Resource Adequacy Engagement Workshop

April 13, 2022

9 a.m. to 12 p.m.

Agenda

Time	Topic	Presenter
9:00 – 9:15 a.m.	Safety Moment and Introduction	Russ Mantifel
9:15 – 9:25 a.m.	WRAP Updates	Russ Mantifel
9:25 – 10:15 a.m.	BPA Planning with WRAP	Steve Bellcoff, Ryan Egerdahl
10:15 – 10:30 a.m.	BREAK	
10:30 – 11:15 a.m.	Planning Scenarios and Preference Rights	Steve Bellcoff, Ryan Egerdahl
11:15 – 11:45 a.m.	Consideration of Customer Feedback	Mai Truong, Ryan Egerdahl, Steve Bellcoff, Tim Johnson
11:45 – 12:00 p.m.	Questions and Next Steps	Russ Mantifel

Safety Moment and Introduction

Russ Mantifel

Bike Safety

- Always inspect your bike prior to riding
- Plan to be seen
  - Wear neon, fluorescent or other bright clothing
  - Whenever possible, ride during the day
  - If you must ride at night, wear reflective clothing and use flashing lights
- Follow the rules of the road

From National Safety Council website: https://www.nsc.org

Bike Safety

- Wear a helmet - guidelines from NHTSA to properly fit the helmet:
  - Adjust sizing pads or fit ring until the helmet is snug
  - Position the helmet level on your head, covering the forehead and not tipped backward or forward; this will be about one to two finger widths above the eyebrow
  - Adjust the side straps so they form a “V” shape under and slightly in front of your ears
  - Center the buckle on the chin strap under your chin
  - Buckle and tighten the chin strap until it is snug; no more than one to two fingers should be able to fit between the chin and strap
  - When fitted, the helmet should not rock more than 1 inch side to side or front to back on your head

From National Safety Council website: https://www.nsc.org

BPA Milestones – 3A Engagement

Close Out Phase 2B/ Phase 3A Implementation Planning (2020/2021)

- BPA staff/executive resources participate in WRAP workgroups
- Finalize Phase 2B deliverables
- Develop implementation plan for Phase 3A
- WPP hires Program Operator

BPA Customer Engagement

- July 29, 2021 – Share BPA perspective on program details and implementation issues
- Aug 20, 2021 – Publish draft letter to the region (Aug 20-Sep 3)
- Aug 25, 2021 – Public meeting to provide clarification on issues in draft letter

Decision on Non-Binding Forward Showing

- Sept 29, 2021 - Final letter to the region with decision on participation in NBFS phase of WRAP program

Non-Binding Forward Showing Winter (2022/23) and Summer (2023)

- Complete program and governance design
- Submit data for detailed modeling to establish Resource Adequacy value and PRM
- FS submittal to Program Operator
  - Mid-June for Winter 2022/23
  - Mid-Oct for Summer 2023
- Refine design/modeling requirements based on continued learnings
- ***Continue engagement with BPA customers/ stakeholders***

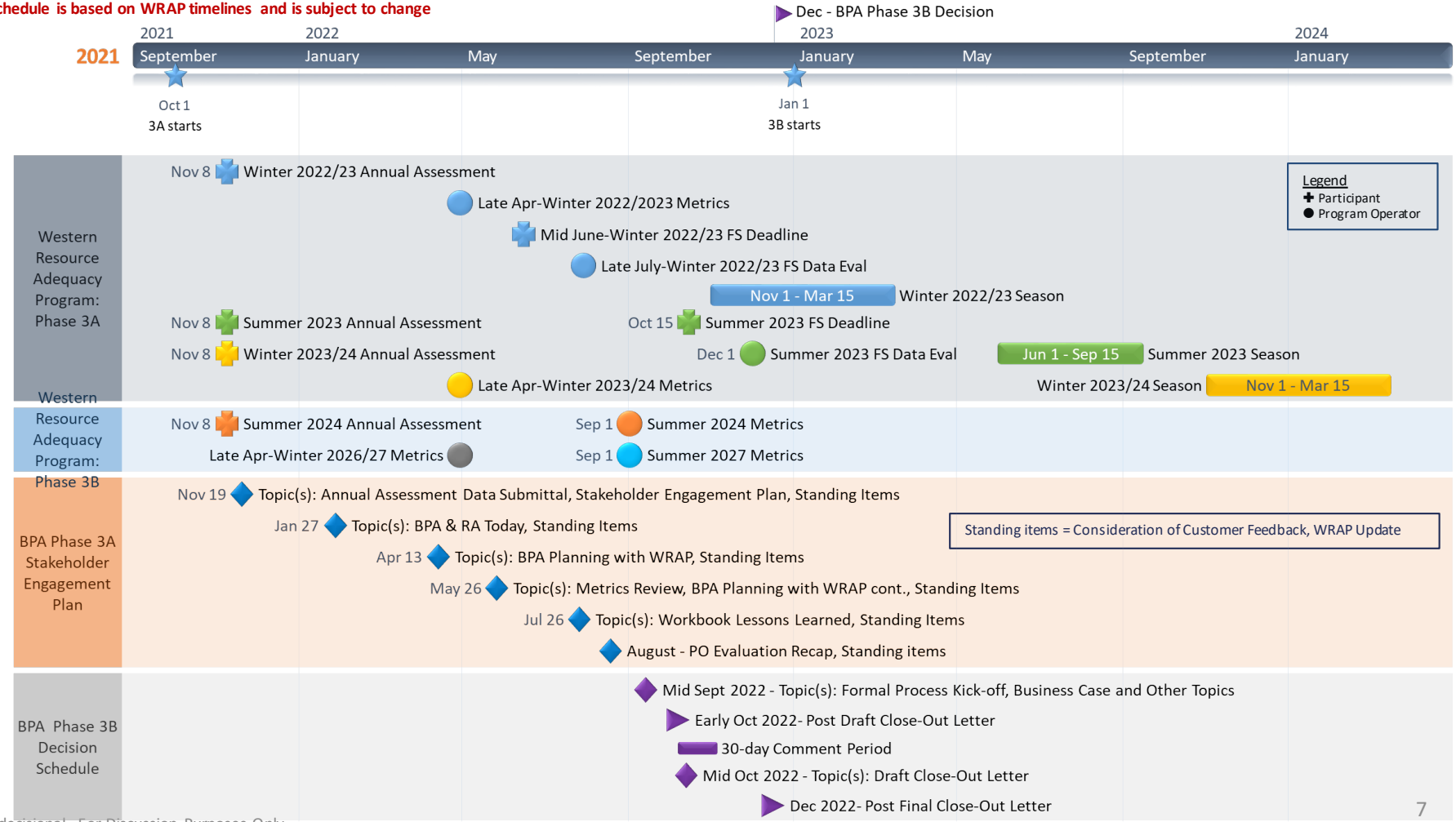
Decision on Binding Phase (Fall/Winter 2022) and BPA Customer Engagement

- Public Process - BPA customer review and input prior to decision
- Consider lessons from NBFS and program/ governance design
- Evaluate ability to meet BPA's WRAP Participation Principles

NBFS = Non-Binding Forward Showing

Tentative BPA Phase 3A Stakeholder Engagement Schedule – as of 04/08/2022

Schedule is based on WRAP timelines and is subject to change



Western Resource Adequacy Program Participation Principles for Binding Program

1. BPA's participation is consistent with its statutory, regulatory and contractual obligations.
2. BPA will maintain reliable delivery of power and transmission to its customers.
3. BPA's participation is consistent with a sound business rationale.
4. BPA's participation is consistent with the objectives of Bonneville's Strategic Plan.
5. BPA's evaluation of WRAP participation includes transparent consideration of the commercial and operational impacts on its products and services.

WRAP Update

Russ Mantifel

Western RA Program Updates

- Program
  - NWPP doing business as Western Power Pool (WPP)
- Technical Design
  - Design task forces working through outstanding design elements from Phase 2B. Approved task force proposals can be found on the WPP website.
  - Forward showing deadline for winter 2022/23 is mid-June 2022
- Governance
  - Filing with FERC is expected in spring 2022
  - Standing up Phase 3A Nominating Committee (NC) – sector-representative group which will nominate the WPP's future independent board of directors
  - Standing up Phase 3A Program Review Committee (PRC) – sector-representative group charged with receiving, considering, and proposing design changes to the WRAP
- WRAP Engagement Opportunities & More Information
  - WPP hosts on-going public webinars (March 3, 2022 webinar on CONE Penalty, Settlements and Pricing, and Load Forecasting)
  - See WPP website for information on the public webinars, approved task force proposals, video overviews and the latest WRAP updates @ https://www.westernpowerpool.org/wrap

BPA Planning with WRAP

Steve Bellcoff

Ryan Egerdahl

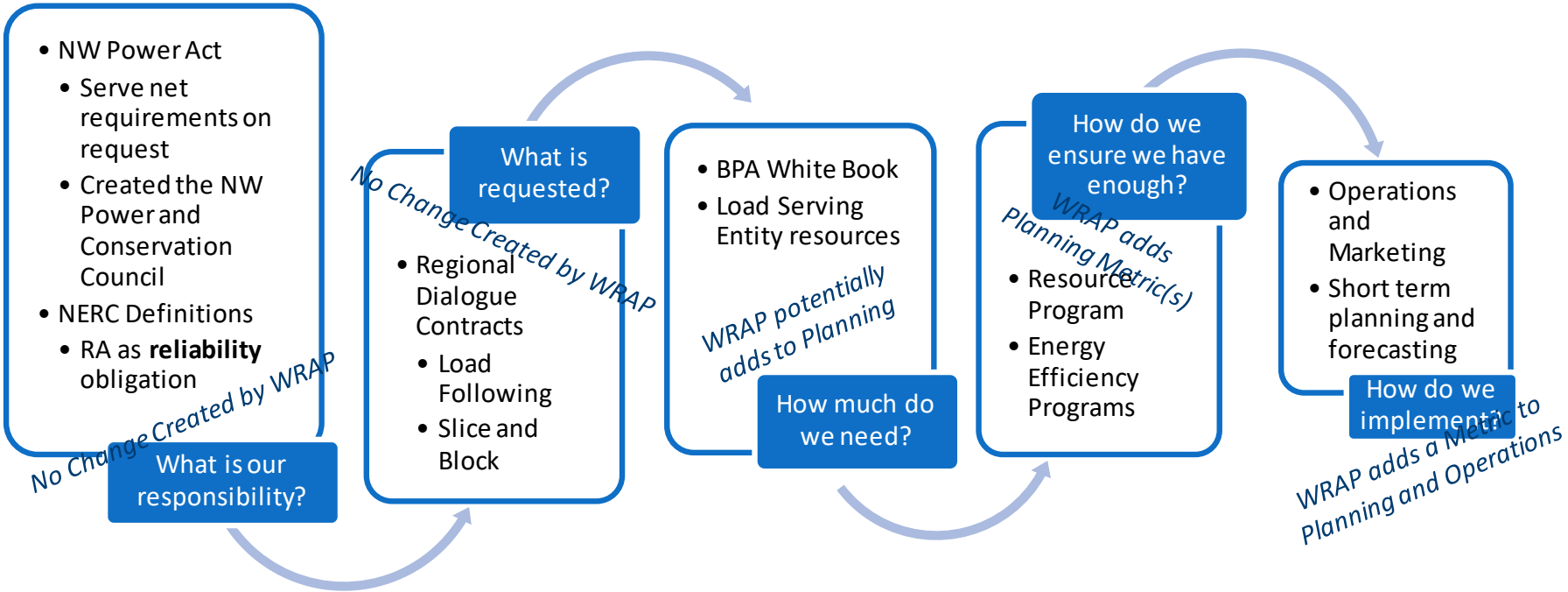
BPA & Resource Adequacy Today – With the addition of the WRAP

Legend
Gray = Today's planning
Blue = Addition of WRAP

- January 27, 2022 presentation provided an overview on BPA's current power planning activities performed today
- BPA's participation in WRAP is additive to the power planning activities BPA performs today
  - Does not replace any current power planning activities

- *Today's presentation overlays what and how the WRAP would change (or not change) the aspects of today's integrated planning on generation resources. A future presentation will address the transmission planning aspect with the addition of WRAP.*

BPA Power Planning – with WRAP



What is Our Responsibility / What is Requested? - With WRAP

- Supply firm power net of customer's non-federal resource(s)
  - Whenever requested by a regional public body, electric cooperative, investor owned utility
  - Authority to acquire resources on a long-term basis to assure adequate supply of power to meet contract obligation
  - Meet future load growth if contractually obligated
- The Regional Dialogue Contracts established the current product set, which customers elected
  - Load Following
  - Block
  - Slice

No Change Created by WRAP

How Much Do We Need? – With WRAP

- Annual load forecasting of elected Regional Dialogue products establish BPA's loads
  - Load Following
  - Block
  - Slice
- Additional Loads from
  - Treaty/Settlement Agreements
  - Surplus Sales (long-term and short term)
- Forecast of Loads published annually in White Book
- *WRAP potentially adds a planning metric - Planning Reserve Margin (PRM) for Generation Capacity Requirement –*
  - *No change to energy forecast created by WRAP*
  - *PRM is a planning requirement and not a Load Obligation. Planning requirement disappears in real time, but assure that Planning for uncertainty in load is being done in the Long-Term.*

