

Resource Adequacy in the NWPP Footprint

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January 15, 2020

RESOURCE ADEQUACY?

- ***What is it?***

- Having enough resources – generation, efficiency measures, and demand-side resources – to serve loads across a wide range of conditions with a sufficient degree of reliability.
- Resource Adequacy looks out 1 – 4 years to ensure adequate resource capability is available to meet customer demand.
- In order to ensure supply always matches demand, electric system operators and planners rely on reserves. There are two principal types of reserves, shorter-term operating reserves and long-term planning reserves.

- ***Why is it important?***

- If insufficient capacity is available: increased possibility of extreme energy pricing, shortages, and possible brown outs. (our region may start experiencing shortages as soon as this year or next)

- ***Capacity?***

- The maximum output an electricity generator can physically produce, measured in megawatts (MW).

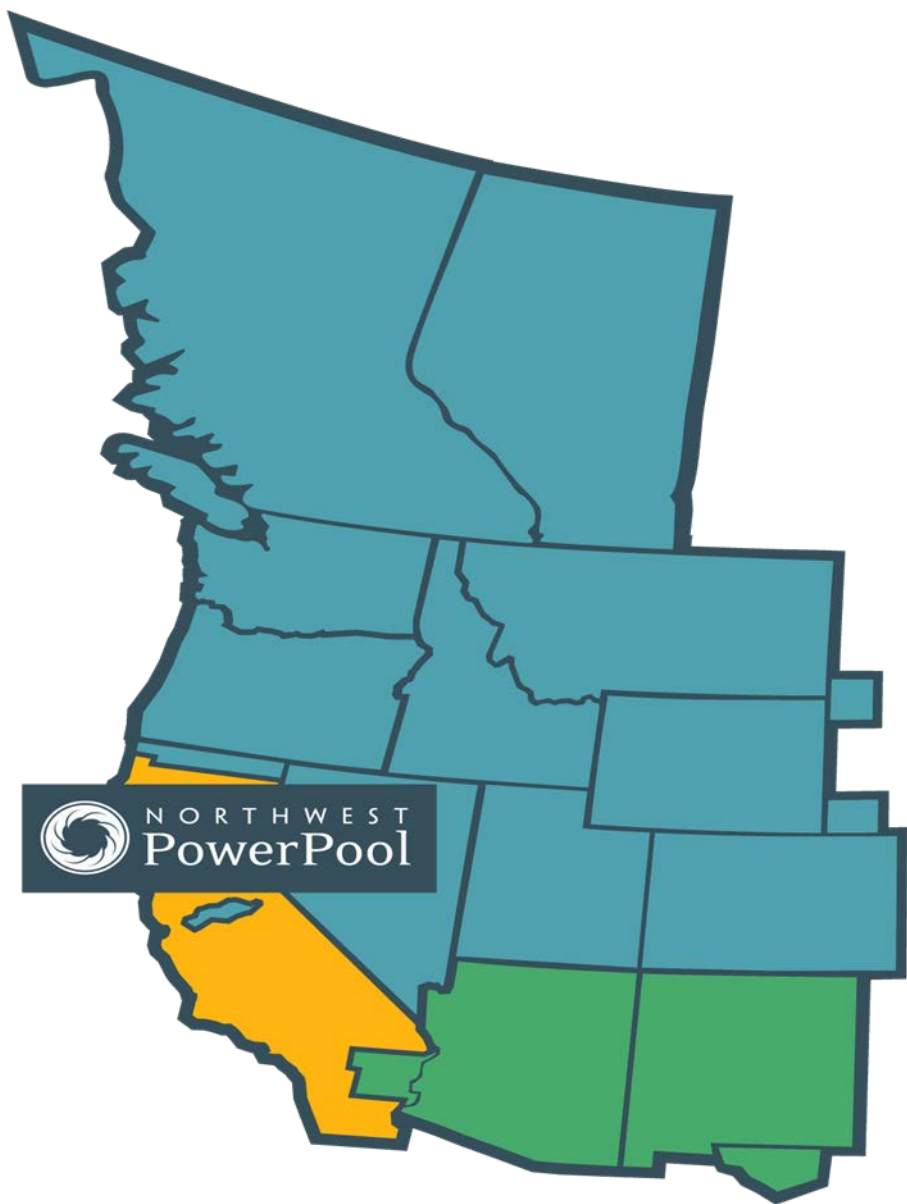
- ***Energy?***

- The amount of electricity a generator produces over a specific period of time.

