

Western Resource Adequacy Program (WRAP)

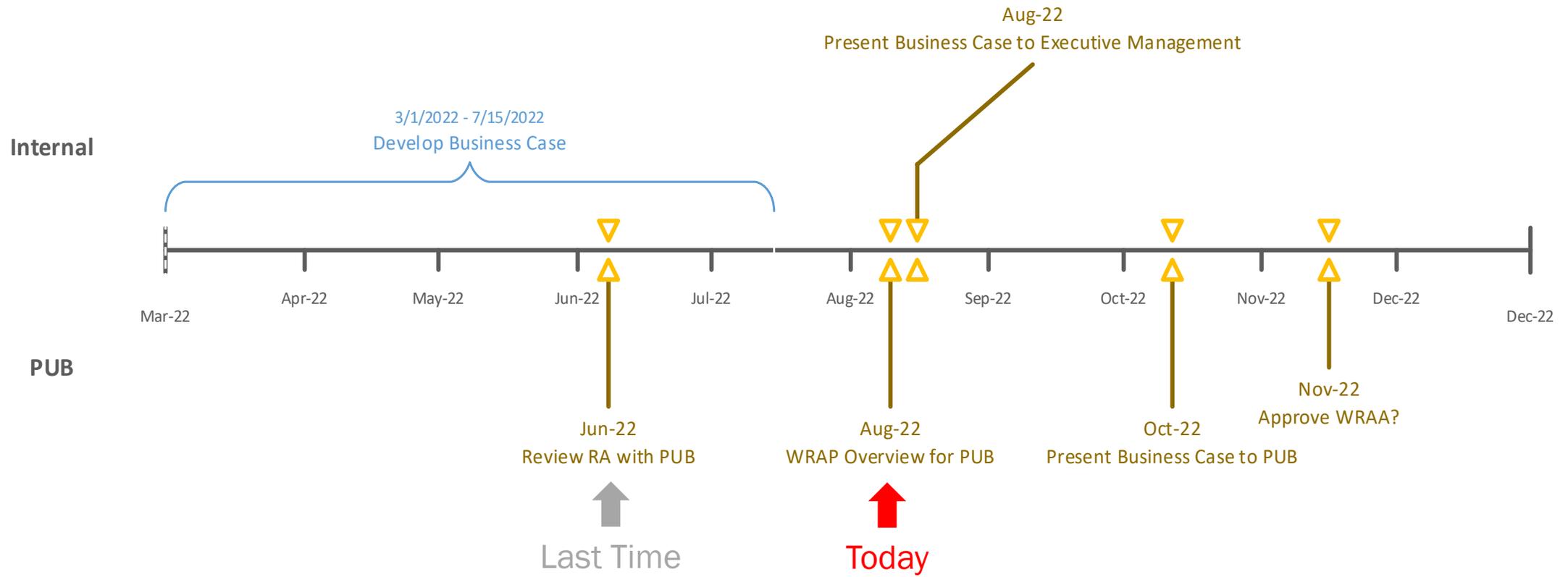
Program Design Overview for Public Utility Board

August 2022

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WRAP Decision

WRAP Decision Timeline



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Why Is WRAP Needed?

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Who Is Participating?

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When Will WRAP be Implemented?

Why is WRAP Needed?

Part 1

Why is WRAP Needed?

Environmental Scan – Summary from Last Presentation

Current Challenges

The integrated regional power system is in transition. The impending retirement of several thermal generators within and outside the region (the Western US and Canada) mixed with increasing variable energy resources (VERs), has led to questions about whether the region will continue to have an adequate supply of electricity during critical hours.

In 2020, a heatwave caused **blackouts in the CAISO** and forced other balancing authorities across the WECC to declare Energy Emergency Alerts. Many in the industry observers believe that we will experience similar events in the coming years.

Electrification

Many States in the West are pursuing policy to decarbonize the economy through electrification of transportation, buildings, and industry. Recent studies suggest that increased electrification will lead to **large increases in peak loads** – further increasing the resource adequacy challenge for WECC utilities.

Implications

These developments threaten to upset the balance of loads and resources within the region and, if not properly addressed, will increase the risk of **supply disruptions** during Winter and Summer, **increase financial risk** for utility customers, and hinder the ability of the system to meet **environmental goals** and legal requirements.

Why is WRAP Needed?

Resource Adequacy Today – Summary from Last Presentation

Shortcomings of Current Construct

Today, resource adequacy is conducted on **utility-by-utility basis** under individual utility IRPs. Varying levels of emphasis are placed on regional factors. There is no uniform/standardized method for measuring resource adequacy or sufficient reliability. Utility-specific planning can make assumptions about regional capacity availability that may not be realistic.

There is **insufficient market/price signals to construct new capacity** when utilities are procuring/building for their specific IRP needs based on their own load forecasts and assessments of available capacity.

Planning on a utility-by-utility basis **fails to account for regional diversity** in peak loads (e.g., winter vs. summer) and resource contributions (e.g., wind rich vs. solar rich areas).

Who is Participating?

Part 2

Who is Participating?

Who is participating?

