

Exhibit to Agenda Item #2

Authorize the Chief Executive Officer and General Manager to:

- a. Enter into a multi-year strategic collaboration with **ESS Tech, Inc. (ESS)** to accelerate adoption of long duration energy storage technology in SMUD's service territory; and
- b. Enter into an acquisition agreement for nonstock security (e.g., warrants) in **ESS**, subject to the requirements of California Public Utilities Code section 12773 (MUD Act).

Board Finance & Audit Committee and Special SMUD Board of Directors Meeting

Tuesday, September 13, 2022, scheduled to begin at 5:30 p.m.

Virtual Meeting (online)

Table of Contents

- Overview
- 2030 Zero Carbon Plan Relevance
- Partnership Highlights
- Iron Flow Battery Basics
- Product Deployment and Use Cases
- Partnership Benefits
- Timeline of Phase 1
- Requested Board Action

Overview

- Long Duration Energy Storage (LDES) is key to SMUD's Zero Carbon ambitions
- Black and Veatch, an engineering and consulting firm, short listed 6 potential LDES companies, ESS has emerged as prime partnership candidate
- SMUD & ESS jointly developed a phased plan to pilot and ultimately deliver a multi-year partnership that will culminate in 200MW/2GWh of LDS by 2028
- Partnership will generate local jobs, education and training with academic partners, and culminate in an Assembly and Tech Support Center in Sacramento to serve the Southwestern United States
- This will be SMUD's first nonstock equity deal under AB689



