Northwest **Power** and **Conservation** Council

October 7, 2025

MEMORANDUM

TO: **Council Members**

FROM: **Nathaniel Clayville**

SUBJECT: **Strategies for Addressing Energy Shortfalls and Ensuring Resource Adequacy: PNGC's Approach**

BACKGROUND:

Presenter: Jessica Matlock, President & CEO at PNGC Power, and Rich Stover, Chief Legal Counsel at PNGC Power

Summary: Pacific Northwest Generating Cooperative's (PNGC Power) presentation will address the Northwest's emerging capacity and energy shortfalls, emphasizing how new WRAP compliance obligations will raise costs and intensify competition for firm resources. The presentation will outline PNGC's strategies to ensure reliability and compliance through effective energy management and participation in SPP Markets+ and CAISO's EDAM. Given that BPA's Tier 1 is fully allocated and Tier 2 uncertain, PNGC will highlight its role as a Joint Operating Entity leveraging scale, resource diversity, and risk management. Phase 1 secured 307 MW of non-federal wind, solar, and market purchases, while Phase 2 targets dispatchable baseload projects post-2028.

More info: PNGC's Resource & IRP Planning overview (how PNGC plans for reliability and cost): https://www.pngcpower.com/capabilities/power-planning/

PNGC's Portfolio Modeling (risk–cost tradeoff analytics for adequacy and markets): https://www.pngcpower.com/capabilities/portfolio-modeling/

JOE & BPA context (Tier 1/Tier 2, contract structure, aggregation):
https://www.pngcpower.com/services/electricity-supply/
https://www.pngcpower.com/about/financial-information/

Market & resource development updates:
https://www.pngcpower.com/news-releases/brattle-study-releases-bpa-day-ahead-market-participation-study-extension/

PNGC Power

Jessica Matlock

President & CEO

Rich Stover

Chief Legal Counsel

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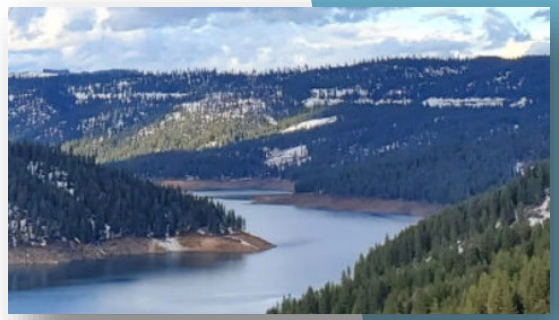
Who is PNGC Power?

- PNGC Power is a cooperative utility owned by 25 local electric cooperatives.
- We serve over 430,000 homes and businesses across 7 western states.
- As the largest customer of the Bonneville Power Administration (BPA), we deliver power reliably and affordably to rural communities.
- Our Board of Directors is made up of member cooperative CEOs.
- Our members work together to secure power, manage costs, and plan for the future.
- Together, we're stronger and more resilient.

Joint Operating Entity



In 2000, Congress authorized Joint Operating Entities (JOE) to allow small utilities to gain efficiencies available to larger ones. A benefit unique to PNGC Power.

- ✓ The intent of the JOE provision was to allow small utilities to pool resources, share risk, and act collectively.
- ✓ That model still works—and it's even more important now as we face a regional energy and capacity shortage.
- ✓ PNGC members are actively working to bring new generation and dispatchable capacity to the Northwest, easing BPA's future planning burden.
- ✓ Our investments will help the whole region by reducing dependence on Tier 2 and creating more flexibility in the system.
- ✓ Creates opportunities to reach economies of scale for development of new energy resources, like natural gas, geothermal, solar, etc.
- ✓ Lower power costs and risks through collective purchasing and shared planning.
- ✓ Collective group of cooperatives that now have a stronger voice in BPA rate cases and policy forums.
- ✓ Joint resource adequacy planning ensuring reliable, cost-effective energy supply for all members.

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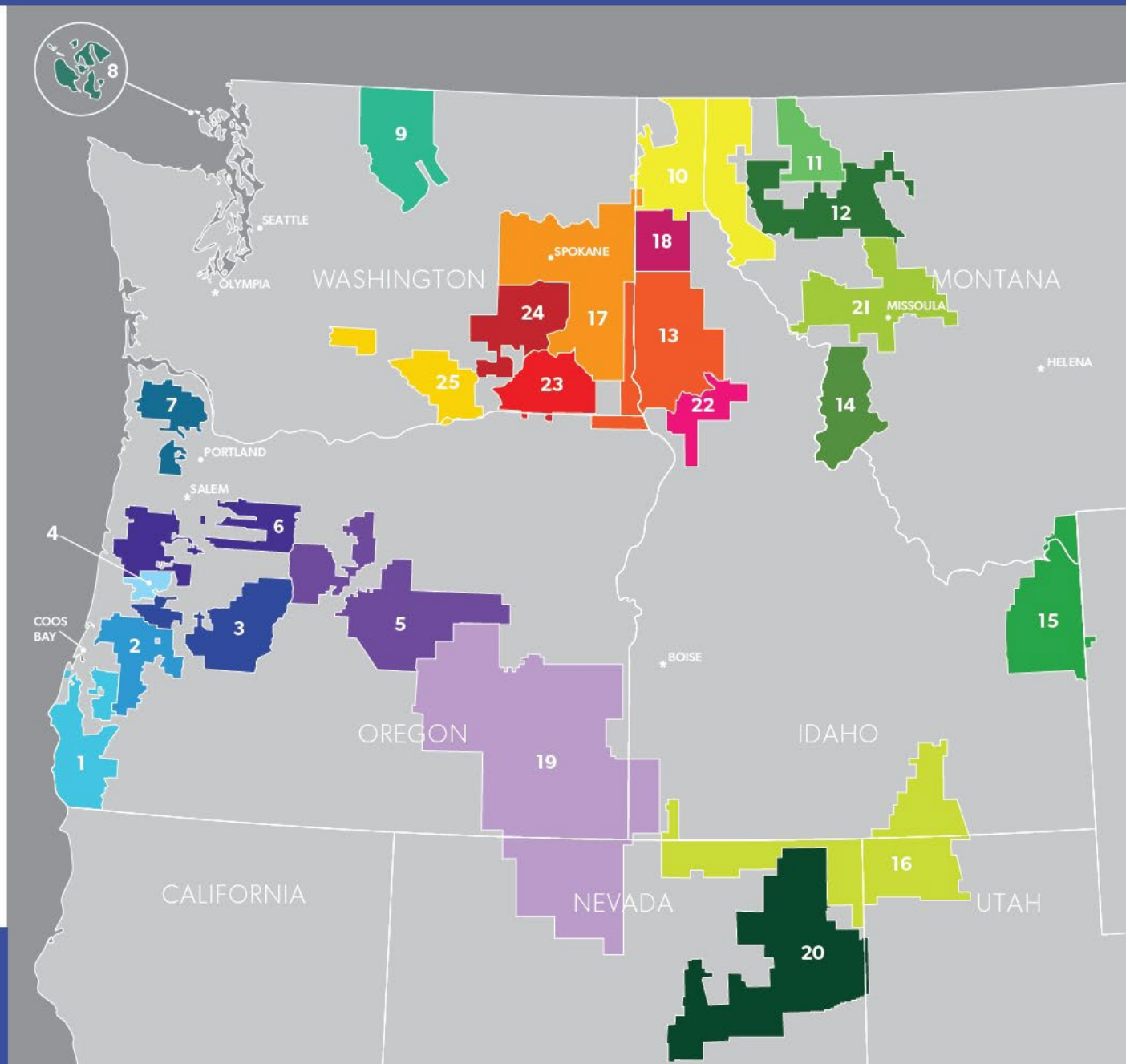
PNGC POWER MEMBER UTILITIES MAP

