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



August 4, 2026

**MEMORANDUM**

**TO:** **Council Members**

**FROM:** **Elizabeth Osborne, Washington Council staff**

**SUBJECT:** **Energy transition and innovation panel**

**BACKGROUND:**

Presenters: Dennis McLerran, Deputy General Manager, Seattle City Light
Josh Jacobs, Vice President of Clean Energy Strategy and Planning, Puget Sound Energy
Serj Berelson, Director of Regulatory and Market Development, West, Opower

Summary: The Council will be joined by three speakers to discuss the clean energy transition. The panel will talk about strategies for addressing the challenges faced by some of Washington's largest utilities in meeting electric decarbonization policy requirements and accommodating significant load growth. Speakers will talk about opportunities available through innovative technologies and programs and discuss supply and demand side options as well as the role that transmission expansion can play. Affordability is a key concern for policymakers, utilities, and many other electric system stakeholders; the panel will touch on the current major cost drivers affecting operations and how utilities are managing them.

Background: Washington has several key policies shaping the transition toward decarbonization across the state's economy. Among them, the Clean Energy Transformation Act requires electric utilities to supply carbon-neutral electricity to customers by 2030 and provide 100 percent clean electricity by 2045.

More info:

Dennis McLerran joined Seattle City Light in his current role earlier in 2026, after previously serving as counsel at Cascadia Law Group, Chair of the Leadership Council of the Puget Sound Partnership, and, prior to that, as the Environmental Protection Agency Region 10 Regional Administrator. Seattle City Light is conducting many innovative pilots, studies, and special projects to facilitate electrification across economic sectors. More information can be found on City Light's website at https://www.seattle.gov/city-light/energy/energy-innovation

Josh Jacobs has been with Puget Sound Energy since 1998 in a variety of roles across the utility's operations. Currently, he leads electric and natural gas resource planning, transmission planning and services, and decarbonization of PSE's natural gas and electric systems. The utility is investing in new clean energy resources, increasing energy efficiency and demand side flexibility programs, and modernizing its infrastructure to enable the clean energy transition. More information can be found on PSE's website at https://www.pse.com/en/green-options/Clean-Energy-Basics

Serj Berelson began working with Opower in 2012, serving in several different roles. His focus is energy efficiency, particularly for low-income customers. Prior to Opower, he was with the California Public Utilities Commission. Opower is a division of Oracle Utilities, bringing together behavioral science with artificial intelligence to help utilities with demand flexibility, electrification, and energy efficiency while maintaining affordability. For more information, see: https://www.oracle.com/utilities/#energy-efficiency

# Adapting for Load Growth & Peaks

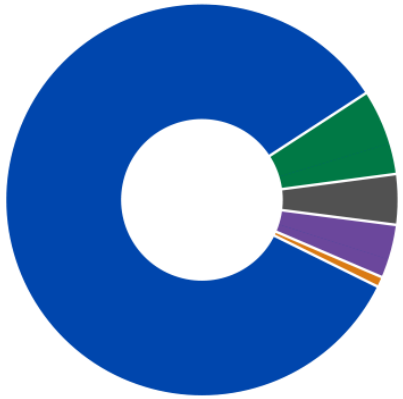
## The Emerging Role of Demand Response

Seattle City Light

WE POWER SEATTLE

# City Light's Current Resource Mix

- We deliver carbon-neutral electricity, generated primarily from hydropower.
- We have maintained net zero greenhouse gas emissions since 2005.
- We have provided energy conservation programs since 1977.



**2024 POWER MIX**

| | |
|---|---|
| HYDRO | 77% |
| WIND | 11% |
| NUCLEAR[1] | 6% |
| UNSPECIFIED[2] | 5% |
| BIOGAS | 1% |
| TOTAL | 100% |

[1] *This fuel represents a portion of the power purchased from Bonneville Power Administration.*

[2] *Fuels from wholesale market purchases are unspecified because current power market practices don't require the identification of the specific generating source at the time of sale.*

*Note: This power mix is based on 2024 data.*

Source: Seattle City Light Fingertip Facts

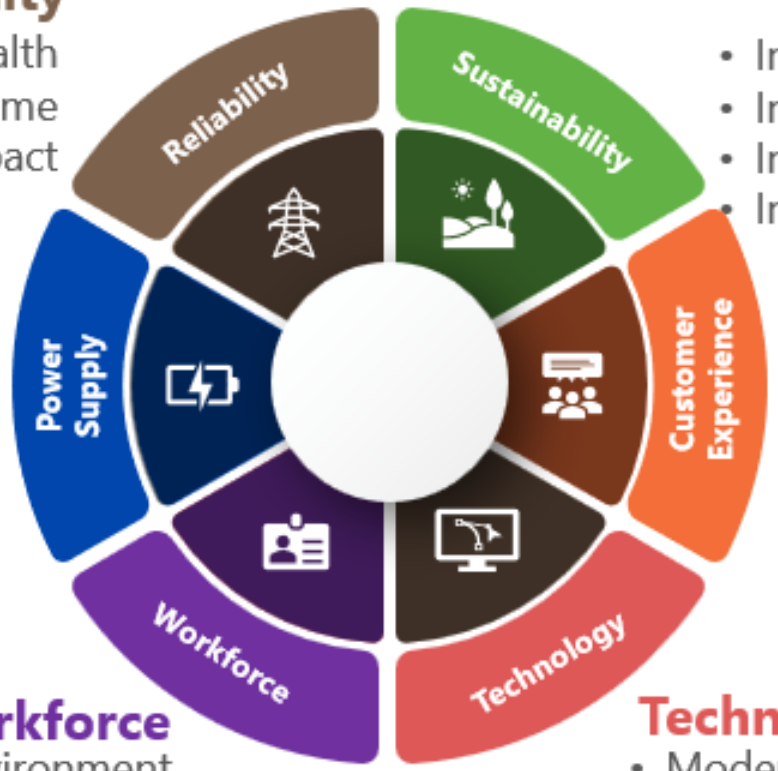
# Roadmap: City Light Focus Areas & Outcomes

## Reliability

- Increase asset portfolio health
- Decrease restoration time
- Decrease major event impact

## Sustainability

- Increase environmental stewardship
- Increase strategic partnerships
- Increase resilient services
- Increase community well-being




## Power Supply

- Maintain existing generation assets
- Acquire generation & transmission
- Adapt for load growth & peaks
- Optimize power resources

## Customer Experience

- Increase customer trust
- Decrease customer effort

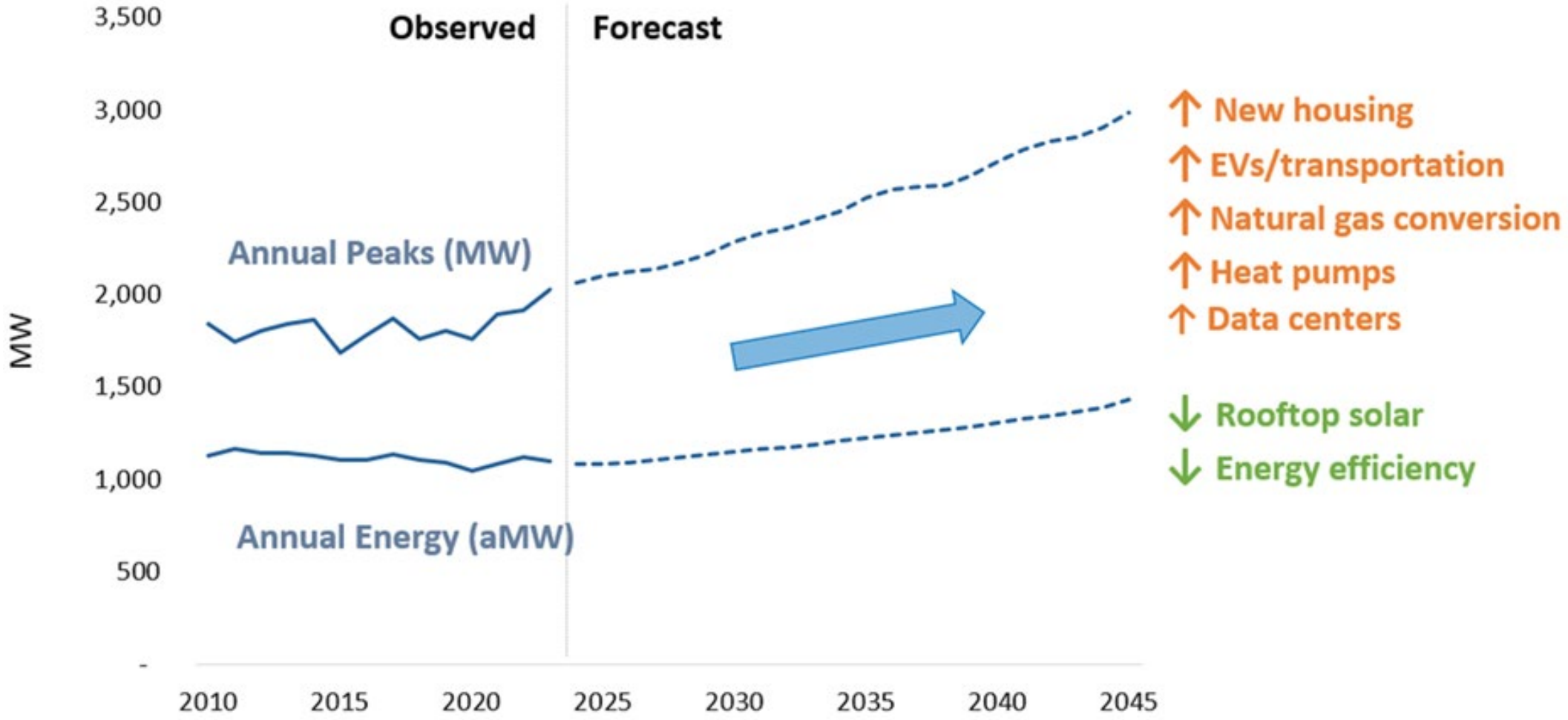
## Workforce

- Model a safe & secure work environment
- Normalize an intentional workplace culture
- Cultivate a skilled workforce
- Improve supportive workforce systems and processes

