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<th><strong>Docket Number:</strong></th>
<th>17-IEPR-03</th>
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<tbody>
<tr>
<td><strong>Project Title:</strong></td>
<td>Electricity and Natural Gas Demand Forecast</td>
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<td><strong>Document Title:</strong></td>
<td>Summary of Planning Area Forecasts CED 2017 Preliminary</td>
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<tr>
<td><strong>Description:</strong></td>
<td>8.3.17 Presentation by Chris Kavlec of CEC</td>
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<td><strong>Filer:</strong></td>
<td>Raquel Kravitz</td>
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Summary of Planning Area
Forecasts: CED 2017 Preliminary

August 3, 2017

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## Summary of Results

**Average annual % growth in sales (2015-2028) and net peak (2016-2028)**

<table>
<thead>
<tr>
<th></th>
<th>Electricity Sales (GWh)</th>
<th>Net Peak (MW)</th>
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<tbody>
<tr>
<td></td>
<td>High</td>
<td>Mid</td>
</tr>
<tr>
<td>LADWP</td>
<td>0.88</td>
<td>0.54</td>
</tr>
<tr>
<td>PG&amp;E</td>
<td>0.54</td>
<td>0.19</td>
</tr>
<tr>
<td>SCE</td>
<td>0.74</td>
<td>0.37</td>
</tr>
<tr>
<td>SDG&amp;E</td>
<td>0.58</td>
<td>0.14</td>
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<tr>
<td>SMUD</td>
<td>1.24</td>
<td>0.75</td>
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</table>
LADWP
LADWP Highlights (Inputs)

- Population growth of 0.53% per year 2016-2028, from 3.98 million to 4.24 million; growth in number of households of 0.75 percent per year in mid case
- Per capita income growth of 2.3% per year in mid case
- 238,000 light-duty EVs on the road in 2028 in the mid case, of which 132,000 are BEV; EV consumption of 860 gWh in 2028
- BTM PV installed capacity of 670 MW in 2028 in mid case
LADWP: Consumption

Average growth 2016-2027 of 1.55%, 1.23%, and 0.91% vs. 1.02% in CEDU 2016 mid
LADWP: Peak End-Use Load

Average growth 2016-2027 of 1.23%, 0.94%, and 0.54% vs. 0.82% in CEDU 2016 mid
LADWP: Consumption to Sales (Mid)

~3,000 gWh of total self-generation in 2028, of which 1,100 is PV
LADWP: End Use Load to Net Peak (Mid)
~600 MW of total self-generation in 2028, of which 275 is PV

Average Annual Growth Net Peak 2016-2028 = 0.51%
LADWP Highlights (Output)

• In mid case, residential consumption grows at 1.79% per year, 2016-2028, commercial by 1.15%, industrial by -0.12%

• Fueled by relatively strong commercial consumption growth and relatively high EV penetration, LADWP consumption grows faster than state average 2016-2028 in mid case

• Residential EUL peak grows slower than residential consumption, so total EUL peak grows slower than total consumption
Comparison of Mid Case With LADWP Forecast Submitted for IEPR

- LADWP projects slightly more EV consumption and lower PV
- Aside from EVs and PV, no significant differences
- LADWP in the midst of developing new forecast
PG&E Highlights (Inputs)

- Population growth of 0.96% per year 2016-2028, from 13.8 million to 15.4 million; growth in number of households of 1.05 percent per year in mid case
- Per capita income growth of 2.0% per year in mid case
- 638,000 light-duty EVs on the road in 2028 in the mid case, of which 398,000 are BEV; EV consumption of 2,400 gWh in 2028
- BTM PV installed capacity of 7,750 MW in 2028 in mid case
- LMDR of 206 MW in 2028
PG&E: Consumption

Average growth 2016-2027 of 1.37%, 1.11%, and 0.95% vs. 1.13% in CEDU 2016 mid
PG&E: Peak End-Use Load

Average growth 2016-2027 of 1.53%, 1.23%, and 0.98% vs. 1.17% in CEDU 2016 mid
PG&E: Consumption to Sales (Mid)

~21,000 GWh of total self-generation in 2028, of which 12,900 is PV

Average annual growth in sales 2016-2028 = 0.38%
PG&E: End Use Load to Net Peak (Mid)

~4300 MW of total self-generation in 2028, of which 2,600 is PV

Average Annual Growth Net Peak 2016-2028 = 0.27%
PG&E Highlights (Output)

• In mid case, residential consumption grows at 1.95% per year, 2016-2028, commercial by 1.08%, industrial by -0.34
• Fueled by relatively strong residential growth, PG&E consumption grows faster than state average 2016-2028
• EUL peak grows faster than consumption because of residential EUL growth
Comparison of Mid Case With PG&E Forecast Submitted for IEPR

• PG&E has higher EV and PV forecasts
• Aside from EVs and PV, PG&E has higher sales forecast
  – Faster industrial growth
  – Faster agricultural growth
  – Difference in efficiency accounting
• Peak forecasts not directly comparable since PG&E accounts for peak shift
SCE Highlights (Inputs)

