

Resource Adequacy in the Pacific Northwest

<https://www.nwpp.org/about/purpose/>

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What is the Northwest Power Pool

- The Northwest Power Pool (NWPP) Corporation assures Member organizations achieve maximum benefits of coordinated operations
- Core values: customer-driven, relationship-based, independent and operating with great integrity
- <https://www.nwpp.org/about/purpose/>

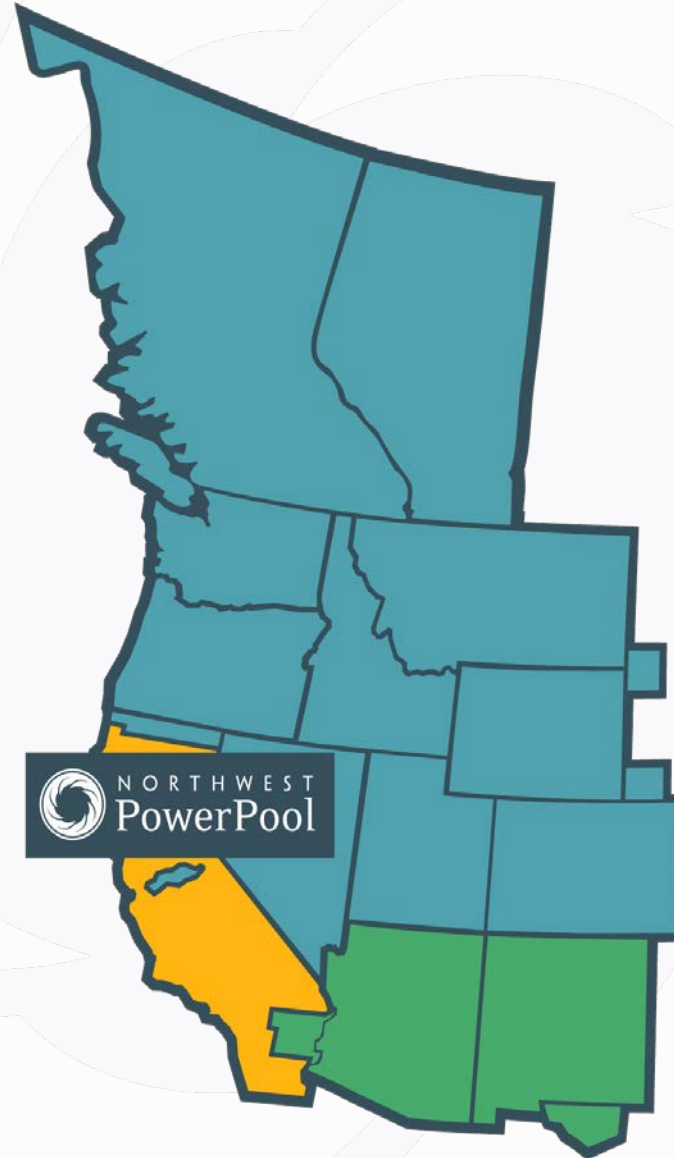
What is the Northwest power pool

- The NWPP Membership is a voluntary organization and is made up of the following members:
- **Members include:**
- Alberta Electric System Operator, Avangrid, Avista, BANC, BC Hydro, BPA, Calpine, Chelan PUD, Columbia Grid, Cowlitz PUD, Douglas County PUD, Energy Keepers, Inc. EWEB, Fortis BC, Grant PUD, Grid Force, Idaho Power, NaturEner, NorthWestern Energy, NV Energy, PacifiCorp, Pend Orielle PUD, Perennial Power, PGE, Powerex, Excel Energy, PSE, Seattle City Light, Snohomish PUD, Tacoma Power, TID, US Army Corps, Bureau of Reclamation, Western Area Power Administration

Why Northwest Power Pool?

