

NorthWestern[®] Energy

Delivering a Bright Future

Resource Adequacy Update

ETAC 8/4/21



- Brief Level Set
- Northwest Power Pool Resource Adequacy Program
 - Implementation timeline
 - Program elements
 - Governance
 - Qualified Capacity Contribution (QCC)
 - Transmission
- Third Party Loads and Resource Adequacy



- Historically, the Northwest has been long capacity due primarily to the hydro system (but also significant coal capacity)
- A number of studies are now showing that the region is currently or soon will be short of the capacity it needs to reliably meet load
 - NWPP: “Although each study differs in scope and methods, a common finding across most of these studies is that the Northwest is either capacity-short today or will be within the next two years.”

- Resource Adequacy (RA) is the ability to serve load across a broad range of conditions, subject to a long-run reliability standard
 - An RA program is a regulatory planning framework that aims to ensure there are enough resources available to serve peak electric demand under most conditions, e.g. 1-day-in-10 years, and that those resources can deliver energy where it is needed
- A key requirement of an RA program is a Planning Reserve Margin (“PRM”) expressed as a percentage above peak load that is required to be held on a forward-looking basis
 - A PRM is an output determined by the adequacy standard
 - An RA program also defines a set of rules that apply to the entities that are covered by the program
 - For example, peak load forecasting methodology, how to count contribution of VERs, penalties for non-compliance, etc.

