CleanEnergyGroup

Beyond Lithium, Part 1:
Hydrostor's Advanced Compressed Air Energy Storage

April 8, 2026

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Clean Energy Group

Affordable, reliable, clean energy for all.

Climate Resilience and Community Health

Distributed Energy Access and Equity

Energy Storage and Flexible Demand

Fossil Fuel Replacement

WEBINAR SPEAKERS

Beyond Lithium, Part 1: Hydrostor's Advanced Compressed Air Energy Storage

Manuel Esquivel
Senior Manager of Regulatory Affairs
Hydrostor

Seth Mullendore
President/Executive Director
Clean Energy Group
(Moderator)

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Upcoming Webinars

Virtual Power Plants and Energy Justice
(April 22)

Beyond Lithium, Part 2: ESS Tech's Iron Flow Battery
(June 3)

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HYDROSTOR

Clean Energy Group Webinar Beyond Lithium Energy Storage

April 8, 2026 – Manuel Esquivel

Agenda

1. Hydrostor and A-CAES Intro
2. Why LDES and Why Now
3. A-CAES explained
4. Economic and Community Benefits
5. Hydrostor’s Operating Plant and Development Projects
6. Pathways for LDES and A-CAES investment

Hydrostor at a Glance

Founded in 2010 | 100+ Employees | US $500M+ raised

We are a clean technology company dedicated to developing essential long duration energy storage infrastructure.

Our compressed air technology operates on a compact footprint with flexible siting to deliver utility-scale renewable energy storage capacity of eight hours or more.

Project highlights:

1	2	15	7
Operational project	Late-stage projects	Projects in the pipeline	Total pipeline capacity (GW)

Key investors:

Goldman Sachs Asset Management

CPP Investments

CGF Canada Growth Fund

HYDROSTOR

Canada | United States | Australia

A-CAES is a Flexible Storage Solution

Proven Technology
Our systems use proven OEM equipment, including air compressors, turbo expanders, generators, and heat exchangers

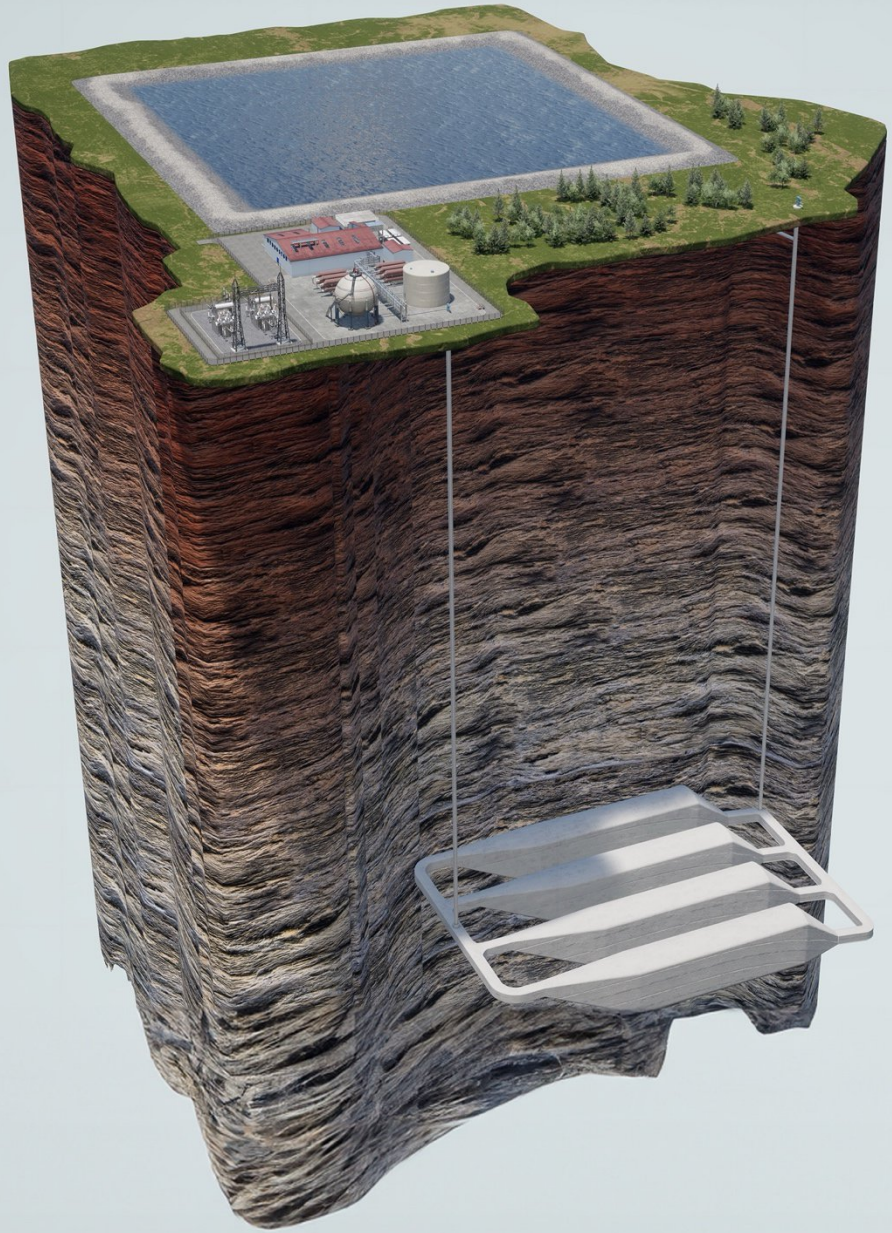
8-24+ Hours of Storage
A-CAES is the best positioned, commercially viable LDES solution for intraday applications