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

Reliability is the
NWPP focus

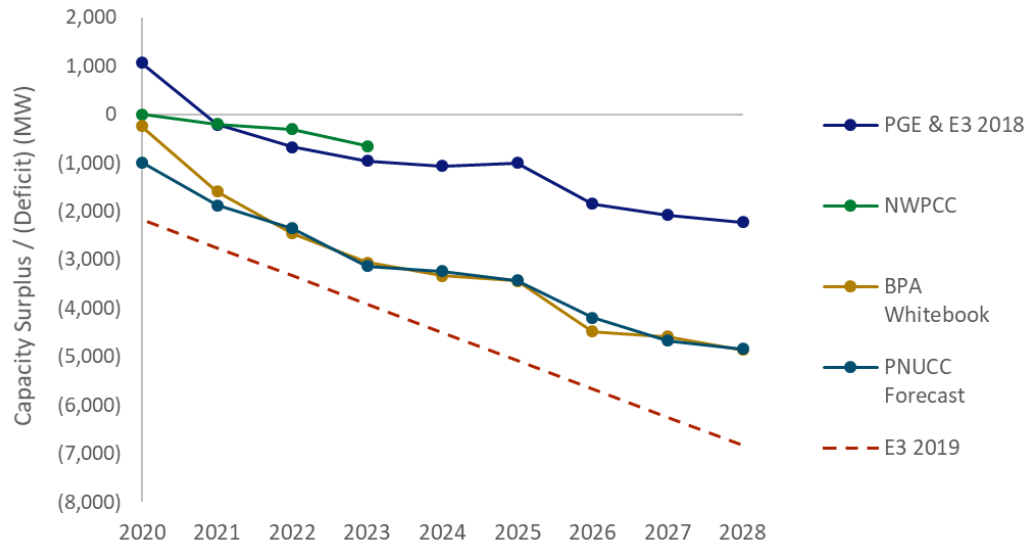


A region in Transition

- Coal retirements – losing firm resources when the region already has relatively tight load-resource balance
 - 3,000 MW of coal resources will come offline in the next two years
- New state policies demand a shift to a cleaner electricity supply portfolio
 - Oregon Senate Bill 1547 increased the state's RPS to 50% in 2016
 - Washington Senate Bill 5116 established goals of carbon neutrality in 2030 and carbon-free by 2045
- Utilities acting on their own – combination of policy and economics
 - Avista and Idaho Power have pledged 100% clean electricity by 2045
 - PacifiCorp, PSE, Idaho Power proposing early retirements of coal

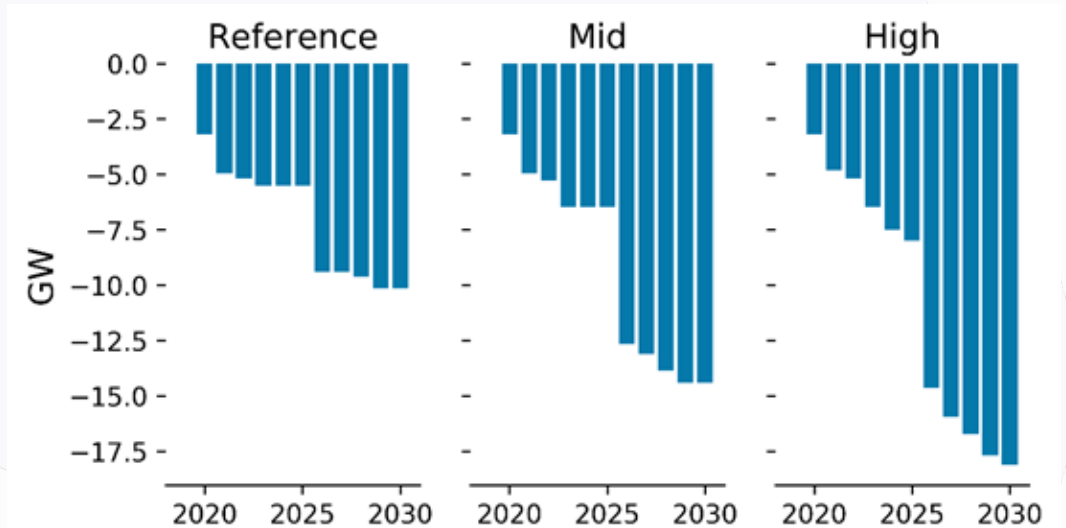
Multiple studies agree that the NW is approaching a period of capacity shortfalls

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 primarily a winter issue 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.

