

Clean Energy Implementation Plan (CEIP) and Conservation Potential Assessment (CPA) target process overview

April 30, 2021 IRP Technical Advisory Meeting



Seattle City Light

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Agenda- Application of 2020 IRP framework to CPA and CEIP

- 1:00- 1:15 Skagit Relicensing Overview and Q&A (request from March IRP Meeting)
- 1:15 – 1:45 High Level intro to Potential Assessments and process for CPA and CEIP target setting
- Break
- 1:55 -2:10 Supply side resource key inputs
- 2:10 – 2:30 Updated Resource needs
- 2:30 – 2:45 Climate change introduction
- 2:50 – 3:00 Wrap up and next meeting

2022 Potential Assessments

Conservation and Demand Response

Kali Hollenhorst
Conservation Policy Analyst
Kali.Hollenhorst@seattle.gov



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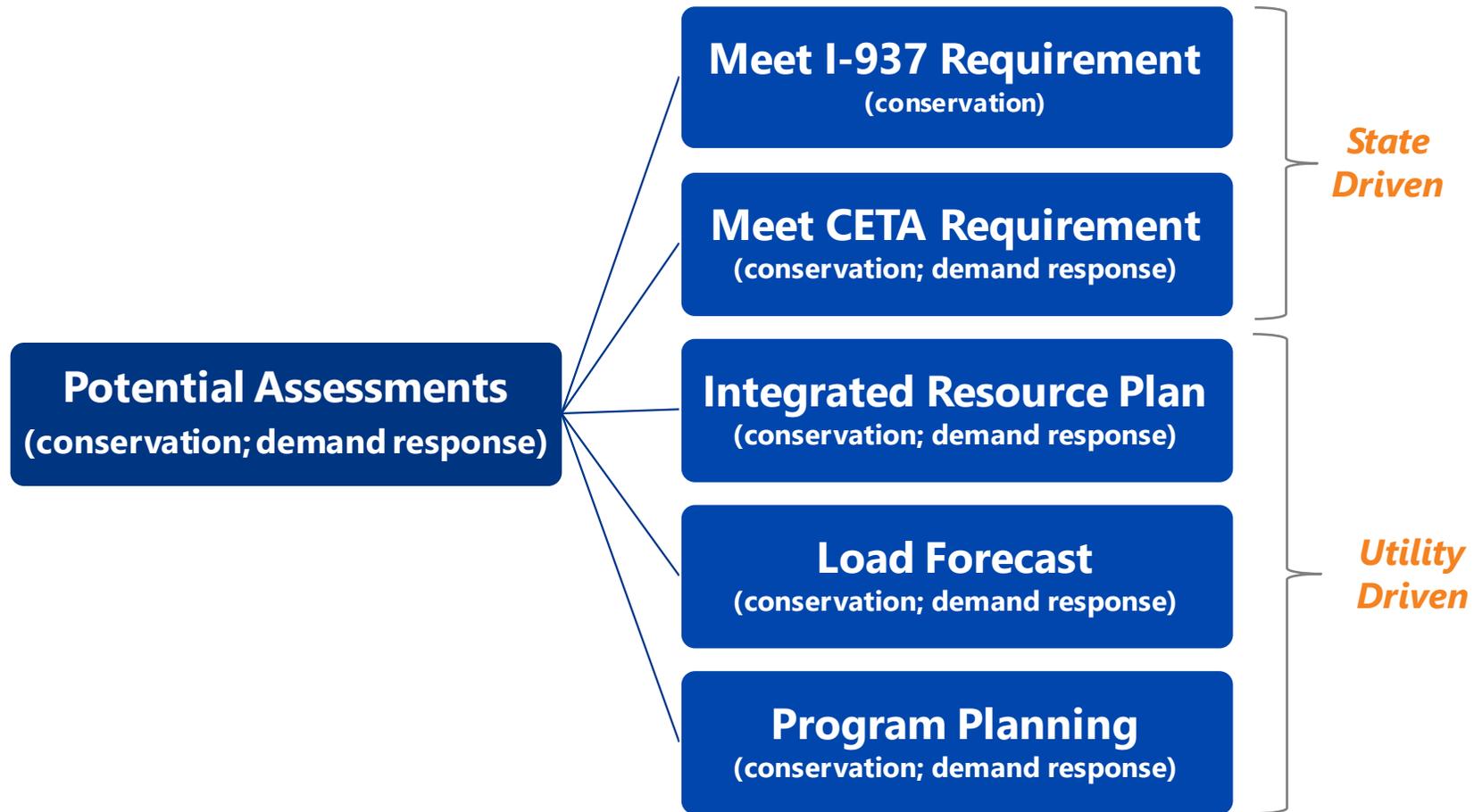
Potential Assessment Discussion Goals

- + What is a Potential Assessment is and why do we do them?
- + What is the methodology for a Potential Assessment and what has changed from the previous studies?
- + When can this group expect to hear about this topic next?

