



**WESTERN AREA POWER ADMINISTRATION**

An agency of the U.S. Department of Energy

# Sierra Nevada Region

## Transmission Services

Cost of Service Model Overview

& Rate Design

(Component 1)

April 23, 2009

# Transmission Services – Rate Design

- SNR uses a formula rate design for transmission services
- Current applicable rate schedules include:
  - CV-T2 (CVP PTP) and CV-NWT4 (CVP network service)
  - PACI-T2 (PACI PTP)
  - COTP-T2 (COTP PTP)

# Transmission Services – Rate Design

- Rate design based on an annual Transmission Revenue Requirement (TRR) for each transmission system (numerator) divided by a capacity calculation (denominator)
- TRR for each transmission system is set using a cost of service study (COS)
- COS study identifies the revenue requirements for the Transmission and non-transmission (Generation) functions

# Transmission Services – Rate Design

- Cost of Service (COS) model is referred to as the “Generation and Transmission (G&T) model”
- Consistent with the methodology used in other Western’s Regions

# CVP Transmission Service

- Cost of Service study uses:
  - Latest “Financial Data” for Reclamation and Western:
    - Plant Data (by facility)
      - Facilities that support the transfer capability of the transmission system (excluding generation ties and radial lines) are included in the TRR
      - Annual expenses (depreciation, interest, and O&M)
    - Adjustments to TRR (e.g. estimated short-term PTP sales)

# Cost of Service Model – G&T

- The TRR is the result of the Annual Fixed Charge Rate applied to the Net Investment Cost for Transmission Facilities. Expressed as a formula, it is:

$$\text{Annual TRR}^1 = \text{Annual Fixed Charge Rate} \times \text{Net Investment Cost for Transmission Facilities}$$

- The Net Investment Cost for Transmission Facilities was determined by an analysis of the CVP, PACI and COTP transmission systems facilities.
  - Only the investment costs of the facilities identified as a “transmission” function were used in developing the TRRs
  - In addition, a portion of the communication (90%) and maintenance facilities (variable – 25% to 74%) are included in the investment costs for transmission

# G&T – Net Plant Investment Example

	B	C	E	G	K
1	<b>FY 2008 NET PLANT INVESTMENT</b>				
2	(\$)				
3		<b>WESTERN</b>	<b>WESTERN</b>	<b>WESTERN</b>	
4		<b>CVP</b>	<b>PACI</b>	<b>COTP</b>	<b>Total</b>
5	Total Plant-in-Service	248,599,930	28,690,758	22,135,318	756,363,333
6	<b>Transmission Plant-in-Service</b>	<b>123,698,159</b>	<b>28,690,758</b>	<b>22,135,318</b>	174,524,235
7	Generation Plant-in-Service	124,901,771			581,839,098
8	Generation Plant to Total Plant	50.24%	0.0000	0.0000	
9	Transmission Plant to Total Plant	49.76%	1.0000	1.0000	
11	<b>Trans. Accumulated Depreciation</b>	<b>40,108,035</b>	<b>14,589,590</b>	<b>11,278,477</b>	
12	Gen. Accumulated Depreciation	40,494,929	0	0	
13	<b>Net Transmission Plant</b>	<b>83,590,124</b>	<b>14,101,168</b>	<b>10,856,841</b>	<b>108,548,133</b>
14	Net Generation Plant	84,406,842			325,029,801

# Cost of Service Model – G&T

## (continued)

- The TRR is the result of the Annual Fixed Charge Rate applied to the Net Investment Cost for Transmission Facilities. Expressed as a formula, it is:

$$\text{Annual TRR}^1 = \text{Annual Fixed Charge Rate} \times \text{Net Investment Cost for Transmission Facilities}$$

- The Annual Fixed Charge Rate includes operation and maintenance expenses (O&M), depreciation expense and interest expense. Expressed as a formula, it is:

$$\text{Annual Fixed Charge Rate} = \frac{\text{O\&M expenses} + \text{Depreciation expense} + \text{Interest expenses}^1}{\text{Net Investment}}$$

<sup>1/</sup> All expenses are annual.

