Exhibit to Agenda Item #2

Board Energy Resources & Customer Services Committee Meeting and Special SMUD Board of Directors Meeting

Wednesday, December 11, 2019 scheduled to begin at 5:30 p.m.

Customer Service Center, Rubicon Room
2020 Load Forecast

- Introduction
- 2020 Load Forecast
- Insights
- Risks and Uncertainties
Why do we do a load forecast?

**Budget**
- Revenue Forecast
- Commodity Budget

**Planning**
- Input for transmission planning, distribution planning, grid operations, resource planning, IRP, rate case, ...

**Regulatory Reporting**
- CEC, FERC, WECC
Inputs to SMUD’s forecasting model are increasing in variability and impact

Assumption development relying on variety of experts for data and value inputs and confirmations

- Historical actuals – long and short term trends
  - Partial TOD actuals; partial SmartPricing Options (SPO) study
  - Number of permits filed and forecasted

- Economic forecasts – UCLA, home building association, Department of Finance, Sacramento Business Journal, various news sources

- SMUD Subject Matter Experts
Major Changes

• Two additional scenarios
  - The new scenarios provide a full IRP adoption scenario for IRP analysis with same assumption base as budget forecast

• Integrated Resource Plan increases in Building Electrification (EB) and Electric Vehicles (EV), and decrease in Energy Efficiency

• Energy storage impact spread over peak period rather than focused on the peak hour

• Further improved collaboration to create the forecast
  - Created access to completed forecast and underlying data on iNet
Residential Count Forecast

Residential Customer Count

Add 5,354 in 2020 (0.9% growth)
Commercial Count Forecast

Commercial Customer Count
(excludes night lights/signals)

Add 345 in 2020 (0.5% growth)
Sales Forecast

2020 Sales Forecast (MWh)

2020 sales of 10,257,621 MWh
- 2018 sales of 10,297,311 MWh (0.4% higher)
- Estimated 2019 sales of 10,365,625 MWh (1.0% higher)

11,077,687 MWh gross managed system energy (10,739,730 MWh excluding station service and large customer generation)
Gross Managed System Peak

2018 actual: 2,944MW
2019 forecast: 2,915MW
2019 actual: 2,927MW
2020 forecast: 2,919MW
• (2020 forecast is 0.27% lower)

Gross Managed System Peak 2020 Forecast v. Last Year

- TOD projected 75MW peak reduction
- In first year, seeing results in line with expectations
- Also seeing peak shifting
Insights

LED adoption causing load decreases – especially residential and small commercial

- SMUD analysis identified phenomenon earlier in the year and was confirmed by Itron using EIA data in their models
- Future decreases with building standards
- Result is decreases in use per customer

Correction in Commercial Customer Count shift between classes – appeared as growth in the 300-500kW and 500-1,000kW commercial rate classes

- Hot 2017 caused commercial rate class shifts, corrected in this forecast by moving back into lower load category
Visible Impact from TOD
• Peak Hour moving to 4-5pm (HE17) – average of $6/MWh cheaper than prior peak hour 5-6pm (HE18)
• Morning peaks in Feb and Mar 7-8am (HE8) – peak is very close to 5-6pm (HE18)

Storage Dispatch
• Lessens previously forecasted system peak reduction

Future New Peaks
• Winter Peaks at Midnight in 2033 in IRP scenarios
  - Combination of EB and EV
  - Forecast assumes increases in work place EV charging as EV population increases
• Summer Sunday Evening – seen at the distribution level
Continuing to understand weather changes and TOD customer behavioral changes and its Financial Impact

- 2019 was hotter in the summer and more mild in the winter than normal – Jan – Sept 22% increase in cooling degree days (CDD) and 9% decrease in heating degree days (HDD)

- Even though sales GWh can be the same quantity, the time of day of usage now impacts revenue and commodity purchases

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<td>Average</td>
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Risks & Uncertainties

**Current**
- Weather and TOD usage patterns
- Economy
- Adoption rate of EB and EV
- EV charging uncertainty
- Telecommuting instead of EV conversion
- Regulatory

**Future**
- EVs with Artificial Intelligence (AI) (more computers means more energy needed)
- Robot workforce (additional load)
- Climate Change (more summer load, less winter load)
- Regulatory