



Seattle City Light

2020 IRP PROGRESS REPORT

Resource Choices and Future 2022 IRP Work

City Light Integrated Resource Plan Team | October 23, 2020



DEVELOP
INPUTS AND
METHODS

IDENTIFY
RESOURCE
NEEDS

ANALYZE
RESOURCE
CHOICES

IDENTIFY
LEADING
RESOURCE
PLANS

FINAL PUBLIC
INPUT

REFINE AND
SELECT PLAN



PROGRESS REPORT ELEMENTS

- City Light's current clean energy path and resource needs
- New regulations and resource timelines
- Resource need changes and COVID
- Improved frameworks, metrics and targets
- 2022 IRP Work Plan
- City Light 2-year Clean Energy Actions

BETTER DEFINING VIABLE RESOURCE CHOICES

- Appreciating all considerations (cost, reliability, environment, and social equity)
- Crafting new ways to look at choices
- New assessment framework and criterion
- Focus on long-range plan
- More updated data and more sophistication in assessment
- Public partnerships for more resource choices & help with finding the right decision with customers

2020 IRP PROGRESS REPORT RESOURCE NEEDS REVIEW

- Summer Resource Adequacy need starting 2026
- Winter Resource Adequacy need starting mid 2030s
- I-937 Compliance met until 2030 or later
- Preliminary CETA compliance review shows City Light at about 91-99% greenhouse gas free depending on year and water condition
- With COVID and customer preferences for additional renewables to meet their sustainability goals, needs assessment will be reviewed with next load forecast

WHAT THE NEW FRAMEWORK DOES

- Targets our resource adequacy and I-937 needs with better/more data
- Accounts for hydro flexibility
- Includes impacts of load changes on BPA contract purchases
- Helps to lower greenhouse emissions
- Calculates energy efficiency program value streams aimed at reducing customer bills
- Provides more detailed benefit assessment of supply alternatives
- Tracks progress & effects of resource choices over time

2020 RESOURCE OPTIONS EXPLORED

Current Choices

- Energy Efficiency (residential, industrial, commercial, behind the meter solar) & BPA Block impacts
- Wind
- Solar
- Market Reliance

Excluded

- Fossil fuel plants

2020 INTEGRATED RESOURCE PLAN NEW OPTIMIZATION MODEL

Goal: Identify using optimization methods the lowest cost combination of demand and supply resources for the next twenty years



Demand Side
Resources + **ΔBPA**
contract

Supply Side Resources

City Light's Supply
Portfolio and
Demand
• Δ Energy position

Policy Constraints

- Energy Independence Act (i-937)
- Resource Adequacy
- SCL Green House Gas Neutrality
- Clean Energy Transformation Act

