Planned Products

June 12, 2024

Slide 29 corrected 6/13/2024

Agenda

- Planned Products: Upcoming Workshops
- Planned Products: Individual optimization for any planned product
- Slice/Block: Day-ahead Settlement
- Block: Surplus as MWs in lieu of rate credit
- Slice/Block: Bond Issue Overview (if time)

Planned Products:
Upcoming Workshops

Slice/Block Product Timeline

Workshops	Workshop Topic

June 12	• Planned Products
	  • Optimization of federal system
	• Slice/Block
	  • Financial Settlements
	  • Overview of Bond Issue (if time)
	• Block
	  • Surplus as MWs Concept

June 18	• Block (AM)
	  • Block with Shaping Capacity
	  • Block reshaping follow-up
	• Slice/Block (PM)
	  • Fixed System
	  • TBD

June 24	• Overview of Slice/Block proposal that meets June design criteria and discussion.
July 8	• Slice/Block product update *There may be advanced outreach

Planned Products:
Optimization of the Federal System

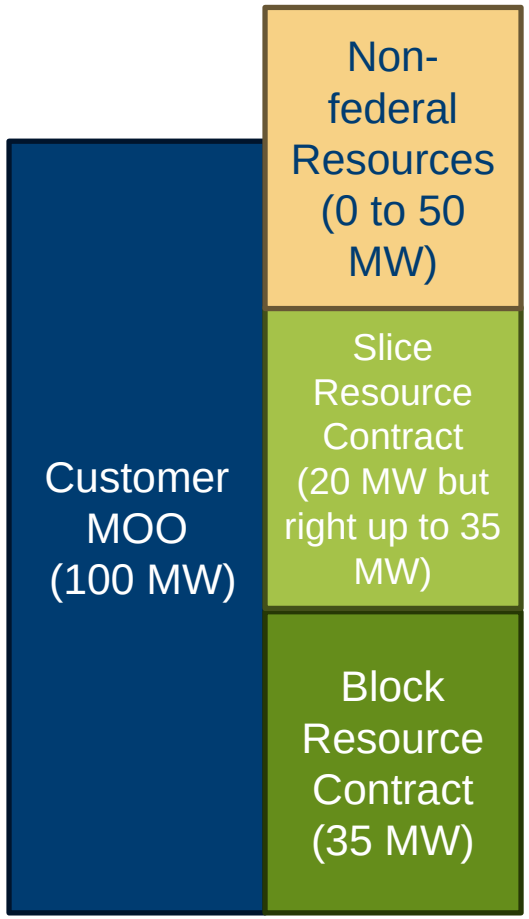
Slice/Block Optimization

- Under Regional Dialogue, Slice/Block customers receive a planned amount of power based on a simulation of the federal system and may optimize their Slice Right to Power (RTP) to best fit their utility needs. Customers communicate their hourly take to Bonneville. Block amounts are set at the start of the fiscal year.
- Bonneville does not dispatch based on the simulated output. Bonneville considers its total load obligation, including the Slice RTP amounts, and optimizes the entire system to serve that load obligation.
- Under a day-ahead market, Bonneville has proposed customers would submit day-ahead Slice RTP amounts in advance of the day-ahead market run so Bonneville could continue to optimize the entire system but would do so via resource offer curves.

