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

February 6, 2018

MEMORANDUM

TO: **Council Members**

FROM: **Gillian Charles**

SUBJECT: Summary of Utility Integrated Resource Plans: Anticipated resource needs over the next 5-10 years

BACKGROUND:

Presenter: Gillian Charles

Summary: The region's IOUs and large public utilities develop integrated resource plans (IRPs) to set out a blueprint for anticipated resource acquisition over the next twenty years. Staff will provide a background on the IRP development process and present a summary of high level findings and the future resource needs identified by the region's utilities.

Relevance: The Council staff participates in the various utility IRP public stakeholder processes and relies on utility data for Council analyses. In addition, the Seventh Power Plan encouraged utilities to use methods consistent with the Council in assessing their own resource adequacy and least cost, least risk analyses.

Workplan: Seventh Power Plan action item ANLYS-11

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Summary of Utility Integrated Resource Plans: Anticipated resource needs over the next 5-10 years

Gillian Charles

Council Meeting

February 14, 2018

Today's Discussion

Integrated Resource Plans (IRP)

What are they? Who does them?

Council Participation

What is the Council's role?

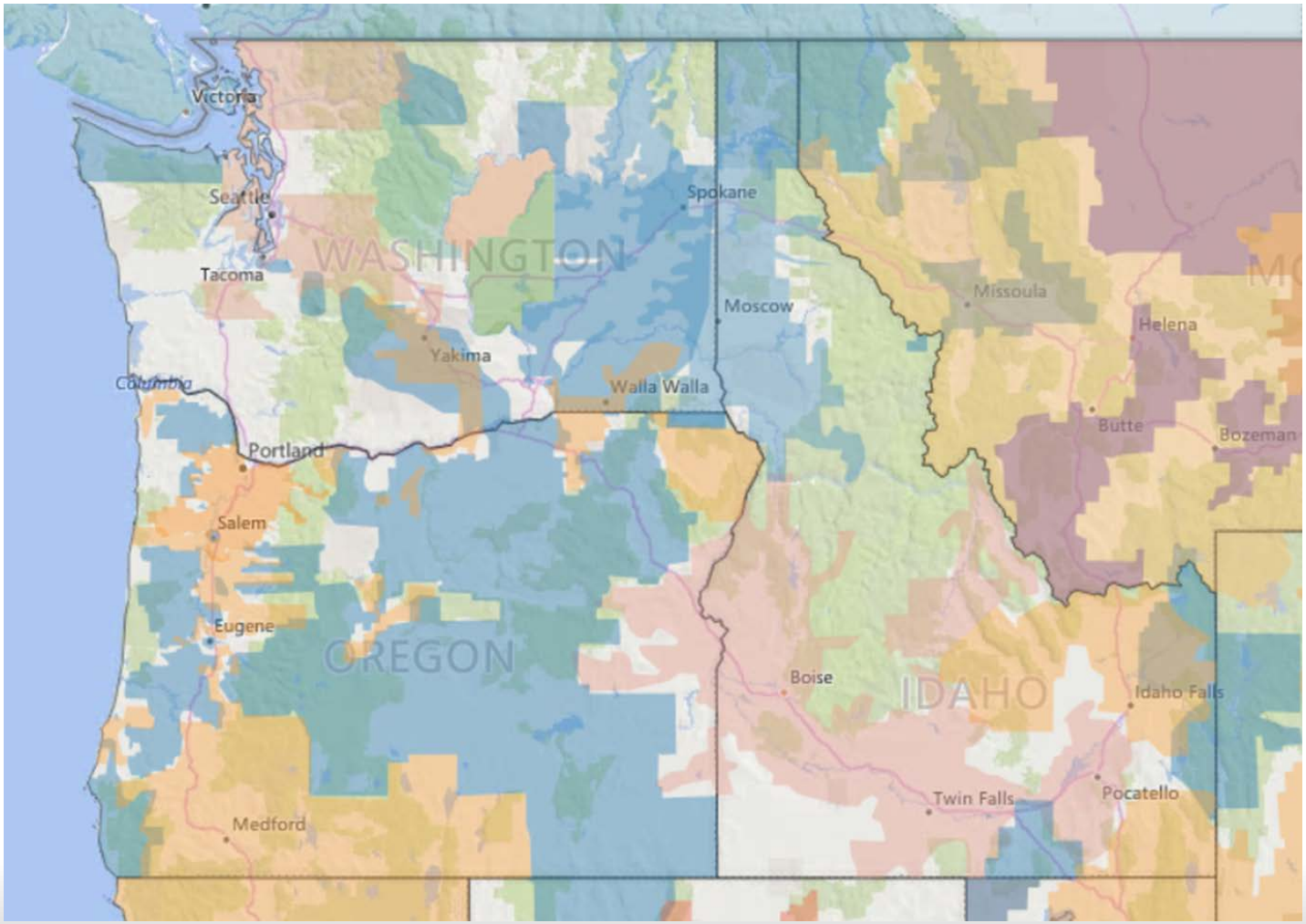
Anticipated Resource Needs

What new resources are expected to be needed over the next 5 yrs?

IRPs and the Seventh Plan

How do the expected new resources compare with the Council's Plan?

Regional Power Planning and Integrated Resource Plans



Utility service territories, SNL maps

What is an IRP?

- An Integrated Resource Plan is a utility's roadmap to meet future resource needs
  - Least-cost, least-risk analysis includes:
    - Load and resource balance
    - Forecast of future demand, fuel prices, market
    - Cost and availability of new energy efficiency and generating resources
