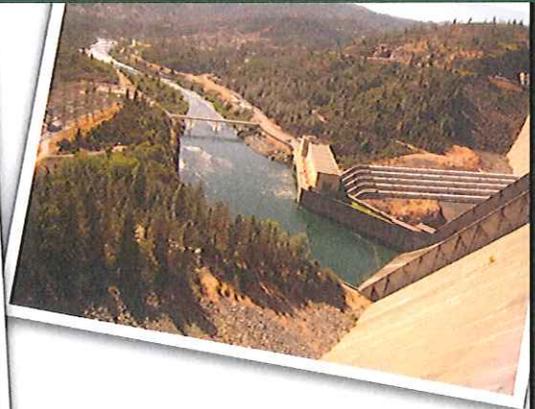
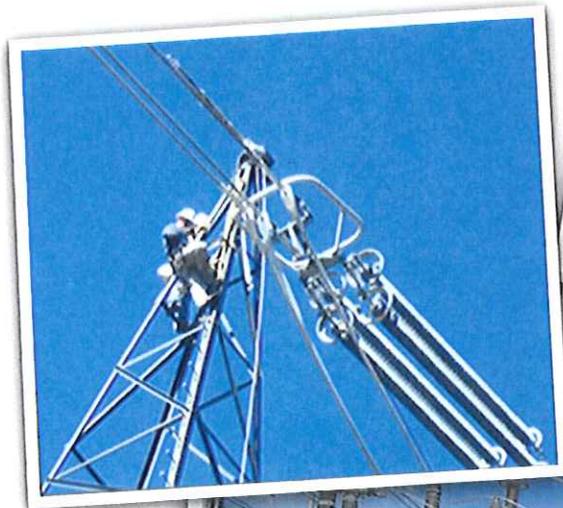


APPENDIX C

Development of the CVP Cost of Service Study



SIERRA NEVADA REGION RATES BROCHURE: WAPA - 156

APPENDIX C

Development of the CVP Cost of Service Study

Western uses a detailed cost-of-service (COS) study to determine the revenue requirements for both transmission and non-transmission (generation) that will be recovered through the CVP proposed formula rates. Each CVP facility is researched in order to determine its functional use. The costs for CVP facilities that support the transfer capability of the transmission system (excluding generation ties and radial lines) are included in the transmission revenue requirement. A map detailing the transmission system facilities is in Appendix D. The costs for facilities that support the generation capability of the CVP system including generation ties and radial lines are included in the CVP Generation revenue requirement.

The source for Western's annual operation and maintenance expense, depreciation expense, interest expense, and investment is Western's CVP financial data, actual or estimated. The COS study examples that follows is based on an estimate of the FY 2010 costs for operation and maintenance, depreciation, interest expense, investment and costs associated with anticipated changes in plant for FY2010. The source for the Bureau of Reclamation (Reclamation) annual depreciation expense, interest expense, and investment is Reclamation's CVP financial data, actual or estimated.

The following information details the transmission and generation revenue requirement data used in the CVP transmission and ancillary services proposed formula rates. The ratio of transmission assets to total assets is 48%.

**Table Appendix C – 1
CVP Cost of Service Study
FY 2011**

Total Plant in Service	Transmission	Non-Transmission (Generation)
O&M	\$25,238,229	\$67,495,797
Depreciation	\$3,171,136	\$11,561,476
Cost of Capital	\$1,051,531	\$4,625,230
Annual Revenue Requirement	\$29,460,896	\$83,682,503
Less Lawrence Livermore National Lab Fixed Charge	(\$322,824)	N/A
Less City of Shasta Lake Transmission Reservation Fee	(35,350)	N/A
Less Unreserved Use Penalties (effective 10/1/2011)	N/A	N/A
Less Short term sales	(\$305,002)	N/A
Total CVP RR effective October 1, 2010	\$28,797,720	\$83,682,503

The following information details the transmission system usage data used in the CVP transmission.