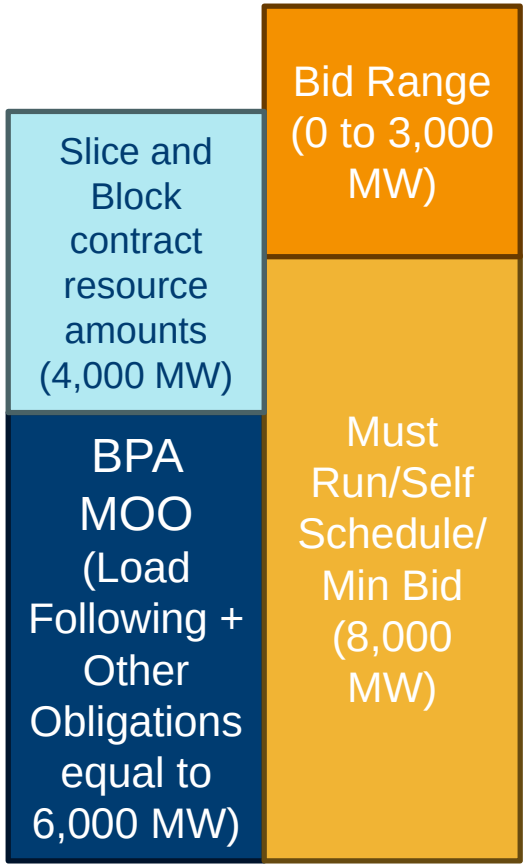
Individualized Optimizations

- Bonneville cannot support individualized optimization of the federal system in the market. Several concepts floated to date rely on Bonneville being able to do this.
  - For example, the concept that a customer could convey a min and max value as well as a daily energy limit to BPA or to the market operator and have the market simultaneously solve for each customer submitted offer limits, within BPA's resource offer.
- Bonneville believes these individual optimizations would create the same problems created by multiple bid ranges.
- In addition, relying on a max bid in every hour without a clear and direct transfer of MOO to Bonneville would make it challenging to determine when energy is deployed for a planned product customer and could lead to disagreements over price in the bid curve.

Example



Slice/Block Customer



Bonneville

- Slice/Block customer communicates to BPA ahead of day-ahead market run that it wants a 20 MW Slice RTP but that it could have up to 35 MW that it wants to count towards its MOO.
- If the customer were to convey a 20 aMW energy offer, but a max offer of 35 aMW in any given offer (constrained by a daily average max), there's no way to distinguish the MWs assigned to that particular Slice/Block contract. And it's unclear how to attribute the deployed right on the addition 15 aMW to a particular customer.
- Without the MOO obligation coming with the MWs, it becomes a calculation of what bid range is assigned to which customer, which would likely lead to contentious accounting about who is getting served at what price.

Slice/Block:
Financial Settlements on Day-ahead Slice

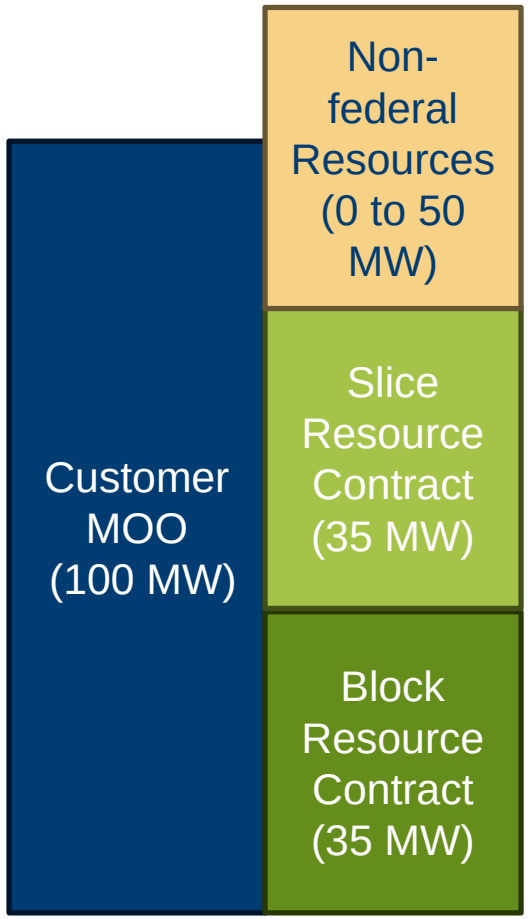
Objectives

- Overview of “simple” settlement.
- Test “shared dispatch” settlements concept and review BPA’s current concerns with concept.
- Discuss if there are any gaps or concerns about either approach.