PNGC 25 MEMBER UTILITIES MAP KEY

1. Coos-Curry Electric Cooperative, Inc. *Port Orford, Oregon*
2. Douglas Electric Cooperative *Roseburg, Oregon*
3. Lane Electric Cooperative, Inc. *Eugene, Oregon*
4. Blachly-Lane Cooperative, Inc. *Eugene, Oregon*
5. Central Electric Cooperative, Inc. *Redmond, Oregon*
6. Consumers Power, Inc. *Philomath, Oregon*
7. West Oregon Cooperative, Inc. *Vernonia, Oregon*
8. Orcas Power & Light Cooperative *Friday Harbor, Washington*
9. Okanogan County Electric Cooperative, Inc. *Winthrop, Washington*
10. Northern Lights, Inc. *Sagle, Idaho*
11. Lincoln Electric Cooperative, Inc. *Eureka, Montana*
12. Flathead Electric Cooperative, Inc. *Kalispell, Montana*
13. Clearwater Power Company *Lewiston, Idaho*
14. Ravalli Electric Cooperative, Inc. *Victor, Montana*
15. Fall River Rural Electric Cooperative, Inc. *Ashton, Idaho*
16. Raft River Rural Electric Cooperative, Inc. *Malta, Idaho*
17. Inland Power & Light Company *Spokane, Washington*
18. Kootenai Electric Cooperative *Rathdrum, Idaho*
19. Harney Electric Cooperative, Inc. *Hines, Oregon*
20. Wells Rural Electric Company *Wells, Nevada*
21. Missoula Electric Cooperative, Inc. *Missoula, Montana*
22. Idaho County Light & Power *Grangeville, Idaho*
23. Columbia REA *Walla Walla, Washington*
24. Big Bend Electric Cooperative, Inc. *Ritzville, Washington*
25. Benton REA *Prosser, Washington*