**Table Appendix C – 2
Transmission System Usage
FY 2011**

Transmission System Usage					
CVP System Coincident Peak (CP)		Peak Generation	Calpine & Roseville NITS	Long-Term Reserved Capacity	Total
Date	Time	in (MW)	in (MW)	in (MW)	in (MW)
9/24/2009	1700	991	690	533	2,214
10/23/2009	2000	850	634	533	2,016
11/16/2009	1900	683	642	533	1,858
12/8/2009	1900	780	638	533	1,952
1/14/2010	1900	627	643	533	1,803
2/8/2010	1900	980	635	533	2,148
3/23/2010	2100	699	629	533	1,862
4/5/2010	2100	770	613	533	1,915
5/31/2010	2100	1,437	581	533	2,551
6/28/2010	1500	1,572	657	533	2,762
7/23/2010	1600	1,648	666	533	2,847
8/3/2010	1500	1,579	657	533	2,769
Average 12 Month CP		1,051	640	533	2,225

Western's Central Valley Project Facility Assignment - Changes from May 2004 Rate Brochure to September 2010 (Estimate)							
Transmission Lines		Rate Brochure May 2004		As of Sept. 2010 (Est.)		Assignment	Comments
Line No.	Facility Name/Description	Transmission Percentage	Non-transmission	Transmission Percentage	Non-transmission	Functional Use	Notes/Changes from May 2004 Rate Brochure
1	Carr-Keswick	0%	100%	0%	100%	Gen tie	No Change.
2	Carr-Keswick No. 1	0%	100%	0%	100%	Gen tie	No Change.
3	Carr-Keswick No. 2	0%	100%	0%	100%	Gen tie	No Change.
4	Cottonwood-Elverta No. 2 (now ODA-OBN-ELV)	100%	0%	100%	0%	Network	No Change.
5	Cottonwood-Elverta No. 3 (now CW-RSC)	100%	0%	100%	0%	Network	No Change.
6	Cottonwood-Roseville	100%	0%	100%	0%	Network	No Change.
7	Elverta-Tracy 230 KV No. 1	100%	0%	100%	0%	Network	No Change.
8	Elverta-Tracy 230 KV No. 2	100%	0%	100%	0%	Network	No Change.
9	Folsom-Elverta (FOL-ROS-EVL)	0%	100%	100%	0%	Network	With the completion of Folsom Loop in 2010, facility assignment changed to 100% transmission. ELV added to parenthetical reference.
10	Folsom-Nimbus	0%	100%	0%	100%	Gen tie	No Change.
11	Friant Dam & Camp - PG&E Line Tap	0%	100%	0%	100%	Gen tie	No Change.
12	Keswick-Cottonwood No.2 (now CW-ODA)	100%	0%	100%	0%	Network	No Change.
13	Keswick-Cottonwood No. 3	100%	0%	100%	0%	Network	No Change.
14	Keswick-Elverta	100%	0%	100%	0%	Network	No Change.
15	Tracy-Livermore -- 230 KV Line	100%	0%	100%	0%	Network	No Change.
16	Keswick-Olinda No 2	100%	0%	100%	0%	Network	No Change.
17	Keswick-Olinda	N/A	N/A	100%	0%	Network	Installation of fiber optic on KE-ODA line. In service date May 2004. All costs assigned to transmission.
18	Roseville-Elverta No. 2	100%	0%	100%	0%	Network	No Change.
19	Round Mountain-Cottonwood	100%	0%	100%	0%	Network	No Change.
20	Spring Creek-Keswick	0%	100%	0%	100%	Gen tie	No Change.
21	Shasta-Cottonwood No. 2	0%	100%	0%	100%	Network	When Shasta DB/DB recorded in Western's F/S (est. FY 2011), facility assignment will change to 100% transmission.
22	Shasta-Keswick 230 KV	100%	0%	100%	0%	Network	No Change.
23	Shasta-Tracy	100%	0%	100%	0%	Network	No Change.
24	Trinity-Carr	0%	100%	0%	100%	Gen tie	No Change.
25	Trinity-Weaverville	N/A	N/A	0%	100%	Gen tie	New Facility. Completed FY 2010.
26	Tracy-Lawrence Livermore	100%	0%	100%	0%	Network	No Change.
27	Tracy-Ygnacio	0%	100%	0%	100%	Radial line	No Change.
28	Tracy-Contra Costa (formerly TRY-YG)	N/A	N/A	0%	100%	Radial line	The portion from Contra Costa to Ygnacio (69 kV) was removed; hence the name change. Facility assignment same as Tracy-Ygnacio. Formerly TRY-YG added to parenthetical.
29	Tracy-Banks	100%	0%	100%	0%	Network	No Change.