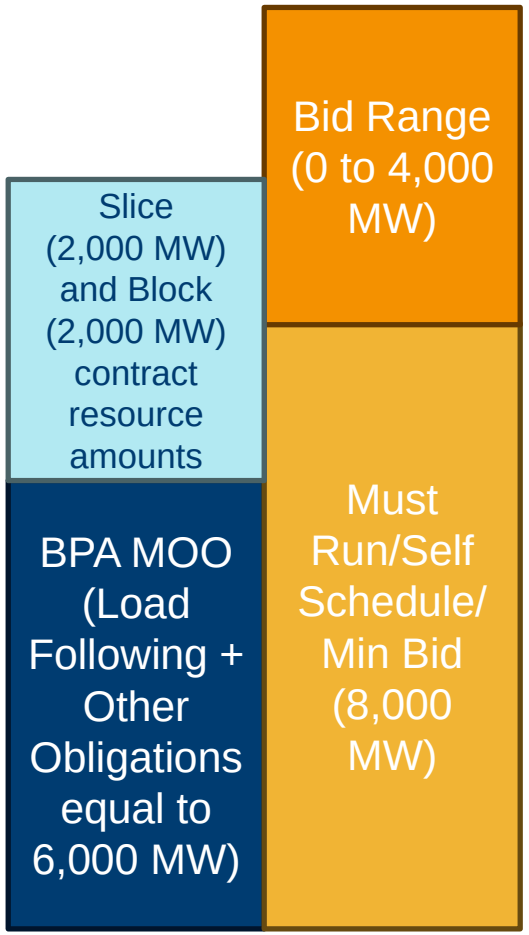
Settlements Assumptions

- The discussion of financial settlements only applies if BPA joins a day-ahead market and the Slice/Block customer is in the same market.
  - If BPA joins a day-ahead market, BPA would need to do a further evaluation if it could leverage a market mechanism to facilitate settlements or whether settlements would be between BPA and the customer.
- If BPA does not join a day-ahead market, BPA assumes it would convey power to customers based on day-ahead Slice RTP and customers would determine where those MWs are being used.
- If a Slice/Block customer is in another market from BPA, the current assumption is that the BPA would schedule that power to the BA the customer is located in. Depending on market rules, that may be a self schedule to the intertie or there may be some ability to optimize; however, working assumption is that energy would be scheduled directly to customer.

Example for Discussion



Slice/Block Customer



Bonneville

1. In this example, a Slice/Block customer has a MOO of 100 MW that it plans to bid into the market.
2. The customer's resource offer would include:
   - Bid range for their non-federal resources.
   - Communication to market about their contract resource amounts for slice and block and would point to BPA's resource offer to serve them. Customer would communicate planned Slice Right to Power (RTP) to BPA ahead of day-ahead market run.
3. BPA's MOO it bids into the market is 6,000 MW based on is Load Following and other obligations. BPA also knows it has contracted for 4,000 MW to planned product customers.
4. BPA's resource offer would look holistically at its obligations. BPA would determine the most economic must run/self schedule/min bid as well as best bid range to optimize on behalf of all load and resource contracts within system constraints.

“Simple” Settlements

- The Slice/Block customer and BPA would settle based on the Slice RTP amount communicated by the customer. This would be regardless if BPA was dispatched to serve all its load obligations or if the market determined another source met some of the MOO. This should be agnostic as generation would clear at the same price.
- Block (including block portion of Slice/Block product) and Load Following would be settled on whatever construct is determined for that cost pool, which is to be determined.

"Simple" Settlements (cont.)