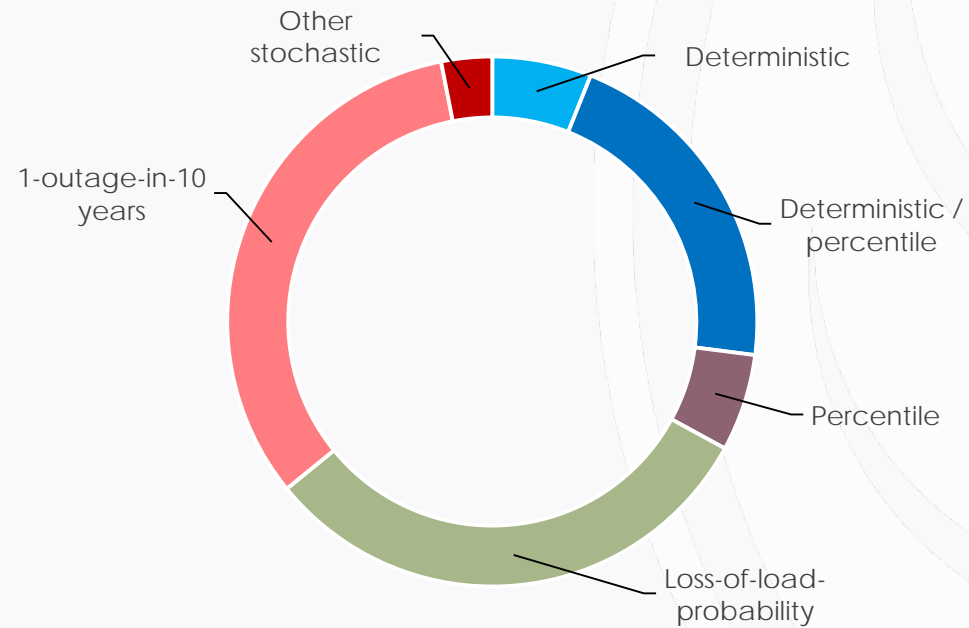
Current practices may not be sufficient to maintain reliability in the Pacific Northwest

- Current practices do not take full advantage of regional load and resource diversity
- There is no uniform method for measuring resource adequacy and no standard for how much reliability is enough
- Significant reliance on front office transactions can save costs for consumers during a time of capacity surplus, but risks insufficient investment in a time of shortfall
- Attributing capacity values to a portfolio of variable and dispatch-limited resources will become increasingly complex due to interactive effects (e.g., solar and wind plus energy storage)