Optimal Portfolio



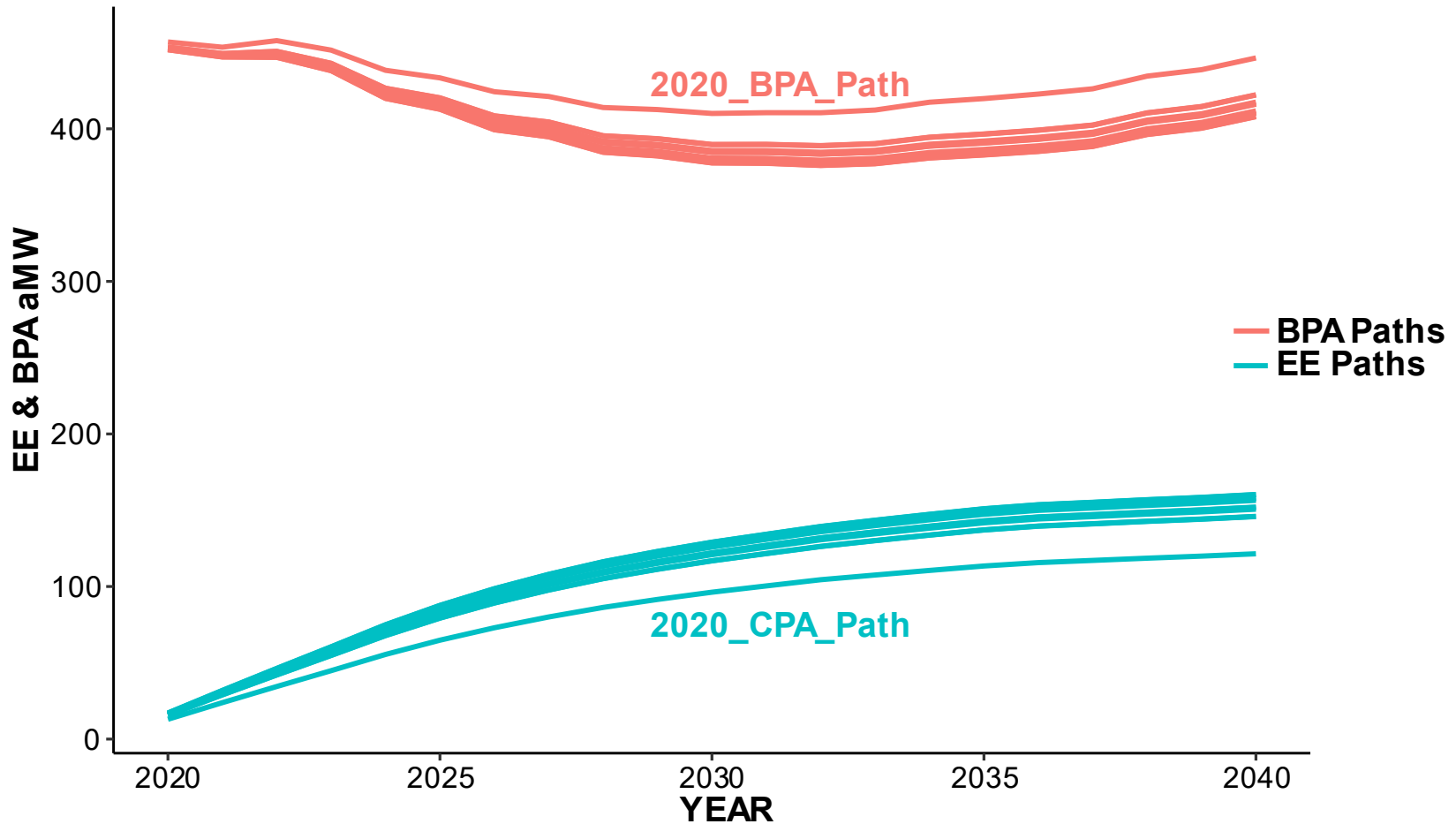
I-937 AND RELATIONSHIP TO ENERGY EFFICIENCY

- Energy Efficiency contributes to City Light's declining load

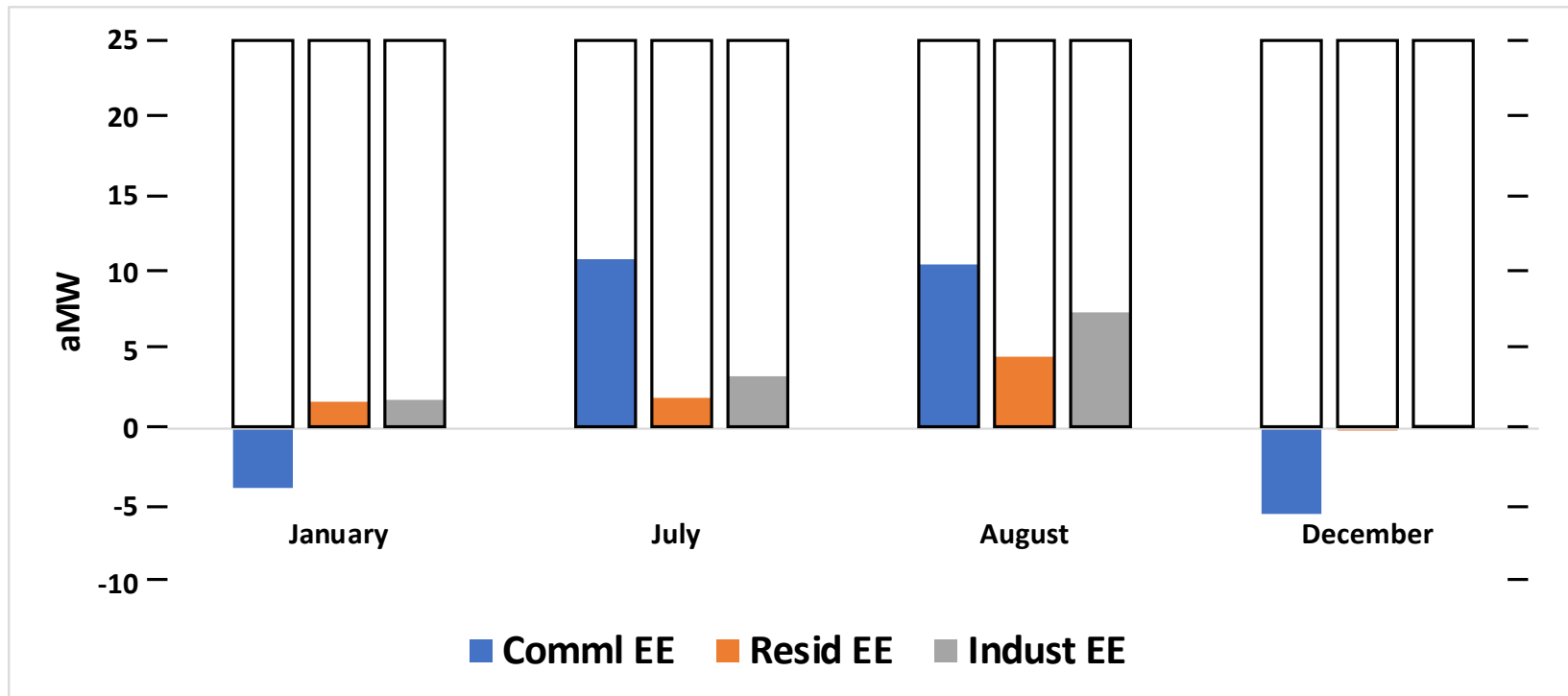
Scenario	No Load Growth Until...	1937 Resource Need Starting In...
No Conservation Path	2023	2023
2020 CPA Path	2033	2031
Top 2020 IRP Conservation Path	2034	2031

