



Public Rate Design Methodology (PRDM)

Workshop #5

Chapter 5, 6 & 8, Tier 1 & 2 Rate Design, Resource Support Services

Meeting 9 a.m. – 4 p.m.

April 29, 2024



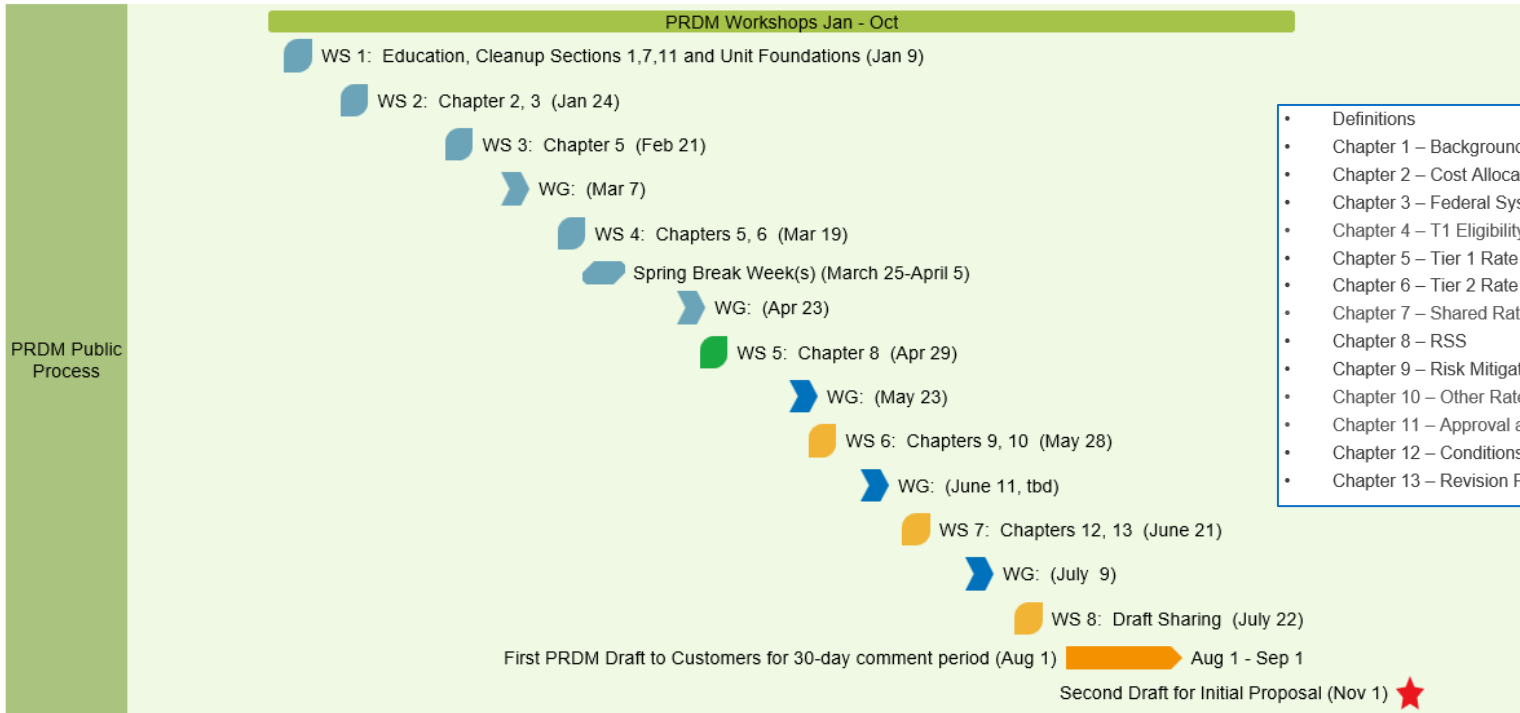
Agenda

Time Start	Time End	Topic	Presenter(s)
9 a.m.	9:15	Welcome, Introduction, Agenda, and Housekeeping	Scott Reed
9:15	10:30	Workgroup report out and discussion	Scott Reed
10:30	10:40	B R E A K	
10:40	12:00	Rate Design Impact Model (PRDIM) introduction and discussion	Peter Stiffler
12:00	1:00	L U N C H B R E A K	
1:00	2:30	Core-design elements and rates discussion	Daniel Fisher, Garth Beavon, Scott Reed, Peter Stiffler
2:30	2:40	B R E A K	
2:40	4:00	Tier 2 and RSS Discussion and next steps	Garth Beavon, Daniel Fisher
3:45	4:00	Conclusion & Next Steps	Scott Reed
Note: times are approximate			

Housekeeping

- Interconnections w/ Policy, Contracts, Rate Case (BP26), and future 7(i) processes (rate schedules and GRSPs).
 - Multiple processes each with their own timing and requirements.
 - Various states of development to resolution.
 - Internal tracking and connectivity, and if you see a gap don't hesitate to reach out.
- Uncertainty, information, and product choice: What you can expect to get here
 - What PRDM will be bringing
 - Core Rate Design applicable to PF public customers with a CHWM contract: Cost allocation and rate treatment for Slice, Load Following, Block and Block with Shaping Capacity
 - I.e., Slice and non-Slice cost allocation, approach to energy, capacity, mitigation, discounts
 - Tool to evaluate non-Slice rate design impacts by customer and product.
 - What we won't...
 - Rate schedules and GRSPs – can't happen until the applicable 7(i) rate case. To the extent a particular issue can and needs to be addressed sooner – we need to discuss whether, or not, the issue can be framed in the PRDM.
 - Rates applicable to other contracts (e.g., PFx, non-CHWM PF public rates, IP, NR, etc.).
- Timing: Targeting Tier 1 rate design and structure ready for drafting work late May, Tier 2, RSS, Risk and Other rate designs ready for drafting work mid-late June

Timeline



- Definitions
- Chapter 1 – Background & Purpose
- Chapter 2 – Cost Allocation
- Chapter 3 – Federal System
- Chapter 4 – T1 Eligibility
- Chapter 5 – Tier 1 Rate Design
- Chapter 6 – Tier 2 Rate Design
- Chapter 7 – Shared Rate Plan
- Chapter 8 – RSS
- Chapter 9 – Risk Mitigation
- Chapter 10 – Other Rate Design
- Chapter 11 – Approval and Duration
- Chapter 12 – Conditions for Revision
- Chapter 13 – Revision Processes



Workgroup Report Out



Workgroup Report Out

- **Summary**
 - Attendance
 - Topics
 - Open discussion – led by EWEB & Grant
 - Preliminary Rate Design Impacts
 - Demand Rate
- **Summarize Discussion & Feedback**