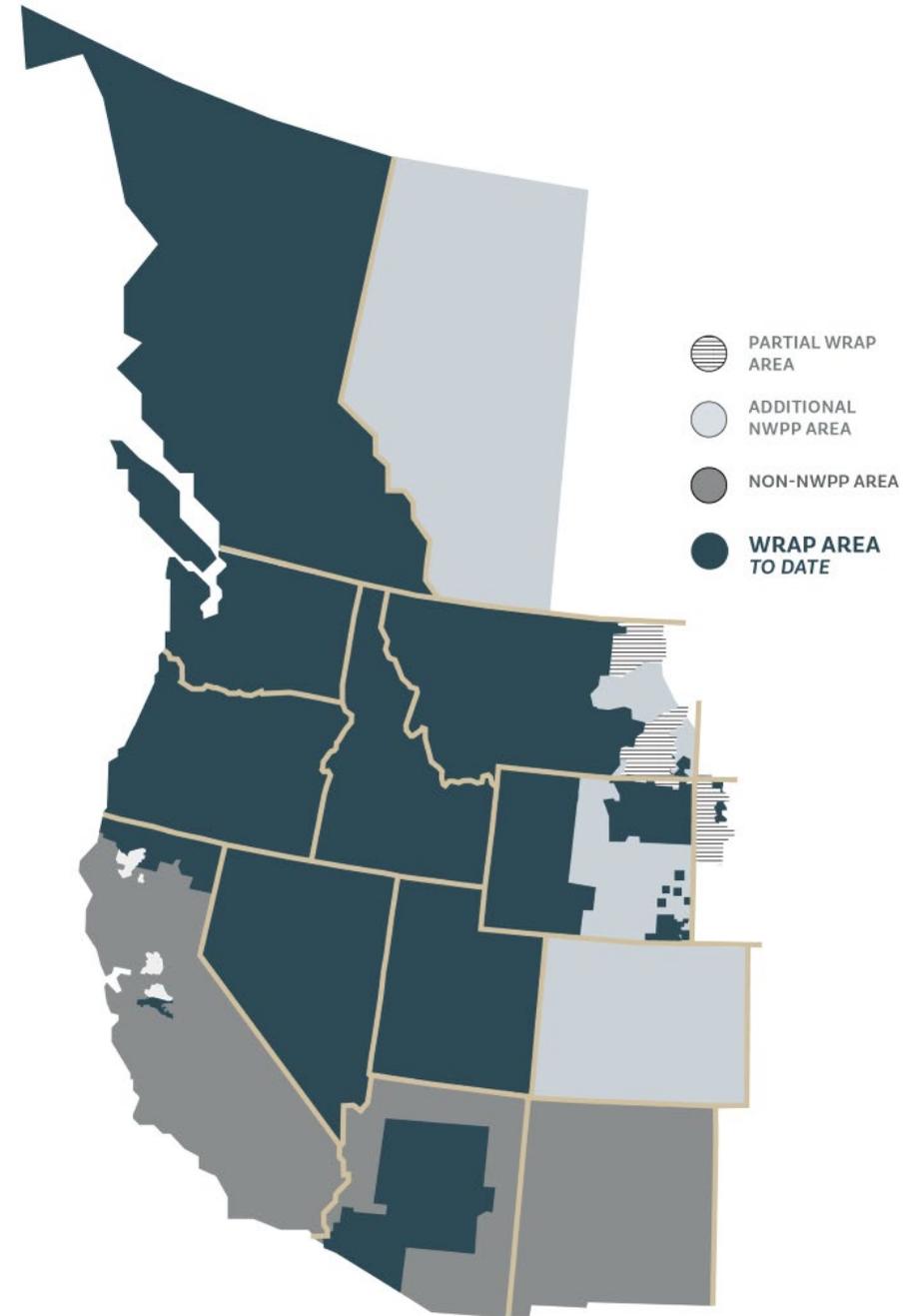
Arizona Public Service	Avangrid	Avista	Basin Electric
Black Hills	Bonneville Power Administration	Calpine	Chelan PUD
Clatskanie PUD	Douglas PUD	EWEB	Grant PUD
Idaho Power	Northwestern Energy	NV Energy	PacifiCorp
Portland General Electric	Powerex	Puget Sound Energy	Seattle City Light
Shell	Snohomish PUD	Salt River Project	Benton PUD (via TEA)
Clark Public Utilities (via TEA)	Cowlitz PUD (via TEA)	Franklin PUD (via TEA)	Lewis PUD (via TEA)
Emerald PUD (via TEA)	Grays Harbor PUD (via TEA)	Tacoma Power	Turlock Irrigation District



Program Administrator



Program Operator



How does WRAP work?

Part 3

How does WRAP work?

Overview

Forward Showing Program

Forward-looking program that helps ensure that the footprint has sufficient generating capacity

Operational Program

Creates a framework to provide Participants with pre-arranged access to capacity resources in the Program footprint during times when a Participant is experiencing an extreme event.

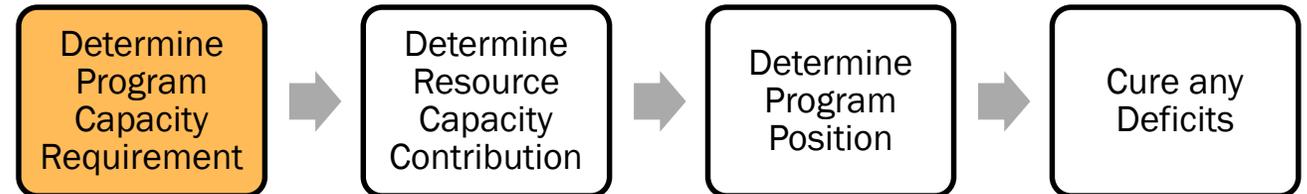
How does WRAP work?

Forward Showing Program

Step 1: Determine Capacity Requirement

To derive a Participant's FS capacity requirement for the season, the maximum of their forecasted monthly P50 load (of the binding season) is multiplied by 100% plus a **planning reserve margin (PRM)**.

The PRM will differ depending on the month.



How does WRAP work?

Forward Showing Program

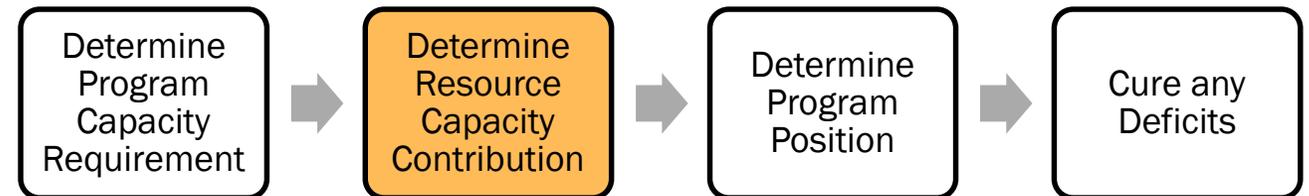
Step 2: Resource Capacity Contribution

Qualified capacity contributions (QCC) will be determined for all resources contributing to a Participant's FS portfolio. The QCC of a resource will represent the amount of MW of "accredited" capacity determined to be reliably available from the resource.

The QCC of a Participant's system will be the sum of all QCCs for each resource (contracted and owned) in their fleet. The QCC calculations will be updated by the Program Operator (PO) on an annual basis.

The methodology for assessing resources will effectively reflect a resource type's capacity contribution during the region's capacity critical hours (CCHs).

Crediting based on CCHs creates the right incentives to add resources that provide capacity when the region will likely experience RA challenges.



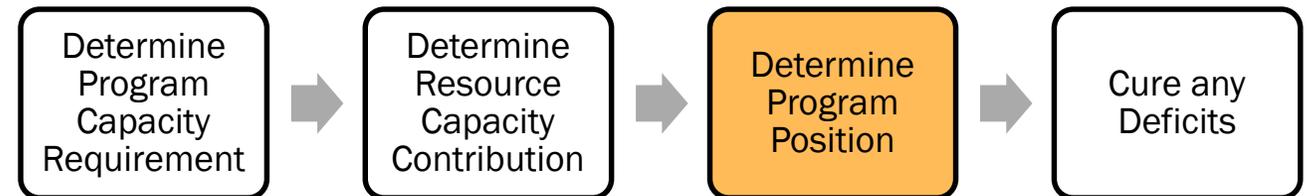
How does WRAP work?

Forward Showing Program

Step 3: Program Position

A Participant's total portfolio QCC is defined as the Participant's resource QCC plus their net contract QCC plus their total RA transfer.

Each Participant's portfolio QCC should be at least equal to the Participant's FS capacity requirement for each month of the binding season. Provided the Participant's portfolio QCC has met or exceeded that threshold, the FS capacity requirement has been satisfied.



How does WRAP work?

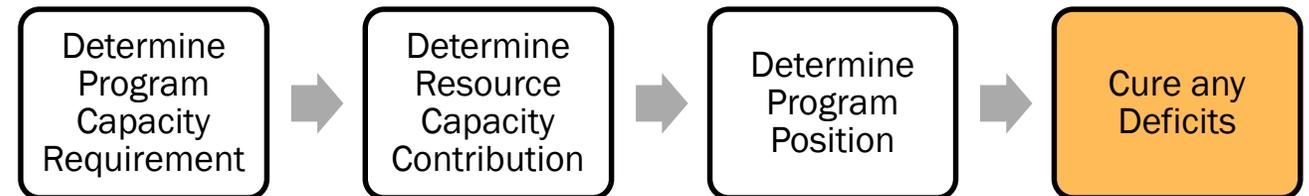
Forward Showing Program

Step 4: Cure Deficits

If a Participant fails to meet their FS capacity requirement after the cure period, the FS Program will assess some multiple of a **CONE (Cost of New Entry) payment** against the noncompliant Participant.