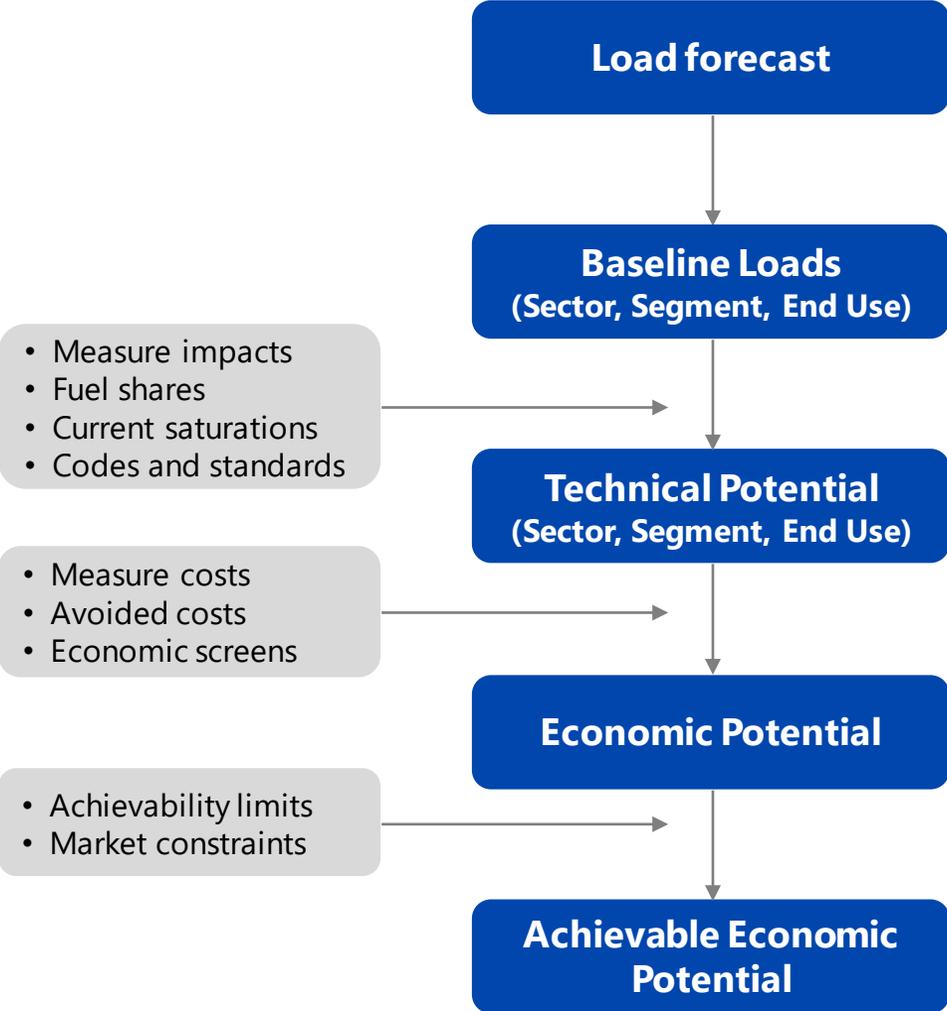
What is a Potential Assessment?

- + Two studies: **Conservation Potential Assessment (CPA)** and **Demand Response Potential**
- + Sets our 2-year and 4-year targets as required by WA State law (I-937, Clean Energy Implementation Plan) due December 31, 2021
- + Yearlong studies; resulting in a 150+ page report
- + Partnership between our consultant, Cadmus, and City Light
- + Identifies the amount, timing and cost of conservation and demand response in City Light's service territory