	Slice/Block Customer	Bonneville
MOO (Load)	• Bids their full MOO into the market (100 MW).	• Bids BPA MOO (load following plus other obligations) into the market (6,000 MW).
Resource Offer	• Communicates to market their contract resource amounts for both their slice and block portions pointing to BPA's resource offer (70 MW). • Bids their non-federal resources in to cover MOO and any bid range they have elected to offer (0 to 50 MW).	• Determines resource offers for market including must run/self schedule/min bid amount (8,000 MW) and bid range (0 to 4,000 MW). The slice (2,000 MW) and block (2,000 MW) contract amounts would be factored into BPA's resource offer determination.
Market Settlement	• Settles directly with the market on load charges (100 MW). • Settles directly with the market on non-federal resource payments (30 MW). • Settles with BPA on the contract resource amount associated with their Slice RTP (35 MW). Settles with BPA in separate transaction on block portion (35 MW).	• Settles directly with market on load charges (6,000 MW). • Settles directly with market for the resource payments for Load Following and Block obligations (8,000 MW). • Settles with Slice/Block customers on value of the Slice RTP amounts (2,000 MW).

“Shared Dispatch” Settlements

Concept: Slice/Block customers would receive a percent share of actual dispatch awards based on the amount of Slice RTP communicated in each hour.

- Slice/Block customer’s slice portion would be settled based on concept. The block portion would receive the same settlement treatment determined for standalone Block and Load Following.
- Using the settlements example:
  - BPA in each hour would determine the percentage the Slice RTP submitted by the customer made up of its total obligations it considered in making its resource offer. The Slice/Block customer’s share is 35 MW/10,000 MW or 0.35%.
  - The settlement would be based on the percentage of the actual system deployed. It could 0.35% of 8,000 MW all the way up to 0.35% of 12,000 MW.
- Customers would derive value by getting settled at market value, having load served by cheaper power when available and share of generation value when BPA power clears. It would be relative to their Slice RTP elections in every hour and not tied to Slice percentage as there would be a disconnect from what was expected to be deployed on behalf of Slice customer.

"Shared" Settlement: Loads = Resources

In this example, assume that Bonneville's actual dispatch was at **10,000 MW**.

	Slice/Block Customer	Bonneville
MOO (Load)	• Bids their MOO into the market (100 MW).	• Bids BPA MOO (load following plus other obligations) into the market (6,000 MW).
Resource Offer	• Communicates to market their contract resource amounts for both their slice and block portions pointing to BPA's resource offer (70 MW). • Bids their non-federal resources in to cover MOO and any bid range they have elected to offer (0 to 50 MW).	• Determines resource offers for market including must run/self schedule/min bid amount (8,000 MW) and bid range (0 to 4,000 MW). The slice (2,000 MW) and block (2,000 MW) contract amounts would be factored into BPA's resource offer determination.
Market Settlement	• Settles directly with the market on load charges (100 MW). • Settles directly with the market on non-federal resource payments (30 MW). • Settles with BPA, or leverages market mechanism if available, on the value from actual dispatch of the federal system for slice portion (**35 MW**). To be determined how settlements would flow on block portion (35 MW).	• Settles directly with market on load charges (6,000 MW). • Settles directly with market for the resource payments for Load Following and Block obligations and to be determined how settlement would flow to customers (8,000 MW). • Settles with Slice/Block customers on value of the slice amounts (**2,000 MW**).

"Shared" Settlement: Loads < Resources

In this example, assume that Bonneville's actual dispatch was at **12,000 MW**.

	Slice/Block Customer	Bonneville
MOO (Load)	• Bids their MOO into the market (100 MW).	• Bids BPA MOO (load following plus other obligations) into the market (6,000 MW).
Resource Offer	• Communicates contract resource amounts for both their slice and block portions pointing to BPA's resource offer (70 MW). • Bids their non-federal resources in to cover MOO and any bid range they have elected to offer (0 to 50 MW).	• Determines resource offers for market including must run/self schedule/min bid amount (8,000 MW) and bid range (0 to 4,000 MW). The slice (2,000 MW) and block (2,000 MW) contract amounts would be factored into BPA's resource offer determination.
Market Settlement	• Settles directly with the market on load charges (100 MW). • Settles directly with the market on non-federal resource payments (30 MW). • Settles with BPA, or leverages market mechanism if available, on the value from actual dispatch of the federal system for slice portion (**42 MW = 35 MW Slice RTP election and 7 MW share of total resources deployed**). To be determined how settlements would flow on block portion (35 MW).	• Settles directly with market on load charges (6,000 MW). • Settles directly with market for the resource payments not associated with a slice (and potentially block) contract amount (9,600 MW). • Settles with Slice/Block customers on value of the slice amounts and to be determined settlement on block portion (**2,400 MW**).