    - Various scenarios
  - Long-term strategy (20+ years) of resource acquisition and interim (2 – 5 years) action plan
- IRPs are developed every 2-3 years; continuous evolution

IRP Process

- Utilities develop IRPs through extensive public engagement and stakeholder meetings
- Independently owned utilities (IOU) file IRPs with state public utility commission
  - Each state has unique regulations
  - Public comment period
  - Acknowledgement
- Large public utilities also often develop IRPs
  - Less regulatory rules, depending on state

Latest IOU IRPs

Utility	
Avista	August 2017
Idaho Power	June 2017
NorthWestern Energy	March 2016* Next IRP scheduled late 2018
PacifiCorp	April 2017
Portland General Electric	November 2016* Kick-off for 2019 IRP in Feb
Puget Sound Energy	November 2017

How does the Council participate?

- Assigned power and state staff to participate in each utility's IRP public stakeholder process (ongoing)
  - Offer feedback and recommendations consistent with Seventh Power Plan's action plan
  - Submit staff comments during public comment period
- Invited utilities to present on their IRP and findings at Council Meetings (ongoing)

Seventh Plan Action Plan Items

- **ANLYS-11**: Planning coordination and information outreach. The Council will continue to participate in the development of Bonneville's Resource Program and in utility integrated resource planning efforts. In addition, the Council will periodically convene its planning advisory committees for purposes of sharing information, tools, and approaches to resource planning.
- **Res-3, Res-6, Reg-3, Reg-4**
  - Recommended data to be included in IRPs

Presentations from Utilities to the Council on IRPs*

Utility	Council Meeting
Puget Sound Energy	July 2016
Portland General Electric	March 2017
PacifiCorp	May 2017
Clark PUD	July 2017
Idaho Power	September 2017
Avista	September 2017
Snohomish PUD	March 2018
Seattle City Light	June 2018