Public Rate Design Impact Model

Peter Stiffler, Economist

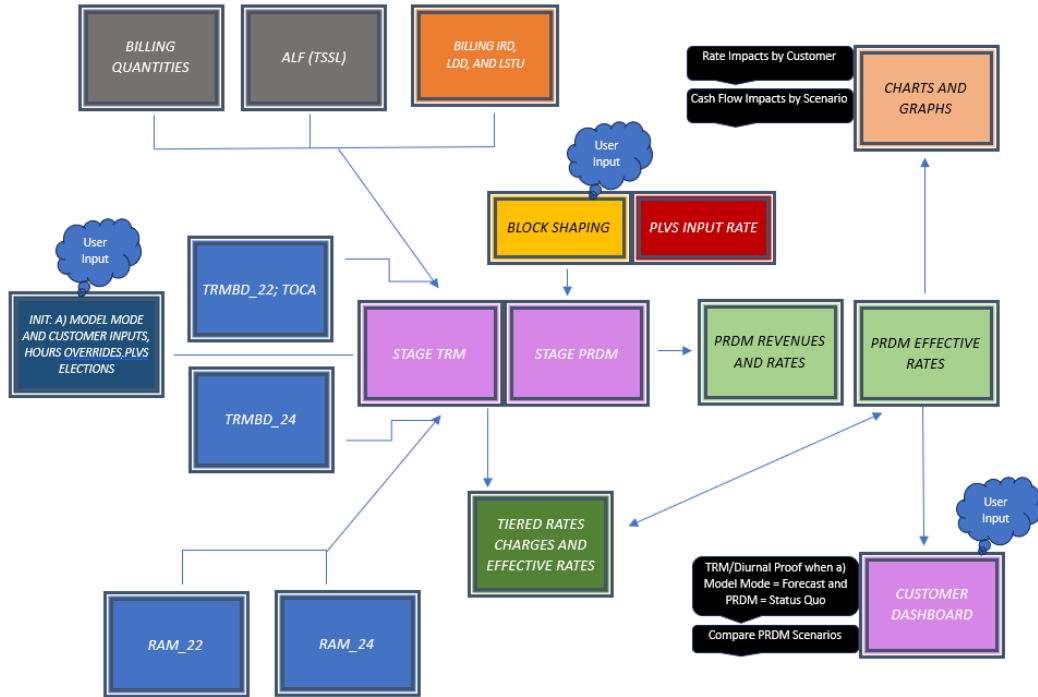


Model Introduction:

- The PRDM Impact Model (RDIM) shows the impacts of previously chosen rate design alternatives. The model accomplishes the following aims:
 - Quantify, using both actual bill and forecast data, the rate impact of alternatives.
 - Prove that moving to the MWh construct does not change how much money is collected from any customer. I.e., Except for cashflow, a MWh rate design is equivalent, down to each customer, to a Customer Charges + Load Shaping rate design.
 - Provide transparency down to the individual customer level, with toggles so customers can investigate how different alternatives will affect them.
 - Build in impacts for both PLVS and Block Shaping capacity elections, if any.
- Today we will describe the model's foundations and core inputs, how it can be used to describe potential impacts by customer and charge type, how it can be used to assess potential designs for our core charges and rate design impact mitigation.
- Over the coming months we aim to leverage this tool in discussions and analysis to land on the rate design documented in the PRDM.

Model Inputs and Layout

- Colors correspond to tab colors in the model
- User inputs have toggles that the user can change to investigate impacts of choices



Model Basics:

- **High-level Features:**
 - Measure impacts of design alternatives against status quo, and competing alternatives.
 - Impacts can be measured across customers, by customer, and by core design element.
 - It is a model which shows the impact to customers of rate design options.
 - It is NOT a representation of projected rate impacts because the **RIC has not yet been applied**.
 - It is NOT a model that can assess design impacts to a particular customer of multiple product choices:
 - The model is designed to compare status quo product choice to status quo product choice under different rate designs. If a customer wants to evaluate the rate design impact under the assumption of a different product choice, additional work using the TRMbd model for BP-24 will be required.
 - Assuming a product choice different from today will work for forecast-to-forecast comparisons but will make the actual-to-actual comparison fail because there are no actual data for the alternative product choice.
- **Things to note that can be altered for analysis**
 - Forecast v. Actual baseline
 - Block shapes and shaping capacity amounts
 - PLVS or no PLVS and PLVS rate
 - Demand rate
 - Portion of Revenue Requirement classified as capacity (Alternatives 3 and 4)

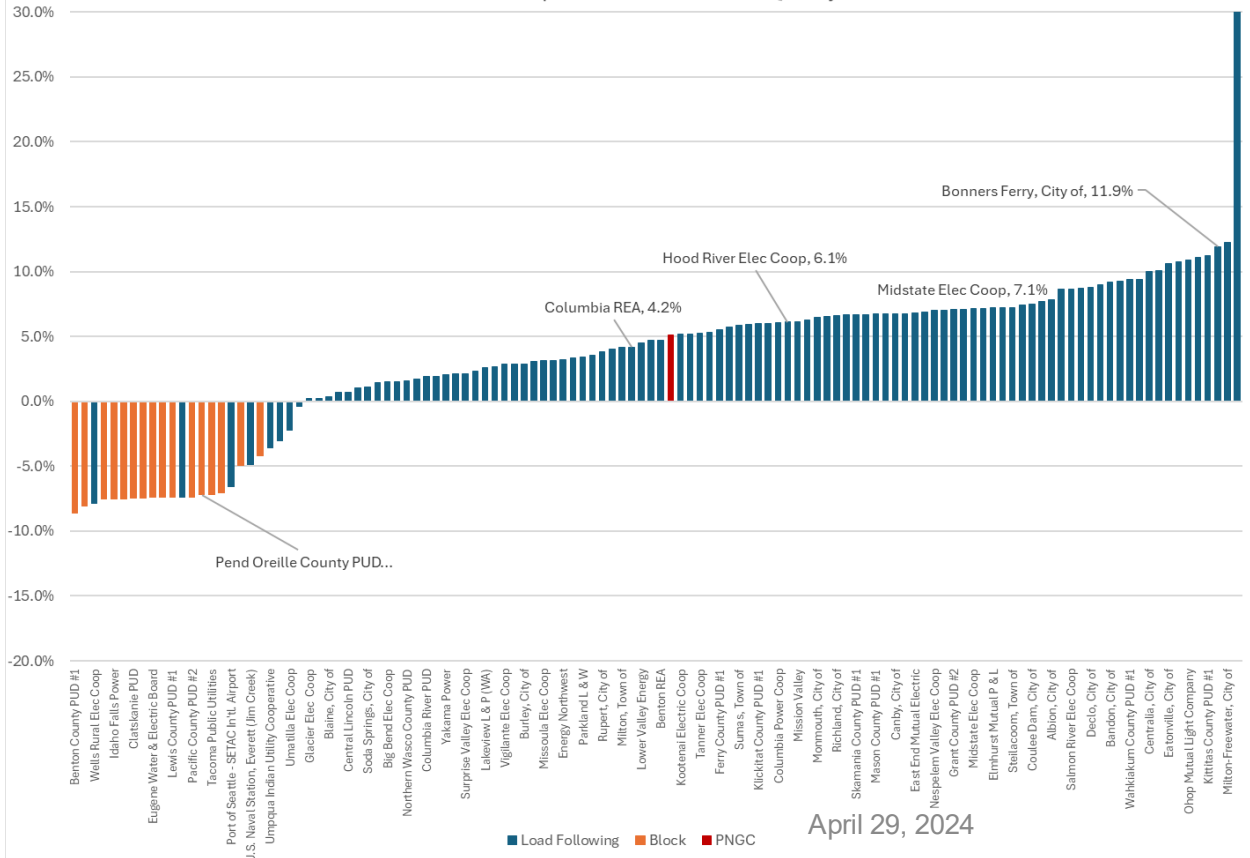
What Does the Model Produce?