How Much Do We Need / How Do We Ensure We Have Enough? – With WRAP

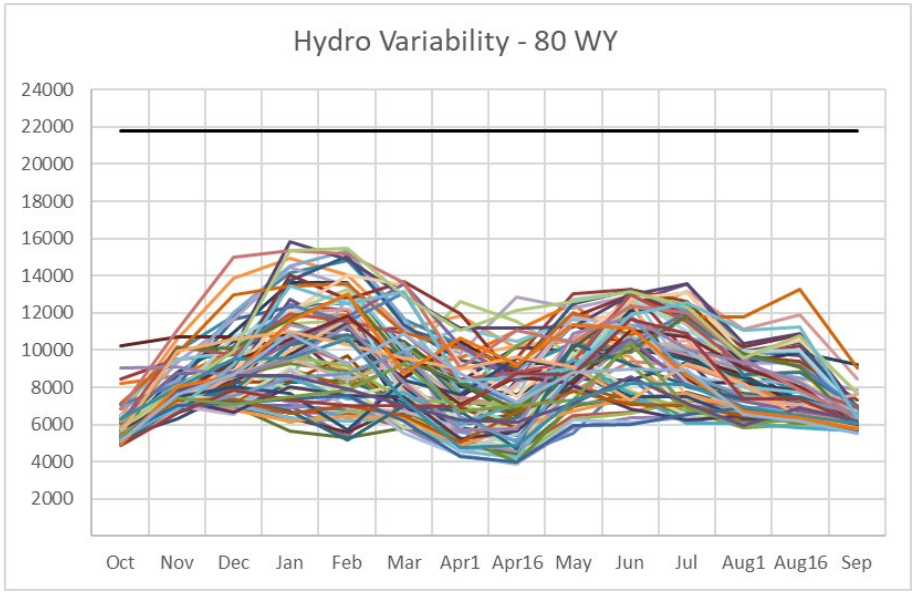
- Resources - Annual Studies forecast fleet capabilities
  - Hydro
  - Thermal
  - Renewable
  - Contract purchases
- *Energy – No change to forecast created by WRAP*
- *Generation Capacity – WRAP Qualified Capacity Contribution (QCC) will add additional data to how the capacity of resources are evaluated. The inclusion of capacity will become a normal part of Trading Floor contracts and will be identified specifically rather than being assumed.*

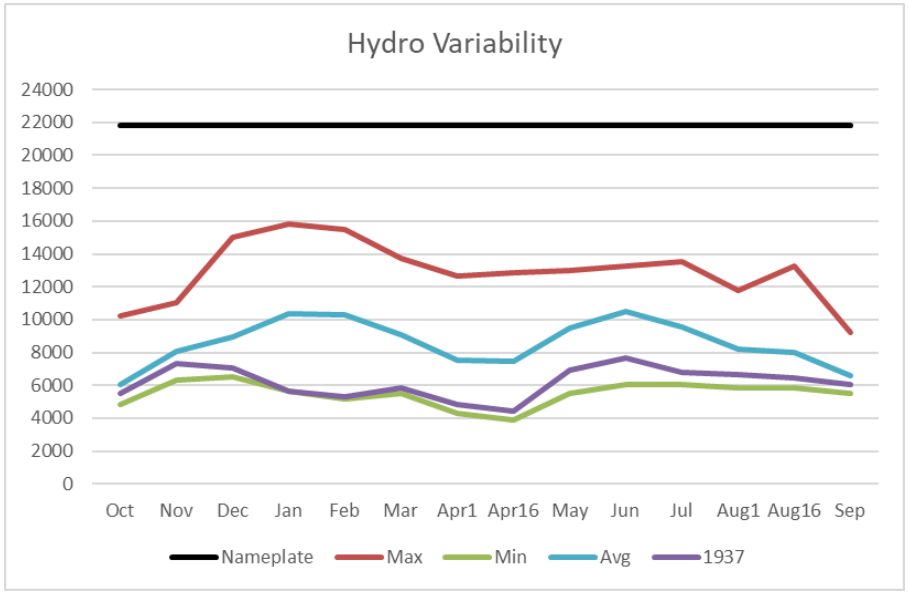
How Much Do We Need / How Do We Ensure We Have Enough? – With WRAP

- Regulated hydro is modeled every year
  - Historical water year record
  - Current constraints
  - Current operational expectations
- *Energy – No change to hydro modeling created by WRAP*
- *Capacity – is a result of modeling the hydro system for energy*
  - *WRAP QCC is not water year dependent, therefore it is too early to say specifically that we understand how WRAP QCC would change the way we look at historical water year capability for the hydro fleet.*
  - *Utilizing historical water years provide a full range of possibility, where WRAP QCC sets a single expected value.*

How Much Do We Need / How Do We Ensure We Have Enough? – With WRAP

- Modeled Variability of Hydro Fleet (aMW)





How Much Do We Need / How Do We Ensure We Have Enough? – With WRAP

- *BPA Hydro Modeling looks at historical stream flows, applies today's constraints and operations, and models the energy available from the resources, to serve load based on that fuel supply and limitations.*

- *WRAP Forward Showing Capacity Requirement starts with a P50 load forecast, then adds a PRM (which included contingency reserves) to the load forecast.*
  - *PRM is established for each season individually.*
  - *Indicative PRMs from WRAP Phase 2B are 16% in the winter, 12% in the summer. For BPA that results in 1,102 MW in Winter, and 768 MW in the Summer.*
  - *PRM on the load, is within today's range of energy uncertainty that BPA plans for in both hydro and loads.*

How Do We Ensure We Have Enough? – With WRAP

- BPA Plans for how to meet Deficits in Long-Term
- Needs Assessment
  - The Needs Assessment measures the Federal Columbia River Power System, in relative isolation, against Bonneville's obligations to supply power to show whether any long-term energy and/or capacity shortfalls exist over a 10-year study horizon.
  - Analysis informs the Resource Program, where resource optimization techniques are used to evaluate and select potential solutions for meeting Bonneville's long-term needs based on cost and risk trade-offs.
- *WRAP potentially creates an additional capacity planning metric to be evaluated in the Needs Assessment*

How Do We Ensure We Have Enough? – With WRAP

No Change Created by WRAP

Does not match CCHs used in WRAP

- **Needs Assessment Metrics –**
  - **Annual Energy**: Evaluates the annual energy surplus/deficit under 1937 critical water conditions, using forecasted load obligations and expected Columbia Generating Station (CGS) output
  - **P10 Heavy Load Hour**: Evaluates the 10th percentile (P10) surplus/deficit over heavy load hours, by month, given variability in hydropower generation, load obligations, and CGS output
  - **P10 Superpeak**: Evaluates the P10 surplus/deficit over the six peak load hours per weekday by month, given variability in hydropower generation, load obligations, and CGS output
  - **18-Hour Capacity**: Evaluates the surplus/deficit over the six peak load hours per day during three-day extreme weather events and assuming median water conditions and variability in CGS output. Winter and summer extreme weather events, such as cold snaps or heat waves, are analyzed for February and August

How Do We Ensure We Have Enough? – With WRAP

- Needs Assessment Metrics have been defined in order to evaluate BPA's potential areas of risk/deficit.
  - Having an energy-constrained hydro system, BPA has historically seen the P10 Heavy Load Hour metric as our constraining metric. Solutions that have solved Heavy Load Hour deficits have also solved any other identified issues.
  - *Potential metric(s) could be added to the existing set of metrics to specifically evaluate WRAP requirements.*

- *A potential WRAP metric to assure capacity availability could be added to the Needs Assessment that would follow Forward Showing requirements.*
  - ***WRAP Capacity:*** *Evaluates the capacity available to serve the peak P50 load forecast (as defined by WRAP) + Seasonal Planning Reserve Margin assuming WRAP Qualifying Capacity of all resource available to serve that load. Evaluated on a monthly basis for summer and winter seasons as defined by WRAP*

How Do We Ensure We Have Enough?

Resource Program

Resource Program – With WRAP

The Resource Program is:

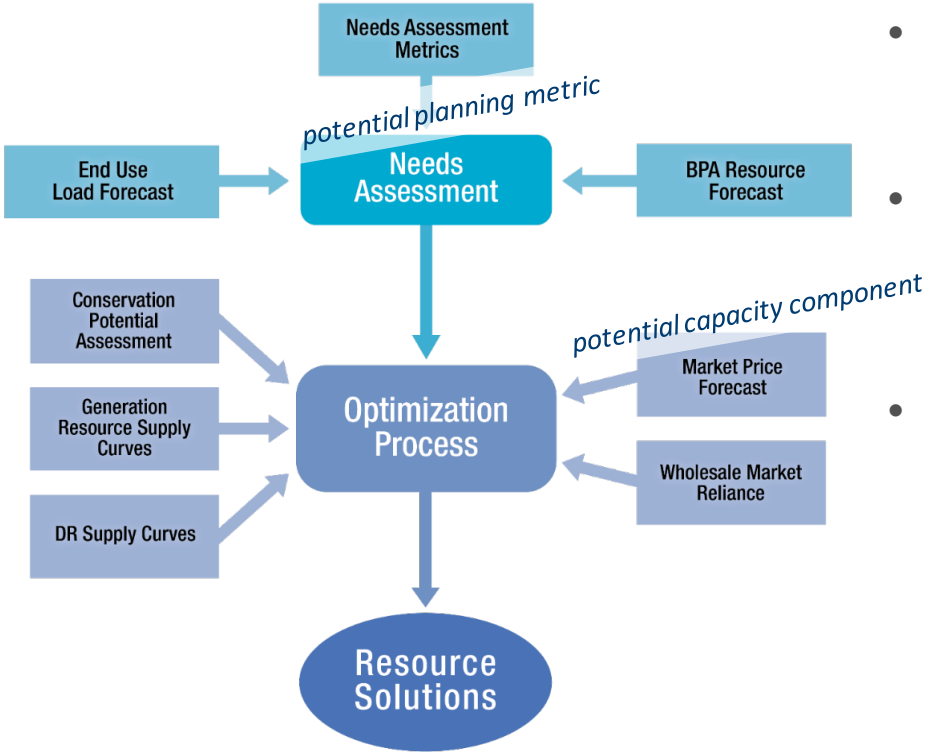
- A forecast/planning tool
- Begins with the Needs Assessment
- Identifies and evaluates potential solutions to meeting those needs
  - Examples: energy efficiency, demand response, market purchases, wind, solar, capacity resources, etc.
- Identifies an optimal cost/risk method of meeting future needs

The Resource Program is not:

- A decision to acquire a resource or finalize agency's action
- A requirement of law or overseen by a regulating body such as FERC or NERC

- *WRAP potentially creates an additional integrated planning metric evaluated in the Needs Assessment provided to the Resource Program*

Resource Program – With WRAP



- Bonneville's Resource Program involves coordinating many individual planning processes
- Different work groups produce necessary components, either as part of their normal routine, or by special request
- From start to finish, the process takes around 18 months

Resource Program – With WRAP

Historically, planned actions to address adequacy at BPA include:

- Acquiring a steady amount of energy efficiency
- Planning for market purchases to balance out hydro variability

- *Planned actions would continue to be modeled through the optimization process with additional potential inputs:*
  - *Additional WRAP Planning Metric(s) would be tested against other Needs Assessment metrics to determine the constraining metric*
  - *Resource solutions may be influenced in optimization by a capacity component*

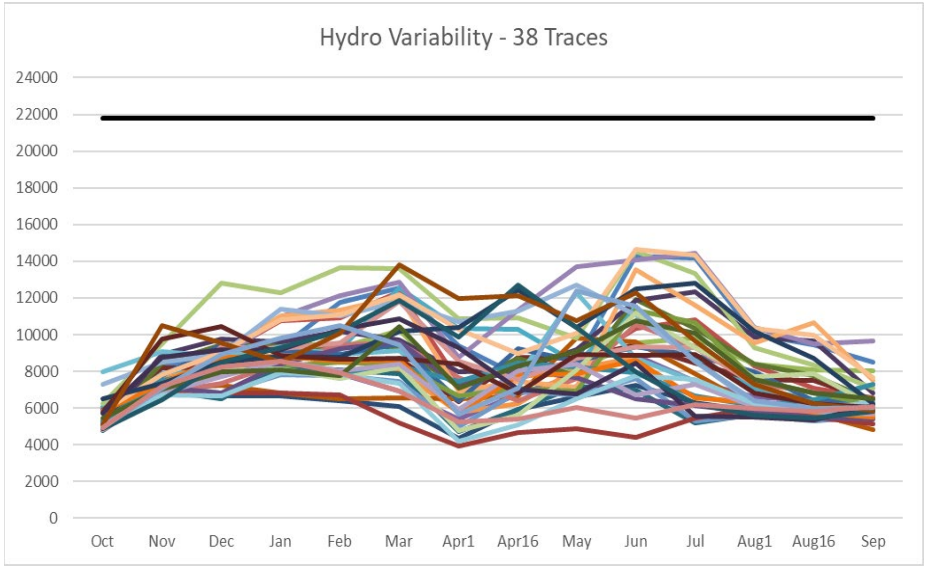
How Do We Implement?