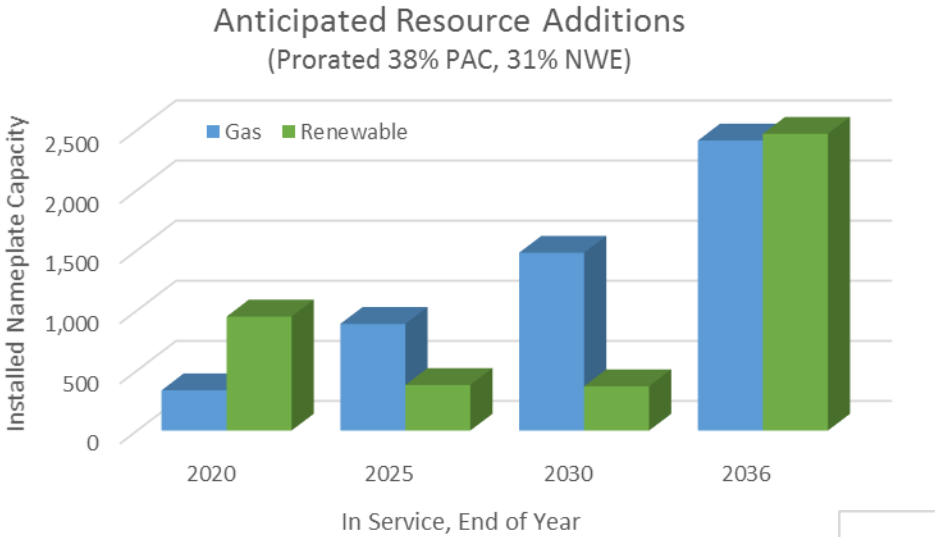
* To date; Currently scheduled

Caveats

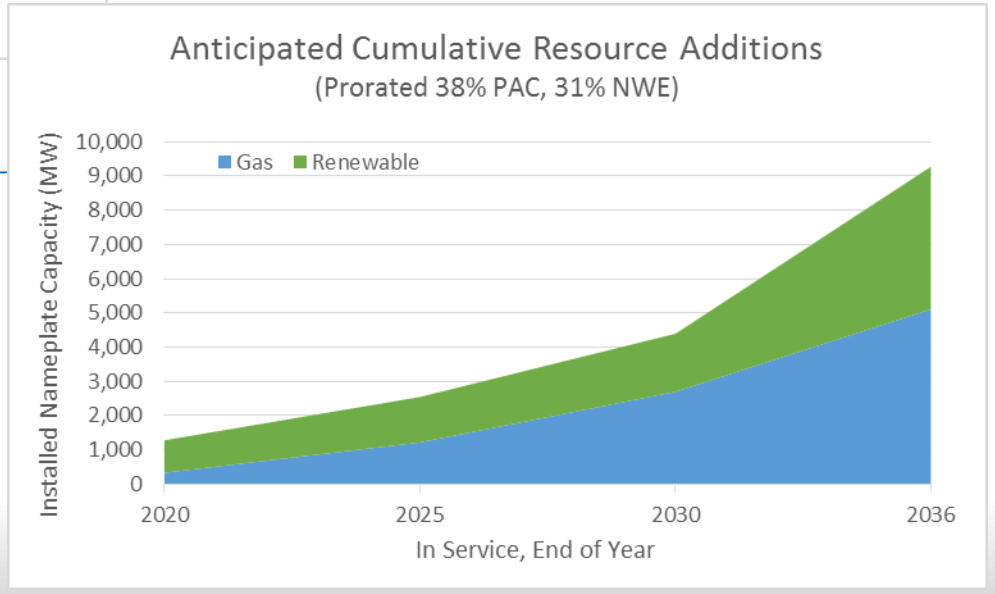
- Aggregates **new** physical resources only
- Does not include anticipated EE, DR, energy storage, market purchases, transmission development, repowered wind
- Resources identified are proxy; not binding
- The farther out, the greater the uncertainty
- Includes IOUs only:

Utility	% New Resources Included
Avista 2017 IRP	100%
Idaho Power 2017 IRP	100%
NorthWestern 2015 IRP	31%
PacifiCorp 2017 IRP	38%
Portland General 2016 IRP	100%
Puget Sound 2017 IRP	100%

