

ORIGINAL



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Tucson Electric Power Company

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

August 3, 2007

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

Arizona Corporation Commission
DOCKETED

AUG 03 2007

DOCKETED BY	<i>NR</i>
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Re: Annual Summer Preparedness Report
Decision No. 69680, Docket No. L-00000C-95-0084-00000

Docket Control:

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 114 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, Docket No. L-00000C-95-0084-00000. Also enclosed is an additional copy of the filing that the Company requests you date-stamp and return in the self-addressed, stamped envelope for our files.

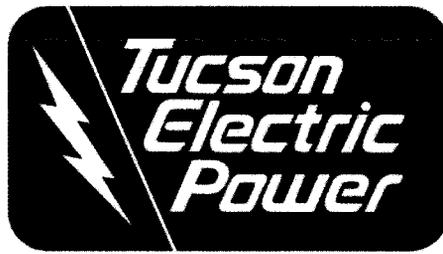
If you have any questions regarding the report, please do not hesitate to contact me at (520) 884-3680.

Sincerely,

Jessica Bryne
Regulatory Services

Cc: Prem Bahl, ACC
Shannon Kanlan (cover letter only), ACC

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DOCKET CONTROL



A UniSource Energy Company

2007 Green Valley and Kantor Substation Summer Preparedness

**Prepared By:
Tucson Electric Power Company**

July 2007

Unisource Energy is able to adequately serve load in the areas served by its Green Valley (TEP) and Kantor substations for the 2007 summer peak load period.

BACKGROUND

Green Valley

Green Valley's transmission needs are met by 138 kV and 46 kV circuits originating at TEP's South substation (exhibit A). The 138 kV circuit is a radial serving the Green Valley substation and will serve the Canoa Ranch station in 2009. The 46 kV system is comprised of two 46 kV circuits, 46-C-550 (49 MVA) and 46-C-552 (49 MVA). The non-mine transformers served by this transmission, and available to back-up loss of the 138 kV circuit, include:

46-C-550

- Cyprus Raw Water T2 46/13.8 kV, 9.4 MVA, 11.3 MVA Emergency
- Green Valley T1 & T2 46/13.8 kV, 25.0 MVA, 30.0 MVA Emergency, each

46-C-552

- Canoa T1 46/13.8 kV, 4.7 MVA, 5.6 MVA Emergency
- Cyprus Esparanza T2 46/13.8 kV, 9.4 MVA, 11.3 MVA Emergency

South 138 kV Circuit

- Green Valley T3 138/13.8 kV, 50 MVA, 60.0 MVA Emergency
- Canoa Ranch T1 (future) 138/13.8 kV, 50 MVA, 60.0 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. Load is transferred to these units in 3 seconds via an automatic throw-over (ATO) scheme that senses loss of voltage from the 138 kV source.

Capacity of the existing 138 kV radial is 331 MVA (1386 A) which, under normal operating conditions with no contingencies, is more than adequate to serve the Green Valley and Canoa Ranch substation load well past 2015, as shown in the following table:

138 kV Loading with Canoa Ranch											
Substation	Xfmr Rating	Xfmr Emergency Rating	2007	2008	2009	2010	2011	2012	2013	2014	2015
Green Valley 138 kv	50	60	47	49	33	33	35	35	26	26	26
Canoa Ranch 138 kv	50	60	0	0	23	23	23	23	23	23	23
Hartt 138 kv	50	60	0	0	0	0	0	0	22	22	22
		Total 138 kV Circuit Loading	47	49	56	56	58	58	71	71	71

Table 1

In documentation up to this time, TEP has assumed continuous ratings when identifying the transformer capacity limitations for backing up load in Green Valley for loss of the 138 kV source. This indicated a non-firm condition when backing up Green Valley out in the 2010 time frame. In actuality, the emergency ratings for these transformers are eight-hour ratings which are more than adequate for serving Green Valley during on-peak conditions (see Table 2 below), as load falls below the continuous rating in less than eight hours during the summer on-peak season. As a result, Transmission Planning recommends that completion of the 138kV line between Canoa Ranch and Cyprus Sierrita be postponed until 2013. In the interim, the existing 46 kV system in the Green Valley area should continue to be used to back up the 138 kV radial. In 2012 work should begin to extend the 138 kV beyond Canoa Ranch to complete a loop with the existing Cyprus Sierrita yard. This will require extending the term of the Certificate of Environmental Compatibility (CEC) granted to TEP under ACC Case 84, Decision No. 59221 in order for the project to be completed in 2013.

