Calpine at a Glance

*Calpine was founded in San Jose, California nearly 40 years ago on principles of sustainability*

Serve customers in **23 states**, Canada and Mexico

Largest **geothermal** power producer in the world

Largest **Natural Gas Combined Cycle** and Cogen fleet in the United States

More than **2,300** employees

**POWER GENERATION**

Natural gas, geothermal, battery storage & alternative technologies; best-in-class maintenance program

**INFRASTRUCTURE DEVELOPMENT**

Since 2000, constructed more **MW** in CA than any other entity. Significant battery storage and carbon capture projects in pipeline
Calpine in California

**Calpine owns and operates 7,425 MW in the West**

**Combined Cycle Gas**
- 6,326 MW combined cycle and cogeneration facilities
- Flexible, efficient, low emissions facilities

**Simple Cycle Gas**
- 374 MW peaking facilities
- Rapid start response to peak demand and load variations

**The Geysers**
- 725 MW geothermal (13 plants)
- Stable, baseload renewable
- World’s largest geothermal resources developed for electric generation
- Battery storage development

**Carbon Capture**
- Pilot projects with Blue Planet and ION at CPN facilities
- Full scale CCS development at Sutter Energy Center
- Partner in CARBONSafe II
- DOE funded FEED study at Delta Energy Center

**Storage / Solar + Storage**
- Over 1,000 MW of storage projects operating or in advanced development
- 105 MW Solar project

Excluded from image: CCGTs in Oregon and Arizona
Highly efficient ~550 MW natural gas combined cycle power plant

Located near Yuba City in Sutter County

Commercially operational July 2001

Long-standing cooperation with the local community
First air-cooled, zero-liquid discharge plant in California
Financial support to levee district

Critical for system and local reliability
State agency analyses show Natural Gas Combined Cycle plants critical to meet electric reliability through 2045
Supplies power to SMUD and CAISO
Sutter Decarbonization Project

- Post-combustion carbon capture retrofit for full 2X1 combined cycle power plant for 2027 operation
- Captures ~1.75 mm tonnes per year at baseload operation; roughly equivalent to taking 326,000 cars off the road annually
- >95% CO₂ capture efficiency
- **First-in-the-world** air-cooled capture facility
- Investigating upgrades to existing facility to increase efficiency
- Provides opportunity for significant investment and fiscal support for region
- Entire project maintains a 10-mile buffer to DACs per the SB535 Disadvantaged Communities Map, which includes CalEnviroScreen 4.0
ION Clean Energy optimizes a technology that has been deployed for more than 100 years to make significant improvements as follows:

- Decreased power consumption
- Extended solvent life
- Lower emissions

Current DOE-funded pilot:
- Operational experience (including internships)
- Support permitting emission estimates
- Optimize design parameters
ION Carbon Capture Pilot at Calpine’s Los Medanos Energy Center

*DOE funded carbon capture pilot at similar power plant in Pittsburg, CA.*
Sutter County CO2 Transport

Utilizes existing pipeline routes and state of the art technology to protect public health and safety

**Transportation**

- CO₂ pipeline route follows existing rights-of-way and located away from population centers
- Front End Engineering and Design Study completed
- State of the art fiber optic cable leak detection system installed and monitored to ensure the safe operation of the pipeline.
- Remote automated shutoff valves will provide safe isolation in the event of a leak
- Coordination with local emergency responders to ensure safe operation

The entire project maintains a 10-mile buffer to SB 535 DACs
Sutter County CO2 Storage

Sutter region has excellent geology for safe, secure and permanent storage

Storage

- 1PointFive brings expertise as storage partner

- Optimal storage location and capacity verified by three independent engineering evaluations including LLNL

- DOE CarbonSAFE Phase II grant will validate characterization and safety

- US EPA well application under preparation
  - Regulations require extensive monitoring, reporting and verification
• Calpine-funded integrated FEED study underway; pilot projects will inform FEED

• Extensive local, state and federal environmental and regulatory review
  – Project will submit CEC Amendment in May 2023
  – CEC CEQA review provides a robust, comprehensive, and inclusive environmental review process

• Ongoing, proactive community outreach is a critical part of any Calpine project.

• To date, early stakeholder engagement has identified and responded to the following:
  – Water use
  – Noise
  – Criteria pollutants

• Calpine intends to build this project under a Project Labor Agreement
Community Benefits Plan Development

**Labor**
- Calpine negotiating a Project Labor Agreement (PLA) to cover project construction
- Calpine to offer learning and development opportunities for job promotion and professional development
- Company to continue to sponsor co-op programs with students from local community colleges

**Diversity, Equity, Inclusion and Accessibility**
- Expanded relationships with minority-serving institutions including career fairs, jobs postings, contracts, apprenticeships, and information-sharing (Including Yuba College, Los Medanos College, and UC Davis)
- Expanded internship program including a program to research and present to community members projects related to environmental justice concerns
- New company-wide target of 10% of supplier spend dedicated to local minority-owned business enterprises

**Environmental Justice**
- Literature review conducted and area mapped using tools including the Climate and Economic Justice Screening Tool, EJScreen, CalEnviroScreen4.0, and the DOE Energy Justice Mapping Tool
- Quantifying, tracking, and updating throughout the life of the project the flow of impacts to communities, including benefits, neutral impacts, and potential harms
- Project design minimizes the potential for harmful impacts: power block upgrade to increase efficiency, leak detection equipment to minimize transport risks, air cooled condensers to minimize water usage, etc.

**Stakeholder Engagement**
- One-on-one small meetings with community groups and Sutter-specific stakeholders kicked off in September 2022, more than 6 months prior to permit filing
- Two public workshops held in May
- Community feedback directly impacts engineering design, broader project design and implementation
- Engagement will continue throughout the lifetime of the project
Calpine is committed to engaging with and listening to the public, community, stakeholders and policymakers.
Sutter Decarbonization Project Timeline

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