

Network Cost Allocation

Pre-Rate Case Transmission Workshop

June 25, 2014

- I. Network Allocation History
- II. FERC Pro Forma
- III. Network Design/Build Criteria
- IV. Recommendation/Proposal

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I. History of Network Cost Allocation

<u>Cost Allocation Basis</u>	<u>Pre-1996</u>	<u>1996 ROD¹</u>	<u>BP-14</u>
Reservation based Class ²	12CP	Contract Demand (CD)	CD
NT Class	12CP	1NCP	12NCP
Equivalent Basis?	Yes (Avg Peak Usage)	Yes (Reservation Equiv)	No (Res v Avg Peak Use)

- The Network Segmentation based upon the 34.5kV bright-line and the FERC pro forma allocation method adopted in BP-14 did not result in an equitable solution for BPA’s wholesale transmission customers.
- WP-96 ROD (p 426): “...BPA proposes to allocate costs to firm Network rate classes using annual contract demand, or their equivalent. For customers without contract demands...their annual noncoincident peaks is used as the contract demand equivalent” (i.e. 1NCP for NT)
- We propose that for BP-16 BPA adopt an allocation based upon NOS design/build criteria (or other appropriate criteria) that reflects true cost causation and assigns diversity benefits on the Network segment appropriately.

¹The 1996 case was ultimately settled with a NT 1CP allocation being adopted

²Reservation based class includes PTP, FPT, and IR service

II. FERC Pro-Forma & Jurisdictional IOUs

- FERC Pro Forma is a simplistic rate design approach to implement wholesale transmission rates for jurisdictional IOU's (collapses the allocation and rate design steps into a single step)
- Retail/NT “Comparability Requirement” - Retail and NT allocation must use equivalent allocation methodology (e.g. 12CP, 3CP, or 1CP)
- PTP set at reserved amount in the rate denominator
- Wholesale transmission revenues are a credit against the IOUs' revenue requirement for the benefit of native load Retail customers (BPA has no native load retail customers)

FERC Pro Forma Ratemaking

WORKS FOR INVESTOR OWNED UTILITIES

- Adoption of 12CP (vs 1CP) maximizes revenues from PTP service for the “benefit” of native retail load (hypothetical example only):

	<u>1CP</u>	<u>12CP</u>
IOU Transmission Revenue Requirement (\$M)	\$ 200,000	\$ 200,000
Retail Native Load Peak	10,000	8,000
NT Load Peak	1,000	800
PTP (Reservation Amount)	1,000	1,000
Rate Denominator (MWs)	12,000	9,800
PTP Rate	\$ 1.389	\$ 1.701
PTP Revenue (credited against native load Rev Req)	\$ 16,667	\$ 20,408

- Protects native load customers, which ultimately are responsible for the utility’s revenue requirement
- Sacrifices cost causation for simplicity (DOESN’T WORK FOR BPA)

Jurisdictional IOUs vs BPA Stats¹

Data: 2013 FERC Form 1, page 400

	<u>IOUs</u> ²	<u>BPA</u>
Percent Retail Electric load	68%	0%
Percent NT Load	4%	22%
Percent PTP Reservations	28%	78%

¹ Retail and NT reflected at 12CP/12NCP amounts, PTP reflected at reserved amounts

² Includes PSE, PGE, Avista, Idaho Power, and PacifiCorp

III. Network Design Criteria (cost causation)

- NOS Cluster Study (5-yr look through 2018) – Base Case, High Wind and No Wind with additional sensitivities
- All cases based upon flows under load-resource balance

Assumptions & Methodology

Item	2013 NOS
Basecase	Summer Case: WECC 18HS Winter Case: WECC 18HW
Load	Expected 1-in-2 peak
Hydro	-95th percentile dispatch -Mid-C remained at assumed contract level
Thermal	Based upon Thermal Merit Order Sequence -Thermal tuned down to accommodate requests for service
Wind	Base scenario: All wind in Northwest set to 60% of contracted/requested demand Wind in Montana set to 100% of requested demand
COL/PDCI	4,800/3,220 Summer
Northern Intertie	Contracted demand in N>S direction for summer; Canadian Entitlement Return for Winter
Montana>NW; Idaho > NW	Set at agreed to levels from ATC Methodology

Assumptions & Methodology (cont'd)

Generation Scenarios

- **Base Scenario**
 - 95th Percentile FCRPS Hydro Gen., 60% Wind Generation in the NW, 100% of the Montana and Northern Intertie requests.
- **High Wind Scenario**
 - 95th Percentile FCRPS Hydro Gen., 100% Wind Generation in the NW.
- **No Wind Scenario**
 - FCRPS Hydro Gen. High Upper Columbia and Low Lower Columbia, No Wind Generation.