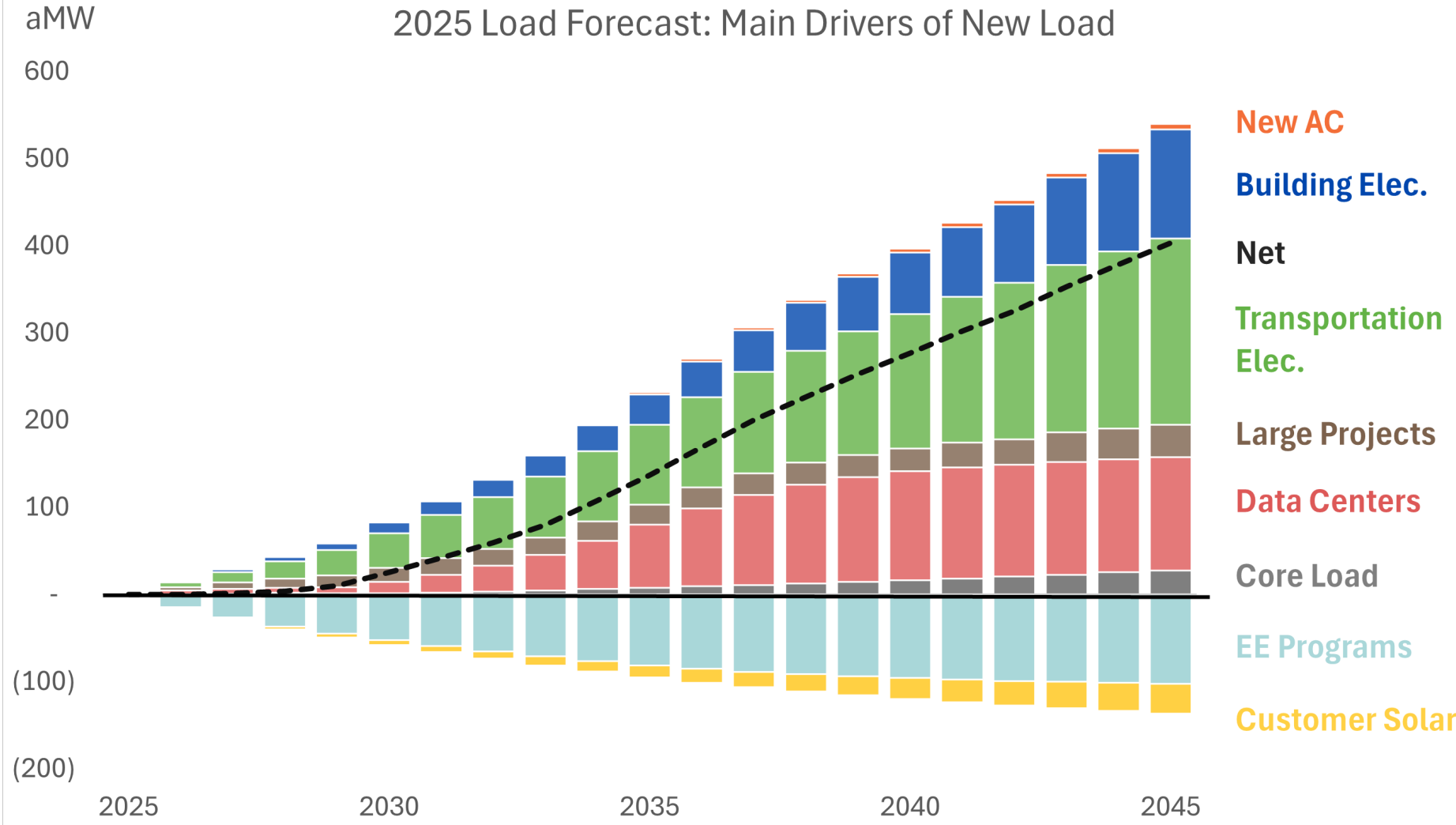
## Technology

- Modern grid & utility digital solutions
- Cyber-Physical Security & network modernization
- Data analytics & AI enablement

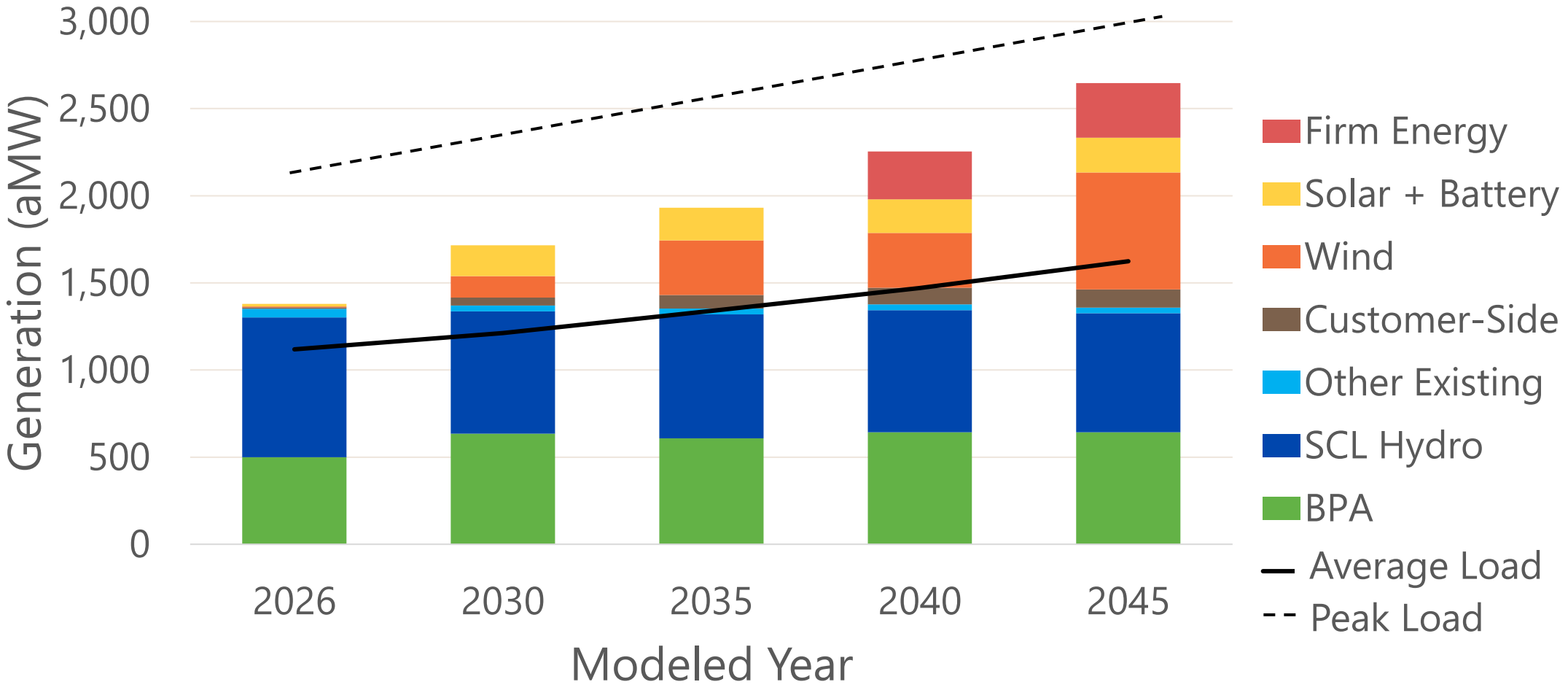
# Load Forecast (Energy and Peak)



