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Tucson Electric Power Company

**One South Church, P.O. Box 711
Tucson, AZ 85702**

April 29, 2010

Docket Control
Arizona Corporation Commission
1200 West Washington
Phoenix, Arizona 85007

Re: Decision No. 69680, Docket No. L-00000C-95-0084-00000
2010 Annual Summer Preparedness Report

Enclosed please find Tucson Electric Power Company's ("TEP") annual summer preparedness report that documents the ability of TEP's Green Valley area 46 kV system to timely restore service to: a) all customers served from Green Valley Substation and Canoa Ranch Substation following outage of the 138 kV South to Green Valley line outage; b) applicable load of UNS Electric, Inc. ("UNS Electric") customers via the 46 kV tie from Canoa Substation to Cañez Substation for an outage of the UNS Electric 115 kV line to Nogales; and c) all TEP customers and applicable load of UNS Electric customers for the concurrent outage of the South to Green Valley 138 kV line and the UNS Electric 115 kV line to Nogales. TEP is filing this report in accordance with Decision No. 69680 (July 6, 2007), Docket No. L-00000C-95-0084-00000, which modified the Certificate of Environmental Compatibility granted in Decision No. 59221 (August 8, 1995).

If you have any questions regarding the report, please do not hesitate to contact me at (520) 884-3680.

Sincerely,

Jessica Bryne
Regulatory Services

cc: Prem Bahl, ACC
Compliance, ACC
Shannon Kanlan, ACC

Arizona Corporation Commission
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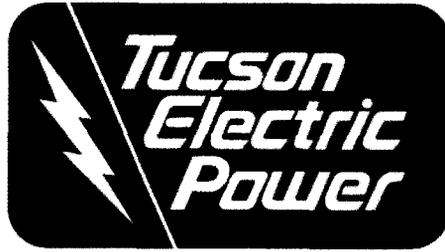
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A UniSource Energy Company

2010 Green Valley and Kantor Substation Summer Preparedness

**Prepared By:
Tucson Electric Power Company**

April 2010

EXECUTIVE SUMMARY

Transmission Planning for Tucson Electric Power Company ("TEP") has evaluated the existing Green Valley and Kantor transmission and sub-transmission facilities to determine the facilities' ability to serve load in Green Valley and Santa Cruz County. As a result of evaluating contingencies involving outages of both TEP's 138 kV transmission, and UNS Electric Inc.'s ("UNS Electric") 115 kV transmission, it has been determined that area transmission and distribution systems are able to adequately serve load in the areas supplied by the Green Valley (TEP) and Kantor (UNS Electric) substations for the 2010 summer peak load period. Future plans in the Green Valley area are included in the TEP and UNS Electric 10-Year Plans, both of which were filed with the Arizona Corporation Commission ("Commission") in January 2010.

BACKGROUND

Green Valley

Green Valley's power delivery needs are met by 138 kV transmission and 46 kV distribution circuits originating at TEP's South substation (Exhibit A). The 138 kV circuit is a radial transmission line serving the Green Valley substation via a single 138/13.8 kV transformer [50 MVA Continuous (55 °C rise), 56 MVA Continuous (65 °C rise), 60.0 MVA Emergency].

The 46 kV system is comprised of two 46 kV distribution circuits, 46-C-550 (rated 49 MVA) and 46-C-552 (rated 49 MVA). The TEP transformers served by this distribution, and available to back-up loss of the 138 kV circuit, include:

46-C-550

- Green Valley T1 46/13.8 kV, 25.0 MVA, 30.0 MVA Emergency
- Green Valley T2 46/13.8 kV, 25.0 MVA, 30.0 MVA Emergency

46-C-552

- Canoa T1 46/13.8 kV, 4.7 MVA, 5.6 MVA Emergency
- Cyprus Esparanza T2 46/13.8 kV, 14.4 MVA, 14.4 MVA Emergency (new since 2009)
- Raw Water Supply T2 46/13.8 kV, 8.8 MVA, 10.6 MVA Emergency
- Raw Water Supply T3 46/13.8 kV, 9.4 MVA, 11.3 MVA Emergency

The two 46 kV transformers at Green Valley (T1 & T2) are used strictly as back-up and are not loaded under normal conditions. Green Valley T1 is out-of-service for re-winding and will be back in-service by mid-May, 2010.

