

Exhibit to Agenda Item #1e

Zero Carbon Energy Solutions 2022 Proposed Budget.

Board Finance & Audit Committee and Special SMUD Board of Directors Meeting
Tuesday, November 9, 2021, scheduled to begin at 5:30 p.m.

Virtual Meeting (online)

Zero Carbon Energy Solutions

2022 Proposed Budget & Initiatives

Lora Anguay
Chief Zero Carbon Officer



Business Segments & Functions



Power Generation	Advanced Energy Solutions	Commodity, Procurement & Sales	New Business Development
Hydro Generation	Research & Development	System Economic Dispatch for Load	New Business Development
License Implementation	Program Planning & Support	Energy Trading	California Mobility Center
Thermal Generation	Residential Program Implementation	Power / Gas Contracts & Reserves	
Renewable Generation	Commercial Program Implementation	Energy Imbalance Market	
Gas Pipeline		Energy Settlements	
Regulatory Compliance		Optimize Energy Operations Assets	
Rancho Seco Fuel Storage			
Project Development			



2030 Zero Carbon Plan Summary



2021

2023

2025

2027

2030

Reliability studies



McClellan



Campbell



Carson



Procter & Gamble



Cosumnes

5MW



100MW



550MW



91MW



250 MW



550-950 MW

300-500 MW

450-850 MW

100-220 MW



VPP Pilots



V2G Pilots

44-254 MW



Research game changing tech: Storage, biofuels, sequestration



Partnerships, grants, joint ventures

Identify internal savings

Assess & mitigate financial risks

Regulatory and legislative advocacy for zero carbon solutions

Re-assess, adjust, prioritize, scale



Safety & Reliability

- Maintenance on Hydro Generation Asset SD-4
- Thermal Plant Maintenance & Overhauls SD-4
- Fire System Upgrades at Loon Lake SD-6
- Control Upgrades at Multiple Hydro Facilities SD-4, 16
- Increase grid monitoring and control capabilities SD-4, 9, 10
 - Continue co-development of Distributed Energy Resources Management System (DERMS)
 - Complete dynamic transmission line ratings pilot
 - Test smart inverters





Affordability

- Pursue new net revenue opportunities
 - Leverage existing partnerships and new opportunities

- Power Generation operational excellence measures
 - Camino Unit 1 generator rehabilitation project
 - Campbell Steam turbine overhaul deferral

SD-19



SD-2





Organizational Agility

- Ensure our processes are aligned with Operational Excellence
 - Implementation of 2030 Zero Carbon Project Management Office
 - Restructure Research & Development to align with the Zero Carbon Plan

SD-3, 10





Environmental Leadership

- Building Energy Efficiency and Electrification SD-9
 - Consolidate and optimize energy efficiency and building electrification programs to maximize carbon reduction
 - Expand and launch additional program offerings such as Home Energy/Carbon Reports, All Electric Smart Homes, and Express Heat Pump Water Heater replacement
- Energy Storage SD-7,9,10
 - Launch new programs and incentives to increase uptake of residential battery energy storage systems
 - Investigate additional distributed and long-term duration storage opportunities





Environmental Leadership

- Load Flexibility SD-4,7,9,10
 - Implement and launch new Virtual Power Plant (VPP) customer programs
 - Conduct research to develop estimates of grid and customer infrastructure impacts from electrification and plan for mitigation measures to accelerate growth

- Transportation Electrification SD-7,9,10
 - Expand programs and incentive offerings to support commercial and residential electric vehicles adoption
 - Expand eMobility hubs to increase access to zero emission transportation options in under-resourced communities





Environmental Leadership

- Green Pricing & Carbon Reduction SD-7,9
 - Implement enhanced options for voluntary renewable pricing and carbon free energy programs

- Demonstrate the potential to create habitat to sequester carbon for responsible power generation and land development SD-10





Environmental Leadership

- Thermal Transition SD-7,10
 - Investigate and assess alternative clean fuel options
 - Complete technical evaluation of options for Long Duration Energy Storage (LDES), Carbon Capture, as well as retirement determinations for McClellan and Campbell Power Plants

- Renewable Project Development SD-2,4,7,9
 - Solano Wind
 - Solar and battery storage projects