# G&T – Annual Fixed Charge Rate Example

	B	C	D	G	H	I
2	<b>Annual Transmission Costs</b>					
7				<b>CVP</b>	<b>PACI</b>	<b>COTP</b>
8	<b>Description</b>			<b>Amount</b>	<b>Amount</b>	<b>Amount</b>
10	Total O&M Expense for Transmission			<b>\$22,387,478</b>	<b>\$2,205,808</b>	<b>\$414,936</b>
11	Net Transmission Plant Investment			\$83,590,124	\$14,101,168	\$10,856,841
12	O&M as % of Net Transmission Plant Investment			26.780%	15.640%	3.820%
14	Total Transmission Depreciation Expense			<b>\$3,082,128</b>	<b>854,628</b>	<b>552,421</b>
15	Net Transmission Plant Investment			\$83,590,124	\$14,101,168	\$10,856,841
16	Depreciation as % of Net Transmission Investment			3.690%	6.061%	5.088%
21	Total Interest Costs			<b>\$918,986</b>	<b>213,142</b>	<b>164,442</b>
22	Net Transmission Plant Investment			\$83,590,124	\$14,101,168	\$10,856,841
23	Interest as % of Net Transmission Plant Investment			1.100%	1.512%	1.515%
24	<b>G. Transmission Fixed Charge Rate</b>					
25	Operation and Maintenance Expense			26.780%	15.640%	3.820%
26	Depreciation Expense			3.690%	6.061%	5.088%
27	Cost of Capital			1.100%	1.512%	1.515%
28	Total			31.570%	23.212%	10.423%
29	<b>H. Transmission Revenue Requirement</b>					
30	Transmission Fixed Charge Rate			31.570%	23.212%	10.423%
31	Net Transmission Plant Investment			\$83,590,124	\$14,101,168	\$10,856,841
33	<b>Actual Annual Transmission cost</b>			<b>\$26,388,592</b>	<b>\$3,273,579</b>	<b>\$1,131,799</b>

# Transmission Service – G&T

- Adjustments to TRR:
  - Revenues from short-term firm and non-firm transmission sales
  - Payments under existing contracts for use of the transmission system that are not charged monthly (e.g. CVP transmission reservation)
  - Other costs relating to facilities associated with the service (e.g. PG&E O&M and facility costs associated with Round Mountain and Cottonwood substations)

# CVP Transmission Service

- Formula Rate – Denominator Calculation
- For CV-T2 (PTP) and CV-NWT4 (network):

CVP Trans Rev Req (TRR)

L-T Xm Cap (TTc) + NITS cp (NITSc)

- TTc = (Total Transmission Capacity) is the total transmission capacity under long-term contract between Western and other parties.
- NITSc = Average 12-month coincident peaks of network integrated transmission service (NITS) Customers at the time of the monthly CVP transmission system peak.

# CVP Transmission Service

- Point-to-Point Service
  - TTc (per formula rate definition)
  - Currently the PTP contracts total 558 MW
  - This amount is additive to the NITS calculated peak to determine the total denominator calculation for the formula rate

# CVP Transmission Service

- Network Service – Coincident Peak (cp) calculation (MW)
  - NITSc (per formula rate definition)
  - Merchant Use, Roseville, & Calpine (network)

	Day	Hour	Western Merchant	PTP	Cust. 1 Network	Cust. 2 Network	Total NITS System Peak
March	4	1900	831.2	558	157.4	495.4	1484
April	12	2100	1059.1	558	135.2	493.0	1687
May	17	1700	1250.6	558	248.5	470.2	1969
June	20	1800	1625.3	558	241.1	474.4	2341
July	21	1900	1655.7	558	189.8	469.2	2315
August	2	1600	1527.9	558	207.3	471.4	2207
September	3	1700	1278.1	558	227.7	479.6	1985
October	6	1700	1174.2	558	139.8	498.5	1812
November	21	1800	901.2	558	142.0	505.3	1548
December	26	1900	857.4	558	151.7	494.2	1503
January	8	1800	759.4	558	174.7	490.9	1425
February	18	1900	728.0	558	155.3	501.5	1385
<b>Avg. 12 CP</b>			<b>1137.35</b>	<b>558.00</b>	<b>180.88</b>	<b>487.0</b>	<b>1805.20</b>