Anticipated New Resources*



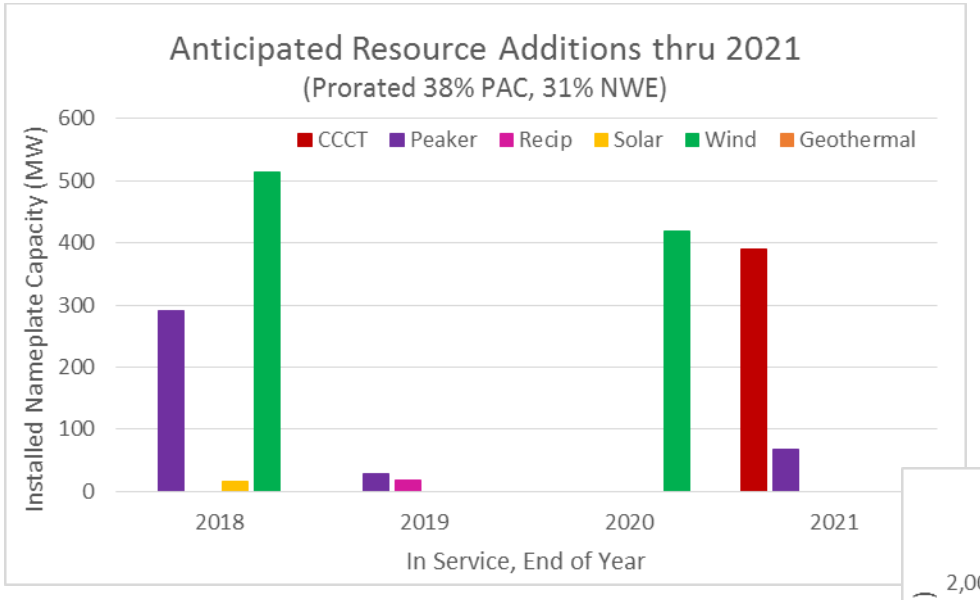
	2020	2025	2030	2036
Gas (MW)	335	887	1,479	2,412
Renewables (MW)	948	379	367	2,468



Cumulative	2020	2025	2030	2036
Gas (MW)	335	1,222	2,701	5,113
Renewables (MW)	948	1,327	1,696	4,163

* Resources identified are proxy; not binding

Resources* identified in next 5 yrs



- Anticipated renewable acquisition sooner and greater than identified in previous round of IRPs; earliest in 2023 before

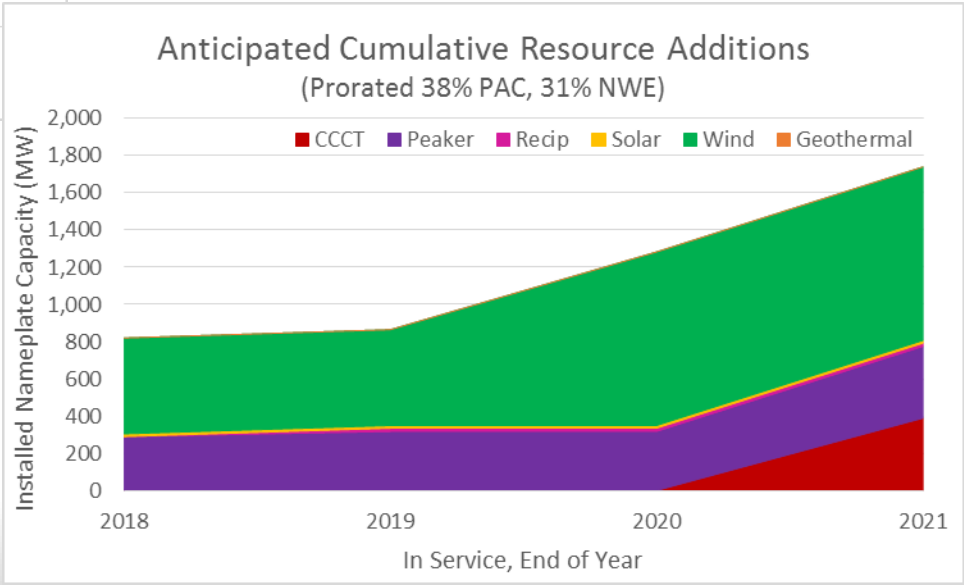
~ 900 MW wind before EOY 2020

~ 400 MW peakers starting in 2018

First CCCT in 2021

However...