Line No.	Switchyards and Substations Facility Name/Description	Rate Brochure May 2004		As of Sep. 2010 (Est.)		Assignment Functional Use	Notes/Changes from May 2004 Rate Brochure
		Transmission Percentage	Non-transmission	Transmission Percentage	Non-transmission		
30	Airport	100%	0%	100%	0%	Network	No Change.
31	J.F. Carr Sub	0%	100%	0%	100%	Gen	No Change.
32	Coyote Sub	0%	100%	0%	100%	Off-system/Load	No Change.
33	Central Valley Sub (Shasta PUD)	100%	0%	100%	0%	Network	No Change.
34	Cottonwood Substation	100%	0%	100%	0%	Network	No Change.
35	Elverta Substation	100%	0%	100%	0%	Network	No Change.
36	Flanagan Substation	100%	0%	100%	0%	Network	No Change.
37	Fiddymont	100%	0%	100%	0%	Network	No Change.
38	Folsom	0%	100%	40%	60%	Network	With Folsom Loop completion in 2010, facility assignment was split between tx and nontx. Original costs remained assigned to nontx; new Folsom Loop costs were assigned to transmission.
39	Keswick Sub - 230kV	57%	43%	43%	57%	Gen/Network	Based on review of breakers functional use, ratios should be reversed. Change effected April 1, 2010, resulted in a \$.02 decrease to firm point-to-point rate.
40	Keswick Sub - 115kV	0%	100%	0%	100%	Gen	No Change.
41	Knauf Substation	100%	0%	100%	0%	Network	No Change.
42	Lewiston Sub	0%	100%	0%	100%	Gen	No Change.
43	Lawrence Livermore Labs	100%	0%	100%	0%	Network	No Change.
44	Nimbus Sub	N/A	N/A	0%	100%	Gen	Line relay replacement in 2006, plus change to circuitry. Assignment is 100% non-transmission.
45	New Melones	0%	100%	0%	100%	Gen	No Change.
46	O'Banion Sub	N/A	N/A	100%	0%	Network	Contributed plant. Communications equipment added in Jan. '08.
47	Olinda 500 kV Sub	N/A	N/A	100%	0%	Network	Ten separate projects went into service between 1999-2007. Cost incurred by Western is \$673K. TANC also incurred costs.
48	Olinda 230kV sub.	100%	0%	100%	0%	Network	No Change.
49	Pacheco Sub	0%	100%	0%	0%	Off-system/Load	No Change.
50	Roseville	0%	100%	100%	0%	Network	Assignment should be 100% transmission. Change effected April 1, 2010, resulted in \$0.01 increase to firm point-to-point rate.
51	Shasta	33%	67%	33%	67%	Network	When Shasta DB/DB is recorded in F/S (estimated completion in FY 2011), facility assignment will be updated. Original cost will remain as assigned; additional cost (est. \$6.6 mill.) will be assigned to transmission.
52	San Luis Unit	0%	100%	0%	100%	Off-system Load/Gen	No Change.
53	Trinity Interconnect Substation	N/A	N/A	0%	100%	Gen	Placed in service in December 2007. Trinity-Weaverville and Weaverville substation completed in 2010.
54	Tracy Sub- 230kV	100%	0%	100%	0%	Network	No Change.
55	Tracy Sub - 69kV	0%	100%	0%	100%	Radial	No Change.
56	Whiskeytown	0%	100%	0%	100%	Gen	No Change.
57	Wintu P.P. SWYD	0%	100%	0%	100%	Off-system/Load	No Change.
58	Ygnacio P.P. SWYD	0%	100%	0%	100%	Off-system/Load	No Change.