BPA BLOCK CONTRACT AND ENERGY EFFICIENCY

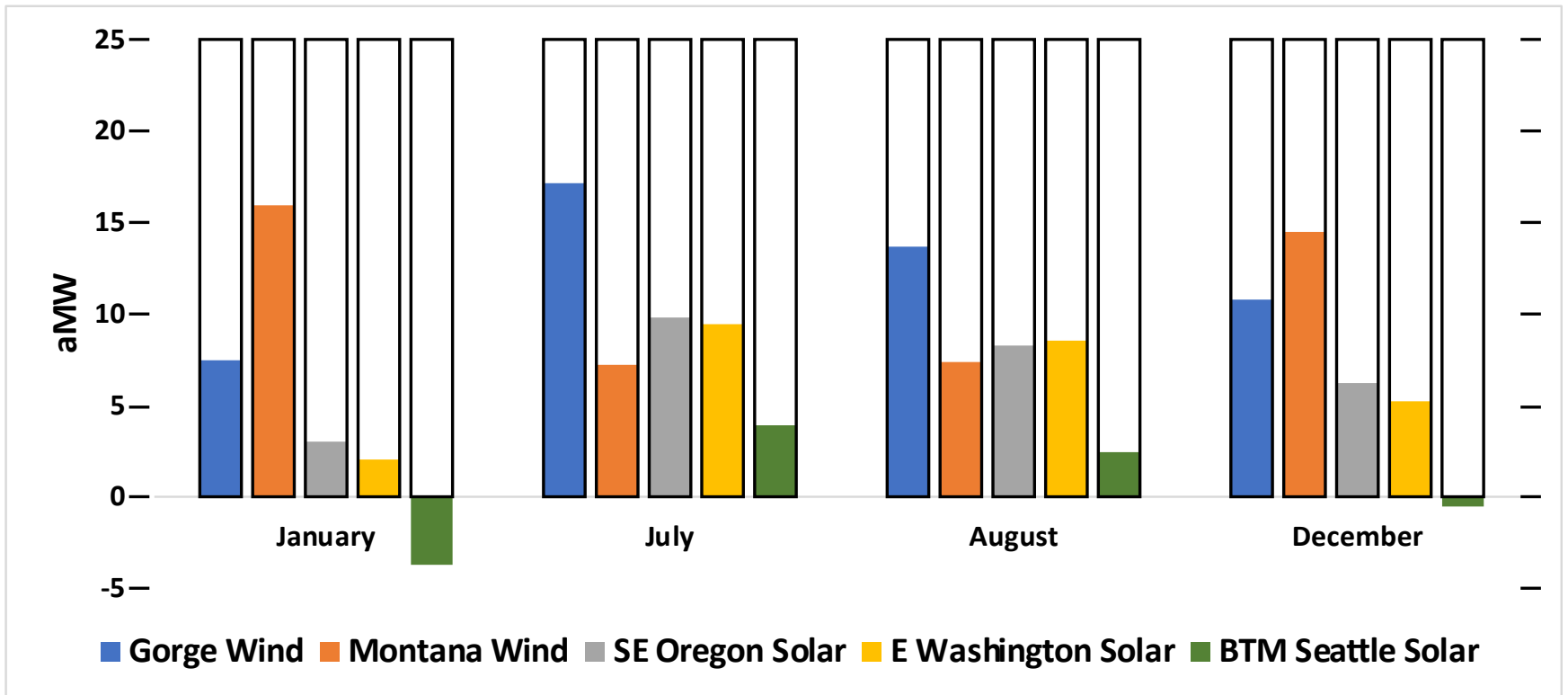
WHY DECLINING LOAD MATTERS



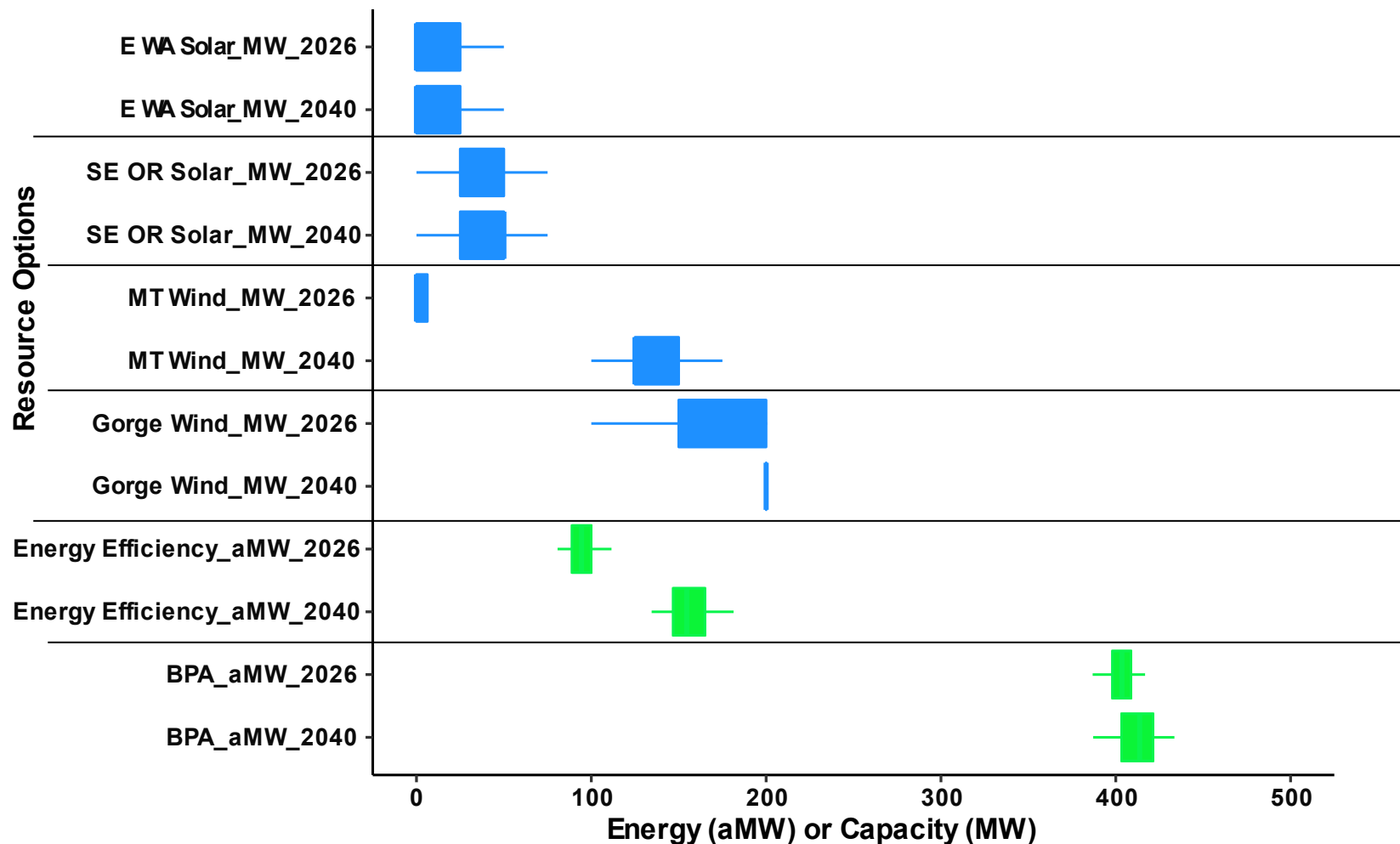
EXPECTED CONTRIBUTIONS TO RESOURCE ADEQUACY NEEDS – DEMAND SIDE RESOURCES



EXPECTED CONTRIBUTIONS TO RESOURCE ADEQUACY NEEDS – SUPPLY SIDE RESOURCES



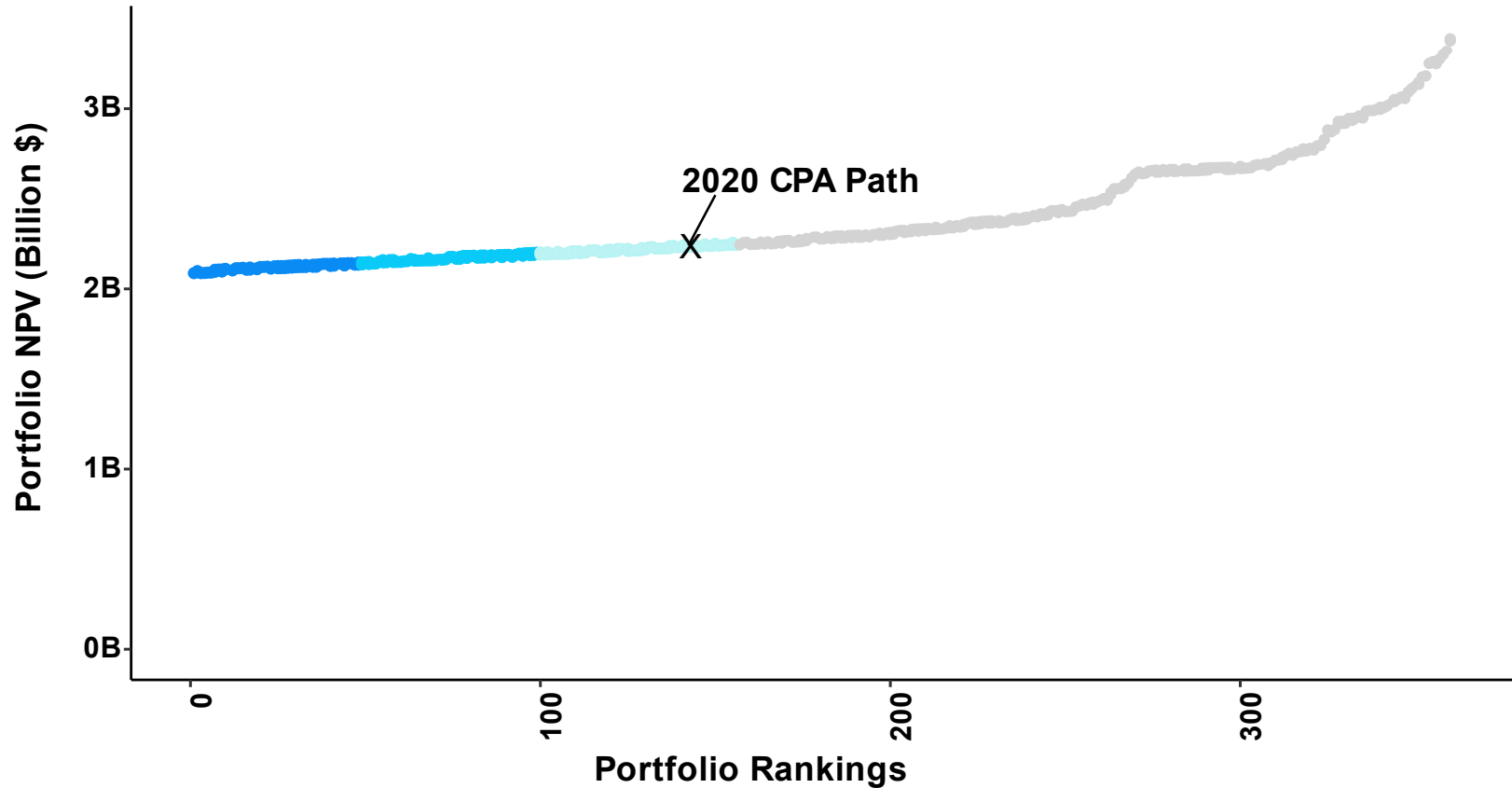
PORTFOLIOS WITHIN 7.5% OF TOP NPV SOLUTION



360 PORTFOLIOS

TOTAL PORTFOLIO COST (NET PRESENT VALUE)

Portfolios Net Present Values



SOCIAL COST OF GREENHOUSE GAS

HOW TO REDUCE GREENHOUSE GAS EMISSIONS

- Per CETA, a utility must incorporate social cost of greenhouse gas when:
 - evaluating conservation programs
 - developing integrated resource plans and clean energy implementation plans
 - evaluating mid to long-term resource options

SOCIAL COST OF GREENHOUSE GAS

WHAT WE DO KNOW

- CETA rulemaking and application ongoing
 - Not intended to affect dispatch or real time operational decisions
 - Impacts vary depending on utility's portfolio of resources
 - Difficult to predict market impacts and resource decisions

SOCIAL COST OF GREENHOUSE GAS

WHAT WE DO KNOW

Year	Price (2019\$ per MT CO2e)
2020	75
2025	83
2030	89
2035	95
2040	102

**CETA Emission Rate for Unspecified Electricity is
0.437 MT CO2e per MWh**

<https://www.utc.wa.gov/regulatedIndustries/utilities/Pages/SocialCostofCarbon.aspx>