HOW IS ADEQUACY MEASURED?

Common reliability metrics quantified using LOLP models include:

- **Loss of load expectation (“LOLE”, units of days/yr):** average number of days per year with loss of load (at least once during the day) due to system load exceeding available generating capacity.
- **Loss of load events (“LOLEV”, units of events/yr):** average number of loss of load events per year, of any duration or magnitude, due to system load exceeding available generating capacity.
- **Loss of load probability (“LOLP”, units of %):** probability of system load exceeding the available generating capacity during a given time period.
- **Loss of load hours (“LOLH”, units of hours/yr):** average number of hours per year with loss of load due to system load exceeding available generating capacity
- **Expected unserved energy (“EUE”, units of MWh/yr):** average total quantity of unserved energy over a year due to system load exceeding available generating capacity.



- **Who is NWPP?**
 - What is its focus?
- **Who are the major players?**
 - Utilities, IPPs, Regulators (OPUC,FERC)
 - NERC, WECC, NWPPC, BPA, other stakeholders

WHY THE NORTHWEST POWER POOL?

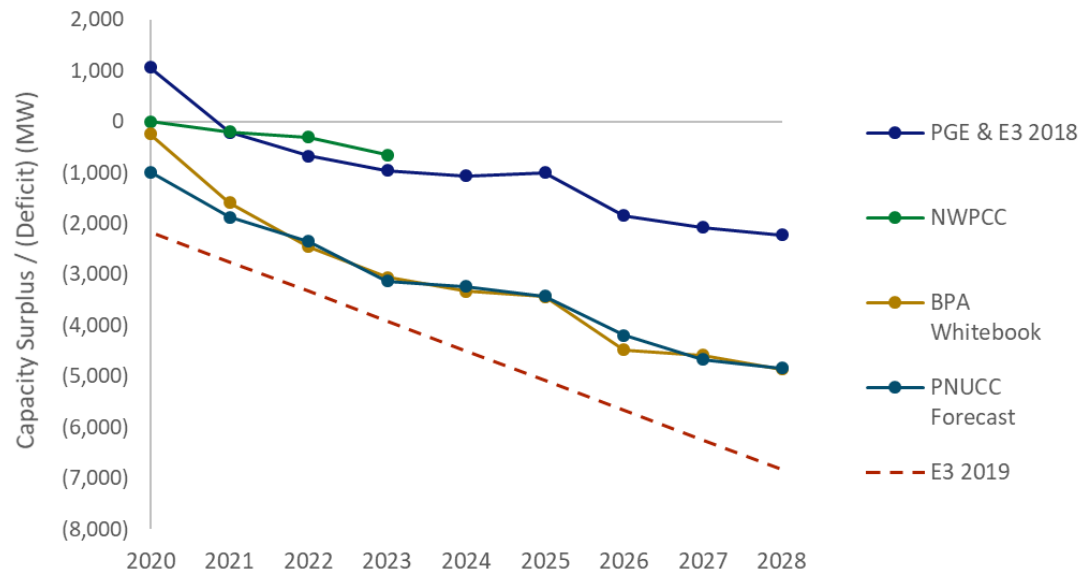
- The NWPP today coordinates several different programs essential to the reliable operation of the power grid within its foot-print including:
 - Reserve sharing program
 - Pacific Northwest Coordination Agreement
 - Western Frequency Response Sharing Group
- The Northwest Power Pool was established in 1941 and since that time has been coordinating resources to maximize efficient electricity production.