- Population growth of 0.70% per year 2016-2028, from 14.9 million to 16.2 million; growth in number of households of 0.91 percent per year in mid case
- Per capita income growth of 1.86% per year in mid case
- 552,000 light-duty EVs on the road in 2028 in the mid case, of which 283,000 are BEV; EV consumption of 2,050 gWh in 2028
- BTM PV installed capacity of 6,300 MW in 2028 in mid case
- LMDR of 96 MW in 2028
SCE: Consumption

Average growth 2016-2027 of 1.25%, 0.93%, and 0.78% vs. 0.80% in CEDU 2016 mid
SCE: Peak End-Use Load
Average growth 2016-2027 of 1.09%, 0.72%, and 0.58% vs. 0.90% in CEDU 2016 mid
SCE: Consumption to Sales (Mid)

~15,900 gWh of total self-generation in 2028, of which 10,800 is PV

Average annual growth in sales = 0.30%
SCE: End Use Load to Net Peak (Mid)

~3,600 MW of total self-generation in 2028, of which 2,300 is PV

Average Annual Growth Net Peak 2016-2028 = -0.19%
SCE Highlights (Output)

• In mid case, residential consumption grows at 2.06% per year, 2016-2028, commercial by 0.52%, industrial by 0.31%

• With less growth in commercial, SCE consumption grows slower than state average 2016-2028 in mid case

• EUL peak grows faster than consumption because of drop from 2016-2017 and residential EUL growth
Comparison of Mid Case With PG&E Forecast Submitted for IEPR

• SCE has higher EV and PV forecasts
• Aside from EVs and PV, sales forecasts are similar
• Peak forecasts not directly comparable since SCE accounts for peak shift
California Energy Commission

SDG&E Highlights (Inputs)

• Population growth of 0.75% per year 2016-2028, from 3.6 million to 3.95 million; growth in number of households of 0.83 percent per year in mid case
• Per capita income growth of 1.75% per year in mid case
• 134,000 light-duty EVs on the road in 2028 in the mid case, of which 83,000 are BEV; EV consumption of 350 gWh in 2028
• BTM PV installed capacity of 1,900 MW in 2028 in mid case
• LMDR of 27 MW in 2028
SDG&E: Consumption

Average growth 2016-2027 of 1.53%, 1.18%, and 1.04% vs. 1.21% in CEDU 2016 mid
SDG&E: Peak End-Use Load

Average growth 2016-2027 of 1.66%, 1.36%, and 1.09% vs. 1.05% in CEDU 2016 mid
SDG&E: Consumption to Sales (Mid)

~4,400 gWh of total self-generation in 2028, of which 3,300 is PV

Average annual growth in sales = 0.35%
SDG&E: End Use Load to Net Peak (Mid)

~1,000 MW of total self-generation in 2028, of which 700 is PV

Average Annual Growth Net Peak 2016-2028 = 0.24%
SDG&E Highlights (Output)

• In mid case, residential consumption grows at 1.72% per year, 2016-2028, commercial by 1.00%, industrial by 0.11%

• Fueled by relatively strong commercial consumption growth, SDG&E consumption grows slightly faster than state average 2016-2028 in the mid case

• Jump in EUL peak from 2016-2017 results in EUL peak growing at faster rate than consumption 2016-2028 in the mid case
Comparison of Mid Case With SDG&E Forecast Submitted for IEPR

• SDG&E has higher EV and lower PV forecasts
• Aside from EVs and PV, sales forecasts are similar
• Peak forecasts not directly comparable since SDG&E accounts for peak shift
SMUD Highlights (Inputs)

• Population growth of 1.14% per year 2016-2028, from 1.5 million to 1.72 million; growth in number of households of 1.11 percent per year in mid case
• Per capita income growth of 1.86 per year in mid case
• 38,000 light-duty EVs on the road in 2028 in the mid case, of which 23,000 are BEV; EV consumption of 150 gWh in 2028
• BTM PV installed capacity of 630 MW in 2028 in mid case
SMUD: Consumption

Average growth 2016-2027 of 1.91%, 1.49%, and 1.26% vs. 1.36% in CEDU 2016 mid
SMUD: Peak End-Use Load

Average growth 2016-2027 of 2.17%, 1.71%, and 1.35% vs. 1.30% in CEDU 2016 mid
SMUD: Consumption to Sales (mid)

~1,100 gWh of total self-generation in 2028, of which 1,000 is PV

Average annual growth in sales = 0.93%
SMUD: End Use Load to Net Peak (Mid)

~215 MW of total self-generation in 2028, of which 210 is PV

Average Annual Growth Net Peak 2016-2028 = 1.26%
SMUD Highlights (Output)

• In mid case, residential consumption grows at 1.87% per year, 2016-2028, commercial by 1.40%, industrial by 0.37%

• Fueled by relatively strong commercial and industrial consumption growth, SMUD consumption grows faster than state average 2016-2028

• Relatively small impact from PV means net peak demand grows almost as quickly as consumption
Comparison of Mid Case With SMUD Forecast Submitted for IEPR

- SMUD has higher EV and lower PV forecasts
- Aside from EVs and PV, SMUD sales and peak forecasts are lower
  - SMUD assumes slower population growth
  - Relationship between sales and peak may be changing
Questions/Comments?