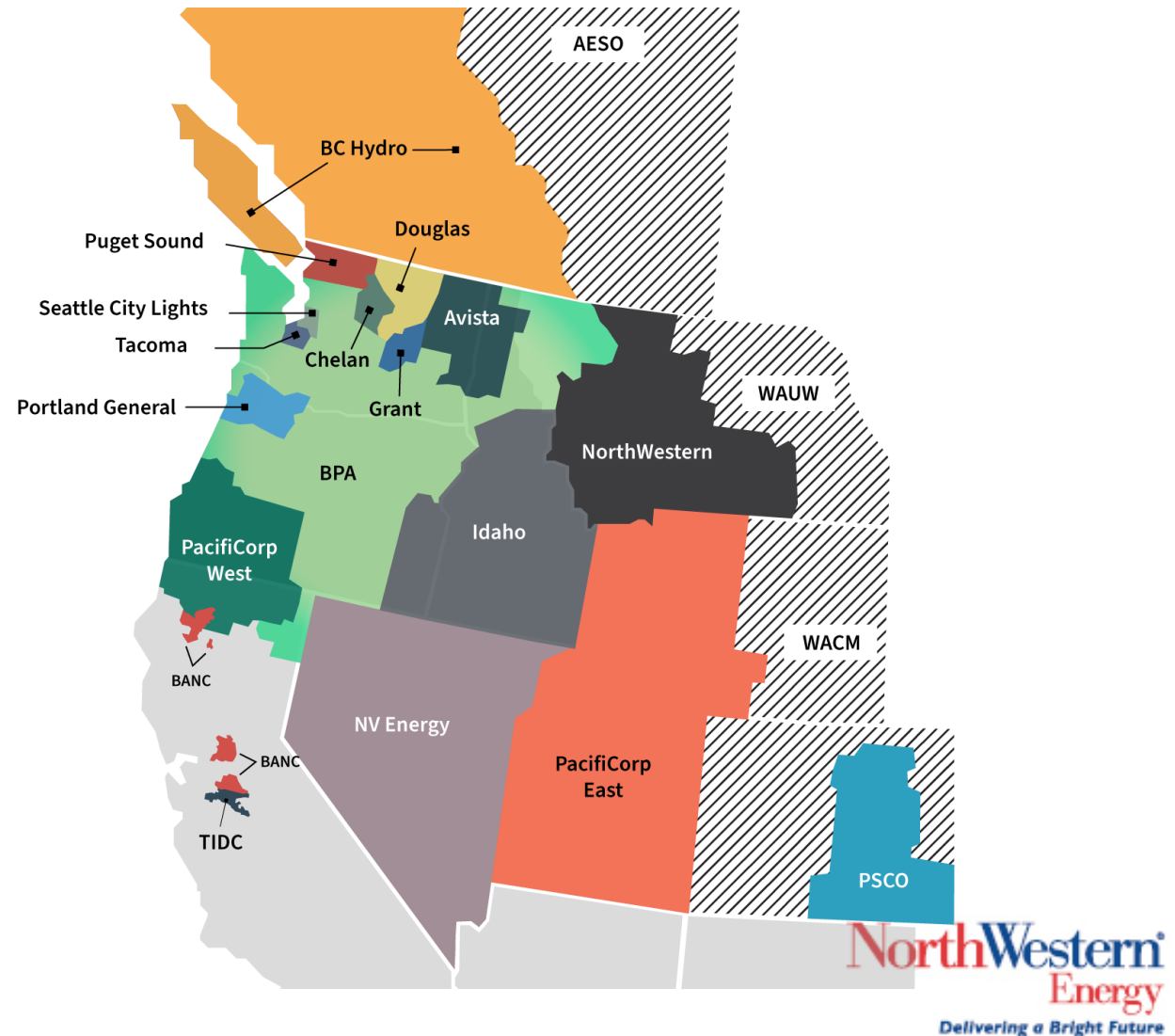


- Northwest Power Pool Resource Adequacy Development Program (RAPDP)
 - Began in Spring 2019
 - Response to a number of factors in the region
 - Coal retirements
 - Increased renewable penetration
 - Scarcity events in late winter 2019
 - Decision to join is optional
 - Once an entity has joined, it would be subject to penalties for non-compliance.



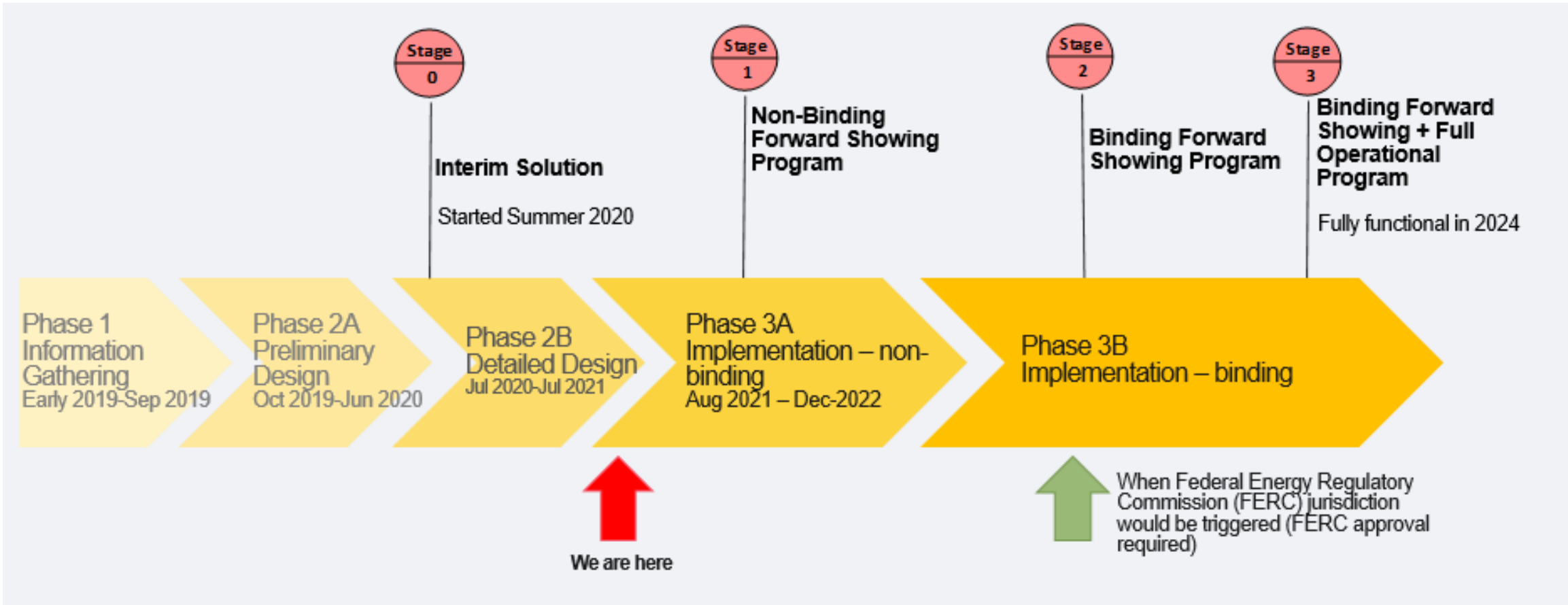
Northwest Power Pool Program – Value Proposition

- Each entity retains responsibility to carry enough capacity to meet its peak requirement plus a PRM
- PRM in a regional program will be lower than would be required for the same level of reliability on an individual basis
 - Load diversity
 - Resource diversity
- Other participants committed to helping during challenging periods