Line No.	Miscellaneous Facilities Facility Name/Description	Rate Brochure May 2004		As of Sep. 2010 (Est.)		Functional Use	Notes/Changes from May 2004 Rate Brochure
		Transmission Percentage	Non-transmission	Transmission Percentage	Non-transmission		
Service and Maintenance Centers							
59	Elverta Maintenance Facility	71%	29%	75%	25%	N/A	Allocation based on work performed by maintenance facility. Houses capital intensive equipment for transmission lines.
60	Redding Maintenance Facility	68%	32%	63%	37%	N/A	Allocation based on work performed by maintenance facility.
61	Tracy Maintenance Facility	30%	70%	34%	66%	N/A	Allocation based on work performed by maintenance facility. Tracy has no equipment or line crew; therefore, higher percentage to non-transmission.
62	Non-Facility	N/A	N/A	60%	40%	N/A	New. SMUD fiber optics equipment and replacement of VHF radio system. Allocated based on total facility assignment ratio.
63	SCADA	N/A	N/A	60%	40%	N/A	Allocated based on facility assignment ratio.
Operation Centers							
64	Sacramento Dispatch Office	57%	43%	60%	40%	N/A	Allocated based on facility assignment ratio.
65	Sacramento Energy Center	57%	43%	60%	40%	N/A	Allocated based on facility assignment ratio.
66	Sacramento Area Operations Center	57%	43%	60%	40%	N/A	Allocated based on facility assignment ratio.
Mobile Equipment							
67	Mobile Transformer -- Sacramento	57%	43%	60%	40%	N/A	Allocated based on facility assignment ratio.
68	Mobile Transformer - Sub 5MVA	100%	0%	60%	40%	N/A	Allocated based on facility assignment ratio.
Communication Facilities							
69	Mt. Oso (LBR) (Microwave)	90%	10%	90%	10%	N/A	No Change.
70	Elverta Microwave Building	90%	10%	90%	10%	N/A	No Change.
71	Grapevine Pass (Microwave)	90%	10%	90%	10%	N/A	No Change.
72	Happy Camp	N/A	N/A	90%	10%	N/A	New; same assignment as other comm. facilities.
73	Mt. Oso (TANC)	N/A	N/A	90%	10%	N/A	New; same assignment as other comm. facilities.
74	Maxwell Series Compensation	N/A	N/A	90%	10%	N/A	New; same assignment as other comm. facilities.
75	Sacramento (Microwave)	90%	10%	90%	10%	N/A	No Change.
76	Tracy 500kV (Fixed Radio equipment)	N/A	N/A	90%	10%	N/A	New; same assignment as other comm. facilities.
77	Southfork Mountain (Microwave)	90%	10%	90%	10%	N/A	No Change.
78	Metering Equipment 1/	0%	100%	0%	100%	N/A	No Change.
79	Reclamation Plant	0%	100%	0%	100%	N/A	No Change. All assigned to non-transmission.
Note: Highlighted lines indicate a change to facilities since May 2004 rate brochure; change could be a new asset or percentage change.							
N/A means the asset did not exist as of May 2004 rate brochure. September 2010 data based on draft financial statements.							
1/ As meters are replaced, costs will be expensed. Also, Western will be transferring metering equipment for 11 cities to NCPA.							