MT = Metric Ton and CO2e = carbon dioxide equivalent emissions

SOCIAL COST OF GREENHOUSE GAS

HOW TO ESTIMATE SOCIAL COSTS OF GREENHOUSE GAS EMISSIONS

City Light's Sources of Emissions

BPA Unspecified

**SCL Marketing
Unspecified Sources**

Exchanges
Market purchases
Contracts

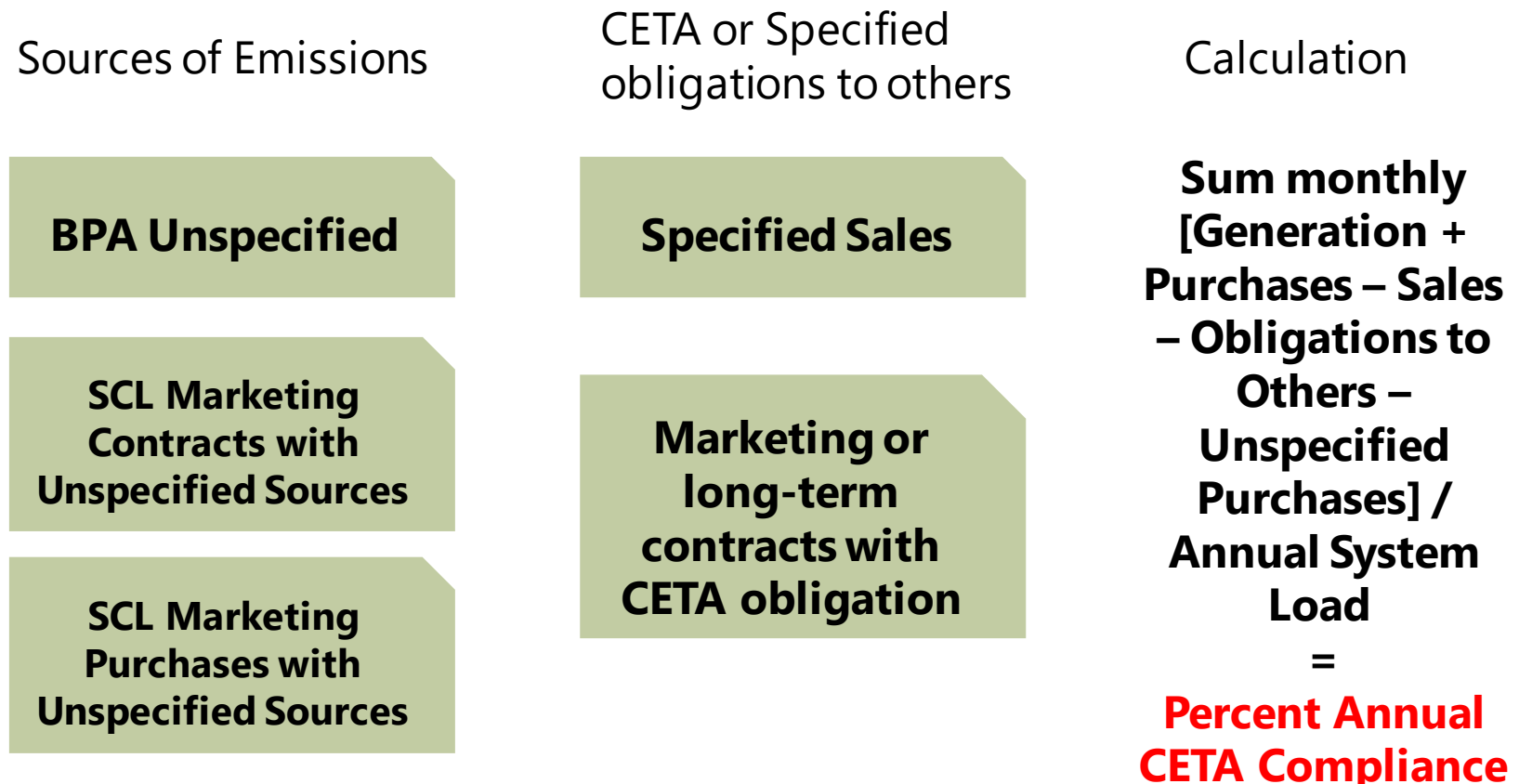
Calculation

$$\begin{aligned} & \text{Unspecified MWhs} \\ & * \text{SCGHG (\$/ton)} * \\ & \text{Emission Rate} \\ & = \\ & \text{Social Cost of GHG from} \\ & \text{Portfolio(Monthly)} \end{aligned}$$

Note: City Light currently uses a monthly accounting for wholesale GHG emissions. City Light directly accounts for GHG emissions for marketing contracts with unspecified sources and the BPA contract's unspecified sources