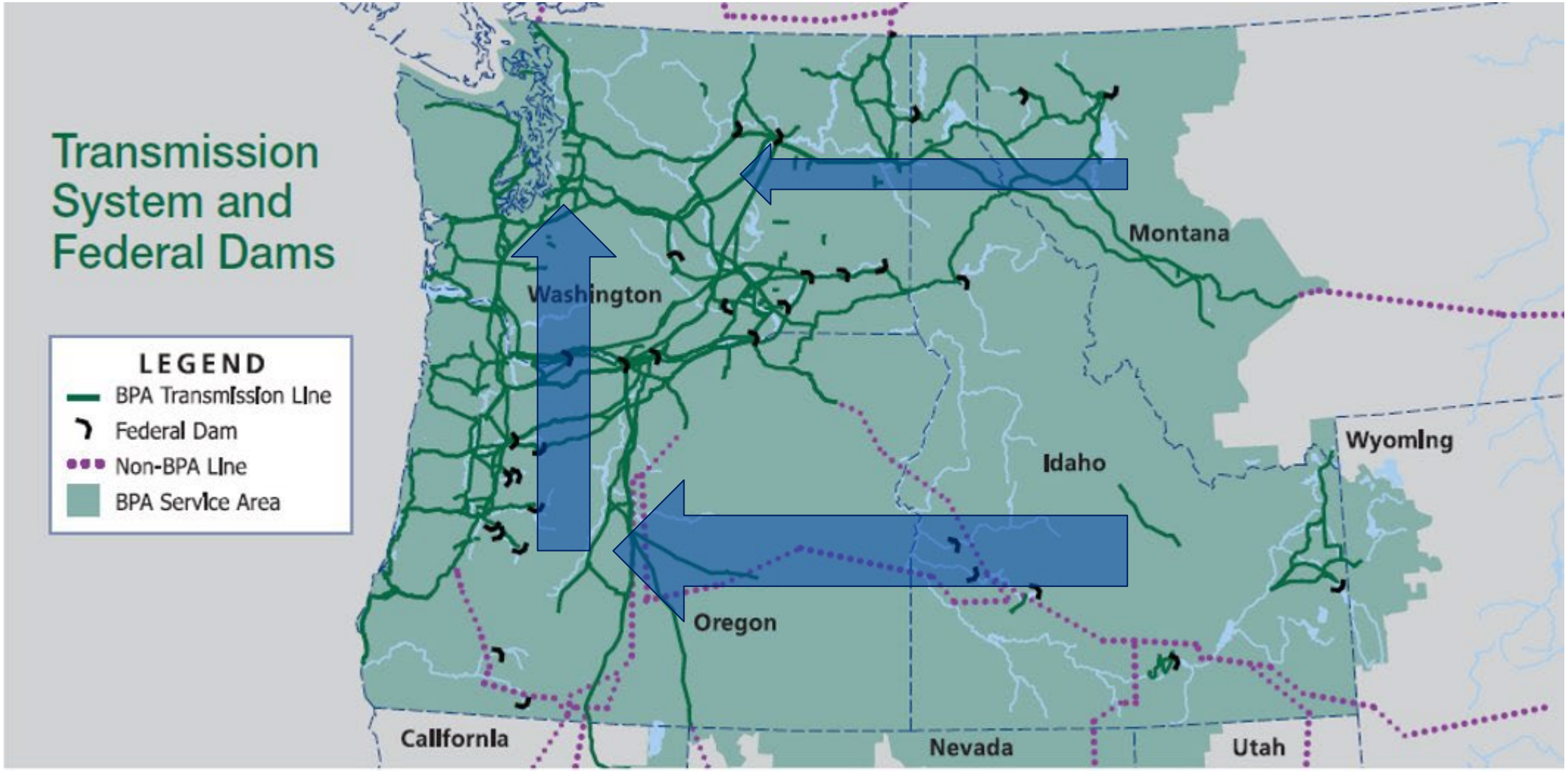
# Drivers of Growing Demand for Electricity



# IRP Results – New Resource Needs



# No Transition Without Transmission



# Demand Response in City Light Service Area

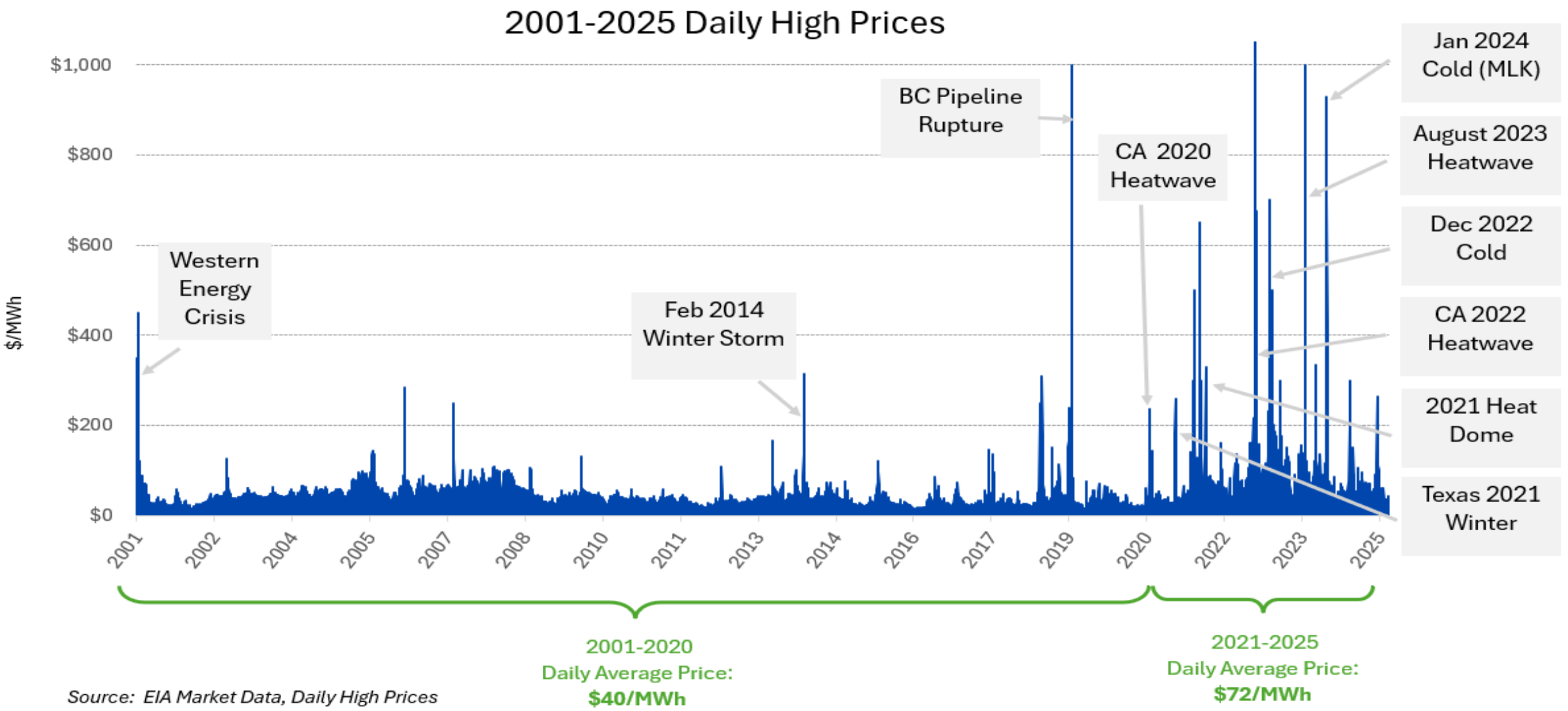
Increasing loads from building and transportation electrification

More frequent extreme weather events due to climate change

Increasing power prices and volatility on the wholesale market

Demand response is a tool that can be used to address these new challenges the region is facing

# Increasing Power Market Volatility




*Source: EIA Market Data, Daily High Prices*

# Benefits of Demand Response

## Benefits for the utility

- Price stabilization
- Renewable integration
- Cost avoidance
- Market revenue
- Emissions reduction
- Resource adequacy
- Grid reliability
- Infrastructure deferral

## Benefits for the customer

- Energy bill reduction
- Societal benefits
- Engagement & education

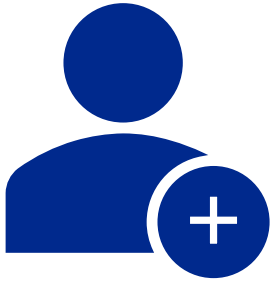
## Shared benefits

- Reliability
- Resiliency
- Affordability

# Large Industrial Curtailment Program

Customers choose to temporarily shut down operations when requested (reduce/curtail load)

Customers receive an incentive for responding

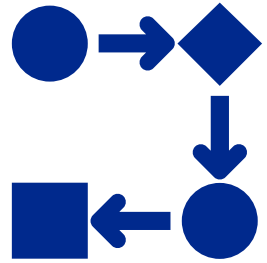


All customers benefit from savings

# Why did we choose industrial curtailment?

Six regional utilities declared energy emergency alerts during 2024 MLK weekend

City Light's hydroelectric generation gave flexibility to store and release water strategically

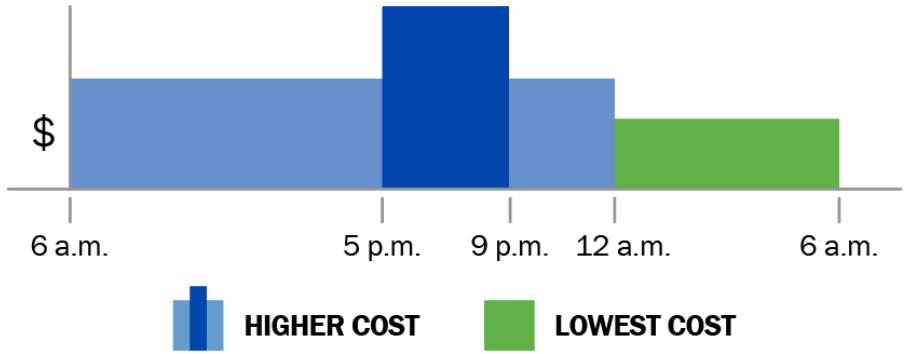


Demand response for large customers would have provided more flexibility

Demand response creates options for responding to extreme weather events and high prices

# New TOU Offering for Residential Customers

- Our first Time of Use (TOU) program for residential customers is now live!
- With TOU, when you use electricity affects how much you pay. Electricity costs more during peak hours (from 5 to 9 PM), when demand is highest, but it will cost less during other times.
- Our TOU rate has three pricing periods:  peak, mid-peak, and off-peak.
- We have also launched a new tool, *Energy Insights*, to help customers understand their electricity use and how the TOU rate could affect their bill.
- **Coming soon**: TOU for small & medium business customers.

