Decarbonizing Seattle through Electrification

The role of Demand Side resources for Seattle City Light

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June 1, 2022
SCL’s legacy: A diverse portfolio of EE

CCES Portfolio by Segment
May 01, 2022

RESOURCE ACQUISITION
(P1) – 32 Programs
- P1: Deep Retrofit Pay-for-Performance
- Csi New Construction
- Csi Retrofit - Lighting
- Csi Retrofit - Non-Lighting
- Existing Buildings CCX & MBEX

VALUE ADDED SERVICE
6 Programs
- P1: (Pilot) Energy Efficiency as a Service
- P1: Green Up
- P1: Large Solar Program
- P1: Net Metering
- Renewable Plus
- Washington State Solar Production Incentive

AFFORDABILITY
6 Programs
- P1: (Pilot) Energy Equity Rate
- P1: HomeWise (Interdepartmental)
- P1: Utility Discount Program (Interdepartmental)
- Green Up Community
- Small Business
- Powerful Neighborhoods

TRANSPORTATION ELECTRIFICATION
8 Programs
- P1: (Pilot) Commercial Charging
- P1: (Pilot) EV Public Charging
- P1: Customer Reets
- P1: Multifamily Charging
- P1: Single Family Launch Q3/22
- Workplace Charging Launch Q3/22
- Curbside Charging Launch Q3/22
- P1: (Pilot) EV Residential Charging - Ext 12/22

PROGRAM ENABLING
- P1: WA State Clean Buildings
- AH Exemplary Building Pilot
- AMI Data User Group
- Digital Marketplace (to include EV)
- Energy Analysis Assistance
- Green New Deal
- NECE/SRC Tools and Training
- Seattle Energy Code
- Supply Chain Management

BUSINESS OPERATIONS
- SCL Internal Energy Efficiency
**Electrification Impacts for Seattle**

*What are the high-level impacts of electrification to SCL's service territory?*

<table>
<thead>
<tr>
<th>City of Seattle Policies:</th>
<th>Targets</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2030</td>
</tr>
<tr>
<td>2018 Climate Action Plan</td>
<td>58% below 2008 emissions</td>
</tr>
<tr>
<td>Green New Deal</td>
<td>“Free of climate pollutants...by 2030”</td>
</tr>
</tbody>
</table>

**Other:**

<table>
<thead>
<tr>
<th>Washington State Energy Strategy</th>
<th>45% below 1990 emissions</th>
<th>70% below 1990</th>
<th>95% below 1990 with net zero emissions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NWPPC 2021 Power Plan—“Path to Decarbonization”</td>
<td>N/A</td>
<td>50% of 1990</td>
<td>80% of 1990</td>
</tr>
</tbody>
</table>
## Capacity for Additional Distributed Load at Peak and Min

### Capacity during peak load hour

### Capacity during min load hour

### Feeders with Capacity <0.5MW during peak load are constrained by planning limit of 50%/66% of getaway rating

<table>
<thead>
<tr>
<th>Substation</th>
<th>Capacity during peak Load (MW)</th>
<th>Capacity during min Load (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Broad</td>
<td>51</td>
<td>152</td>
</tr>
<tr>
<td>Broad Annex</td>
<td>80</td>
<td>142</td>
</tr>
<tr>
<td>Canal</td>
<td>65</td>
<td>129</td>
</tr>
<tr>
<td>Creston</td>
<td>179</td>
<td>223</td>
</tr>
<tr>
<td>Delridge</td>
<td>120</td>
<td>200</td>
</tr>
<tr>
<td>Duwamish</td>
<td>159</td>
<td>257</td>
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<tr>
<td>EastPine</td>
<td>37</td>
<td>131</td>
</tr>
<tr>
<td>Massachusetts</td>
<td>29</td>
<td>43</td>
</tr>
<tr>
<td>North</td>
<td>125</td>
<td>204</td>
</tr>
<tr>
<td>Shoreline</td>
<td>44</td>
<td>129</td>
</tr>
<tr>
<td>South</td>
<td>161</td>
<td>264</td>
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<tr>
<td>Union</td>
<td>91</td>
<td>122</td>
</tr>
<tr>
<td>University</td>
<td>75</td>
<td>123</td>
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<tr>
<td>Viewland</td>
<td>77</td>
<td>173</td>
</tr>
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</table>

