2026 Integrated Resource Plan (IRP): External Advisory Panel Meeting #3

April 2, 2025

Seattle City Light

WE POWER SEATTLE

Today's Agenda

- SCL Presenters
- 2026 IRP & DSMPA Staggered Approach
- 2026 DSMPA Preliminary Results
- Existing Resources
- Next Steps

Today's SCL Sponsors and Contributors – IRP

Name	Title, Group	Role
Siobhan Doherty	Power Supply Officer	IRP Sponsor
Katie Ewing	Manager, Resource Planning & Analysis	IRP Contributor
Mike Hamilton	Strategic Advisor/Data Scientist, Finance	IRP/DSMPA Contributor
Ruizhe Wang	Sr. Economist/Data Scientist, Finance	IRP/DSMPA Contributor
Verene Martin	Data Scientist, Resource Planning & Analysis	IRP/DSMPA Contributor
Rebecca Klein	Data Scientist, Resource Planning & Analysis	IRP Contributor
Alan Bach	Sr. Power Analyst, Resource Planning & Analysis	IRP Contributor
Ana Mileva	Principal, Sylvan Energy Analytics	IRP Contributor
Elaine Hart	Principal, Sylvan Energy Analytics	IRP Contributor

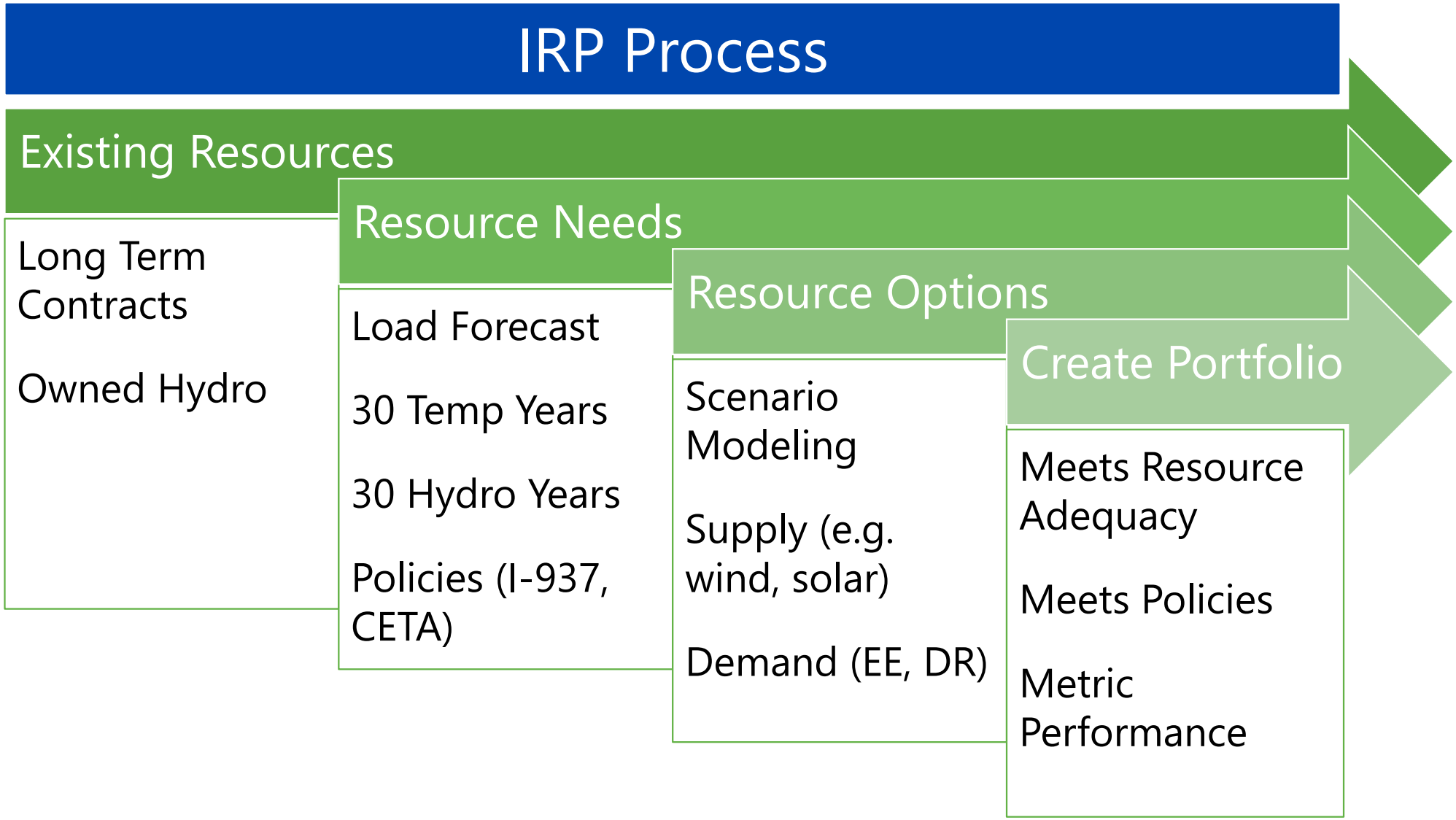
Today's SCL Sponsors and Contributors – DSMPA

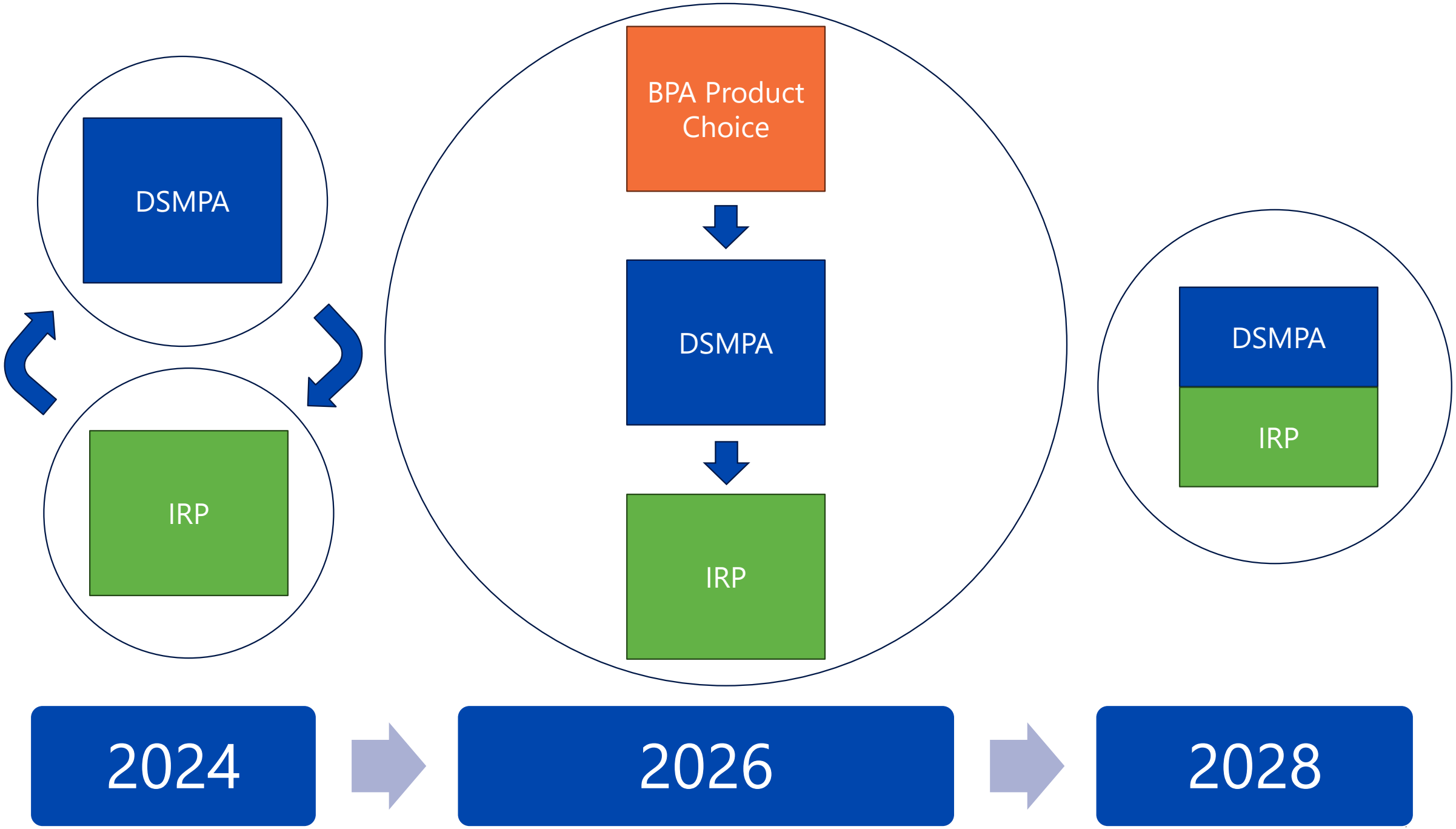
DSMPA Team		
Name	**Title, Group**	**Role**
Margaret Frey	Strategic Advisor, Power Contracts and Regional Affairs	DSMPA Contributor
Aquila Velonis	Principal, Cadmus	DSMPA/IRP Contributor
Jesse Emge	Sr. Associate, Cadmus	DSMPA/IRP Contributor
Sophia Spencer	Principal, Nauvoo Solutions	DSMPA Contributor
Jennifer Finnigan	Manager, CES Strategy, Planning and Evaluation	DSMPA Contributor
Joseph Fernandi	Director, Customer Energy Solutions (CES)	DSMPA Sponsor
Craig Smith	Chief Customer Officer	DSMPA Sponsor