The CONE assesment is intended to **strongly motivate Participants to comply** with program metrics in the forward showing time horizon. If a Participant fails to meet their forward showing capacity or transmission requirements after the cure period, the forward showing program will assess some multiple of a CONE.

The CONE is based on publicly available information (i.e., information provided by the Energy Information Administration) relevant to the estimated annual capital and fixed operating costs of a hypothetical natural gas-fired peaking facility. The CONE value does not consider the anticipated net revenue from the sale of capacity, energy, or ancillary services nor does it consider variable operating costs necessary for generating energy.



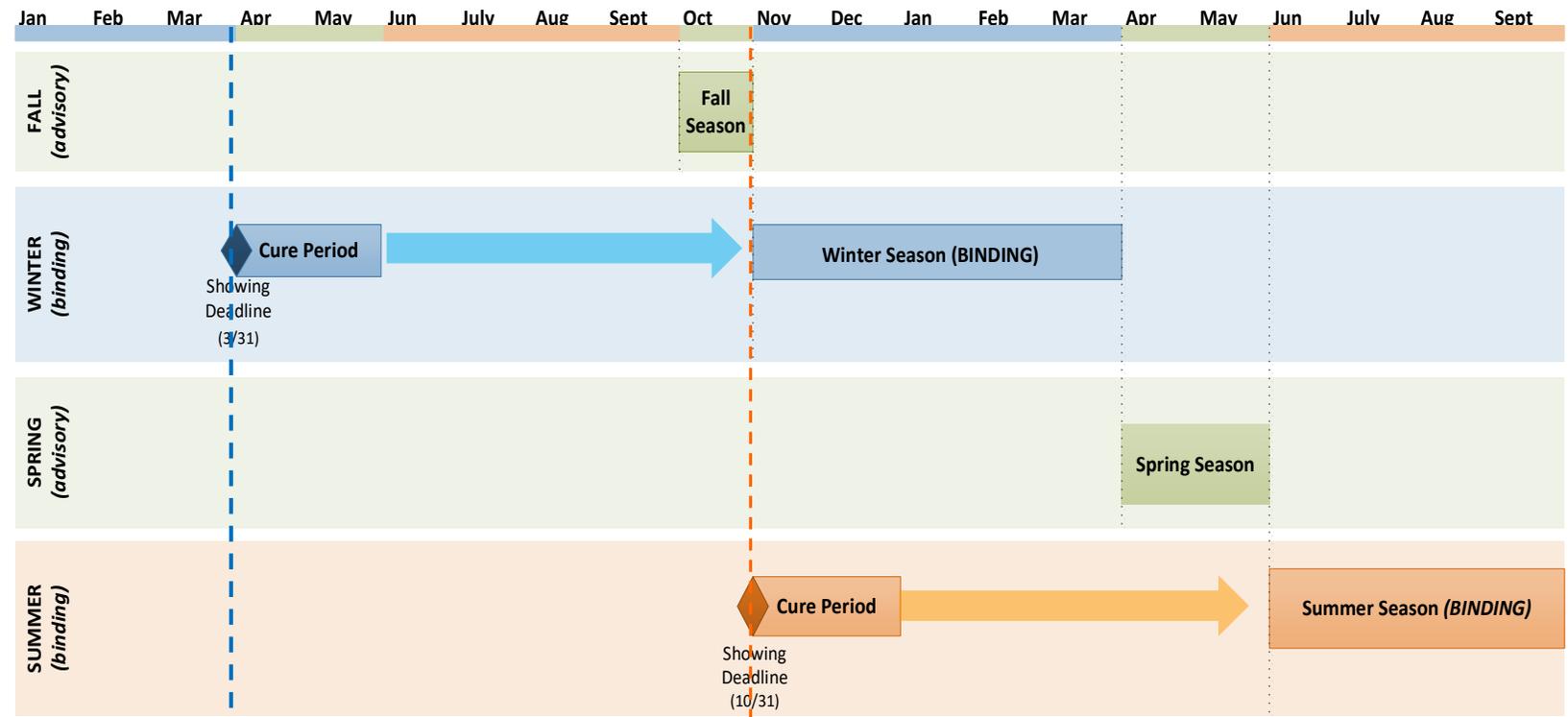
How does WRAP work?

Forward Showing Program

Compliance Timing

The FS Program will be binding for the **Summer** and **Winter** seasons. The FS deadline will be seven months ahead of the start of each binding season; at the FS deadline, Participants must demonstrate that they own or have contracted sufficient QCC to meet their FS capacity requirement, which is based on the regional metrics as defined by the RA Program and calculated by the PO.

The Spring and Fall seasons will be advisory; the PO will provide advisory metrics. There will be no FS deadline or PO review for those seasons, and thus there will be no deficiency payments for noncompliance for Spring or Fall. However, the PO may conduct analyses with available data in an advisory manor, and to allow for future advice to the RA Program and Participants.



How does WRAP work?