Kantor

Kantor substation is one of four substations serving UES load in Santa Cruz county. This station is served by the 115 kV radial transmission line served from WAPA's 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 shown in Table 3.

GREEN VALLEY CONTINGENCY OPERATION

Loss of the 138 kV radial requires that the existing 46 kV system be available to back up the 138 kV system. As shown in Table 2 below, the forecast load in Green Valley is anticipated to exceed the capability of the 46 kV transformers to back up loss of the 138 kV radial by 2013. This is due, in part, to the need to back up part of the load south of the new Hartt 138/13.8 kV substation scheduled to be in-service by summer, 2013. Hartt will be served from the same 138 kV circuit currently supplying Green Valley. The two 46 kV circuits, 46-C-550 and 46-C-552, are not the limiting elements in this case.

Green Valley Area Transformer Capacity, MVA											
	Rating	Emergency Rating	2007	2008	2009	2010	2011	2012	2013	2014	2015
Green Valley-T3	0	0	-47	-49	-33	-33	-35	-35	-26	-26	-26
Canoa Ranch-T1	0	0	0	0	-23	-23	-23	-23	-23	-23	-23
Hartt-T1	0	0	0	0	0	0	0	0	-22	-22	-22
Green Valley -T1	25	30	30	30	30	30	30	30	30	30	30
Green Valley -T2	25	30	30	30	30	30	30	30	30	30	30
Canoa-T1	4.7	5.6	2.7	2.5	2.4	2.3	2.3	2.2	2.2	2.2	2.2
Cyprus Esparanza Wells-T2	9.4	11.3	1.6	1.1	0.6	0.2	-0.3	-0.6	-0.6	-0.6	-0.6
Cyprus Raw Water Supply-T2	9.4	11.3	1.8	1.7	1.6	1.6	0.2	-1	-2.3	-3.6	-4.8
TOTAL CAPACITY			19.1	16.3	8.6	8.1	4.2	2.6	-11.7	-13.0	-14.2

