Western Resource Adequacy Program

May 8, 2023

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WRAP Value Proposition

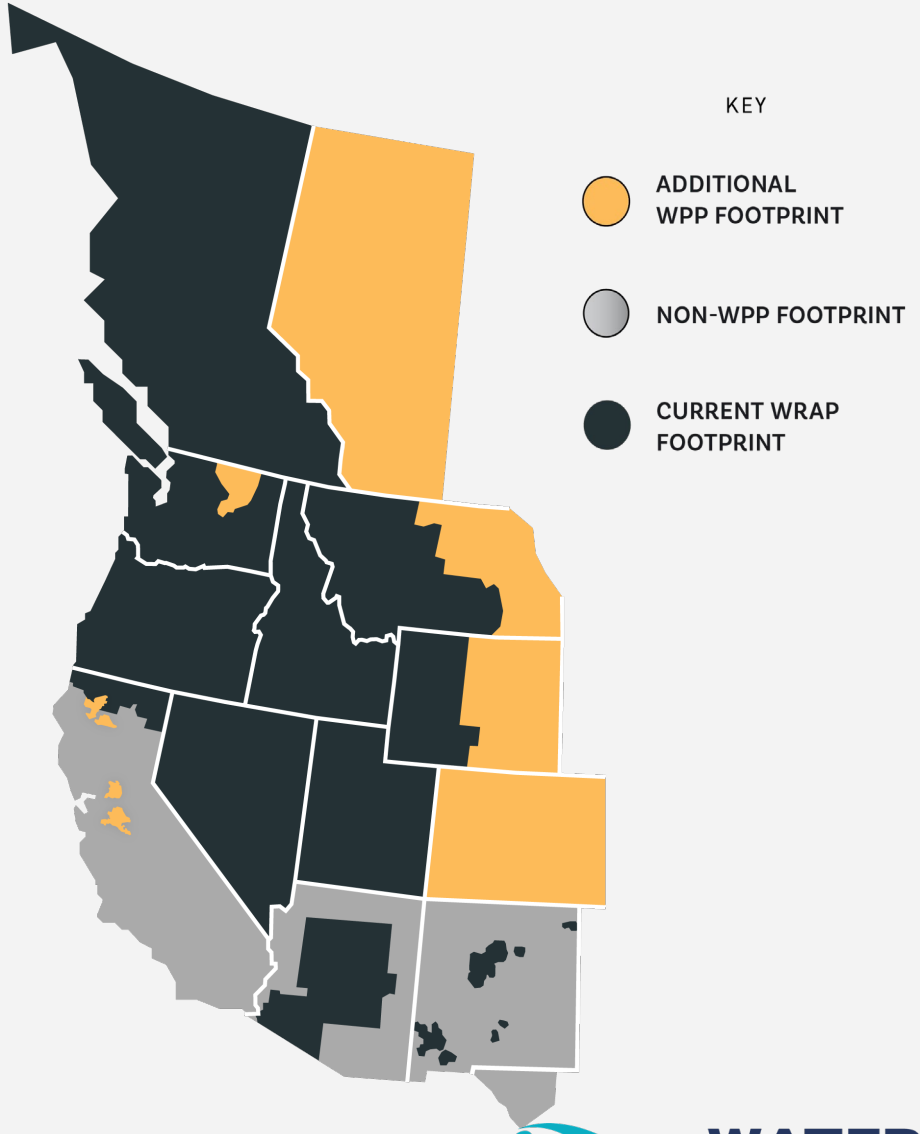
- ***Reliability first-*** Implementing a west-wide resource adequacy (RA) program must be the priority for the region
  - Work on WRAP interoperability with markets is important and ongoing
- ***Diversity is key-*** WRAP benefits hinge on diversity of resources, loads, and transmission across a broad footprint
- ***Leadership opportunity is nigh-*** WRAP commitments send strong signal that the West can work together to tackle RA

Solving a Problem

- Resource Adequacy is currently conducted on utility-by-utility basis under individual IRPs or other local planning processes
  - *No standardized method for measuring reliability risk or capacity contribution of resources*
  - *Utilities often must make broad assumptions about regional capacity availability that may not be accurate*
- Implements a **binding forward showing** framework that requires entities to demonstrate they have secured their share of the regional capacity need for the upcoming season
- Implements a **binding operational program** that obligates members with calculated surplus to assist participants with a calculated deficit on the hours of highest need
- Leverages the binding nature of the operational program, together with modeled supply and load diversity, to **safely lower the requirements** in the forward showing and help **inform resource selection** for the region, **driving investment savings** for members and their end use customers

Current Participants

Arizona Public Service
Avista
Bonneville Power Administration
Calpine
Chelan County PUD
Clatskanie PUD
Eugene Water & Electric Board
Grant PUD
Idaho Power
Northwestern Energy
NV Energy
PacifiCorp
Portland General Electric
Powerex
Public Service Company of New Mexico
Puget Sound Energy
Salt River Project
Seattle City Light
Shell Energy
Snohomish PUD
Tacoma Power
The Energy Authority



Resource Type	Accreditation Methodology	% of Resource Stack
Run-of-River Hydro	Historical output on Capacity Critical Hours	4.1%
Storage Hydro	WPP-developed hydro model that considers the past 10 years generation, potential energy storage, and current operational constraints	36.3%
Wind and Solar	ELCC	Wind: 11.5% Solar: 9.2%
Thermal	UCAP (resource capability is adjusted to reflect historic forced outage rates during capacity critical hours)	37.0%
Short-Term Storage	ELCC	1.6%
Hybrid Resource	"Sum of parts" method - ESR will use ELCC and generator will use appropriate method	0%
Customer Side Resources	Load modifier or capacity resource	0.3%
External Resources (imports)	Must be supported by an identified source, an assurance that the capacity is not used for another entity's resource adequacy requirements, an assurance that the seller will not fail to deliver in order to meet other supply obligations, and affirmation of NERC priority 6 or 7 firm point-to-point transmission service rights (or network integration transmission service rights) from the identified source to the point of delivery/load	Not included