California Energy Commission

Flexible Demand Appliance Standards

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SB 49 on Appliance Standards

Promote Flexible Demand Technologies in Appliances

- Cost-Effective, GHG Reductions, Grid Benefits
- Consumer Consent
- Open Source & User-Friendly
- Cybersecurity & Communications
- Interface with Load Management / DR Programs
- Labeling and Certification
Evaluating Appliances

Initial Assessment

• Load Shift Potential (MWh)
• Flexible Capacity (MW)
• Cost-Effective ($)
• GHG Emission Reductions (mmtCO₂e)

Important Factors

• Technically Feasible
• Equity & Disadvantaged Communities
• Innovation & Market Growth
• Synergies with Policies
• Challenges and Risks
Load Shape of Appliances

Use of Residential Smart Appliances for Peak-Load Shifting and Spinning Reserves
Cost/Benefit Analysis

Figure 3.2. ELCAP Dishwasher Load Shape for an Average Annual Day

Table 3-11. ELCAP Dishwasher Hourly Consumption on an Average Annual Day

<table>
<thead>
<tr>
<th>Hour</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
<th>11</th>
<th>12</th>
</tr>
</thead>
<tbody>
<tr>
<td>kW-hr/hr</td>
<td>0.0075</td>
<td>0.0034</td>
<td>0.0017</td>
<td>0.0014</td>
<td>0.0012</td>
<td>0.0031</td>
<td>0.0061</td>
<td>0.0111</td>
<td>0.0169</td>
<td>0.0190</td>
<td>0.0177</td>
<td>0.0149</td>
</tr>
<tr>
<td>Hour</td>
<td>13</td>
<td>14</td>
<td>15</td>
<td>16</td>
<td>17</td>
<td>18</td>
<td>19</td>
<td>20</td>
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</tr>
<tr>
<td>kW-hr/hr</td>
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<td>0.0276</td>
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<td>0.0188</td>
<td>0.0135</td>
</tr>
</tbody>
</table>

The dishwasher load shape based on the data shown in Table 3.11 is shown in Figure 3.2 below.
Existing Title 24 Standards

- **Appendix JA5** - Specifications for Occupant Controlled Smart Thermostats
- **Appendix JA13** - Requirements for Heat Pump Water Heater Demand Management
- **Section 110.12** - Mandatory Requirements for Demand Management
- Building Codes and Reach Codes Adoption for **EV Charging**

Proposed Standards for 2022

- **Section 140.10** - Requirements for **Photovoltaic** and **Battery Storage** Systems
- Sizing requirements based on building space type and climate zone
Load Management Standards (LMS)

LMS Supports Customer Access to Lower Rates

• **MIDAS** (Market Influenced Demand Automation Server) electricity rate database – **2021**

• Customer education and outreach – **2022**

• Rate **access tool** to support third-party providers – **2023**

• Develop locational electricity rates – **2024**
Contact Information

CEC Flexible Demand Standards Webpage:

https://www.energy.ca.gov/proceedings/energy-commission-proceedings/flexible-demand-appliances

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