# CVP Transmission Service – Merchant Use

- For rate design purposes, Western's use of the transmission system to meet its statutory obligations is treated as NITS (see OATT Attachment K)
- NITS Merchant use includes:
  - Metered CVP generation
  - Purchases for reliability and meeting load (e.g. SBA purchases)
  - SMUD's Custom Product (CP) purchase
- NITS Comparative Data on Next Slide

# NITS Load Information – Merchant Breakout Example

## MERCHANT PEAK NITS CALCULATION BREAKDOWN (MW)

	CVP Peak Calculation	SBA Purchases	Custom Product	TOTAL
March	512.0	24.5	294.6	831.2
April	730.2	29.5	299.5	1059.1
May	872.5	73.6	304.4	1250.6
June	1271.7	49.1	304.4	1625.3
July	1100.9	250.4	304.4	1655.7
August	1223.5	0.0	304.4	1527.9
September	988.4	0.0	289.7	1278.1
October	894.4	0.0	279.9	1174.2
November	621.3	0.0	279.9	901.2
December	577.5	0.0	279.9	857.4
January	460.9	24.5	274.0	759.4
February	448.2	0.0	279.9	728.0
	9,701.54			13,648.16

# CVP Gen Historical 12-month Effect on NITS

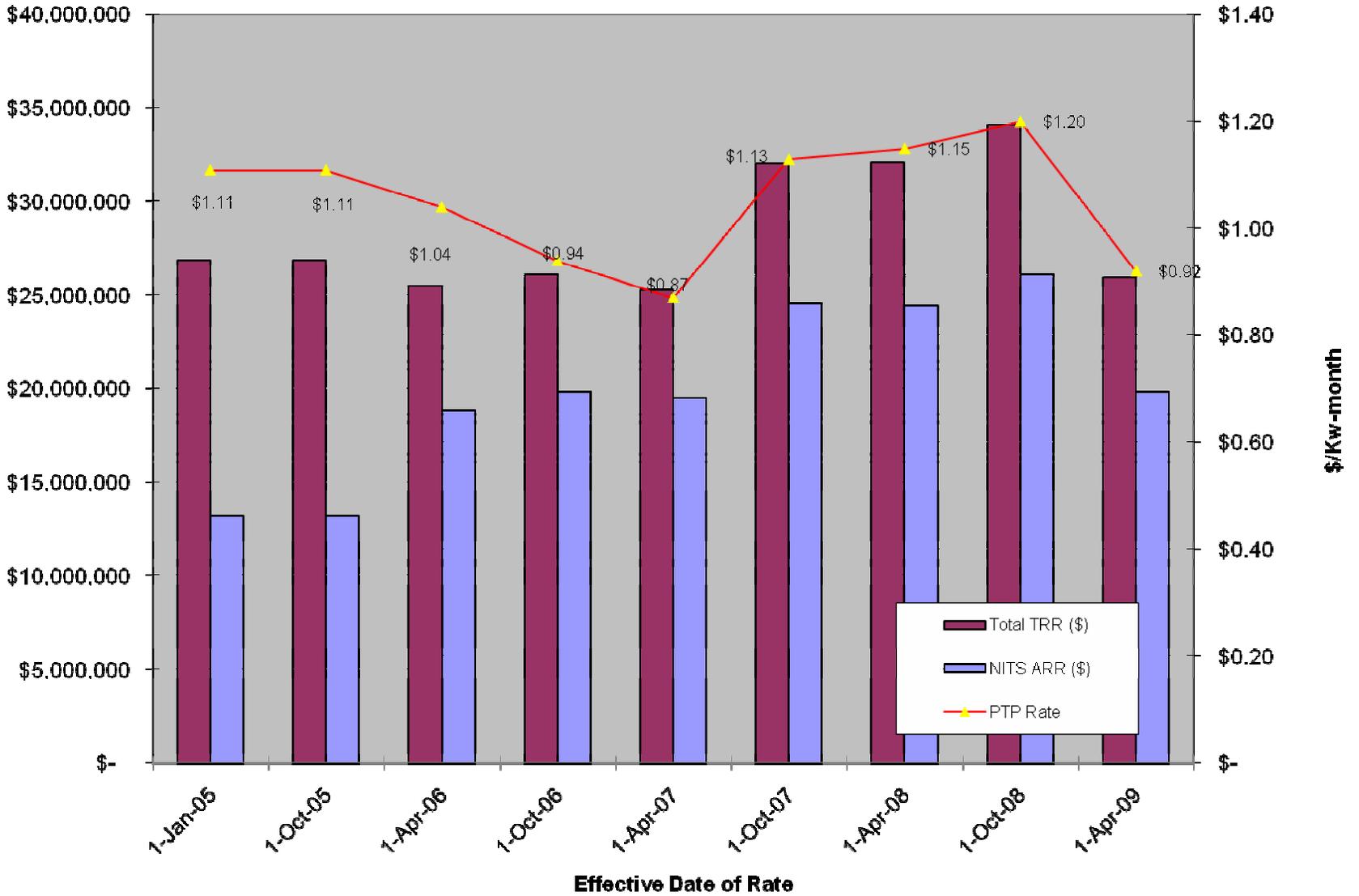
CVP PEAK CALCS				
Date Range of Peak	Sep 06 - Aug 07	Mar 07 - Feb 08	Sep 07 - Aug 08	Mar 08 - Feb 09
<i>Water Year Description</i>	<b>WET</b> -----	-----	-----	-----> <b>DRY</b>
Annualized Total CVP Gen (MW)	16,010	9,899	9,584	9,702
Calculated Avg CVP Gen cp (MW)	1,334	825	799	808
Load Ratio Shares				
<b>Cust 1 cp</b>	9.65%	10.02%	10.05%	10.09%
<b>Cust 2 cp</b>	25.88%	26.37%	28.01%	28.02%
<b>Custom Product (Merchant NITS)</b>	26.71%	27.78%	22.88%	27.73%
<b>Merchant (Less Custom Product)</b>	37.76%	35.84%	39.05%	34.17%