CETA COMPLIANCE MEASUREMENT

HOW TO REDUCE GREENHOUSE GAS EMISSIONS



Methodology follows our Fuel Mix Disclosure approach + ensuring clean for our own use of energy (beyond retail load and losses)

RESOURCE COST-EFFECTIVENESS SCREEN GOALPOST IN DEVELOPING I-937/CETA TARGETS

	2020 CPA Approach	Proposed 2022 CPA Approach
Screening Method	Compare levelized avoided cost to measure levelized cost	Compare NPV of benefits to NPV of measure/resource cost
Calculation of Net Benefits (value components)		
BPA	Peanut butter application of prices/costs without adjustment for hourly, monthly MWH shapes	MWH changes in BPA and market position value vary by hour, month, year, GHG cost consistent with CETA
Mkt Position		
GHG		
RPS Need	REC price using 2018 IRP portfolio	Implied value of EE in reducing RPS and RA needs by month
RA Need	None	
Transmission Costs	Peanut butter application of transmission rate	Included in the implied value of EE for RPS and RA

MOST IMPORTANT FINDINGS FROM PRELIMINARY RESOURCE CHOICES EVALUATIONS

- New framework presents a new cost effectiveness model for energy efficiency to unlock its full potential
- Energy efficiency remains first resource, but limited
- Solar and wind can help address our summer resource adequacy
- Energy efficiency, solar and wind diversifies portfolio and can address future CETA and I-937 need

IRP COMPARISON

RESOURCE DECISION TIMING

2018 IRP Progress Report

- Annual conservation investment reduces costs and risks
- New REC contracts may be required in 2022 (monitor load changes)
- 2028 New BPA Contract will help meet Resource Adequacy

2020 IRP Progress Report

- Annual conservation investments reduce costs, with new focus on more energy efficiency programs
- 2026 summer resource adequacy starts timeline for resource additions
- By 2031 City Light to need more renewables to meet I-937 regulations
- With only conservation investments and existing resources, City Light will be about 98% carbon free (median conditions)
- Goal is still 100% carbon free

2020 IRP PROGRESS REPORT UPDATE

- City Light completing written report and IRP Progress report legislation by end of year
- Reviewed by City Council in Q1 2021
- Report includes assessment of resource needs and discussion of resource choices and CETA regulatory timeline and metrics

2022 IRP RESOURCE CHOICES

Near term

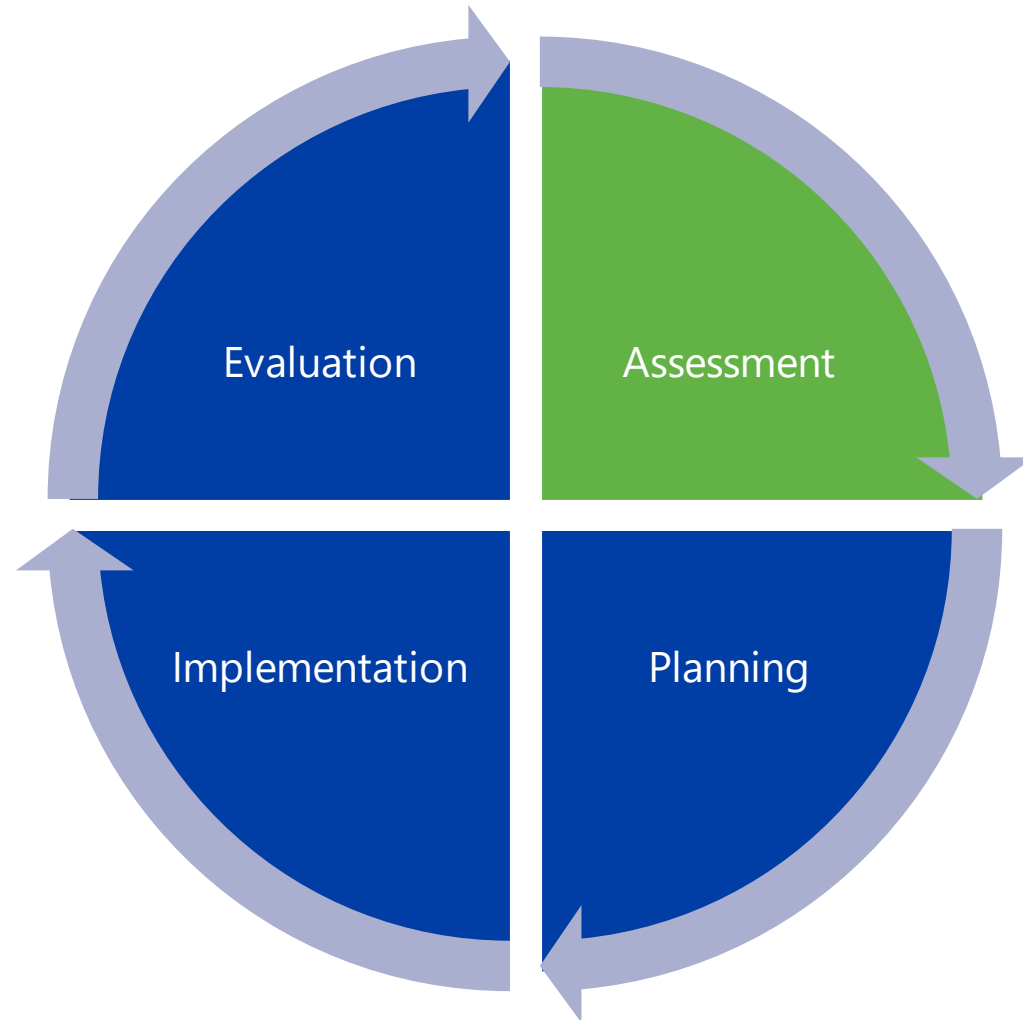
- Customer Energy Efficiency
- Solar (utility, customer)
- Onshore Wind
- Customer Demand Response
- Existing hydro
- Market Reliance