Flexible Siting
Purpose-built hard rock caverns allow for flexible project siting – facilities can be built anywhere there is hard rock, not salt caverns, typically 30-50% of landmass

Low-cost, Large Scale
A utility-scale LDES solution available today providing 200-500+ MWs of storage

Emission-free Operation
Allows excess energy that would otherwise be curtailed to be integrated onto the grid without sacrificing reliability

50+ Year Asset Lifetime
No efficiency degradation and low O&M

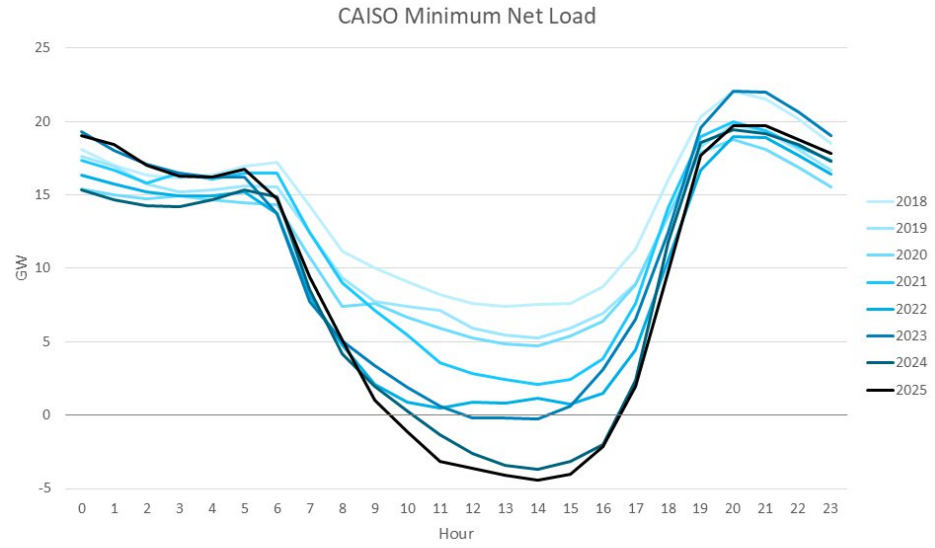


Why LDES – Flexibility and Affordability

CAISO – FROM DUCK TO CANYON

Over the past several years, rapid solar growth in CAISO has transformed the duck curve into a deep canyon, with net load falling below zero in recent years.