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PNGC and Region's Needs

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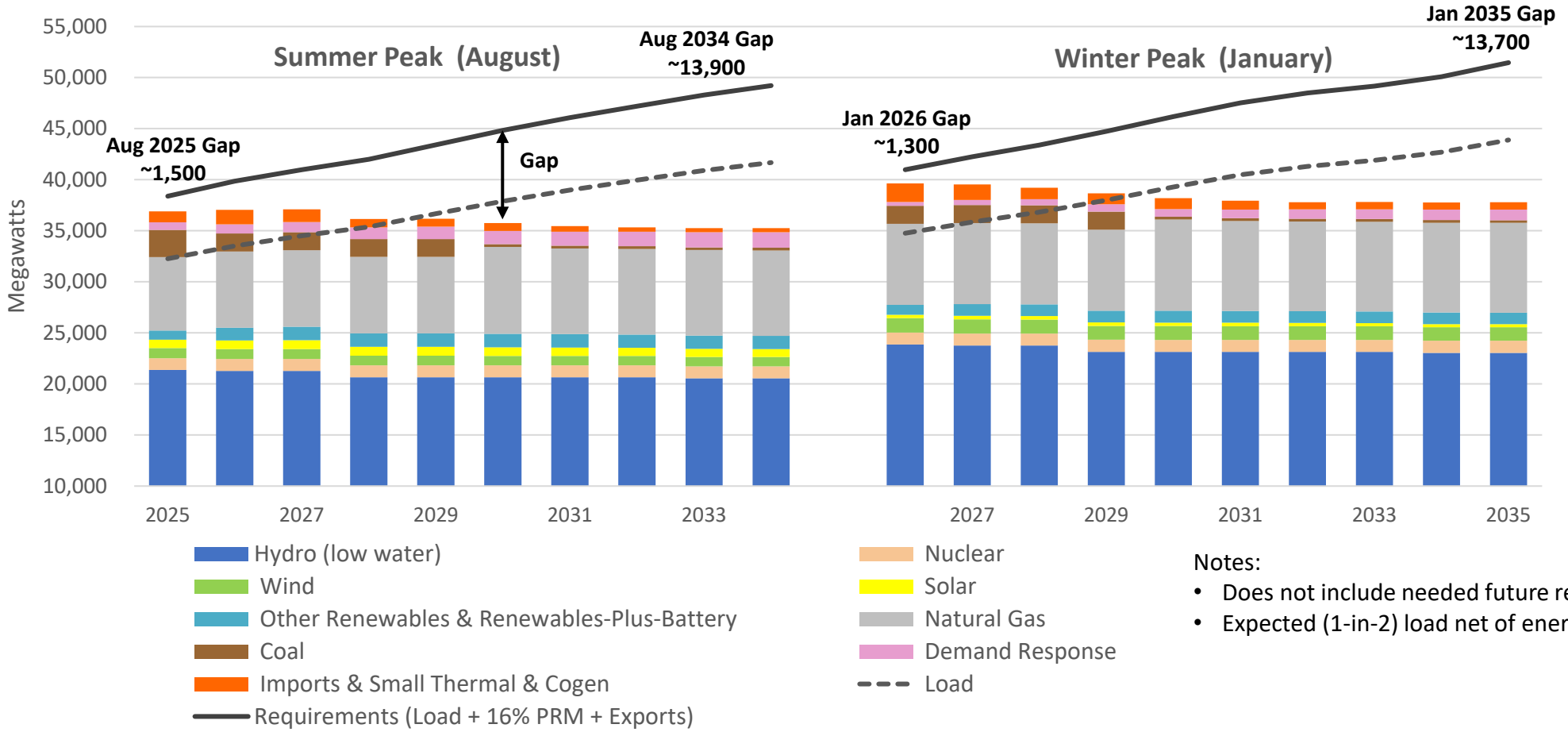
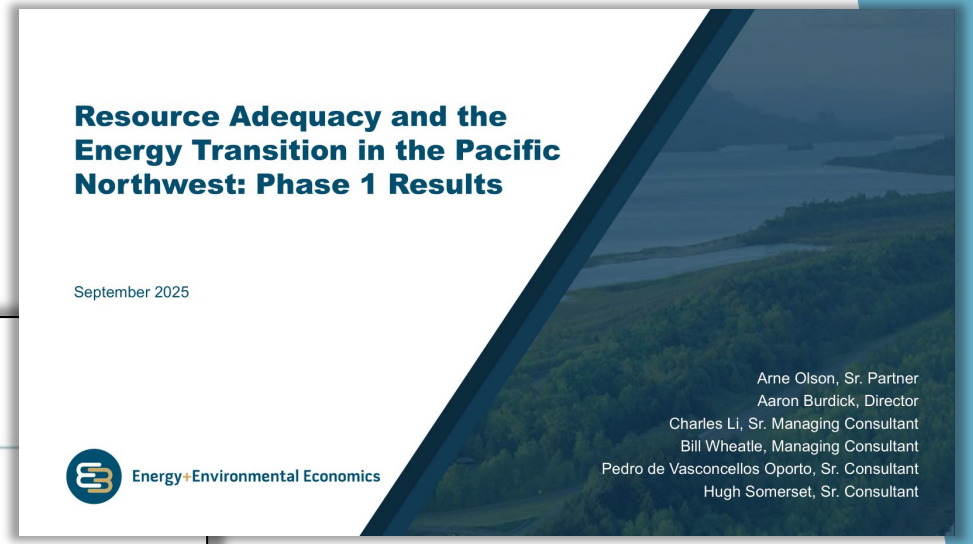
Forecasted resource gaps in winter and summer peak hours



Notes:

- Does not include needed future resources
- Expected (1-in-2) load net of energy efficiency



Key findings of Phase 1:

1. **Accelerated load growth and continued retirements create a resource gap beginning in 2026 and growing to *9 GW by 2030***
   - 9 GW is approximately the load of the state of Oregon
2. **Preferred resources such as wind, solar and batteries make only *small contributions* to meeting resource adequacy needs**
3. ***Timely development of all resources is extremely challenging* due to permitting and interconnection delays, federal policy headwinds, and cost pressures**

The Greater Northwest faces a supply deficit in 2026 which grows to 8,900 MW by 2030

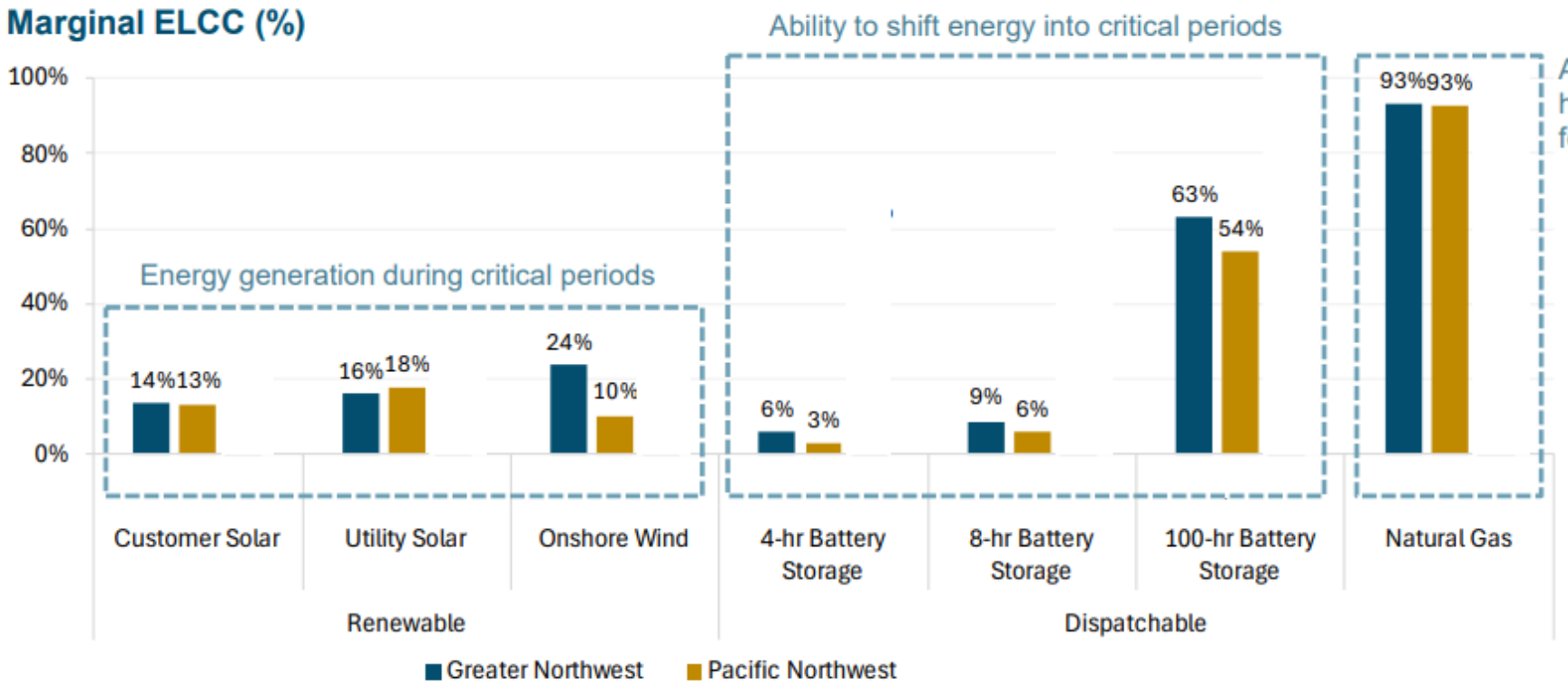
+ **Load growth and retirements mean the region faces a power supply shortfall in 2026**
  - The region currently relies on imports to maintain reliability
+ **Nearly 9,000 MW of new capacity is needed by 2030**
+ **Projects currently in active development account for only 3,000 MW of new capacity**
  - 850 MW are coal-to-gas conversions
  - 350 MW are hydro upgrades