Long term

- BPA sizing
- Battery storage
- Pumped Storage
- Offshore wind
- Other renewable
- Other storage

FUTURE WORK

1. Understanding Climate Change, Electrification impacts and Transmission & Distribution benefits
2. Incorporating Supply and Demand Uncertainty
3. Aligning Generation, Transmission, Distribution and Customer Program Planning



CITY LIGHT CLEAN ENERGY 2-YEAR ACTIONS

Actions

Update resource needs accounting for COVID and approved electrification plans

Achieve 2020 and 2021 Conservation Potential targets and create new 2022 and 2023 targets and CETA targets

Incorporate Climate Change into demand forecast investigate opportunities for hydro supply approach

Revise Commercial Solar pilot rate for 2022 based on the new framework

Develop additional electrification scenarios to further chart utility actions to support customer and local plans

Investigate and seek new renewable resource and transmission additions for potential Customer Programs and City Light needs

Evaluate and develop demand response and renewable energy targets for clean energy action and implementation plans (CETA requirements)

2022 IRP STAKEHOLDER ACTIONS

- Stakeholder input requested on action plans –
 - Provide inputs reflecting City wide customer values and preferences
 - Feedback on alternative resource plans
 - Bring to City Light external research and your individual expertise to support completion of 2022 IRP work

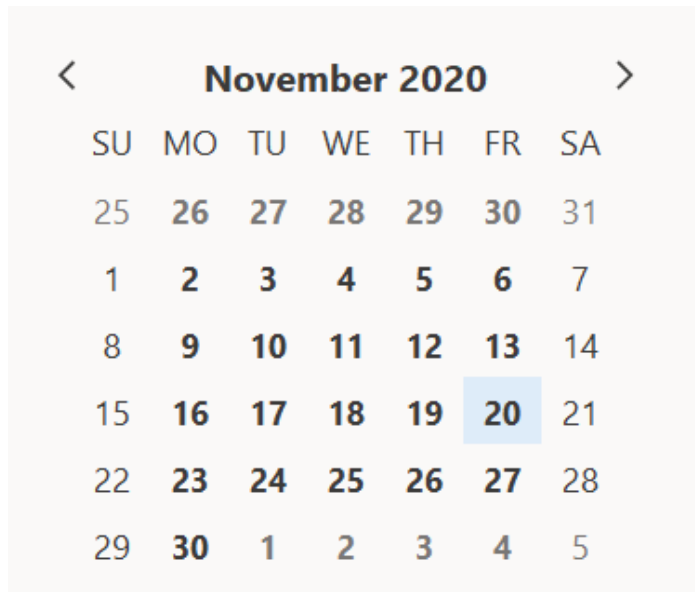
QUESTIONS AND ANSWERS



Follow up
questions

NEXT STEPS- NOVEMBER

1. Stakeholder input on 2022 IRP process
2. Follow up on questions
3. 2022 scheduling



A calendar for November 2020. The days of the week are listed at the top: SU, MO, TU, WE, TH, FR, SA. The dates are arranged in a grid. The date 20 is highlighted with a light blue background.

November 2020						
SU	MO	TU	WE	TH	FR	SA
25	26	27	28	29	30	31
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

CITY LIGHT

Our Mission

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

Our Vision

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

Our Values

Customers First, Environmental Stewardship, Equitable Community Connections, Operational and Financial Excellence, and Safe and Engaged Employees