2030 Zero Carbon Plan Summary

2021

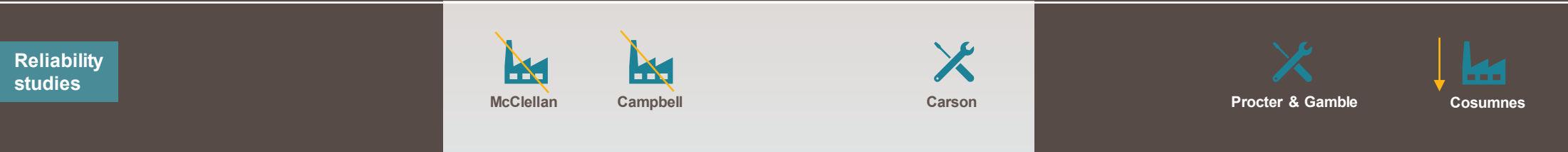
2023

2025

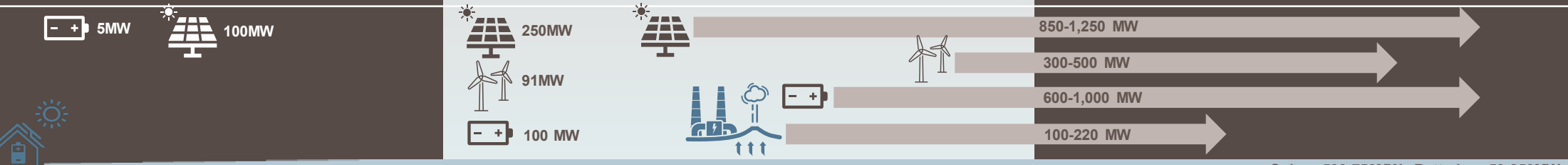
2027

2030

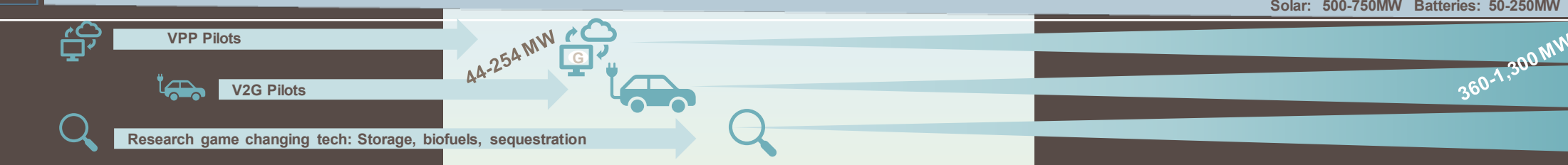
Natural gas generation repurposing



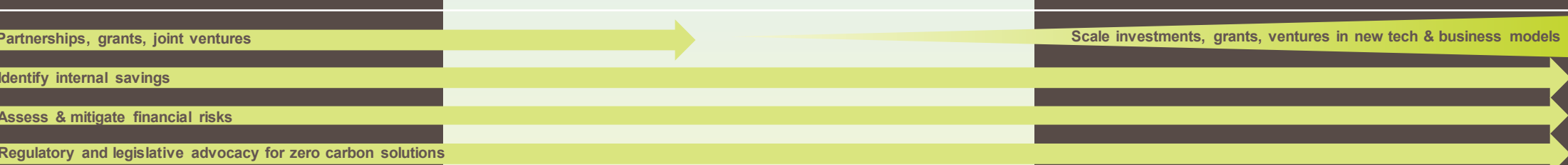
Proven clean tech



New tech & business models



Financial impact & options



Re-assess, adjust, prioritize, scale

Partnership Highlights

Multi-phased Partnership

Phase 1 (2022-2024)*

4 MW/24MWh

Phase 2 (2025-2026)

40MW/400MWh

Phase 3 (2027-2028)

156MW/1576MWh

*Note: at the end of each phase, there will be a “go/no go” decision for proceeding to next phase

Phase 1

Scope:

Establish a partnership with ESS
Execute pilot to deliver 4MW with 6-hr to 10-hr duration of LDES through flow battery technology.

Schedule:

Beginning 2022 with anticipated pilot results 2024

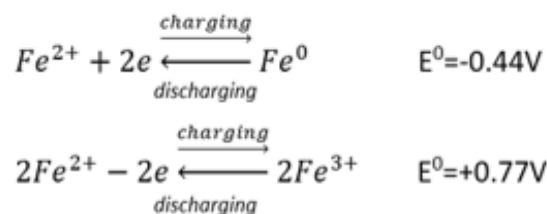
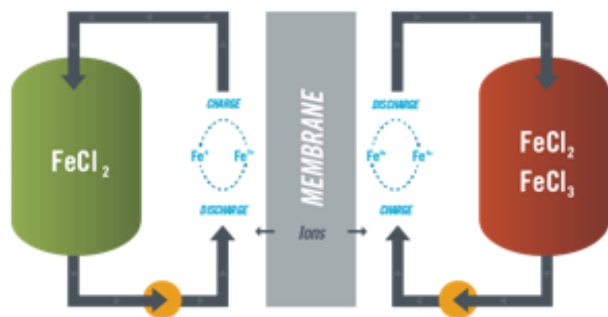
Budget:

\$31M Gross, less \$12M ITC (40%)

\$18M Net

Iron Flow Battery

Electrochemistry



- ✓ During charging iron collects (electroplates) on the negative electrode
- ✓ During discharging iron dissolves back into solution
- ✓ Passive design proton pump continuously refreshes electrolyte in closed-loop system

Environmental Attributes

Electrolyte = water, salt and iron

- Non-toxic
- Secure, reliable supply chain with no reliance on critical minerals
- No need for fire suppression, containment or hazmat restrictions
- Battery components substantially recyclable at end-of-life

Operating Attributes

- Unlimited cycling
- Designed for 25-year operating life with minimal annual O&M requirements

Product Deployment

Two distinct products will be deployed in Phase 1 including ESS's *Energy Warehouse (EW)* and *Energy Center (EC)*.



Use Cases: Resiliency, demand charge management, energy cost management, EV charging mitigation

Distribution capacity support, peak shifting, PV energy integration/optimization

Partnership Benefits

SMUD benefits

- SMUD's first warrant deal under AB689
- Escalating product discounts over phases of partnership
- Increased storage capabilities for the grid
- Increased reliability & accessibility of green energy
- Local job creation and training opportunities

ESS benefits

- Additional data on flow battery technology
- Increased public awareness and brand enhancement
- Commercial benefits

Phase 1 Timeline

2022

Dec

Feb

Apr

Jun

Aug

Oct

Dec

Feb

2024

Phase 1

4MW
(targeting 6-
10 hours
duration)

Order Energy Warehouse

Finalize site selection

Construction and Site Readiness

Energy Warehouse Installation

Startup and Commissioning
Energy Warehouse

Order Energy Center

Startup and
Commissioning Energy
Center

Energy Center Installation