Table 2

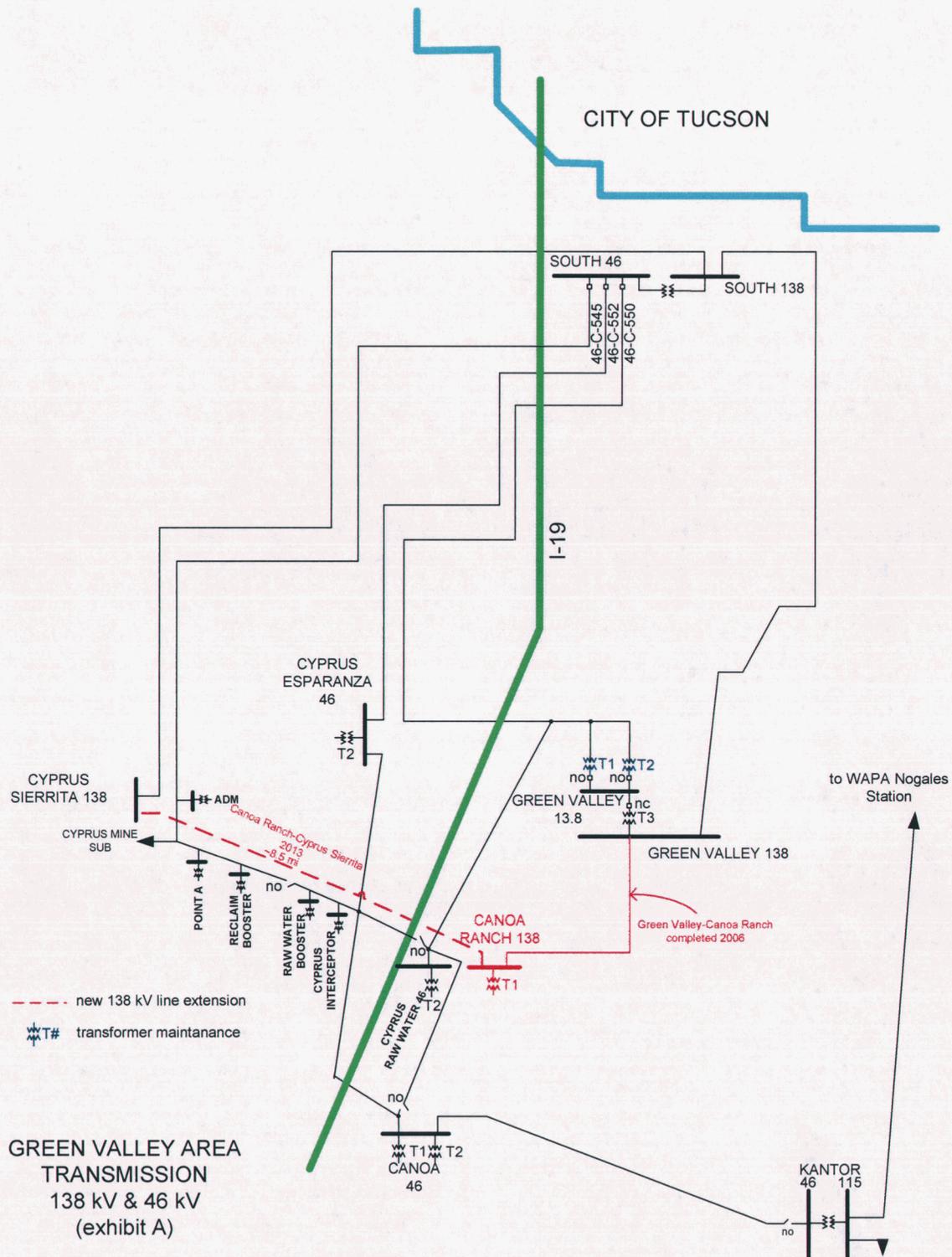
KANTOR CONTINGENCY OPERATION

For loss of the 115 kV radial in Santa Cruz county serving the Kantor 115/13.2 kV substation, the TEP 46 kV circuit 46C552 served from South substation is used to back up this load. 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 to back up Kantor is shown in the following table:

46C552 kV Loading, MVA											
Substation	Rating	Emergency Rating	2007	2008	2009	2010	2011	2012	2013	2014	2015
Canoa-T1	4.7	5.6	2.9	3.1	3.2	3.3	3.3	3.4	3.4	3.4	3.4
Canoa-T2	3.1	3.7	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1
Cyprus Esparanza Wells-T1	3.1	3.7	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Cyprus Esparanza Wells-T2	9.4	11.3	9.7	10.2	10.7	11.1	11.5	11.9	11.9	11.9	11.9
Cyprus Raw Water Booster-T1	5.0	6.0	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Cyprus Raw Water Supply-T2	9.4	11.3	9.5	9.6	9.7	9.7	11.1	12.3	13.6	14.9	16.1
Kantor	12.5	14.9	5.5	5.6	5.7	5.8	6.0	6.1	6.2	6.3	6.4
46C552	49.0		33.4	34.3	35.1	35.7	37.8	39.5	40.9	42.3	43.6
46C552 Margin			15.6	14.7	13.9	13.3	11.2	9.5	8.1	6.7	5.4
46C552 Margin w/ Green Valley 138 OOS			2.0	1.9	1.8	1.7	1.5	1.4	1.3	1.2	1.1

Table 3

It is clear from the table above that there is adequate capacity to serve the native Canoa and Cyprus load as well as Kantor through 2019 for loss of the 115 kV circuit even after loss of the 138 kV circuit (N-1 and N-1-1 contingencies).



CITY OF TUCSON

SOUTH 46

SOUTH 138

46-C-545
46-C-552
46-C-550

I-19

CYPRUS ESPARANZA 46

CYPRUS SIERRITA 138

CYPRUS MINE SUB

POINT A
RECLAIM BOOSTER

RAW WATER BOOSTER
CYPRUS INTERCEPTOR

no T1 no T2

GREEN VALLEY 13.8

GREEN VALLEY 138

CANOA RANCH 138

Green Valley-Canoa Ranch completed 2006

to WAPA Nogales Station

--- new 138 kV line extension
⚡T# transformer maintenance

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

no T2

CYPRUS RAW WATER 46

no T1 T2

CANOA 46

no T1 T2

KANTOR 46 115