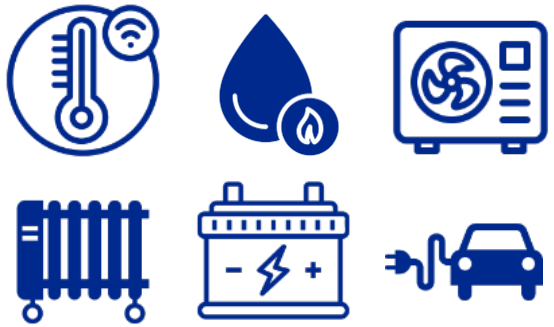



SCAN ME

# What is the future of load flexibility for City Light?

City Light plans to develop a comprehensive demand response portfolio that leaves no customers behind. Phasing will depend on customer adoption of technologies, customer willingness to participate, and value to the utility.

Manual demand response/behavior change



Virtual power plant (automated demand response)

Price-based mechanisms (rates)

City Light will prioritize based on evolving technological maturity, operational capabilities, and grid needs

# Example Customer Needs by Customer Technology

Customer capability for participation in DR varies, depending on the availability of the customer technology and impacts to customer comfort and operations (relative to the customer benefits).

**HVAC**
- Need comfort & productivity
- Summer PM cooling & Winter AM / PM heating
- Automated or customer-programmed response

**Residential Electric Vehicles**
- Need vehicle charged before morning commute
- Weekday evening at-home charging after work
- Customer-programmed response



**Industrial Process**
- Need incentives to outweigh lost productivity
- Weekday daytime business hour operations; may have overtime shifts
- Automated (Auto-DR) or manual response

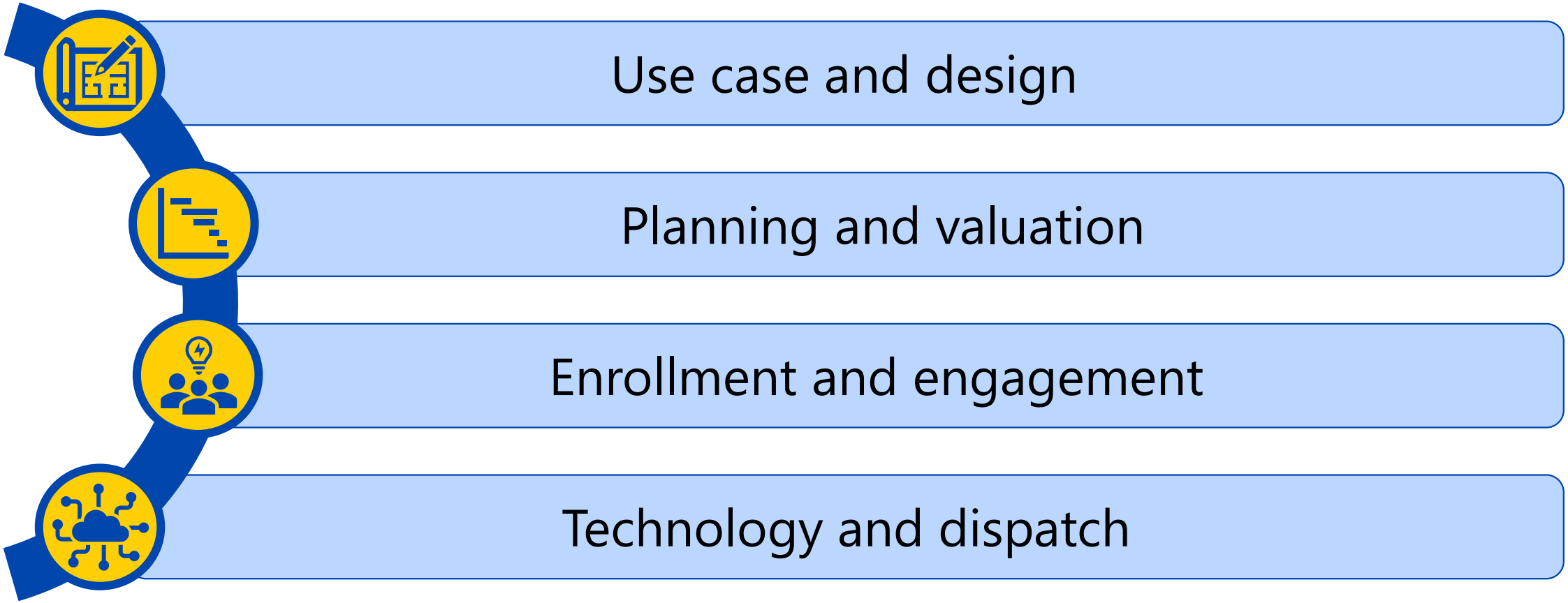
**Water Heaters**
- Need to meet morning & evening usage
- Flexibility to regularly shift & shimmy with minimal customer impact
- Automated response

**Battery Storage**
- Need resiliency & bill management
- Otherwise available for utility grid services
- Automated response

# Demand Response Product Matrix

| Product Name | Deployment | Event Frequency | Event Length (hours) | Customer Discomfort/ Interruptions |
|---|---|---|---|---|
| Commercial Critical Peak Pricing | Limited | 4-12 per season | 1-4 | Moderate |
| Commercial Curtailment | Limited | 4-12 per season | 24 | Low/Moderate |
| Commercial Heavy Duty Electric Vehicle Direct Load Control | Frequent | As often as daily | 1-4 | Moderate/ High |
| Commercial Light Duty Electric Vehicle Direct Load Control | Frequent | As often as daily | 1-4 | Moderate/ High |
| Commercial Medium Duty Electric Vehicle Direct Load Control | Frequent | As often as daily | 1-4 | Moderate/ High |
| Medium Commercial HVAC Switch | Limited | 4-12 per season | 1-4 | Moderate |
| Commercial Bring Your Own Thermostat | Limited | 4-12 per season | 1-4 | Moderate |
| Large Commercial Battery | Frequent | As often as daily | <1-4 | None/Low |
| Small Commercial Battery | Frequent | As often as daily | <1-4 | None/Low |
| Industrial Critical Peak Pricing | Limited | 4-12 per season | 1-4 | Moderate |
| Industrial Curtailment | Limited | 4-12 per season | 24 | Severe |
| Residential Battery+ | Frequent | As often as daily | <1-4 | None/Low |
| Residential Bring Your Own Battery | Frequent | As often as daily | <1-4 | None/Low |
| Residential Storage Grid-Enabled Water Heater | Frequent | As often as daily | <1-4 | None/Low |
| Residential Heat Pump Grid-Enabled Water Heater | Frequent | As often as daily | <1-4 | None/Low |
| Residential Bring Your Own Thermostat | Limited | 4-12 per season | 1-4 | Moderate |
| Residential Critical Peak Pricing | Limited | 4-12 per season | 1-4 | None/Low |
| Residential Electric Vehicle Direct Load Control | Frequent | As often as daily | 1-4 | None/Low |
| Residential Time of Use (TOU) - OptOut | Frequent | Daily | Not Applicable | Low/Moderate |
| Residential Time of Use (TOU) and Electric Vehicle Time of Use (EVTOU) | Frequent | Daily | Not Applicable | Low/Moderate |
| Commercial Time of Use (TOU) and Electric Vehicle Time of Use (EVTOU) | Frequent | Daily | Not Applicable | Low/Moderate |

# Foundational Capabilities to Scale Demand Response



# Remaining Challenges to Scale Demand Response

- Legacy market structures & resource adequacy frameworks
- Evolving policy landscape and compliance complexity
- Transmission constraints and regional coordination
- Supply-chain, vendor, and technology-market volatility
- Customer technology adoption & affordability barriers
- Operational culture shift: supply-centric -> flexibility-centric
- Need for sustained funding and long-term organization commitment

# What Success Looks Like in 3-5 Years

- DR becomes a routine, reliable part of operations
- Virtual power plant operating at meaningful scale
- Strong, diverse customer participation
- DR recognized in IRPs & resource adequacy as a firm, plannable resource
- Locational & long-duration DR supporting affordability & reliability
- Technology foundation fully established
- Demonstrated DR performance builds trust
- Regional coordination accelerates DR scale

# THANK YOU

Seattle City Light

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# Centering People in Demand Response

## Unlocking residential demand flexibility through customer behavior

**Serj Berelson – Oracle Utilities Opower**

Director, Regulatory Affairs and Market Development, West

# Demand is Increasing Significantly – in Summer & Winter

Load growth and changing peaks call for a broader flexibility portfolio.