Operational Program

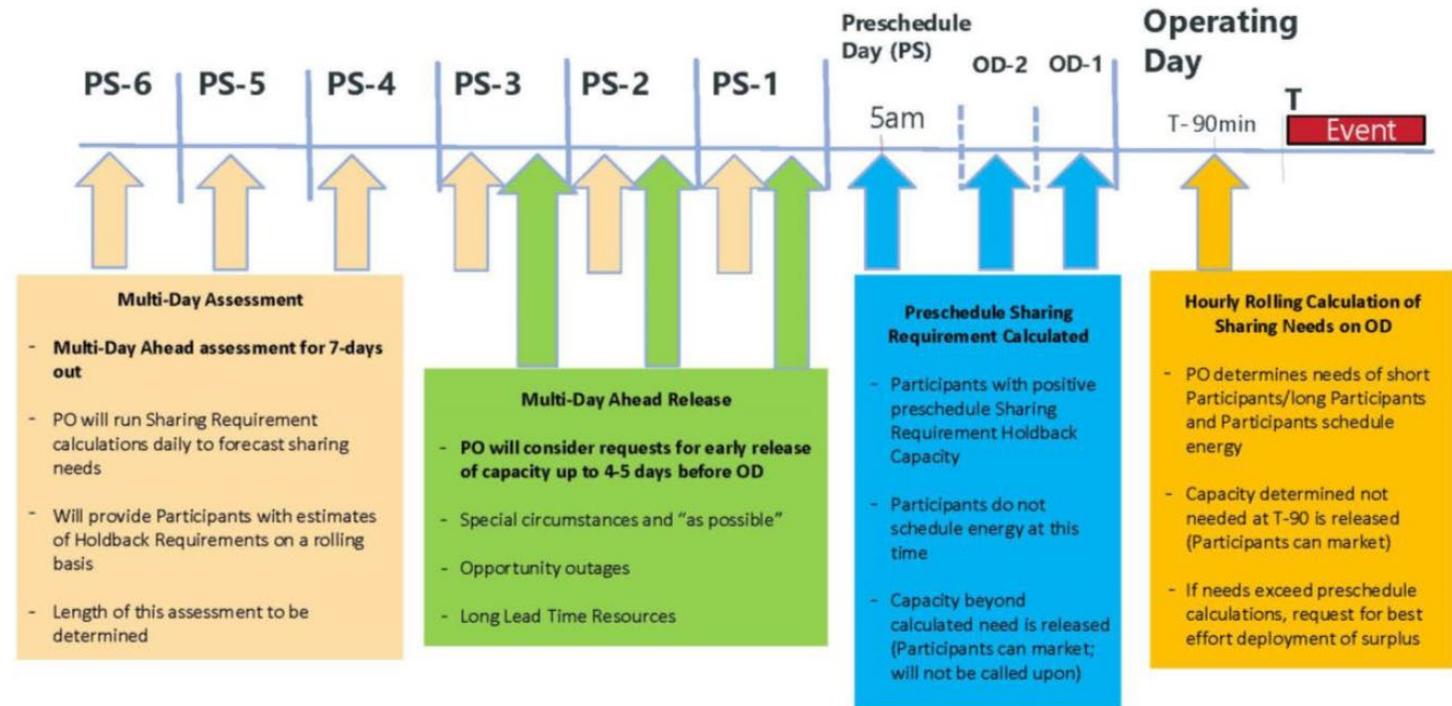
Operational Program

The Operational Program is implemented over a timeline beginning with a forecast up to a week prior, revised daily through the preschedule day, and revised hourly into the Operating Day (OD). The figure to the right demonstrates a high-level summary of the Operational Program timeline for any given event forecast (all times are shown in Pacific Prevailing Time).

Participants submit hourly forecasts and operating information to the PO. The PO performs Sharing Calculations and provides a **Multi-Day Ahead Assessment** for up to the next 7 days in the forecast window.

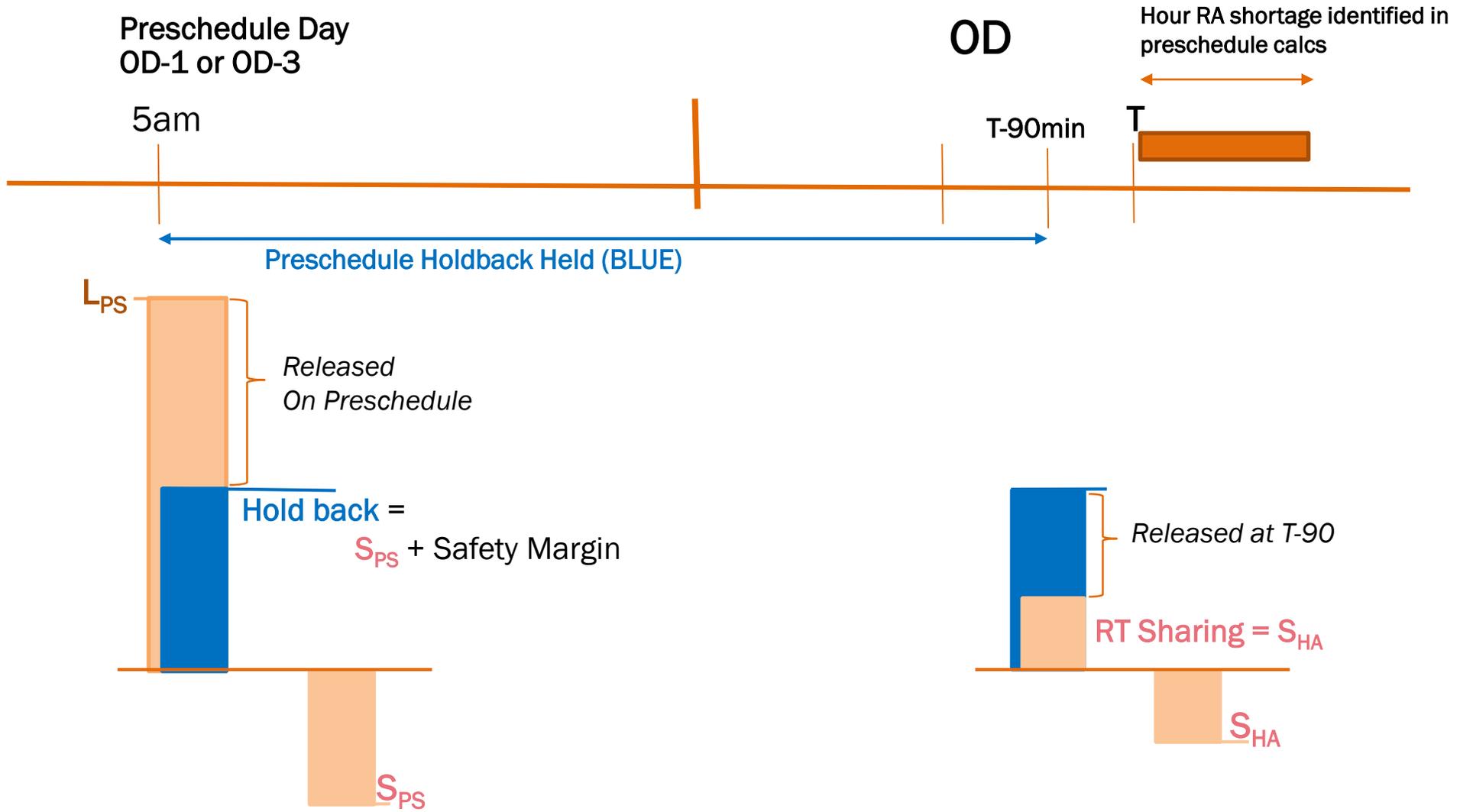
On the preschedule day the PO will provide Sharing Calculations and **Holdback Requirement** for the forecasted ODs.

The Sharing Calculations are performed hourly on the OD to determine the Energy Deployment up to the Holdback Requirement for each Sharing Event. Any capacity not identified in the Energy Deployment to be released back to Participants.



How does WRAP work?

Operational Program



How Will WRAP be Directed and Controlled?

Part 4

How Will WRAP be Directed and Controlled?

WRAP Administrator & Operator



Program Administrator

- Serves as public utility for program/keeps on file and maintains WRAP Tariff, under direction of Board of Directors (BOD)
- Submits approved tariff/agreement changes
- Facilitates and supports stakeholder/committee process
- Provides coordination, facilitation, training
- Hires and oversees the Program Operator (through the BOD)