BTU Analytics
A FACTSET Company



Note: Data shows the daily load curve where the lowest net load value was observed in each year.
Source: BTU Analytics – a FactSet Company, CAISO (Data Updated August 18th, 2025)

https://insight.factset.com/from-duck-to-canyon-how-caisos-load-profile-has-evolved

ISONE – COUNTING AND GROWING

JANUARY 13, 2026

New England grid saw 134 ‘duck curve’ days in 2025

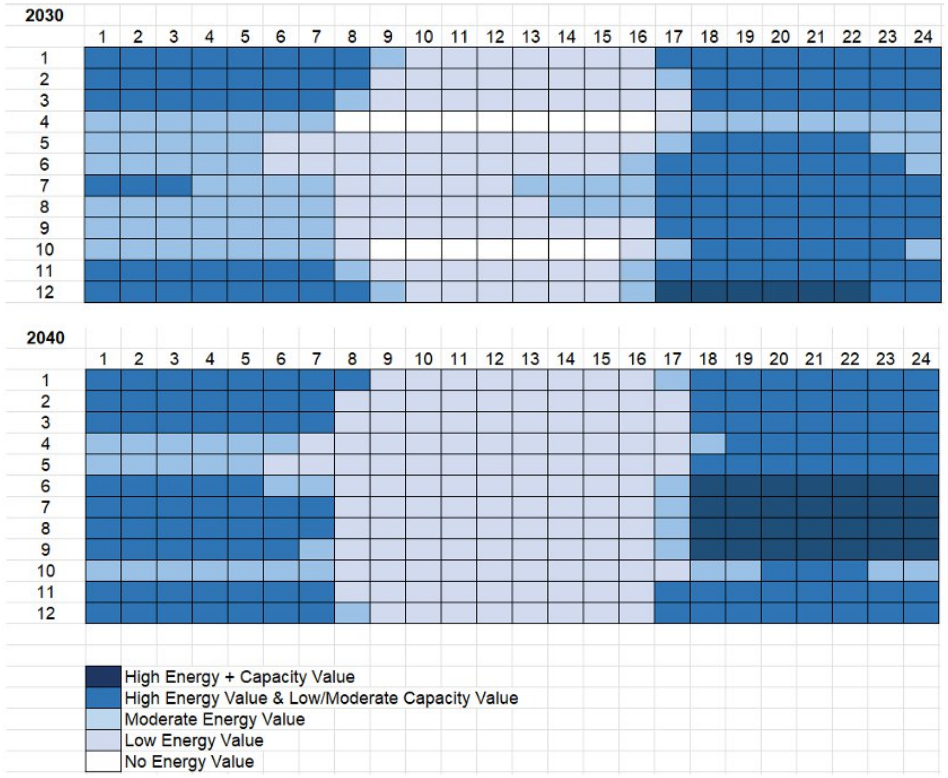
The frequency of “duck curve” days — when the regional power grid supplies less electricity at midday than overnight — continued to increase in 2025.

There were 134 duck curve days over the course of the year, up from 107 in 2024. Their frequency has been steadily increasing since New England’s first duck curve was observed in 2018.

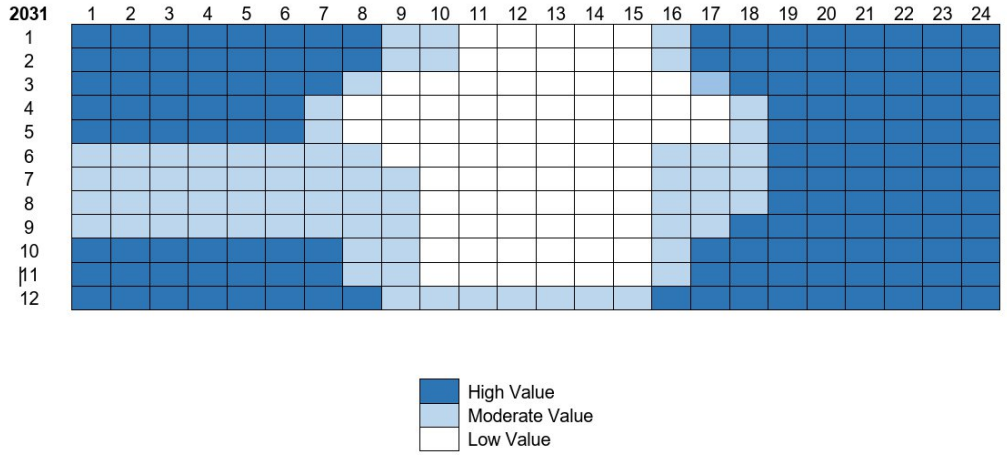
https://isonewswire.com/2026/01/13/new-england-grid-saw-134-duck-curve-days-in-2025/

Why LDES – Resource Adequacy/Reliability and Affordability

APS 2024 IRP (2030 AND 2040 ANALYSIS)



APS 2025 RFP (2031 ANALYSIS)



WHY LDES NOW

LDES is a no-regrets solution that will support the grid of the future, while serving as an essential bridge during the transition.