Greater Northwest
Total Resource Need and Effective Capacity Contribution from Planned Resources(MW)

System Needs (MW)	2025	2026	2027	2028	2029	2030
Total Resource Need*	49,245	50,737	52,499	54,184	55,879	57,195
Existing Portfolio w/ Retirements	46,716	45,629	45,381	45,375	45,033	44,585
Firm Imports	3,750	3,750	3,750	3,750	3,750	3,750
Reliability Position Surplus (+) / Shortfall (-)	**+1,222**	**-1,358**	**-3,368**	**-5,059**	**-7,096**	**-8,860**
ELCC from "In-Development" Firm Resources	-	481	527	528	773	1,107
ELCC from "In-Development" Wind, Solar and Battery projects	-	496	909	1,381	1,581	1,880

** Total Resource Need includes peak load + planning reserve margin as well as obligation to serve the Columbia River Treaty Regime*

Resource reliability value depends on ability to supply energy during multi-day cold snaps under low hydro conditions



These annual marginal ELCC values represent the ability of a marginal resource addition to reduce region-wide reliability risk relative to a firm, always available generator. For these 2025 values, ELCCs are primarily a function of output during the wintertime multi-day energy-constrained events that define risk for the Greater NW and the PNW subregion.

+ **Solar and wind have low capacity factor during reliability events → 10-24% of nameplate**
+ **Short-duration energy storage cannot charge during most energy-constrained events → 3-9%**
+ **Natural gas plants with firm fuel can run when needed → 93%**

Phase 2 will evaluate resource options for meeting near-term and long-term resource adequacy and clean energy needs

	Scenario	RA contributions	Additional considerations
Mature	Solar	Low and declining ELCCs	Variable energy resource
	Onshore wind	Declining ELCCs	Variable energy resource
	Natural gas	Firm	Carbon emitting, requires pipeline infrastructure
	Biomass/biodiesel	Firm	Uncertain fuel availability and cost
	Short-duration storage (4-8 hr li-ion)	Declining ELCCs	ELCC saturation impacted by hydro fleet interactions
	Long duration storage (10-12 hr pumped hydro)	Declining ELCCs	ELCC saturation impacted by hydro fleet interactions
	Geothermal	Limited potential	High cost per kWh and limited PacNW sites
	Energy efficiency	Limited potential vs. cost	Can reduce new load but cannot serve existing load
	Demand response	Declining ELCCs	Duration and use limited
Emerging	Floating offshore wind	Declining ELCCs	High enabling infrastructure costs + long timelines
	Natural gas to H2 retrofits	Firm	High enabling infrastructure costs + long timelines
	New dual fuel gas + H2-ready plants	Firm	High enabling infrastructure costs
	New H2-only plants	Firm	High enabling infrastructure costs + long timelines
	Gas w/ 90-100% carbon capture and storage	Firm	High enabling infrastructure costs + long timelines
	Nuclear small modular reactors	Firm	Uncertain costs + long timelines
	Enhanced geothermal	Firm	Uncertain costs and potential
	Multi-day storage (100 hr)	Slower declining ELCCs	Uncertain costs, high round-trip energy losses
	Direct air capture	n/a	Can offset emitting gas that serves RA needs

Note: emerging technologies face cost uncertainty, unclear commercialization timelines, and/or high enabling infrastructure needs

PNGC Member Needs

Growing Needs

- Energy gap: 240–565 aMW above Tier 1 limits (2029–2044)
- Capacity gap: 480–960 MW (winter peaks, 2029–2044)