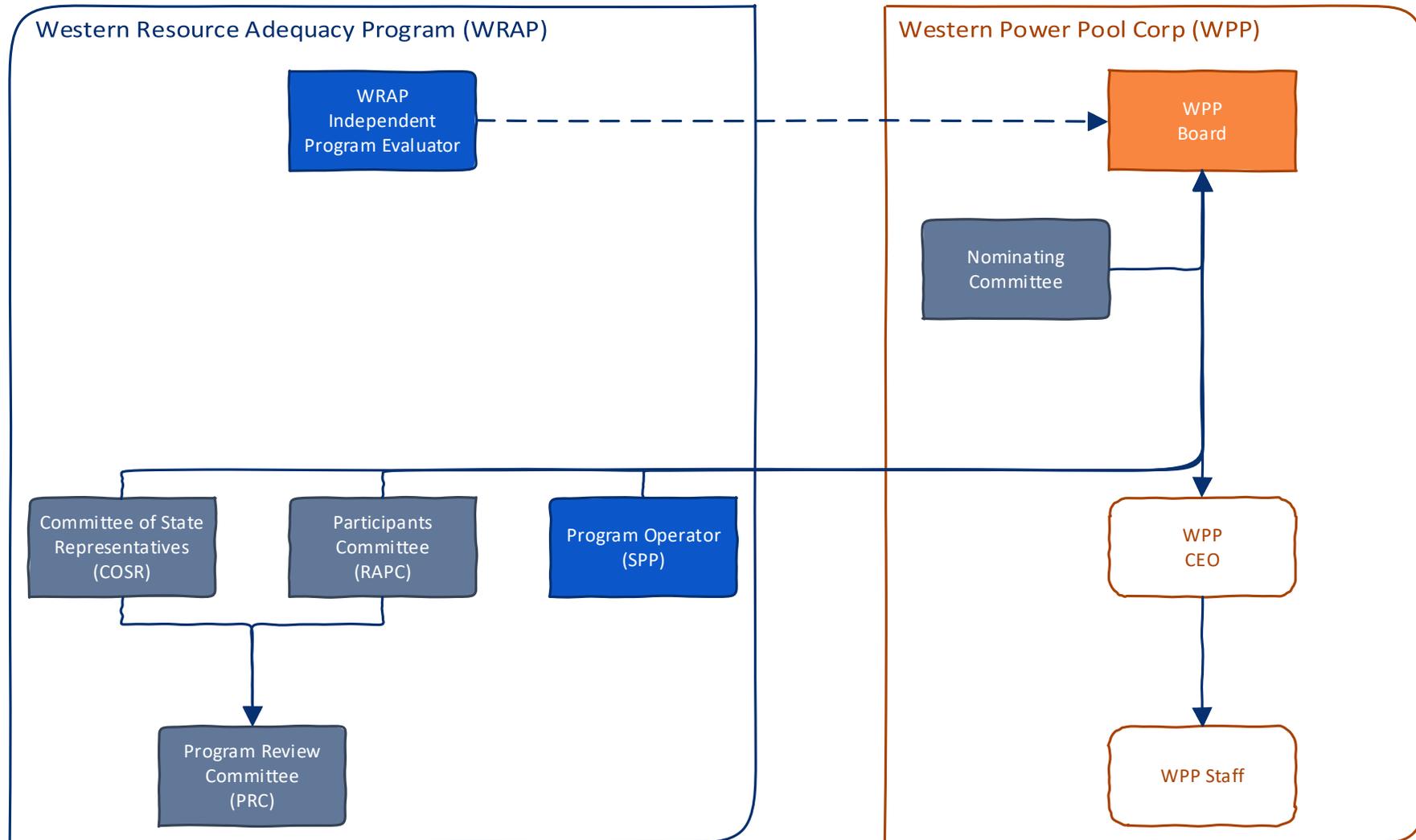


Program Operator

- Technical operation of program
- Performs Forward Showing, runs Operations Program, assesses after-the-fact compliance
- Conducts Participant data collection and validation, performs modeling and analytics
- PO officer serves as advisor to the BOD

How Will WRAP be Directed and Controlled?

WRAP Governance Overview



How Will WRAP be Directed and Controlled?

Federal Energy Regulatory Commission (FERC) Jurisdiction



Is WRAP FERC Jurisdictional?

Yes. The mandatory compliance phase of WRAP triggers FERC jurisdiction under the Federal Power Act.

The Forward Showing and Operational Programs both implicate FERC jurisdiction.

Forward Showing Program

Forward Showing is mandatory – **Participants that show Qualifying Capacity Contributions below their Forward Showing Requirement must pay a Forward Showing Deficiency Charge.** The Program prescribes how to calculate Forward Showing Requirement (e.g., PRM and Peak Load metric), how to calculate Qualifying Capacity Contribution, and determines the FS Deficiency Charge.

FERC jurisdiction has been determined to apply to deficiency charges on public utilities participating in capacity sharing agreements that fail to procure generating capacity sufficient to meet their load requirements.

FERC jurisdiction has also been determine to apply to the level of the installed capacity reserve requirement in capacity sharing arrangements, which affects the payments by the participants to one another.

Operational Program

Operations Program is mandatory: **Participant with Operating Day Deficiency must buy capacity/energy to cure that deficit; Participants with Operating Day surplus must sell capacity/energy to extent deficient Participant does not timely resolve its deficiency outside of WRAP.** The program prescribes how to determine who is deficient or surplus, and by how much; default pricing for mandatory sales/purchases to resolve all deficiencies not resolved outside of WRAP, and how to determine deficiency charge for surplus Participant that fails to satisfy its assigned energy delivery obligation

FERC jurisdiction has been determine to apply to agreements of public utilities to share or pool electric generating capacity.

How Will WRAP be Directed and Controlled?

Participant Exit Provisions

Exit Provisions

A participant can exit the WRAP if they are ordered by a regulatory body, if ongoing participation conflicts with certain legal authorities applicable to a participant, or if they determine that exit is required to protect the interests of their customers.

A Participant could also decide that it needs to leave the program because the Participant disagrees with a decision being made under the governance model that affects the way the WRAP is administered or their ability to continue participation. A Participant could decide that it needs to leave the program for various business reasons.

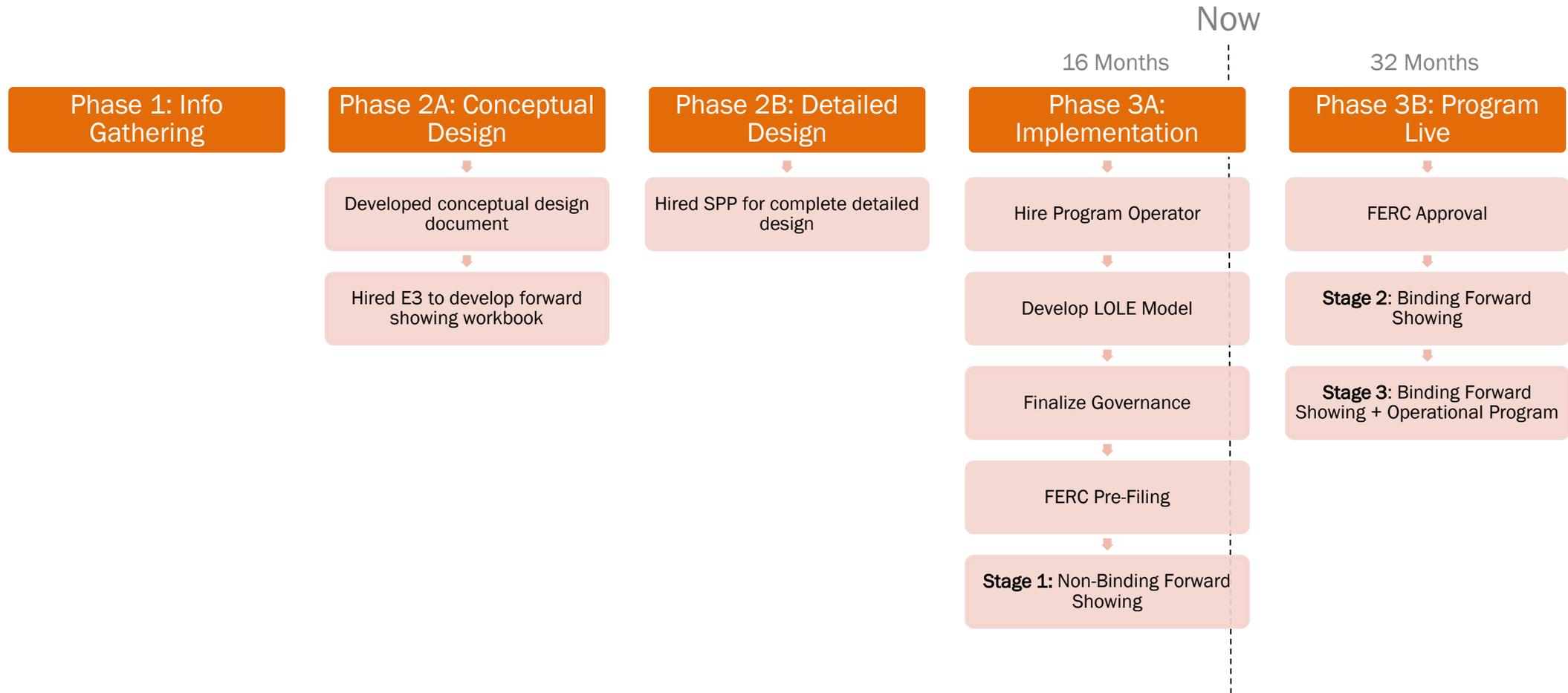
Exit, like entry, is voluntary, but 24 months advanced notice is required. Shorter notice of exit allowed for extenuating circumstances on case-by-case basis, or in case of significant reduction of peak load forecast under certain conditions, or if participant pays determinable costs of exit. Exit is also allowed if RAPC super-majority allows BOD to file major changes to WRAP Tariff that are otherwise prohibited. Non-standard exit provisions are anticipated for federal entities subject to specific statutory requirements.