# CVP Transmission Service

Western will revise the formula rate based on EITHER of the following conditions:

- 1) Updated financial data available during March of each year
- 2) A change in numerator or denominator that results in a rate change of at least \$0.05/kW-month

## Chronology of CVP Transmission Rate & Rev Req



# COTP and PACI Transmission Service

# COTP Transmission Service

- For Rate Schedule COTP-T2

## COTP TRR

Western's COTP Seasonal Capacity

- Where:
  - COTP TRR = COTP Seasonal Transmission Revenue Requirement, Western's costs associated with facilities that support the transfer capability of the COTP.
  - Western's COTP Seasonal Capacity = Western's share of COTP capacity (subject to curtailment) under the then current California-Oregon Intertie (COI) transfer capability for the season.

# COTP Transmission Service

- Denominator calculation
- Based on Western's entitlement – 177 MW
  - 100 MW DOE Lab entitlement
  - 50 MW Western entitlement
  - 27 MW TANC layoff arrangement
- There were minimal COTP sales in 2005. Since 2005, the SBA has not posted COTP ATC to OASIS so that it is available for reliability reasons.

# PACI Transmission Service

- For Rate Schedule PACI-T2

## PACI TRR

### Western's PACI Seasonal Capacity

- Where:
  - PACI TRR = PACI Seasonal Transmission Revenue Requirement. Western's costs associated with facilities that support the transfer capability of the PACI.
  - Western's PACI Seasonal Capacity = Western's share of PACI capacity (subject to curtailment) under the then current California-Oregon Intertie (COI) transfer capability for the season.

# PACI Transmission Service

- Denominator Calculation
- Based on Western's entitlement – 400 MW
- Currently it is reserved by the Merchant
- Over the past four years, Merchant delivered custom product power to several customers utilizing the PACI.

Questions?