- There are several functions of the model. Key outputs include:
 - Effective rates, decomposed, for each design alternative.
 - Histograms showing the relative frequency and spread of rate impacts for each alternative relative to the Status Quo.
 - Bar charts showing rate impacts in order from least to highest with differentiation for Load Following, Block, and JOE customers.
 - Bar charts like above but showing rate impacts in order of smallest to largest customer.
 - Cash Flow Analysis graphs showing the cash flow implications of moving to MWh rates.
 - Customer-specific dashboard:
 - Shows that TRM approach (TOCA-based core charges) and PRDM approach (MWh-based core charges) are equivalent, **only if the model is set to Forecast mode**.
 - Illustrates cash flow implications of moving from TRM to PRDM diurnal MWh rates.
 - Comparison of Status Quo bill impacts to Alternatives (or alternatives to other alternatives) with and without PLVS as an option.
 - Rank order impacts (1 = lowest impact 119 = highest rate impact). Composition of revenues for each alternative compared.

Preliminary Designs in Model:

*Dependent Variables	Element 1	Element 2	Element 3	Element 4	Element 5	Element 6	Element 7
Status Quo	TOCA	Non-Slice TOCA*	Slice %	Non-Slice HLH/LLH Load Shaping Rates	Rate = Marginal Revenue Credit to Element 2 Load Following Demand = Tier 1 CSP - Tier 1 aHLH - CDQ Block w/ Shaping Capacity Demand = Contract Shaping Amount - CDQ		
Alt. 1			Slice % and/or \$/MWh	Non-Slice HLH/LLH Energy*	Rate = Marginal Revenue Credit to Element 4 Load Following Demand = Tier 1 CSP - Tier 1 aMonthly Shaped Block = Tier 1 CSP - Tier 1 aMonthly Block w/ Shaping Capacity Demand = Contract Shaping Amount	Rate = Embedded Capacity Based Revenue Credit to Element 4 PLV = TRL * PLVrate (removed from Element 4) No PLV Option PLV Option (Same capacity pricing as Load Following + Mkt Energy)	Rate Impact Credit Rate Impact Credit Rate Impact Credit
Alt. 2			Slice % and/or \$/MWh	Non-Slice HLH/LLH Energy*	Rate = Marginal Revenue Credit to Element 4 Load Following Demand = Tier 1 CSP - Tier 1 aHLH Block w/ Shaping Capacity Demand = Contract Shaping Amount	Rate = Embedded Capacity Based Revenue Credit to Element 4 PLV = TRL * PLVrate (removed from Element 4) PLV Option (Same capacity pricing as Load Following + Mkt Energy)	Rate Impact Credit Rate Impact Credit
Alt. 3			Slice % and/or \$/MWh	63% of Non-Slice Revenue Requirement over HLH/LLH Energy*	Rate = 37% of Non-Slice Revenue Requirement over capacity at TTSL & Contract Shaping Amount Load Following and Shaped Block Demand = Load at TTSL Block w/Shaping Capacity Demand = Contract Shaping Amount	Rate = Embedded Capacity Based Revenue Credit to Element 4 PLV = TRL * PLVrate (removed from Element 4) PLV Option (Same capacity pricing as Load Following + Mkt Energy)	Rate Impact Credit Rate Impact Credit
Alt. 4	Fixed Customer Charge 37% of Revenue Requirement		Slice % and/or \$/MWh	Non-Slice HLH/LLH Energy*	Rate = Marginal Revenue Credit to Element 4 Load Following Demand = Tier 1 CSP - Tier 1 aMonthly Shaped Block = Tier 1 CSP - Tier 1 aMonthly Block w/ Shaping Capacity Demand = Contract Shaping Amount	Rate = Embedded Capacity Based Revenue Credit to Element 4 PLV = TRL * PLVrate (removed from Element 4) No PLV Option PLV Option (Same capacity pricing as Load Following + Mkt Energy)	Rate Impact Credit Rate Impact Credit Rate Impact Credit