2026 IRP & DSMPA Staggered Approach

Seattle City Light

Elements of the 2026 IRP




DSMPA
IRP
BPA Product Choice
DSMPA
IRP
DSMPA
IRP
2024
2026
2028

2026 Staggered Approach

1

BPA Product Choice

- Production cost model
- Decision independent of candidate resources

2

DSMPA

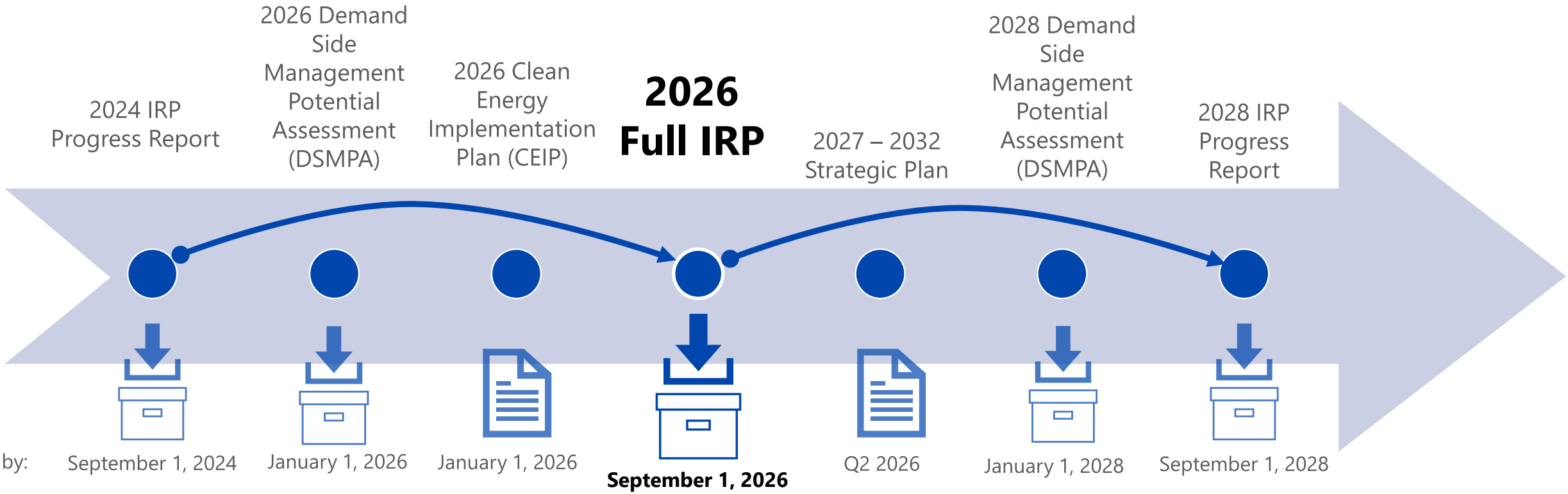
- Capacity expansion & production cost models
- BPA product choice, Cadmus demand side resources, and candidate supply side resources

3

IRP

- Capacity expansion & production cost models
- BPA product choice, DSMPA demand side resources, and candidate existing and emerging supply side resources

2026 Integrated Resource Plan (IRP) Timeline Context



Targeted City Council Consideration:		**Aug 2025**		**Jan 2026**	**July 2027**	**July 2027**

2026 DSMPA

Potential Assessment 101

EE Preliminary Results

DR Preliminary Results

Seattle City Light

PA 101: Who prepares potential assessments?

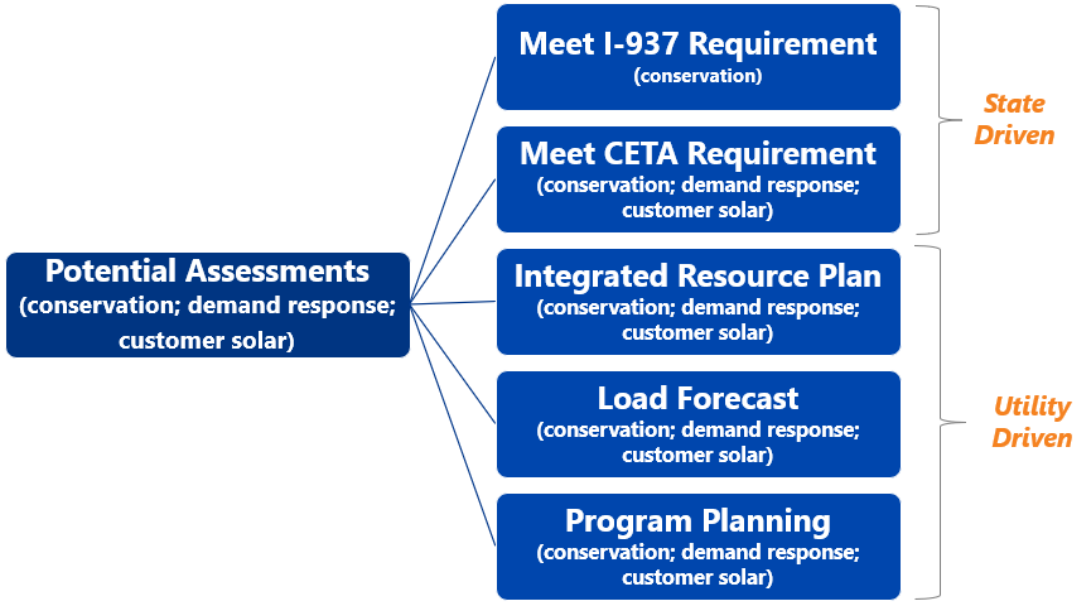
Name	Title, Group	Role
Margaret Frey	Strategic Advisor, Power Contracts and Regional Affairs	DSMPA Contributor
Mike Hamilton	Sr. Economist / Data Scientist, Financial Planning	IRP/DSMPA Contributor
Verene Martin	Data Scientist, Resource Planning & Analysis	IRP/DSMPA Contributor
Aquila Velonis	Principal, Cadmus	IRP/DSMPA Contributor
Jesse Emge	Senior Associate, Cadmus	IRP/DSMPA Contributor
Sophia Spencer	Data Consultant, Nauvoo Solutions	DSMPA Contributor
Jennifer Finnigan	Manager—CES Strategy, Planning and Evaluation	DSMPA Sponsor
Joseph Fernandi	Director, Customer Energy Solutions (CES)	DSMPA Sponsor
Craig Smith	Chief Customer Officer	DSMPA Sponsor

PA 101: What, Why, How, When

PA 101: **What** is a potential assessment?

- Identifies the amount, timing, and cost of demand-side resources
- A tool that helps to weigh demand-side resources as alternatives to supply-side resources
- Sets our 2-year and 4-year targets as required by WA State law (I-937, Clean Energy Implementation Plan)
- Year-long study; results in 150+ page report

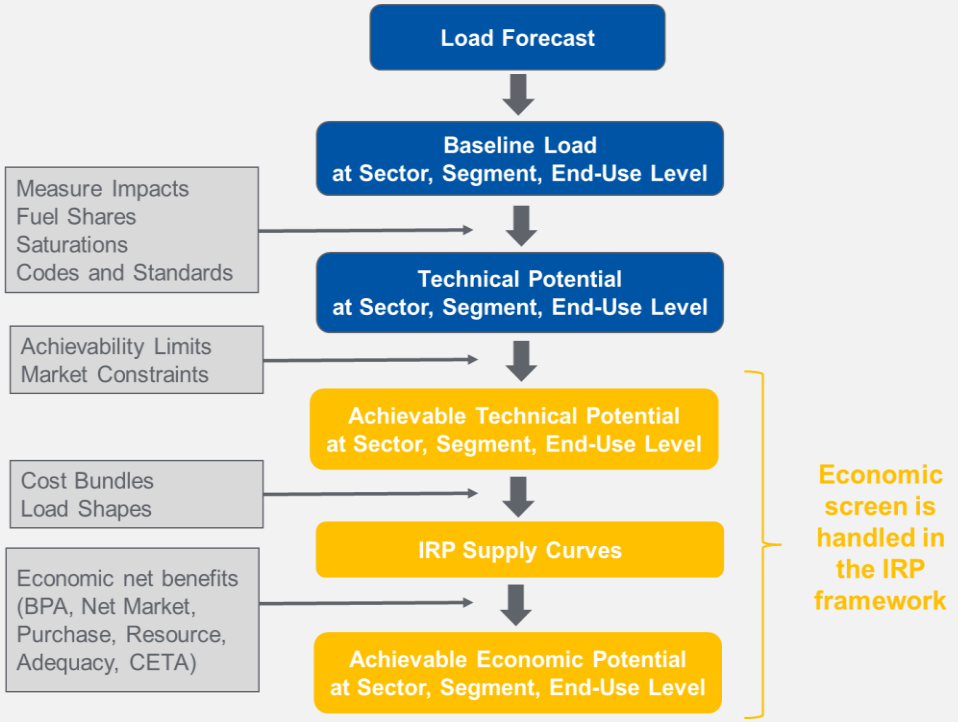
PA 101: **Why** we do potential assessments?



PA 101: What, Why, How, When

PA 101: How we set potential?

Conservation



Demand Response

- Analysis methodology is similar to the energy-efficiency market potential assessment
  - Use the same load forecast and baseline load data
- Develop a defined list of demand response (DR) options looking at firm and flexible load reduction opportunities
- Analyze different DR options to develop IRP supply curve inputs for possible selection in the economic screening process

PA 101: What, Why, How, When

Timeline: Completed and Expected

	2024				2025								
	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	June	Jul	Aug	Sep
Kickoff													
Data gathering													
Measure lists/characterization													
End use load forecast													
Potential (EE/DR)													
Draft report													
Final report													
Present (Stakeholder Briefings)													
City Council Resolution													

PA 101: Considerations around potential assessments

- **Are** based on City Light's load forecast and regional studies, like the Commercial and Residential Building Stock Assessments
- **Do** account for codes and standards that are 'on the books'
- **Do** use broad assumptions about the adoption of energy measures
- **Do** rely on cost data from the Northwest Power and Conservation Council and Regional Technical Forum
- **Are** directional and can inform program design
- **Are** updated every two years

PA 101: Limitations of potential assessments

- **Do not** consider program implementation barriers
- **Cannot** predict market changes over time
- **Cannot** predict future changes in policies, pending codes and standards, and which new technologies may become commercially available
- **Do not** attempt to forecast or otherwise predict future changes in energy efficiency/demand response/customer solar measure costs
- **Are not** prescriptive

2026 DSMPA

Potential Assessment 101
EE Preliminary Results
DR Preliminary Results

Seattle City Light

Study Focus: What's included in the 2026 study

End Use Forecast	Energy Efficiency	Demand Response
Building Electrification	Add up to 5 Energy Conservation Measures (ECMs)	Added new Demand Response (DR) products
Climate Change	Updated high priority ECMs	Update 2024 DSMPA products with program info
Highly Impacted Communities	Integrated Resource Plan (IRP) inputs	IRP inputs
Update saturations, efficiency shares, and fuel shares	Codes and Standards Forecast	Hourly inputs for electric vehicles (EV) and Time-of-Use (TOU) products

EE Baseline End-Use Forecast

+ A single base case forecast; embeds electrification (no scenarios)

STUDY PERIOD

2026 to 2045 (20 years)
Base year: 2025

BUILDING TYPES

Same as 2024 DSMPA
Residential: Single family, multifamily - low rise, multifamily - mid rise, multifamily – high rise; standard and highly impacted communities

SECTORS

Residential, commercial, industrial (same as 2024 DSMPA)

END USES

Heating, cooling, lighting, water heat, dryer, etc.