Compliance Pressure

- WRAP rules: All BPA customers must meet capacity obligations or face penalties

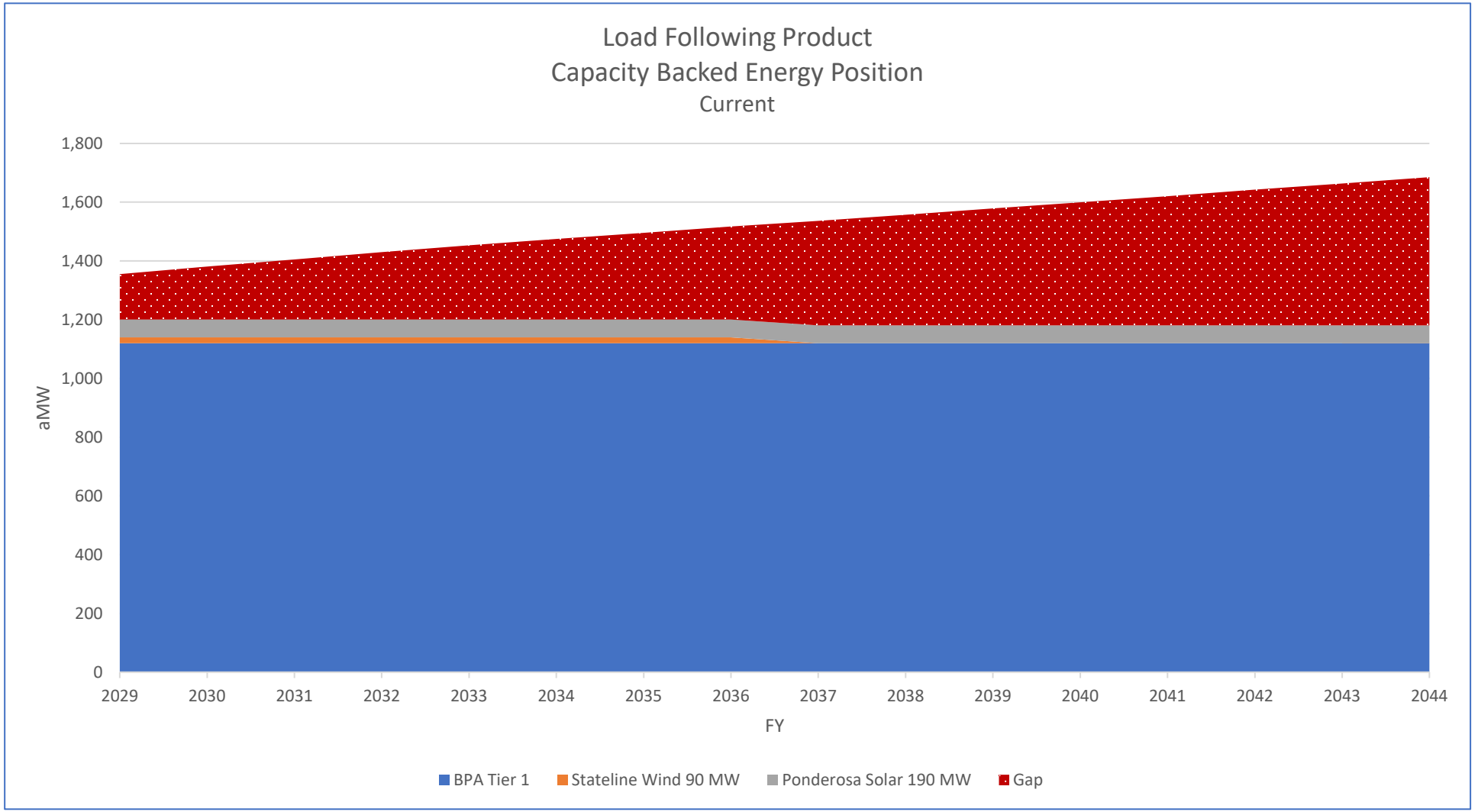
Limits of BPA Options

- Tier 2 risk: Unknown costs, market exposure, uncertain reliability
- Capacity costs: Unpriced today, but expected to be expensive and highly competitive under WRAP

PNGC's Advantage

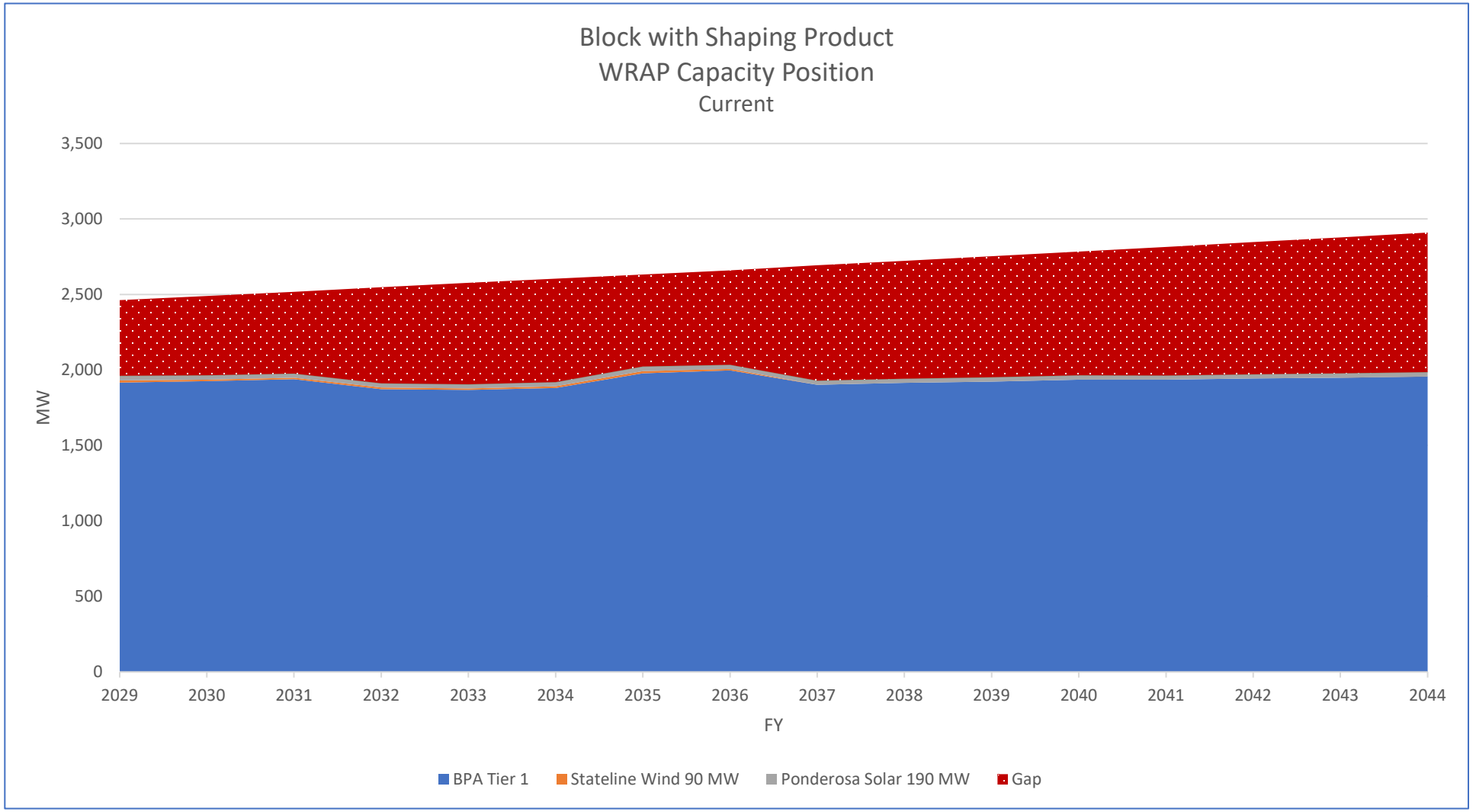
- Planned Product: Flexible schedules, integrates non-federal resources, market-ready, monetizes load diversity
- Economies of scale: Large enough to build or buy resources directly
- Risk control: Greater certainty over costs, supply, and compliance