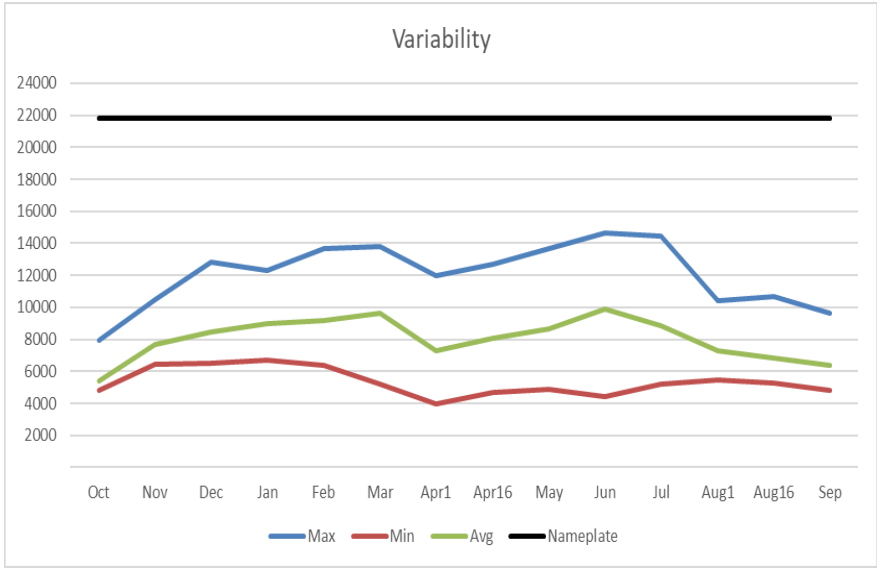
Transition From Long-Term To Mid-Term

Aka – “Out Year” to “Within Year”

How Do We Implement? Mid-Term – With WRAP

- Modeled Variability of Hydro Fleet (aMW)





- Mid-term planning look at Hydro Variability as the constraint
  - Energy-limited system (fuel supply) – not a capacity-limited system (machines)

How Do We Implement? Mid-Term – With WRAP

- *Mid-Term hydro modeling looks at 38 synthetic future streamflow forecasts (based on hydrology from 1982-2018), then applies todays constraints and operations, models the energy available from the resources to serve load.*

- *WRAP Forward Showing Capacity Requirement, starts with a P50 load forecast, then adds a PRM (which included contingency reserves) to the load forecast.*

- *PRM is established for each season individually. Indicative PRMs from WRAP Phase 2B are 16% in the winter, 12% in the summer. PRM results in 1,102 MW in Winter, and 768 MW in the Summer for BPA.*
  - *PRM is within today's range of modeled Energy uncertainty that is planned for in both hydro resources and loads.*

How Do We Implement? – with WRAP

- BPA Power Operations and Trading Floor staff work together to identify and implement marketing strategies to address Surplus and Deficit energy and capacity positions
- Trading Floor participates in the monthly, daily, hourly and intra-hour energy markets across WECC and CAISO
- Energy products include unspecified and specified power
- Transactions are scheduled on Firm and Non-Firm Transmission

How Do We Implement? – with WRAP

- *WRAP would not change how Operations and Trading Floor staff work together.*
- *WRAP does not create MW's – program does not create additional energy or capacity, it identifies it at different times compared to what todays planning/marketing does – for both Surplus and Deficit positions*
- *BPA does not expect the Forward Showing Capacity Requirement assessment of BPA's resource portfolio will produce a RA deficit result. We also expect the program will not affect BPA's marketing practices of surplus power (capacity and energy) or BPA's offering such surplus (as a product) to assist BPA's Firm Requirements Power (e.g., Slice/Block) customers. The capacity obligation associated with PRM is within today's range of resource and load variability, in advance of any specific condition it is not known when, or if, the Forward Showing Capacity Requirement would become additive to BPA's Trading Floor's existing risk tolerance.*

WRAP Forward Showing Timing

- *Winter Forward Showing Submittal – March 31 for following Winter*
  - *Timing matters, March FS places expectation in Long-Term planning timeframe.*
  - *Within year modeling begins in June for the following year*
  - *Trading Floor activity follows within year modeling practices*
  - *Long-Term marketing follows larger assumptions on surplus/deficits*

- *Summer Forward Showing Submittal – October 31 for following Summer*
  - *Timing matters, October FS is early in the water year before much has developed*
  - *Early water year planning is very conservative, until water year estimates start to firm up through the year*

How Do We Implement?

Transition to Real Time

Within Day/Within Week

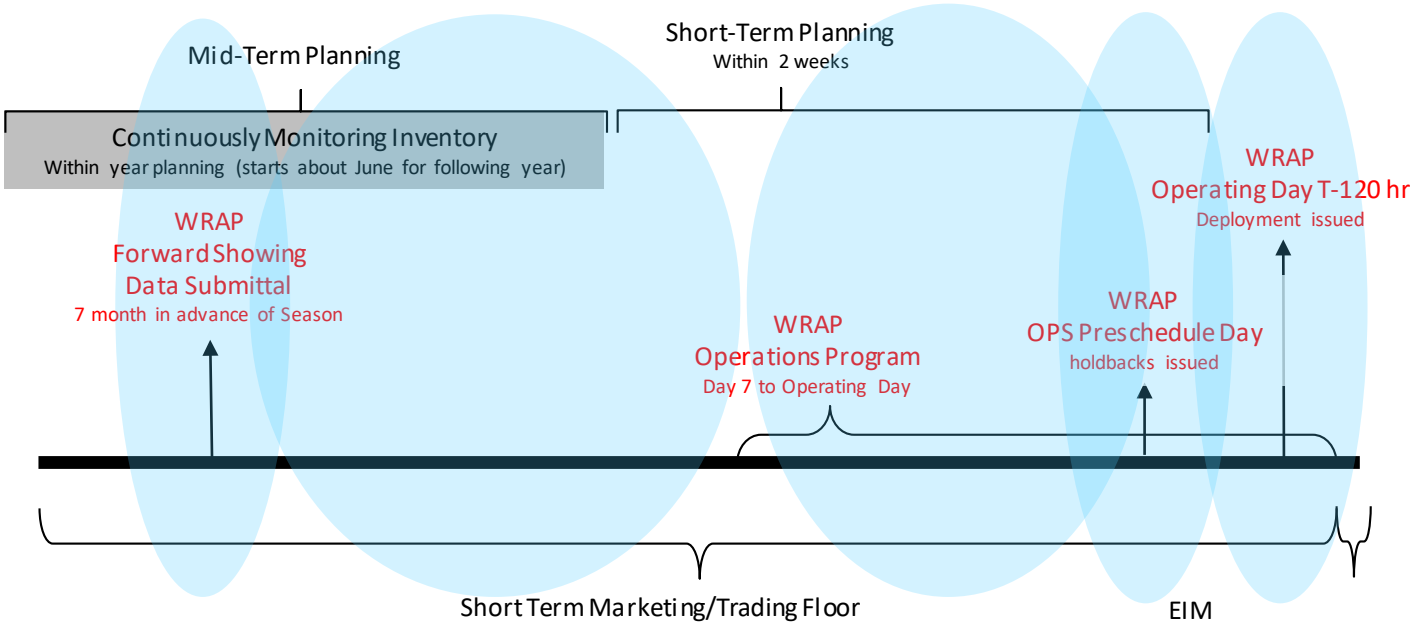
How Do We Implement?

- Near Perfect Hydro Knowledge
  - Hydro within Operational Control
  - Hydro Energy and Capacity modeled
- Loads forecasted
  - Daily forecasts based on pre-schedule
  - Load forecast updated hourly
- Trading Floor and Operations work together to balance system

How Do We Implement?

- *WRAP would not change how Operations and Trading Floor staff work together*
- *WRAP would add:*
  - *Forward Showing Capacity Requirement that may need to be met*
  - *Preschedule Holdback notice/release of FS Capacity Requirement*
  - *At T-90 of Operational Hour, Energy Deployment/Holdback release*
- *WRAP activities are known prior to EIM submittal timeframes*
- *It is premature to assume changes in Trading Floor or marketing activities*
- *Current WRAP estimates put Holdbacks and Energy Deployments in range of uncertainty BPA plans for today*

WRAP FS Requirement, Holdback, Deployment



WRAP FS Requirement, Holdback, Deployment

- *Forward Showing: Data Submittal - 7 months in Advance of Season*
  - *BPA's planning is conservative and FS Capacity Requirement falls within range of Load and Resource Variability planned for*
  - *With WRAP implemented, a Capacity market may develop in this timeframe. If Capacity market develops a market premium may develop for purchases in timeframe, BPA may be a buyer if deficit or a seller if surplus based on planning processes.*
  - *WRAP does not create additional power to sell, any sales in this timeframe would be offsetting sales that historically would have been made in another timeframe.*

- *Forward Showing to Operations: 7 months to 7 days*
  - *BPA Trading Floor takes a conservative forward marketing approach to address gen/load uncertainty. As we approach Preschedule and uncertainty dissipates we increase our marketing participation.*
  - *As water conditions become known, inventory position becomes known. Market participation is based on expectation of fuel supply and load.*
  - *FS Capacity Requirement must be available to the WRAP; for serving BPA's WRAP load, offsetting Variable Energy Resource deltas, covering outages in our resource portfolio, and providing support in Sharing Events, if LRE has a positive Sharing Calculation and others are negative.*

- *Operations: 7 days ahead to preschedule*
  - *As we approach Preschedule and uncertainty dissipates we increase our marketing participation.*
  - *Advisory timeframe where FS Capacity Requirement can be released if Sharing Event is not forecasted, or provides expectation of expected Sharing Event coming*
  - *The potential holdback will be part of the inventory evaluation for marketing activities, as inventory for WRAP requirements will be preserved with market activities.*

WRAP FS Requirement, Holdback, Deployment

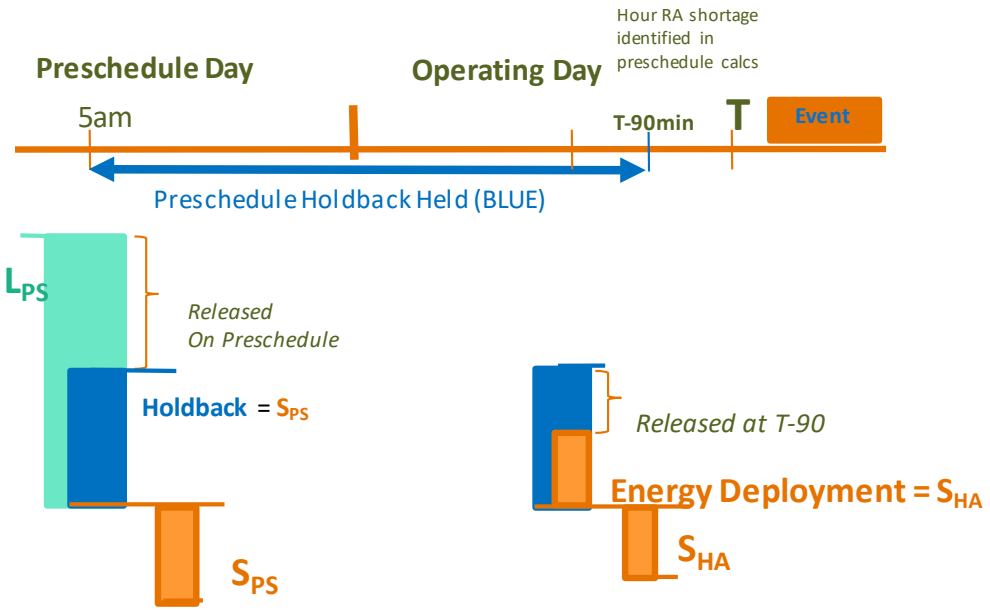
- *Operations: Preschedule day*
  - *As uncertainty dissipates we increase our marketing participation.*
  - *The potential holdback will be part of the inventory evaluation for marketing activities, as needed inventory for covering WRAP requirements will be preserved with market activities.*
  - *Based on Sharing Calculation and Sharing Event; 1) All LRE experience Positive Sharing Calculations resulting in NO Sharing Event and all FS Capacity Requirement is Released, 2) LRE is issued Holdback based on Positive sharing Calculation and a Sharing Event being triggered, 3) LRE causes a Sharing Event due to having a Negative Sharing Calculation and requesting Holdback from others.*
  - *Holdbacks issued on behalf of a Negative Sharing Calculation and request for holdback, will receive Settlement from the requesting LRE*
- *Operations: Operating Day*
  - *BPA balances load and inventory*
  - *Operating Day Sharing Calculation completed at T-120 before hour, Energy Deployments issued at T-90 based on acceptance by Negative LRE*
  - *Energy Deployment activates settlement calculation for energy delivery, denial of Energy Deployment which had Holdback accepted by LRE activates Settlement for Holdback and Make-Whole calculation in order to preserve the opportunity cost associated with the Holdback*
  - *Settlements have been design to incentivize a LRE to solve any deficiencies outside of the program, as well as between Holdback and Deployment*