## Peak Demand is Growing Overall

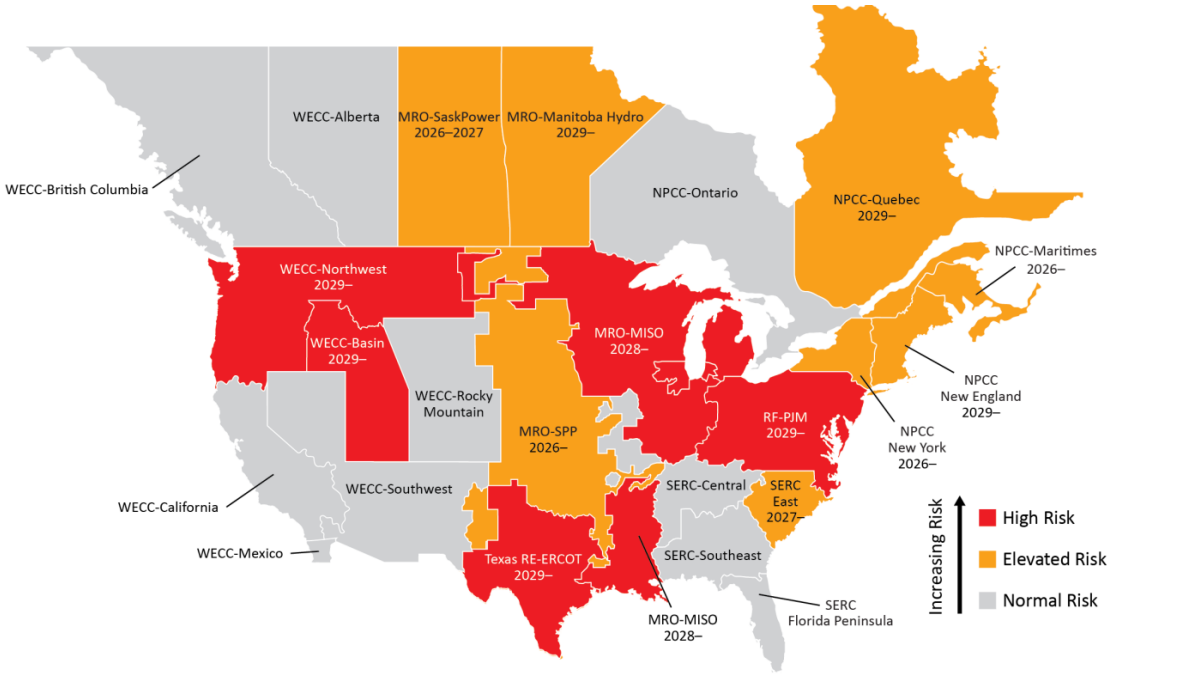
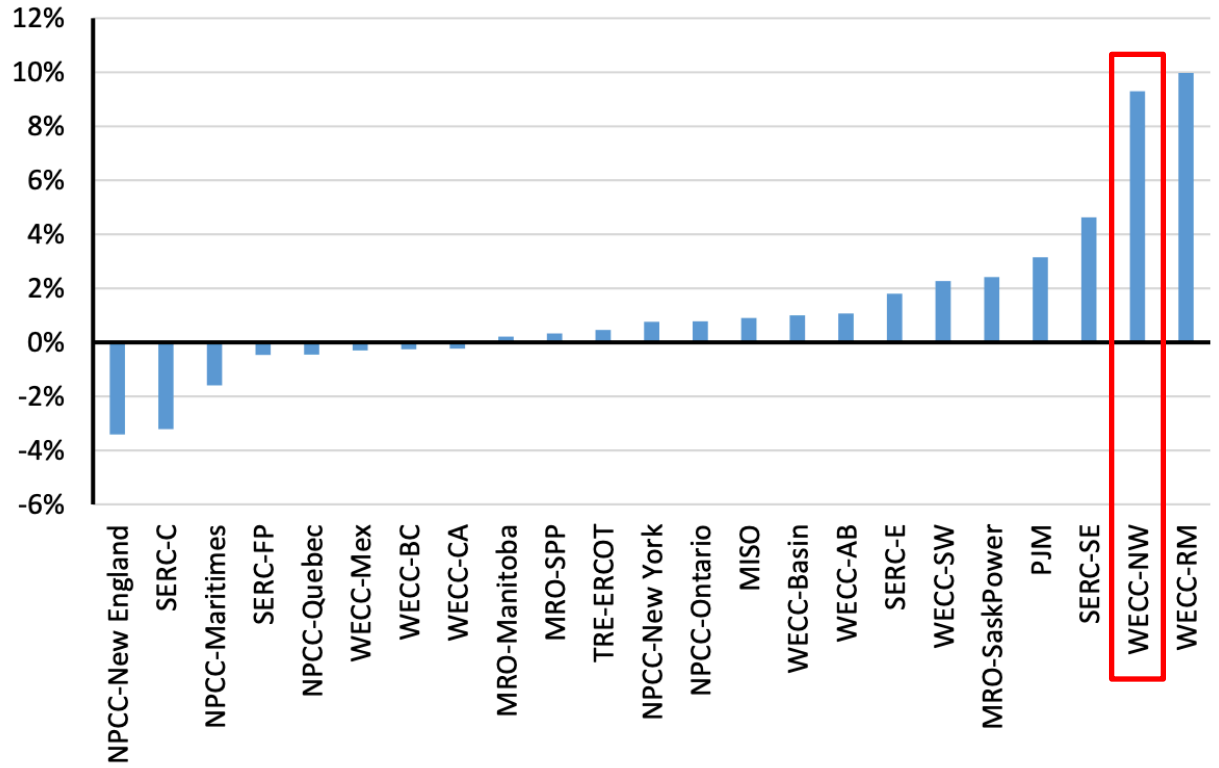



**Figure 1: Risk Area Summary 2026–2030**
Shows highest risk classification that occurs in the first 5 years and states initial year of occurrence

2025 Long-Term Reliability Assessment

*NERC 2025 Long-Term Reliability Assessment*

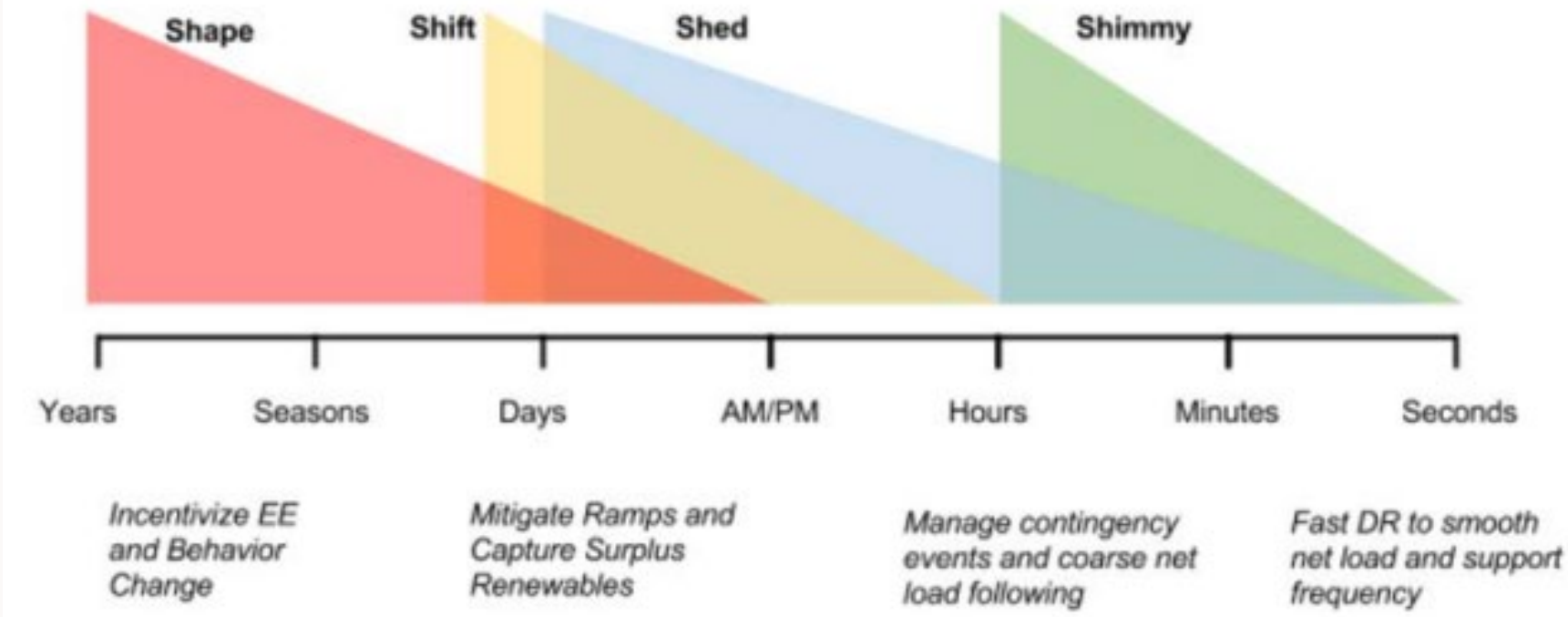
## Winter Peaks are Growing in Particular