PNGC 25 Member - ***Load Following Product***
Current Capacity Backed Energy Position



PNGC 25 Member – Shaped Block Position

Capacity Position



WRAP and SPP Markets+

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WESTERN RESOURCE ADEQUACY PROGRAM

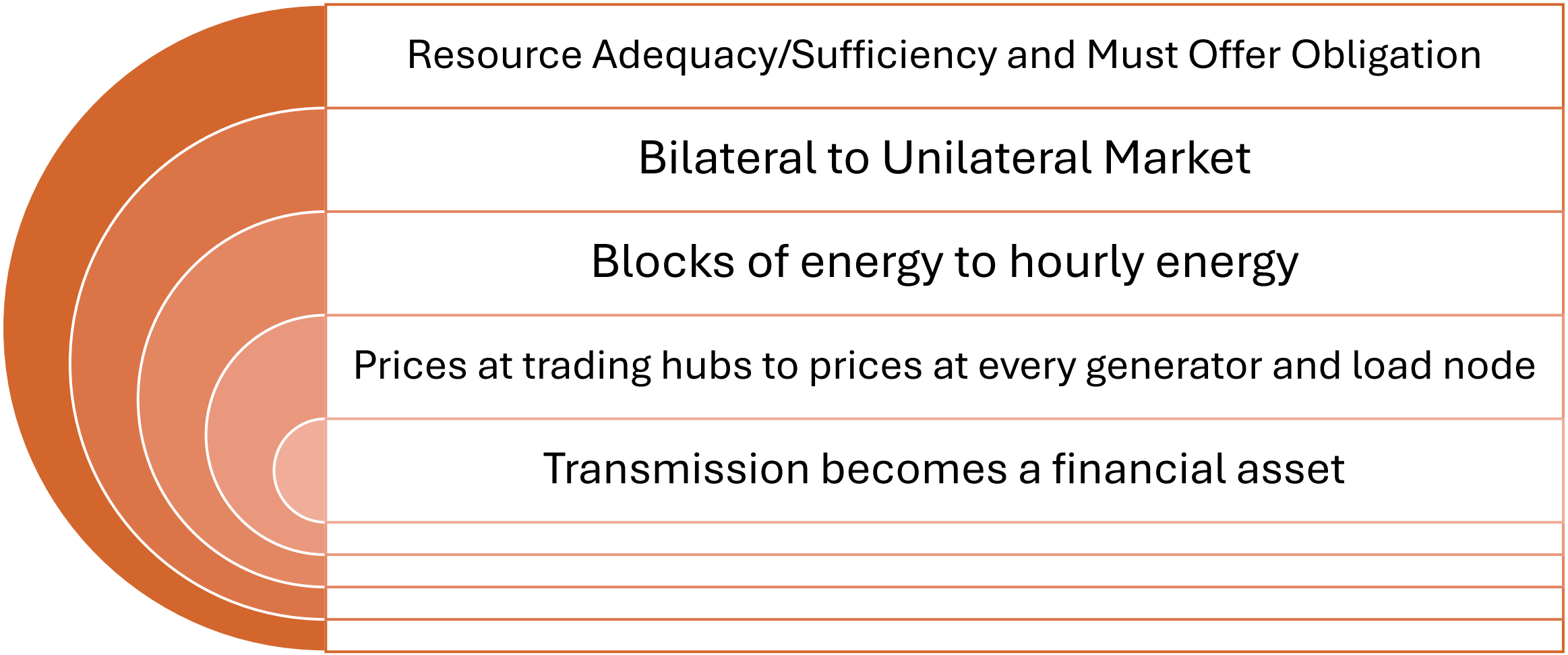
- Transitions to a **binding program Winter 2027-2028.**
- 22 participants currently participating that serve **~ 71 GWs of expected peak load.**
- **Steep penalties** for inadequacies.
- Western Power Pool is Program Administrator and SPP is the Program Operator.
- **WRAP Participation is a pre-requisite for Markets +.**

Markets + must offer obligation

- Market participants **must offer enough resources** to meet their day-ahead demand forecast (p50) plus some uncertainty and sales (capped at forward showing amount).
- Resource accreditation is **adjusted based on resource performance**.
- To the extent a market participant does not have enough resources to meet its obligations, WRAP will attempt to partner that participant with another WRAP participant that is surplus to meet that obligation at a pre-defined price.