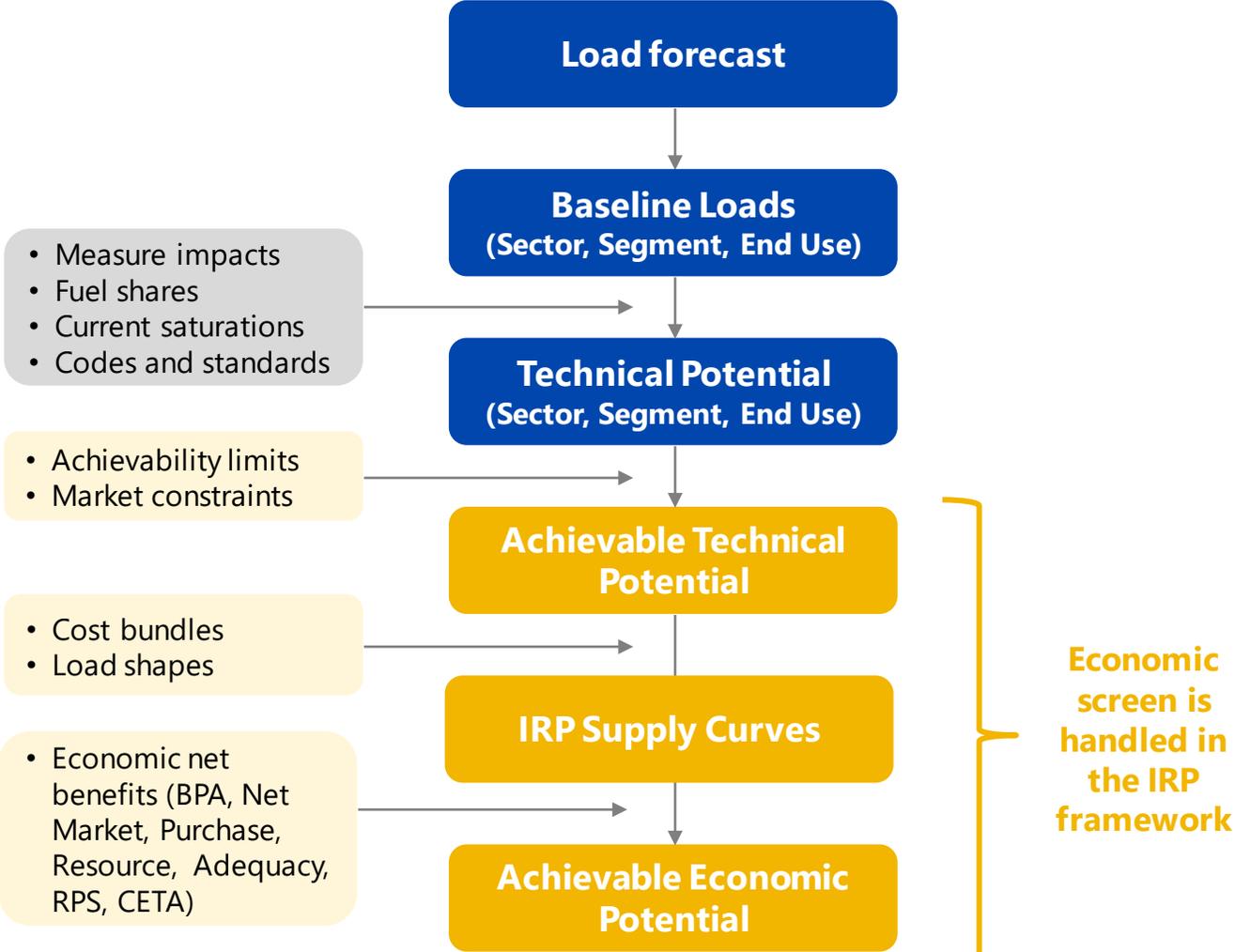
Why we set targets



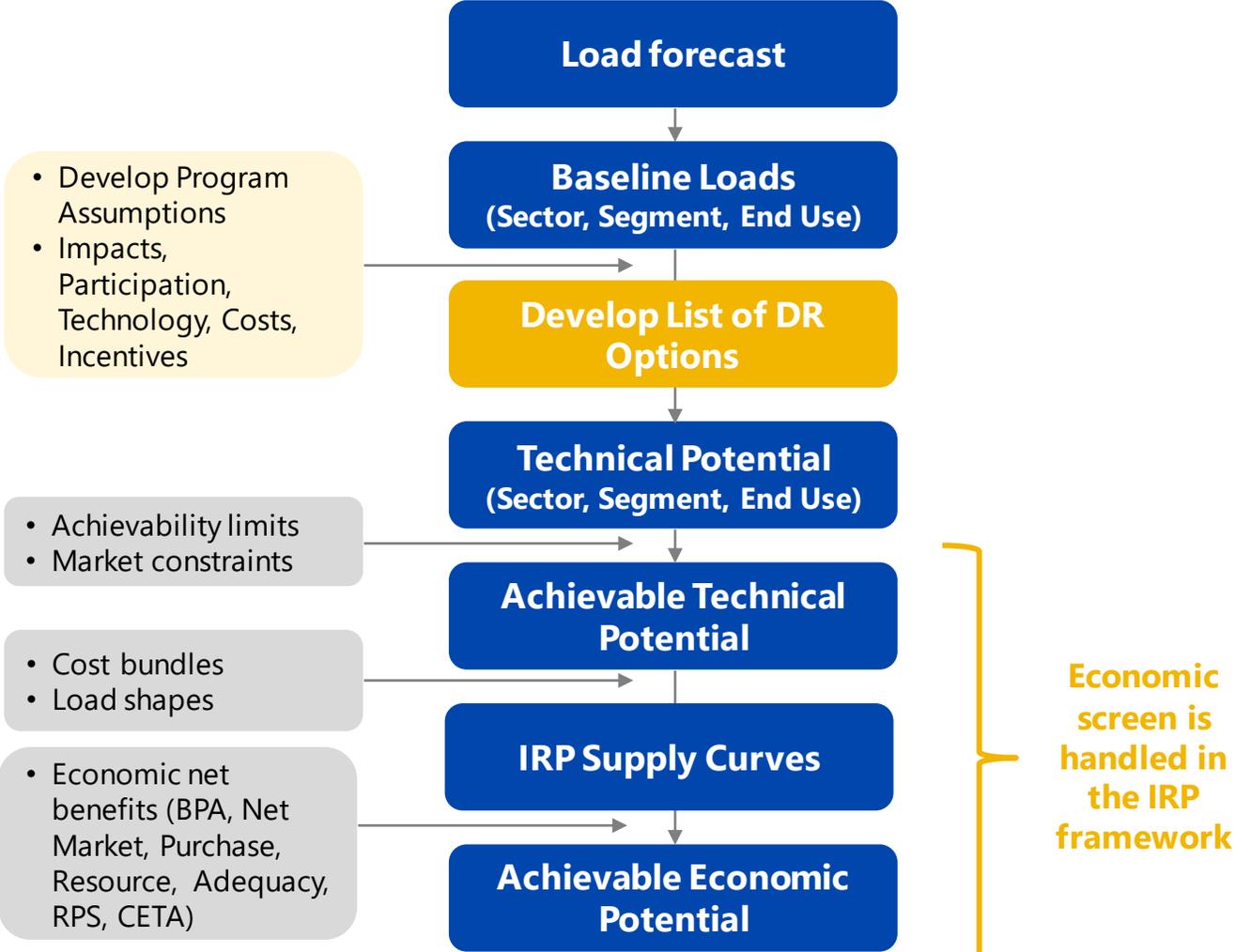
How we set targets (prior to 2022 CPA)



How we set targets (in the 2022 CPA and going forward)



How we set demand response targets



Types of Potential (in the 2022 CPA)



What you can expect

- + Methodology overview at the June meeting
- + Draft demand response targets at the June meeting
- + Draft conservation targets at the June meeting
- + Final report and targets this summer
- + City Council approval no later than end of 2021