(grain of salt)



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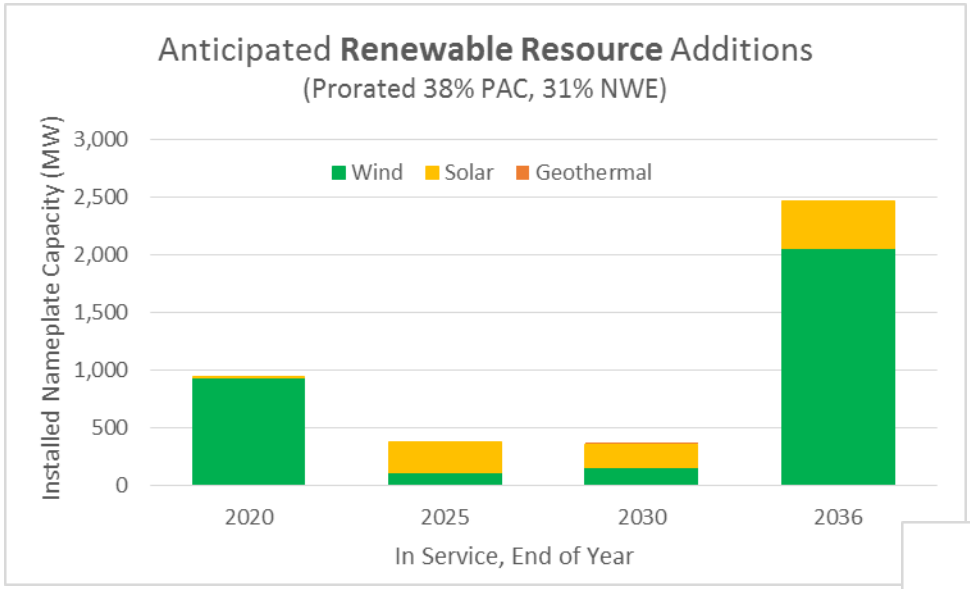
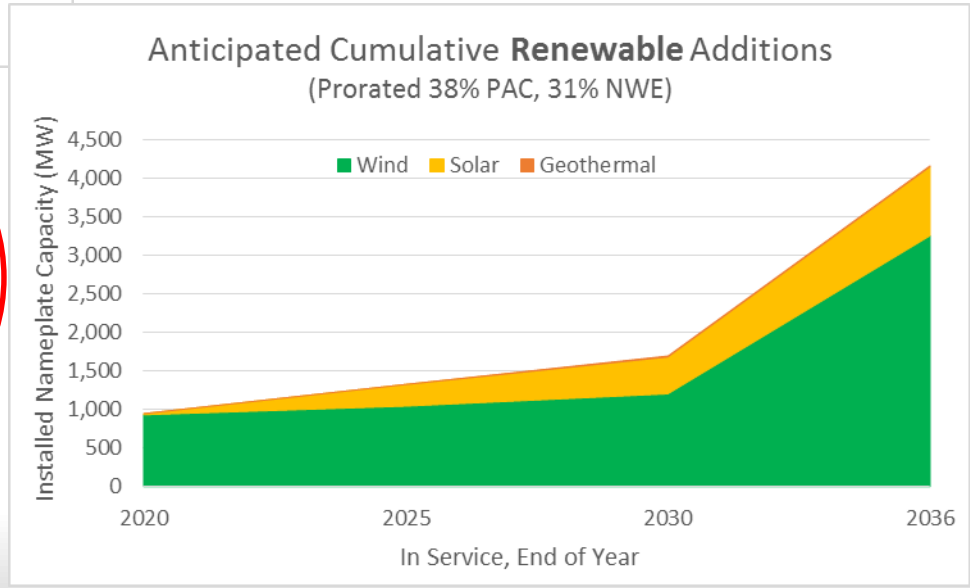
Renewable Resource Breakout



