Exhibit to Agenda Item # 2

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

Wednesday, January 15, 2020 scheduled to begin at 5:30 p.m.
SMUD Headquarters Building, Auditorium
Energy Efficiency: Historical Perspective

- Faster & cost-effective way to meet increasing electricity demand
- Manage peak demand which defers capital expenditures
- Offer a way for our customers to save on their utility bills
- Required through various state statutes
Energy Efficiency Paradigm is Expanding

Energy Efficiency

- Electrical Efficiency
- Electrification Efficiency
- Natural Gas Efficiency
Why Building Electrification

Lower Bills
New and Existing Homes

Energy Efficient
Heat pumps are 3-7x more efficient than natural gas

Healthy
Dramatically reduces pollution inside the home and in our community

Safer
On average a gas pipeline catches fire every 4 days in the country
Policy Actions on Building Decarbonization

- 22 local jurisdictions in California have adopted ordinances requiring or encouraging all-electric new construction.

- 40+ local jurisdictions considering ordinances for adoption within the next year.

- Unanimous support from Sacramento’s Mayors’ Climate Commission for an all-electric ordinance.
IRP Plan to Achieve Net Zero Carbon

SMUD net carbon emissions

Supply side decarbonization
Community impact

SMUD’s carbon emissions
Building electrification
Vehicle electrification

2020 carbon emissions

Carbon emissions (tonnes)

0 500,000 1,000,000 1,500,000 2,000,000 2,500,000

2020 2021 2022 2023 2024 2025 2026 2027 2028 2029 2030 2031 2032 2033 2034 2035 2036 2037 2038 2039 2040

January 15, 2020 6 Board Energy Resources & Customer Service Committee Meeting and Special SMUD Board of Directors Meeting
Current SD-9 and the IRP

**SD-9: Current Goal**

- Achieve energy efficiency savings of 1.5% of the retail energy sales

**2018 IRP: Net Zero Carbon Emission by 2040**

- Carbon equivalent of approximately 3.1% of the average annual retail energy sales
Power Supply Portfolio Emissions Intensity

<table>
<thead>
<tr>
<th>Year</th>
<th>Emissions Intensity</th>
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<tbody>
<tr>
<td>2020</td>
<td>0.18 tCO2/MWh</td>
</tr>
<tr>
<td>2030</td>
<td>0.11 tCO2/MWh</td>
</tr>
<tr>
<td>2040</td>
<td>0.06 tCO2/MWh</td>
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Why Carbon as a Metric

Old metric of GWh is obsolete in the paradigm of reducing carbon emissions

Carbon aligns both traditional EE with electrification EE under a common metric

Aligns SMUD with the CEC, CPUC & CARB’s Fuel Substitution Working Group’s anticipated carbon approach to measure statewide EE
Proposed SD-9 Language

a) **Achieve overall energy efficiency** for our customers to maximize carbon reduction consistent with our net zero carbon target.

We are establishing the following goals for carbon reduction associated with building decarbonization:

<table>
<thead>
<tr>
<th>Year</th>
<th>Attributable Building Decarbonization (metric tons)</th>
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<tbody>
<tr>
<td>2030</td>
<td>75,000</td>
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<tr>
<td>2040</td>
<td>330,000</td>
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Implications of Changes to SD-9

The proposed SD-9 goal exceeds the current SD-9 GWh goal

<table>
<thead>
<tr>
<th>First Year GWh Savings</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
<th>2029</th>
<th>2030</th>
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<tbody>
<tr>
<td>Proposed SD-9</td>
<td>157.9</td>
<td>153.1</td>
<td>152.0</td>
<td>151.0</td>
<td>173.0</td>
<td>187.2</td>
<td>220.8</td>
<td>277.5</td>
<td>309.1</td>
<td>351.3</td>
<td>353.8</td>
</tr>
<tr>
<td>Current SD-9 (Pre-IRP)</td>
<td>155.3</td>
<td>150.3</td>
<td>150.0</td>
<td>150.3</td>
<td>150.1</td>
<td>150.4</td>
<td>150.1</td>
<td>150.3</td>
<td>151.3</td>
<td>150.5</td>
<td></td>
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Building Energy Efficiency Outcomes and Investments

Programs Budgets

- EE goal based on GWh
- EE goal based on carbon
- EE as a % of Retail Sales
- Annual budgets

January 15, 2020
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Requested Action

• Amend Strategic Direction SD-9, Resource Planning to the proposed language change and establish attributable building decarbonization metrics in place of GWh metrics.

• The Natural Resources Defense Council (NRDC), strongly supports approval of our SD-9 proposal.