

# Exhibit to Agenda Item #9

Provide the Board an informational overview of an opportunity for SMUD to partner with **Calpine Corporation** on a grant application under which SMUD would purchase the output of a proposed **Carbon Capture and Storage** project at the **Sutter Energy Center**.

Board of Directors Meeting

Wednesday, March 15, 2023, scheduled to begin at 6:00 p.m.

Auditorium, SMUD Headquarters Building

## Meeting objectives

- Inform the SMUD Board and community of a partnership opportunity with Calpine Corporation for a Carbon Capture and Sequestration (CCS) project that may be eligible to apply for a U.S. Department of Energy grant as well as federal tax credits.
- Discuss alignment with our 2030 Zero Carbon Plan.
- Share the public outreach process, schedule, and next steps.

# 2030 Zero Carbon Plan overview

Affordable . Reliable . Equitable



## Natural gas generation repurposing

Replace 2 power plants with renewable and storage resources and retool remaining 3 to minimize emissions

~\$2.5 billion investment



## Proven clean technology

Expand SMUD's renewable and battery storage resources up to 3.5x compared to today

Equivalent to energy needs of more than 600,000 homes

Support customer resources  
Growing rooftop solar and batteries



~\$2 billion investment



## New technology & business models

Pilot & scale new projects and programs

- 2x savings from energy efficiency & building electrification
- Education & demand flexibility
- Virtual power plants & vehicle-to-grid technology
- New grid-scale technologies

## Financial

- Pursue grants & partnerships
- Limit rate impacts to rate of inflation



## Maximize community benefits

- Keep affordable rates & reliable power
- Improve local air quality & overall community health
- Reduce regional impacts of carbon – drought, wildfires & extreme weather
- Create regional clean tech jobs
- Strengthen all communities
- Support under-resourced communities
- Involve our customers & community in this transition

Goal:

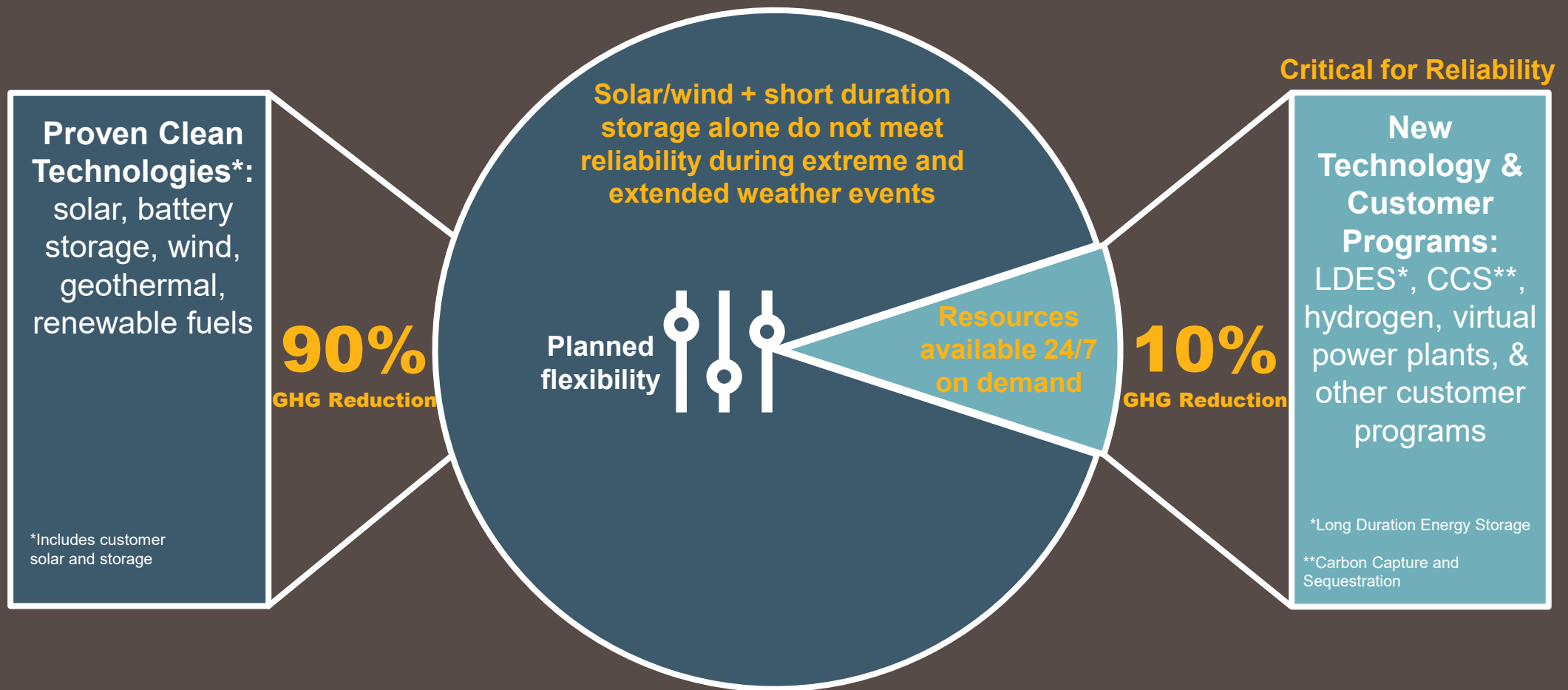
Eliminate CO<sub>2</sub> from SMUD's power supply