WRAP Holdback, Deployment – Preschedule-Operating Day

S_{PS}: Sum of all *negative* preschedule sharing requirements (i.e. total amount entities are short on preschedule)

L_{PS}: Sum of all *positive* preschedule sharing requirements

S_{HA}: Calculations are rerun throughout the operating day at T-90 ("hour ahead"); as above, these are the sums of those results



WRAP Settlement Pricing

- *BPA will be made whole if suppling Holdback (at Preschedule) or Deploying Energy (during Operating Day)*
- *The **Settlement Price** is based on a regional index price (ICE DA Mid- C), shaped hourly, plus a 10% adder*

Definition: Total Settlement Price

Total Settlement Price
= MAX(MIN($2000, Hourly Shaping Factor
× Applicable Index Price × 110%), 0)

- ***Holdback Settlement (non-dispatched)**: Ensures seller receives minimum of **Settlement Price x 20%** for total MW holdback*
- ***Make Whole Payment**: Ensures seller is no worse off than had they sold the energy as a block in day-ahead*

Make Whole Payment (when applicable)
= Possible Block Sale Revenue
− Final Settlement Revenue
− Realtime value of declined energy
− Realtime value of unheld energy

BREAK

Planning Scenarios and Preference Rights

Steve Bellcoff

Ryan Egerdahl

Objectives

Through Scenarios provide a sense of how the WRAP might change BPA's current process of marketing surplus power, but continue to preserve Preference Rights for public customers

Assumptions

- Participation in WRAP does not replace any of BPA's current power planning activities
- Surplus power (energy, capacity, or both) marketing remains the same

Initial Scenarios proposed by PPC

- Scenario 1: BPA identifies that it is surplus based on its resource plan study (which includes consideration of WRAP accounting).
- Scenario 2: BPA is holding out capacity for the program 7 months out that it would not otherwise hold.
- Scenario 3: BPA is ordered to “hold out” for the program in the short term (less than 7 month). This is capacity that BPA could otherwise make available but for the program.
- Scenario 4: BPA goes into the operational time period holding out capacity for the program.

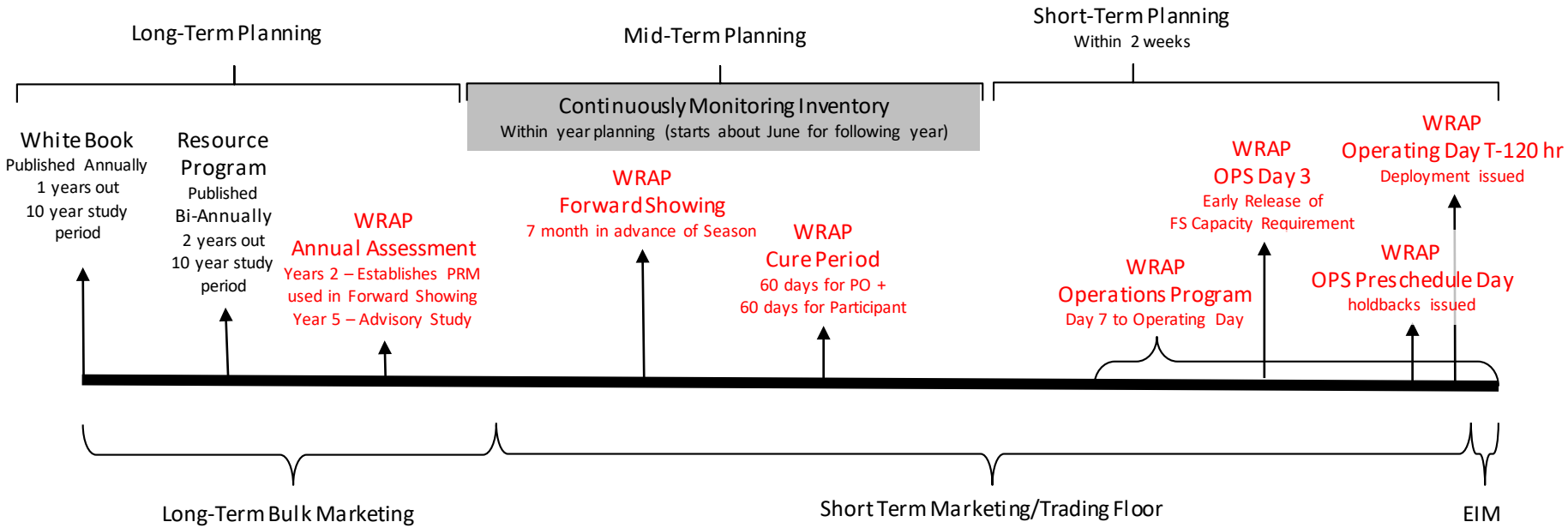
Initial Scenarios proposed by PPC

- Scenario 5: BPA is in the program, its capacity has been called upon in the program and there is a preference customer who needs capacity and a non-preference customer who needs capacity – both participate in the program.

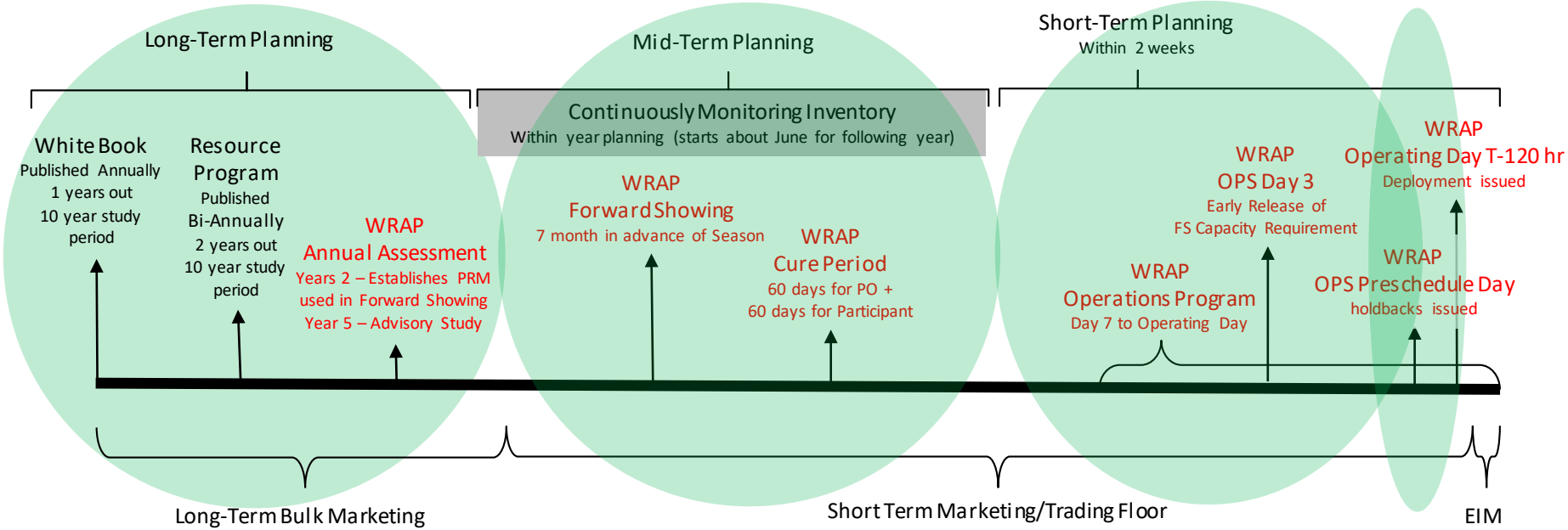
- Scenario 6: BPA is in the program, its capacity has been called upon in the program and there is a preference customer in the program who needs capacity and a preference customer not in the program who also needs capacity.

- Scenario 7: BPA is in the program, its capacity has been called upon in the program and there is a preference customer not in the program who needs capacity and an IOU in the program who also needs capacity.

Timeline



Timeline


Long-Term Planning
Mid-Term Planning
Short-Term Planning
Within 2 weeks
Continuously Monitoring Inventory
Within year planning (starts about June for following year)
White Book
Published Annually
1 years out
10 year study period
Resource Program
Published Bi-Annually
2 years out
10 year study period
WRAP
Annual Assessment
Years 2 – Establishes PRM used in Forward Showing
Year 5 – Advisory Study
WRAP
Forward Showing
7 month in advance of Season
WRAP
Cure Period
60 days for PO +
60 days for Participant
WRAP
Operations Program
Day 7 to Operating Day
WRAP
OPS Day 3
Early Release of FS Capacity Requirement
WRAP
OPS Preschedule Day
holdbacks issued
WRAP
Operating Day T-120 hr
Deployment issued
Long-Term Bulk Marketing
Short Term Marketing/Trading Floor
EIM

Scenario A

PPC Proposed Scenario 1

BPA identifies that it is surplus based on its resource plan study (which includes consideration of WRAP accounting).

BPA's interpretation of Scenario

BPA identifies Surplus in the Long-Term Planning Horizon

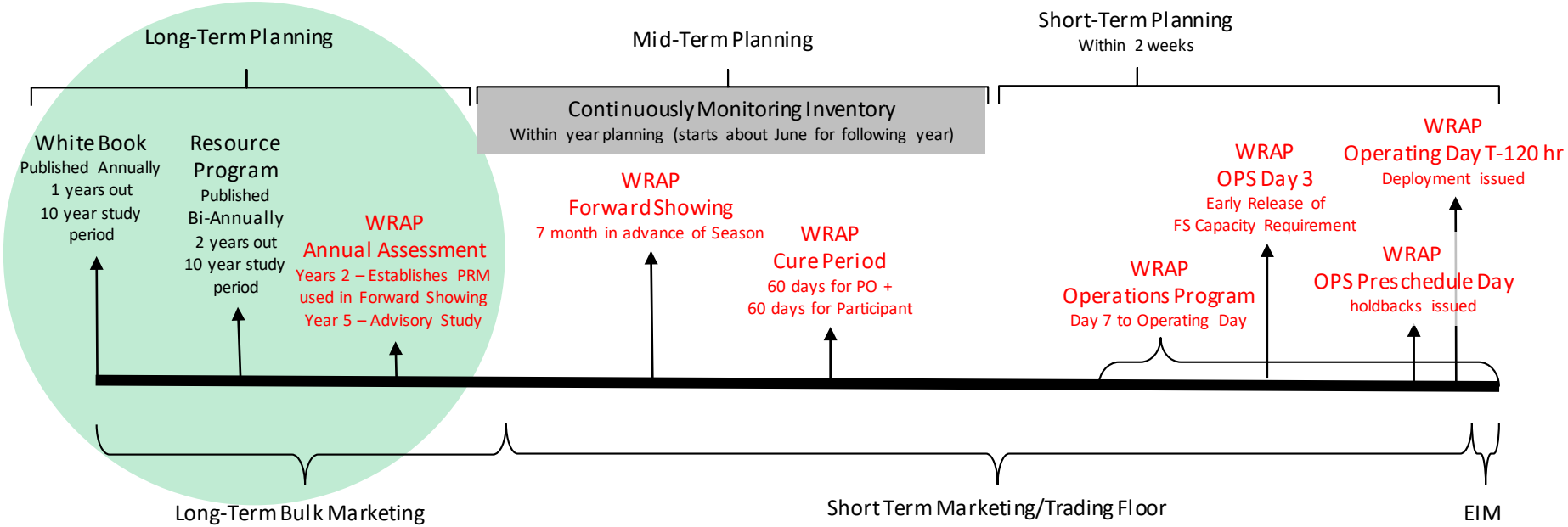
- *Resource Program (constraining metric)*
- *White Book*
- *WRAP Annual Assessment*

Counter Scenario

BPA identifies Deficit in the Long-Term Planning Horizon

- *Resource Program (constraining metric)*
- *White Book*
- *WRAP Annual Assessment*

Timeline - Scenario A

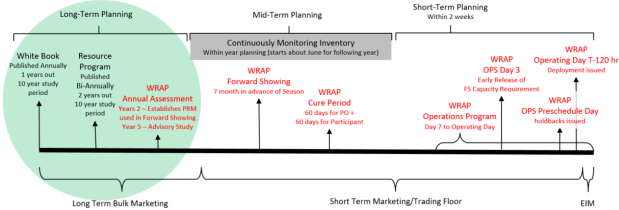


Scenario A – LT Planning (inventory position)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Resource Program & White Book (inventory position)

