



# PHMSA WORKGROUP 2

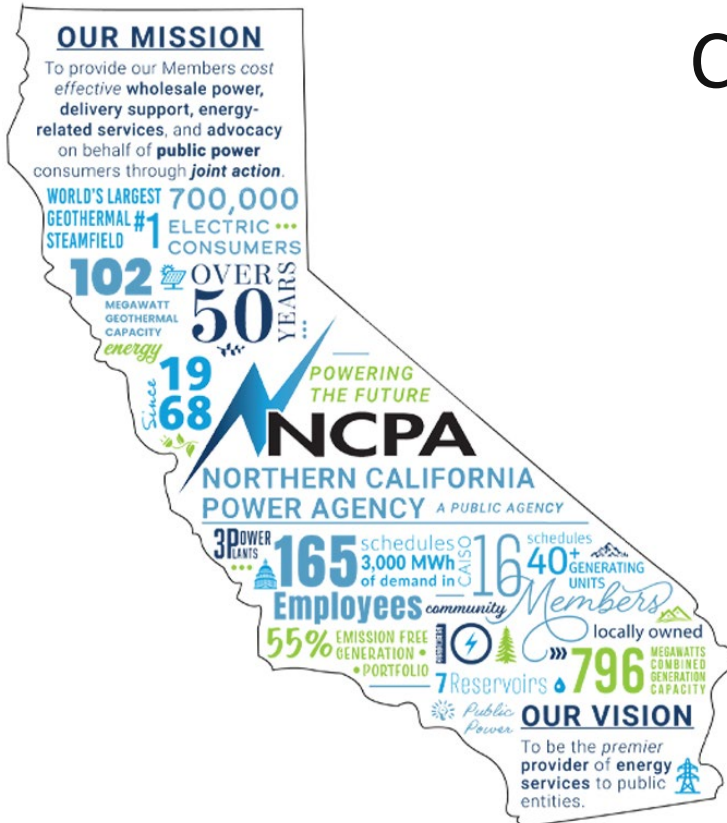
## Underground H2 Storage

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# NCPA – A Public Agency

## California Joint Powers Agency

- Est. 1968
- 16 Member Agencies
- Generator Owner & Operator
  - 3 Power Generation Groups
  - Hydroelectric, Geothermal, & Combustion Turbines
  - Combined Capacity of ~800MW



# NCPA & The Combustion Turbine Group

- Energy Efficiency & Environmental Stewardship
  - 55% Carbon Free Portfolio
- Lodi Energy Center (LEC)
  - 304MW 1x1 Fast Start Combined Cycle Plant
  - Upgraded in 2020 to burn up to 45% H<sub>2</sub> (by vol).
  - Completed Feasibility Study of H<sub>2</sub> production & storage in 2020



## H2 & Underground Storage

Conclusions from our Feasibility Study:

- ❖ *“Although numerous electrolyzer facilities exist worldwide, hydrogen energy storage facilities on the scale considered in this study are a relatively new phenomenon.*
- ❖ *Capital costs for hydrogen production and storage equipment remain high and contributed significantly to levelized costs.”*

- Large scale H2 storage costs contribute to entry barrier
- Underground storage presents a unique opportunity to leverage existing assets
- NCPA is actively exploring options to lower storage costs