TEA SOLUTIONS

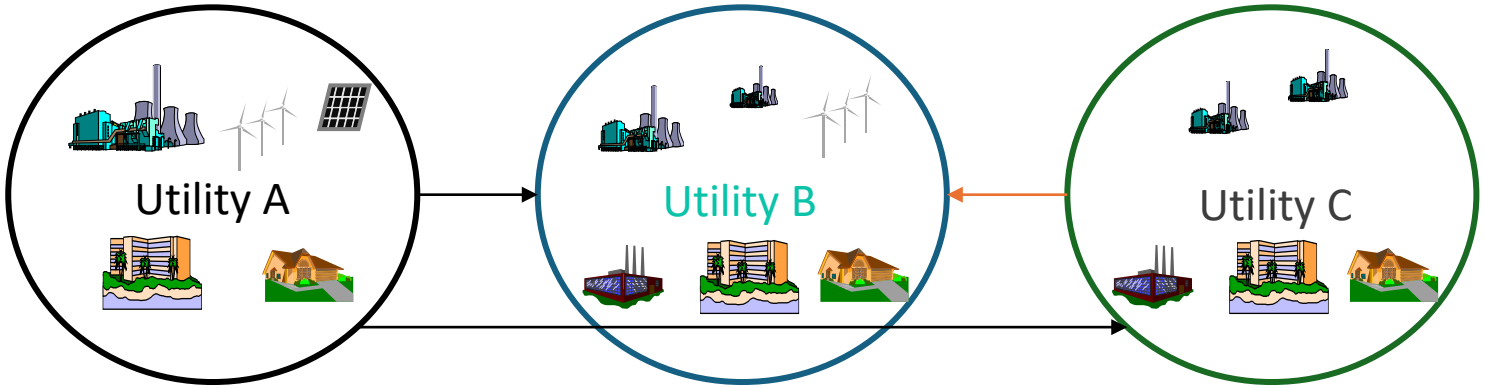
KEY ORGANIZED MARKET CHANGES



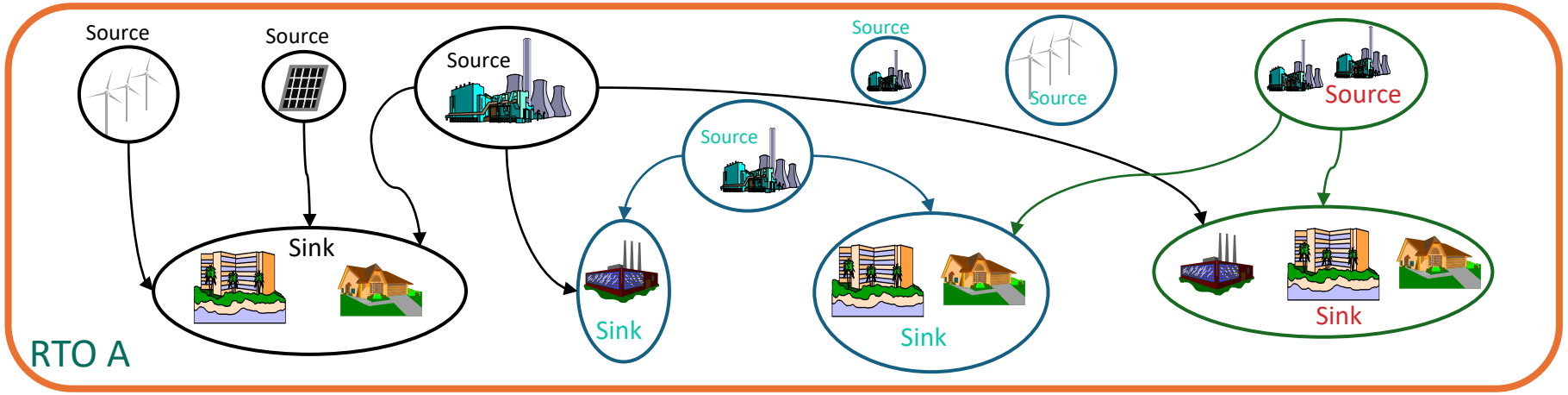
Bilateral to Organized Markets

Transition to organized Markets

Bilateral Environment



Organized Market Environment



Utility organized market Business Model

Same:

- Primary objective is **still to keep the lights on and minimize costs**
- **Oversee operation** of your generation, transmission, & load (demand)

Different:

- **Utility's demand served by the market** - through lowest cost market-supplied resources
- Utility sells generation into market - **organized market is a "unilateral" market** – transaction counterparty is the organized market
- Utility can **use "financial" bilateral market to hedge** market price uncertainty

CONSIDERATIONS

- **BPA products need to evolve to become compatible with Day-Ahead Markets.**
  - Is Resource Shaping Service still needed? Or at a minimum, should it look different?
  - Does the current requirement for resource dedication of a fixed amount to BPA still make sense or should the customer just offer in the resource to the market?

- **BPA has yet to define Day-Ahead Market responsibilities for its various products.**
  - Will BPA the Scheduling Coordinator/Market Participant for non-federal resources of Load Following customers? For only dedicated resources with RSS?
  - Will BPA be the Scheduling Coordinator/Market Participant for the load of planned product customers it serves with Tier 1?

**BPA committed to start a stakeholder process to work through compatibility with day-ahead markets for POC products. Start date is TBD!*