Alternative 1 Rate Impact relative to Status Quo by Product



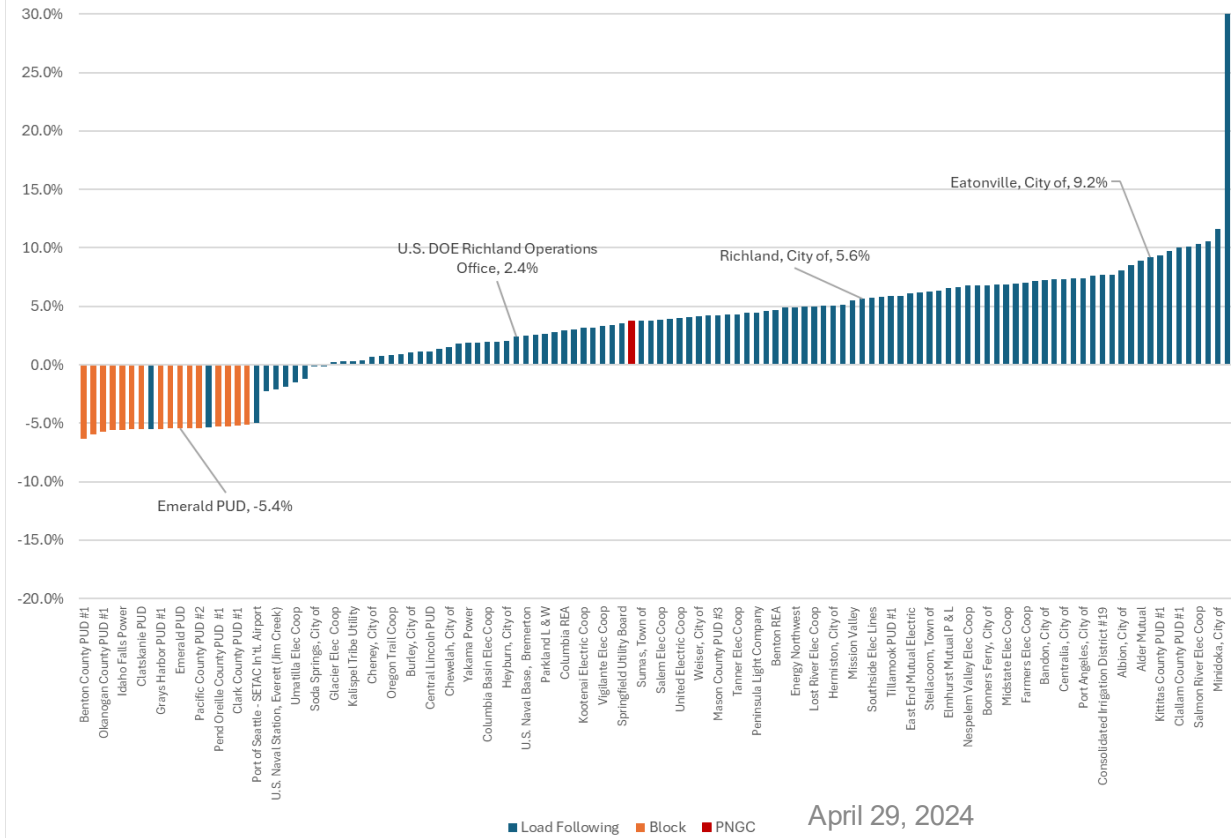
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Diurnal 1:

Alternative 1 results assuming no Block with Shaping Capacity and PLVS charge.

Rate = Marginal || Revenue Credit to Element 4
Load Following Demand = Tier 1 CSP - Tier 1 aMonthly
Shaped Block = Tier 1 CSP - Tier 1 aMonthly
Block w/ Shaping Capacity Demand = Contract Shaping Amount

Alternative 2 Rate Impact relative to Status Quo by Product

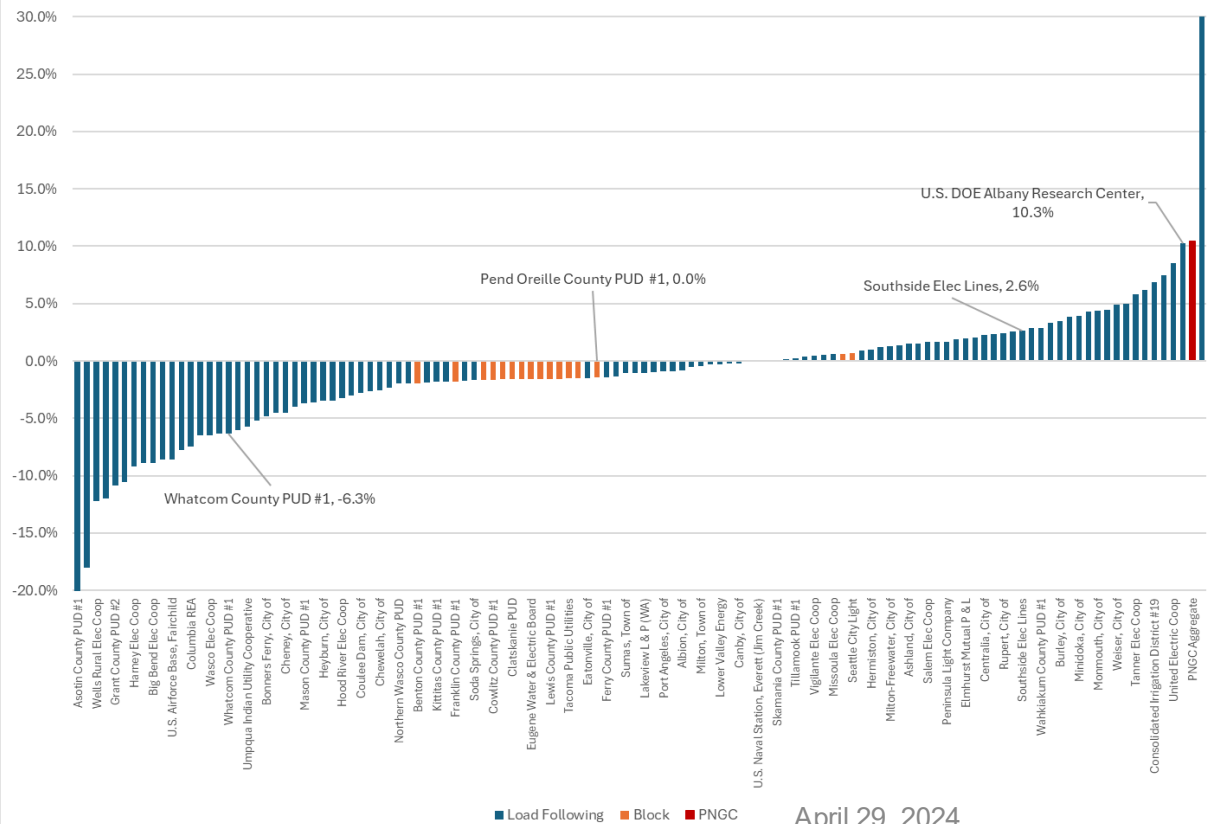


Diurnal 2:

Alternative 2 results assuming no Block with Shaping Capacity and PLVS charge.