"Shared" Settlement: Loads > Resources

In this example, assume that Bonneville's actual dispatch was at **8,000 MW**.

	Slice/Block Customer	Bonneville
MOO (Load)	• Bids MOO into the market (100 MW).	• Bids BPA MOO (load following plus other obligations) into the market (6,000 MW).
Resource Offer	• Communicates contract resource amounts for both their slice and block portions pointing to BPA's resource offer (70 MW). • Bids their non-federal resources in to cover MOO and any bid range they have elected to offer (0 to 50 MW).	• Determines resource offers for market including must run/self schedule/min bid amount (8,000 MW) and bid range (0 to 4,000 MW). The slice and block contract amounts would be factored into BPA's resource offer determination.
Market Settlement	• Settles directly with the market on load charges (100 MW). • Settles directly with the market on non-federal resource payments (30 MW). • Settles with BPA, or leverages market mechanism if available, on the value from actual dispatch of the federal system for slice portion (**35 MW = 28 MW share of resources deployed + 7 MW served by market**). To be determined how settlements would flow on block portion (35 MW).	• Settles directly with market on load charges (6,000 MW). • Settles directly with market for the resource payments not associated with a slice (and potentially block) contract amount (6,400 MW from Bonneville resources + 1,600 MW from market). • Settles with Slice/Block customers on value of the slice amounts and to be determined settlement on block portion (**1,600 MW share of resources deployed + 400 MW served by market**).

“Shared Dispatch” Concerns

1. What share of dispatch should Slice RTP be allowed to settle on?

- If BPA calculates the Slice RTP percentage based on total obligations, then it would be greater than the made available to customers at a PF Tier 1 rate. This is similar to concerns about providing a “true slice” of the system concept. BPA does not believe that it could, or should, create a paper accounting for what would have been attributed to power at a PF Tier 1 rate for every hour of dispatch.
- An alternative that BPA considered is that Slice and Block contract amounts are always considered part of the must run/self schedule/min bid amounts but that would likely assume settlement as a price taker.

"Shared Dispatch" Concerns

2. Does there need to be a true-up between Slice RTP communicated amounts and actual system dispatch?

- BPA assumes that the customer's Slice RTP amounts would be determined by what the Slice Computer Application (SCA) models. BPA also assumes that if a customer elects to use their MWs in a market on a given day, those MWs have been used regardless if BPA was dispatched to serve those MWs.
  - In the example that BPA had only been dispatched at 8,000 MW and the market served some of the customer's Slice RTP, it would not replenish the MWs available to the Slice customer in that month as those MWs had been requested to meet obligations already.
  - Alternatively, if BPA was dispatched at 12,000 MW, the additional MWs associated with a greater dispatch would not count against a Slice/Block customer's take for the month.
- Two questions that need to be addressed based on the assumption:
  - Should Slice/Block customers be able to access MWs if the capability still exists because the units were not deployed in a market?
  - Should Slice/Block customers future Slice RTP be decremented based on any MWs awarded beyond the Slice RTP amounts conveyed to BPA?

"Shared Dispatch" Concerns

3. Does the concept eliminate the distinction between the Slice/Block and non-Slice cost pools and risks associated with each pool?

