DOCKETED

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<th>Docket Number:</th>
<th>17-IEPR-06</th>
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<td>Project Title:</td>
<td>Doubling Energy Efficiency Savings</td>
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<td>Presentation - Energy Efficiency Savings from Utility Programs</td>
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<td>9.7.17 Presentation by Mike Jaske of CEC</td>
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<td>Raquel Kravitz</td>
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Energy Efficiency Savings from Utility Programs

Docket No. 17-IEPR-06

Mike Jaske
Energy Assessments Division

California Energy Commission, Arthur Rosenfeld Room
Sacramento, CA
September 7, 2017
Topics

• Utilities and SB 350
• IOU and POU Potential Studies
• Adjustments to Projections
• CVR and Fuel Substitution
UTILITIES AND SB 350
Targets for Responsible Entities

• Draft Commissioner Report incorporates the essence of the staff *Framework* Report
  – Responsible entities are those for which reasonably firm savings projections can be established
  – Each such responsible entity will have an individual target

• Given their history, utilities are the most obvious category of responsible entities
Utility Pursuit of the Doubling Goal

• Enhancing existing activities
  – Traditional or enhanced versions of rebate, incentive or financing programs
  – New programs encouraged by AB 802
  – Efforts to encourage tighter standards, to enhance compliance with standards, or to exceed standards

• New conservation voltage reduction (CVR) and fuel substitution programs

• SB 350 encourages utilities to do more, but does not require it
EE POTENTIAL STUDIES
IOU and POU Potential Studies

- CPUC and CMUA conducted studies of traditional EE programs
- Each contracted with a unit of Navigant Consulting, Inc. using similar approaches but different software packages and input assumptions
- Neither addressed the full set of options enumerated in PRC 25210(d) – especially CVR and fuel substitution
CPUC Potential & Goals Proceeding

- CPUC’s intent was an update of traditional EE goals in the context of increasing emphasis on GHG emission reductions

- Principal issues:
  - AB 802 BROs analysis
  - Which C/E test to use
  - Whether or not to adopt a GHG cost adder

- SB 350 concern – timing of CPUC rulemaking means that this draft SB 350 report must be updated
CMUA Potential Study for POUs

- CMUA contracted with POUs to conduct an electricity potential study
- Study covered 2018 to 2027
- Study design allowed POU control over:
  - what measures to include in assessment
  - whether to have emerging technologies
  - whether to include attributable savings from codes and standards
  - net vs gross basis for savings projections
Adjustments to Studies for SB 350

- Staff believes some aspects must be uniform for SB 350 purposes even in this initial cycle
  - Savings years: 2015-17, 2018-2027, and 2028-2029
  - Net savings, not gross savings
  - Exclude utility contribution to more stringent standards requirements, due to staff non-utility savings projections
  - Cumulative savings, not annual incremental savings
- Consider further standardization in future cycles
Establish Targets for 2015 to 2029

**IOUs**
- Estimate 2015-2017 savings since EM&V studies not yet released
- Use 2018-2029 projections from the study

**POUs**
- Use reported savings for 2015-2016
- Estimate savings for 2017
- Linear extension of the last two years (2025-2027) to compute POU savings out through the end of 2029
Savings from Statewide Code & Standards

**IOUs**

- CPUC has formal C&S program with several elements
- Large C&S savings
- C&S advocacy to count as part of nonutility wedge

**POUs**

- POU savings from individual C&S are not reported to CEC
- LADWP, SMUD, Anaheim, Glendale Imperial, Turlock, Vernon, Azusa, Colton, and Moreno Valley chose to include C&S projections in their annual targets
- C&S to count as part of nonutility wedge
Net vs. Gross Savings

**IOUs**
- CPUC requires IOU targets to be derived from “net” market potential
- No adjustments needed

**POUs**
- Most POUs report both net and gross savings, so choosing net creates no analytic issues for them
- LADWP, Anaheim, and Burbank only report gross savings, so staff estimated net-to-gross factors
Cumulative Savings

- Both CPUC and CMUA studies focus on annual incremental savings
- Decay and replacement of annual savings is not addressed in detail in either report
- Cumulative savings is the basis for the doubling goal, so cumulative savings should be the basis for utility targets
- Staff has created cumulative savings by adding up annual savings
PROJECTIONS AND ADJUSTMENTS
CPUC Electricity Goals: mTRC GHG Adder #1 Scenario
CPUC Natural Gas Goals: mTRC GHG Adder #1 Scenario
IOU Savings vs. Proposed Targets