NWPP Program Implementation Timeline





- Independent NWPP Board of Directors
 - Transition from current structure
 - BoD will oversee the RA Program and other services provided by NWPP
- Program Operator
 - Contract with NWPP, reports to BoD
- Independent Evaluator
 - Analyzes operations, accounting/settlement, and design and makes written report
 - Does not monitor participants and does not have decision making authority



- Resource Adequacy Participant Committee (RAPC)
 - Comprised of all Participants (Load Responsible Entities)
 - Main decision-making body
- Other Committees
 - Committee of States
 - Representation from state commissions or energy offices; role of public power being considered
 - Program Review Committee (PRC)
 - Propose, review and recommend program changes to RAPC
 - Representation from Participants, IPPs, marketers, public interest groups, customer advocacy groups



- Two Modules
 - Forward Showing Program
 - For each peak season (Summer and Winter), each entity must demonstrate 7 months in advance that it has the capacity and transmission to meet its peak load plus PRM
 - Operational Program
 - In the day-ahead and operating day time frames, each entity commits to make excess capacity available to other participants who are experiencing high loads, low VER generation, and/or excess generation outages



- Thermal Resources
 - Unforced Capacity (UCAP) methodology (reflects resource-specific outage history) during capacity critical hours
- Storage Hydro
 - Methodology unique to NWPP program
 - Reflects operational restrictions during historical capacity critical hours
 - Likely will apply to a portion of NorthWestern's fleet
- Run-of-river Hydro
 - Effective Load Carrying Capability (ELCC) analysis
 - Will apply to a portion of NorthWestern's fleet



- Variable Energy Resources
 - ELCC analysis
- Energy Storage (battery and pumped hydro)
 - QCC based on 5-hour duration requirement
- Hybrid Facilities
 - Sum of the Parts methodology
 - PO may adjust QCC for facilities that cannot be grid-charged
- Customer Resources
 - Demand response, behind-the-meter generation
 - Must be controllable and dispatchable
 - Potentially could be registered as a load modifier or as a capacity resource



- Transmission Objectives

- Encourage procurement of firm transmission service sufficient to demonstrate deliverability of resources to load, while recognizing the need for flexibility where necessary or appropriate.
- Enhance overall visibility with respect to deliverability (from generator to load) for resources used for program compliance, supporting situational awareness and regional planning.
- Support and enhance reliability across the region without supplanting existing responsibilities of Balancing Authorities, LREs/Load Serving Entities (LSEs), and Transmission Service Providers (TSPs), and others.



- Transmission Objectives(continued)
 - Rely on existing Open Access Transmission Tariff (OATT) frameworks to facilitate transmission-related requirements for demonstration of resource adequacy and sharing of diversity across the NWPP footprint.
 - Respect program participants' OATT rights and responsibilities and Participants' other legal obligations, including contractual commitments and statutory requirements.
 - Design the Program in a manner that achieves deliverability objectives in a manner that is consistent with continued market efficiency in the operational time horizon.



- The program requires firm transmission
- At the Forward Showing deadline, Participant must demonstrate transmission rights to deliver 75% of its requirement
- Participant must indicate expected path for the remaining 25%



- Participants that fail to meet their forward showing requirements (after the cure period) will be assessed a penalty
- Penalty will be based on the Cost of New Entry (CONE)
 - Estimated annual capital and fixed operating costs of a new gas-fired resource
- This is an important element of an RA program and also one of the key elements that will require FERC approval



- Operational Program

- In return for carrying less capacity than they otherwise would need, entities commit to sharing with other members of the program
 - Sharing = selling energy to other members during times when the entity has excess and others are short
- If it is not needed, the capacity will be “released” by the PO at different intervals ahead of the operating day, allowing the entity to use it for other purposes



- NorthWestern's Supply peak load is approximately 1,200 MW
 - Our participation in the NWPP program would be for this group of customers
- Third party loads (co-ops and retail choice customers) represent an additional 700 MW of peak load
- Currently in Montana it is not mandatory for these loads or their suppliers to participate in the NWPP program or to otherwise plan for their own resource adequacy
 - NWPP program is voluntary
 - Neither the OATT nor current state regulation addresses this issue



- Why is this an issue?
 - As a Balancing Authority, we have an obligation to maintain service on our system
 - If a choice customer is short in a given hour, we have the ability to charge that customer for the energy shortage, but there is no mechanism in the OATT to charge for the capacity needed to provide that energy
 - Similarly, we have no authority under the OATT to curtail a specific customer in the event of a shortage



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