When Will WRAP be Implemented?

Part 5

When Will WRAP be Implemented?

What has happened so far? What is happening next?



When Will WRAP be Implemented?

Transition Timeline

Non-Binding Forward Showing

Winter 22-23, Summer 23, Winter 23-24, Summer 24, Winter 24-25

Transition Seasons (Ops and FS)

Summer 25, Winter 25-26, Summer 26, Winter 26-27, Summer 27, Winter 27-28



Non-Binding Operations Program

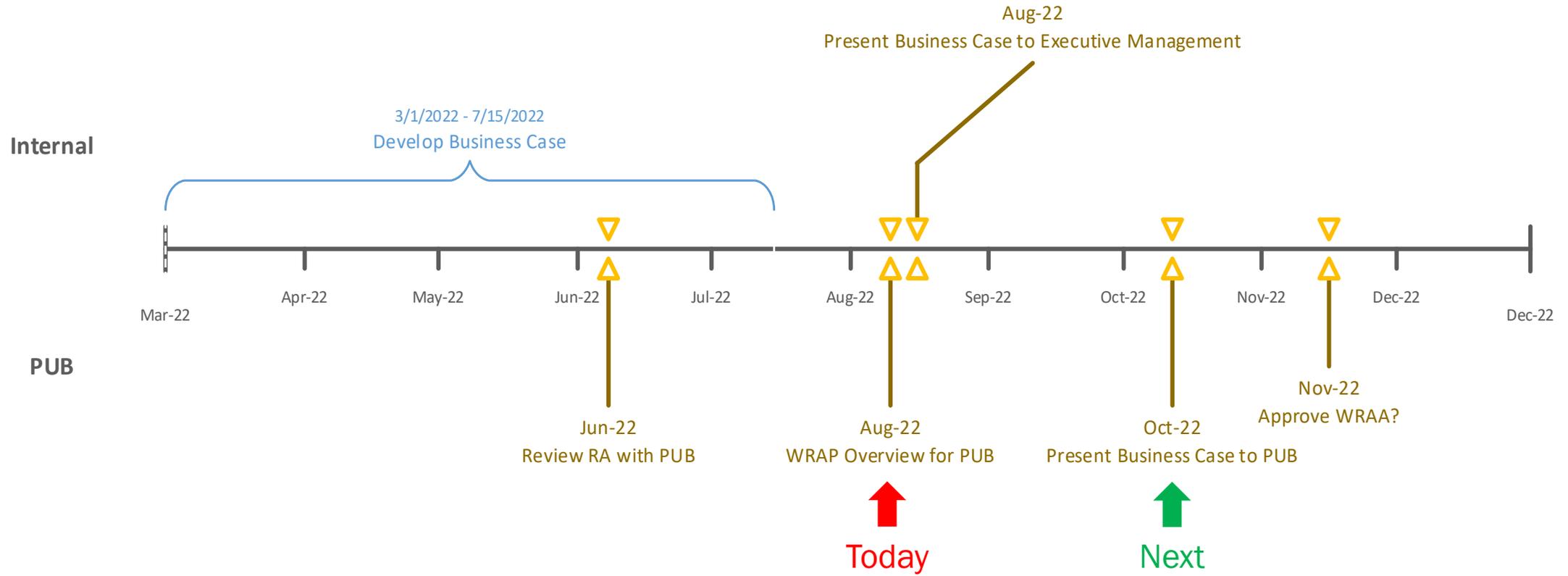
Summer 23 (trial – will include testing scenarios), Winter 23-24, Summer 24, Winter 24-25

Binding Program Without Transition Provisions

Summer 28 and all seasons following

When Will WRAP be Implemented?

Decision Timeline Revisited



Appendix

Part 6

Appendix

About the WPP



The Western Power Pool (WPP)

Having evolved from its informal origins of three engineers in 1941 to the existing staff today, the Western Power Pool (WPP) organization (formerly Northwest Power Pool [NWPP]) strives to help its Member organizations achieve maximum benefits of coordinated operations. The staffing and governance functions of the NWPP were folded into a non-profit corporation in 1999. During the course of its evolution, the WPP has refined its core values to be customer-driven, relationship-based, independent, and operating with great integrity. From this foundation, the WPP provides professional and management services to its participating organizations, as defined by its General Services Agreement, and professional service contracts with individual participants.

The NWPP Membership is a voluntary organization comprised of major generating utilities serving the Northwestern U.S., British Columbia and Alberta. Smaller, principally non-generating utilities in the region participate indirectly through the member system with which they are interconnected.

NWPP activities are largely determined by major committees – the Operating Committee, the PNCA Coordinating Group, the Reserve Sharing Group Committee, and the Transmission Planning Committee

Program Administrator (PA)

WPP will provide all support of the governance outlined above including the compensation for the Board of Directors (BOD), responsibility for the expenses and logistics for all their meetings and the committees under the BOD. The support of the contract and compensation to the Program Operator (PO) will be the WPP responsibility, as well as legal and federal regulatory support for the WRAP, including meeting all the functions required of a public utility. WPP will also be responsible for billing, collection and payments under the WRAP as well as all the other current contracted programs and services of the WPP.

Appendix

About SPP



The Southwest Power Pool (SPP)

Today, SPP oversees the bulk electric grid and wholesale power market in the central United States on behalf of a diverse group of utilities and transmission companies in 17 states.