*NERC 2025-2026 Winter Reliability Assessment*

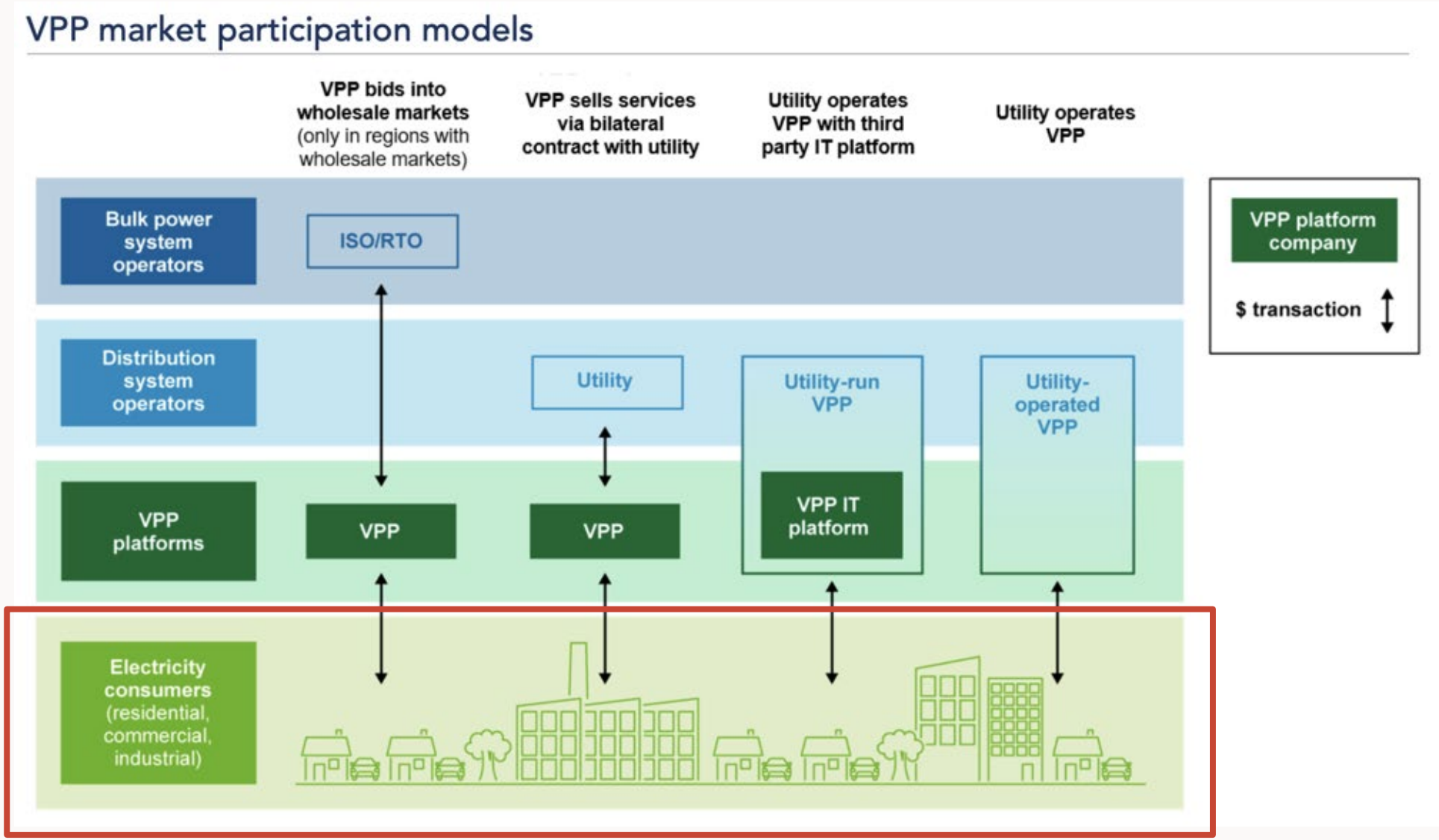
# How Can Demand Response Meet Local & System Needs?

*Demand Response Comes in Many Forms to Reduce Peak Demand*




*Lawrence Berkeley National Laboratory Demand Response Potential Study*

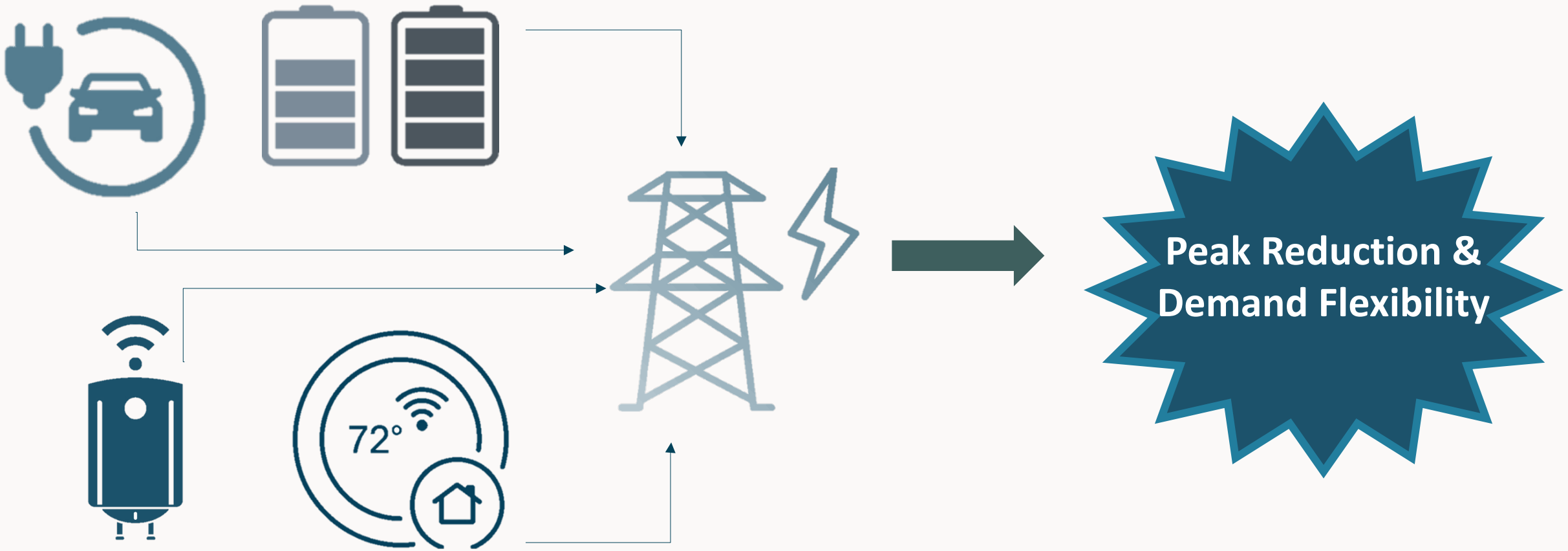
# Demand Reducing Resources Can Be Bundled into “Virtual Power Plants”