Flexibility and Reliability without sacrificing Affordability are already needed today, given interconnection delays of new generation, retirement of uneconomic generation, unprecedented data center and electrification load growth, and more frequent extreme weather events.

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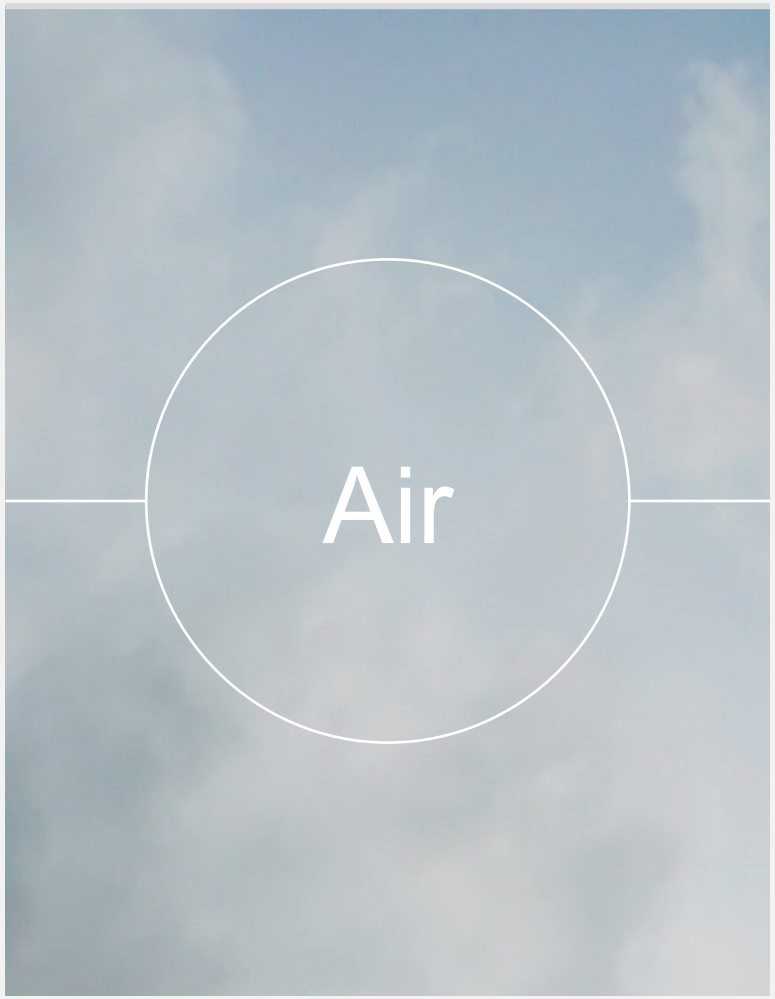
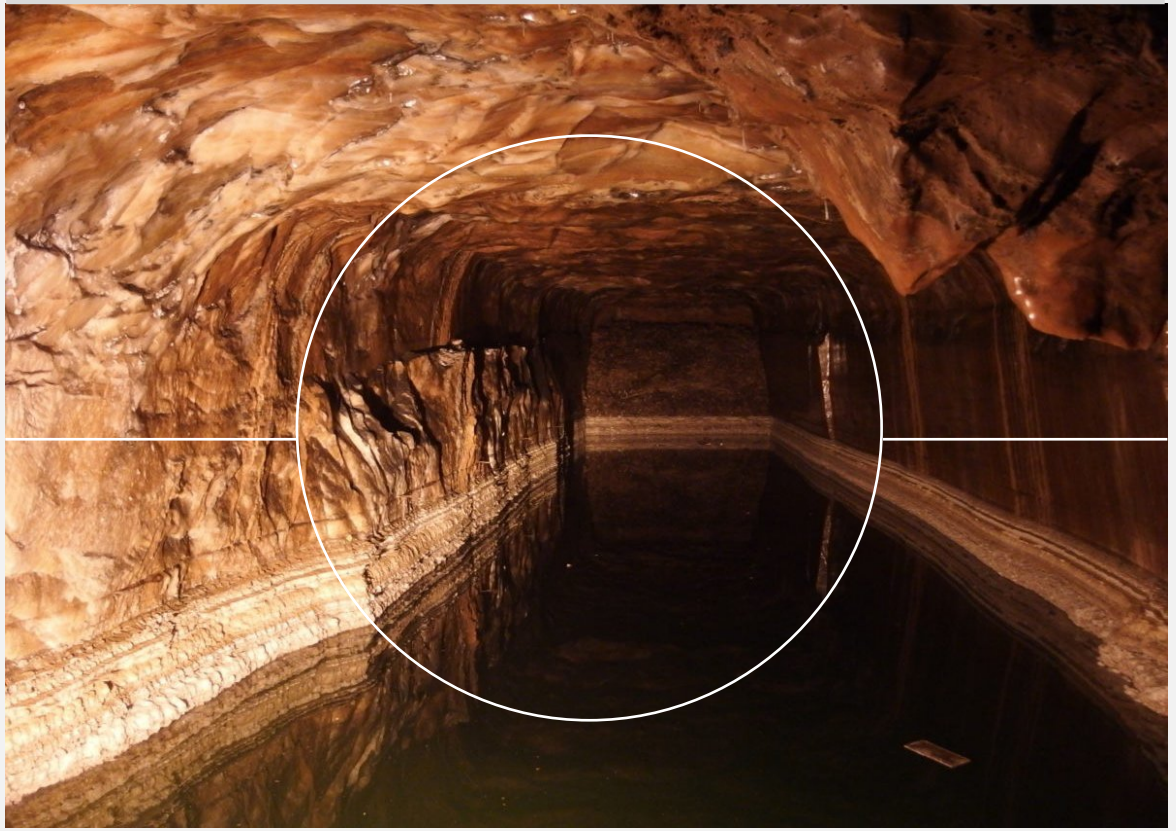
Key Features

