Presentation Overview

What does the electrical grid do for us?
How is California’s grid changing?
When and where can we impact that change?
Why do we care about the changing grid?

This presentation draws from:
- BayREN Codes & Standards Program Implementation Activities
- CPUC/CEC En Banc Hearing on Consumer Retail Choice (5/19/2017)
- CEC 2019 T24 Part 6 Pre-rulemaking
This is my story

Acworth NH is very different
What does the Grid do for you?

Compared to Oakland CA
When we pay for electricity, we’re paying for...

A network of connected infrastructure and services:

- Distribution & Transmission
- Generation & Energy Efficiency
- Reliable and equitable electric service to all customers

We want our grid to be resilient

- Climate change
- Disasters (natural and man made)
- New markets and technology innovation
Intersection of Energy Code & Grid

Regulators
- CPUC
- CEC

Operators
- CAISO
- IOUs
- CCAs/CCEs
- MOUs

Stakeholders
- Local Governments
- RENs
- Industry & Markets

Customers
- Residential
- Commercial

Local Governments
- RENs
- Industry & Markets

Residential
- Commercial
Change is ... here

- Solar PV and Energy Storage
- Electric vehicles
- Internet of Things and Device Connectivity
- Community Choice Energy

and is complicated.

“California may well be on the path towards a competitive market for consumer electric services, but is moving in that direction without a coherent plan to deal with all the associated challenges that competition poses.”

*CPUC Staff White Paper “Consumer and Retail Choice, the Role of the Utility, and an Evolving Regulatory Framework”*
CPUC/CEC Consumer Choice En Banc

21 Ratesetting proceedings

A1608006 - PG&E Diablo Canyon Proposal
A1609001 - SoCal Edison General Rates
R1206013 - Residential Rates
R0310003 - Assembly Bill 117 Rulemaking
R1408013 - Distribution Resources Plans
R1410003 - Integrated Distributed Energy Resources
R1512012 - Time of Use
A1509001 - PG&E General Rate Case
A1701012, ...18, ...19 - IOU 2018-2022 Demand Response Portfolios
R1309011 - Demand Response
R1407002 - Net Energy Metering

R1410010 - Resource Adequacy Rulemaking
R1602007 - Integrated Resource Planning
R1211005 - California Solar Initiative/Self-Generation Incentive Program Rulemaking
R1502020 - Renewables Portfolio Standard
A1704018 - Portfolio Allocation Methodology
A1701013, .14, .15, .16, .17 - IOU/CCA EE Business Plans
A1701020, .21, .22 - IOU Transportation Electrification
R1311005 - Energy Efficiency
R1503011 - Energy Storage
R1311007 - Zero Emission Vehicles
Limited Impact of Standards PV Requirements Compared to Other Forecasted PV Development

- Total Statewide Capacity
- Total Residential Retrofit
- Total Res New Construction w/o Standards
- Total Res New Construction w/ Standards

Can all new residential construction be ZNE?

- ZNE was the goal but was not mandated by law
- Mixed fuel vs. all-electric
- Cost-effectiveness vs. grid realities & market readiness
- Site-specific vs. community solar & storage systems

Pre-rulemaking currently in progress
SUBCHAPTER 8
LOW-RISE RESIDENTIAL BUILDINGS -
PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES

SECTION 150.1 – PERFORMANCE AND PRESCRIPTIVE COMPLIANCE APPROACHES FOR LOW-RISE RESIDENTIAL BUILDINGS

(b) Performance Standards. A building complies with the performance standards if the energy consumption budget calculated for the Proposed Design Building under Subsection 2 is no greater than the energy budget calculated for the Standard Design Building under Subsection 1 using Commission-certified compliance software as specified by the Alternative Calculation Methods Approval Manual.

Target EDR Examples by Climate Zone

Here is an example of how Target EDRs might look for different scenarios in different CZs for the 2,700 sf **Mixed Fuel Homes**:

Note: At this time these numbers are examples only and may change as our tools evolve.