Capacity of the existing 138 kV radial is 227 MVA which well exceeds the total 138 kV circuit loading of 52.7 MVA at the Green Valley substation.

Kantor

Kantor substation is one of four substations serving UNS Electric's load in Santa Cruz County. This station is served by the 115 kV radial transmission line supplied by the WAPA Nogales substation. For loss of this line, the load at Kantor can be picked up via an existing 46 kV tie, 46C552, served from TEP's South substation. The rating of this 46 kV circuit is 49 MVA. The transformer capacity at Kantor is 12.5 MVA. Expected load on 46C552 is 35.2 MVA including the Kantor load. Therefore the net 46 kV system capacity exceeds the projected peak demand.

CONTINGENCY OPERATION

Green Valley

The most serious contingencies regarding the Green Valley area involve loss of one or both of the 345/138 kV transformers at the South substation. Neither the N-1 nor the N-2 contingency causes any overloads on the remaining system. Table 1 demonstrates that there are no voltage violations greater than 5% for loss of one transformer or greater than 10% for loss of both transformers.

Green Valley Area 138 kV Contingency Voltage Deviations						
	South		Green Valley		Canoa Ranch	
	V	delta V	V	delta V	V	delta V
ALIS	1.029	0.00%	1.018	0.00%	1.018	0.00%
South-T1	1.026	0.29%	1.015	0.29%	1.015	0.29%
South-T1 + T2	0.969	5.83%	0.954	6.29%	0.953	6.39%

Table 1: Green Valley Area 138 kV Contingency Voltage Deviations

There is adequate capacity on the underlying 46 kV system to back up load in Green Valley for loss of the South to Green Valley 138 kV radial transmission line in 2010. This is based on the fact that the load at the Green Valley substation is transferred to the 46 kV system via 46/13.8 kV transformation that exists at the station for this purpose.

Kantor

The TEP 46 kV circuit 46C552, served from South substation, is used to back up the Kantor substation for loss of the 115 kV radial serving Santa Cruz county. The circuit is rated at 49 MVA and also serves Canoa, Cyprus Esparanza Wells, Cyprus Raw Water Supply and Cyprus Raw Water Booster. The remaining capacity available after backing up Kantor is shown as "46C552 Margin" in the following table:

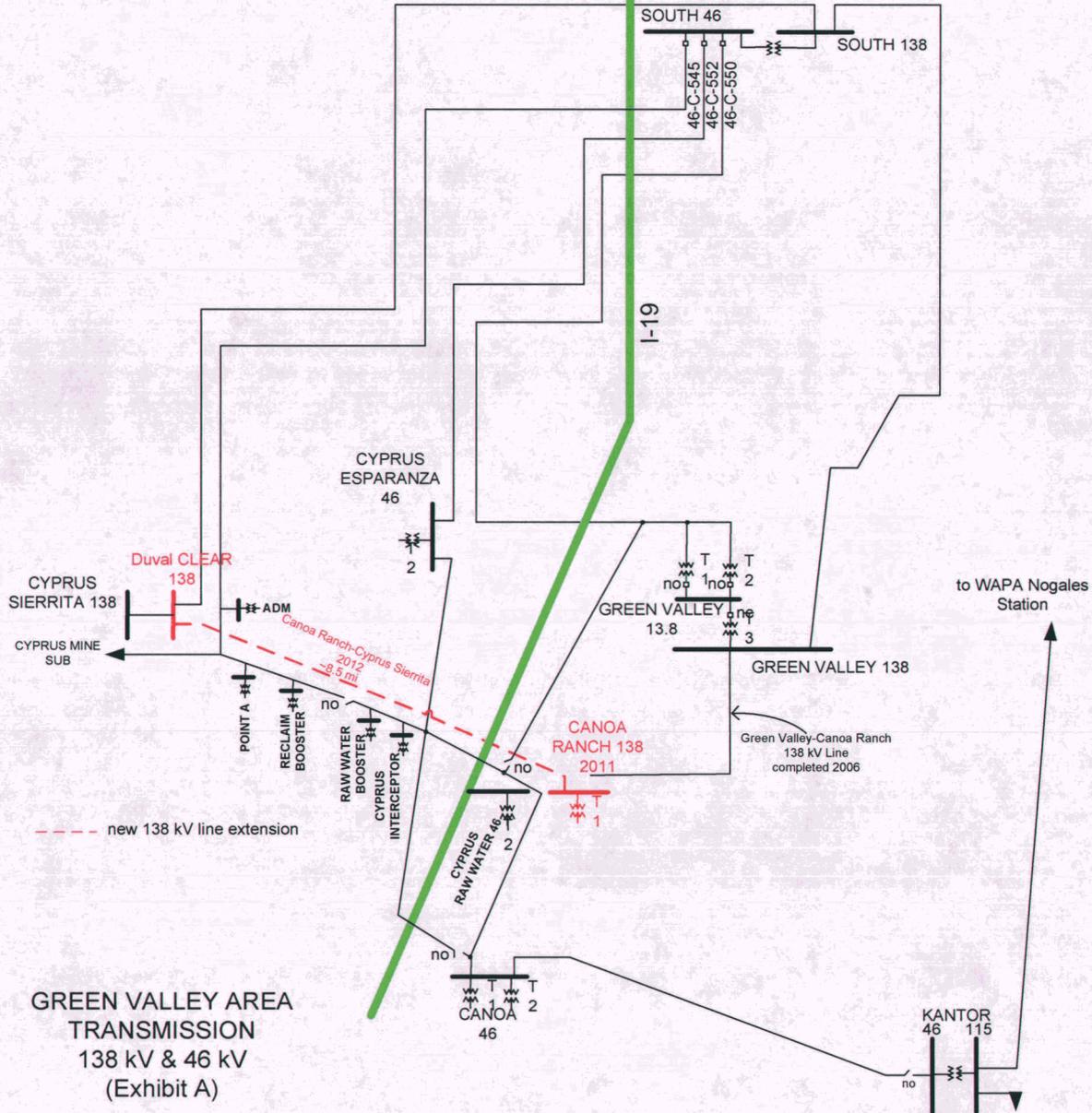
Substation	Rating	Emergency Rating	2010 Load
Canoa-T1	4.7	5.6	3.4
Canoa-T2 (mine)	3.1	3.8	1.8
Cyprus Esparanza Wells-T1 (mine)	3.1	3.8	0.3
Cyprus Esparanza Wells-T2	14.4	14.4	10.5
Cyprus Raw Water Booster-T1 (mine)	4.7	5.6	2.7
Cyprus Raw Water Supply-T2 (mine)	8.8	10.6	2.8
Cyprus Raw Water Supply-T3	9.4	11.3	5.1
Kantor	12.5	14.9	8.7
46C552 w/ Kantor	49		35.2
46C552 Margin			13.8
46C552 Margin w/ Green Valley 138 OOS ⁽¹⁾			4.2

Table 2: 46C552 kV Loading

It is clear from Table 2 above that there is adequate capacity to serve the native Canoa and Cyprus load as well as Kantor for loss of the 115 kV circuit even after loss of the 138 kV circuit (N-1 and N-1-1 contingencies respectively). The last row in Table 2 assumes that, for the South-Green Valley 138 kV line out-of-service, non-mine 46 kV transformers are fully loaded to back-up Green Valley and therefore the increased loading on 46C552 reduces the remaining capacity on that line.

(1) The difference between the forecast load and the continuous rating of the transformers at Canoa T1, Esparanza Wells T2 and Raw Water Supply T3

CITY OF TUCSON



GREEN VALLEY AREA
TRANSMISSION
138 kV & 46 kV
(Exhibit A)