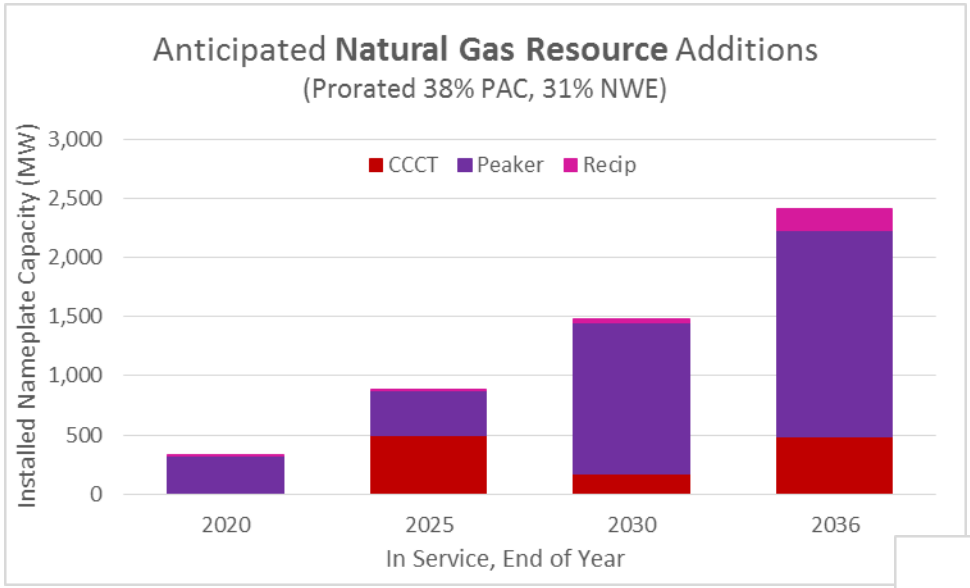
State Renewable Portfolio Standards	
Washington 9% thru 2019 15% by 2020	**Montana** 15% by 2015
Oregon 20% by 2020 **27% by 2025** **(formerly 25% thereafter)** 35% by 2030 50% by 2040	

Wind	2016	2017	2018	2019	2020
PTC	100%	↓ 20%	↓ 40%	↓ 60%	n/a
ITC	30%	24%	18%	12%	n/a

SolarPV	2019	2020	2021	2022	2023
ITC	30%	26%	22%	10%	n/a

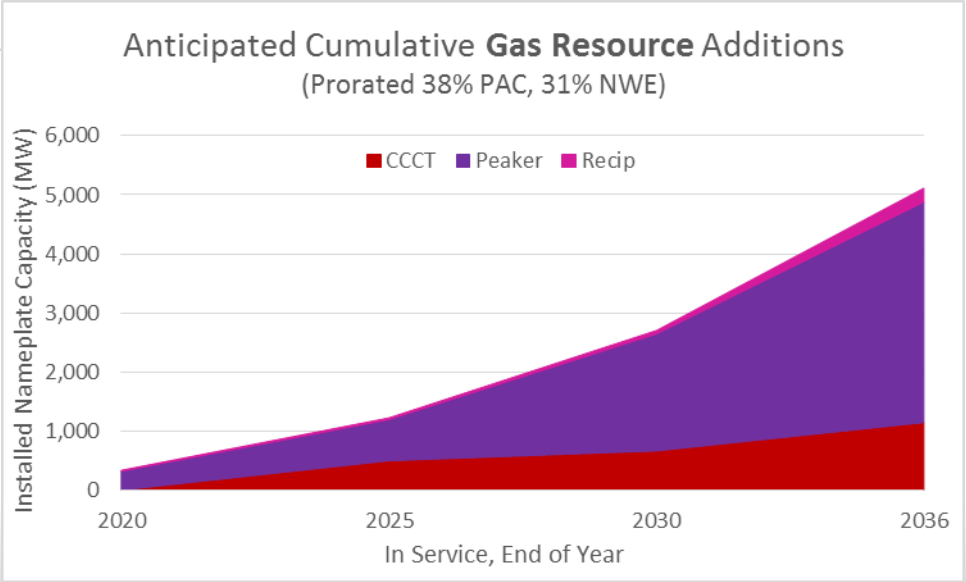


Natural Gas Breakout



MW Installed	2020	2025	2030	2036
CCCT	0	497	166	481
Peaker	318	379	1,285	1751
Recip	17	11	28	180

- Need for capacity resources greater, over baseload energy resources
- Frame technology the overwhelming choice for new gas peaking resources
- Reciprocating engines still viable option, but more expensive