CPA and CEIP 2020 IRP supply side resource inputs updates

Paul Nissley
Resource Planning Data Scientist
Paul.Nissley@seattle.gov

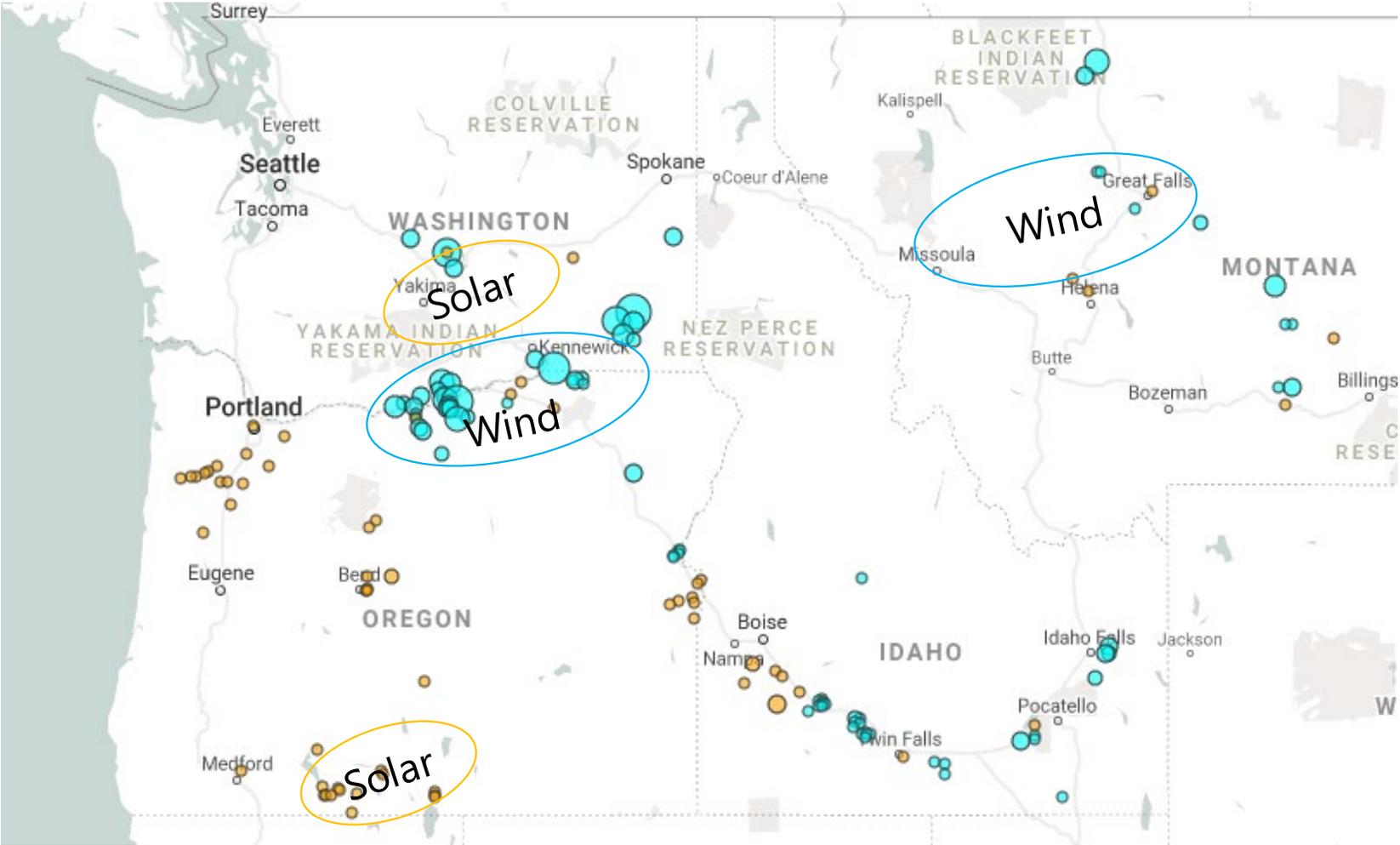


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IRP supply side resources and locations

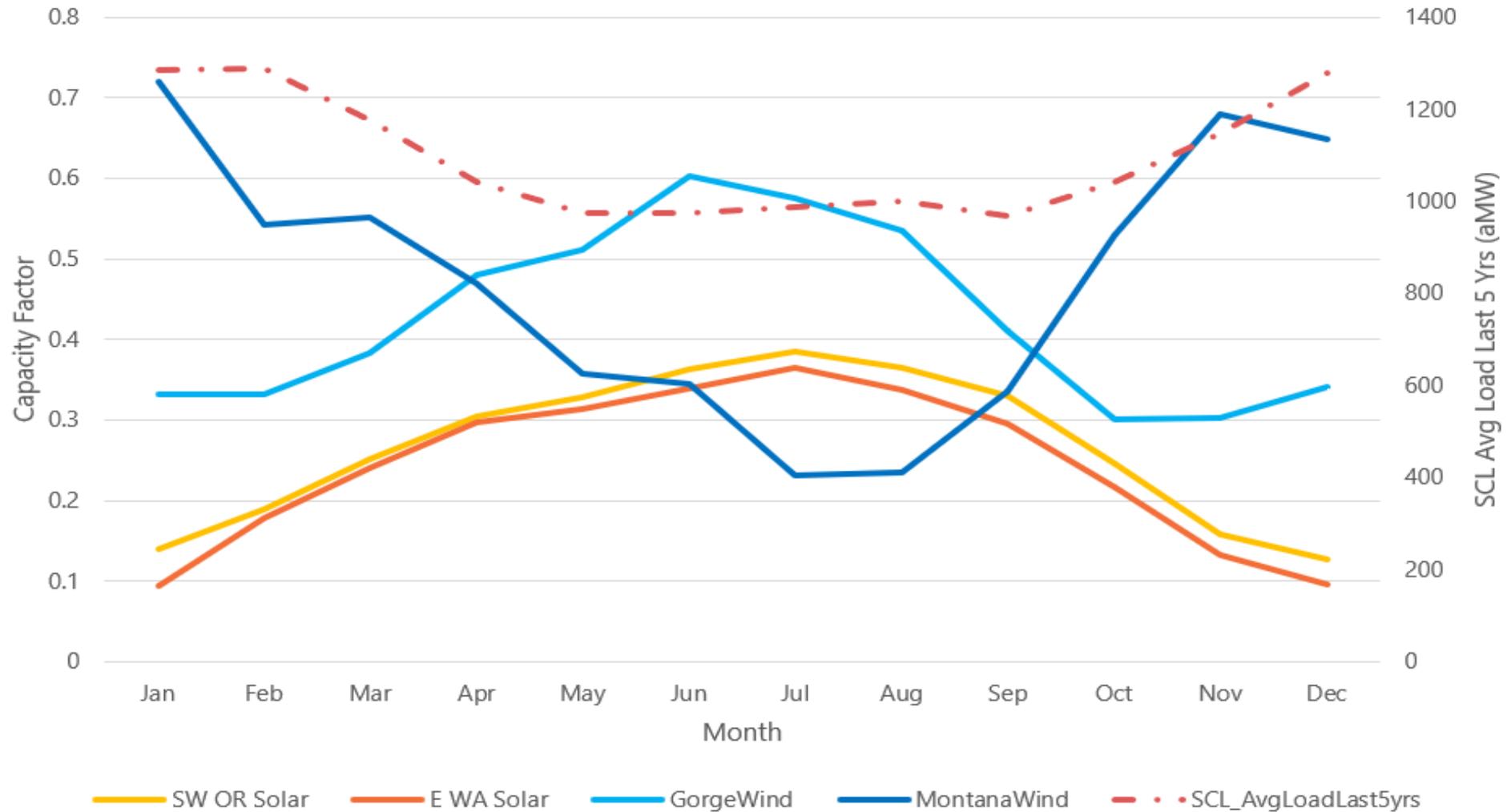


Supply Resource Inputs

Resource	Capacity Factor (%)	NREL Annual Technology Baseline (ATB) LCOE in 2025	NREL ATB LCOE in 2030
Montana Wind	44 – 49%	\$26 - \$32	\$22 - \$35
Gorge Wind	40 – 44%	\$29 - \$36	\$24 - \$38
Southeastern OR Solar	26 – 30%	\$25 - \$35	\$18 - \$37
Eastern WA Solar	24 – 28%	\$27 - \$38	\$19 - \$40