EE Baseline Forecast Results

Industrial: Does not include spot loads, district steam, or street lighting forecast

EE Conservation Potential Assessment

- Determine technical and achievable technical energy efficiency potential (2026 through 2045)
- Review the measure list from the 2024 DSMPA project and discuss changes - Working session with the City Light staff

2026 CHANGES:

▲ = increase impact
● = mixed impact
▼ = decrease impact

- Updated to RBSA III ▲
- Increased avoided T&D ▲
- Revised Admin cost factor ●
- Added new measures ▲
- Removed selected measures ▼
- Updated 10 high impact measures with latest RTF data ●
- Included City Light evaluation data for DHPs and HPWHs ●
- Changes in codes and standards ▼
- No change to emerging technologies

New Measures Added

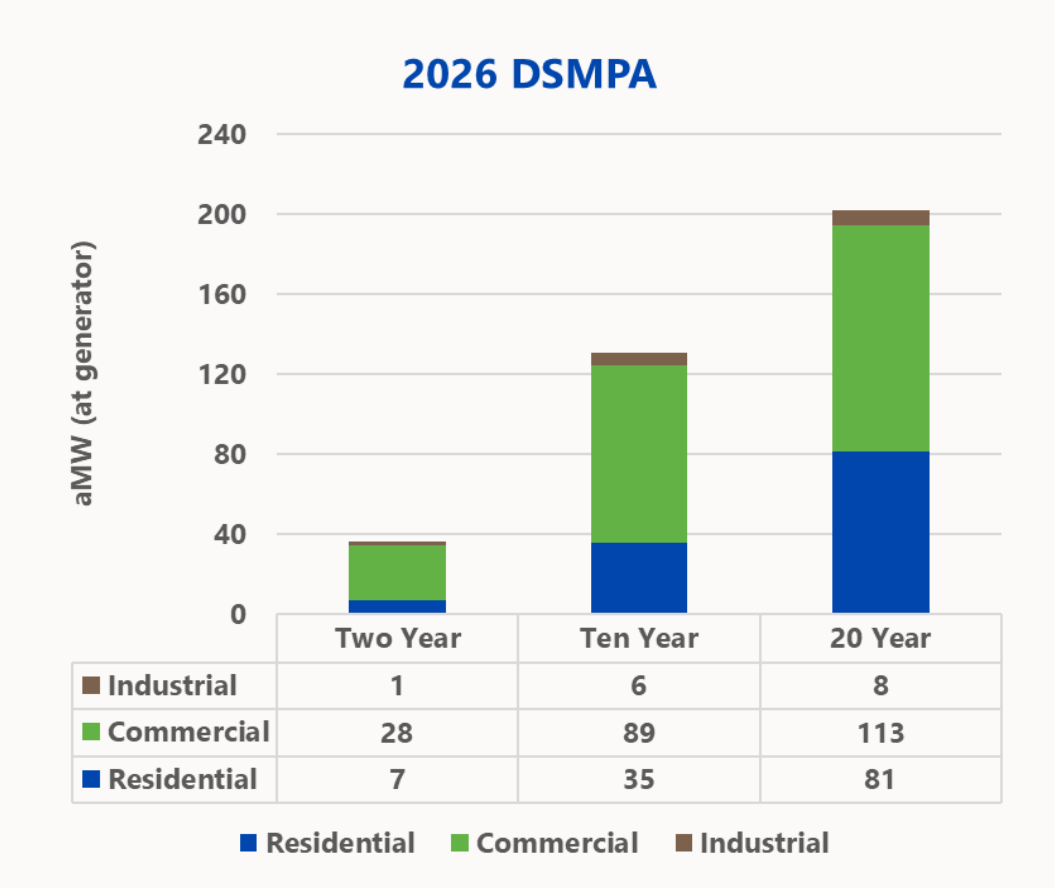
- EV chargers
- Window HP
- HVAC sizing
- MF PTHP
- HP with back-up

Measures Removed

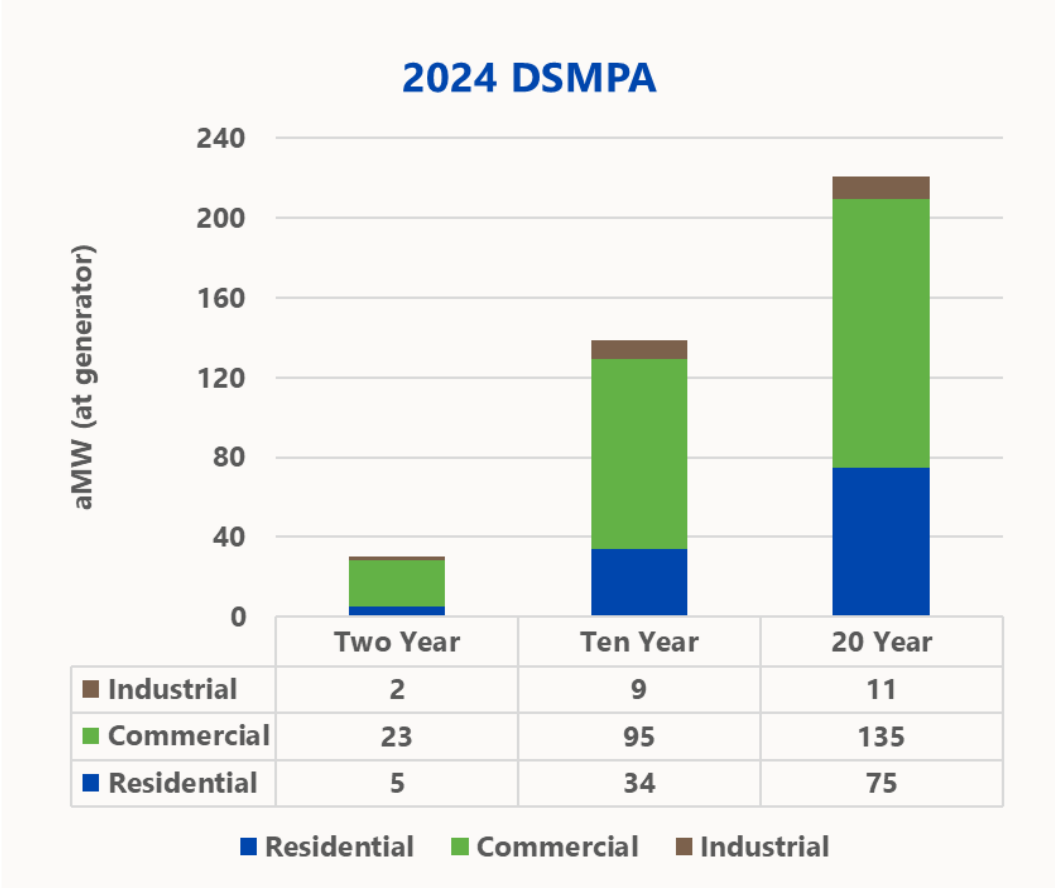
- Street lighting controls
- Secondary waste-water impacts
- Spas
- Fryers
- Refrigerator and freezer recycling

EE 2026 DSMPA Comparison to 2024 DSMPA

Achievable Technical Potential **DRAFT**

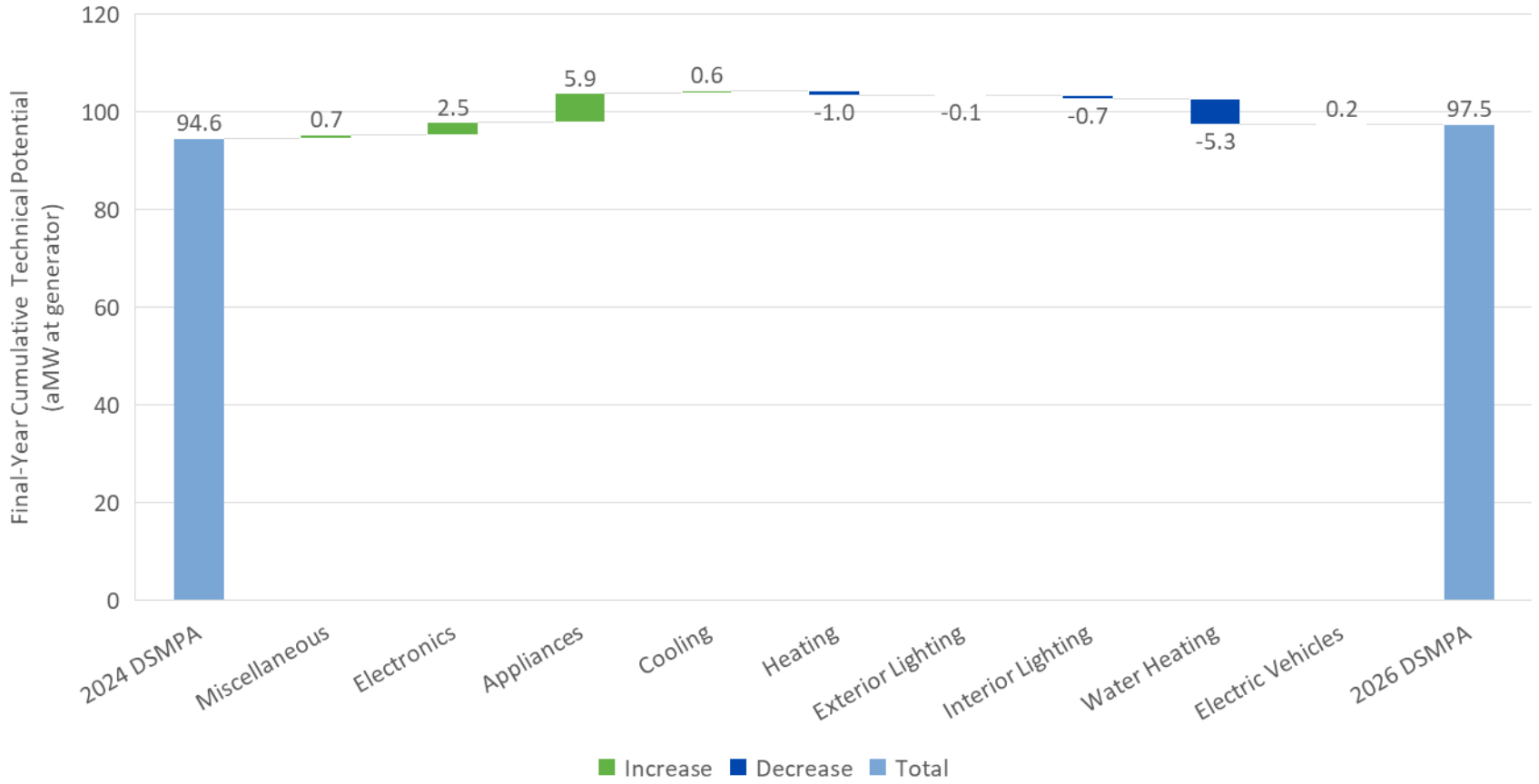


	Two Year	Ten Year	20 Year
Industrial	1	6	8
Commercial	28	89	113
Residential	7	35	81