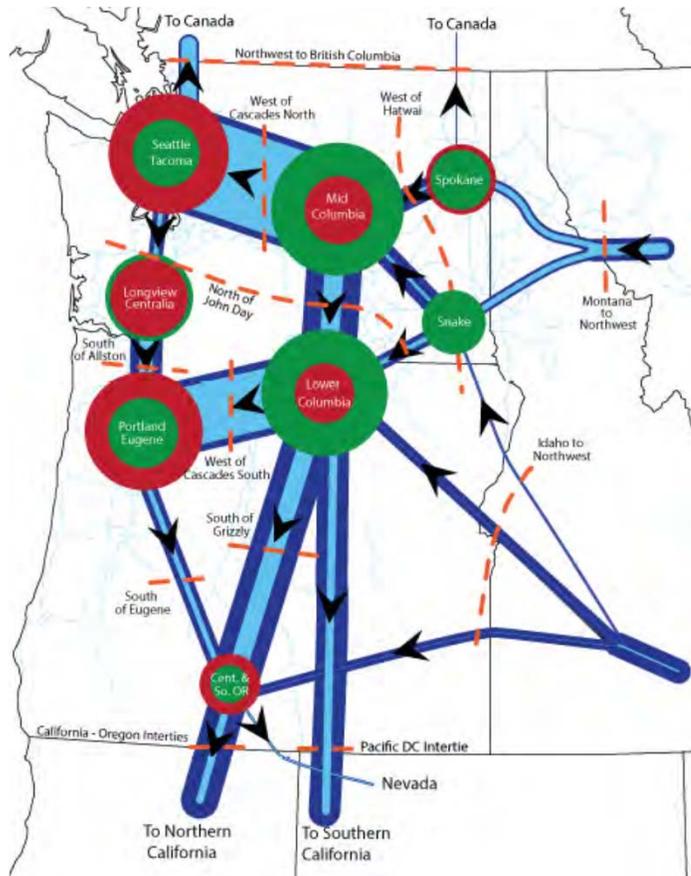
Additional Sensitivities

- **Sensitivity 1**
 - NW Load Growth.
- **Sensitivity 2**
 - Export from NW.
- **Sensitivity 3**
 - Reduced FCRPS.
- **Sensitivity 4a**
 - Boardman to Hemingway. Energize project
- **Sensitivity 4b**
 - Boardman to Hemingway. Energize project & increase schedules from Northwest to Idaho

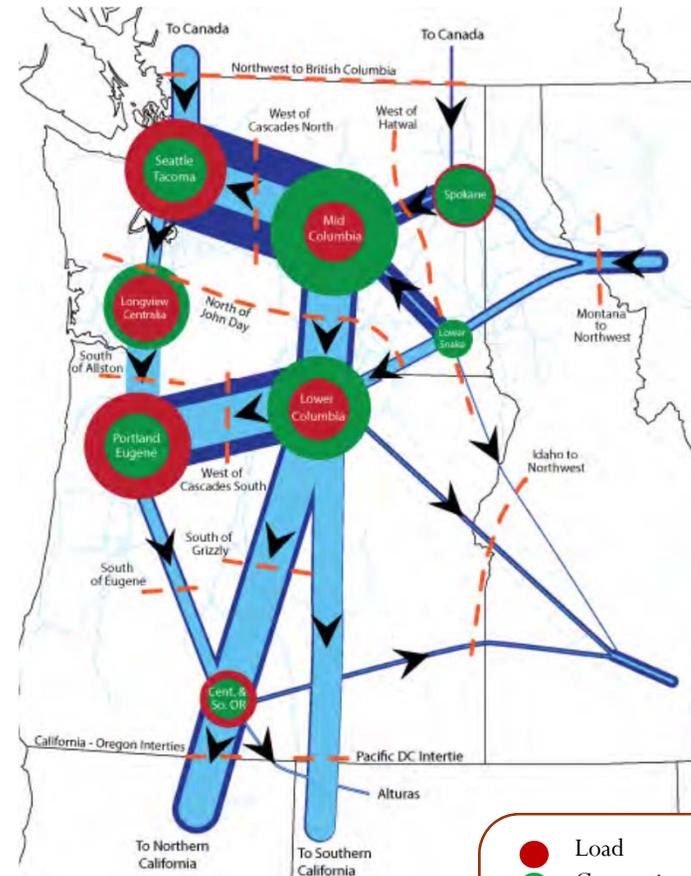
- Substantial diversity benefits accrue on the Network Segment given the diverse usage patterns (Forecasted flows are the basis of design, not contract demand amounts.)