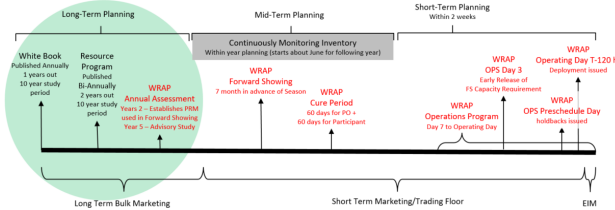
- Resource Program (bi-annual publication) – Forecast of BPA resources and the amount of power needed to supply load
  - Needs Assessment presents inventory position of multiple metric
    - Inventory position of current metric evaluates Frozen Efficiency Loads against resources
    - Multiple metrics show deficits including 1937 Annual Energy and P10 HLH
    - P10 HLH metric has continued to be most constraining metric
    - Expect that metric(s) representing WRAP Forward Showing would be added
  - Resource Optimization creates multiple potential resource sets that could solve deficits of most limiting metric
    - Most cost effective solutions selected
    - Provides estimate for Energy Efficiency targets
- White Book (annual publication) – Forecast of long-term inventory based on expected loads, across full range of historical water conditions
  - Energy – historically shows annual deficits under critical water, and surpluses under average water
  - 120 hour Capacity – historically shows annual January deficits under critical water, and surpluses under average water

Scenario A – LT Planning (inventory position)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



WRAP Annual Assessment

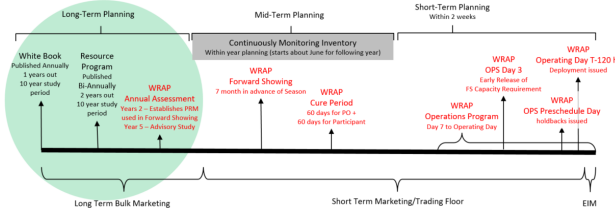
- WRAP Annual Assessment – annual study that provides WRAP participants with multiple level of program specific information
  - Resource QCC (Qualifying Capacity Contribution) – resource specific
  - LOLE (Loss of Load Expectation) analysis of 1 day in 10 year event, which providing program level capacity requirement
  - PRM (Planning Reserve Margin) translation of the Capacity Requirement to meet LOLE vs forecasted P50 load
- Year 5 results
  - Serves as a long-term evaluation point to give advanced knowledge of coming situation
  - Provides expected QCC values, forecasted LOLE and PRM values
- Year 2 results
  - Serves as the LOLE study for the evaluated year,
  - Establishing the PRM target for Forward Showing analysis
    - Published at least 18 months ahead of Forward Sowing submittal
    - PRM applied during Forward Showing evaluation (7 months in advance of season)

Scenario A – LT Planning (marketing activity)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Long-Term time frame marketing activity

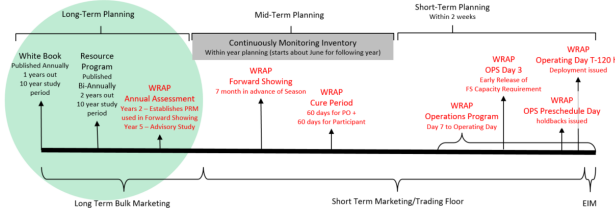
- Long-Term Studies (White Book) provide a picture of BPA's inventory position under multiple water conditions
- Energy limited system – LT studies picture is based on some specific look at federal resource capability, exact knowledge of fuel supply are not known until closer to real time.
- LT Studies identifying some level of firm surplus position,
  - provide Long-Term Marketing with Inventory to potentially market
  - LT Marketing employs a large range of strategies to maximize the benefits of any identified surplus,
    - Maximized revenue from sales = increased secondary sales revenue, which leads to lower PF rates
    - Financial Hedging strategies = increased certainty on revenue
- LT Studies identifying some level of deficit position,
  - As Identified in Resource Program, BPA has many options of how to solve, including:
    - Wait for actual water year to occur, and meet deficit though better than critical water
    - Financial Hedging strategies
    - Energy/capacity purchase

Scenario A – LT Planning (Preference)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Preference and Surplus Power

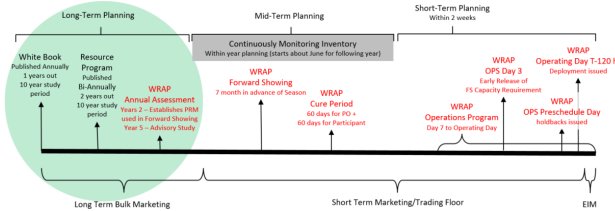
- Preference and priority means that BPA must first offer federal power to public bodies and cooperatives before offering such power to other (non-preference) entities. The types of entities eligible for preference include: PUDs, Munis, electric cooperatives, irrigation districts, port districts and tribes.
  - First established by section 4(a) of the Bonneville Project Act of 1937:
    - "The administrator shall at all times, in disposing of electric energy generated at said project, give preference and priority to public bodies and cooperatives."
  - Reconfirmed by section 5(a) of Northwest Power Act of 1980:
    - "All power sales . . . shall be subject at all times to the preference and priority provisions of the Bonneville Project Act of 1937."
- Preference is to supply, not price. There is no preference right to a lower price.

Scenario A – LT Planning (Preference-continued)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Preference and Surplus Power - continued

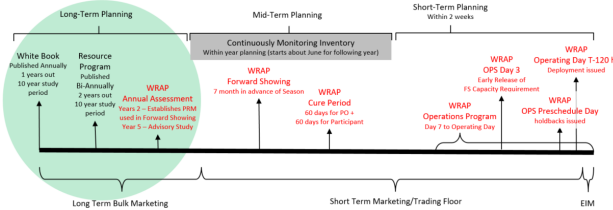
- If BPA has a surplus, it makes sales for the following time frames:
  - Forward Sales (longer than 30 days away, but less than a year),
  - Balance of Month (longer than a day away, but no more than the end of the month away),
  - Daily (sales for the next day), and
  - Real time (sales for the next hour).
- BPA uses a three-part manner in consideration of Preference:
  1. Posting a Daily Notice on its website and mailing an Annual Notice.
     - These notices alert PNW customers to contact BPA to find out what is available and request a purchase
  2. Selling a standardized product.
     - This allows PNW customers to know the basic "terms" of the contracts that BPA sells because BPA's product is standard HLH or LLH energy or capacity for each hour.
  3. Regional Surplus letter/Letter of Intent.
     - Notifies Preference Customers that BPA will be looking to forward market power over a determined time horizon, and to contact BPA to find out what is available and request a purchase.

Scenario A – LT Planning (Preference-continued)

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Preference and Surplus Power - continued

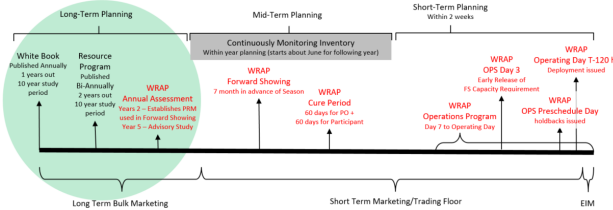
- When Long-Term Forward Sales are being considered or finalized with non-preference customers, BPA also posts Notice of intent
  - These notices alert customers to contact BPA for specifics of what is available, and request the right to purchase
  - Preference provides the right for public bodies and cooperatives to the offered power ahead of other (non-preference) entities
  - Preference does not provide for preference right to a lower price.
  - If no Preference customer accepts the offer, BPA then relies on previous steps as the presumption that PNW customers are aware of what BPA is offering and there's no interest in the offer. Thus, BPA considers the energy or capacity to be available as surplus for sale to non-preference entities.

Scenario A – LT Planning - Summary

Scenario

BPA identifies Surplus or Deficit in the Long-Term Planning Horizon

- *Resource Program*
- *White Book*
- *WRAP Annual Assessment*



Long-Term Planning - Summary

- BPA uses the Resource Program as an advisory study to establish potential ways to solve potential long-term inventory needs
- Long-Term Studies (White Book) provide a picture of BPA's inventory position under multiple water conditions
- WRAP Annual Studies provide a picture of a participant program specific needs
- If and when BPA determines it has Surplus Power to market, BPA assures Preference is met in three-part manner:
  1. Posting a Daily Notice on its website and mailing an Annual Notice.
  2. Selling a standardized product.
  3. Regional Surplus letter/Letter of Intent.
- Preference Customers looking for Surplus Power should periodically/regularly call the Trading Floor to see what is available.

- A decision to join the WRAP would not change the way in which BPA conducts marketing activities, BPA would continue to assure Preference is met through standard practices. Any changes to the methods used to assure Preference would be outside of the WRAP.

Scenario B

PPC Proposed Scenario 2

BPA is holding out capacity for the program 7 months out that it would not otherwise hold.

PPC Proposed Scenario 3

BPA is ordered to "hold out" for the program in the short term (less than 7 month). This is capacity that BPA could otherwise make available but for the program.

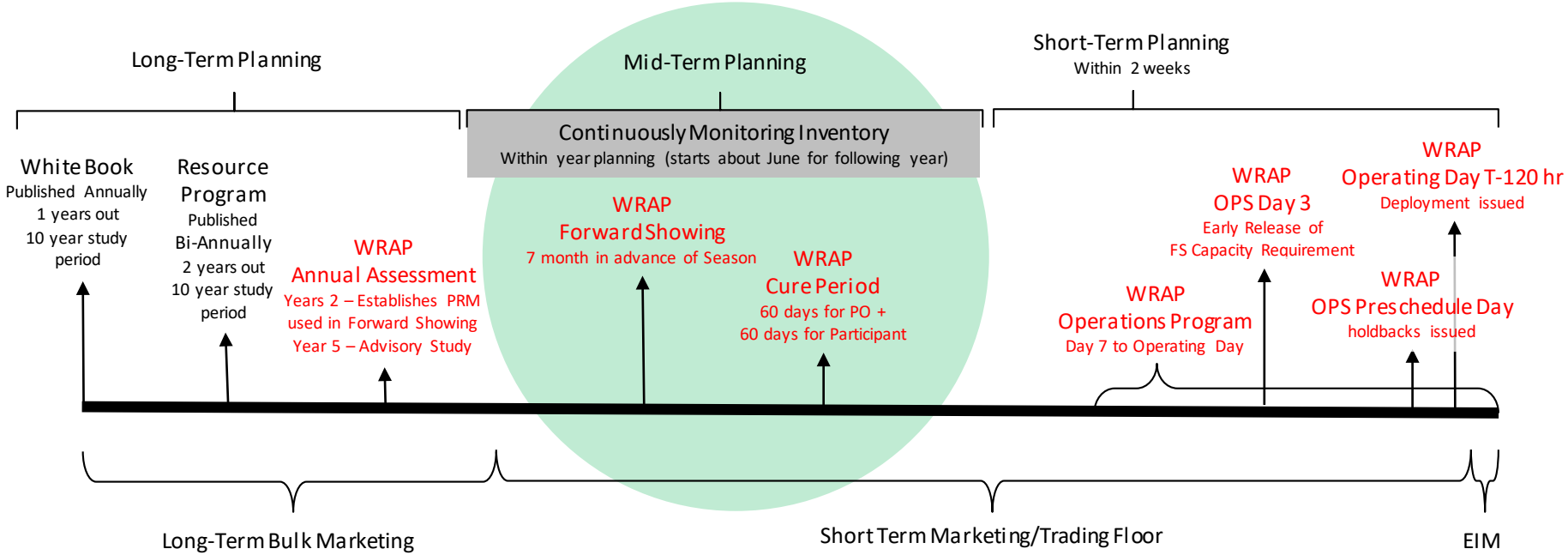
BPA's interpretation of Scenario

At WRAP Forward Showing time frame (7 months ahead of season) BPA meets or passes Forward Showing Capacity Requirement test. Is BPA dedicating capacity to the WRAP program, from that point forward, that it otherwise would have declared surplus and sold as a Forward Sale.

Counter Scenario

At WRAP Forward Showing time frame (7 months ahead of season) BPA finds itself failing to pass Forward Showing Capacity Requirement test, what happens.

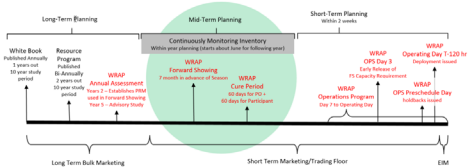
Timeline - Scenario B



Scenario B – Forward Showing (PASSING)

Scenario

At WRAP Forward Showing time frame (7 months ahead of season) BPA meets or passes Forward Showing Capacity Requirement test. Is BPA dedicating capacity to the WRAP program that from that point forward it otherwise would have declared surplus and sold as a Forward Sale.



Forward Showing – 7 months in advance of Season

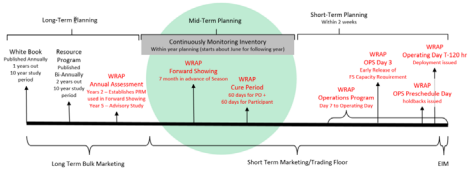
- Forward Showing Capacity Requirement = WRAP defined P50 load + Planning Reserve Margin (includes Contingency Reserves)
- Forward Showing Test: QCC of Resource Portfolio => Forward Showing Capacity Requirement

- BPA Passes Forward Showing Test/Evaluation/Demonstration
  - QCC greater than Forward Showing Capacity Requirement is considered 'Surplus' and outside of program
  - Forward Showing Capacity Requirement is carried forward into Operations program as capacity available within the WRAP, and the base value for all Sharing Calculations
  - Planning for the capacity associated with the PRM (indicative from Phase 2B of 16% winter, 12% summer) falls within the range of resource and load variability BPA plans for today at the 7 months in advance of each season.
  - At this time, BPA believes that the Forward Showing Capacity Requirement falls within, BPA Trading Floor's existing risk tolerance, it is too early to show that it would be incremental to existing marketing risk thresholds.