Thousands of new regional clean tech jobs

# 2030 Zero Carbon Plan – the 10% gap

It Takes a Portfolio Approach to Achieve Zero Carbon



# Current Power Purchase Agreement with Sutter Energy Center

- Commercial operation in July 2001.
- Located in Sutter County.
- Highly efficient, natural gas-fired, ~550 MW combined-cycle facility.
  - SMUD's current PPA: ~250MW, expires in 2026.
- First air-cooled, zero-liquid discharge plant in CA.
- Located within Balancing Authority of Northern California (BANC).
- 77-acre project site zoned industrial.



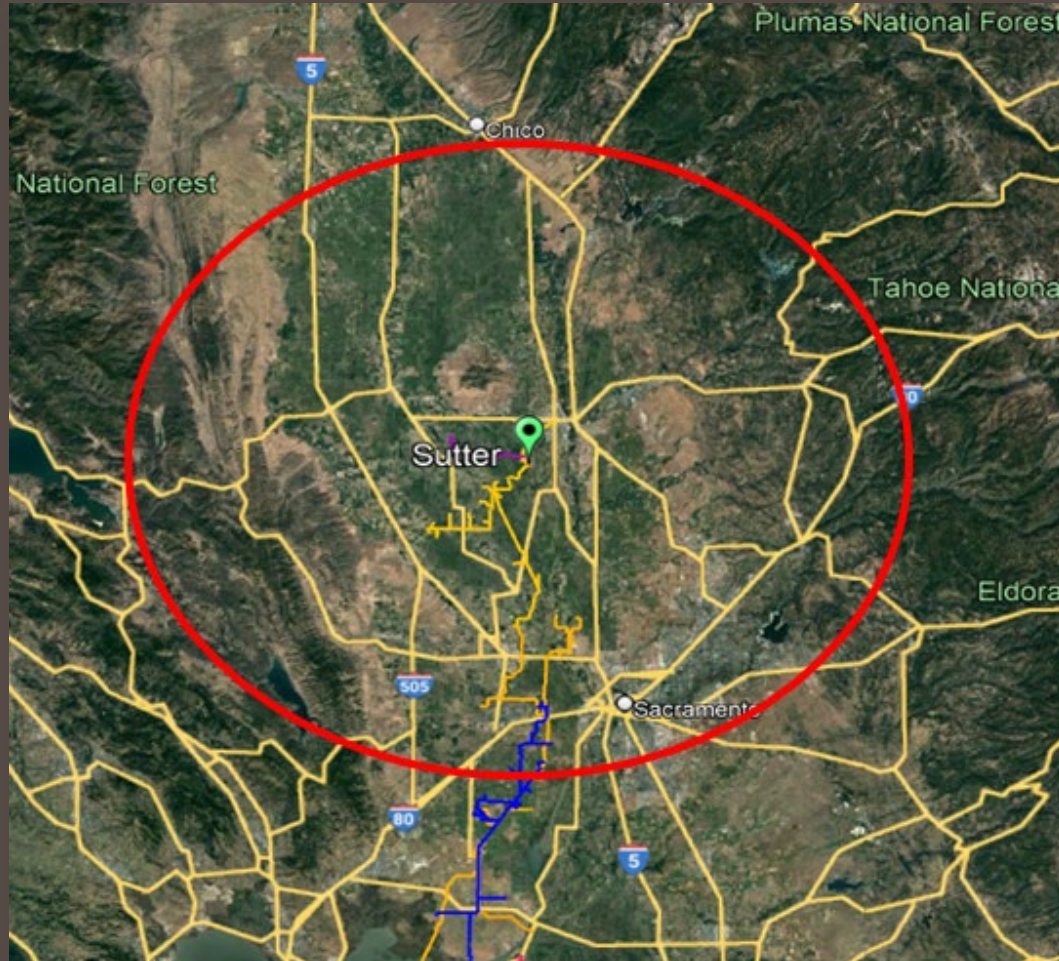


# Sutter Energy Center- CCS Opportunity

- Calpine is interested in SMUD/BANC partnership on a U.S. Dept of Energy CCS grant opportunity.
  - Seeking a 12-year term with SMUD.
  - Conversion of existing Natural Gas plant to include CCS.
- CCS Project Details:
  - Online date Jan. 1, 2027.
  - Up to 400 MW.
  - Up to 1.5 million metric tons GHG sequestered per year.
  - Capture expected to be 95-98%.
  - Air-cooled.
- Transport pipeline will look to use existing rights of way.
- Sequestration partner to develop, build, own and operate sequestration site.



# Sutter CCS retrofit is well-situated



## Excellent geology

According to LLNL\* study, the area around Sutter can store ~ 1,655 million tons of CO<sub>2</sub>.



## Nearby sequestration site

Opportunities for storage locations within 15 miles of the Sutter Energy Center.