Rate = Marginal || Revenue Credit to Element 4
 Load Following Demand = Tier 1 CSP - Tier 1 aHLH
 Block w/ Shaping Capacity Demand = Contract Shaping Amount

Alternative 3 Rate Impact relative to Status Quo by Product



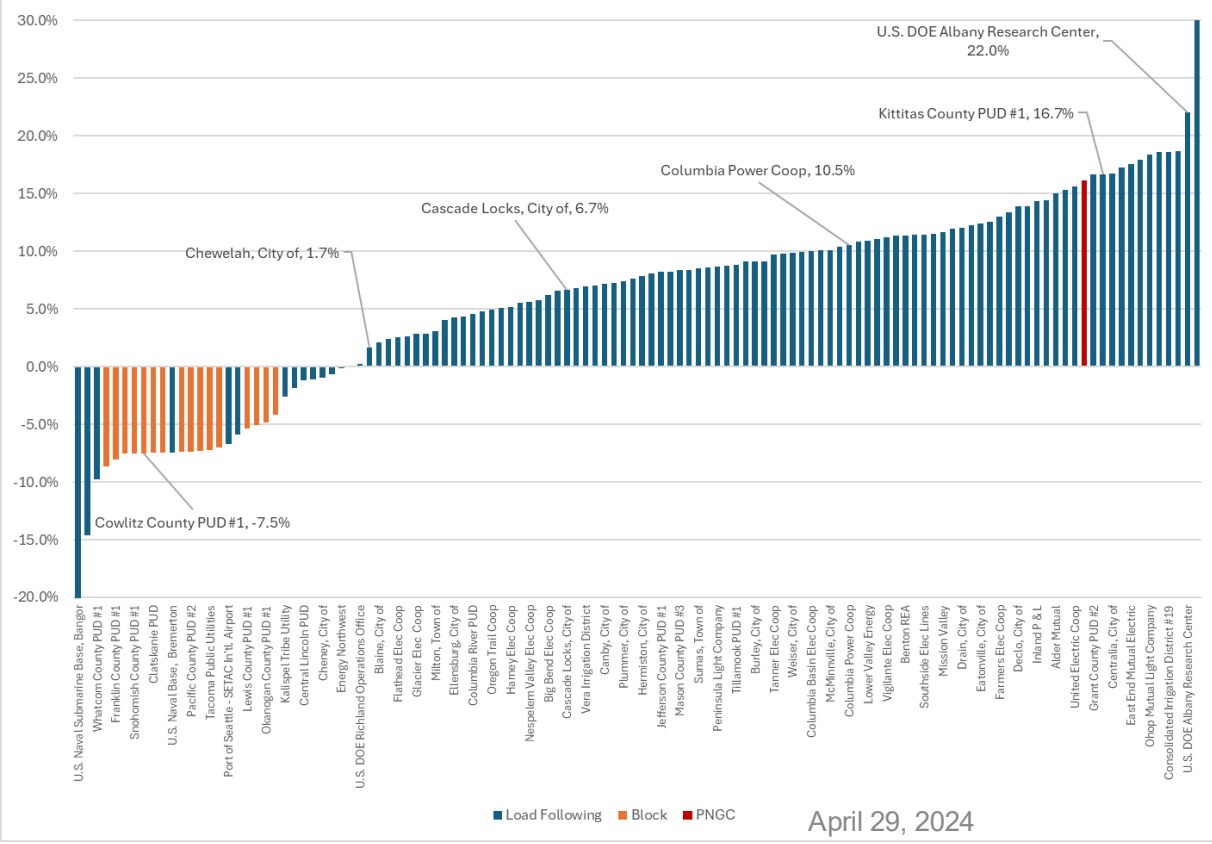
Classification:

Alternative 3 results assuming no Block with Shaping Capacity and PLVS charge.

Rate = 37% of Non-Slice Revenue Requirement over capacity at TTSL & Contract Shaping Amount

**Load Following and Shaped Block Demand = Load at TTSL
Block w/Shaping Capacity Demand = Contract Shaping Amount**

Alternative 4 Rate Impact relative to Status Quo by Product

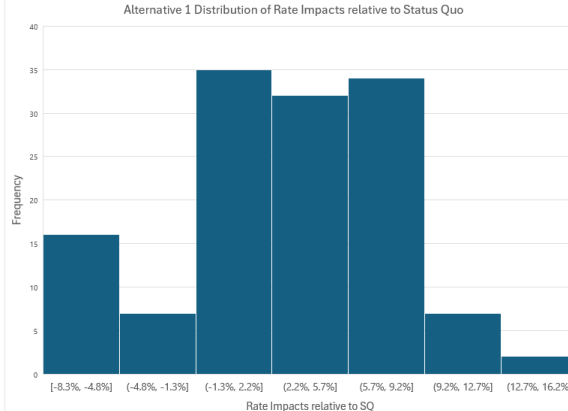


Alternative 4 results assuming no Block with Shaping and PLVS charge.

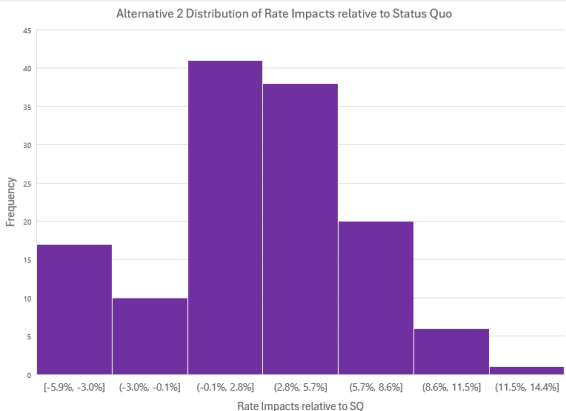
Note: This design will have a different forecast to actual impact compared to the others given the fixed customer charge.

Fixed 37% Customer Charge
 Rate = Marginal || Revenue Credit to Element 4
 Load Following Demand = Tier 1 CSP - Tier 1 aMonthly
 Shaped Block = Tier 1 CSP - Tier 1 aMonthly
 Block w/ Shaping Capacity Demand = Contract Shaping Amount

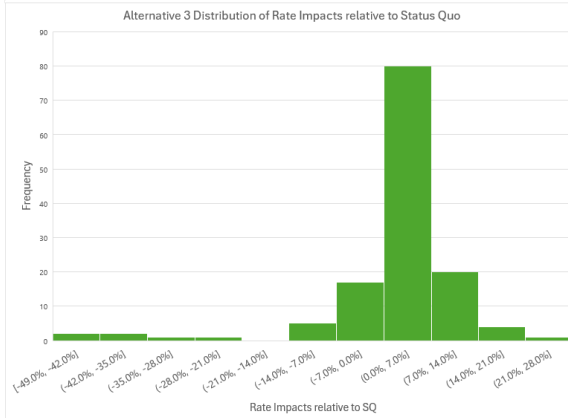
Alternative 1 has a less skewed distribution of rate impacts



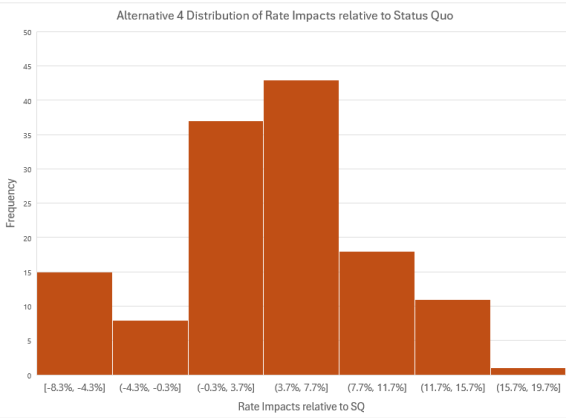
Alternative 2 has a narrower distribution of rate impacts