Source: EPRI, Seattle City Light Electrification Assessment, Figure 5-6.
SCL’s 2022 IRP – Relevant recommendations

• 2022 IRP expected to be first to call for new resources in several years
• Per CETA RCW.19.405.040, utilities must pursue ‘all cost-effective, reliable, and feasible conservation and efficiency resources, and demand response’
• Increases Energy Efficiency portfolio
  ● Energy Efficiency grows over 100 MW by 2041
• Demand response programs proposed for both Summer & Winter
  ● DR is Important tool for reducing climate change and/or electrification load uncertainties for summer and winter
  ● Important tool for minimizing financial impacts of wholesale power prices
  ● Important option for customer energy solutions/reducing energy burden
  ● Important to start demand response programs as soon as possible in order for ramp rates to take effect
• Also proposes investments in utility scale renewables & customer solar program
Relevant Demand Response efforts

**Past Efforts**

**Demonstration projects and pilots**
- Northwest Open Automated Demand Response Technology Demonstration Project (2010); Water heater pilot (1990s)
- BPA Regional HPWH Pilot did not pursue (~2017)
- C&I curtailment did not pursue (2019)

**In Flight Efforts**

- **DRPA / CPA**
  - DR not used in 2020 IRP; DR not selected in ‘optimal portfolio’ in the analysis for the CPA; DR selected in the 2022 IRP; new DRPA will be completed in 2023

- **TOD Rate Pilots**
  - Ordinance 125957; City Light begins enrollment in the Residential TOD pilot Q4 2020

- **Grid Mod Plan**
  - plan to launch DR pilot in 2022; additional DR work in following years (e.g., managing charging)

- **Connected Communities grant**
  - DOE awarded a “Connected Communities” grant in October 2021 to a team of organizations including City Light; this project is still in negotiation and contracting, and the plan is that it will take place over 5 years (focus on water heating).
## Demand Response Pilot planned for Q4 2022 - Q4 2024

<table>
<thead>
<tr>
<th>High-Priority Criteria</th>
<th>Residential Water Heating - GIWH</th>
<th>Residential BYOT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retention rates</td>
<td>High, due to low customer impact</td>
<td>Moderate, due to potential fatigue/attrition due to comfort impacts</td>
</tr>
<tr>
<td>Customer interest</td>
<td>Low customer interest in water heaters</td>
<td>High customer interest and easier enrollment</td>
</tr>
<tr>
<td>Scalable by 2026</td>
<td>Partially scalable by 2026</td>
<td>Readily scalable by 2026 due to high existing market penetration</td>
</tr>
<tr>
<td>Gives City Light the ability to control/dispatch load</td>
<td>Daily calls through summer/winter</td>
<td>Can only be called up to 5 times per month, or 15 times per season</td>
</tr>
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</table>

**RANKINGS**
- High
- Moderate
- Low
- Unknown
10-Year Important Milestones

- **Demand Response pilot programs start**
  - **Climate Commitment Act 2023**
  - **Opt in Time of Use Rates Begin**

- **Time of Use Rates Pilot**
  - **New ~100 MW Resource for Customer R+**
  - **IRP Progress Report**

- **New Skagit license start**

- **New BPA contract start**

- **CETA Greenhouse Gas Neutral**

- **~400 MW New Supply Resources Online**

- **~50 aMW Energy Efficiency**

- **~10 MW Demand Response**

- **Long-lead resource additions MT & Offshore wind**

- **~90 MW Demand Response**
THANK YOU