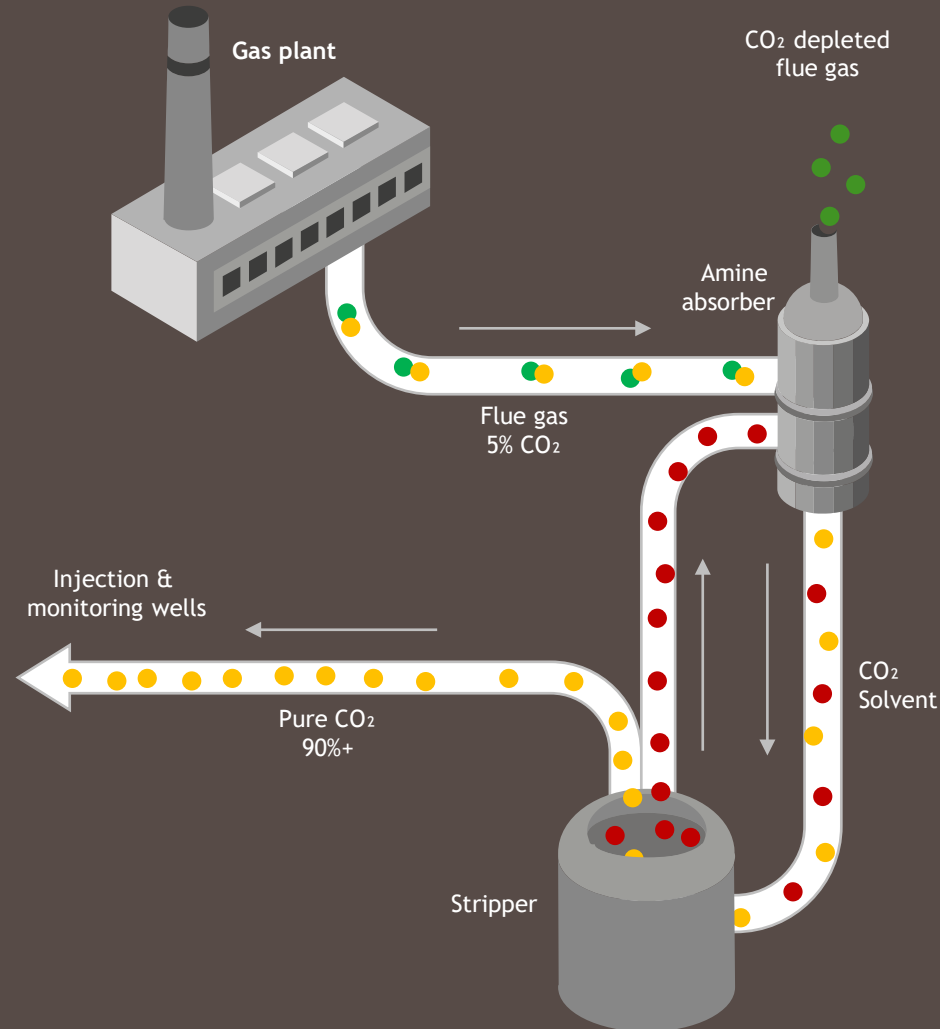
## Existing rights-of-way

Transport pipeline will look to use existing rights of way.

\*Lawrence Livermore National Laboratory

# Carbon capture and storage

*Critical in meeting California's climate goals.*



Capture technology is mature.



California's geology is ideal for storage.



Substantial federal and state support exists.



Power sector CCS enables hub development.



# Project portfolio benefits



Reduces GHG emissions in Sacramento sooner benefitting the communities surrounding our plants.



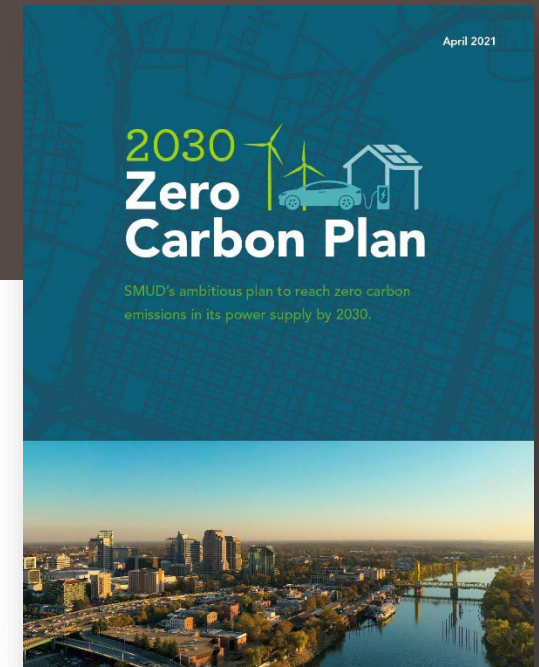
Provides a transitional clean resource to hydrogen and other clean fuels and technologies not yet mature.