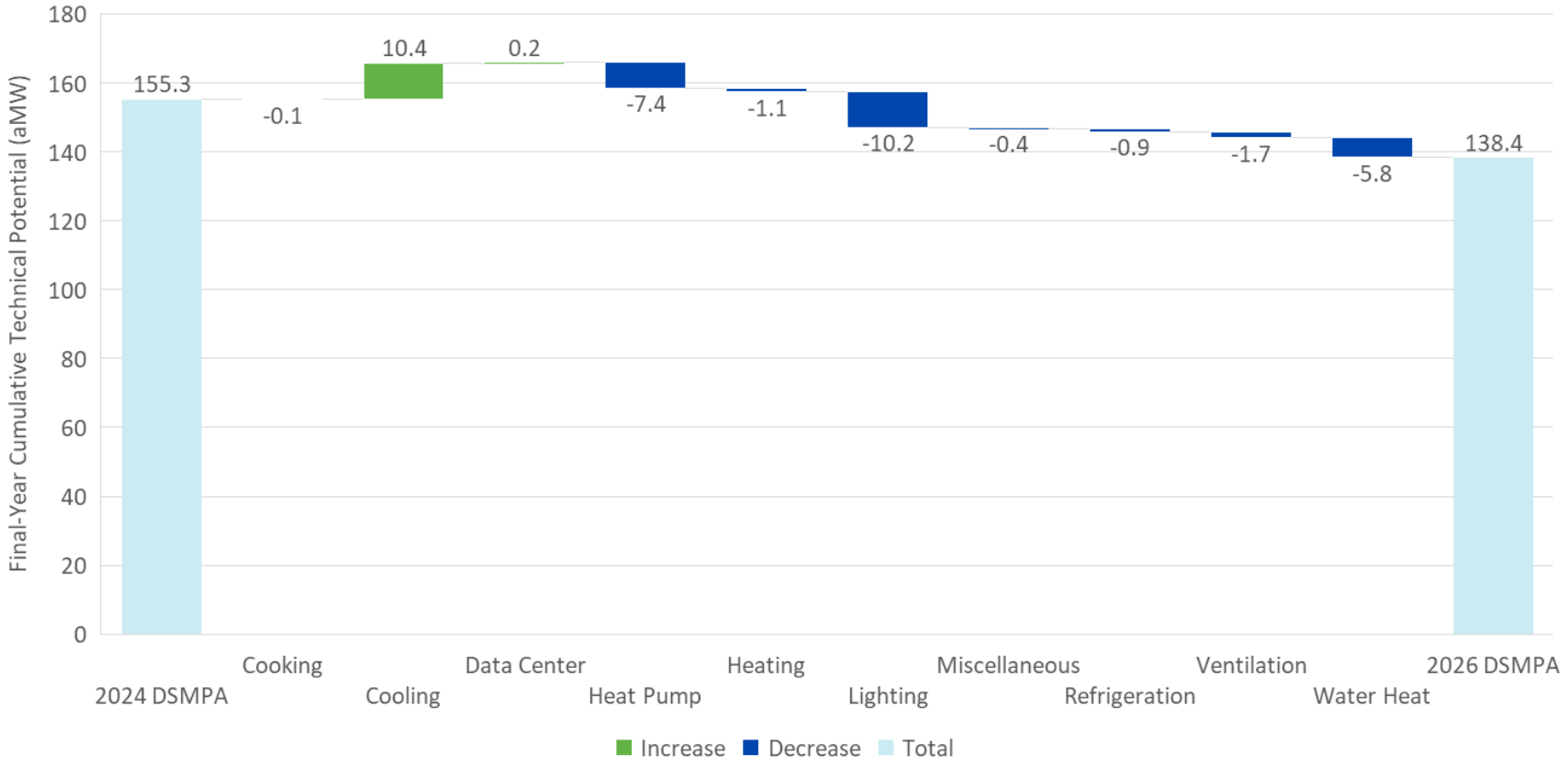
	Two Year	Ten Year	20 Year
Industrial	2	9	11
Commercial	23	95	135
Residential	5	34	75

Base Case: Change in Residential Technical Potential by End Use **DRAFT**



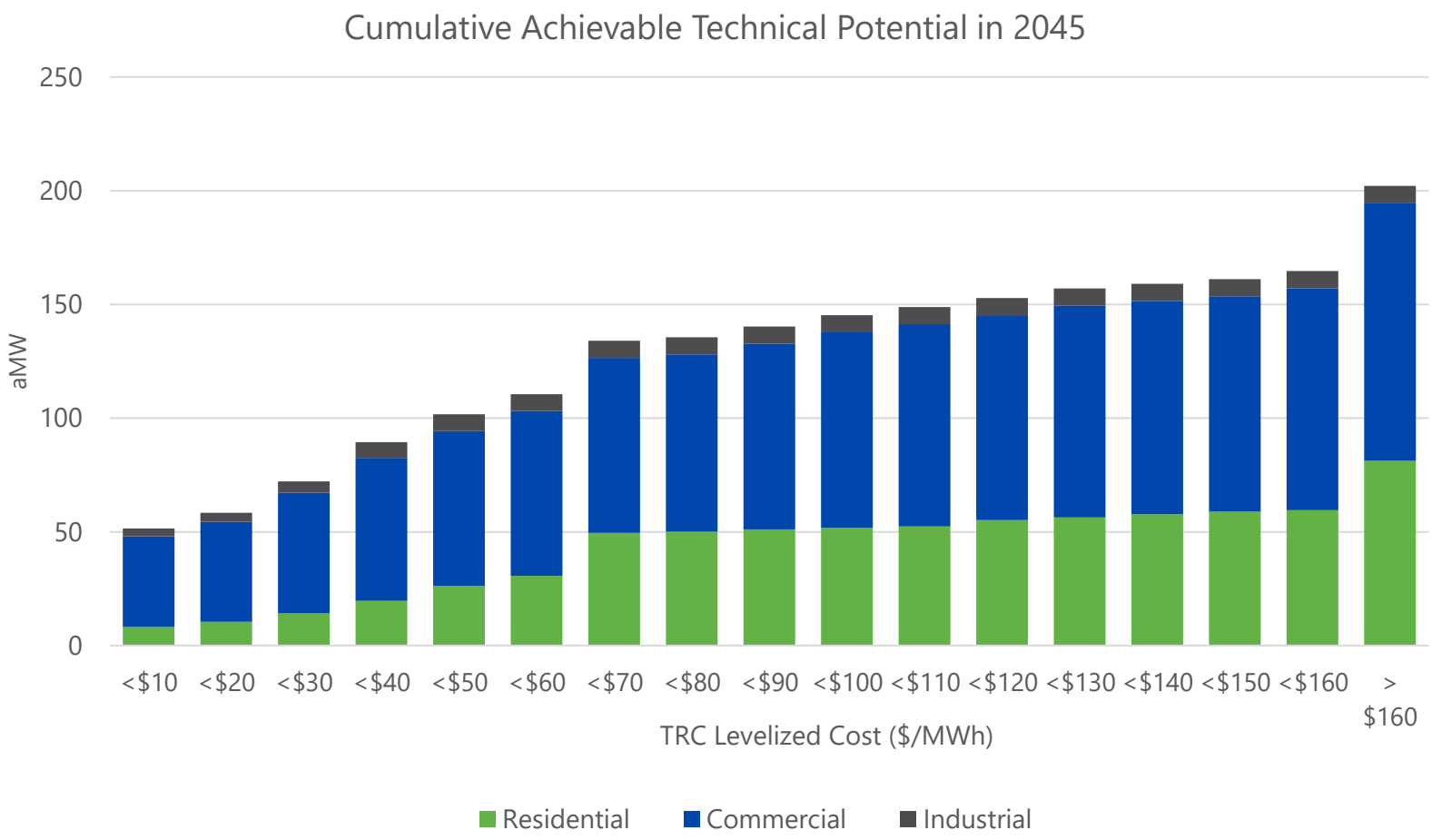
- Changes in RBSA III end-use saturations and fuel shares impact end-uses
- Increase in heat pump dryer appliance savings characterization
- Decrease in water heating characterization (saturations/unit savings)

Base Case: Change in Commercial Technical Potential by End Use **DRAFT**



- Reduced potential from commercial lighting (2029 WA lighting code); lighting control potential remains
- Updates in cooling and heat pump characterization of chiller upgrades and ASHP

Levelized Cost Results by Cost Bundle **DRAFT**



- Similar distribution as 2024 CPA but with more aMW in lower cost bundles due to new T&D
- 2026 DSMPA found 66% of the cumulative 2045 achievable technical potential can be acquired at less than or equal to $70/MWh
- 2026 DSMPA found 19% of cumulative achievable technical potential has a levelized cost greater than $160/MWh

EE Potential Conclusions **DRAFT**

- Short-term **achievable technical potential** is ~36 aMW within the first two years (through 2027)
- Commercial sector continues to provide the highest potential
- Similar to the prior CPA, low-cost energy efficiency potential is not abundant
  - In-part due to reduced low-cost lighting potential
  - More expensive HVAC measures

2026 DSMPA

Potential Assessment 101
EE Preliminary Results
DR Preliminary Results

Seattle City Light

Products Assessed

14 Residential, 15 Nonresidential Products

Three main DR categories:

- Direct load control (DLC)
- Pricing options
- Other (Behavioral and battery)

Residential DR Product List	DR Type
Residential Storage Switch Water Heater (WH)	WH DLC
Residential Storage Grid-Enabled Water Heater	WH DLC
Residential Heat Pump Grid-Enabled Water Heater	WH DLC
Residential Electric Vehicle Direct Load Control	EV DLC
Residential Critical Peak Pricing (CPP)	CPP Pricing
Peak Time Rebates (PTR)	PTR Pricing
Residential Time of Use (TOU) - OptOut	TOU Pricing
Residential Time of Use (TOU)	TOU Pricing
Highly Impacted Community Residential Battery (Batt)	Batt Other
Residential Battery	Batt Other
Residential BYOT	HVAC DLC
Residential HVAC Switch	HVAC DLC
Residential Connected Heat Pump Direct Load Control	HVAC DLC
Residential Behavioral (Non-incentivized)	Behavioral Other

Non-Residential DR Product List	DR Type
Commercial Electric Vehicle Time of Use (TOU)	EV Pricing
Commercial Light Duty Electric Vehicle Direct Load Control	EV DLC
Commercial Medium Duty Electric Vehicle Direct Load Control	EV DLC
Commercial Heavy Duty Electric Vehicle Direct Load Control	EV DLC
Commercial Critical Peak Pricing (CPP)	CPP Pricing
Industrial Critical Peak Pricing (CPP)	CPP Pricing
Commercial Curtailment	Load DLC
Industrial Curtailment	Load DLC
Commercial Time of Use (TOU)	TOU Pricing
Small Commercial Battery	Batt Other
Large Commercial Battery	Batt Other
Small Commercial BYOT	HVAC DLC
Small Commercial HVAC Switch	HVAC DLC
Medium Commercial HVAC Switch	HVAC DLC
Commercial Grid Enabled Building Curtailment	Load DLC