RESOURCE ADEQUACY PROJECT OVERVIEW

- The NWPP report: *Exploring a Resource Adequacy Program in the Northwest, 2019* includes two primary conclusions:
 1. The region may begin to experience shortages as soon as next year.
 2. By the mid-2020s, the region may face a capacity deficit of thousands of megawatts. Deficits of that magnitude may result in both extraordinary price volatility and unacceptable loss-of-load.
- As a result of this analysis, the NWPP and its member utilities are moving forward to design an RA program for NWPP member utilities.

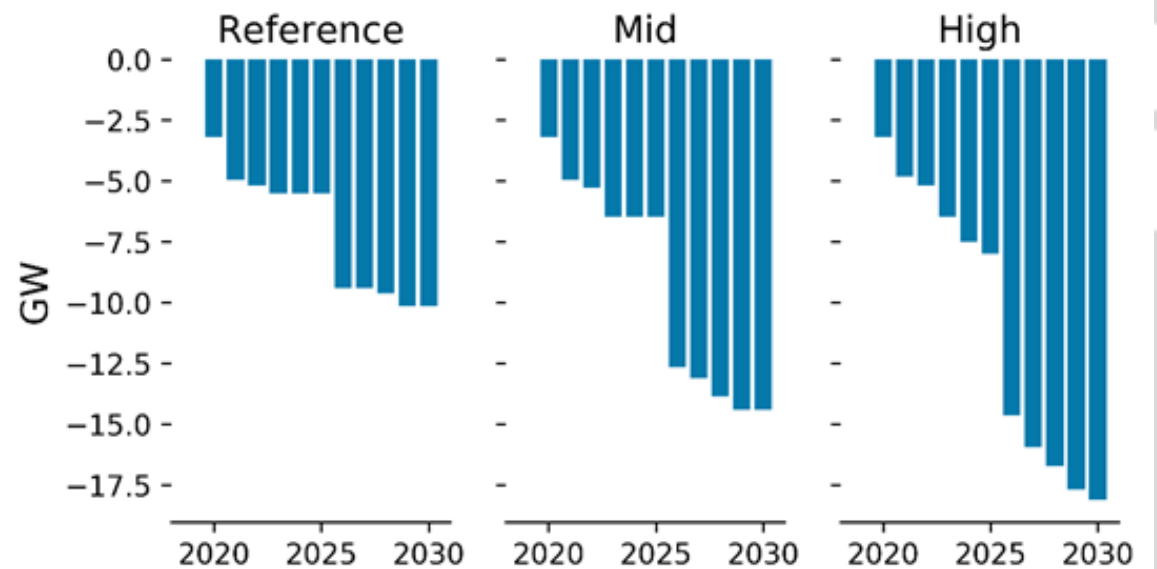
MULTIPLE STUDIES AGREE THAT THE NW IS APPROACHING A PERIOD OF CAPACITY SHORTFALLS

NW Capacity Surplus / Deficit in Recent Studies



Note: WECC also publishes a resource adequacy assessment, but it focuses only on summer, whereas resource adequacy is a winter & summer issues for the Northwest

US WECC Coal Retirement Scenarios



Note: Coal retirement scenarios developed by NWPP IRP Team. From research of announced and potential retirements from across the US WECC.

NWPP RESOURCE ADEQUACY PROGRAM

The NWPP is pursuing the first stage of design of a voluntary Resource Adequacy Program (RA Program) for the NWPP members.

- In a large portion of the NWPP footprint, utilities manage Resource Adequacy individually and with different methods. An RA Program would allow utilities to forecast and manage Resource Adequacy in a coordinated manner.
- The RA program will respect local autonomy over investment decisions and operations and will continue to respect the rights and characteristics of individual utilities, transmission service providers, Bas, Regulators and other entities.
- The RA Program is conceived to be voluntary to join, but once an entity joins, it will be contractually committed to the requirements of the RA Program.