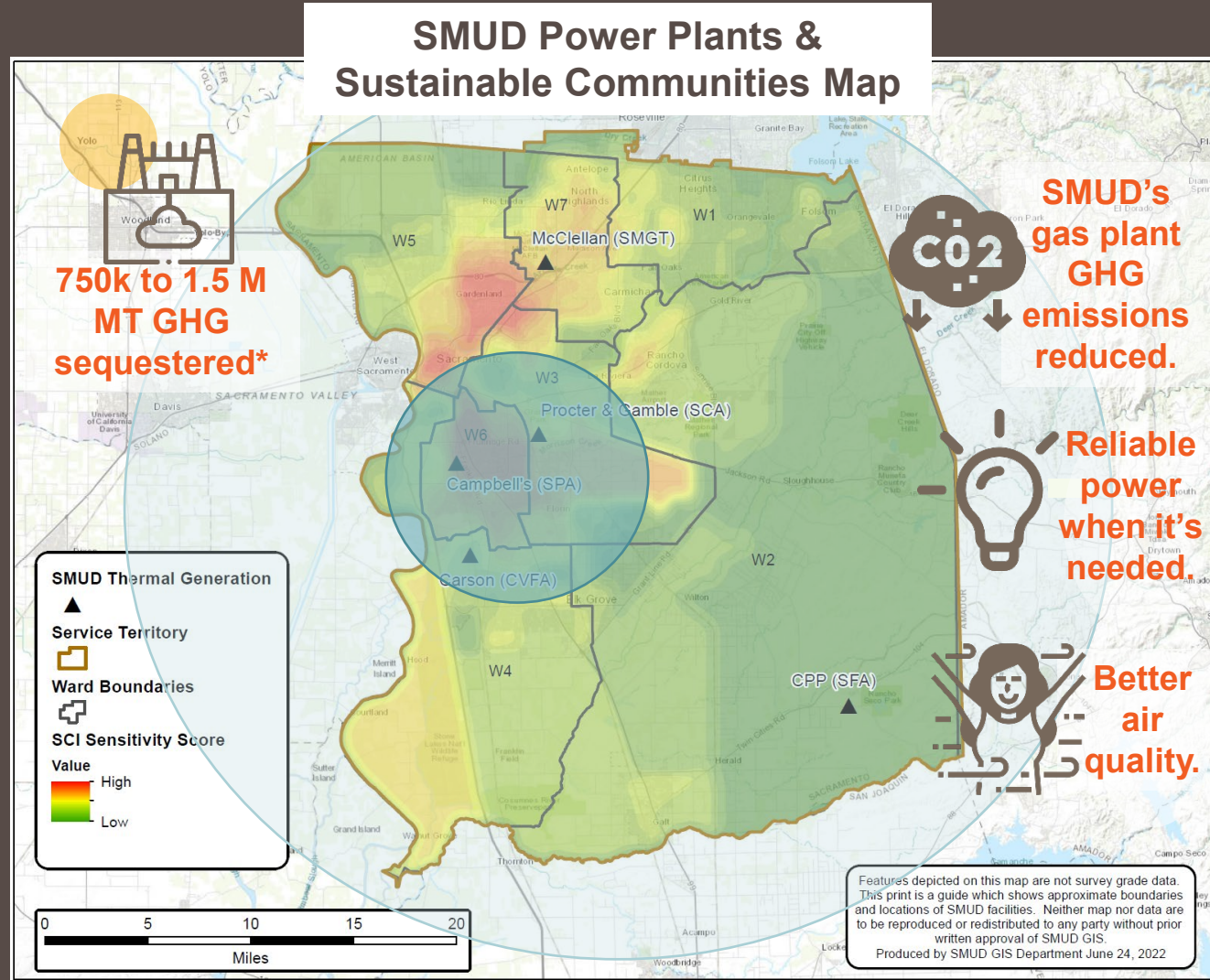
Supports SMUD's local reliability needs with clean, reliable, efficient, flexible 24x7 generation.



DOE funding opportunity significantly reduces the cost of this resource to SMUD.



# Emissions reduction potential



*\*Equivalent to removing 250k to 500k gas cars from the road.*

# Public outreach process & schedule

## April 2023

- Public workshop to discuss CCS and other 2030 Zero Carbon Plan technologies/programs.

## May 2023

- Board Committee meeting update, including report out on the project and feedback from public engagement.
- Board decision on CCS grant partnership and letter of intent to enter into offtake agreement.