Source: Department of Energy

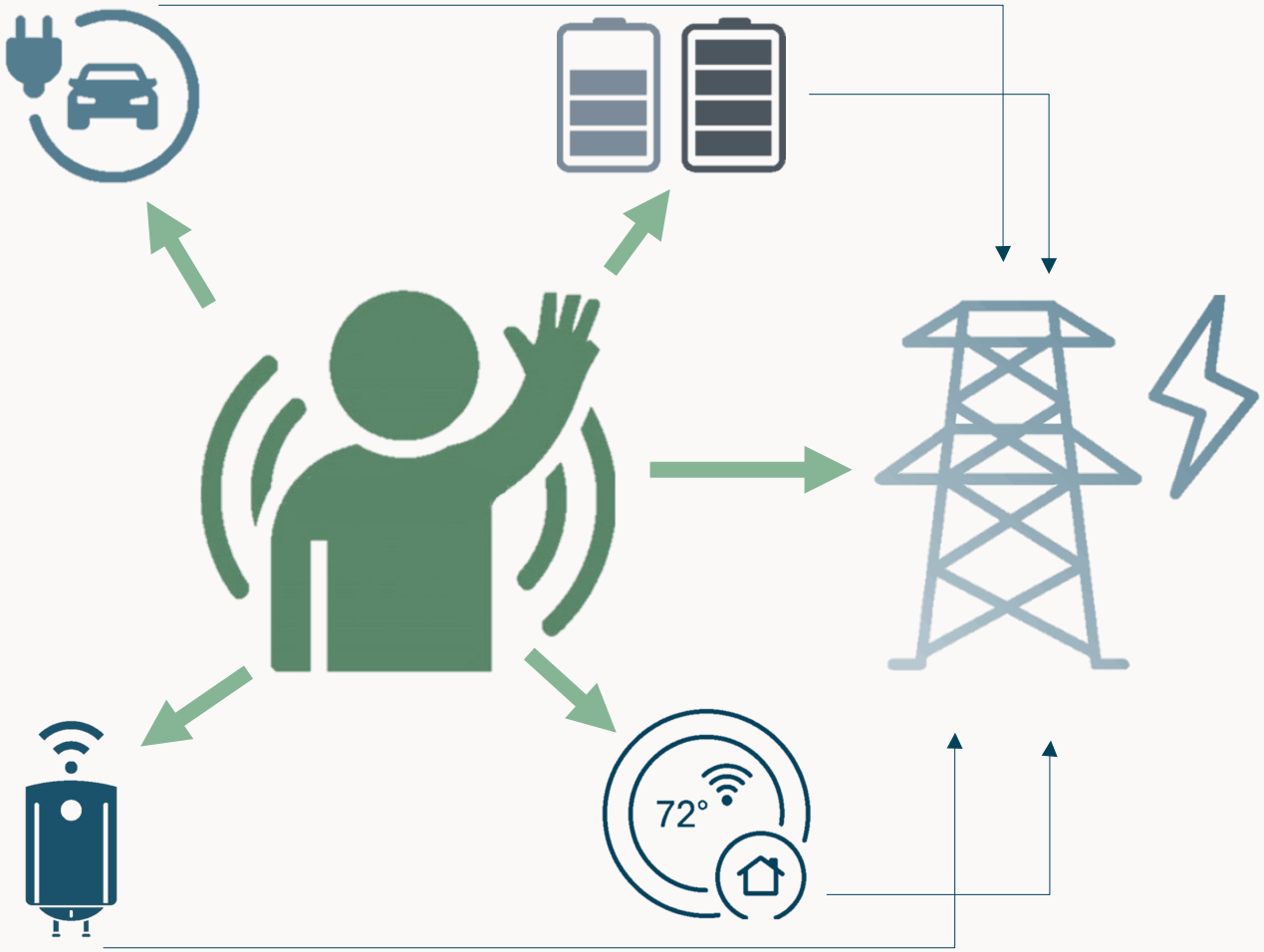
# Traditional Approach to Demand Flexibility

Focused on device enrollment and remote dispatch



# Empowering Customers as Energy Partners

Moving to a people-centric approach



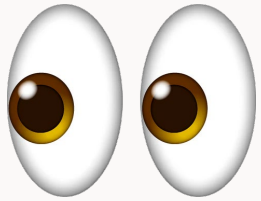

*Even More* Peak Reduction & Demand Flexibility!

# A Device-Centric Model Leaves People and Savings Behind

Many customers want to participate, but cannot if they are limited to device-based programs

### Cost

- Not every home can afford a device
- Average cost of batteries: $15k-$21k

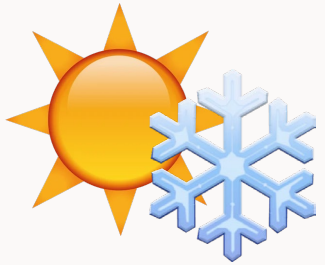


### Awareness & Accessibility

- Lack of awareness
- Often requires homeownership
- Only 16% of HH* have smart thermostats

### Customer Sentiment

- Customers may not want someone "controlling their devices“
- Concerns about comfort and ease of use



### Seasonality

- Many DR programs are built for summer
- Winter peaks becoming increasingly prevalent

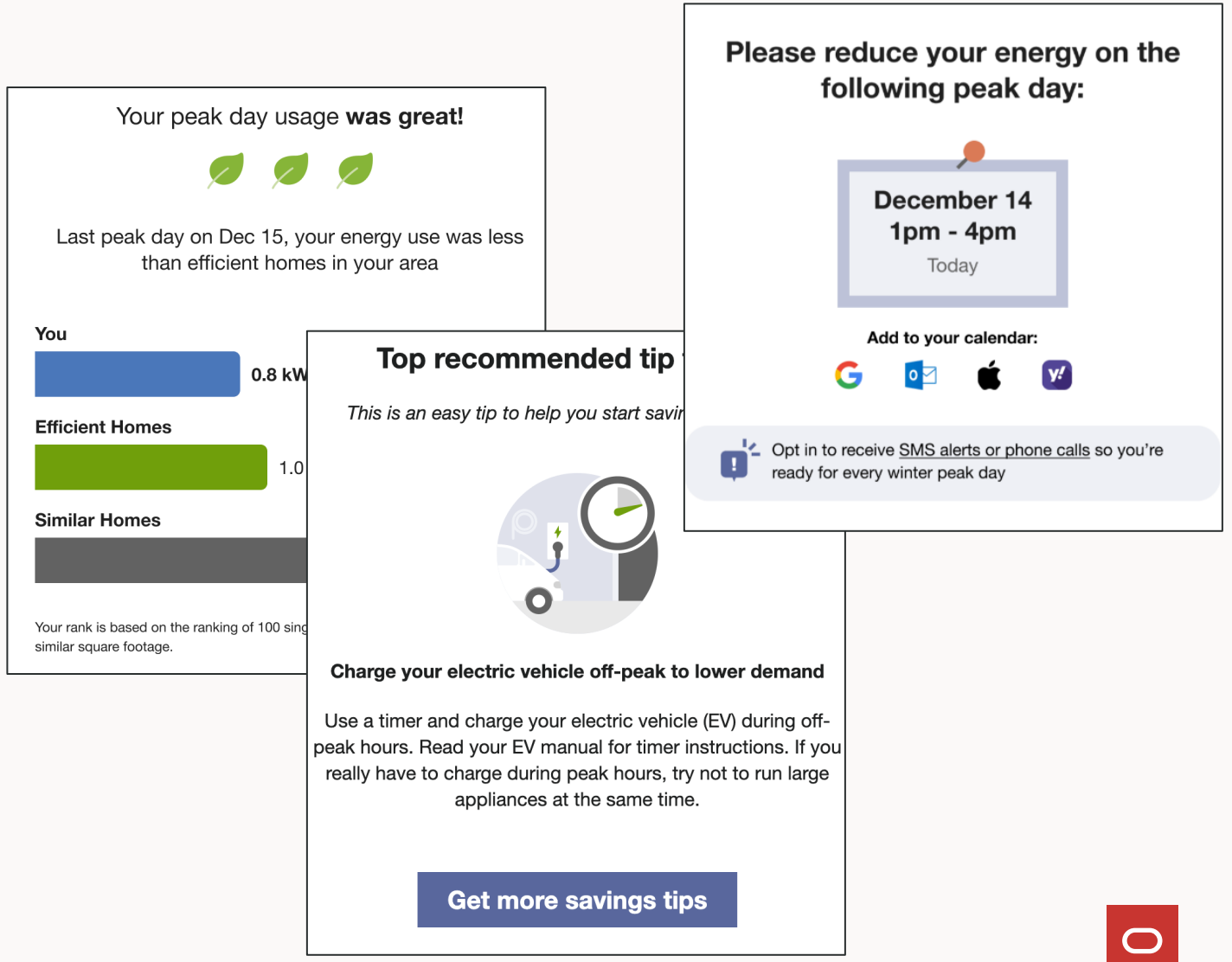
* with internet access

# Using Behavioral Science to Encourage Action

Behavioral approaches have proven success in demand side management

**Behavioral programs harness the power of:**

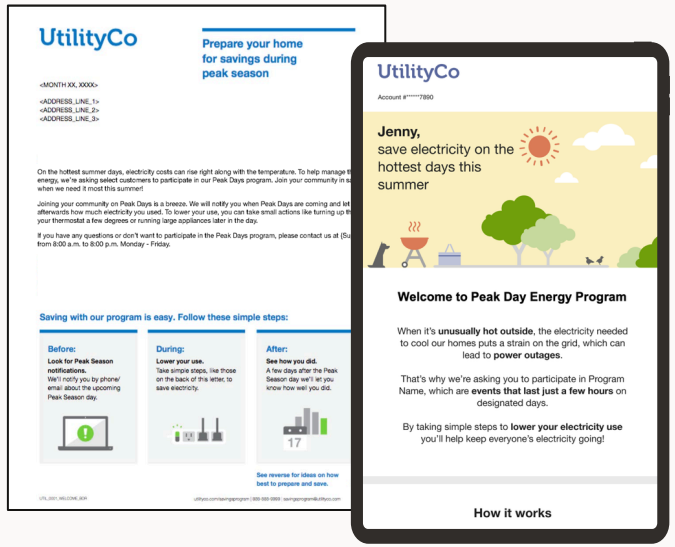
- Opt-out design that reaches more customers
- Personalized energy insights
- Tailored tips
- Normative comparison
- Reliable measured effects with RCT



# Behavioral Demand Response – Customer-Focused Peak Reduction

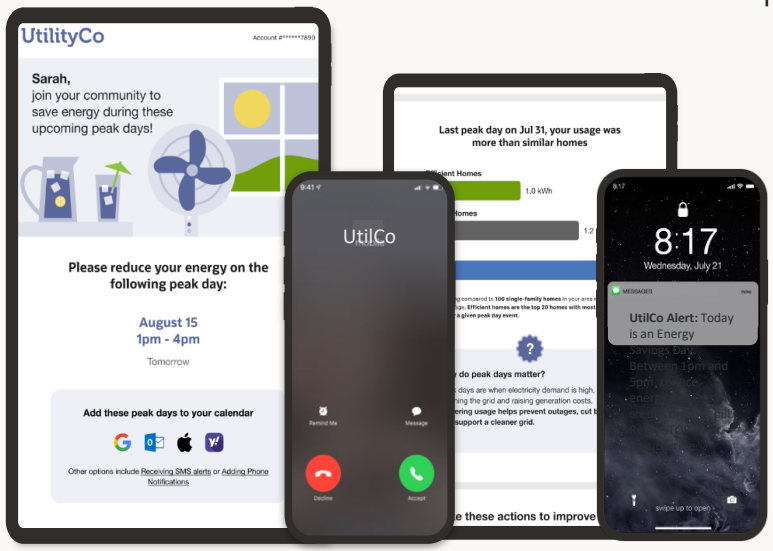
Introduce the program, prompt action, then reinforce impact.