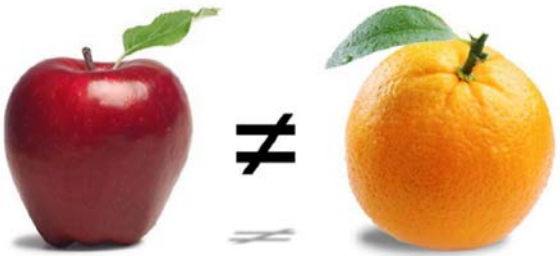


Observations

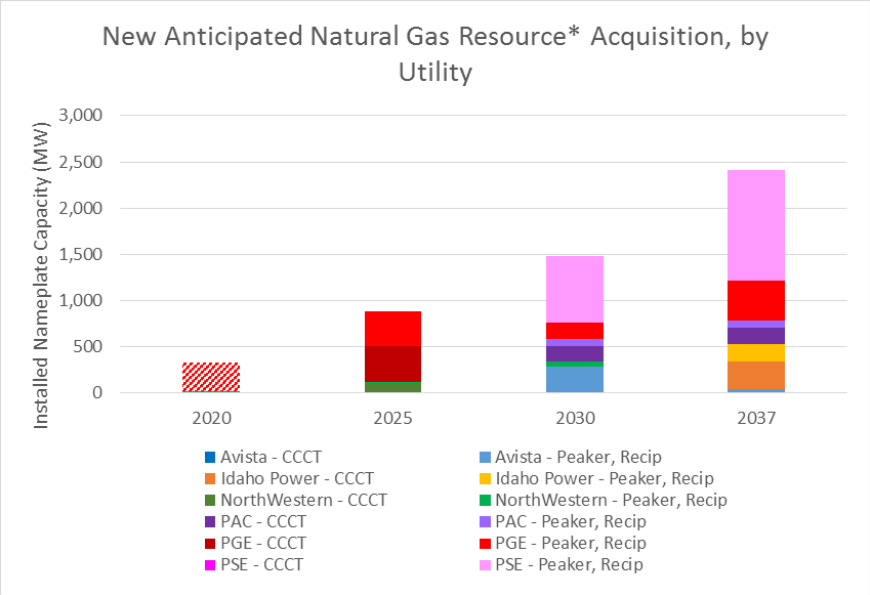
- Energy efficiency and demand side strategies pursued first, keeping load growth low/flat and delaying the need for resource acquisition
- Changes in Oregon RPS, combined with expiring federal tax credits have accelerated renewable resource acquisition
- Uncertainty over environmental regulations and carbon legislation → a lot of retirement and replacement scenarios for existing coal plants
- Fundamental change in treatment/analysis of resource acquisition: less resource-specific, more generic capacity vs. energy need
- Commission proceedings cast doubt on initial acquisition needs (see “what’s next” slide)

How does this compare to the findings in the Seventh Plan?

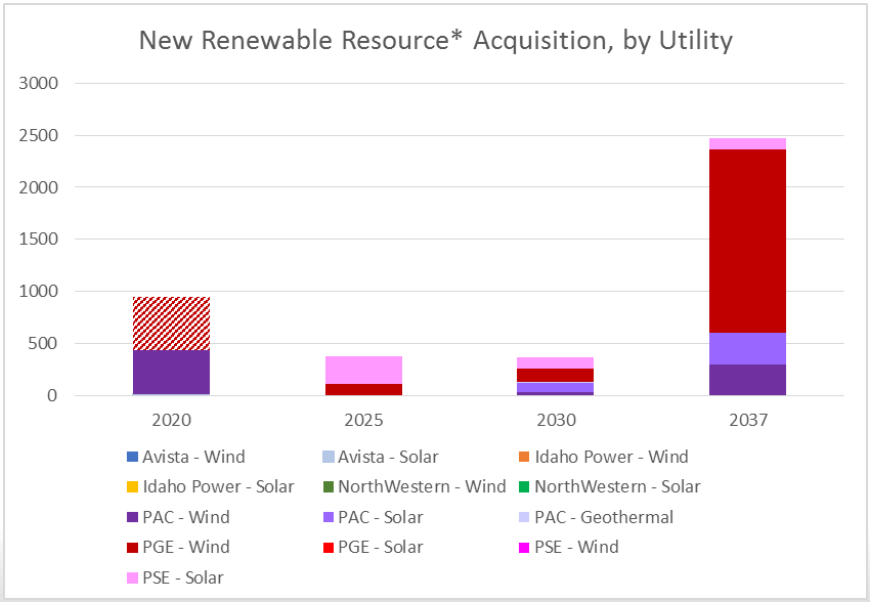
- Energy efficiency is the least-cost, least-risk resource across range of scenarios
- Demand response to be developed and utilized for new peaking capacity resources
- Increased use of existing gas resources, before development of new gas plants
- Renewable resources primarily built only to meet long-term RPS goals



What's next? (i.e. Plans change!)