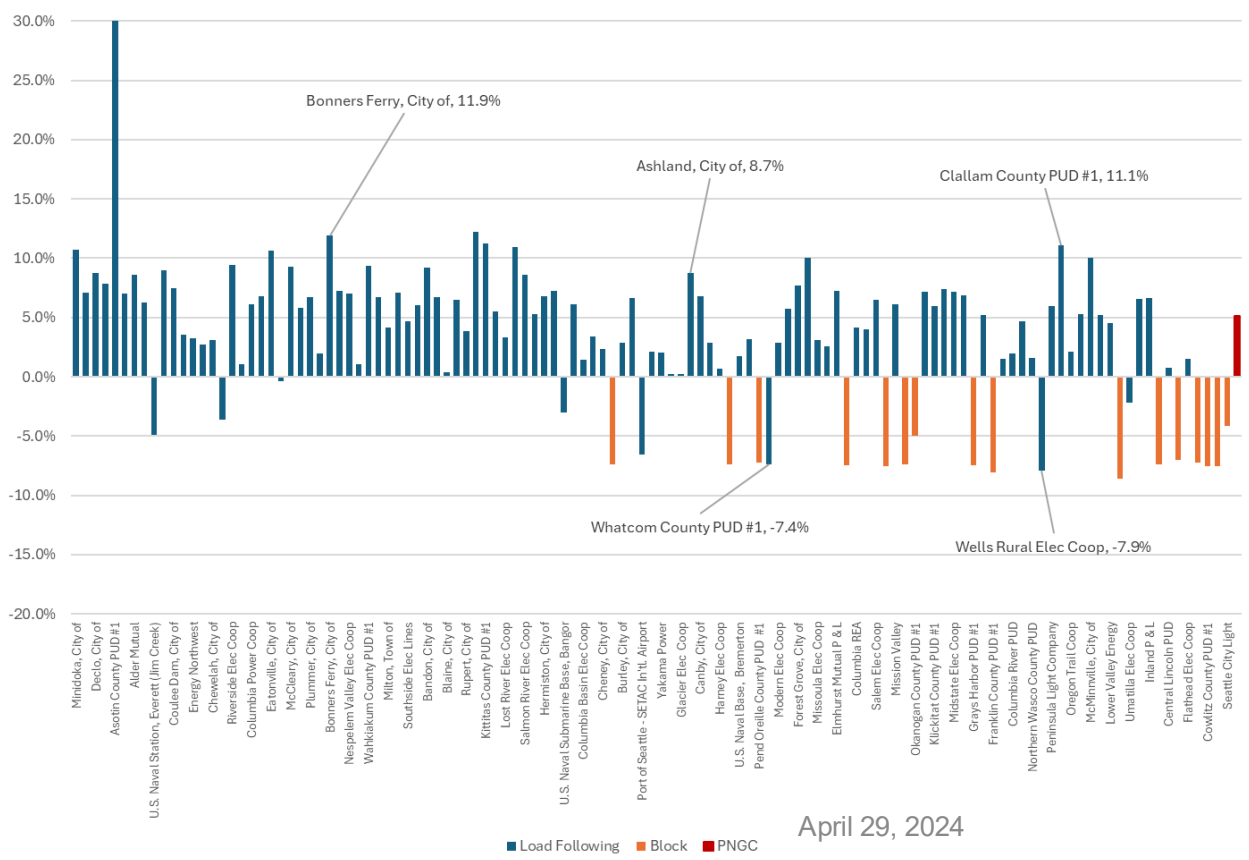
Alternative 3 has the widest distribution and skew of rate impacts



Alternative 4 has similar skew to Alternative 2 but wider distribution



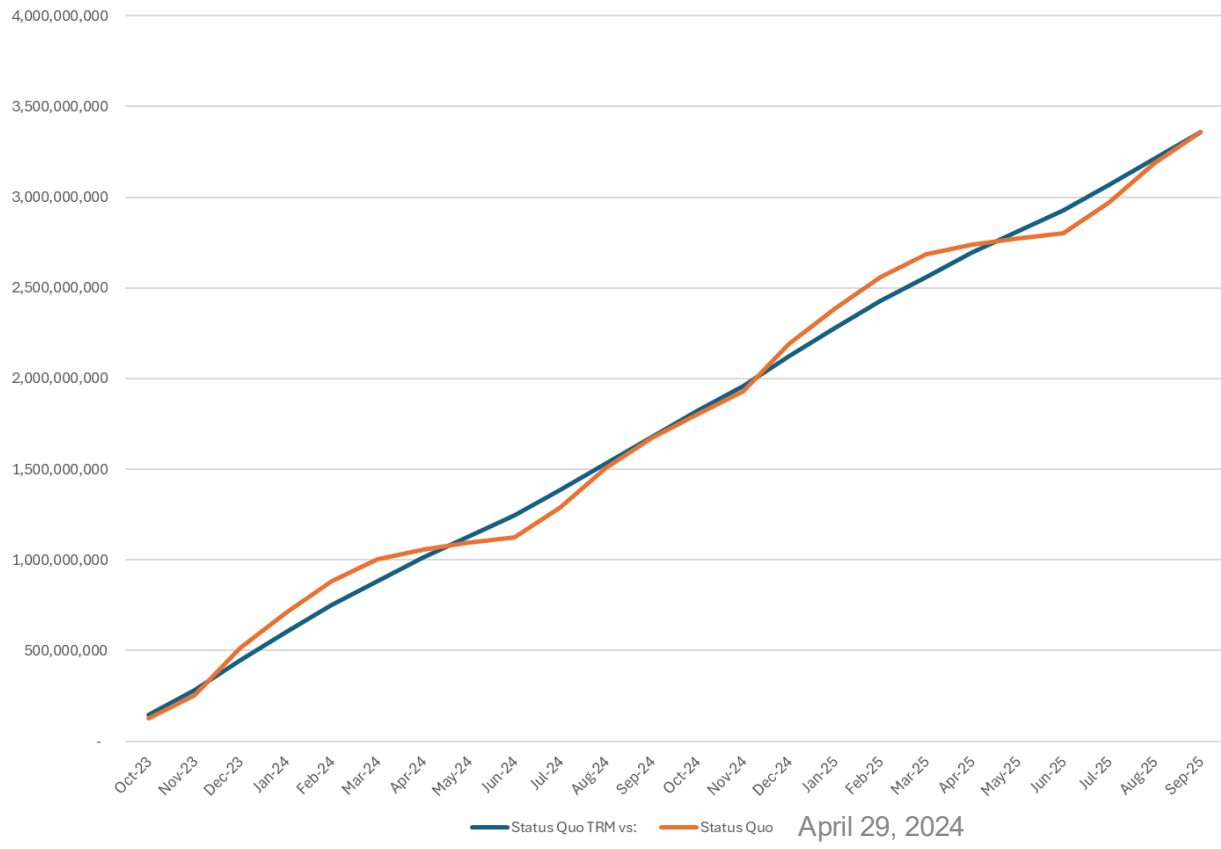
Alternative 1 Rate Impact by Customer Size