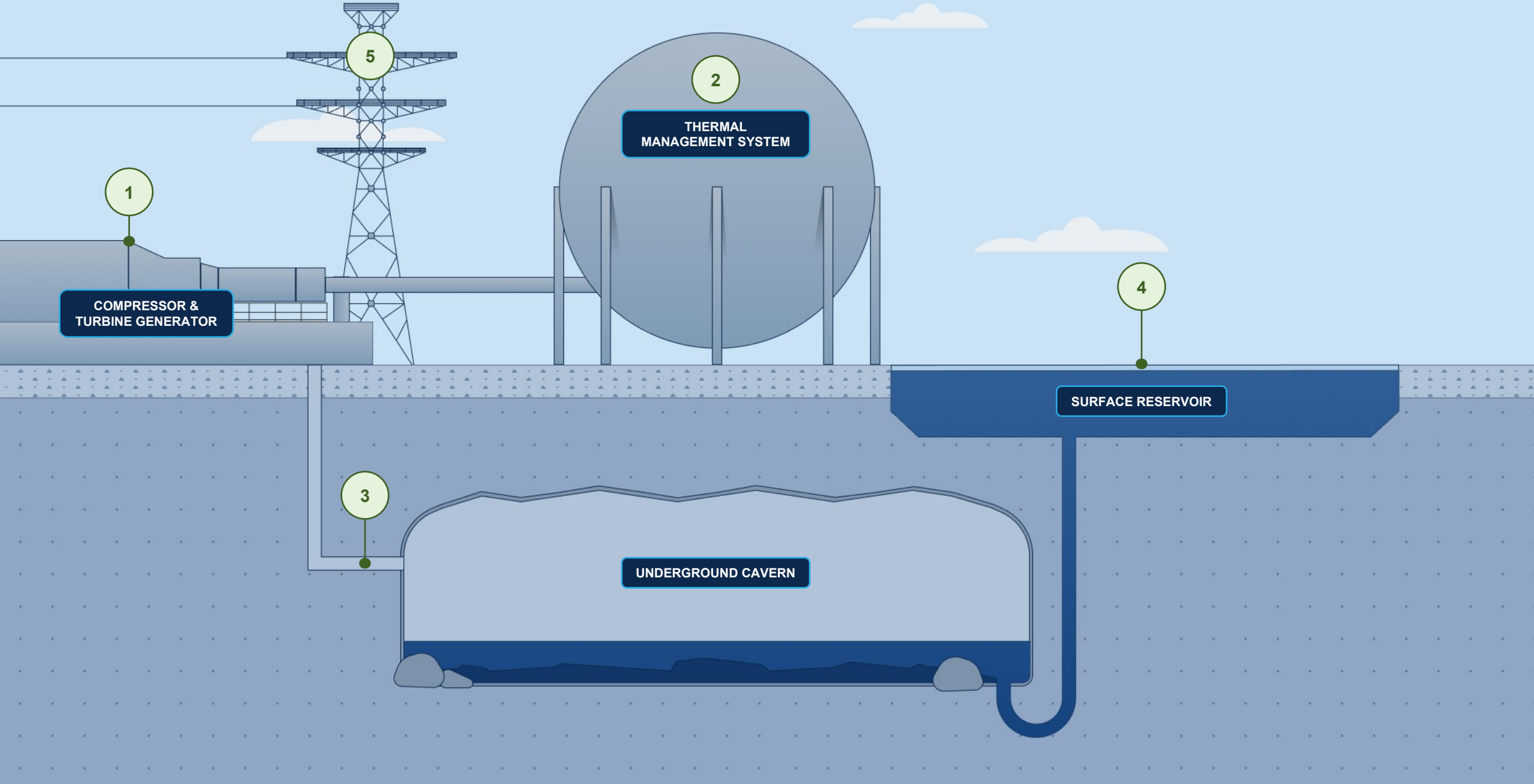


Innovation Grounded on System Integration from Established Industries

CONVENTIONAL INDUSTRIAL EQUIPMENT



KNOWN CAVERN ENGINEERING


5
2
THERMAL MANAGEMENT SYSTEM
1
COMPRESSOR & TURBINE GENERATOR
4
SURFACE RESERVOIR
3
UNDERGROUND CAVERN

The Closed Loop A-CAES Process

1

COMPRESSION

Energy powers an air compressor, generating heat in the process.

2

HEAT EXCHANGE