Scenario B – Forward Showing (FAILING)

Scenario

At WRAP Forward Showing time frame (7 months ahead of season) BPA finds itself failing to pass Forward Showing Capacity Requirement test, what happens.



Forward Showing – 7 months in advance of Season

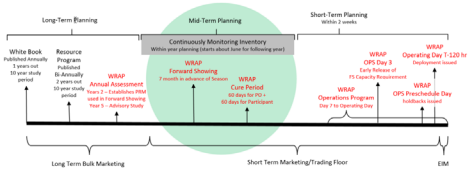
- Forward Showing Capacity Requirement = WRAP defined P50 load + Planning Reserve Margin (includes Contingency Reserves)
- Forward Showing Test: QCC of Resource Portfolio => Forward Showing Capacity Requirement

- BPA FAILS Forward Showing Test/Evaluation/Demonstration
  - BPA submits Forward Showing Data Submittal (March 31 for Winter Season, October 31 for Summer Season)
  - Program Operator (PO) evaluates submittal and identifies Deficiency(s) - Within 60 days of data submittal – PO notifies BPA of Deficiency(s) and issues order for corrective action
  - BPA has a 60 day 'Cure Period' to resolve Deficiency(s) and submit information to Program Operator (total of 120 days from submittal)
  - BPA would take proactive steps to secure capacity needed to meet Forward Showing Capacity Requirement
    - Failure of BPA to meet Forward Showing Capacity requirement within 120 days of Forward Showing Data Submittal deadline would result in BPA being accessed a 'Cone Charge' for failure to meet program requirements.
  - Results for Phase 2B indicative study show BPA to have sufficient resource QCC value to PASS test and have WRAP surplus

Scenario B – Forward Showing - Summary

Scenario

- At WRAP Forward Showing time frame (7 months ahead of season) BPA meets or passes Forward Showing Capacity Requirement test. Is BPA dedicating capacity to the WRAP program that from that point forward it otherwise would have declared surplus and sold as a Forward Sale.
- At WRAP Forward Showing time frame (7 months ahead of season) BPA finds itself failing to pass Forward Showing Capacity Requirement test, what happens.



Forward Showing – 7 months in advance of Season

- Forward Showing Capacity Requirement = WRAP defined P50 load + Planning Reserve Margin (includes Contingency Reserves)
- Forward Showing Test: QCC of Resource Portfolio => Forward Showing Capacity Requirement

- BPA does not expect the Forward Showing Capacity Requirement assessment of BPA's resource portfolio will produce a RA deficit result. We also expect the program will not affect BPA's marketing practices of surplus power (capacity and energy) or BPA's offering such surplus (as a product) to assist BPA's Firm Requirements Power (e.g., Slice/Block) customers. Capacity obligation associated with PRM is within today's range of resource and load variability; it is too early to identify that in any way it would be incremental to existing marketing risk thresholds.
- BPA will have until 3 months prior to the start of a binding season to solve any Deficiencies identified in the Forward Showing Data submittal. A capacity Deficiency could be solved by acquiring capacity through a purchase contract for capacity meeting WRAP QCC requirements.

Scenario C

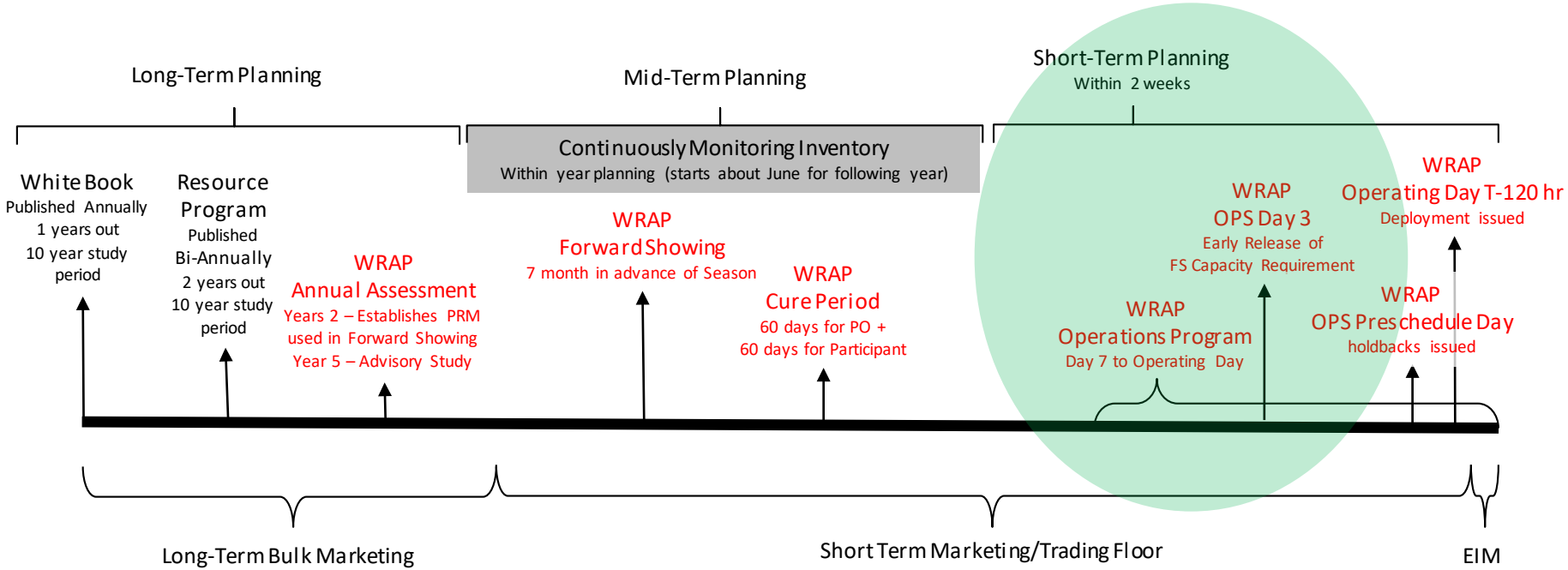
PPC Proposed Scenario 4

BPA goes into the operational time period holding out capacity for the program.

BPA's interpretation of Scenario

Under WRAP requirements what is BPA's capacity requirement, as it enters the Operations time frame (7 days ahead of Operating Day)? How does/can that capacity requirement change ahead of the Operating Day?

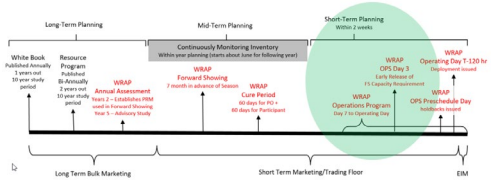
Timeline - Scenario C



Scenario C – Operations Thru Preschedule

Scenario

Under WRAP requirements what is BPA's capacity requirement, as it enters the Operations time frame (7 days ahead of Operating Day)? How does/can that capacity requirement change ahead of the Operating Day?



WRAP Operations – 7 days ahead of Operating Day thru Preschedule Day

- WRAP Operations period prior to Preschedule day, program provides hourly advisory calculation (surplus/deficit) for Operating Day
- WRAP Operations period activity
  - Hourly data for Operating day is submitted daily to the WRAP Program Operator.
  - Program Operator performs Sharing Calculation for each hour of Operating Day, each day ahead of Preschedule Day
  - Participants Sharing Calculation for Operating Day provided Daily,
    - Positive Sharing Calculation could become Holdback at Preschedule,
    - Negative Sharing Calculation could become 'needed help' at Preschedule

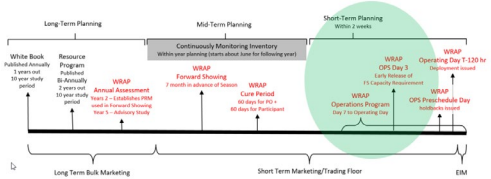
Sharing Calculation = $[\boldsymbol{P50 + PRM - \Delta\ Forced\ Outages + \Delta RoR\ Performance + \Delta VER\ Performance}] - [\boldsymbol{Load\ Forecast + \Delta CR + Uncertainty}]$

- WRAP Participant Requirement - BPA maintains access to Forward Showing Capacity Requirement through Preschedule Day
- Program Operator has the ability to grant early release of possible holdback (portion of Forward Showing Capacity Requirement) at Operations Day 3
- Any share of possible holdback (portion of Forward Showing Capacity Requirement) that the PO releases, can not be called upon in the future by Program Operator

Scenario C – Operations Thru Preschedule

Scenario

Under WRAP requirements what is BPA's capacity requirement, as it enters the Operations time frame (7 days ahead of Operating Day)? How does/can that capacity requirement change ahead of the Operating Day?



WRAP Operations – 7 days ahead of Operating Day through Preschedule Day

Sharing Calculation = $[\boldsymbol{P50 + PRM - \Delta\ Forced\ Outages + \Delta RoR\ Performance + \Delta VER\ Performance}] - [\boldsymbol{Load\ Forecast + \Delta CR + Uncertainty}]$

- Preschedule Day Sharing Calculation produces a Holdback or Release of Forward Showing Capacity Requirement
  - Positive Sharing Calculation participants meet Negative Sharing Calculation participants needs, on a prorate basis
- Any share of possible holdback (portion of Forward Showing Capacity Requirement) that the PO releases (early or at Preschedule Day), can not be called upon in the future by Program Operator

- BPA does not expect the Forward Showing Capacity Requirement assessment of BPA's resource portfolio will produce a RA deficit result. We also expect the program will not affect BPA's marketing practices of surplus power (capacity and energy) or BPA's offering such surplus (as a product) to assist BPA's Firm Requirements Power (e.g., Slice/Block) customers. Capacity obligation associated with PRM is within today's range of resource and load variability; it is too early to identify that in any way it would be incremental to existing marketing risk thresholds.

Scenario D

PPC Proposed Scenarios

5 *- BPA is in the program, its capacity has been called upon in the program and there is a preference customer who needs capacity and a non-preference customer who needs capacity – both participate in the program.*

6 *- BPA is in the program, its capacity has been called upon in the program and there is a preference customer in the program who needs capacity and a preference customer not in the program who also needs capacity.*

7 *- BPA is in the program, its capacity has been called upon in the program and there is a preference customer not in the program who needs capacity and an IOU in the program who also needs capacity.*

Scenario D

BPA's interpretation of Scenario

On WRAP Preschedule Day, BPA (and multiple other participants) has Positive Sharing calculation and is issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.

A – 2 participants in the program have Negative Sharing Calculations and have requested holdback from the program, one who has Preference and one who does not

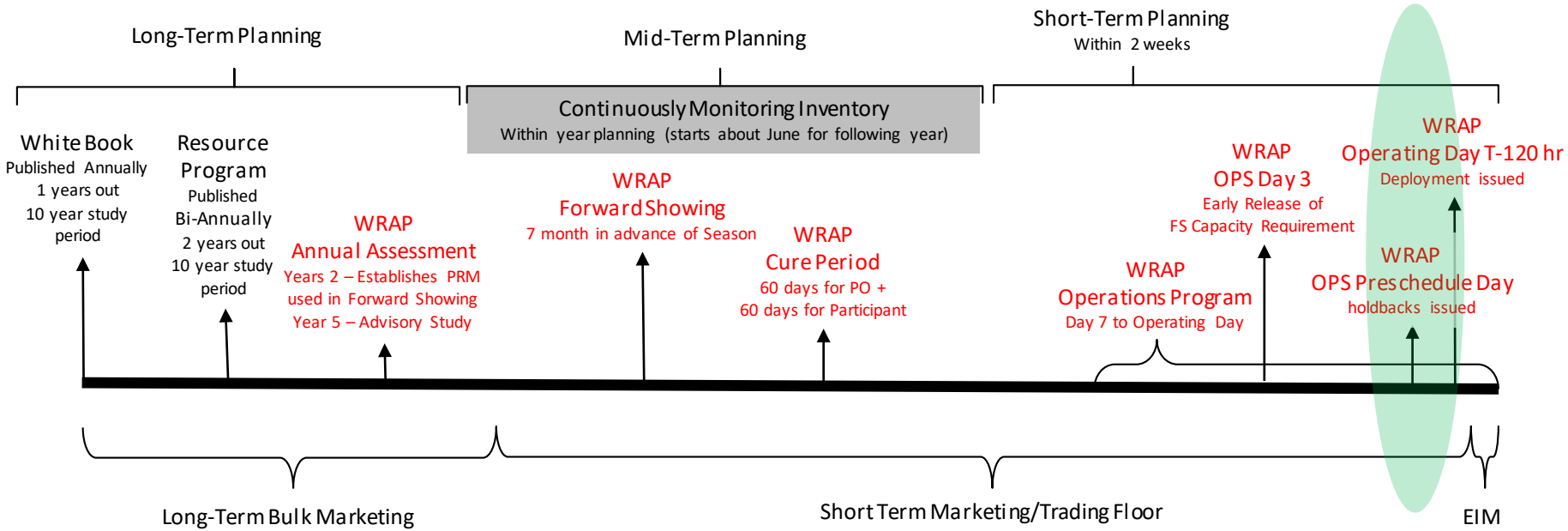
B – 1 preference participant in program has Negative Sharing Calculation and has requested holdback from program, and BPA Trading Floor receives request from Preference customer for Energy purchase

C - 1 non-preference participant in program has Negative Sharing Calculation and has requested holdback from program, and BPA Trading Floor receives request from Preference customer for Energy purchase

Counter Scenario

BPA is one of the Negative Sharing Calculations and requests Holdback

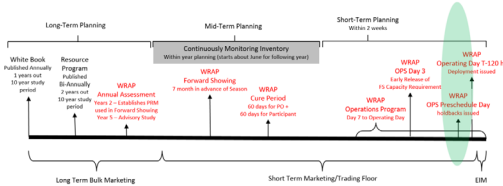
Timeline - Scenario D



Scenario D – Preschedule Day Holdback Issued

Scenario

On WRAP Preschedule Day BPA (and multiple other participants) have Positive Sharing calculations and are issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.