Comparison 2026 vs 2024 DSMPA DR Results **DRAFT**

Sector	2024 DSMPA Winter (MW)	2026 DSMPA Winter (MW)	2024 DSMPA Summer (MW)	2026 DSMPA Summer (MW)
Commercial	50.8	43.9	65.0	55.1
Residential*	129.0	120.5	78.1	105.3
New in 2026**	NA	22.1	NA	24.7
Total	179.9	176.6 (with opt-in) 180.7 (with opt-out)	143.1	174.3 (with opt-in) 178.9 (with opt-out)

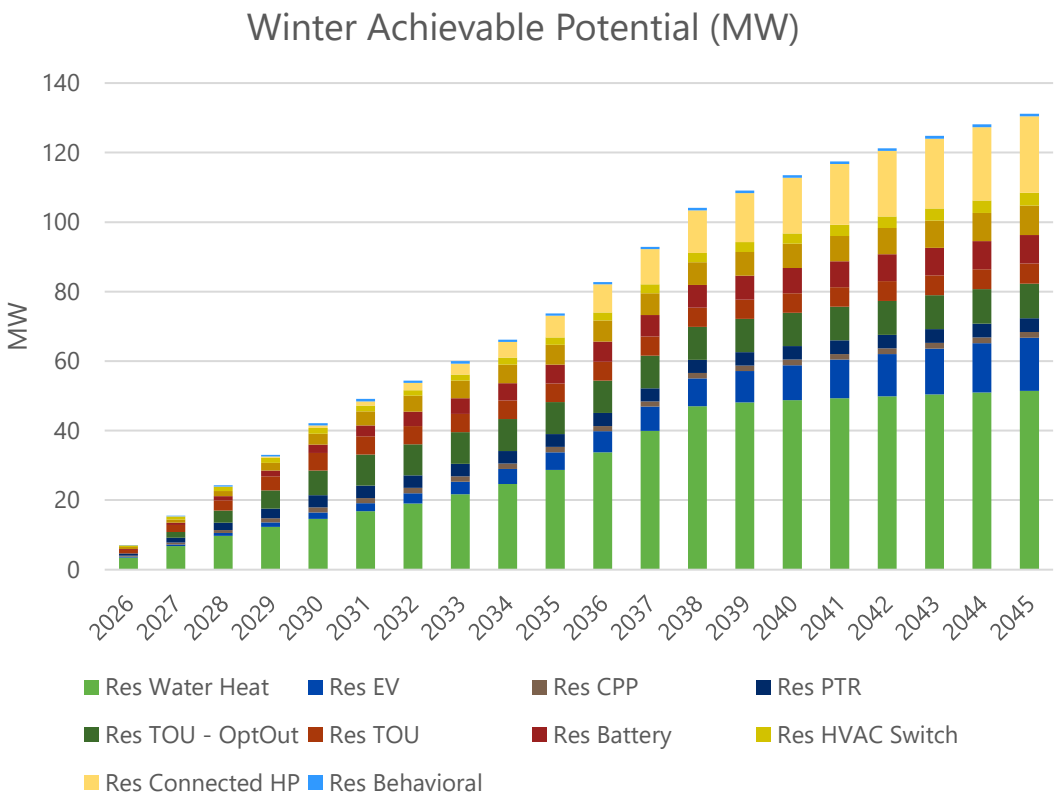
* Includes Res TOU opt-in
** Includes Res TOU opt-out

Changes in the 2026 DSMPA

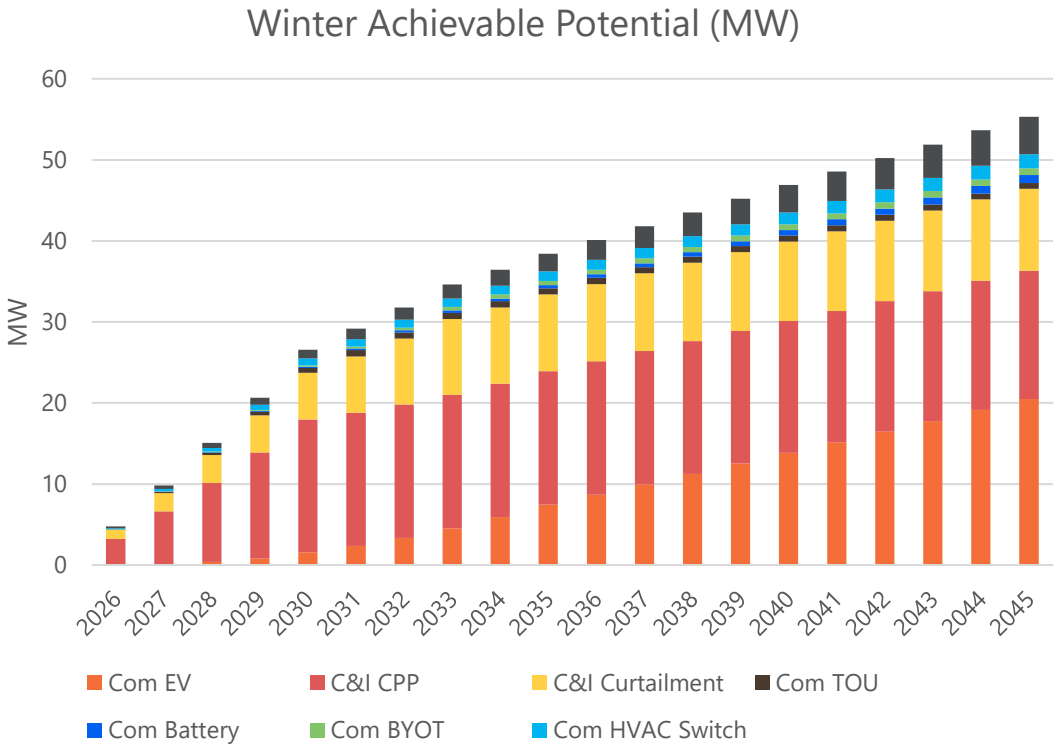
- **Program and Evaluation data.** Leveraged recent City Light and NW program and evaluation data
- **Aligned C&I Curtailment design.** Assumed up to 10 participants with at least 1MW load curtailable (up to 72 hours).
- **Integrated City Light program staff input.** For example, aligned assumptions across products.

Winter Demand Response **DRAFT**

Residential



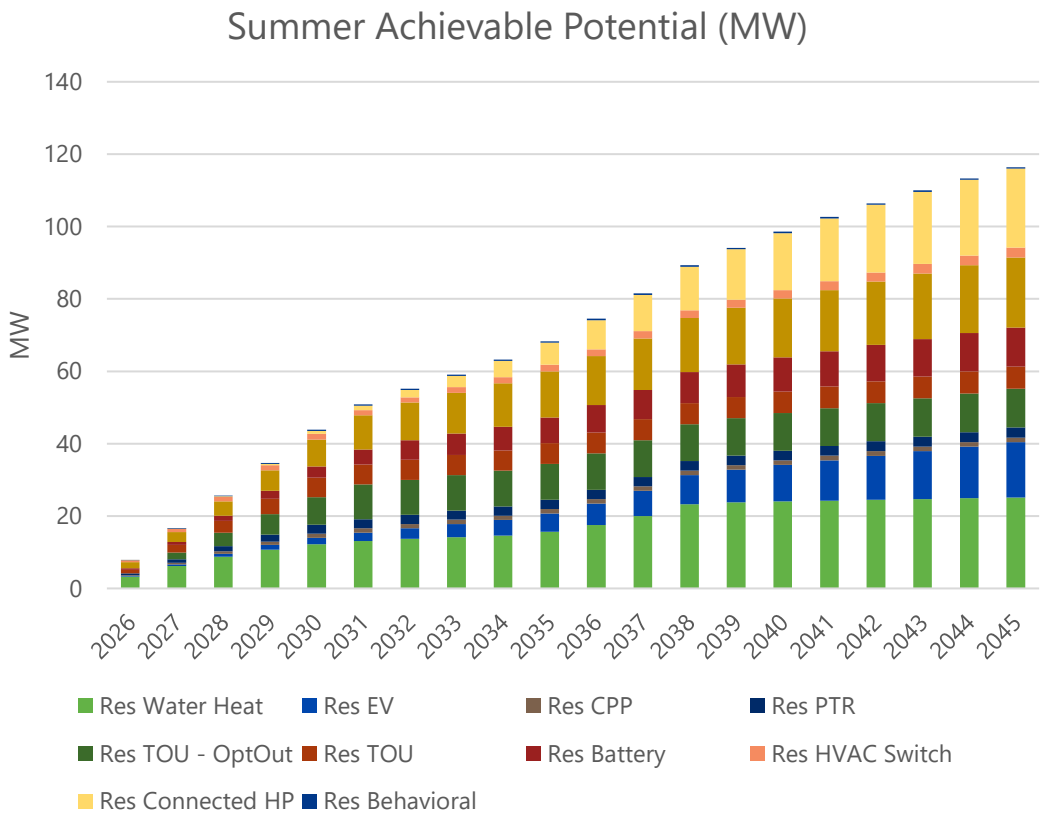
Nonresidential



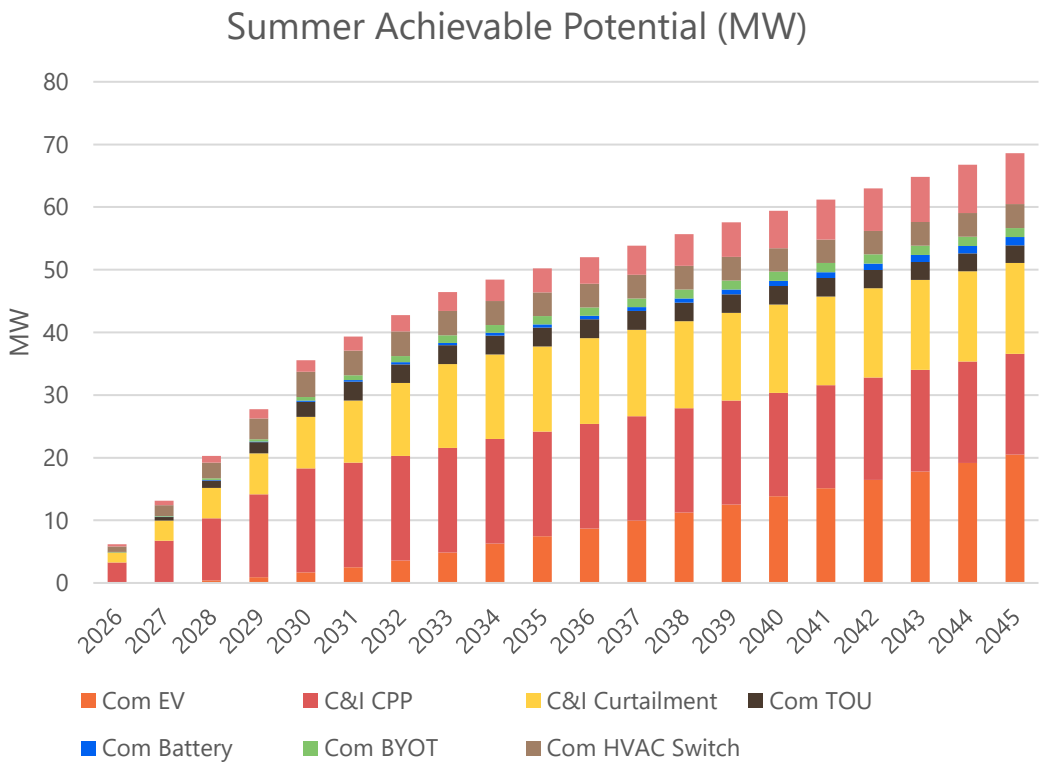
NOTE: Res TOU opt-in and Res TOU opt-out are not additive