As an RTO, SPP ensures the reliable supply of power, adequate transmission infrastructure, and competitive wholesale electricity prices for a 552,000-square-mile region, including more than 70,000 miles of high-voltage transmission lines in the Eastern Interconnection.

Through their portfolio of Western Energy Services, we also provide contract-based services like reliability coordination and administration of a real-time balancing market to customers in the Western Interconnection.

SPP has a staff of more than 600 professionals working to ensure almost 19 million people across their service territories have electricity when they need it.

WRAP Program Operator (PO)

The PO will be responsible for the fulfillment of the contract requirements for the RA Program including the FS and the near-term to real-time operations. These would include modeling and system analytics, the performance or analysis of the LOLE study, PRM analysis, qualifying capacity contributions, Forward Showing Assessments, Deliverability for Planning & Reliability Coordination for capacity reserve adequacy, and Generation Assessment & Uncertainty Response activity.

These responsibilities will also include the monitoring and responding in the real-time operations. The PO will calculate any required settlements and assess penalties for noncompliance according to the penalty calculation rules set forth in the program. To perform their functions under the contract, the PO will have sufficient information technology resources including systems and people to maintain the systems, meeting requirements of cyber security, backup of data/systems, change control, and system recovery.

The PO will support the RAPC and other committees to provide comments, input, solutions, and problems. The PO also could be asked to provide input to the NWPP BOD.

Appendix

Operational Program

Operational Program

Deficient Participant must affirm on Operating Day if it is still deficient and requires Program assistance - allows out-of-program resolution; receives Energy Deployment from surplus Participants if still deficient on Operating Day

Surplus Participant that fails to provide assigned Energy Deployment and does not receive advance waiver or justify failure after the fact, must pay Energy Delivery Failure Charge, i.e., applicable energy index price multiplied by factor that increases for multiple unexcused failures and if deficiency was not fully covered by other surplus Participants - capped by CONE-based FS Deficiency Charge.

Sharing Calculation formula, which determines identity and extent of both deficient Participants (negative value) and surplus Participants (positive value), using FS metrics and departures therefrom, is as shown in the figure to the right:

Definition: Sharing Requirement	
$\text{Sharing Requirement} = [P50 + PRM - \Delta \text{ Forced Outages} + \Delta \text{ RoR Performance} + \Delta \text{ VER Performance}] - [\text{Load Forecast} + \Delta \text{ CR} + \text{Uncertainty}]$	
P50	The 1-in-2 peak load seasonal values as submitted in the FS Program for the forecasted upcoming two years.
PRM	Percentage of dependable capacity needed above the 1-in-2 peak Load Forecast to meet unforeseen increases in demand and other unexpected conditions. See the FS Design document for more details.
Δ Forced Outages	Includes any outages or de-rates associated with thermal generation units, storage hydro units and transmission outages impacting firm capacity import. Does not include generation on outage for scheduled maintenance.
Δ VER Performance	Comparison of forecasted VER production vs. qualified capacity contribution (QCC) of VER. Includes both over and under performance of wind and solar plants.
Δ Run-of-river Performance	Comparison of forecasted run-of-river production vs. QCC of run-of-river hydro. Includes both over and under performance.
Load Forecast:	Forecasted load for the OD considering the forecasted weather conditions of OD.
Uncertainty:	Forecast of potential error of the Load Forecast, VER forecast, and run-of-river forecast.
Δ CR:	Comparison of contingency reserves (CRs) that were included in the FS Program and CR requirement in Ops Program. Contingency reserves will be carried into the operating hour as required by the NWPP CR Sharing Program.

Appendix

Resource Adequacy Program Participants

The Load Responsible Entity (LRE)

The LRE is the prime actor in WRAP and is the focus of program rights, responsibilities and compliance. Each LRE must sign WRA Agreement (pro forma agreement under the WRAP Tariff) to commit. LRE participation is voluntary and will determine viability/scope of program as well as fund the costs of administering the program.

Qualifications for Participation

- Participants must be an LRE.
- Participants must be able and willing to execute any and all agreements necessary to participate in the WRAP and comply with all applicable terms and conditions therein.
- Participants must be willing to meet all FS and Operational Program requirements, including the ongoing ability to transact, deliver, and receive electricity in the WRAP Operational Program.
- Participants are expected to register all of the resources and supply contracts that may be used to meet their FS and/or Operational Program obligations under the WRAP, as well as disclose any other obligations associated with those resources.
- Participants must execute the WRAP non-disclosure agreement and comply with the terms and conditions therein, as well as otherwise meet any and all other confidentiality requirements of the WRAP.

Appendix

New WPP Board

WPP Independent Board

Following FERC approval and “critical mass” commitments, the current WPP board will be replaced with new Board of Directors (BOD) that meets independence standards appropriate to oversight of FERC-jurisdictional regional program. The WPP BOD will have the authority to file WRAP Tariff changes under FPA section 205, but cannot file certain types of major changes to WRAP Tariff in scope, character of WRAP absent super-majority RAPC approval. The WPP BOD will have final authority for approval/rejection on all proposed tariff changes, and can propose tariff changes to be considered in stakeholder process. The WPP BOD will also oversee pre-existing WPP functions.

The new WPP BOD will be comprised of five voting members and must include one current member (for three-year term), assuming one applies. There will also be two advisory (non-voting members) from current board, with two-year terms.

Appendix

WPP Board Nominating Committee

Nominating Committee

An Nominating Committee (NC) is proposed to be used for selecting the Directors for the BOD. The WRAP proposal is based in large part on the NC procedures that have been successfully used for the Western Energy Imbalance Market (EIM). The BOD will be selected by a NC comprised of certain stakeholder representatives. This proposal explains the selection and composition of the NC, how the NC will select a slate of nominees for each open position, and how that slate of nominees will be subject to a vote of approval on the slate by the BOD. The NC will nominate a slate with one nominee for each open seat on the BOD for which the term is scheduled to expire.

The NC is responsible for identifying and recommending for nomination proposed Directors for approval by the sitting BOD. The NC is also responsible for recommending compensation for the BOD. The NC is the committee responsible for identifying a recommended nominee or nominees for open positions on the BOD, working with the NWPP staff and an executive search firm.

Composition

- RAPC/Participant Investor-owned Utilities (IOUs) (2)
- RAPC/Participant Consumer-owned utilities (COUs) (2)
- RAPC/Participant Retail Competition Load Responsible Entity (LRE) (1)
- Federal Power Marketing Administration (1)
- Independent power producers/marketers (1)
- Public interest organizations (1)
- Retail customer advocacy group (1)
- Industrial customer advocacy group (1)
- WPP Agreement Signatory (not on RAPC and not a Market Operator) (1)
- Load Serving Entity (LSE) (or representative) with loads in the WRAP represented by another LRE and otherwise not eligible for any other sector (1)
- BOD (1)
- COSR (chair or vice chair) (1)

Appendix

RA Participants Committee (RAPC)

Composition

The RAPC is comprised of Participants and in collaboration with the WRAP's other working groups, committees, and task forces, is responsible for recommending policies, procedures, and system enhancements related to the policies and administration of the WRAP.