- Under today's paradigm, BPA assumes the percentage associated with Slice is entirely managed by Slice/Block customers and it optimizes its position to serve firm load and take advantage of surplus opportunities on the remaining system on behalf of its other load obligations (including Load Following and Block). Slice/Block customers do not cover the costs of balancing purchases that BPA makes on behalf of load service for its other obligations.
- Under the "shared dispatch" proposal, Slice/Block customers would be communicating their Slice RTP amounts based on their SCA constraints but receiving a share of BPA's total optimization. This could include if BPA does forward purchases to meet expected loads (as described in the example on the next slide).

"Shared Dispatch" Concern Example

- One example that addresses all three concerns is if BPA were to make a 1,000 MW balancing purchase to cover expected load obligations in the fourth week of January.
  - Under this scenario, it is likely that BPA produces more power from the system in the first three weeks of January and backs off federal system dispatch in the fourth week of January.
- In the "shared dispatch" concept, Slice/Block customers could receive:
  - Additional MWs in the first three weeks of the month above Slice RTP amounts communicated due to BPA moving increased water in the first three weeks of the month. If there was no true up, Slice/Block customers would have no impact to their total take in the month for these additional MWs.
  - Slice/Block customers would get the advantage of the balancing purchase in the fourth week as BPA would be including that in its resource offer to meet loads. However, based on cost construct would not be paying any of the costs associated with the purchase.
- How should this be accounted for?

Discussion

- Is there interest in Slice/Block product if “simple” settlements is the approach?
- Are there suggestions of how to meet concerns of “shared dispatch” approach? For example, should Slice RTP be trued up in the SCA based on actual dispatch?
- Is there anything missing in this settlements discussion?

Block:
Surplus as Megawatts

Caveats on MW Concept

- This is a high-level explanation of how the concept would work.
- While BPA believes it could make this concept work, additional details would need to be worked out and it could be determined that it is not feasible.
- The objective of today's overview is to determine if there is interest in this option or not.

Concept

- The concept would only be offered if there is no Slice/Block product.
- Each rate period, BPA would determine an amount of forecasted surplus it would factor into a net secondary revenue credit. The credit would be factored into the PF Tier 1 rates and the surplus would be made available to Block customers. For example, BPA could determine 80% of surplus would be counted toward the NSR credit. This would have the effect of raising PF Tier 1 rates by half that credit because providing 20% for MWs or after the fact surplus value.
- Block customers could then elect whether to receive a share of the remaining 20% of surplus as MWs or as a credit.
  - BPA may opt to start with a smaller percentage of surplus but could scale what is offered as MWs over time.
  - BPA may also be able to offer this option to Load Following customers.
- Customers who elect to take $ instead of MW would be settled their surplus share on a quarterly or annual basis.