Example graph showing the rate impacts of Alternative 1 relative to Status Quo, ordered smallest to largest customer

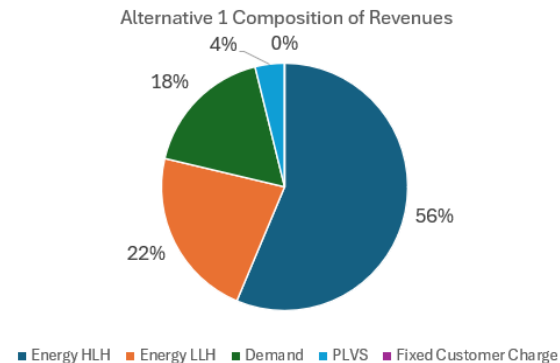
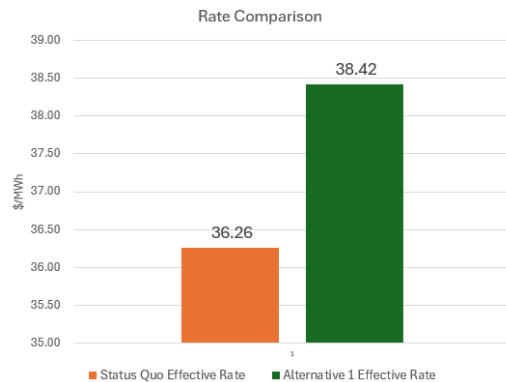
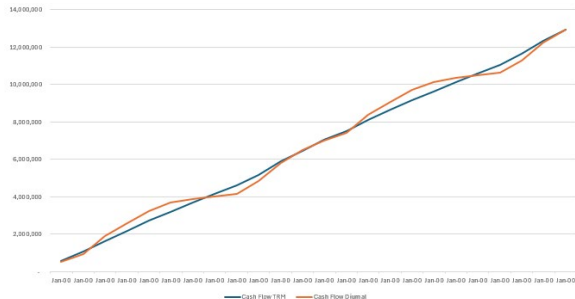


Status Quo Revenue Collection under TRM versus Diurnal Energy Rates with Demand and PLVS



Example graph showing the cash flow impacts of all customers together on BPA's revenue collection

Example Output Single Customer:



Preliminary T1 Rates in Model:

Element	Rate	Determinant		
	T1	LF	B	BWS
Energy	@ cost	Actual v. Planned	Planned	Planned
Demand	Marginal	Actual	Planned	Planned
PLVS	Embedded	Planned	Not Applicable	Planned*
RIC.c	CDQ	Fixed	Not Applicable	Fixed**
RIC.m	tbd			

*If elected and eligible. **Need to evaluate proper relationship to CDQ.

Demonstration and Discussion:

- At this point, BPA staff has a strong preference for Alternative 1 under a MWh rate implementation. Staff finds:
 - The MWh approach to be more intuitive and easier to analyze and implement compared to the status quo approach.
 - The move to a monthly MWs from aHLHs for purposes of calculating the demand billing determinant aligns better with the future block with shaping capacity product. Further, it separates the demand billing determinate from the current industry commodity standard that may change in the future.
 - The performance of the Total Transmission System Load is unimpressive and likely to produce unintended consequences. In addition, it's a significant change from today for no real reason other than to do something different. If it ain't broke, don't fix it.
 - The true customer charge approaches are interesting, but we are concerned about the forecast to actual impact in Alternative 4. In addition, it's a significant change from today for no real reason other than to do something different. If it ain't broke, don't fix it.
- Customer observations?



Tier 1 Next Steps

- Narrow focus in single design and particular rates, and move to designing and modeling the associated Rate Impact Credit mitigation component
- Share results at next workgroup, tune, and adjust as needed ahead of next workshop
- Target: Land preferred Tier 1 core design and rates structure by late May.



Chapter 6: Tier 2 Rate Design

(continuation from workshop #4 & summary of changes)



Direction in PRDM: Above-CHWM and Tier 2

Quantities and Attributes:

- For most customers, access to power purchased at Tier 1 rates would be fixed for the term of the contract, but each rate period there will be a different Above-CHWM amount because the customer will have a new load forecast for each rate period. (CHWM will remain the same, but the customer's forecast overage will be different. Each fiscal year will have a different load forecast.)
- For operational and contractual convenience, BPA may extend to Load Following customers an option to have up to 0.999 aMW of Flexible Path Above-CHWM Load served through the Tier 1 rate design. This rounding option would be similar in purpose to the "round down" option under Regional Dialogue, permitting contract choices which would apply to full MW units.
- BPA will convey the environmental attributes, including carbon costs and RECs, to public power customers that are served with firm requirements power at a specific Tier 2 rate.

Direction in PRDM: Above-CHWM and Tier 2 (cont.)

Rates and Costs:

- Rate design will be the same: For each Tier 2 alternative, there will be a \$/MWh charge for power service in fixed, annual amounts on a take-or-pay basis. The rate will be determined in each rate period. Each fiscal year will have a different rate.
- Under certain conditions, BPA proposes to provide power to the Long-Term Tier 2 rate at the cost of Tier 1. In all other conditions, BPA would set the Tier 2 rates on the acquisition cost or the forecast market cost of that power.
- BPA intends to include provisions in the PRDM that explain what happens if BPA has Long-Term Tier 2 costs and no load being served at the Long-Term Tier 2 rate. The provision would also address situations where a subset of customers that elected service at the Long-Term Tier 2 rate are determined to be bearing an inequitable amount of the Long-Term Tier 2 costs.

Direction in PRDM: Tier 2

“Flexible Above-CHWM Path” means that a customer will be able to make, in each rate period, a different choice for service of that amount (e.g., choice between federal service or non-federal service).

“Long-Term Tier 2 Path” means that a customer has made a commitment, for the term of the contract, to the choice of federal service for their Above-RHWM Load.