Transmission

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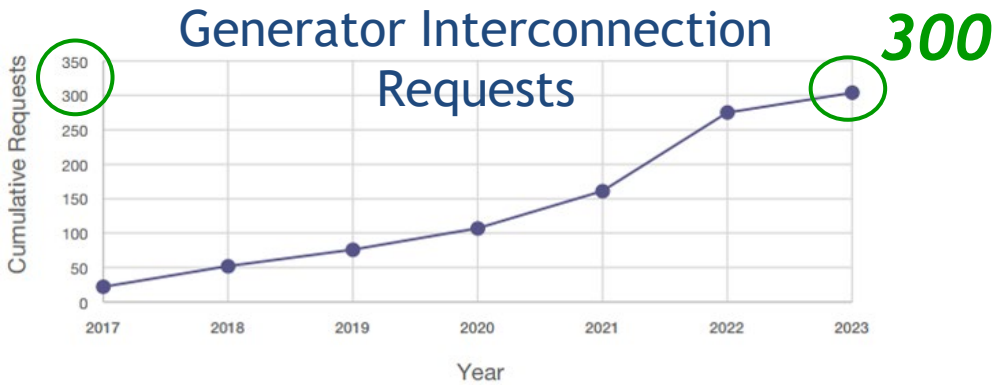
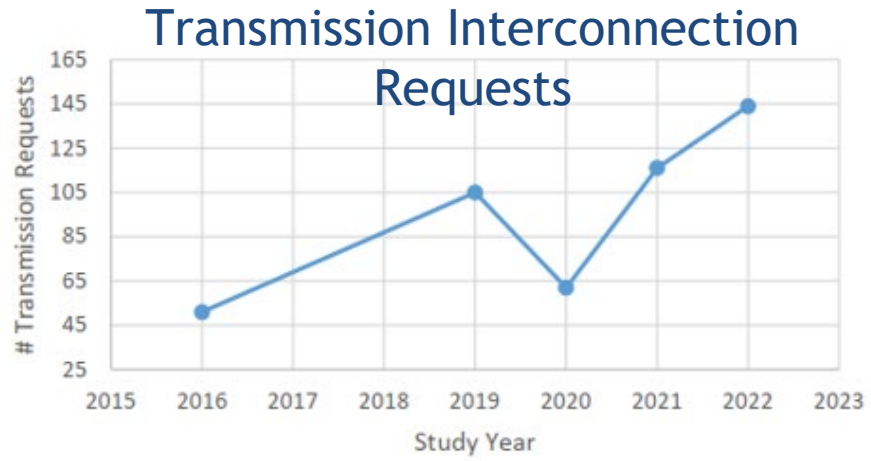
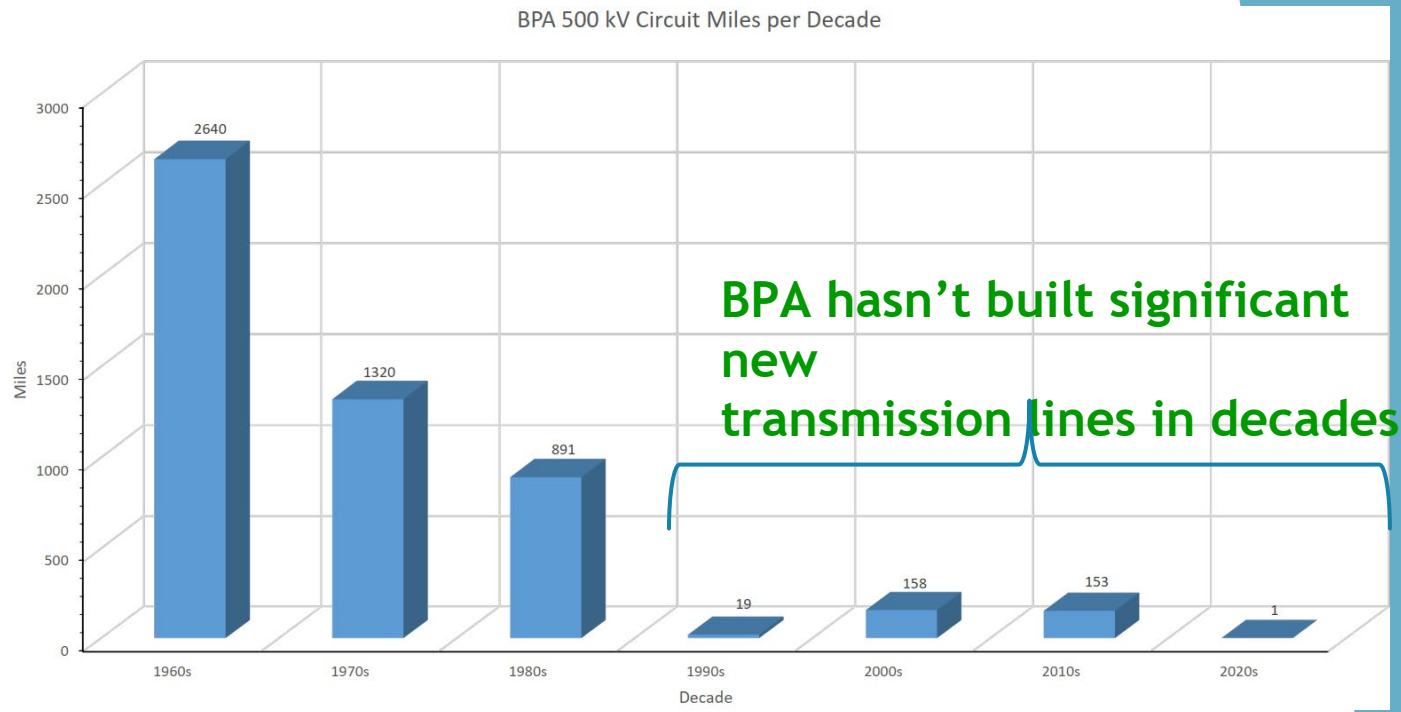
BPA Transmission: *Interconnection Frenzy*





Source: Rick Dunn, GM Benton PUD



BPA hasn't built significant new transmission lines in decades

CLEARING UP
An Independent News Service from NewsData

TOP STORY

BPA Transmission Expansion Study Hits a 'Brick Wall'

Steve Ernst Mar 1, 2024

Meeting Urgent Regional Power Needs Through Collective Action

PNGC Overview: PNGC operates as a cooperative utility, representing a network of 25 member organizations that collectively serve over 438,000 residential and commercial customers across seven western United States. This positions PNGC as the largest consumer of energy from the Bonneville Power Administration, highlighting its significant role in regional energy dynamics.

Stonger Together as a JOE: As a Joint Operating Entity (JOE), PNGC empower smaller utilities to collaborate effectively, allowing them to share resources, mitigate risks, and strategically plan for future energy generation. This collective framework enhances their collective bargaining power and influence in region energy markets.

Escalating Power Shortfalls: Current forecasts reveal alarming trends, predicting substantial capacity shortfalls during both winter and summer months. By 2030, the region may experience a staggering 9 GW deficit, primarily due to increasing energy demands, the retirement of aging power plants, and existing infrastructure limitations.

Market & Regulatory Shifts: The impending WRAP program is set to become a binding regulatory framework for 2027-2028, introducing stringent penalties for any inadequacies in resource availability. Additionally, active participation in evolving market structures, such as Markets+, necessitates a proactive approach from utilities to ensure compliance and competitiveness.

Questions?

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