Preschedule Day Hold Back Issued

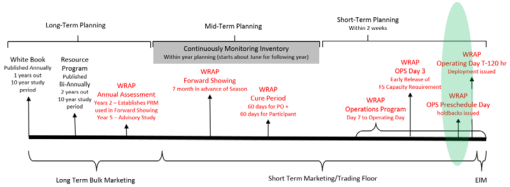
- By becoming a WRAP participant, BPA obligates itself to requirements of the program
  - Meet and make available Forward Showing Capacity Requirement
  - Provide Holdback and Energy Deployment as assigned by Program Operator, due to Positive Sharing Calculation
- BPA requirement for participation in WRAP
  - WRAP to recognize Preference on any Holdback and/or Energy Deployment from BPA
- Recognition of Preference principle in WRAP
  - If 'ALL' Negative Sharing Calculation Holdback and/or Energy Deployments are met, Preference requirement does not need to be checked. All needs have been filled, and all settlements are the same regardless of who serves need
  - If any Negative Sharing Calculation Holdback and/or Energy Deployments is not being met, any Holdback or Energy Deployment from BPA must meet Preference requirement, Program Operator to assign all BPA Holdback and Energy Deployment to Preference entities first
- WPP is aware of Preference requirement and requirement to be incorporated into the Operations Program

Scenario D – Preschedule Day Holdback Issued

Scenario

On WRAP Preschedule Day BPA (and multiple other participants) have Positive Sharing calculations and are issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.

A – 2 participants in the program have Negative Sharing Calculations and have requested holdback from the program, one who has Preference and one who does not



Preschedule Day Hold Back Issued

- All participants needs served by WRAP
  - Program Operator assigns prorated Holdback on Preschedule Day to all Positive Sharing Calculation participants, Remaining Forward Showing Capacity Requirement for all participants released
  - Operating Day - at T-120, Sharing Calculation completed by Program Operator, Energy Deployment from Holdbacks assigned at T-90
  - Preference requirement does not require enforcement as 'ALL' needs are met
- WRAP's calculated shortfalls exceed total program positive sharing available
  - Program Operator assigns prorated Holdback on Preschedule Day, however the total MW's of all program wide hold backs are insufficient to serve all Negative Sharing Calculations.
  - Program Operator issues Emergency action request for participants to voluntarily provide 'Surplus' capacity to program for Holdback and Energy Deployment
  - Preference requirement must be enforced – Program Operator to assign all BPA Holdback and Energy Deployment to Preference entities first
  - Operating Day - at T-120, Sharing Calculation completed by Program Operator, Energy Deployment from Holdbacks assigned at T-90

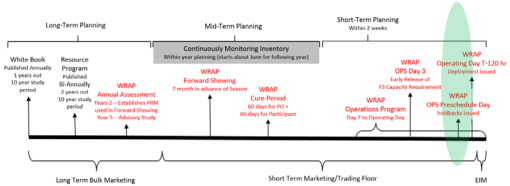
Scenario D – Preschedule Day Holdback Issued

Scenario

On WRAP Preschedule Day BPA (and multiple other participants) have Positive Sharing calculations and are issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.

B – 1 preference participant in program has Negative Sharing Calculation and has requested holdback from program, and BPA Trading Floor receives request from Preference customer for Energy purchase

C - 1 non-preference participant in program has Negative Sharing Calculation and has requested holdback from program, and BPA Trading Floor receives request from Preference customer for Energy purchase



Preschedule Day Hold Back Issued

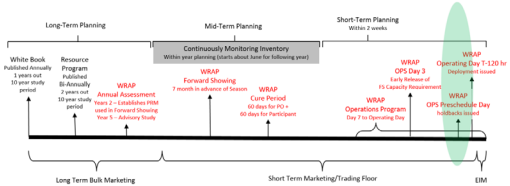
- WRAP Preschedule Day Holdback and Operating Day Energy Deployments
  - WRAP follows process described in previous slide, set ‘A’
  - BPA provides any Holdback and/or Energy Deployment assigned by Program Operator
- BPA Trading Floor request
  - No change from today on how Trading Floor evaluates request
    - Evaluation of Surplus
    - Evaluation of Pricing
    - Offer if BPA has available

Scenario D – Preschedule Day Holdback Issued

Scenario

On WRAP Preschedule Day BPA (and multiple other participants) have Positive Sharing calculations and are issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.

Counter – BPA is one of the Negative Sharing Calculations and requests Holdback



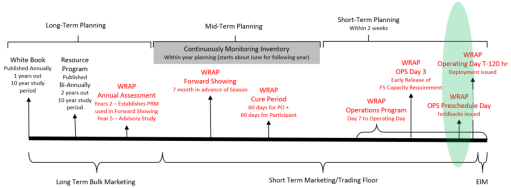
Preschedule Day Hold Back Issued

- Negative Sharing Calculation Holdback and/or Energy Deployment served by Positive Sharing Calculation participants
  - On Preschedule Day, BPA is identified as having a Negative Sharing calculation
  - Program Operator asks BPA for confirmation of Holdback request – BPA confirms request
  - Program Operator assigns prorated Holdback to all Positive Sharing Calculation participants
  - BPA has access to WRAP program to solve Negative Sharing Calculation
  - BPA searches market and does NOT find contract available to serve need
  - At T-120 on Operating Day, Program Operator calculates final Sharing Calculations
  - Between T-120 and T-90, Program Operator confirm with BPA its want for Energy Deployment – BPA confirms
  - At T-90, Program Operator issues Energy Deployments (from Holdbacks) to serve BPA's negative calculation.
  - By T-60, participants tag energy delivery to Hub or directly to BPA delivery location.
  - Next Day, Program Operator issues Settlement notice based on Settlement Calculation to BPA, for Energy Deployment from the appropriate parties.

Scenario D – Holdback Issued - Summary

Scenario

On WRAP Preschedule Day BPA (and multiple other participants) have Positive Sharing calculations and are issued holdbacks on a prorate basis, due to a Sharing Event with one or more participants having Negative Sharing Calculations.



Preschedule Day Hold Back Issued

- By becoming a WRAP participant, BPA obligates itself to requirements of the program
- WRAP is aware of BPA's requirement for assuring Preference on Holdbacks and Energy Deployments from BPA
- BPA will continue to market Surplus power, as it does today, through the Trading Floor
- If BPA has a Negative Sharing Calculation, BPA would be helped in the same manner other participants are by the program

Consideration of Customer Feedback

Mai Truong
Ryan Egerdahl
Steve Bellcoff
Tim Johnson

Addressing Phase 3A Letter Commitments

- BPA is fulfilling its commitment to work with customers and stakeholders made in the Phase 3A Letter to the Region
- Managing a “WRAP Public Considerations” tracking spreadsheet (posted on the BPA Resource Adequacy webpage) to resolve the open questions and key considerations in order for BPA to make a well-informed decision on participation in Phase 3B

Considerations Tracking Update

- Added 6 items in response to comments received following the January workshop
- “WRAP public considerations” tracking spreadsheet is posted on the BPA Resource Adequacy webpage

Q/C#: 70 - 75

Guide to Reading These Slides

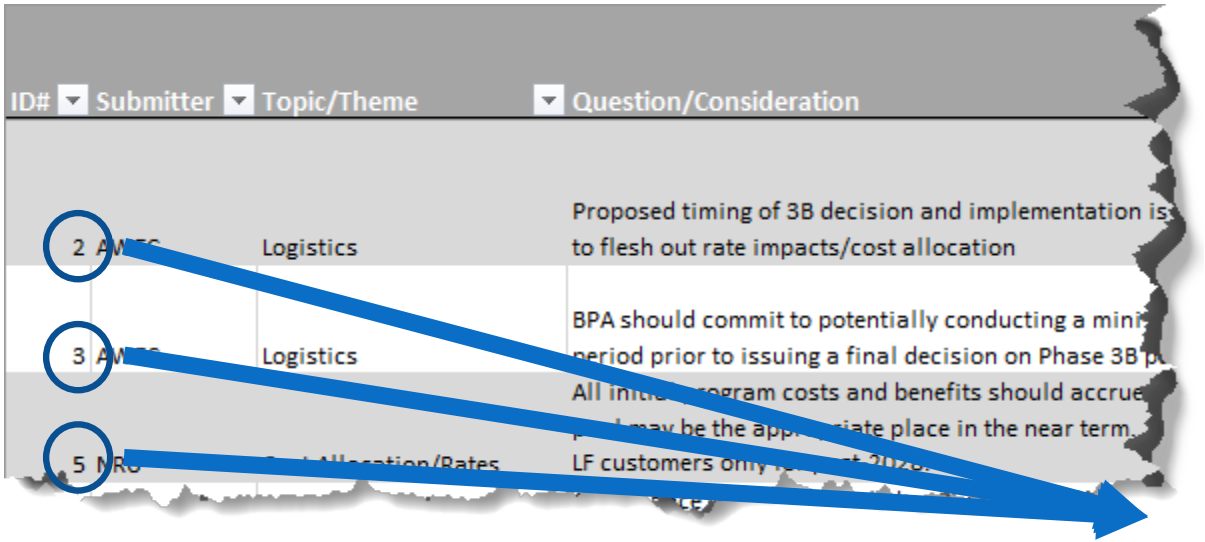
Theme	BPA Response
• High level or summarized themes BPA captured from comments/feedback. • May include specific comments as beneficial to the conversation.	• BPA's response to themes or specific comments. • May have a single response for multiple comments.

Indicates the specific comment IDs being addressed for the topic, as captured in the considerations tracking spreadsheet

Q/C#: 2, 3, 5, etc.

Guide to Reading These Slides

Considerations Tracking Sheet Example



Q/C#: 2, 3, 5, etc.

Program Impacts

Theme	BPA Response
7-month deadline for FS may not be able to accommodate the variability of hydro availability	• WRAP's qualified capacity contribution methodology for storage hydro was specifically design to look across the last 10 years of history (as a wide variety of water conditions) and evaluate the actual generation as well as the fuel supply in storage. Then the methodology takes into account the unique characteristics of the specific hydro facility and its current operating requirements, to establish a single capacity value. Capacity unlike energy has a limited duration the capability need to account for, when the program moves to an energy metric, a methodology that specifically accounts for some level of firm energy will be required. • See sections "2.5 Qualified Capacity Contribution of Resources" and "Appendix D - Qualified Capacity Contribution modeling" in the WRAP Detailed Design Document for additional information.

Q/C#: 7

Program Impacts

Theme	BPA Response
What happens if there simply is not sufficient physical capacity in the region to meet the forward showing obligations of all RA participants when the binding phase of the RA program begins? Would the RA program still impose penalties even though it is not possible to comply? Would BPA still pay them?	"WRAP must be workable for all participants and not intended to set up participants to fail. The CONE charge is adopted only when: • "participants can secure supply in a competitive environment to pass the Forward Showing • there are mechanisms to ensure adequate liquidity and ability to contract for capacity in the 8- 10 month ahead timeframe • there has been an assessment of capacity availability prior to the binding season to ensure that all participants can procure enough capacity to pass the Forward Showing The program must be workable for all participants and as such is not intended to set up any participant for failure during the initial binding seasons. The CONE penalty is designed to incentivize new build when there isn't sufficient capacity in the market." To this point, WRAP is working to design a Transition Plan that would verify these things and others, as the program becomes binding, in order for penalties or charges to be applied. See WRAP CONE Proposal for more information. BPA forecasts the availability and cost of power (energy and/or capacity) from short term programs, such as WRAP or markets, and engages in resource planning regarding the long-term acquisition of a resource(s) having the capability to meet the Administrator's expected obligations. Once the criteria above has been met and BPA fails to meet the Forward Showing Capacity Requirement, then BPA may be assessed a CONE charge.