Heat is extracted from the compression process and captured by a thermal management system for reuse.

Hydrostor IP*: Adiabatic heat storage improves efficiency and makes the process emissions free

3

AIR STORAGE

Compressed air is pumped underground and stored in a purpose-built, water-filled cavern.

4

WATER DISPLACEMENT

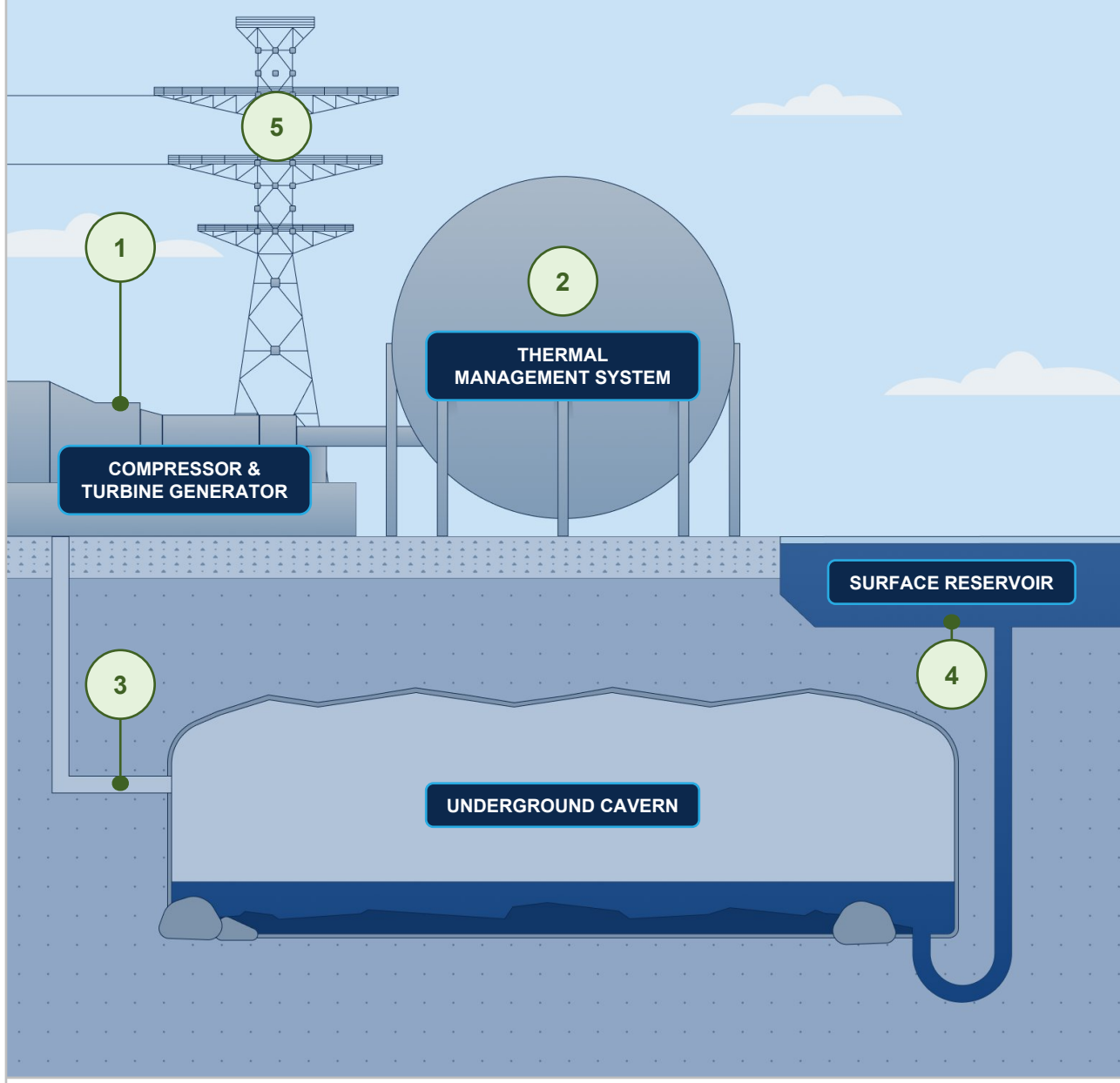
Compressed air displaces water, forcing it up the shaft to the surface reservoir.