Summer Demand Response **DRAFT**

Residential

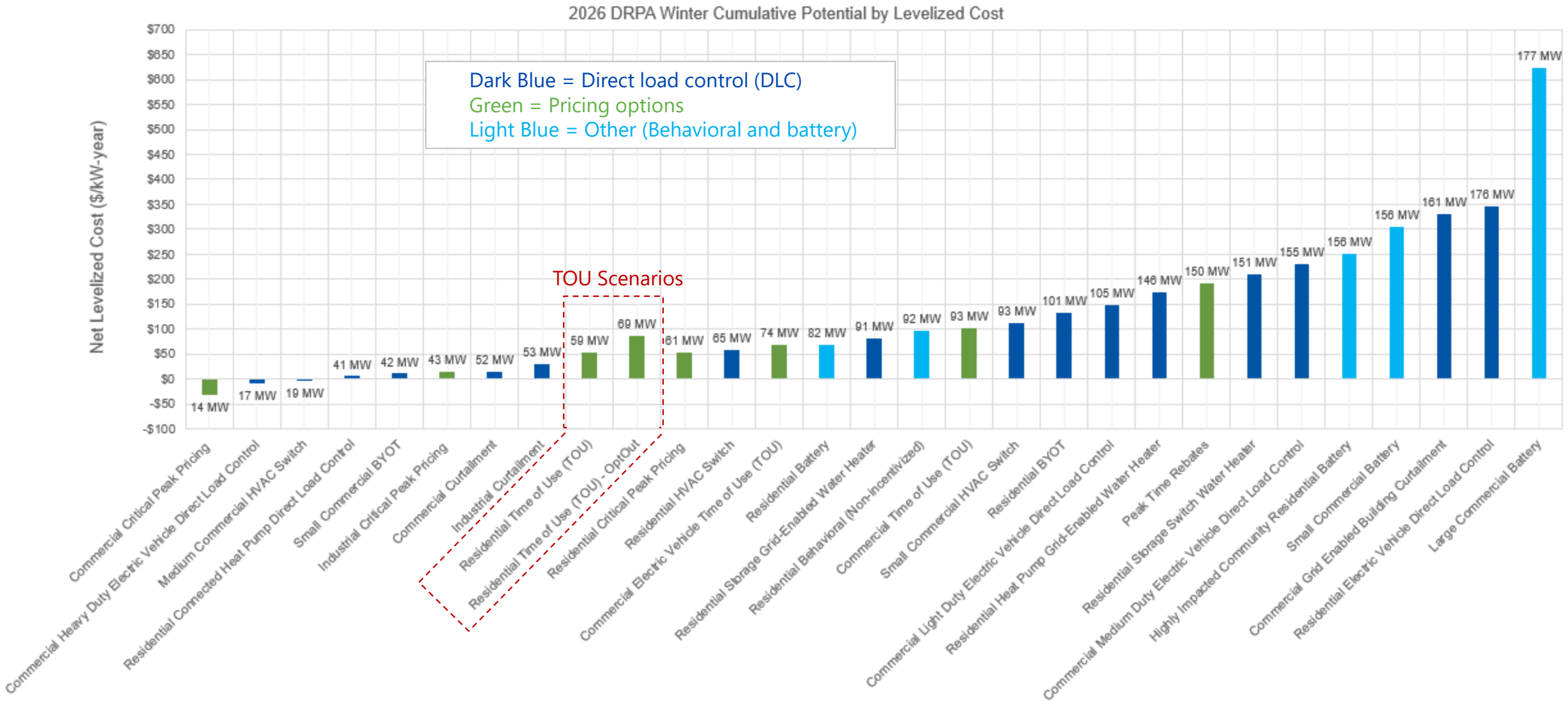


Nonresidential



NOTE: Res TOU opt-in and Res TOU opt-out are not additive

Winter DR Achievable Potential Supply Curve **DRAFT**



DR Potential Conclusions **DRAFT**

- Residential
  - Residential Heat Pump Grid-Enabled Water Heaters offer the greatest achievable demand response winter potential (41 MW) by 2045 and with levelized costs under ~$175/kW-year
- Nonresidential
  - Curtailment and pricing programs offer the greatest achievable demand response winter and summer potential by 2045
- EVs
  - With the increase projected EV adoption, the opportunity to manage EV loads has also increased

Next Steps – DSMPA Legislative Timeline

- April 1st – 28th: IRP team completes DSMPA EE/DR modeling and drafts economic potential section of the report
- May 5th – May 21st final report review period
- May 26th: Legislative package due for pre-approval by CAO/CBO
- June 9th: GM Briefing Materials due
- June 24th: 2026 DSMPA Council Briefing w/ GM
- July 11th: Formal Legistar Review and Approval
- August 15th: SCLAC Council Meeting #1
- September 5th: SCLAC Council Meeting #2
- September 16th: Seattle City Council – Vote on Resolution

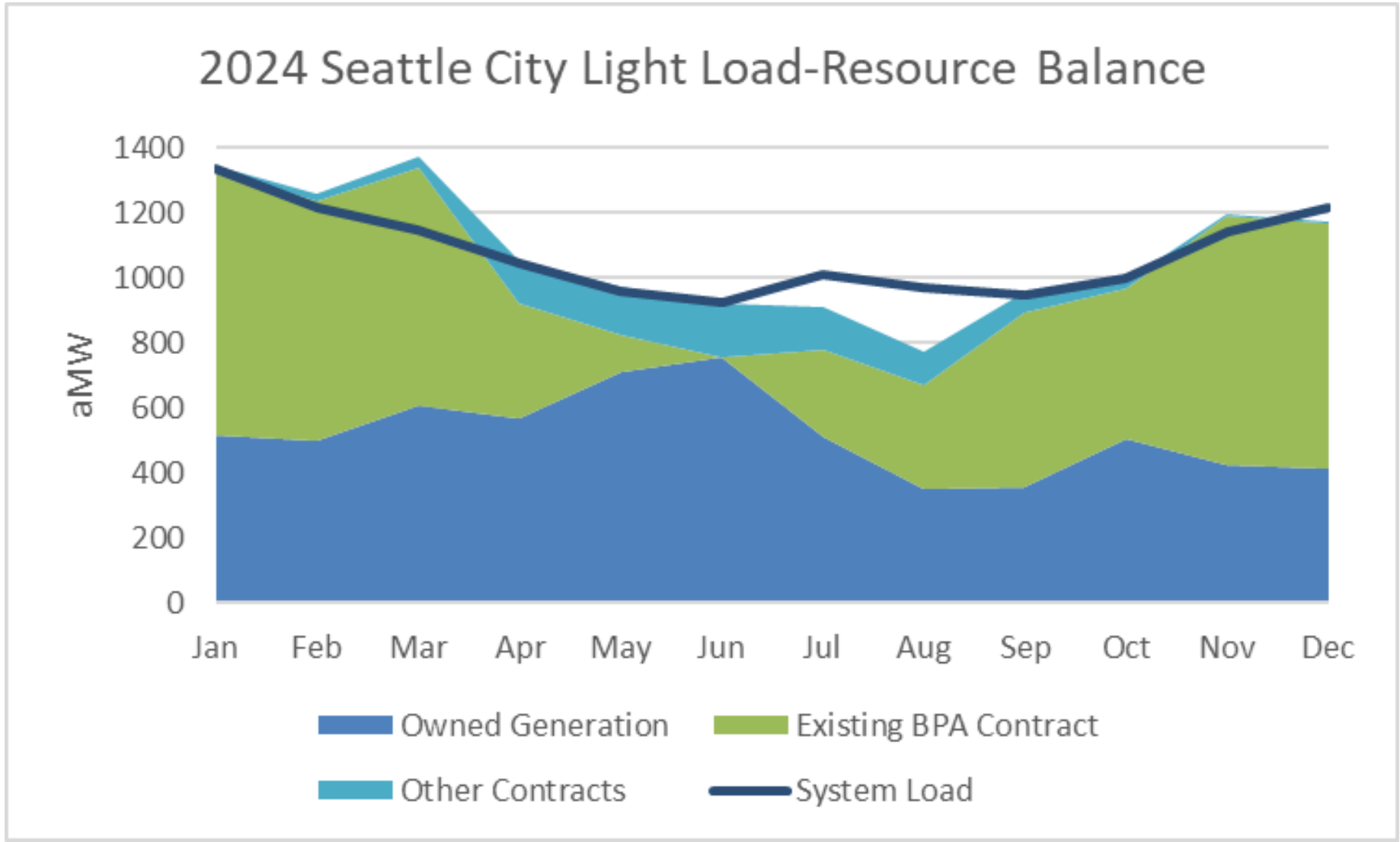
Existing Resources

Seattle City Light

2024 Existing Resources

Resources	2024 Energy Produced (MWh)	% of Grand Total	Year Contract Expires
Owned Generation			
Boundary	3,025,434	30.7%	
Gorge	689,925	7.0%	
Diablo	363,142	3.7%	
Ross	411,631	4.2%	
Cedar Falls	6,841	0.1%	
South Fork Tolt	44,885	0.5%	
TOTAL OWNED	*4,541,858*	*46.1%*	
Contracts			
BPA Block	4,278,100	43.4%	2028
Priest Rapids	19,184	0.2%	2052
Columbia Basin Hydro	251,860	2.6%	2025-2027
High Ross	315,307	3.2%	2066
Seven Mile	3,263	0.0%	2066
Lucky Peak	290,821	3.0%	2038
Columbia Ridge	69,446	0.7%	2028/2033
King County WW	9,647	0.1%	2033
Condon Wind	73,861	0.7%	2028
TOTAL CONTRACTS	*5,311,489*	*53.9%*	
GRAND TOTAL	**9,853,347**	**100.0%**	

