Exhibit to Agenda Item #1
SMUD Fleet Electrification Strategy

Board Strategic Development Committee and Special SMUD Board of Directors Meeting
Tuesday, November 30, 2021, scheduled to begin at 5:30 p.m.
Virtual Meeting (online)
Introduction

Transportation = 25% total U.S. emissions

Transportation = Largest source of emissions in California

Sacramento = 6th worst city in nation for air pollution

Public comment may be submitted via e-mail to PublicComment@smud.org.
Our mission; demonstrate leadership

**Accelerate**
local, regional, and state adoption of electric transportation

**Catalyze**
the market for commercial fleet vehicles & equipment

**Influence**
community inclusive economic and workforce development

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Key SMUD fleet electrification milestones

- 100% sedans electrified
- Zeus contract and fleet electrification strategy
- Transitioned to renewable diesel
- Increased hybrid bucket investment
- Charging infrastructure investment
- Electric cable pullers
- 100% sedans electrified

Road to fleet electrification

% of fleet with electric application:
- 2016: 6.5%
- 2017: 6.6%
- 2018: 7.3%
- 2019: 12.5%
- 2020: 13.0%

Fuel economy (miles/gallon):
- 2016: 7.5
- 2017: 8.0
- 2018: 8.6
- 2019: 8.4
- 2020: 9.1

% of fleet with electric application:
- 2016: 13,144
- 2017: 6,460
- 2018: 5,886
- 2019: 6,915
- 2020: 6,091

Total MT CO2e emissions (anthropogenic & biogenic):
- 2016: 13,144
- 2017: 6,460
- 2018: 5,886
- 2019: 6,915
- 2020: 6,091

Electric miles driven (excluding hybrids):
- 2016: 2,462
- 2017: 14,625
- 2018: 39,992
- 2019: 66,974
- 2020: 52,917

Transitioned to renewable diesel
Implemented GPS
Started Nissan Leaf pilot

100% sedans electrified

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Snapshot of SMUD’s operational fleet

927 fleet assets

13% electrified

5,413,708 miles driven

$9.4 million Total Fleet capital spend

9.1 miles per gallon Fuel economy

$.82 cents per mile Maintenance cost

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Where we’re headed

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Breakdown of SMUD’s operational fleet

Current focus

- **Pickups & vans**: 294 units, 0% electrified. 2,438,750 annual miles driven
- **Bucket trucks**: 93 units, 30% electrified. 993,097 annual miles driven
- **Light duty**: 106 units, 48% electrified. 488,557 annual miles driven

Current focus = 50% of the fleet that drives 70% of the miles

Future focus

- **Heavy duty**: 68 units, 0% electrified. 327,711 annual miles driven
- **Service trucks**: 141 units, 4% electrified. 1,143,685 annual miles driven
- **Construction equipment**: 225 units, 14% electrified. 9,907 annual miles driven

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Influences on fleet electrification

Technology
- Vehicle to grid, Vehicle to business
- Software
- Telecommunications
- Hydrogen cell technology

Policy & regulations
- SD-7 environmental policy
- California Air Resource Board regulations
- Rule 2, 6, and 16 – facilities fees, demand charges

Infrastructure
- Equipment
- Power supply
- Destination & on-route charging

Customers
- EV charging rates
- Charging as a service program (advisory, design, construction)
- Incentives

Vehicle innovations
- California Mobility Center
- Original equipment manufacturers
- Zeus electric chassis work trucks
- Vehicle supply

SMUD
- Change management
- Intellectual Property
- Revenue/value
- Equity
- Trust

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Commercial fleet perspective

Leadership & technology

Infrastructure

Fleet Management

Safety, regulation & customers

Maintenance & affordability

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Electrification strategy

Integrate proven, existing technology

Pilot & adopt new technology under dev.

Partner to influence change & adoption

Benefits

Reduce maintenance costs & reduce emissions

Re-assess, adjust, prioritize, scale

Influence manufacturers, change behaviors & expectations, spur economic & workforce dev.

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

- Light duty original equipment manufacturer vehicles available
- Original equipment manufacturer pickups released
- R&D project and Vehicle 2 Grid
- Zeus all-electric trucks at SMUD
- Service trucks pilot
- E-bucket pilot
- Heavy duty and construction equipment pilots

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Integrate proven, existing technology

2021  2022  2023  2024  2025  2026  2027  2028  2029  2030

Integrate proven, existing technology

Light duty original equipment manufacturer vehicles

Original equipment manufacturer pickups

Accelerate local, regional, and state adoption of electric transportation

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Pilot & adopt new technology under dev.

2021 2022 2023 2024 2025 2026 2027 2028 2029 2030

- R&D projects and Vehicle 2 Grid
- Zeus all-electric work trucks
- Service trucks pilot
- E-bucket pilot
- Heavy duty

Catalyze the market for commercial fleet vehicles & equipment
Partner to influence change & adoption

Influence community inclusive, economic and workforce development

- Aggregate commercial fleet demand
- Change behaviors and expectations
- Attract technology and manufacturing to the region

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Estimated investment & benefits

Status quo

- $100M capital investment ($10M annually)
- $41M fleet maintenance ($4.1M annually)
- $20M fuel expense ($2M annually, gasoline and diesel)
- 6,091 MT CO2 emissions annually

Estimated investment

- $200M estimated investment
- $20M to $40M estimated grant funding
- ~$2M estimated charging infrastructure investment

Benefits

- $4M reduced maintenance expense through 2030, +20% reduction annually thereafter
- $9M fuel expense reduction through 2030, ~$2M reduction annually thereafter
- 26,644 MT CO2 emissions eliminated through 2030
- Demonstrate leadership in electric transportation
- Align w/ SMUD 2030 Zero Carbon Plan

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Driving toward a Clean PowerCity

- Catalyze the market
- Accelerate adoption
- Influence economic & workforce dev.

25% total U.S. GHG emissions

Largest GHG source in California

6th most polluted city in the country

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