NEM = Net Energy Metering; GH = Grid Harmonization; Dumb PV = No Battery Storage

<table>
<thead>
<tr>
<th>CZ</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>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>48.0</td>
<td>26.5</td>
<td>3.4</td>
<td>7.7</td>
<td>6.9</td>
<td>4.6</td>
<td>4.1</td>
<td>2.0</td>
<td>1.4</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>41.2</td>
<td>18.0</td>
<td>2.9</td>
<td>6.1</td>
<td>5.5</td>
<td>3.1</td>
<td>2.8</td>
<td>1.9</td>
<td>1.1</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>46.9</td>
<td>22.7</td>
<td>2.8</td>
<td>5.8</td>
<td>5.3</td>
<td>3.2</td>
<td>2.9</td>
<td>1.9</td>
<td>1.1</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>48.0</td>
<td>20.9</td>
<td>2.9</td>
<td>5.3</td>
<td>4.5</td>
<td>2.9</td>
<td>2.8</td>
<td>1.6</td>
<td>1.0</td>
<td>1.0</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>48.0</td>
<td>14.9</td>
<td>2.7</td>
<td>4.6</td>
<td>3.9</td>
<td>2.4</td>
<td>2.3</td>
<td>1.4</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>43.0</td>
<td>14.6</td>
<td>2.9</td>
<td>5.3</td>
<td>4.3</td>
<td>2.7</td>
<td>2.6</td>
<td>1.5</td>
<td>0.9</td>
<td>0.9</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>43.3</td>
<td>23.4</td>
<td>3.8</td>
<td>8.5</td>
<td>6.5</td>
<td>4.4</td>
<td>4.2</td>
<td>1.7</td>
<td>1.2</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>43.1</td>
<td>24.5</td>
<td>3.1</td>
<td>7.0</td>
<td>5.8</td>
<td>3.8</td>
<td>3.5</td>
<td>1.9</td>
<td>1.2</td>
<td>1.1</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>44.8</td>
<td>22.1</td>
<td>4.0</td>
<td>9.0</td>
<td>6.2</td>
<td>4.9</td>
<td>4.6</td>
<td>1.6</td>
<td>1.2</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>44.6</td>
<td>21.3</td>
<td>3.4</td>
<td>7.4</td>
<td>5.4</td>
<td>4.4</td>
<td>4.1</td>
<td>1.6</td>
<td>1.3</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>48.0</td>
<td>17.9</td>
<td>5.7</td>
<td>10.5</td>
<td>8.1</td>
<td>6.9</td>
<td>6.8</td>
<td>1.4</td>
<td>1.2</td>
<td>1.2</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>46.3</td>
<td>27.5</td>
<td>3.0</td>
<td>7.6</td>
<td>6.5</td>
<td>4.8</td>
<td>4.3</td>
<td>2.2</td>
<td>1.6</td>
<td>1.4</td>
<td></td>
</tr>
</tbody>
</table>
ADMINISTRATIVE REGULATIONS

CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 1

10-115 – COMMUNITY SHARED SOLAR ELECTRIC GENERATION SYSTEM OR COMMUNITY SHARED BATTERY STORAGE SYSTEM OFFSET OF ONSITE SOLAR ELECTRIC GENERATION OR BATTERY STORAGE REQUIREMENTS
Why must we care?

The California Energy Crisis

Climate Change

Next generation economic drivers are here – we need to lead
Resources

BayREN Codes & Standards: https://www.bayrenencodes.org/
Tools for Local Ordinances: http://localenergycodes.com/
Title 24 Part 6: http://www.energy.ca.gov/title24/2019standards/
CA EE Coordination Committee: https://www.caeecc.org/
CPUC Proceedings

**R1408013** - Distribution Resources Plans
**R1410003** - Integrated Distributed Energy Resources
**R1512012** - Time of Use
**R1407002** - Net Energy Metering
**R1602007** - Integrated Resource Planning

EBEW Paper on EE Programs: http://www.ebew.org/news
Thank you

Chris Bradt
BayREN C&S Program Manager
Frontier Energy Senior Program Manager
510-463-6127
cbradt@frontierenergy.com