Each customer will be provided a one-time option to elect one of these four options:

Option	Description
All Long-Term	All of a customer’s Above-CHWM Load will be served at BPA’s Long-Term Tier 2 rate.
Fixed Long-Term, remainder Flexible	A fixed aMW amount of a customer’s load will be served at BPA’s Long-Term Tier 2 rate with any remaining Above-CHWM load served through the Flexible Above-CHWM Path.
Fixed Flexible, remainder Long-Term	A fixed aMW amount of a customer’s load will be served through the Flexible Above-CHWM Path with any remaining Above-CHWM load served at BPA’s Long-Term Tier 2 rate.
All Flexible	All of a customer’s Above-CHWM Load will be served through the Flexible Above-CHWM Path.

Direction in PRDM: Tier 2 (cont.)

Setting aside potential offramps, a customer will make a one-time election to determine what portion of its Above-CHWM load will be served through the Long-Term Tier 2 Path and what portion will be served through the Flexible Above-CHWM Path.

Tier 2 Alternative	Allocated Costs (Resource types)	Environmental Attributes?
Long-Term Tier 2 Federal Service Option	Cost-effective resource acquisitions. (Workshop discussion clarified that BPA resource acquisitions may not be limited to specific terms.) If sufficient firm inventory is available, BPA will set the Long-Term T2 rate with an allocation of the costs of BPA's firm inventory.	BPA will convey the environmental attributes, including carbon costs and RECs.
Short-Term Tier 2 Federal Service Option*	Cost-effective resource acquisitions.	Same as Long-Term
Vintage Tier 2 Federal Service Option*	An acquisition-based purchase of power at the cost of acquiring the output of that resource.	Same as Long-Term

* Customers with Flexible Path will make an election about short-term federal Service at least three months before each rate case.



Tier 2 Next Steps

- Any open remaining questions or discussion?
- Move this chapter to drafting



Chapter 8: Resource Support Services

(continuation from workshop #4)



Direction in PRDM: RSS

- **TRM:**
 - **Most important sentence.** The capacity component of each RSS service will be priced at the Demand Rate, and the energy component will be priced at the market price of energy for the appropriate time period for the particular RSS service.
 - **Second most important sentence.** BPA will offer comparable pricing methodology, terms, and conditions for each of these services for qualifying resources, whether the purchaser is a Load Following, Block, or Slice/Block customer.
 - **The TRM did not establish the RSS pricing methodology.** BPA will develop or modify the design and pricing governing these products in each 7(i) process.
 - **A framework that was not comprehensive nor restrictive.** The TRM did not confine BPA to only offering certain support services and allowed BPA the ability to refine or adopt new services as negotiated through contract with rates set in each 7(i) process.
 - **Financial cost/benefit of resource shape.** TRM made clear that the financial benefit, or cost, of a resource's energy shape would be measured and billed separately from the load.
- **PRDM:**
 - **Limit to pricing philosophy only.** The same as the TRM, the PRDM should include a sentence on the pricing philosophy to be applied in each 7(i) process – e.g., comparable treatment across products, marginal, and market-based. No mention of specific treatment for capturing energy value.
 - **RSS thresholds.** We may want to consider including RSS pricing thresholds in the PRDM – e.g., the size and circumstance of a resource when RSS-based charges would apply.
 - Important note. Just because RSS isn't applied, doesn't mean the cost went away. Rather, high/low capacity contributions and high/low energy shape value would be captured through BPA's net load billing determinants and rates. This could result in MORE being paid and would also be less transparent.



Relevant Considerations for RSS

- With little to no exception, BPA rates staff believes capacity should be measured and billed separately from the load.
- BPA rate staff is open to the idea of bundling the energy impact of a resource's output into the load but is somewhat concerned about the tradeoffs:
 - If a resource had a banner energy generation year, the resource output could effectively displacing BPAs Tier 1 power rather than a market-based value.
 - In high-market-value times, the customer would receive **less** credit than had BPA tracked the resource generation separately from the load. All else equal, this would **increase** BPA's financial reserves.
 - In low-market-value times, the customer would receive **more** credit than had BPA tracked the resource generation separately from the load. All else equal, this would **decrease** BPA's financial reserves.
 - BPA has a long history of separating firm generation from surplus generation to avoid these outcomes. For example, BPA's Secondary Crediting Service that existed prior to Regional Dialogue.
 - Bundling could inadvertently foreclose entirely better designs. New day-ahead markets might lend themselves better to an entirely different approach altogether. Rather than having the energy impacts flow through BPA's posted load or resource energy rates, certain market implementations may be the best way to capture a resource's energy value.



RSS Next Steps

- Any open remaining questions or discussion?
- Move this chapter to drafting



Conclusion & Next Steps

May and June Schedule

Workgroup #3 5/23

May 28, Workshop #6

- Chapter 9: Risk Mitigation
- Chapter 10: Other (LDD, IRD, DSI, etc.)

2029 PRDM

- Definitions
- Chapter 1 – Background & Purpose
- Chapter 2 – Cost Allocation
- Chapter 3 – Federal System
- Chapter 4 – T1 Eligibility (CHWM) Move to POC
- Chapter 5 – Tier 1 Rate Design
- Chapter 6 – Tier 2 Rate Design
- Chapter 7 – Shared Rate Plan – Delete
- Chapter 8 – RSS
- Chapter 9 – Risk Mitigation
- Chapter 10 – Other Rate Design
- Chapter 11 – Approval and Duration – Delete/Move
- Chapter 12 – Conditions for Revision
- Chapter 13 – Revision Processes

Workgroup #4 6/11 (tbd)

June 21, Workshop #7

- Chapter 12: Conditions for Revision
- Chapter 13: Revision Processes

Parking Lot

Issue	Action	Note
Environmental Attributes T1, T2	New section in Chapter 2	
WRAP and PRM-Related Services	Contract negotiations and Chapter 5 through Peak Load Variance Charge	
Battery Treatment	Contract negotiations, maybe PRDM, likely future 7(i) process	
Risk framework (e.g., RDC & Secondary energy credits)	Chapter 2, Chapter 9, or potential future 7(i) process	
Designated System Obligations	Chapter 3	
Vintage Tier 2 not flat block	Contract negotiations and potential PRDM	
Resource Acquisition Strategy and Execution	Resource Program and Operations	
New Resources Rate Design	Contract negotiations and applicable 7(i) process	

Thank you

For feedback, questions, comments please email: prdm@bpa.gov

Project Leads

Scott Reed, Policy sgreed@bpa.gov

Leon Nguyen, Logistics & Coordination ldnguyen@bpa.gov

Power Rates Manager

Daniel Fisher, dhfisher@bpa.gov

Lead Executive Sponsor

Kim Thompson, Vice President, Northwest Requirements Marketing

ktthompson@bpa.gov

Thank you

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