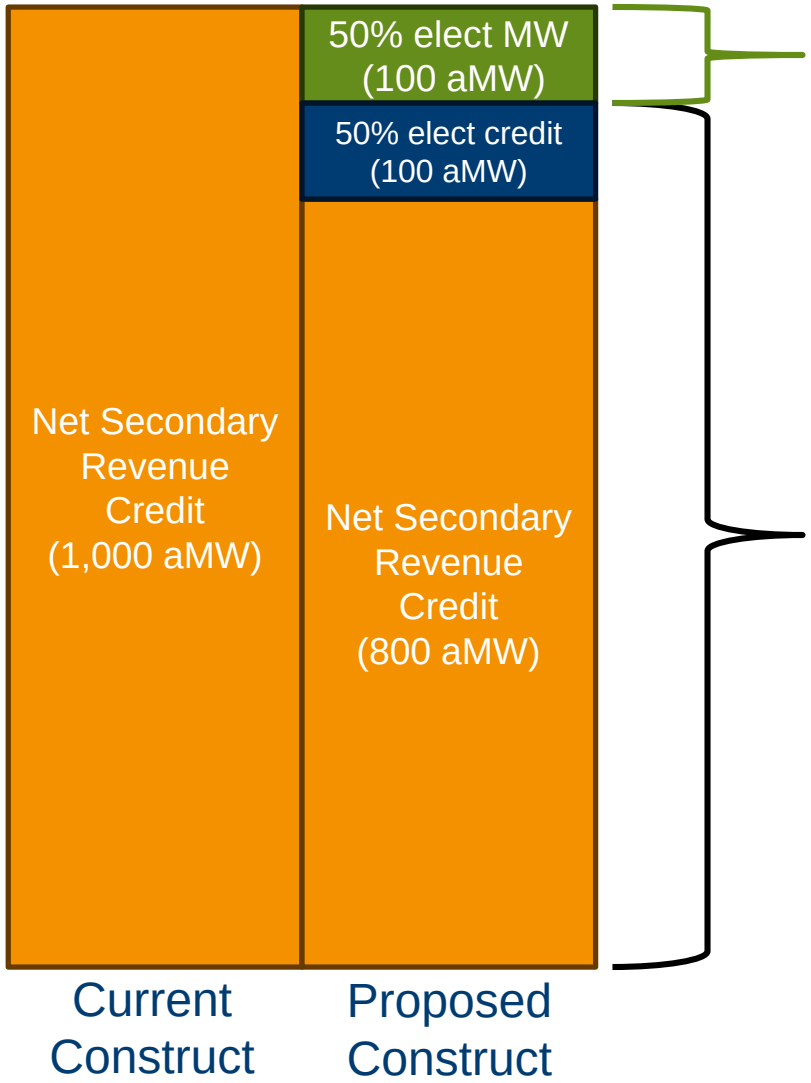
Concept (cont.)

- Customers would track and receive surplus as MWs similar to how Slice/Block customers see surplus today.
  - **Start of rate period:** BPA would notify customers who took MWs as surplus which set of resources are associated with the PF Tier 1 rates and would be eligible for surplus as MWs.
  - **Start of water year:** Throughout the year, customers would be able to track water year predictions to guess how much may be available in surplus.
  - **3-months out:** BPA would provide a monthly 3-month look ahead at expected surplus inventory. This would need to be a new calculation as Slice/Block inventory includes both firm and surplus power.
  - **10-days out:** BPA would have a tool to share expected shape and MWs of surplus that will be made available to customers ahead of the day-ahead market run. This could be a modified SCA or a new tool.
  - **DA Market:** Customers would point to the surplus MWs in their day-ahead run as a contract resource.
- Customers would still have the option to sell ahead of time based on expectations but would be responsible for figuring out how to meet day-ahead and real-time obligations based on what is provided by BPA.

Why this works?

- A key piece in making this work is that the Load Following and Block customers share the same costs and risks.
- For example, if BPA needed to buy power or buy back forward sales in order to meet loads due to unexpected outages or lower than expected surplus, then all customers would share in those costs. It becomes a question of what is incorporated into rates ($), what value is delivered through the year (as $ or MWh), and would be captured through reserves ($).
- The entire system would still be optimized to provide best value to all customers; however, Block customers would be able to use the MWhs to meet load at no additional cost or offer to the market or another buyer.
- Cross-product equity is preserved and customers would be no worse off than if BPA had just offered the NSR credit as it looks today. Cash flow and timing would be impacted, however.
- A key benefit of this proposal is the simplicity of having all products built on the same platform – this avoids significant complexity and makes equity easy to demonstrate.

Example



Customers who elected surplus as MW would be expected to get **their share of 100 aMW** as those MWhs are realized throughout the year.

BPA would manage 900 aMW of surplus and optimize that surplus value throughout the year as it becomes available.

- **89%** of that actual value derived would have been assumed to cover the NSR credit. If BPA generated more or less revenue, it would be captured through reserves.
- **11%** of that value would be credited on a quarterly or annual basis to those customers that elected to take surplus dollars over MWs.