Columbia Grid 5-Year Flow Models

Winter Peak Conditions



Summer Peak Conditions



- Load
- Generation
- ▬ Transmission Capability
- ▬ Transmission Loading
- - - Path Definition
- ◀ Path flow Direction

Source: Figure E-2 and E-3 2013 Columbia Grid System Assessment (<http://columbiagrid.org/books/pdf/2013SA-FB.pdf>)

BP-14 Allocation & Rate Design

- The table below shows the derivation of the PTP and NT rates in BP-14 (FPT/IR revenue is de minimis)
- There are two basic steps shown below to calculate the PTP and NT rates
 1. “Allocation step” which allocates total Network costs to each class of service (Network rev req on line 1 * allocation factor on line 3)
 2. “Rate Design step” to calculate the class rates (net allocated rev req on line 6 / billing factors [times 12 mo], shown on lines 7)
- For illustrative purposes, the following table calculates the NT rate assuming a 12NCP billing factor (BP-14 adopted a 12CP billing factor that had no impact on the PTP rate)
- PTP and NT rate are the same, but billed on a completely different basis!

	<u>BP-14 CD / 12NCP Allocator:</u>	(a)	(b)	(c)	(d)	(e)	<u>Notes:</u>
1	Network Revenue Requirement	\$640,000					Set Network Rev Req to achieve stated PTP rate of \$1.479 (T-7 \$632,033)
		PTP/IR/FPT	NT				
		<u>Classes</u>	<u>Class</u>				
2	Reservation CD / 12NCP	27,270	7,209				PTP = Contract Demand / NT = 12NCP (from BP-14)
3	CD/ 12NCP Allocation Factors	79.1%	20.9%				Percentages derived from Line 2
4	Allocation of Revenue Requirement	\$506,186	\$133,814	Rate	MW	Revenue	Line 1 times Line 3
5	Credit for ST/NF PTP Sales (1,587MW@\$1.537)	22,274	5,888	\$1.479	1,587	\$28,162	\$28,162 times line 3 allocator
6	Net after PTP ST/NF Credit	\$483,913	\$127,925				Line 4 minus Line 5
7	Billing Factors (PTP,IR,FPT CD / NT 12NCP)	27,270	7,209				Same as Line 2 (assumes 12NCP billing factor for illustrative purposes)
8	Network Rates (\$/kW-mo)	\$1.479	\$1.479				NT rate is \$1.741 which incl. NT redispatch and is billed on a lower 12CP MW

Cost Based Allocation & Rate Design

- The table below shows the derivation of the PTP and NT rates based upon cost causation
- There are two basic steps shown below to calculate the PTP and NT rates
 1. “Allocation step” which allocates total Network costs to each class of service (Network rev req on line 1 * allocation factor on line 3)
 2. “Rate Design step” to calculate the class rates (net allocated rev req on line 6 / billing factors [times 12 mo], shown on lines 7)
- For illustrative purposes, the following table calculates the NT rate assuming a 12NCP billing factor (a change in NT billing factors has no impact on the PTP rate)
- Line 9 shows the difference between the BP-14 methodology and a 2CP peak usage basis. **NT customers receive a ~\$30M subsidy.**

