages are a reality for any transmission system, but UNS Electric developed a plan to drastically reduce them without over-burdening rate payers with 66 miles of new construction. The upgrade will provide substantially better service for a relatively low capital investment.

Second, UNS Electric took timing in to consideration. The 138kV upgrade is scheduled for completion in 2012. It will solve many of the same issues that the second line is meant to address, so ordering a second line now is premature. Also, several renewable projects are proposed for southeastern Arizona; it would be rash to construct a second line before the 138kV conversion is completed or before renewable projects, which have the potential to change existing transmission plans, can be considered. Specific renewable projects outlined for southeastern Arizona are presented below.

POTENTIAL RENEWABLE TRANSMISSION PROJECTS

This section discusses three examples that could significantly impact future TEP and UNS Electric transmission plans. In addition to the three identified below, there are a number of other planned transmission and generation projects that should be considered before any decision is made with regards to constructing a second line.

TEP Proposal to Upgrade Western's 115 kV Line

TEP proposed, along with SWTC, to construct a new double circuit 230 kV transmission line from the SWTC Apache substation to the Saguaro substation. This proposal is under consideration by Western, and depending on the outcome of the discussions and further study, it could become a reality within the five year planning horizon. If such a project were to materialize, the current limitations of the Western 115 kV line could be overcome. This would make it possible to continue serving the Santa Cruz system from an upgraded Nogales 230/138 kV substation. Detailed studies are necessary to confirm the technical and economic feasibility of this option.

Black Forest Partner's Southline EHV Proposal

This proposal would replace or upgrade the SWTC 230 kV transmission line from Apache to Bicknell with a 345 kV line. Such a line, if constructed by 2014 as Black Forest Partners has proposed, would provide a closer source for a second line to Valencia. This could reduce the required investment, although the actual economic feasibility would have to be determined through future study.

Tohono O'odham Nation Solar Project

The Tohono O'odham Nation lands, along with other adjacent lands, have been identified as having the potential to support up to 500 MW of solar power generation. Given the proximity to the preferred corridor, the Gateway project or its variation could serve as a collector system for the contemplated new solar generation.

Possible Asynchronous Tie to CFE

A relatively small asynchronous tie at 138 kV could, if determined to be economically feasible, provide interim reliability benefits such that the need for a second line to Valencia could be deferred or eliminated.

CONCLUSION

Per the Commission's order, UNS Electric studied continuity of service and restoration times for Santa Cruz County. The Company also studied various options for improving continuity of service, including the associated costs. Based on the findings outlined in this report, UNS Electric believes the 138kV line upgrade is the best option for Santa Cruz County's long term plan.

Construction of a second line would decrease power outages in Santa Cruz County, but 66 miles of new construction cannot be done quickly or cost-effectively when compared to the upgrade already in progress. In total, a second line would cost between \$69 and \$73 million; this represents a system-wide rate increase of 6%. This would be in addition to the amount already committed to the line upgrade (\$33 million).

The line upgrade currently underway will provide benefits nearly identical to those of a second line. SIL and MLSC will be substantially improved and RMR will be eliminated for years. Additionally, the upgrade project already has a Certificate of Environmental Compliance and can be done for less than half the cost. The benefits of a second line pale when compared to the line upgrade this way. UNS Electric has made prudent procedural and facility enhancements in Santa Cruz County and it will continue to do so. Improving service to the Santa Cruz load is a high priority for UNS Electric; continuing to upgrade the 115kV line is the most efficient and cost-effective way for the Company to improve continuity of service.