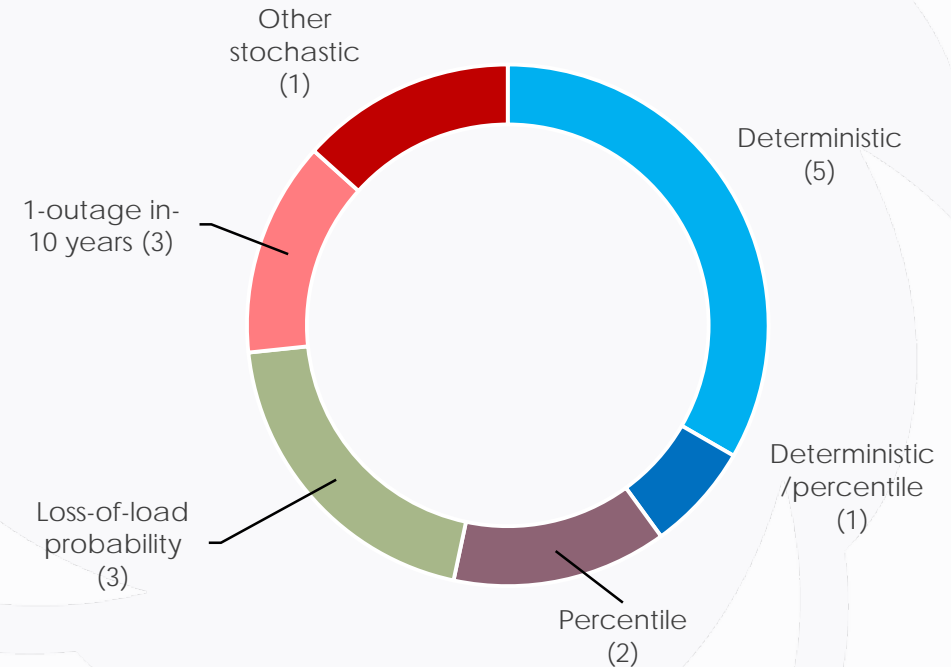


IRP needs assessment method

Weighted by peak load



Weighted by number of utilities



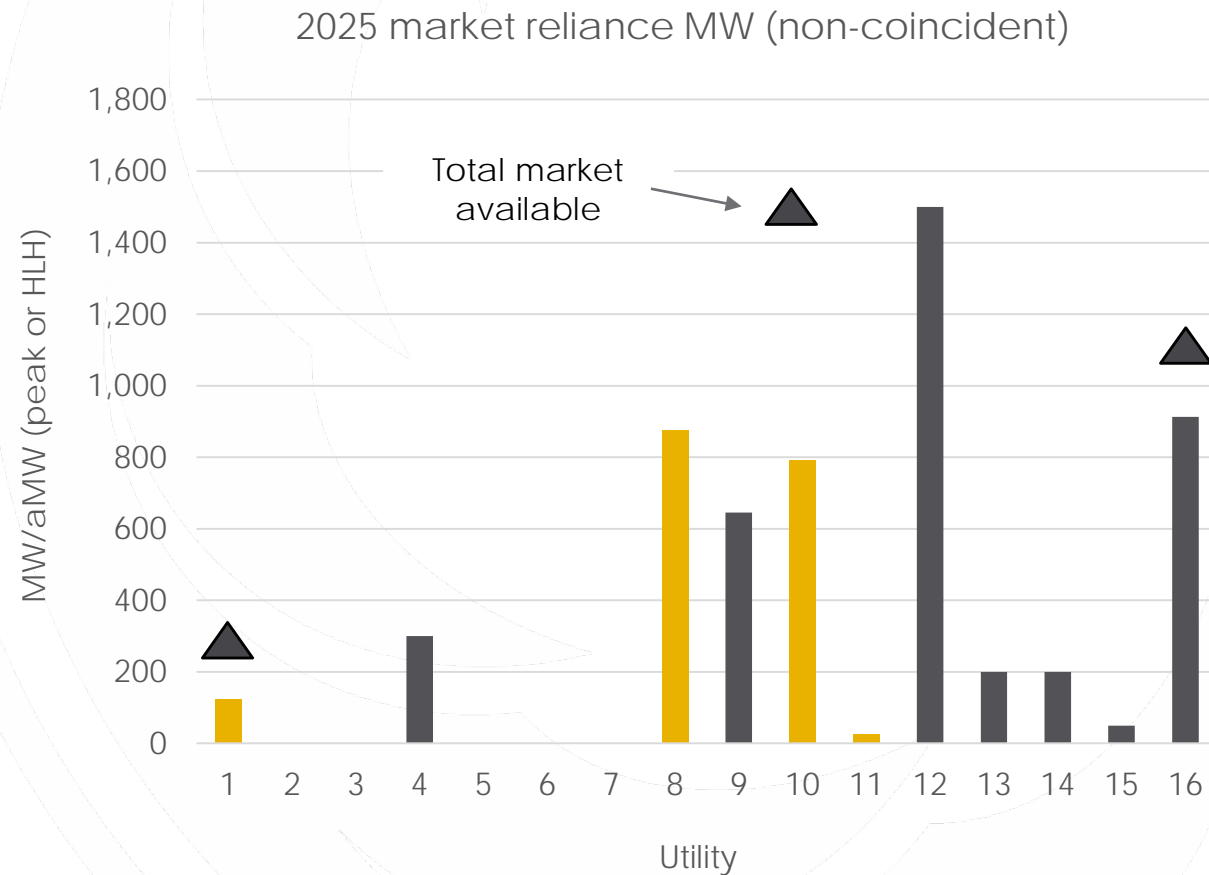
Data from IRP survey. Missing data filled in when possible.



Season of
highest use
SUMMER
WINTER

Data from IRP survey. Missing
data filled in when possible.

Market reliance, yes!