Purpose

In carrying out its purpose, the RAPC will provide the forum for Participants that have executed a WRAA with WPP. The RAPC can approve or reject proposed amendments to the WRAP Tariff prior to the filing of such amendments at FERC. The RAPC can also consider, approve, or reject program rules if such rules solely apply to the administration of the WRAP and have no application to any other program and/or contract service provided by NWPP. To the extent such rules do apply to any other service provided by WPP, the RAPC will be afforded the opportunity to provide input to the WPP BOD to resolve any issues. This will be accomplished by a collaboration with NWPP on the development of WRAP provisions, business practices, and interregional agreements to promote transparency and efficiency in the operation of the WRAP.

Voting

In the RAPC, each representative will have one vote. Voting will utilize a "House and Senate" style approach. The "House" vote will be weighted based on each representative's P50 load, as determined in the FS Program. The "Senate" vote will be equally weighted for all RAPC representatives. For a resolution to be approved, it must pass both the "House" and the "Senate" vote.

This construct is similar to SPP WEIS Western Markets Executive Committee structure that FERC has approved.

Appendix

Committee of State Representatives (COSR)

Purpose

The WRAP governance structure will need to include states' perspectives on matters such as integrated resource planning, reserve requirements, emerging policies concerning renewable generation, storage, efficiency and demand resources, and rules for retail choice (e.g., direct access providers and consumer choice aggregators).

Composition

The COSR is comprised of state representatives, either from the public utility commission or state energy office, at each state's discretion. It is envisioned that there would be one representative from every state or provincial jurisdiction that regulates one or more WRAP Participant(s). The COSR would have a Chair and Vice-Chair. The Chair or Vice-Chair of COSR will be requested to attend open sessions of the RAPC and to provide input and advice. In addition, the COSR shall assign an independent COSR support staff member(s) to attend and audit closed meetings of the RAPC under a non-disclosure agreement.

Appendix

Program Review Committee (PRC)

Purpose

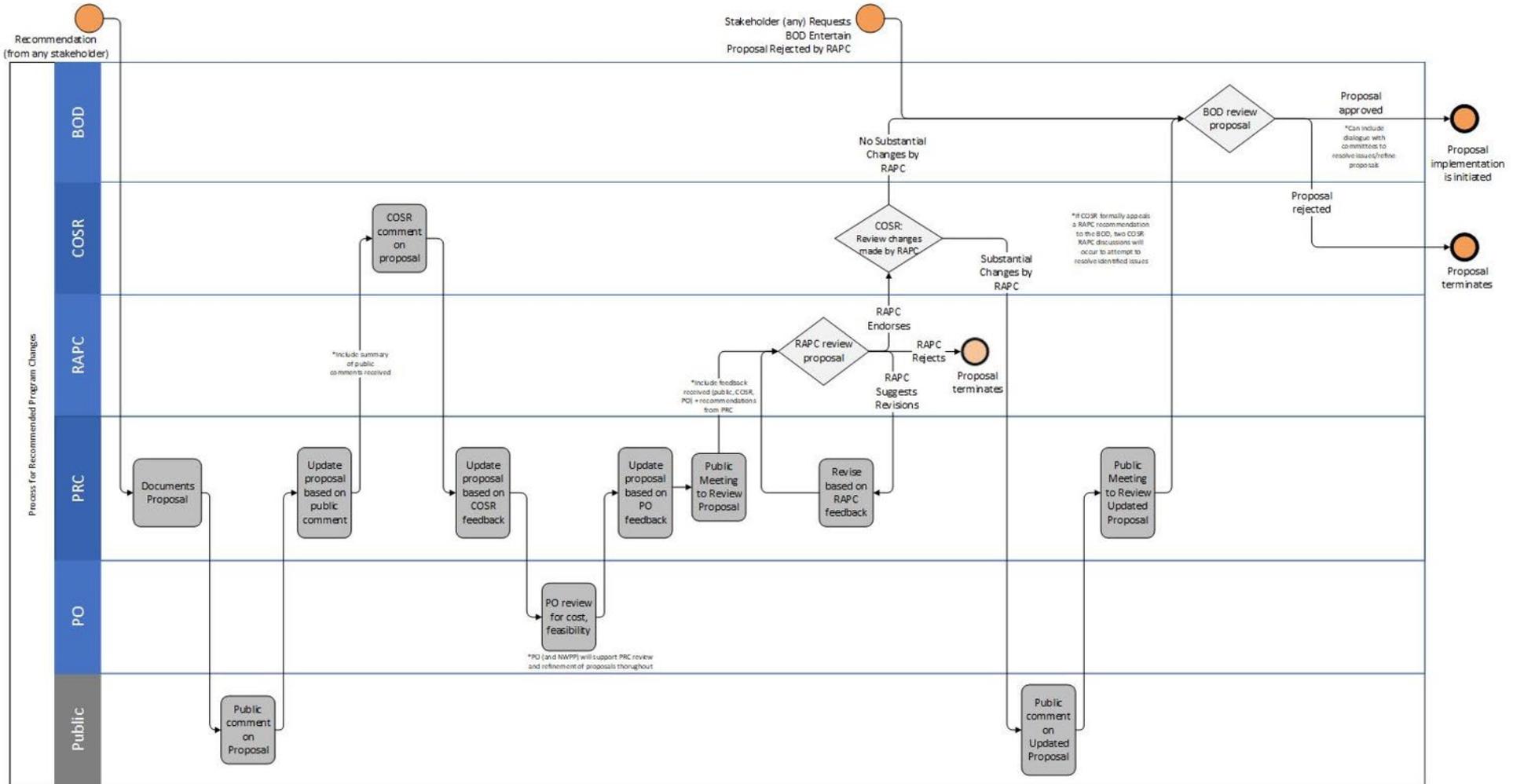
The PRC is a sector representative group charged with receiving, considering, and proposing design changes to the WRAP. The PRC is the clearing house for all recommended design changes not specifically identified as time-sensitive or of high RAPC priority. These recommended changes could come from Participants, the COSR, the BOD, other committees, stakeholders, the public, etc.

Composition

- RAPC Participant IOUs (4)
- RAPC Participant COUs (4)
- RAPC Participant Retail Competition Load Serving Entity (2)
- RAPC Participant Federal Power Marketing Administration (2)
- Independent power producers/marketers (2)
- Public interest organizations (2)
- Retail customer advocacy group (1)
- Industrial customer advocacy group (1)
- Load Serving Entity (LSE), or designated representative, with loads in the WRAP represented by other LREs and is otherwise not eligible for any other sector (1)
- COSR (chair, vice-chair, or designated representative) (1)

Appendix

PRC Approval Process



Appendix

Independent Evaluator

Purpose

The Independent Evaluator (IE) function has been identified by the current WPP BOD, state regulators, and the WRAP participants as an important element of a well-functioning regional WRAP to provide an outside, independent assessment of the performance of the program. The IE will be important to FERC as it considers approving the FERC-jurisdictional elements of the WRAP. It is recommended that the IE be established on or near the conclusion the non-binding stage of the WRAP and on an ongoing basis to provide an annual review of the WRAP. This initial scope for the IE could change over time, but this initial recommendation is intended to balance the need for independent review to identify continuous improvement opportunities with cost and administrative burden, especially as WRAP functionality will be implemented in stages over time.

Responsibilities & Limitations

- Once per year, analyzes operations, accounting/settlement, and design of program and makes recommendations for changes in a written evaluation report;
- Does not monitor WRAP Participants;
- Does not have decision-making authority; and
- Reports their findings to all WRAP committees (subject to confidentiality considerations).