**IOU Savings by Program**

**IOU Targets by Program**

- **Adjustments:**
  - Changed years
  - Deleted C&S savings
## POU Size Diversity

<table>
<thead>
<tr>
<th>Utility</th>
<th>Type</th>
<th>2018 Projected Savings (GWh)</th>
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<tbody>
<tr>
<td>LADWP</td>
<td>IRP</td>
<td>499</td>
</tr>
<tr>
<td>SMUD</td>
<td>IRP</td>
<td>150</td>
</tr>
<tr>
<td>Medium Group (14)</td>
<td>IRP</td>
<td>190</td>
</tr>
<tr>
<td>Small Group (22)</td>
<td>Non-IRP</td>
<td>13</td>
</tr>
<tr>
<td>Total (38)</td>
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<td>852</td>
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Annual POU Electricity Savings

### Which POUs Were Adjusted?

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<thead>
<tr>
<th>Description of POU Targets Submitted</th>
<th>Adjusted for Net</th>
<th>Adjusted for C&amp;S</th>
<th>Added Years</th>
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<td>Los Angeles Market Gross+C&amp;S</td>
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<td>✓</td>
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<tr>
<td>Sacramento Market Gross+C&amp;S</td>
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<tr>
<td>Imperial Market Net+C&amp;S</td>
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<tr>
<td>Anaheim Market Gross+C&amp;S</td>
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<tr>
<td>Riverside Market Gross: 1% Avg. Annual</td>
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<td>✓</td>
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<tr>
<td>Turlock Market Net+C&amp;S</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Glendale Market Net+C&amp;S</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Pasadena Market Gross:1.25% Avg. Annual</td>
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<tr>
<td>Santa Clara Market Net</td>
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</tr>
<tr>
<td>Burbank Market Gross</td>
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<tr>
<td>Modesto Market Net</td>
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<tr>
<td>Roseville Market Gross</td>
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<tr>
<td>Palo Alto Market Net</td>
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<tr>
<td>Vernon Market Net+C&amp;S</td>
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<td>Redding Market Gross</td>
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<tr>
<td>San Francisco Market Net</td>
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Annual Electricity Savings by POU Size

POU Program Targets

With Adjustments

Adjustments to POU
Cumulative Savings Projections
Cumulative Targets by POU Size

POU Program Targets With Adjustments

Implications for POUs

• CEC adoption of SB 350 targets for POUs does not require any POU to change its projected savings or modify its programs
• SB 350 creates a new accounting system that can operate in parallel with other systems
• Future cycles of SB 350 target setting will refine numerous aspects of EE planning
CVR AND FUEL SUBSTITUTION
Conservation Voltage Reduction

- Explicitly included in PRC 25310(d)(9) as a compliance option
- CVR has evolved over time to be better described as CVR/Volt-Var Optimization (CVR/VVO)
- Only one utility deploying CVR/VVO at scale although several have conducted pilots
Modern CVR/VVO
Policy Issues/Next Steps

• Policy Questions:
  – Is additional research/demonstration needed to determine whether various CVR/VVO technologies are cost effective in loading conditions for specific feeder configurations?
  – Are further statutory changes warranted to encourage CVR/VVO, when it appears to be cost-effective, but is not being implemented?

• Next Steps:
  – Highlight potential focus for further effort in the next utility target setting cycle
Fuel Substitution

• January 2017 Framework paper defined:
  – Fuel substitution to mean end-use device shifts from natural gas to electricity
  – Fuel switching to mean non-utility fuels shifting to electricity
• PRC 25310(a) excludes fuel switching, e.g., transportation electrification
Fuel Substitution Requirements

- PRC 25310(d)(10) requires both end-user energy savings and GHG emissions
- Means **site** energy savings and **source** GHG emission reductions
- Does not align directly with CPUC 3-prong test for fuel substitution programs
- No utility proposed savings from fuel substitution programs – further study needed
Some Implementation Questions

- Should the resource mix used to assess GHG savings be utility-specific or statewide?
- What process should be used to develop minimum heat pump performance standards and performance of displaced gas devices?
- What process should be used to reconcile the existing CPUC 3-prong test versus SB 350 EE requirements?
- Which utility obtains credit towards SB 350 EE target compliance – the natural gas utility with departing load or the electric utility gaining load?
Major Issues for the Future

• Collaborative study of savings decay/replacement
• Review of Utility Codes & Standards programs and overlaps with other quantification efforts
• Improve forecasting post-processing to extract savings from C&S, price response, and private market efforts
• CVR/VVO assessments
• Fuel substitution assessments
Questions?