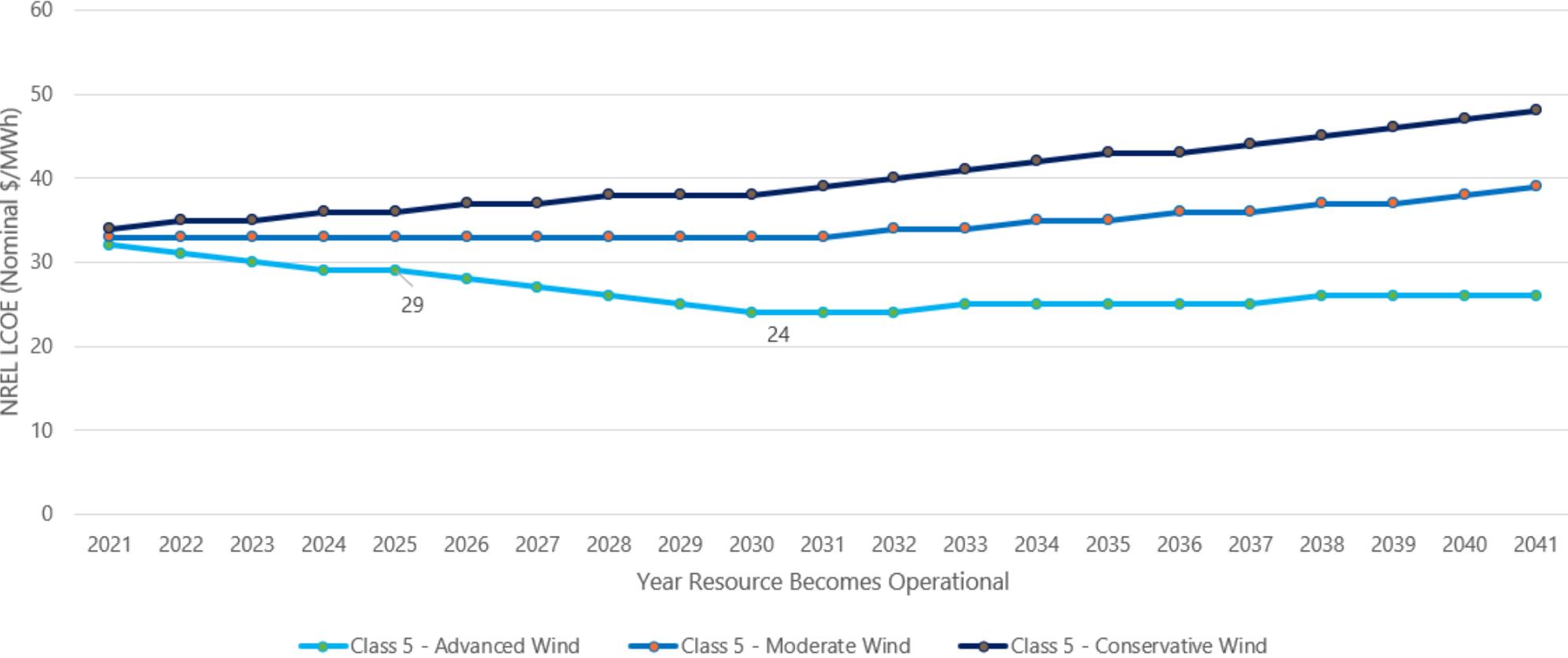
- Sites chosen because:
 - Capacity factors
 - I-937 eligible
 - Transmission access
 - Known projects in area/planned for area
- Levelized Cost of Energy (LCOE) doesn't include federal tax credits
- LCOEs do not incorporate transmission costs

Supply Resources Monthly Energy Shape



NREL ATB Wind Levelized Cost of Energy

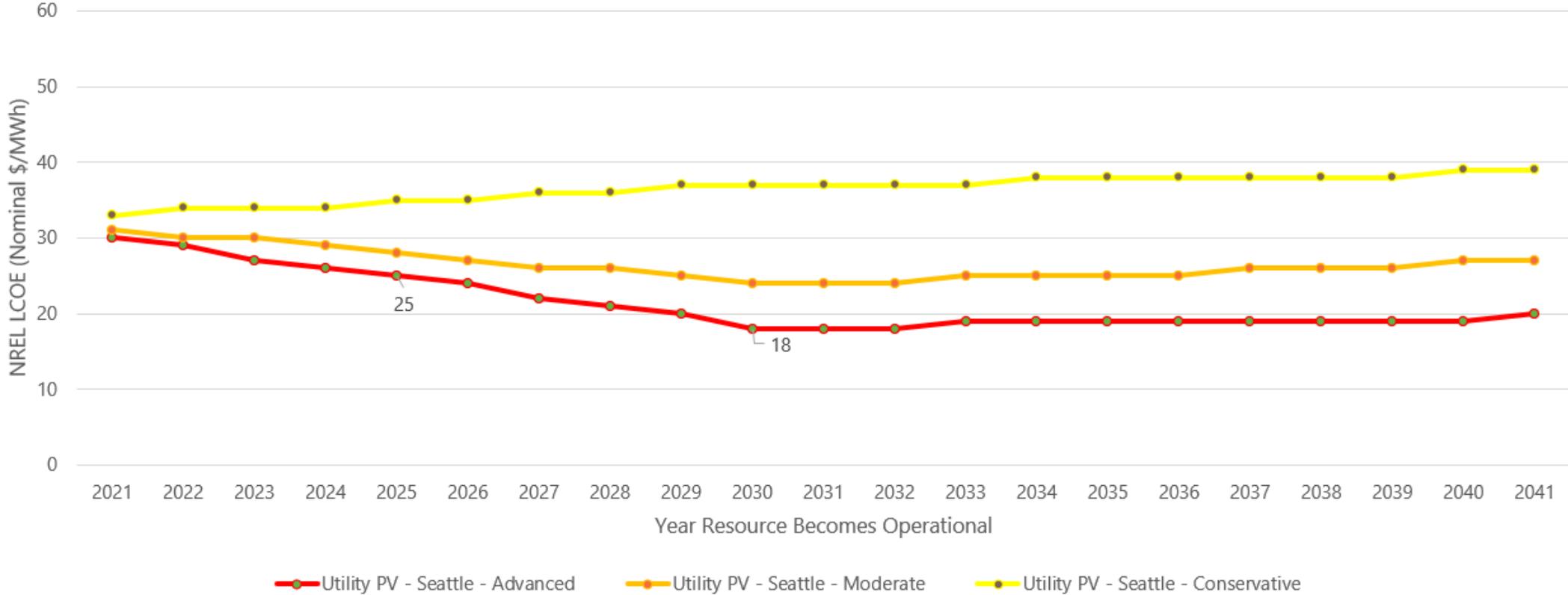
SCL proposes to use moderate technology improvement case as the baseline input, while others could be used in sensitivity analyses.



