Exhibit to Agenda Item #1

Brief the Board on SMUD’s Strategy for Fleet Asset Transition to Zero Emissions.

Board Strategic Development Committee and Special SMUD Board of Directors Meeting

Tuesday, May 10, 2022, scheduled to begin at 5:30 p.m.
Virtual Meeting (online)
Fleet electrification strategy

From November 30, 2021, Strategic Development Committee Presentation:

Where we’re headed

[Graph showing the increase in the number of electric vehicles from 2021 to 2030, with an目标 to be 100% electrified by 2030 and zero emissions by 2030.]

Public comment may be submitted via e-mail to PublicComment@smud.org.
Fleet electrification strategy

From November 30, 2021, Strategic Development Committee Presentation:

Electrification strategy

- Integrate proven, existing technology
- Pilot & adopt new technology under dev.
- Partner to influence change & adoption
- Benefits: Reduce maintenance costs & reduce emissions

Phased strategy & implementation:
- 2021: Integrate proven, existing technology
- 2022: Pilot & adopt new technology
- 2023: Partner to influence change & adoption
- 2024: Benefits - Reduce maintenance costs & reduce emissions
- 2025: Re-assess, adjust, prioritize, scale
- 2026:
- 2027:
- 2028:
- 2029:
- 2030:

November 30, 2021

Public comment may be submitted via e-mail to PublicComment@smud.org.
# Utility Fleet Electrification Benchmark Information

<table>
<thead>
<tr>
<th>Utility</th>
<th>2030 goal</th>
</tr>
</thead>
<tbody>
<tr>
<td>PG&amp;E</td>
<td>• 100% of light-duty fleet</td>
</tr>
<tr>
<td></td>
<td>• 10% of medium-duty fleet</td>
</tr>
<tr>
<td></td>
<td>• 5% of heavy-duty fleet</td>
</tr>
<tr>
<td>San Diego General Electric</td>
<td>• Electrify 100% of the Light Duty Fleet</td>
</tr>
<tr>
<td></td>
<td>• 30% of overall fleet Zero-Emission Vehicles (ZEV)</td>
</tr>
<tr>
<td>SoCal Edison</td>
<td>• 100% of light-duty vehicles</td>
</tr>
<tr>
<td></td>
<td>• 30% of medium-duty vehicles</td>
</tr>
<tr>
<td></td>
<td>• 8% of heavy-duty vehicles</td>
</tr>
<tr>
<td></td>
<td>• 60% of forklifts</td>
</tr>
<tr>
<td>Portland General Electric</td>
<td>• 60% of all vehicles by 2030</td>
</tr>
<tr>
<td>Seattle City Light</td>
<td>• 50% GHG Reduction by 2025</td>
</tr>
<tr>
<td>SMUD</td>
<td>Zero emissions by 2030</td>
</tr>
</tbody>
</table>
Board Inquiry

The Board noted that if we accelerate 100% of fleet to zero emissions by 2030.

Important questions:
1. What will become of the replaced vehicles with useful life?
2. What factors do you consider in your decision making?
3. What are the trade-offs for early replacement?
### Make-up of SMUD’s fleet

<table>
<thead>
<tr>
<th>Class</th>
<th>Availability</th>
<th>% of Fleet ZEVs</th>
<th>Count</th>
<th>Annual Miles</th>
<th>Average Age</th>
<th>Replacement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pickups and vans</td>
<td></td>
<td>0%</td>
<td>294</td>
<td>2,438,750</td>
<td>10 years</td>
<td>3 to 6 years</td>
</tr>
<tr>
<td>Construction equipment</td>
<td></td>
<td>20%</td>
<td>225</td>
<td>9,907</td>
<td>10 years</td>
<td>10 to 15 years</td>
</tr>
<tr>
<td>Service trucks</td>
<td></td>
<td>4%</td>
<td>141</td>
<td>1,143,685</td>
<td>10 years</td>
<td>10 to 15 years</td>
</tr>
<tr>
<td>Light duty</td>
<td></td>
<td>100%</td>
<td>106</td>
<td>488,557</td>
<td>3.5 years</td>
<td>3 to 6 years</td>
</tr>
<tr>
<td>Bucket trucks</td>
<td></td>
<td>27%</td>
<td>93</td>
<td>993,097</td>
<td>5.5 years</td>
<td>10 to 15 years</td>
</tr>
<tr>
<td>Heavy duty</td>
<td></td>
<td>0%</td>
<td>68</td>
<td>327,711</td>
<td>12 years</td>
<td>10 to 15 years</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td></td>
<td><strong>13%</strong></td>
<td><strong>927</strong></td>
<td><strong>5,413,708</strong></td>
<td><strong>9.2 years</strong></td>
<td></td>
</tr>
</tbody>
</table>

- **Partially electrified**
- **Fully electrified**
- **Not available**

May 10, 2022

Board Strategic Development Committee and Special SMUD Board of Directors Meeting
## End of life