## Notify



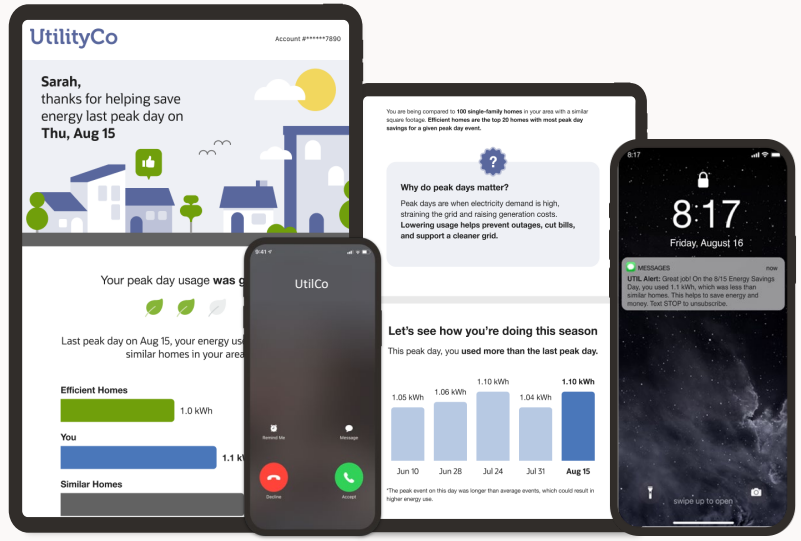

**Pre-Season Welcome**

## Act




**Pre-Event Communication**

## Reinforce

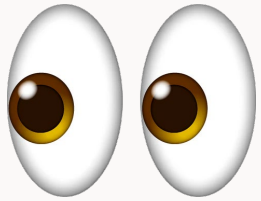



**Post-Event Communication**

# BDR Doesn't Face the Same Barriers as Device Programs

## Cost

- Free to participate
- No device purchase required
- More equitable offering

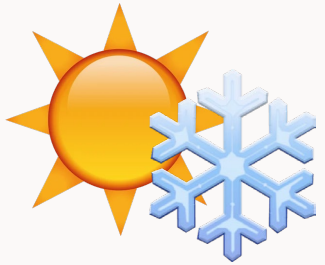


## Awareness & Accessibility

- Enrollment *not required,* uses opt-out design
- Renters can participate
- Can be offered with an incentive

## Customer Sentiment

- Customers more willing to voluntarily reduce usage than cede control
- Customers control end uses to curtail



## Seasonality

- Winter & summer participation opportunities

## BDR has Proven Results

Behavioral science can produce measurable, repeatable peak reduction.

**~1-3%**

**Savings at peak**

**100,000s**

**Customers reached per event**

up to **79%**

**Of customers report taking action**

# Key DR Results from Puget Sound Energy

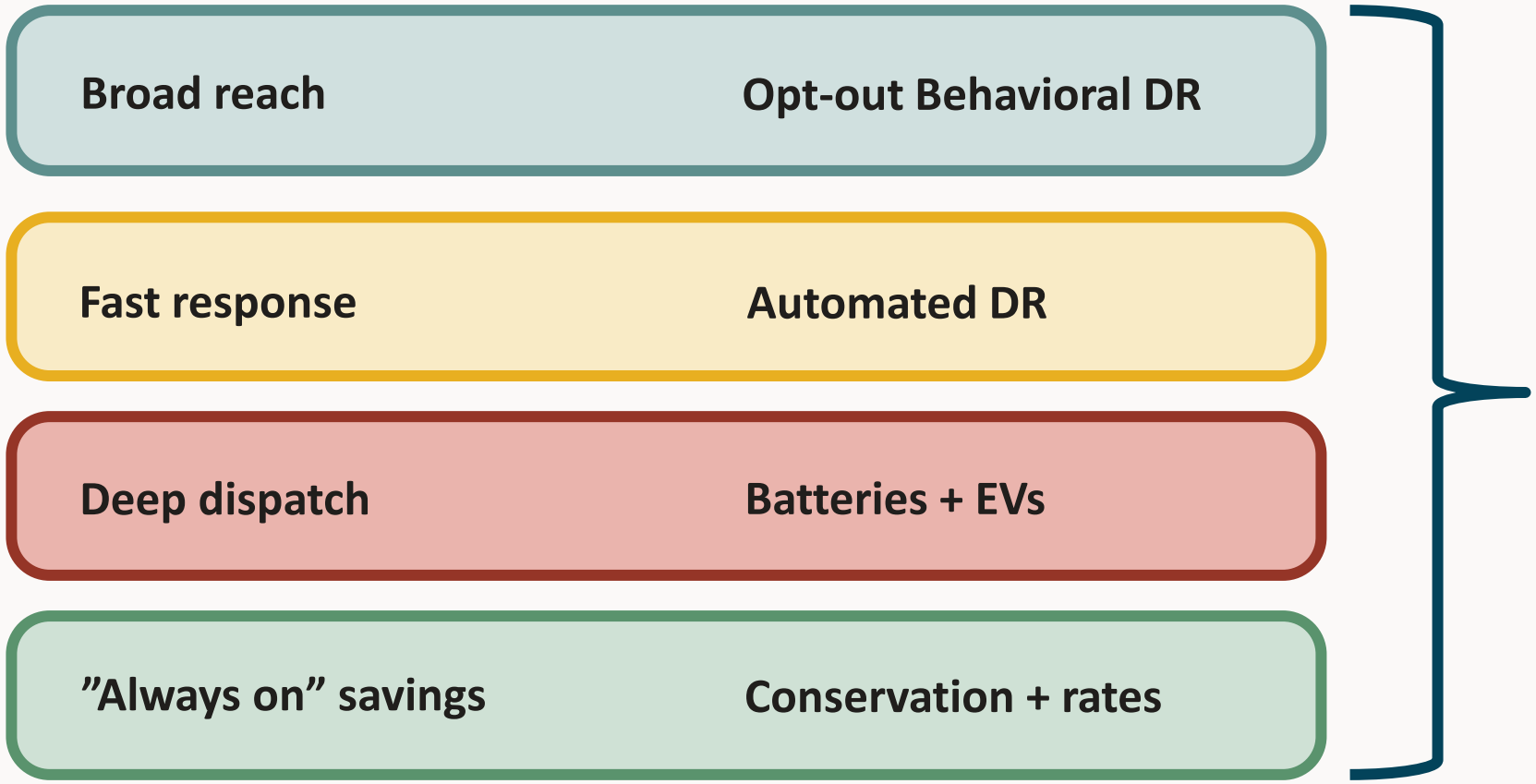
*Flex Events*

| | Summer | Winter |
|---|---|---|
| Average MW capacity per event | **8.2 MW** | **9.9 MW** |
| # of Events | 4 | 14 |

- **~450,000** households participating per event, on average
- **72%** remember taking some form of Flex event action
- **+8-9%** PSE helps me manage and reduce my monthly home usage
- **+9%** PSE provides a variety of conservation programs
- **3-5%** participant communication opt-out rate
- Flex event action equally strong for **renters**, **low- and moderate-income households**, and **deepest need customers**

## BDR is a Complementary Layer Within a Broader Portfolio

Different resources serve different customers, locations, and timescales.




### Optimized Portfolio

- Starts with people
- Includes all available resources
- Each resource plays a role

# Build Demand Response Around Customers, Not Just Devices

The grid is more flexible when every customer can contribute

**Look beyond devices; consider the human element of DR/demand flexibility programs**

**Prioritize broad-reaching customer engagement, while giving personalized insights**

**Enable and encourage utility-run programs to reach scale and maximize impact**

**Take a “customer journey” approach that meets people where they are and guides them towards increasing involvement in demand response/flexibility programs**

**Ensure that regulations and directives include behavioral resources. Language that only refers to “devices” ignores the valuable role that BDR can play.**

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# Thank you!

**Serj Berelson – Oracle Utilities Opower**

Director, Regulatory Affairs and Market Development, West