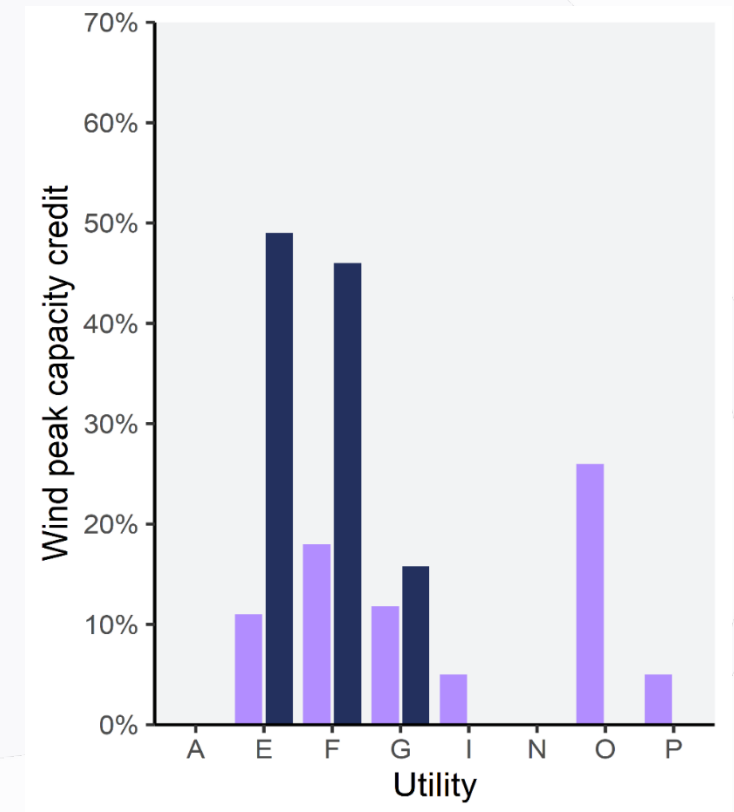
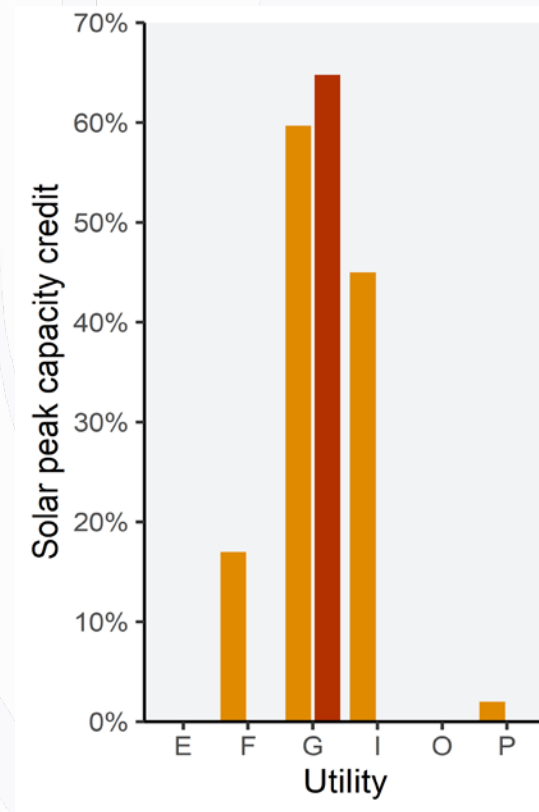




Wind & solar peak contribution varies

Depends on:

- Location
- Season of stress
- Existing portfolio
- Analysis method



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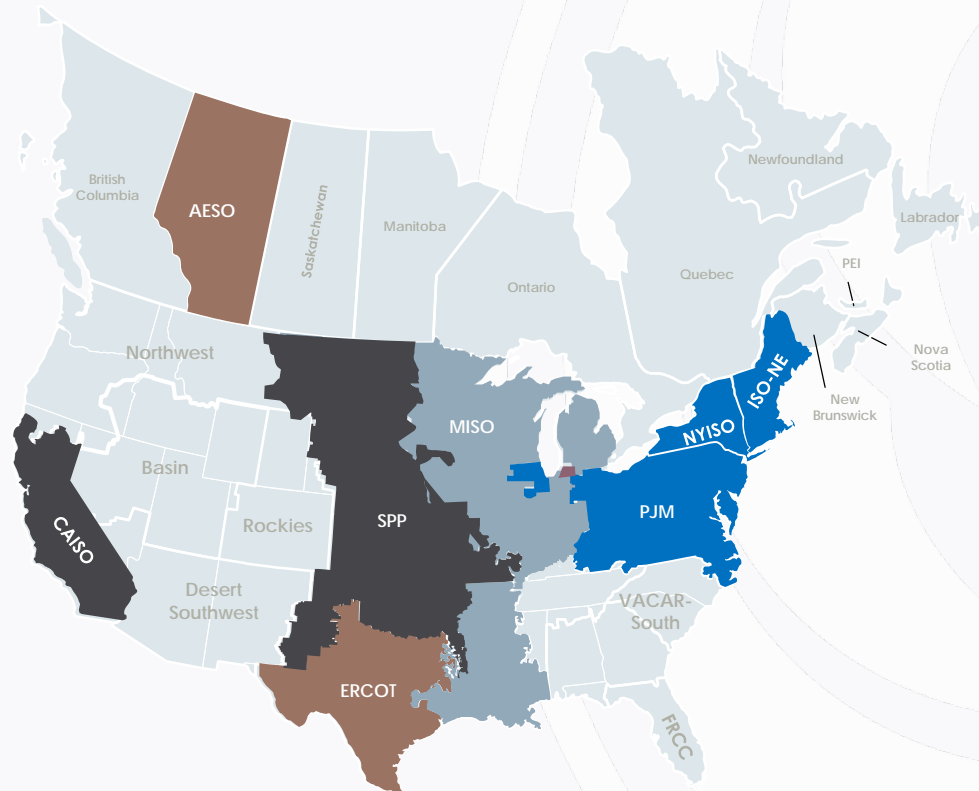
Work Group Recommendations

1. The region should take further steps to develop a regional resource adequacy program to achieve the following benefits:
 - To maintain reliability during a period of significant transition for the region's electricity system;
 - To promote increased transparency and uniformity that will provide utilities, regulators, and stakeholders alike with a clear understanding of the region's resource adequacy position;
 - To allow utilities and their customers to safely realize the full benefits of the load and resource diversity that exists across the region while maintaining reliability;
 - To provide a platform for utilities to share planning reserves and make optimal use of existing resources.

Work Group Recommendations

2. The design of a resource adequacy program for the NW should be tailored to reflect the unique qualities & characteristics of the region
 - Significant role of hydroelectricity & public power
 - Transmission and fuel delivery constraints in the region
3. A resource adequacy program should not usurp authority that is vested with the utilities and their governing bodies to determine the best way to meet resource adequacy requirements
 - RA program must include binding commitments for each member to do its share to maintain regional reliability and must have exclusive authority over resource capacity accreditation
 - However, decisions about which resources to procure to satisfy the regional obligation would continue to rest with member utilities

North America overview



Energy Only Market

- AISO
- ERCOT

Bilateral Resource Adequacy Program

- CAISO
- SPP

Voluntary Central Capacity Market

- MISO

Central Capacity Market

- PJM
- NYISO
- ISO-NE

Evaluating The RA Framework

| Program Participation | Program Design | Program Administration | Structural Framework | Regulatory Framework |
|--|--|--|---|---|
| <ul style="list-style-type: none"> › NWPP footprint › BA/LSEs, IPPs, IOUs, PUDs › Voluntary entry and program commitment › Compliance obligation | <ul style="list-style-type: none"> › Standardized regional RA metrics › Forward showing period › Rules and bylaws › Operating program to unlock diversity benefits/ investment savings | <ul style="list-style-type: none"> › Centralized entity administering and executing the RA program › Validates annual showings and deficiencies › Enforces the program › Includes an independent evaluator process | <p>Understanding the legal framework and government structure</p> | <ul style="list-style-type: none"> › Ensuring regulation meets state and federal jurisdiction › Regulators and stakeholders gain insight into the regions RA position |



Committees exist
within the NWPP

EXECUTIVE COMMITTEE

Set mission/vision; approve policy decisions

EXECUTIVE ADVISORY COMMITTEE

Sounding board / program champions

FRANK AFRANJI

Stakeholder
Advisory
Committee

Public
Webinars

STEERING COMMITTEE

Execute the mission/vision;
recommend policy

Resource Adequacy Program Design Project (RAPDP)

Overview of Project Timeline



Thank you!

<https://www.nwpp.org/resources/>