- IRP is "starting line" of future resource acquisition
- What is identified as a future need in an IRP is *not necessarily* what a utility will end up procuring
- Ex: PGE identified early generic and efficient capacity resources in IRP, but recent RFP activity suggests different strategy of meeting near-term resource requirements



* Resources identified are proxy; not binding

Current Activities

Requests for Proposals

- Avista released RFP for 15MW solar in April 2017
- PacifiCorp released RFP for 1,270 MW wind in September 2017 (projects must be operational by EOY 2020)
- Portland General Electric to release RFP for 310 MW renewable resources in 2018
  - OPUC encouraged PGE to rethink its initial identification of 515 MW in 2018; OPUC believed it to be unnecessarily risky to customers and not an immediate need
- PSE to release "all source" RFP in 2018 (for delivery in 2022)

Repowering existing wind

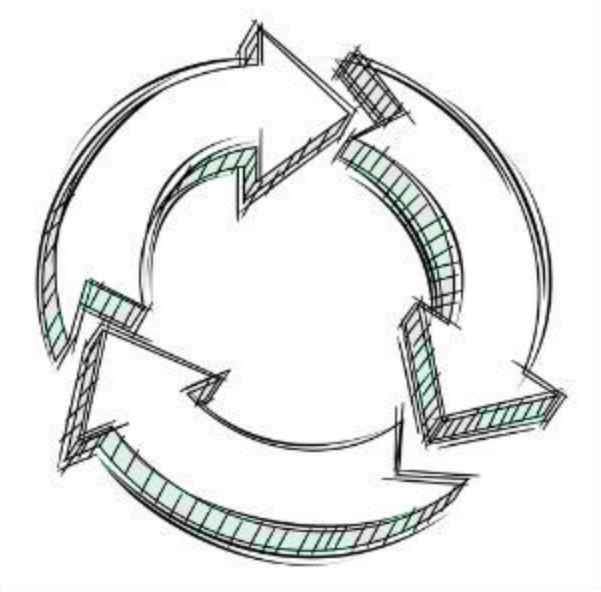
- PacifiCorp planning to repower ~900 MW of existing wind fleet by 2020

Replacement resources for retiring coal plants

Pursue new transmission – Idaho Power, PacifiCorp

Coming Up…

- Staff to continue to follow and participate in IRPs, and invite utilities to present findings from IRP analysis



Back-Up Slides

Planned Coal Retirements - Region

Plant	Retirement Date	Capacity & Op Yr	Location	Ownership
J. E. Corette	2015	173 MW (1968)	Billings, MT	PPL Montana**
Hardin	2018	116 MW (2006)	Hardin, MT	Rocky Mountain Power (Not related to PAC)
Boardman*	2020	600 MW (1980)	Boardman, OR	PGE, Idaho Power (90/10)
Centralia – 1 Centralia – 2	2020 2025	670 MW (1971) 670 MW (1971)	Centralia, WA	TransAlta
Colstrip – 1 Colstrip – 2	2022	360 MW (1975) 360 MW (1976)	Colstrip, MT	PSE, Talen Energy (50/50)
North Valmy – 1 North Valmy – 2	2019 2025	254 MW (1981) 268 MW (1985)	Valmy, NV	Idaho Power, NV Energy (50/50)
Jim Bridger – 1*** Jim Bridger – 2***	2028 2032	578 MW (1974) 578 MW (1975)	Sweetwater, WY	PAC (2/3), Idaho Power (1/3)
Regional Total		**3,037 MW******		

* Ceasing coal-fired production; future of Boardman plant TBD
** Out of region (OOR)
*** Not a commitment; only part of PAC 2017 IRP forecast. Decision on SCR to be made by PAC in early 2018. Idaho power also evaluating SCR and early retirement in their IRP process with no decision yet.
**** includes 50% of North Valmy; does not include Corette or Bridger