Class 5 has capacity factors ~41-43% (Gorge Wind)

NREL Solar Levelized Cost of Energy

SCL proposes to use moderate technology improvement case as the baseline input, while others could be used in sensitivity analyses.



Capacity factors ~28-29% (SE Oregon)

Updated 2020 IRP Resource Needs with new load forecast

Paul Nissley
Villamor Gamponia
Resource Planning Data Scientists
Paul.Nissley@seattle.gov
Villamor.Gamponia@seattle.gov



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I-937 and CETA Compliance

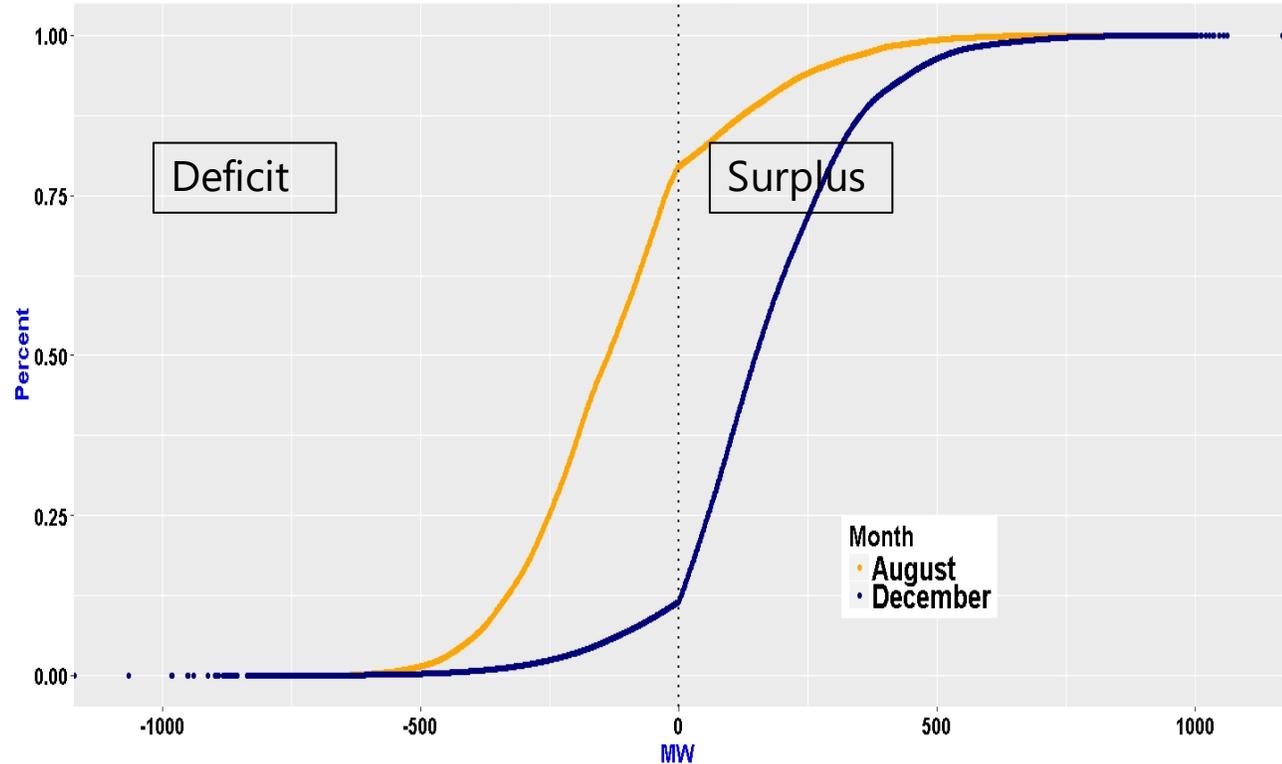
- + IRP Framework considers a variety of alternative compliance options for meeting I-937 and CETA
- + I-937 Resource Needs Depend on:
 - Load Growth Uncertainty-compliance options for no load growth versus positive load growth
 - Conservation Potential Assessment Path
 - Renewable Resource Choices for meeting Resource Adequacy
- + Difficult to present as a resource need at this stage, more discussion required in June with illustration