Q/C#: 53

Program Impacts

Theme	BPA Response
How do the reserves that BPA is currently holding out for its products compare to the Planning Reserve Margin that is required under the RA program? Will this difference result in any changes to the amount of capacity that BPA holds as reserves?	• Balancing and contingency reserves required of balancing authorities are different from the Planning Reserve Margin (PRM) required for participants in WRAP. • Participation in WRAP does not change the amount of capacity that the BPA BAA holds for both balancing and contingency reserves. • As a BA, BPA must ensure it has sufficient balancing reserve and contingency reserve capacity to supply Ancillary and Control Area Services to load and generators located in its BAA. Subject to multiple variables these reserves maintain load-resource balance at all times and support reliable operations of the transmission system. The amount of capacity for providing balancing reserves, known as Generation Inputs, is forecast and set in BPA rate setting proceedings. The amount of capacity for contingency reserves is defined by NERC standards (3% of online generation plus 3% of load). • In the WRAP, the PRM represents the amount of dependable capacity needed beyond the P50 load forecast to meet unforeseen periods of high demand, unexpected resource outages, and other unexpected conditions. The WRAP also assumes contingency reserves are being held by all participants in the region and then adjusts the PRM to account for individual participant's contingency reserves. • See sections "2.2.2 Planning Reserve Margin," "Appendix B - B.7 PRM Calculation," and Appendix C – C.1 Impact of Contingency Reserves on PRM" in the WRAP Detailed Design Document for additional information on the planning reserve margin.

Q/C#: 8

Program Impacts

Theme	BPA Response
Wants to explore with BPA "what would happen today" vs. "in the RA program" under various scenarios	Today's presentation "BPA Planning with WRAP" builds offs of the January 27, 2022 presentation to explain how the planning process may be impacted by WRAP. Additionally, today's (April 13, 2022) presentation, "Planning Scenarios and Preference Rights," includes scenarios submitted by customers to illustrate how BPA planning may or may not be impacted by WRAP.
Needs common understanding of how BPA plans on a forward basis to meet its peak loads today, including the reserve margin BPA applies to the forecasted peaks. (baseline to allow customers to judge if RA program is an improvement over BPA status quo)	
Requests that BPA explore through a public forum the relationship between program-qualified capacity and the capacity needed to meet its P10 Heavy Load Hour planning criteria	• In today's (April 13, 2022) presentation "BPA Planning with WRAP", based on the indicative PRMs from Phase 2B, BPA's PRMs (for summer and winter) are within today's range of energy uncertainty that is planned for in both hydro and loads. • As an energy constrained hydro system, historically the P10 heavy load hour metric is BPA's constraining point. • Potentially, BPA may add a capacity metric to its planning processes.

Q/C#: 36, 45, 70

Program Impacts

Theme	BPA Response
Assuming BPA does become a load responsible entity and does not plan to relax its existing planning criteria, how much WRAP qualified capacity does BPA anticipate it will have in excess of program requirements that it will not need to meet its other planning criteria?	• As described in "Scenario A – LT Planning (Preference)" in the "Planning Scenarios and Preference Rights" presentation and in the "BPA Planning with WRAP" presentation for today (April 13, 2022), a decision to join the WRAP would not change the way in which BPA conducts marketing activities. BPA would continue to assure Preference is met through standard practices. Any changes to the methods used to assure Preference would be outside of WRAP. • WRAP qualified capacity contribution and BPA's energy limited resource portfolio do not create an alignment of WRAP surplus being BPA surplus. BPA will continue to use planning methods based on variability of hydro and load along with risk methodologies to establish marketing practices. Surplus in WRAP does not define BPA's inventory position.
How will BPA's methodology and timeline(s) for making surplus capacity and energy available first to preference customers interact with the forward showing and operational timelines and requirements under the program?	

Q/C#: 74, 75

Program Impacts

Theme	BPA Response
Would BPA (and its load-following customers) be better off if BPA simply sold excess capacity to others in the RA program without being a load-responsible entity itself? Would this be a better business case for BPA given that (i) it does not plan on changing its own planning criteria and (ii) it would allow BPA to avoid the risk of penalties but still reap capacity sales revenues?	This is a two-part response. • First, WRAP is a potential resource for BPA to meet its long-term sales contract obligations to supply firm power to its regional power customers. WRAP would become another tool in the "tool box." • Second, while WRAP is not a market, it does provide the potential to sell capacity and energy to WRAP participants in need, if BPA determines it has surplus available. Additionally, participation in WRAP does not create incremental MWs to the FCRPS. BPA still has the "same MW amount." One potential impact to surplus sales is moving when BPA makes the sale – earlier or later.
Assuming BPA does not become a load responsible entity in the WRAP, how much excess capacity could BPA potentially sell to other load responsible entities in the WRAP while still meeting its current planning criteria?	

Q/C#: 47, 71

Program Impacts

Theme	BPA Response
How will the requirement to "hold out" capacity for others in the program impact BPA's ability to make secondary sales? How is this mitigated through payments from the WRAP?	• At this time, it is premature to answer the exact impact (positive or negative) to secondary sales until the binding program is up and running. BPA believes over time the program will provide assurance to the region that reliability risks are lower. WRAP does not create new energy or capacity; fuel supply (water) establishes the resource capability BPA has available to meet load and/or market as surplus. • In today's (April 13, 2022) "BPA Planning with Wrap" and "Planning Scenarios and Preference Rights" presentations is the description of how the Forward Showing Capacity Requirement transitions into any holdbacks on the Preschedule Day, how holdbacks transition to energy deployments in the Operating Day, and how and when release of those requirements happen. • By joining the WRAP, BPA would be obligated to assure the Forward Showing Capacity Requirement is available at Preschedule, to serve BPA's program load, any change in variable energy resource, and provide help to other program participants. After the Preschedule Day, all capacity in the program beyond BPA's need would be compensated for (i.e., holdback or energy deployment). WRAP has been designed on a concept that the program would be activated through a Sharing Event between 12 and 20 times per year. Anything beyond meeting the program's Forward Showing Capacity Requirement is considered Surplus to the program, BPA would be free to use its Surplus in any way it wants, such as, storing for future, taking additional outages, or for marketing opportunities.
Assuming BPA does become a load responsible entity in the WRAP, does BPA plan to relax its current planning criteria to reduce capacity planning charges or create excess capacity to sell to other load responsible entities in the WRAP?	
How much can BPA reliably relax its current planning criteria and how much excess capacity would this create for BPA to sell (subject to its preference obligations) to load responsible entities in the WRAP? How much net revenue would result?	

Q/C#: 19, 72, 73

Program Impacts

Theme	WRAP Response
The RA program's PRM is based on a coincident peak, yet the program then applies that PRM to each individual entity's non-coincident peak. Is this a standard design among similar programs? If not, does it reduce the purported benefits of a region-wide RA construct?	• The RA program models a total capacity need for the footprint to meet the 1-in-10 year reliability standard (incorporating load and supply diversity), ultimately this can be broken down into the P50 peak load forecast times the PRM. • The PRM is calculated based on a 1 day-in-10 year analysis for the coincidental peak load shape and peak. That calculation results in a total capacity need for the program. However in establishing the PRM (%) target, the capacity needed is allocated by the non-coincidental peak – by taking that total capacity need and dividing by the sum of the participant's non-coincidental peak rather than the coincidental peak. • Therefore the PRM (%) applied to each entities' non-coincident P50 peak load forecast is already adjusted to result in the same total aggregate capacity requirement across the footprint that was determined in the original 1 day-in-10 year analysis. This methodology ensures we equitably allocate out the capacity requirement for the footprint to all participants, while maintaining the same total capacity requirement for the footprint that was determined in the modelling. • This approach maintains and unlocks diversity from the full footprint and established the regional capacity requirement needed to meet the reliability metric (which is driven by the most challenging hours based on a coincident "net peak" perspective). This is all done in a manner that achieves an equitable allocation to all participants, while maintaining the diversity benefit of the large footprint of participants. • Other programs use a wide variety of approaches that take into account by Coincidental and Non-Coincidental peaks and different places in calculations. But all program include some relationship between them in order to maximize diversity and allocate it to individual participants.

Q/C#: 54

Legal

Theme	BPA Response
What specific contract language provides BPA the authority to participate in the RA program?	• There is no express contract language that applies to Bonneville's decision to participate in the WRAP. The Regional Dialogue contracts define the parties' rights and responsibilities for the sale of federal power. BPA's decision to participate is not based on a contractual right, term or condition. • In addition, if BPA makes the decision to participate in the WRAP that decision will be made within the scope of the Administrator's authority to acquire power on a short-term basis (5 years and less) which resides in section 11(b)(6)(i) of the Transmission System Act of 1974.
How will BPA preserve the rights and obligations of both BPA and its customers under the Regional Dialogue contracts when such rights and/or obligations may conflict with the requirements of the RA program?	BPA will continue to meet its existing contractual obligations. Similarly, BPA expects customers purchasing federal power under the existing Regional Dialogue power sales contracts to meet their obligations and to exercise attendant rights. BPA does not believe WRAP will create impediments or barriers affecting BPA or its customers' contractual performance.

Q/C#: 41, 56

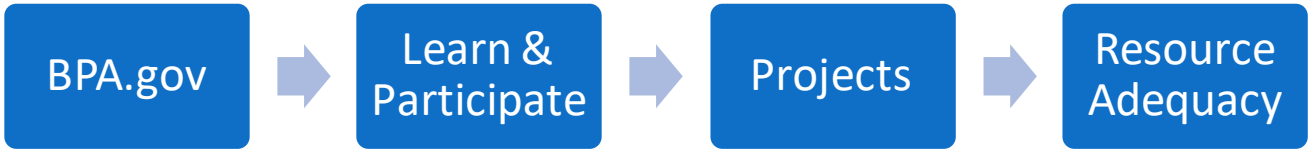
Theme	BPA Response
How will BPA respect statutory preference rights in both the forward and operational timeframes while simultaneously meeting its commitments in the program?	• BPA has updated the previous response to this item (on Slide 16 from the January 27, 2022 workshop) on the process for considering preference: • BPA does not need to change its current process to statutory preference rights. BPA is obligated to provide notice to preference customers regarding proposed offers to sell available surplus capacity or energy. BPA's notice obligation to preference customers will not be affected by participation in the Western Resource Adequacy Program. BPA will provide notice to preference customers if BPA determines that it has surplus capacity or energy that can be offered for sale, as it does today. BPA meets its requirements in a three-part manner: 1. Posting a Daily Notice on its website and mailing an Annual Notice. These notices alert PNW customers to contact BPA to find out what is available and request a purchase. 2. By selling a standardized product. This allows PNW customers to know the basic "terms" of the contracts that BPA sells because BPA's product is standard HLH or LLH energy or capacity for each hour. If a product is not standard, BPA includes the non-standard terms in the Annual Notice or issued RFO. 3. Regional Surplus letter/Letter of Intent. This notifies preference customers that BPA will be looking to forward market power over a determined time horizon and to contact BPA to find out what is available and request a purchase. • If BPA is determined to have surplus capacity and there is a competing request for that surplus between a preference entity and a non-preference entity, BPA will supply such capacity to the preference entity in accordance with section 4(a) of the Bonneville Project Act. The Western Resource Adequacy Program itself does not establish offers of power between buyers and sellers. Similarly, regional preference will be adhered to if there is a competing request between a regional preference customer, which can be a public body customer, investor or-owned utility customer, or a Direct Service Industrial customer, and a non-regional entity. • For additional information, see "Scenario A – LT Planning (Preference)" in the "Planning Scenarios and Preference Rights" presentation and in the "BPA Planning with WRAP" presentation for today (April 13, 2022).

Q/C#: 64

QUESTIONS?

Next Steps

- Please submit your feedback @ techforum@bpa.gov by April 27, 2022.
- Next workshop is on May 26, 2022.
- For more information on BPA's participation in the Western Resource Adequacy Program:



Appendix

Considerations Tracker Update

Items Added to the Considerations Tracker in Response to Comments Received Following the January 27, 2022 Workshop

Q/C#	Question/Consideration (May be summarized)
70	Requests that BPA explore through a public forum the relationship between program-qualified capacity and the capacity needed to meet its P10 Heavy Load Hour planning criteria
71	Assuming BPA **does not** become a load responsible entity in the WRAP, how much excess capacity could BPA potentially sell to other load responsible entities in the WRAP while still meeting its current planning criteria?
72	Assuming BPA **does** become a load responsible entity in the WRAP, **does** BPA plan to relax its current planning criteria to reduce capacity planning charges or create excess capacity to sell to other load responsible entities in the WRAP?
73	How much can BPA reliably relax its current planning criteria and how much excess capacity would this create for BPA to sell (subject to its preference obligations) to load responsible entities in the WRAP? How much net revenue would result?
74	Assuming BPA **does** become a load responsible entity and **does not** plan to relax its existing planning criteria, how much WRAP qualified capacity does BPA anticipate it will have in excess of program requirements that it will not need to meet its other planning criteria?
75	How will BPA's methodology and timeline(s) for making surplus capacity and energy available first to preference customers interact with the forward showing and operational timelines and requirements under the program?