2024 Existing Resources



Next Steps

Seattle City Light

Next Meeting

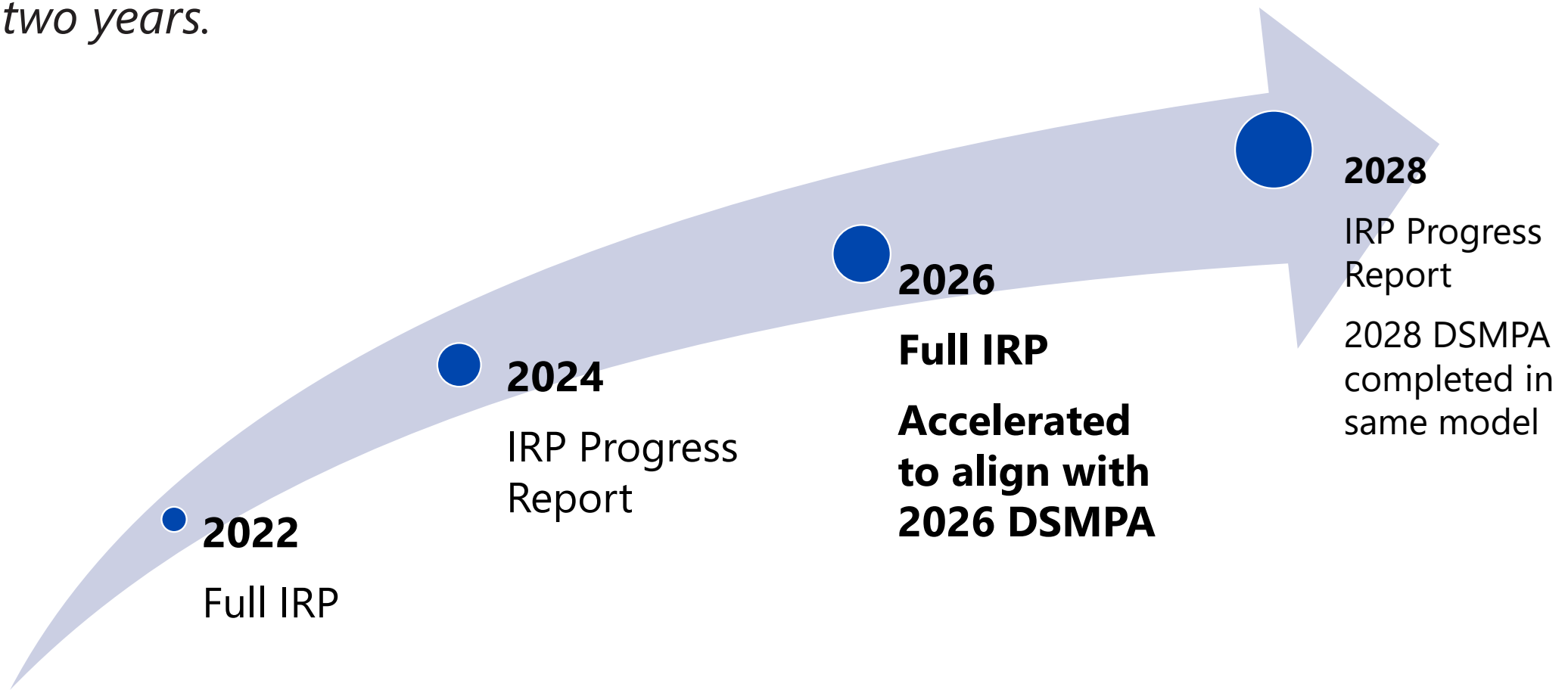
- May proposed agenda
  - DSMPA Final Results
- 2025 meetings:
  - Adding at least one more meeting for the IRP results (Timing TBD)

THANK YOU

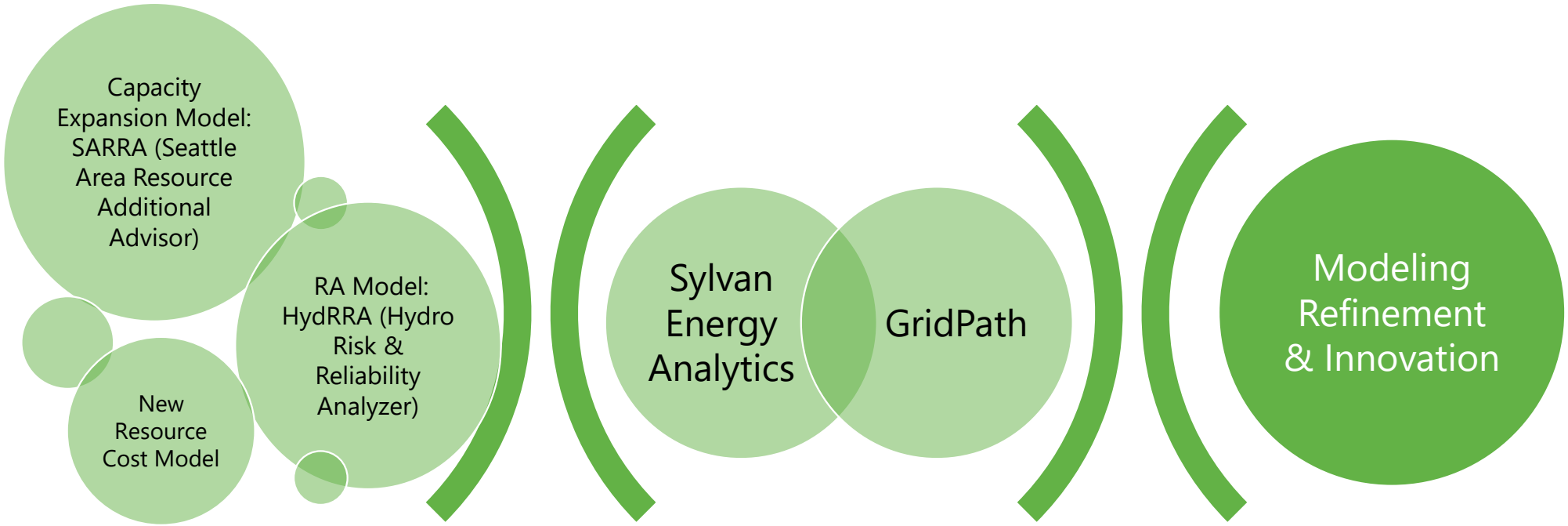
Seattle City Light

2026 IRP

- RCW 19.280.030 requires all state electric utilities to develop and update integrated resource plans (IRP) and make them available to the public *every two years*.