Additional Details To Be Determined

- BPA has not addressed whether a customer would be required to take their surplus or if they could forfeit that surplus. For example, during spring runoff both BPA and customers may have must-run based on streamflows that may well exceed loads. Staff have not discussed what should occur in these extreme events.
- BPA's initial thinking is the MWs provided as surplus would not have a forward showing QCC value for WRAP as surplus is not guaranteed seven months in advance. However, the amounts provided in the day-ahead could help meet WRAP operating day needs.
- How surplus would be calculated. The Slice/Block product provides customers with a percentage that does not separate P10 and surplus values so would need to determine a calculation and how shaping would be communicated.

DISCUSSION

- Are customers interested in the concept? Or would including a Slice/Block product be the preferred approach?

Slice/Block:
Bond Issue Overview

What is the issue?

- Bonneville meets the debt service costs of about $4.5 billion in tax-exempt bonds for Energy Northwest's Project 1, Project 3, and Columbia Generating Station (CGS).
- If a non-governmental entity, such as an electric cooperative, is considered to have direct use of CGS, BPA would not be able to preserve the tax-exempt status of the bonds.
- The Slice/Block product is considered to be a direct use of CGS as the slice portion of the product assumes a percentage of CGS is being used to serve load directly to customer.
- Under Regional Dialogue, any non-governmental entity was limited to 2.8% CHWM otherwise BPA would need to remediate a percentage of bonds to no longer be tax exempt.

What was the RD approach?

24.8 Bond Assurances

- BPA has advised «Customer Name» that: (1) the Columbia Generating Station has been financed and refinanced in large part by bonds that are intended to bear interest that is exempt from federal income tax under section 103 of the Internal Revenue Code of 1954, as amended, and Title XIII of the Tax Reform Act of 1986, and **(2) the tax-exempt status of those bonds and other bonds issued together with those bonds might be jeopardized if «Customer Name» or any other nongovernmental person has a contract to purchase additional amounts of the output of the Columbia Generating Station.**
- Consequently, «Customer Name» shall notify BPA at least 90 days before «Customer Name» acquires an Annexed Load, or «Customer Name» is acquired, in whole or in part, as an Annexed Load. «Customer Name» hereby acknowledges and agrees that **BPA shall have the right to reduce «Customer Name»'s CHWM in connection with any such Annexed Load to the extent the aggregate CHWM, including the Annexed Load, (or the aggregate CHWM, including the Annexed Load, of related entities) otherwise would result in a nongovernmental customer with a CHWM share of the Tier 1 System Resources that exceeds 2.8 percent.**

Provider of Choice Policy and ROD

Section 11.6 of the Policy states:

> "Bonneville meets the debt service costs of about $4.5 billion in tax-exempt bonds for Energy Northwest's Project 1, Project 3, and CGS. The tax exemption is predicated on a tax law analysis that is in part based on existing agreements and arrangements with customers relating to the use of the output of CGS and the payment of the costs of CGS. Notwithstanding anything else in this Policy, Bonneville will structure Provider of Choice contracts so that the tax-exempt status of these bonds is preserved."

The issue was addressed in Issue 66 of the ROD: Should the Policy include a subsequent CHWM adjustment category to provide additional CHWM for mutually agreed upon annexations of non-Bonneville loads?

What has changed since 2008?

- Approximately $1.5 billion worth of bonds are subject to a 1% (0.5%) de minimis threshold based on changes to IRS rules.
  - This would translate to a non-governmental entity being limited to 0.5% Slice to avoid remediation.
- The remaining bonds are still subject to 3%.
- If the bonds lose their tax-exempt status, they would need to be remediated immediately. The remediation would need to start at contract signing (FY 2026).

Next Steps

- BPA will likely need to put constraints on the product in order to avoid losing the tax-exempt status of bonds. For example, BPA could retain its Regional Dialogue approach in limiting a non-governmental entity's CHWM.
- The options are influenced by the product design so therefore will not share preferred alternative until the key product features are determined.
- This topic would be addressed in a workshop no later than fall 2024.