Committees exist
within the NWPP

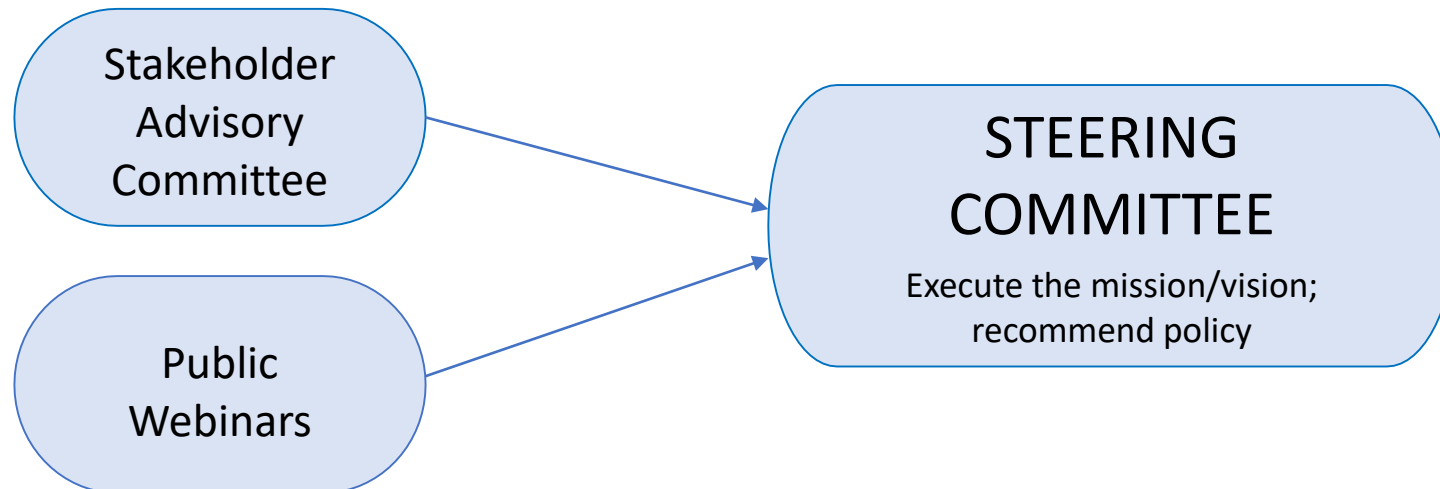
EXECUTIVE COMMITTEE

Set mission/vision; approve policy decisions

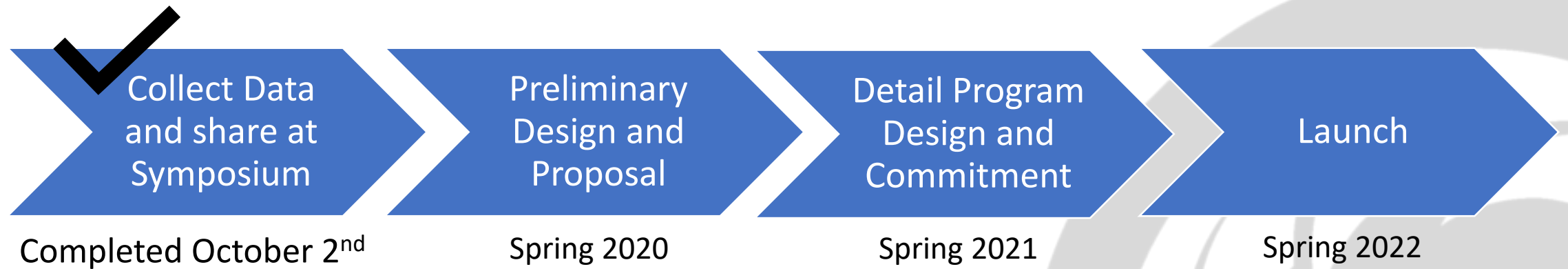
EXECUTIVE ADVISORY COMMITTEE

Sounding board / program champions

FRANK AFRANJI



PROGRAM DEVELOPMENT TIMELINE



For more information:

www.nwpp.org/adequacy

Thank you!