Various ways to measure

<table>
<thead>
<tr>
<th>Life cycle</th>
<th>Definition</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Accounting</strong></td>
<td>Asset value has depreciated to $0</td>
<td>Purchased for $100k, 10-year straight line depreciation, -$10k per year, 10-years value is $0</td>
</tr>
<tr>
<td><strong>Financial</strong></td>
<td>Asset costs more to repair than it would to replace</td>
<td>Vehicle accident damage, significant engine or other key component failure before end of life</td>
</tr>
<tr>
<td><strong>Economic</strong></td>
<td>The period during which it remains useful to its owner</td>
<td>Technology becomes obsolete or work practices change</td>
</tr>
<tr>
<td><strong>Environmental</strong></td>
<td>Vehicle engine emissions out of compliance</td>
<td>No longer permitted to run the piece of equipment, fines and other operational constraints</td>
</tr>
<tr>
<td><strong>Physical</strong></td>
<td>The asset no longer functions</td>
<td>Motor or other features fail beyond repair</td>
</tr>
</tbody>
</table>
Two concepts; reactive maintenance vs. optimization

<table>
<thead>
<tr>
<th>Factor</th>
<th>Reactive Maintenance</th>
<th>Optimization</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maintenance costs</td>
<td>Low to none</td>
<td>Higher</td>
</tr>
<tr>
<td>Capital costs</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Reliability</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Performance</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Emissions</td>
<td>Higher</td>
<td>Lower</td>
</tr>
</tbody>
</table>
Current replacement strategy

Optimization replacement strategy

- Perform preventative maintenance
- Keep reliability and performance high
- Replace higher emitting vehicles ahead of compliance
- Light duty replaced on shorter economic life cycles (3 to 6 years)
- Medium/heavy duty longer economic life cycles (10 to 15 years)
- Send all replaced vehicles to auction for resale
Replaced vehicles resale value

Past...

- **# of Vehicle Sold**
  - 2017: 56
  - 2018: 67
  - 2019: 98
  - 2020: 84
  - 2021: 101

- **Net Proceeds ($000)**
  - 2017: $292
  - 2018: $548
  - 2019: $749
  - 2020: $562
  - 2021: $947

Future...

- **Annual Replacements and Resale Value**
  - **Resale Value $**
    - 2022: $0
    - 2023: $200,000
    - 2024: $400,000
    - 2025: $600,000
    - 2026: $800,000
    - 2027: $1,000,000
    - 2028: $1,200,000
    - 2029: $1,400,000
    - 2030: $1,600,000

- **Number of Units Replaced**
  - 2022: 20
  - 2023: 40
  - 2024: 60
  - 2025: 80
  - 2026: 100
  - 2027: 120
  - 2028: 140
  - 2029: 160
  - 2030: 180

$17.7M value in aggregate through 2030
# Alternatives and trade-offs

<table>
<thead>
<tr>
<th>Alternatives</th>
<th>Pros</th>
<th>Cons</th>
</tr>
</thead>
</table>
| Disposal before end of life (take off road) | • Encourages electrification  
• Eliminates emissions | • Not available to used car market  
• Creates waste  
• Increases energy requirements for new vehicle production  
• Loss of resale value |
| Sell vehicle into auction (remains on road, not at SMUD) | • Resale value from auction  
• Optimized asset management costs  
• Reduced maintenance  
• Higher reliability | • May contribute to internal combustion engine (ICE) vehicle continuing to operate for unknown period  
• Lose opportunity to influence emissions  
• Lose opportunity for future decision making for that vehicle |
| Wait for zero emission options to replace (extend life of vehicles at SMUD) | • Will have more direct control over replacement and emissions at SMUD | • May reduce reliability of vehicles  
• Increases maintenance costs |
Recommendations

• Highest emission vehicles will be eliminated and replaced first
• Extend life of vehicles to match when zero emission options become available in the market
• Adjust asset management approach
  • Additional fleet in ready reserve as back-up to ensure reliability
  • Lower capital near term, increases later
  • Increased maintenance costs
  • Foregone resale value
• Continue grants and pilot projects
• Develop and forge new partnerships

<table>
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<th>Class</th>
<th>Current</th>
<th>Future</th>
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<tbody>
<tr>
<td>Pickups and vans</td>
<td>3 to 6 years</td>
<td>3 to 6 years</td>
</tr>
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<td>Construction equipment</td>
<td>10 to 15 years</td>
<td>12 to 18 years</td>
</tr>
<tr>
<td>Service trucks</td>
<td>10 to 15 years</td>
<td>12 to 18 years</td>
</tr>
<tr>
<td>Light duty</td>
<td>3 to 6 years</td>
<td>3 to 6 years</td>
</tr>
<tr>
<td>Bucket trucks</td>
<td>10 to 15 years</td>
<td>12 to 18 years</td>
</tr>
<tr>
<td>Heavy duty</td>
<td>10 to 15 years</td>
<td>12 to 18 years</td>
</tr>
</tbody>
</table>