## DOCKETED

<table>
<thead>
<tr>
<th><strong>Docket Number:</strong></th>
<th>17-IEPR-03</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Electricity and Natural Gas Demand Forecast</td>
</tr>
<tr>
<td><strong>TN #:</strong></td>
<td>222728</td>
</tr>
<tr>
<td><strong>Document Title:</strong></td>
<td>Presentation - CED 2018-2030 Revised Electricity and Natural Gas Demand Forecast</td>
</tr>
<tr>
<td><strong>Description:</strong></td>
<td>California Energy Demand (CED) 2018-2030 Revised Electricity and Natural Gas Demand Forecast: Process, Summary of Results, and Choice of Planning Forecast by Chris Kavalec, February 21, 2018</td>
</tr>
<tr>
<td><strong>Filer:</strong></td>
<td>Patty Paul</td>
</tr>
<tr>
<td><strong>Organization:</strong></td>
<td>California Energy Commission</td>
</tr>
<tr>
<td><strong>Submitter Role:</strong></td>
<td>Commission Staff</td>
</tr>
<tr>
<td><strong>Submission Date:</strong></td>
<td>2/26/2018 1:14:12 PM</td>
</tr>
<tr>
<td><strong>Docketed Date:</strong></td>
<td>2/26/2018</td>
</tr>
</tbody>
</table>
California Energy Demand (CED) 2018-2030 Revised Electricity and Natural Gas Demand Forecast: Process, Summary of Results, and Choice of Planning Forecast

February 21, 2018

Chris Kavalec
Energy Assessments Division
Chris.Kavalec@energy.ca.gov
916-654-5184
Purpose/Uses of Forecast

- Integrated Resource Planning
- Distributed Resource Planning
- California ISO Transmission Planning Process (TPP)
- CPUC/California ISO Resource Adequacy
- CPUC energy efficiency potential studies
- Benchmark for policy planning (e.g. SB 350)
- Renewables planning
- Other
Process: How We Got Here

• Total of 7 IEPR workshops
• Demand Analysis Working Group (DAWG) meetings
• Joint Agency Steering Committee (JASC) guidance
• Process alignment discussions: IRP, DRP, TPP, and IEPR forecast
• Other stakeholder discussions
CED Forecasts Incorporate Policy Initiatives

- Building codes and appliance standards
- IOU, POU, and other efficiency programs and initiatives
- Distributed generation incentive programs
- Demand response programs, including large-scale residential TOU programs
- ZEV incentives
- Electrification (ports, airports, HSR, etc.)
CED Forecast Methods and Inputs Evolve Over Time

Changes/Improvements vs. CEDU 2016

- Hourly load forecasting model for the three IOU TAC areas
  - Incorporates hourly PV generation, EV consumption, residential TOU, and additional achievable energy efficiency (AAEE)
  - Allows estimates of peak demand which incorporate changes in peak hours (peak shift)
- Estimates of AAEE savings for 38 POUs in addition to IOU estimates
Changes/Improvements vs. CEDU 2016 (cont.)

- Analysis of efficiency initiatives beyond traditional AAEE in support of SB 350 targets
  - Includes an optimistic “what if” case for comparison to SB 350 doubling goals
- Additional achievable PV (AAPV)
- Developed a DAWG subgroup for vetting EV forecast
- Analysis and incorporation of large increase in community choice aggregators (CCAs)
Summary: Statewide Baseline Electricity Consumption

New mid case growth faster than CEDU 2016 mid
Statewide Baseline Electricity Peak Demand (Noncoincident)

Faster consumption growth and peak shift increase peak demand
Impact of Peak Shift (Noncoincident Statewide Peak)
Mid Baseline Demand Case
Statewide Baseline Electricity Sales

Higher consumption increases sales vs. 2016
From Baseline to Managed Forecasts: AAEE and AAPV

- Incremental to committed savings and PV in the baseline CED 2017 Revised forecasts
- AAEE based on 2017 Potential Study, POU goals, and SB 350 analysis
- 6 AAEE scenarios for electricity and natural gas consumption and peak; 4 AAPV scenarios
- Adjusted, or managed, forecasts for planning purposes
AAEE Scenarios

1. High Baseline Demand-Low AAEE Savings (high-low)
2. Mid Baseline Demand-Low AAEE Savings (mid-low)
3. Mid Baseline Demand-Mid AAEE Savings (mid-mid)
4. Mid Baseline Demand-High AAEE Savings (mid-high)
5. Low Baseline Demand-High AAEE Savings (low-high)
6. Mid Baseline Demand-High Plus AAEE Savings (mid-high plus)
   • AAPV with Scenarios 1, 2, 3, and 5
Statewide Savings by AAEE Scenario

In 2030, 54,000 GWh for mid-high plus, 38,000 for mid-mid
AAPV Additional Capacity, Statewide
Translates to around 4,000 GWh in 2030 in mid-mid case

[Graph showing trends in MW from 2019 to 2030 for different scenarios: High-Low, Mid-Low, Mid-Mid, Low-High]
“What If” Scenario (Mid-High Plus) with Committed Savings 2015-2017 versus Electricity Doubling Goals
Choice of Single Forecast Set for CAISO/IOUs from Managed Forecasts

- *CED 2017 Revised* mid baseline demand combined with:
  - Mid baseline-mid AAEE/AAPV for system and flexibility planning
  - Mid baseline-low AAEE/AAPV for localized planning
Single Forecast Set: CAISO Sales

The chart shows the forecasted CAISO Sales in GWh from 2016 to 2030.

- **Mid Baseline**
- **Mid Baseline, Mid-Low AAEE/AAPV**
- **Mid Baseline, Mid-Mid AAEE/AAPV**

The data indicates a steady increase in sales over the forecasted period.
Single Forecast Set: CAISO Coincident Peak
Moving Forward

• Forecast update later this year
  – Update econ-demo, historical data, PV and EV forecasts, and CCAs

• 2019 IEPR
  – Continue work on hourly load models
  – Refine/update SB 350 and AB 802 analysis
  – CEUS and RASS surveys
  – Model updates, revisions, and improvements
  – Further geographic disaggregation
  – Other
Comments/Questions?