Serving our customers



Integrated Resource Plan Public Workshop 3 Current Situation and Future Options



April 27, 2020

WELCOME! We look forward to working with you.











Scenarios How are we adjusting inputs? What do prices look like?





Reminder



Top Down vs Bottom Up





Scenario Input Summary

Factors:	Scenario 1:	Scenario 2:	Scenario 3:	Scenario 4:
	Carbon Policy	Technology	Cruise Control	Reliability
	Accelerates	Solves	(Base Case)	Reigns
Demand				
Peak Growth Rate	2.13%	0.00%	0.85%	1.28%
Energy Growth Rate	1.74%	-0.79%	0.79%	1.11%
Storage Resources				
2hr (by 2045)	5 GW	28 GW	2 GW	2 GW
16hr (by 2045)	0 GW	28 GW	0 GW)	0 GW
Carbon Policy				
SCC (in price) pre 2030	yes	no	No	yes
SCC (in price) post 2030	yes	no	No	no
Min RPS by 2045	50%	base	base	Base 2030
Natural Gas Prices				
Growth Rate	400%	-50%	base	300%
Capital Costs				
wind	base	-30%	base	base
solar	base	-30%	base	base
RA Standard				
PRM	15%	15%	15%	5% then 15%
NW Pool Sharing	yes	yes	yes	no
Coal Retirements				
NW Coal	2025	base	base	none post 2030
WECC Coal	2030	base	base	none post 2030

Scenario Inputs: Demand





Annual WECC Peak (MW)



Scenario Inputs: Demand





Buildout by 2045





Nameplate Capacity Buildout by 2045 (MW)

Price and Volatility Comparison





SCENARIOS



Emissions





Are we adequately addressing key changes we might see in the future with our scenarios?

YESNO

Resource Need

Do we pass our resource adequacy test with our current portfolio?





Do we have enough resources?

Load vs. 10th Percentile Generation



We still have enough if we don't renew our CBH contracts. We <u>don't have enough</u> if we don't renew our BPA contract in 2028.

	LOLH (hours per year we're short)	NEUE (annual shortage as % of load)	LOLE (days per year we're short)
Threshold to stay below	2.4	0.001%	0.2
Average before CBH ends (2020-2025)	1.1	0.0008%	0.13
Average after CBH ends but before BPA ends (2026-2027)	1.6	0.001%	0.17
Average after BPA contract ends (after 2028)	5,236	16.9%	275.2



Approximately 560 MW of PERFECT capacity is needed by 2028

LOSS OF LOAD EXPECTATION (LOLE) AFTER 2028



Note: A 540MW addition is sufficient to meet 0.001% NEUE and 2.4 LOLH standards. ¹⁸

When do you think our need is biggest?

- Summer
- 🗅 Fall
- □ Winter
- □ Spring



Unserved Energy by Month

When is our need?

Without BPA, we have a need in every season, but need is highest October through January



Draft Portfolio Options What could we do to fill the gap?





Resources to be considered

TACOMA TACOMA PUBLIC UTILITIES

CBH Contract

- Renew
- Don't' renew

BPA Contract

- Renew with same product
- Renew with different product
- Don't renew

Other Resources

- Eastern WA wind
- Gorge wind
- Solar
- Small modular nuclear
- Natural gas peaker
- Add generator to Cowlitz project
- Add pumped storage to Cowlitz project

Only certain combinations make sense!

Do we have the right list of resources?

YES

- □ NO, there are important resources missing from the list
- NO, there are some resources on the list that we should not consider



Renew BPA Slice/Block	BPA Slice + CBH (continue current portfolio)
	BPA Slice only
	BPA Slice + 2023 Solar to replace CBH
	BPA Slice + 2028 Solar
	BPA Slice + WA Wind
	BPA Slice + Gorge Wind
	BPA Slice + Pumped Storage at Cowlitz
	BPA Slice + 3 rd Generator at Cowlitz
Renew BPA with Shapeable Block	BPA Block only
	BPA Block + 2023 Solar to replace CBH
	BPA Block + 2028 Solar
	BPA Block + WA Wind
	BPA Block + Gorge Wind
	BPA Block + Pumped storage at Cowlitz
	BPA Block + 3 rd Generator at Cowlitz
No BPA	WA Wind + Gorge Wind + Solar
Renewal	WA Wind + Gorge Wind + Solar + Pumped storage at Cowlitz
	WA Wind + Gorge Wind + Solar + 3 rd Generator at Cowlitz
	WA Wind + Gorge Wind + Solar + Limited Natural Gas

Draft Portfolio List

WA Wind + Gorge Wind + Solar + Small Modular Nuclear

Are there any portfolios on our list that are of particular interest to you?

- Portfolios where we renew our BPA contract
- Portfolios where we don't renew BPA contract
- Portfolios that include solar
- Portfolios that include wind
- Portfolios that include expanding capabilities at our Cowlitz project (adding generator or pumped storage)
- Portfolios that include nuclear
- Portfolios that include natural gas

Are there any portfolios that we should consider but are not listed?



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Next Steps and Action Items What are we covering next?





Workshop Plan







Are there any other topics that we should address at our next meeting?