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<td>Presentation - Willow Rock Energy Storage Center for 8-11-22 Informational Hearing</td>
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<td><strong>Filer:</strong></td>
<td>Amanda Cooey</td>
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<td><strong>Organization:</strong></td>
<td>Ellison Schneider Harris &amp; Donlan LLP</td>
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Willow Rock Energy Storage Center

CEC Informational Hearing – August 2022
Hydrostor Introduction

- Company Background
- Technology Overview: Advanced Compressed Air Energy Storage

Willow Rock (formerly ‘Gem’) Energy Storage Center

- Willow Rock – Site Vicinity & Location
- Project Overview
- Conceptual Site Design
- Project Fundamentals & Overall Timeline
- Economic and Fiscal Benefits
- Project Permitting Process – CEC Lead Agency by California Statute

Questions & Answers
About Hydrostor

Hydrostor is the global leader in Advanced Compressed Air Energy Storage (A-CAES)

Founded: 2010

Offices: Toronto, Canada (HQ), SF Bay Area, Adelaide, Australia (satellite)

Operating Facilities: 2 (Canada – Toronto Hydro; Canada – IESO)


Project Pipeline: 900+ MW commercially bid in CA in 2020, 4 GW project pipeline (focused on U.S., Canada, Australia)

A-CAES is a breakthrough for long-duration energy storage:

- Uses only water, pressurized air and commercially proven equipment to provide long-duration, emissions-free storage.
- Provides similar characteristics to pumped hydro storage, but with the key advantage of being able to flexibly site where the grid needs it.
How Advanced-CAES Works (A-CAES)

A-CAES integrates proven technologies and construction approaches in innovative ways to produce a superior long-duration grid-scale energy storage solution

**STEP 1**
Compress air using electricity

*Electricity runs a compressor to produce heated compressed air*

**STEP 2**
Capture heat in thermal store

*Heat is extracted from the air stream and stored in a proprietary thermal store*

**STEP 3**
Store compressed air in purpose-built cavern

*Air is stored in a purpose built cavern using water to maintain constant pressure*

**STEP 4**
Convert the air to Electricity

*Water forces air to the surface where recombined with heat and expanded through a turbine*

**Unique to Hydrostor**

- **STEP 3**
  Store compressed air in purpose-built cavern
  - Air is stored in a purpose built cavern using water to maintain constant pressure

- **STEP 4**
  Convert the air to Electricity
  - Water forces air to the surface where recombined with heat and expanded through a turbine

- **Unique to Hydrostor**

- **Major Equipment**: Utilize off-the-shelf, commercially proven power generating equipment, including air compressors, turbo-expanders, generators and heat exchangers

- **Underground Storage Caverns**: Purpose-built underground cavern construction using industry standard and well-proven mining techniques

- **Efficiency**: Round Trip Efficiencies (RTE) of the A-CAES process are approximately 60%
Willow Rock Energy Storage Center - Vicinity Map
Willow Rock (formerly Gem) Transmission Routes
Willow Rock A-CAES Project Overview

Willow Rock A-CAES Energy Storage Project:

- **Location**: Near Rosamond, CA (Whirlwind Sub)
- **Size/Duration**: Up to 500 MW with 8 hours storage
- **Development**: 60 acre site control complete, Interconnection Phase 2 – Full Deliverability, AFC submitted to CEC; Data Adequate: July 2022
- **Commercial**: Active negotiations currently underway with multiple California Load Serving Entities
- **Target COD**: First Half 2028

### Permitting

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**Project Milestones Dates:**

- *File Permit Application (AFC): Q4 2021*
- *Start of Construction: Q1 2024*
- *Commercial Operations Date: Q2 2028*
Willow Rock – Preliminary Site Layout
Willow Rock Project – Conceptual Bird’s Eye View
Representative Willow Rock Visual Renderings

Looking South from off Tehachapi-Willow Springs Rd

Looking East from off Hamilton Rd
Willow Rock A-CAES: Project Fundamentals

- Project Site Control: 75 year Lease executed
- Project Commercial Life: 50+ years
- Transmission Interconnections (230 kV):
  1) SCE Whirlwind Substation (CAISO), and/or
  2) Proposed LADWP Rosamond Substation
- Water Needs – All Non-Potable Water Sourcing:
  - Initial Reservoir Fill: 450-550 acre-feet
  - Annual Makeup (Preliminary): 20 to 60 acre-feet per year
- Expected Geology: Quartz Monzonite @ cavern depth (granitic formation)
- Cavern Volume: ~1.0 million cubic yards (~1.3 MCY rock volume @ surface)
- Project will meet or exceed all applicable noise standards
- No use of natural gas – Plant will be 100% emissions-free
Willow Rock A-CAES: Economic and Fiscal Benefits

- **Total Installed Cost:** $1+ billion

- **Construction Jobs:**
  - Average Construction Workforce: ~250 over 4+ years
  - Peak Construction Workforce: ~700
  - Total Construction Labor: ~2 million man-hours

- **Operations & Maintenance Jobs:** 25-40 Full-time equivalent positions

- **Fiscal Benefits:** Over $500 million in Regional Direct & Indirect Economic impacts

- Significant contribution to property tax base. Unlike state-imposed solar tax exemptions, Willow Rock is not exempt from property taxes.

- Hydrostor will work closely with Kern County to establish a Community Benefits Program in connection with the project
Lead CEQA Agency for A-CAES Permitting

The California Energy Commission (CEC) has determined that Willow Rock is a thermal power plant 50 megawatts or greater, and thus subject to Commission jurisdiction. Nevertheless, Kern County, Willow Rock and the CEC are working cooperatively on the project.

- Application for Certification (AFC) submitted to the CEC – December 2021
- AFC Deemed Data Adequate by the CEC – July 2022
- CEC serves as Lead Agency for CEQA under their CEQA functionally equivalent AFC review and licensing process
- All Local, State and Federal Responsible Agency reviews – including Kern County – are incorporated into the CEC licensing process. There will be ample opportunity to participate in and provide critical input throughout the AFC process.
- Hydrostor is fully committed to working directly with Kern County and local stakeholders to address any potential concerns
Contact Information

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