Updating Resource Adequacy(RA) Needs for the 2022 CPA and CEIP

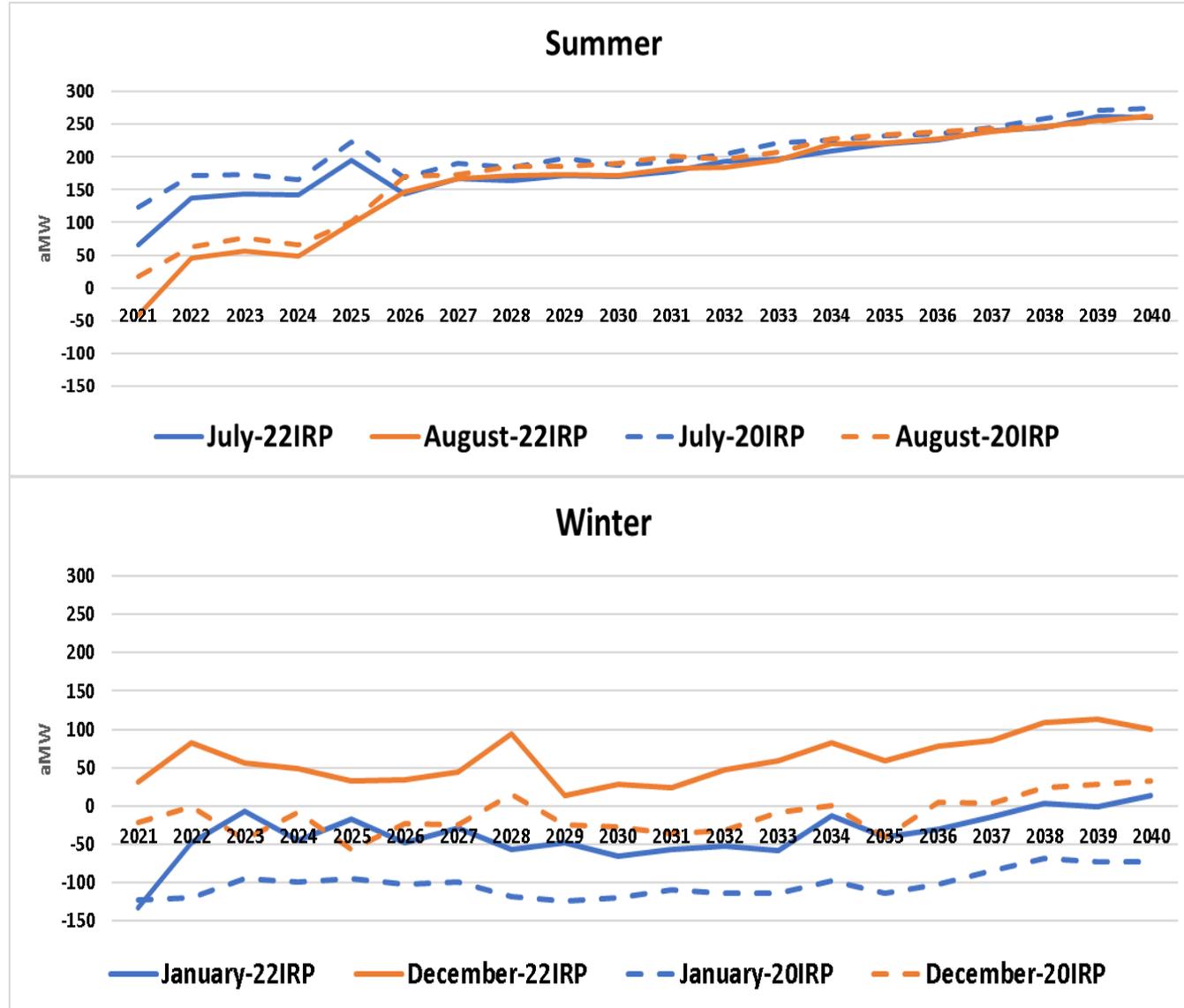
To review, SCL's 2020 RA model and standard are:

- A probabilistic energy adequacy model,
- Simulates future hourly load and hydro conditions using historical temperatures and hydro inflows,
- Looks at seasonal RA needs (July/August for Summer, December/January for Winter),
- Risk metric used is Loss of Load Events or LOLEV:
 - Target LOLEV = 0.2 events/year for the month
 - Market reliance= 200 aMW

Cumulative Distribution of 2026 Hourly Surplus/Deficits, No Market Reliance/New EE/New Supply



Resource Adequacy Needs



RA needs for LOLEV =0.2
Market Reliance=200aMW
No new energy efficiency
No new supply

- ### Key Conclusions
- No significant changes in summer needs
 - Winter needs are higher due to new load forecast and electrification

Regional Resource Adequacy Activities

- + At present, no new applicable data to inform SCL Resource Adequacy needs study (anticipate information in coming months)
- + NW Power Council's 2021 Plan Resource Adequacy Assessment
 - Draft Assessment indicates significant improvement in Resource Adequacy by 2025 using 5% loss of load probability metric
 - SCL relies on Power Council's monthly metrics about frequency, duration and magnitude
- + NW Power Pool Resource Adequacy Program (voluntary)
 - Ongoing design work will launch program as a Resource Adequacy capacity program and with operational capacity sharing
 - Anticipated November 2022 launch for winter season (initially non-binding obligation to test program)

Climate Change and Resource Adequacy

Ronda Strauch
Climate Change Research and Adaptation
Advisor
Ronda.Strauch@seattle.gov



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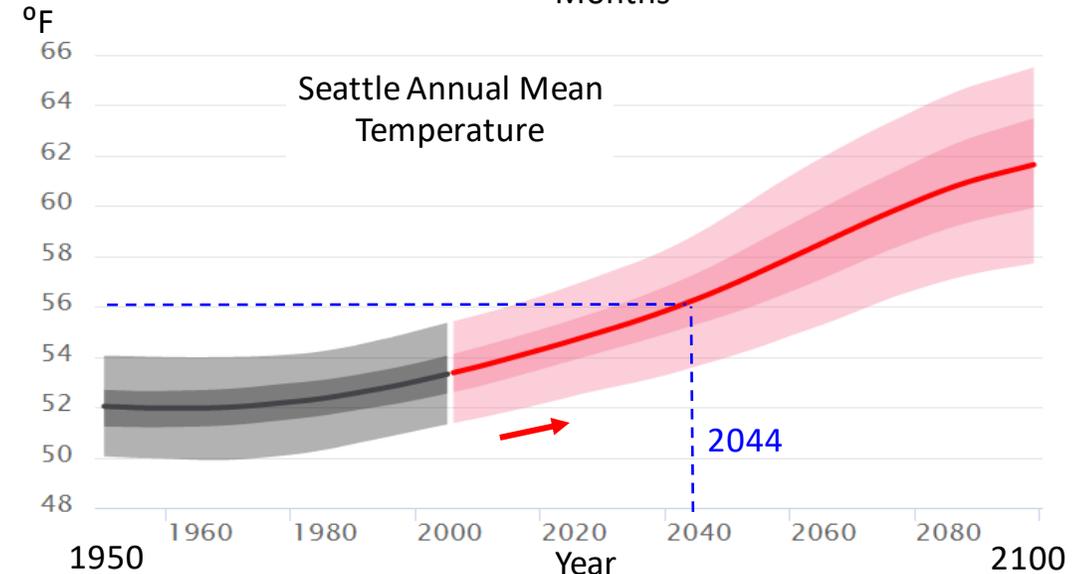
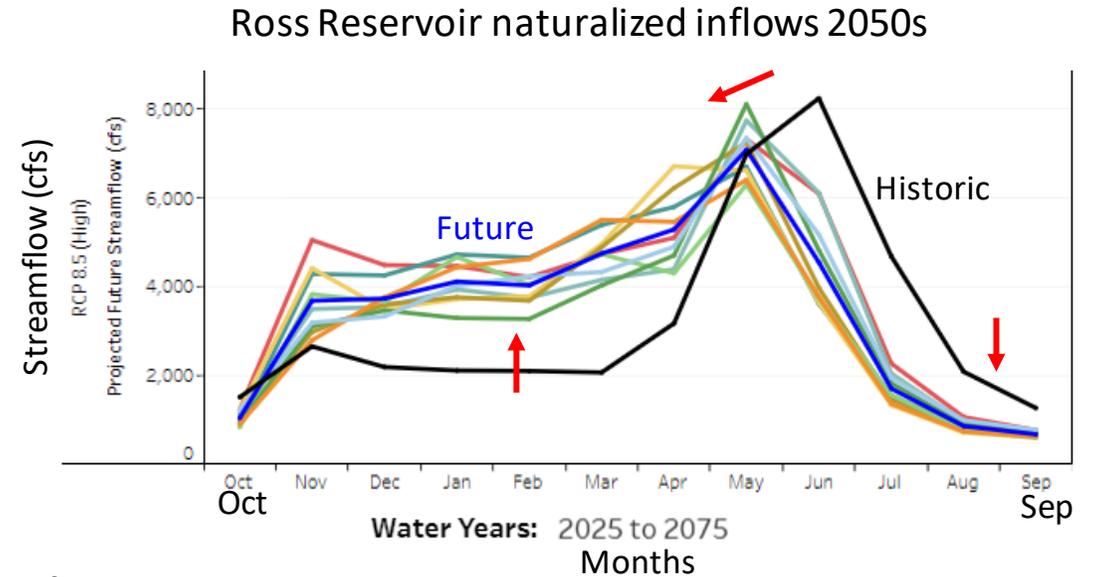
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Climate Change Resilient Resource Adequacy