Hydrostor IP*: Hydrostatic compensation maintains cavern pressure, improves efficiency, and enables siting flexibility, which minimizes cavern cost and size requirement

5

DISCHARGE

When energy is needed, the water is allowed to flow back down the shaft into the underground cavern, pushing the compressed air back to the surface facility. The compressed air is then reheated from heat stored earlier in the process and expanded through the turbines to generate electricity.



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*Patented, proprietary technology

Advanced-CAES Improves on Traditional-CAES Technology

	TRADITIONAL-CAES	ADVANCED-CAES
Proven technology	Yes, >400MW's in service for over 50 years (multiple plants)	Yes, first commercial facility established in Ontario in 2019
Supply chain	Proven and established supply chain	Proven and established supply chain
Emissions	Emissions from burning gas to re-heat air	100% emissions-free
Efficiency	Low round-trip efficiency	Adiabatic process increases system efficiency
Operating cost volatility	Cost volatility dependent on natural gas prices	Stable operating costs based on off-peak electricity rates
Siting flexibility	Limited location options due to salt cavern requirements	More flexible locations using hard rock caverns
Intellectual property	None	9+ patent families


290MW Kraftwerk Huntorf CAES Plant in Germany, operating since 1978


130MW McIntosh Power Plant in Alabama, operating since 1991


2MW Goderich Plant (Hydrostor's first commercial A-CAES facility)

Technical Specifications Highlights

CAPACITY & FOOTPRINT

500 MW in 100 acres

DURATION

8+ Hour
low marginal cost to increase

EFFICIENCY

60-70%
no degradation

Economic and Community Benefits

A-CAES facilities generate significant regional economic benefits over the course of construction and operations

CONSTRUCTION JOBS

Projects will employ thousands of construction workers, with 750+ at its peak

OPERATIONAL JOBS

Once operational, the facility will employ ~40 full-time employees for 50+ years

LOCAL INVESTMENT

$500M+ in regional benefits over the project's construction

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GODERICH
ENERGY STORAGE

Goderich – Ontario, Canada

The world's first commercially contracted A-CAES facility that proves the technology's ability to fully participate in and deliver a range of valuable grid services to electricity markets.