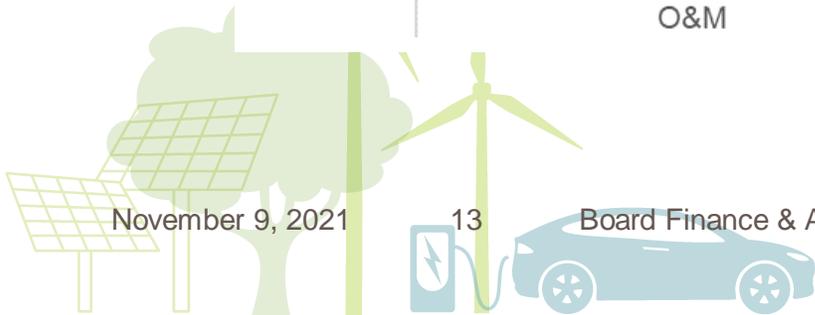
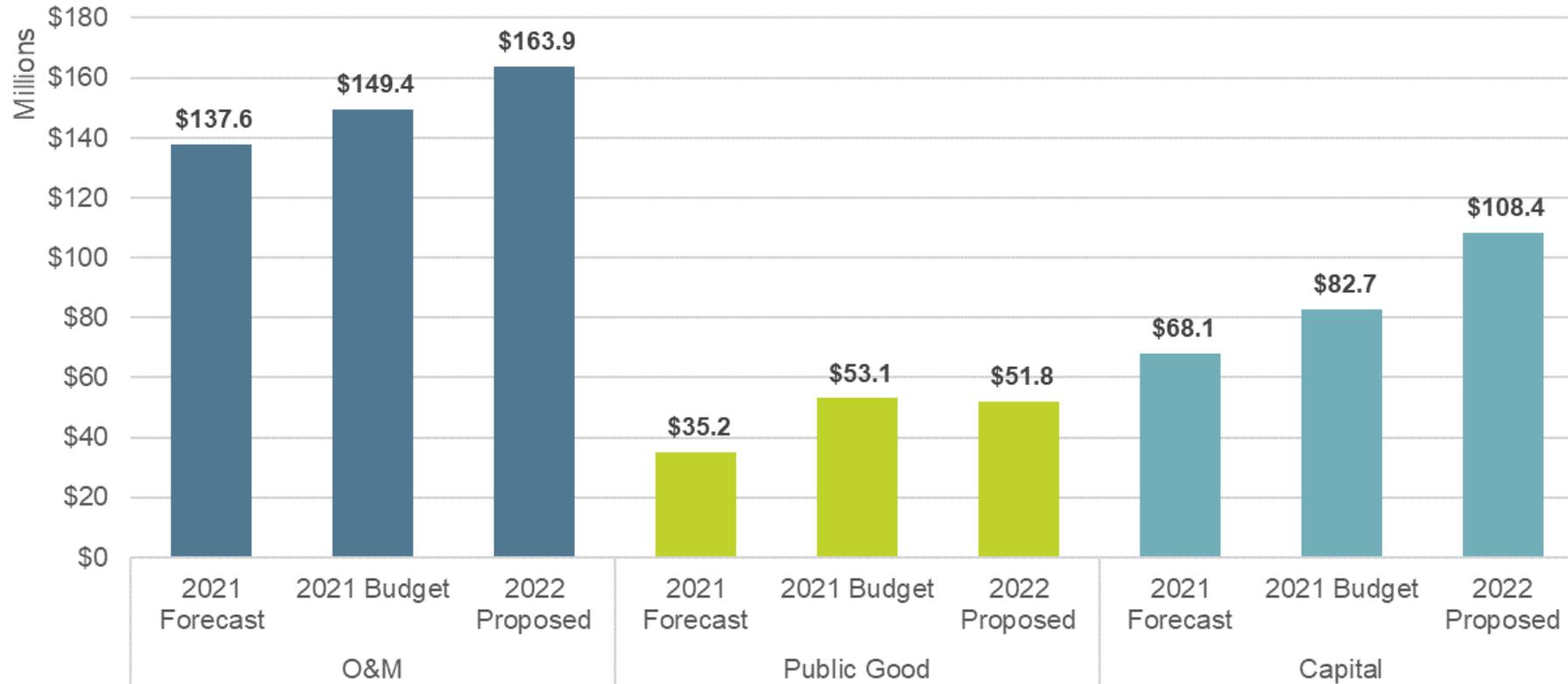
Community Vitality

- Upper American River Project (UARP) License Implementation Projects
 - Crystal Basin Recreational Facilities upgrades

SD-5



2022 Proposed Budget



Commodities Budget



2022 Commodity Budget

Cost (\$Million)	2021 Budget	2022 Proposed	\$ Change Proposed to Budget
Power Cost	\$251.2	\$215.0	(\$36.1)
Transmission Cost	\$30.2	\$28.8	(\$1.4)
Gas Cost	\$159.6	\$196.9	\$37.4
Total Commodity Cost	\$440.9	\$440.7	(\$0.2)

- In 2021 SMUD Water Year was about 60% of normal precipitation.
 - Reservoirs are starting in 2022 lower than normal leading to an increase in gas costs and higher percentage of SMUD's thermals than past years.