Supply	<ul style="list-style-type: none"> • Increased winter inflows - More generation (Nov-May) • Decreased summer inflows - Aug. release for fish • Consecutive years of drought - Reduced generation • Increased flow variability
Demand	<ul style="list-style-type: none"> • Less in winter - Warmer, Less frequent cold events • More in summer - Warmer, More frequent heat waves • Increased temperatures variability in summer

What is uncertain?

- + Flexibility in relicenses (esp. Skagit)
- + Climate-related interruptions (wildfire, storms)
- + Climate projection variability among models
- + Novel conditions – no historical experience



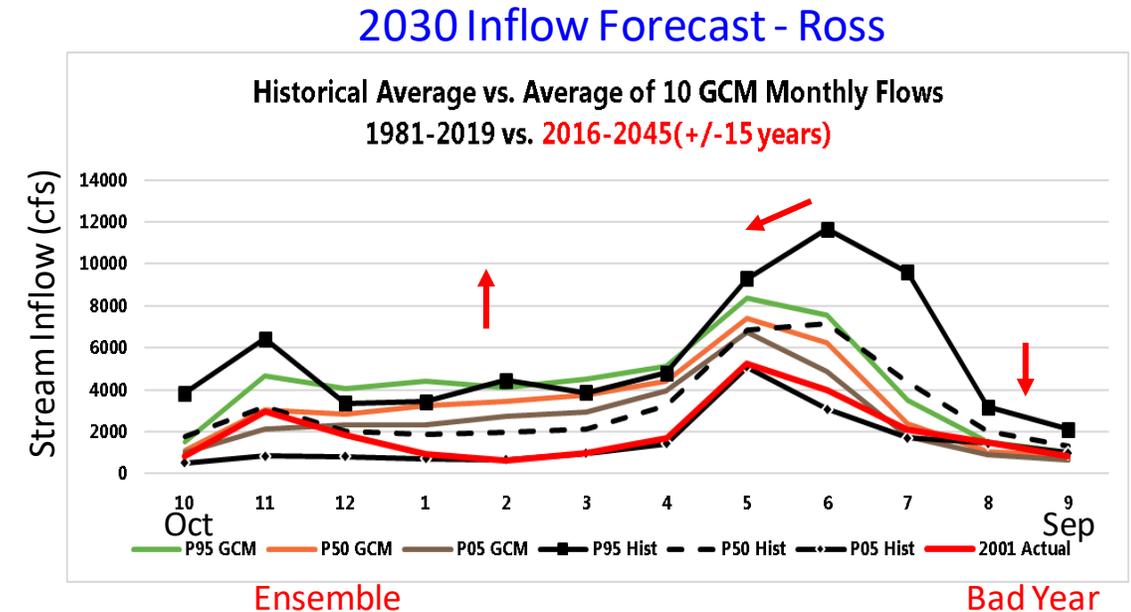
Climate Change Stress Test

Our Vision

- Our demand forecast and resource adequacy assessment are informed by climate change science.

Potential Approaches

- **Incremental** – coarse to finer scale
- Use historical **analog**s of future 'bad water' scenarios (e.g., 2001, 2015)
- **Probabilistic** approach – monthly distributions for 30-year windows from suite of GCMs
- **Match** GCMs – streamflow & temperatures
- **Novel** scenarios – future beyond observations
- Capture **extremes** – more granular analysis (daily TMIN/TMAX, hourly, daily high and low flows)



Next Steps

- + Conduct Potential Assessments
- + Develop sensitivity analyses and include qualitative considerations in absence of time to complete more robust scenario analysis for CPA and CEIP
- + June 25, 2021 IRP Advisory: review potential assessments' key inputs, approach and draft targets
- + ~July 2021: public outreach for input on proposed CEIP targets and equity indicators
- + Early Fall 2021: Submit CPA and CEIP targets to City Council

THANK YOU



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Mission, Vision & Values

Mission

Seattle City Light provides our customers with affordable, reliable and environmentally responsible energy services.

Vision

Create a shared energy future by partnering with our customers to meet their energy needs in whatever way they choose.

Values



Customers First



Environmental Stewardship



Equitable Community Connections



Operational and Financial Excellence



Safe and Engaged Employees



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