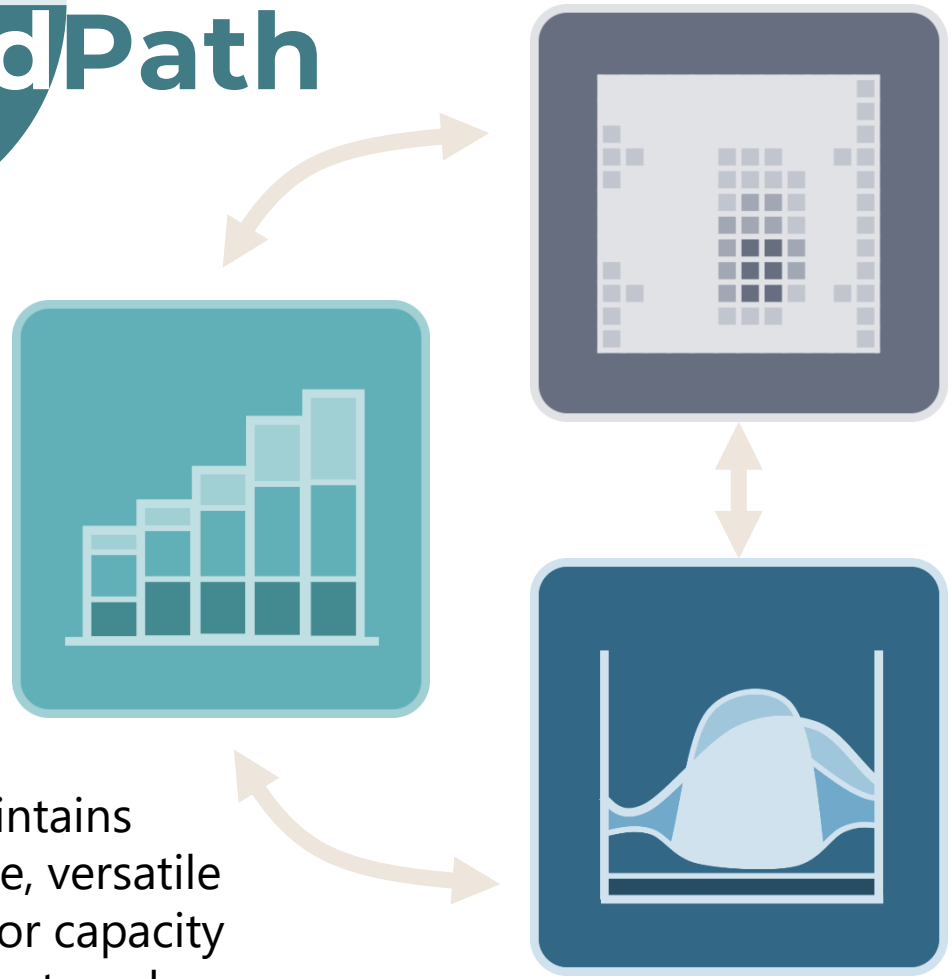
New Approach



SYLVAN
ENERGY ANALYTICS

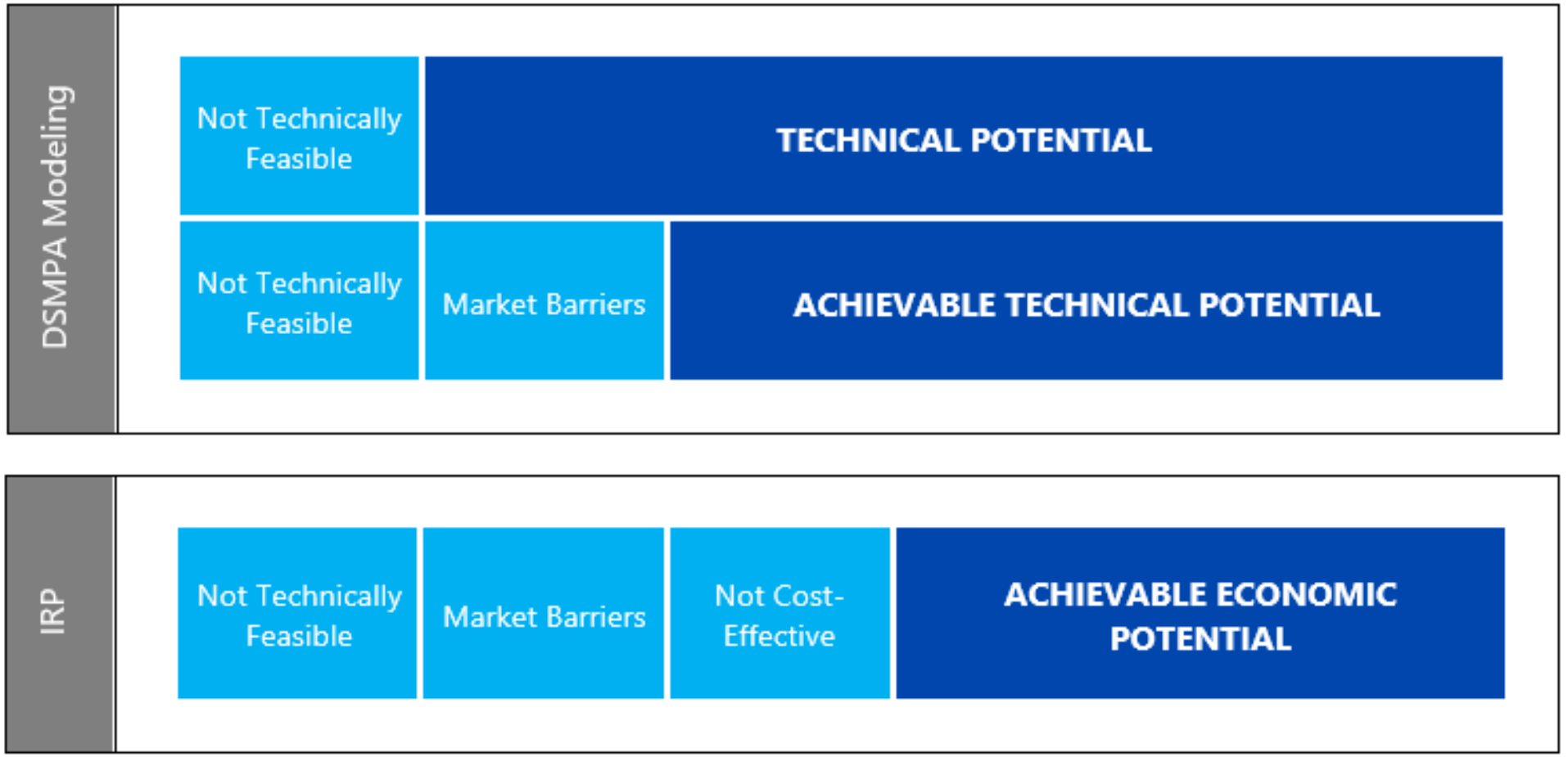
- **Sylvan Energy Analytics** provides consulting services and software solutions for clean energy planning
- Extensive experience in integrated resource planning, working across the utility industry, with specific expertise in the Pacific Northwest

GridPath



Sylvan develops and maintains GridPath, an open-source, versatile grid-analytics platform for capacity expansion, production cost, and resource adequacy analysis

Re-cap: Energy Efficiency Potential Methodology



EE vs DR

Contrasts with Energy Efficiency Potential

Energy Efficiency Potential

- Hundreds of individual measures
- Over one thousand measure permutations
- IRP model selects measures bundled by cost
- Aggregate accuracy is important – not necessarily measure-level precision
- Potential estimates typically ignore program delivery and design

Demand Response Potential

- About one dozen products
- IRP model selects individual products
- Accuracy at the product level is paramount, but data is limited and not always transferable
- Potential depends highly on program delivery and design, and this implementation risk not fully captured in the potential estimate

Emerging technologies

- Residential

Induction Cooktops
Vinyl siding, insulated
SIPS panel framing
Networked automation controls
Smart Electrical Panel

Smart outlets
Indirect Evaporative Coolers
Clothes dryer w heat recovery
Advanced Air-to-water Heat Pump

- Commercial

Web-Enabled Power Monitoring for Small and Medium-Sized Businesses
Food truck, efficient electric cooking
Low GWP freezers and refrigerator cases
Induction Cooktop
Commercial/Industrial CO2 Heat Pumps
Central HPWH with load controls
Aero foil outfitted shelving
Advanced Air-to-water Heat Pump

Products Assessed Detail

14 Residential, 15 Nonresidential Products

Residential DR Product List	DR Type	Primary Competition	Assumptions
Residential Storage Switch Water Heater	WH DLC	A	Competes with grid-enabled and heat pump water heater adoption
Residential Storage Grid-Enabled Water Heater	WH DLC	A	Competes with heat pump water heater adoption; WA code requires to install grid-enabled water heaters adoption; Assume 90% non-exempt rate.
Residential Heat Pump Grid-Enabled Water Heater	WH DLC	A	Adoption based on Council ramp rate (e.g., assume cost effective)
Residential Electric Vehicle Direct Load Control	EV DLC		Uses City Light EV adoption
Residential Critical Peak Pricing	Pricing	C	Removed customers with solar/batt adoption (from solar potential)
Peak Time Rebates	Pricing	C	Removed customers with solar/batt adoption (from solar potential)
Residential Time of Use (TOU) - OptOut	Pricing	C	Removed customers with solar/batt adoption (from solar potential). Does not complete with Opt-in Res TOU product.
Residential Time of Use (TOU)	Pricing	C	Removed customers with solar/batt adoption (from solar potential). Does not complete with Opt-out Res TOU product.
Highly Impacted Community Residential Battery	Batt DLC		Assume different incentives; based on solar potential
Residential Battery	Batt DLC		Based on solar potential
Residential BYOT	HVAC DLC	B	Competes with connected HP
Residential HVAC Switch	HVAC DLC	B	Competes with smart thermostat and connected HP adoption
Residential Connected Heat Pump Direct Load Control	HVAC DLC	B	Assume slow ramp rate (similar to Council's emerging technology ramp classification)
Residential Behavioral (Non-incentivized)	Behavioral		

Three main DR categories:

Direct load control (DLC)
Pricing options
Other (EV managed charging and battery)

Non-Residential DR Product List	DR Type	Primary Competition	Assumptions
Commercial Electric Vehicle Time of Use (TOU)	EV Pricing		Uses City EV adoption for public vehicles
Commercial Light Duty Electric Vehicle Direct Load Control	EV DLC		Uses City Light EV adoption for light duty vehicles
Commercial Medium Duty Electric Vehicle Direct Load Control	EV DLC		Uses City Light EV adoption for medium duty vehicles
Commercial Heavy Duty Electric Vehicle Direct Load Control	EV DLC		Uses City Light EV adoption for heavy duty vehicles
Commercial Critical Peak Pricing	Pricing	E	Removed customers with solar/batt adoption (from solar potential)
Industrial Critical Peak Pricing	Pricing		
Commercial Curtailment	Load DLC		Large customer must commit to 1MW or more in load reduction
Industrial Curtailment	Load DLC		Large customer must commit to 1MW or more in load reduction
Commercial Time of Use (TOU)	Pricing	E	Removed customers with solar/batt adoption (from solar potential)
Small Commercial Battery	Batt DLC		Based on solar potential
Large Commercial Battery	Batt DLC		Based on solar potential
Small Commercial BYOT	HVAC DLC	D	Adoption based on Council ramp rate (e.g., assume cost effective)
Small Commercial HVAC Switch	HVAC DLC	D	Competes with smart thermostat adoption
Medium Commercial HVAC Switch	HVAC DLC		
Commercial Grid Enabled Building Curtailment	Load DLC		

2026 and 2024 DSMPA Demand Response Potential Comparison

	Winter				Summer			
	2024 DRPA Achievable Potential in 2045		2026 DRPA Achievable Potential in 2045		2024 DRPA Achievable Potential in 2045		2026 DRPA Achievable Potential in 2045	
Product Option	Achievable Potential (MW)	TRC Levelized Cost ($/kW-year)	Achievable Potential (MW)	TRC Levelized Cost ($/kW-year)	Achievable Potential (MW)	TRC Levelized Cost ($/kW-year)	Achievable Potential (MW)	TRC Levelized Cost ($/kW-year)
ComCPP	14.8	-$4	14.3	-$31	14.8	-$4	14.3	-$31
GridIEBCurtail	4.9	$476	4.6	$331	8.6	$283	8.1	$188
IndCPP	2.0	$24	1.6	$15	1.9	$25	1.8	$7
NRCurtailCom	6.8	$27	8.4	$16	15.2	$27	12.8	$15
NRCurtailInd	1.4	$31	1.7	$30	1.4	$31	1.7	$30
PkTmRbtP	2.2	$182	4.0	$191	1.6	$264	2.8	$292
ResCPP	1.2	$58	1.6	$54	0.6	$122	1.3	$78
ResTOU	5.5	$54	5.8	$53	3.8	$83	6.1	$48
ComEVTOU	16.6	$27	9.8	$67	16.6	$27	9.8	$67
ConHPDCLWin	32.6	$20	22.0	$6	4.8	$74	21.8	$6
LgNRBatt	0.3	$749	0.3	$623	0.4	$639	0.4	$489
LIResBatt	1.0	$544	1.0	$250	1.3	$515	1.3	$215
NRHVACSwchMed	2.0	$16	1.6	-$3	3.6	$11	3.6	-$13
NRHVACSwchSm	0.2	$95	0.2	$113	0.2	$148	0.2	$148
NRTstatSm	1.1	$41	0.8	$11	1.4	$34	1.5	$1
ResBatt	7.0	$285	7.2	$69	9.2	$281	9.5	$65
ResBYOT	16.3	$40	8.4	$134	22.3	$31	19.4	$141
ResERWHDLCSwch	0.5	$218	0.5	$210	0.5	$235	0.5	$229
ResERWHDLCGrd	9.9	$132	9.6	$80	9.2	$143	8.9	$90
ResEVSEDLC	8.4	$361	15.3	$346	8.4	$361	15.3	$346
ResHVACSwch	5.3	$48	3.7	$59	1.7	$126	2.8	$73
ResHPWHDLCGrd	39.0	$247	41.4	$175	14.8	$666	15.8	$526
SmNRBatt	0.7	$487	0.7	$306	0.9	$438	0.9	$246
ComTOU	Not Modeled		0.7	$101	Not Modeled		2.8	-$5
ComEVSEDLCHD	Not Modeled		3.1	-$7	Not Modeled		3.1	-$7
ComEVSEDLCLD	Not Modeled		3.7	$149	Not Modeled		3.7	$149
ComEVSEDLCMD	Not Modeled		3.9	$230	Not Modeled		3.9	$230
ResBehaviorDR	Not Modeled		0.8	$97	Not Modeled		0.4	$106
ResTOUOptOut	Not Modeled		9.9	$87	Not Modeled		10.7	$77

Mission, Vision, and Values

Mission

Seattle City Light safely 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**