	<u>2CP based upon Cost Causation:</u>	(a)	(b)	(c)	(d)	(e)	<u>Notes:</u>
1	Network Revenue Requirement	\$640,000					BP-14 Network Segment Revenue Requirement
		PTP/IR/FPT	NT				
		<u>Classes</u>	<u>Class</u>				
2	2CP	26,740	9,587				2CP from 2013 NOS shown on Slide 7
3	2CP Allocation Factors	73.6%	26.4%				Percentages derived from Line 2
4	Allocation of Revenue Requirement	\$471,105	\$168,895	Rate	MW	Revenue	Line 1 times Line 3
5	Credit for ST/NF PTP Sales (1,587MW@\$1.451)	19,359	6,940	\$1.381	1,587	\$26,300	\$27,633 times line 3 allocator (\$1.451 is solved for to = PTP LT rate)
6	Net after PTP ST/NF Credit	\$451,746	\$161,954				Line 4 minus Line 5
7	Billing Factors (PTP,IR,FPT CD / NT 12NCP)	27,270	7,209				Same as prior slide (assumes 12NCP billing factor for illustrative purposes)
8	Network Rates (\$/kW-mo)	\$1.380	\$1.872				Rate reflect cost causation based upon design criteria
9	Revenue Requirement Delta (BP-14 - 2CP)	32,167	(34,029)			1,862	Prior slide lines 6 minus this slide line 6

The ~\$30M Allocation “Subsidy “ (Cont.)

- The subsidy results from allocating the majority of PTP diversity benefits to the NT class
- BPA designs/builds based upon PTP and NT forecasted “flows”, recognizing system diversity benefits
- BUT...BP-14 allocated costs to PTP as if all PTP customers use the system to their full contract demand at the same moment every month of the year.
- “Back of the envelope” Network revenue requirement had BPA built the Network to meet all reservation amounts simultaneously (~150M diversity benefit):

	Network (as Built)		Factor	Network (@ CD level)		
O&M (Increased by 50% of Capital Cost)	\$246,241		1.18	\$290,639		
Transm Acquisition & Ancillary Services	\$18,906			19,303		
Depreciation (grossed up by PTP MW incr.)	\$142,680		1.36 *	198,206		
Net Interest Expense (grossed up by PTP MW incr.)	\$122,904		1.36 *	170,734		
Planned Net Revenues	\$109,270			111,563		Total
Total Network Revenue Requirement	\$640,000			\$790,446		Increase \$150,445
	PTP/IR/FPT Classes	NT Class				
MW	27,270	7,209		27,270	7,209	
Allocation Factors	79.1%	20.9%		79.1%	20.9%	NT
Allocation of Revenue Requirement	\$506,187	\$133,814		\$625,176	\$165,269	<u>Increase</u>
Credit for ST/NF PTP Sales (1,587MW@\$1.537)	22,274	5,888		27,504	7,271	
Net after PTP ST/NF Credit	\$483,913	\$127,926		\$597,673	\$157,999	\$30,073
Billing Factors (PTP,IR,FPT CD / NT 12NCP)	27,270	7,209		27,270	7,209	
Network Rates (\$/kW-mo)	\$1.479	\$1.479		\$1.826	\$1.826	\$0.348

* BP-14 PTP reservation amounts are approximately 9,000 MW greater than peak usage

Rights to Network Capacity

PTP

- Limited to contract demand quantity
- Additional capacity must be purchased from BPA or reseller

NT

- Limited to firm transmission by network designation attestation (Section 30.7 of BPA's OATT)
- Unlimited non-firm for undesignated resources
- No relationship to actual average annual load (i.e. rights to capacity v 12NCP alloc.)

Value of PTP Resale and Redirects

- Given 80% of Network is reserved service, there is limited market to resell (PTP coincidence factor is $\sim 66\%$)¹
- Value/cost of resale and redirects are allocated to PTP under “usage based” allocator

¹ Coincidence Factor is peak use/contract demand expressed as a percentage. Tacoma request No 3 will get the information to derive the 5-year historical coincidence factor.

IV. Recommendation/Proposal

- BPA adopt a Network allocation methodology based upon Cost Causation:
 - Peak usage equivalent allocator for both PTP and NT (e.g. PTP@2CP & NT@2CP)
 - Or, Contract Demand equivalent for NT service (e.g. PTP@CD & NT@1NCP)
- To do otherwise simply results in PTP subsidizing NT Service on BPA's Network Segment

Segmentation & Allocation

- Are “standalone” issues
- Under Status-Quo (BP-14 Segmentation and Allocation), PTP customers are allocated radial facilities they don't use based upon their full share of reserved quantities

Additional Data Needs

- Response to data requests 3 & 4 (Historic E-tags and TTSL by product)
- What is total MW of NT rights to designated Federal and Non-Federal resources?
- 1:50 weather for NT