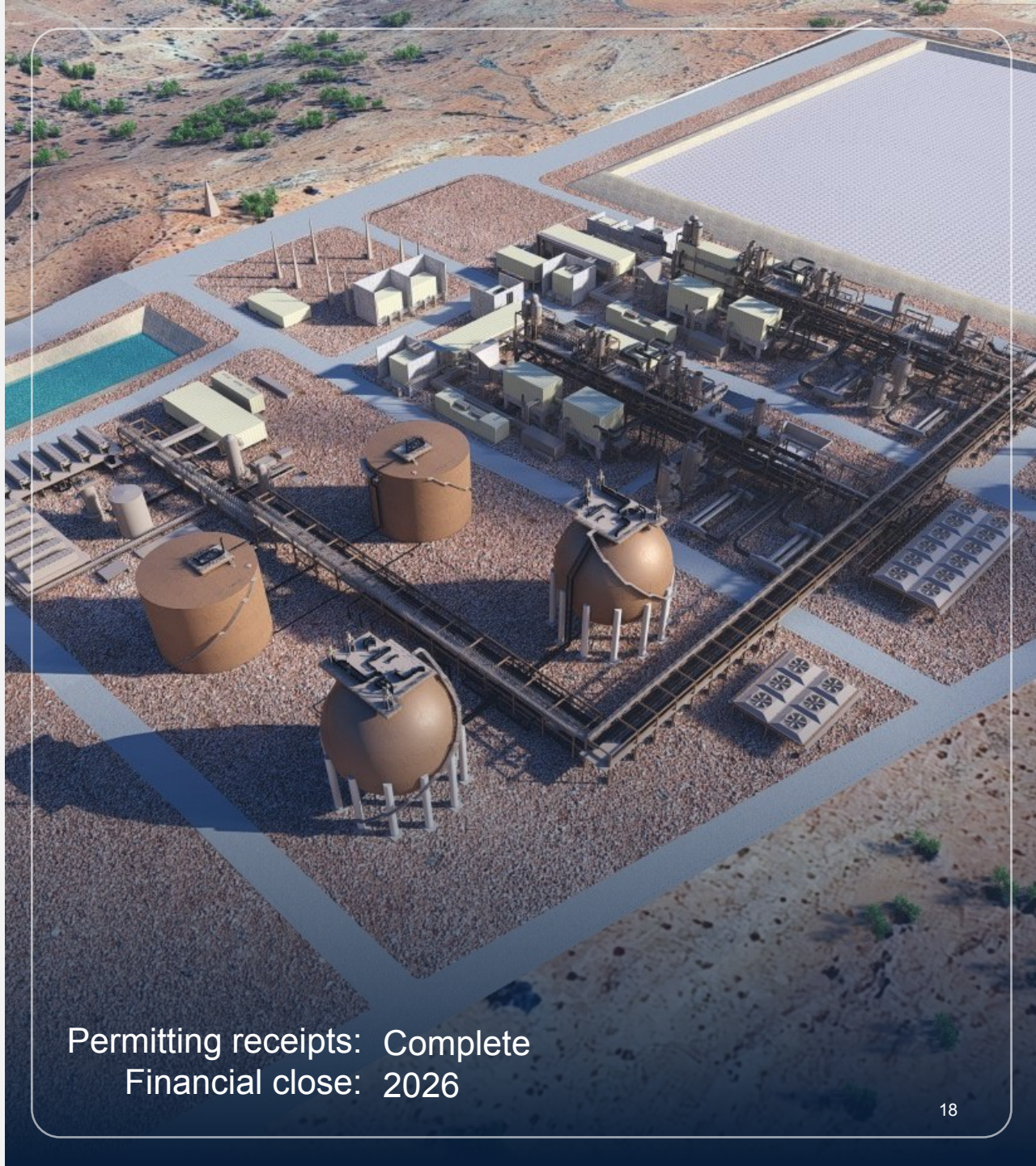
Status:	**Operational**
Ownership:	100% Hydrostor
Offtake contracts:	IESO, 10-year Capacity Agreement
Contracted Capacity:	1.75 MW / 7 MWh
Performance:	Proven Adiabatic System
Debt:	Export Development Canada

SILVER CITY ENERGY STORAGE

Broken Hill – New South Wales, Australia

Precedent setting project that is providing LDES capacity and transmission reliability service with a 200MW, 8-hour (1,600 MWh) long-duration storage project.

Status:	**Late-Stage Development**
Ownership:	100% Hydrostor
Site:	Secured, including subsurface access & services
Offtake contracts:	Transgrid agreement signed LTESA contract signed
Interconnection:	Q4-2025
Permits:	Approved in Feb-2025
Delivery:	Worley selected as engineering & EPC-M
Debt:	Process underway (comfort letters received)
Grant:	ARENA (A$45 Million)

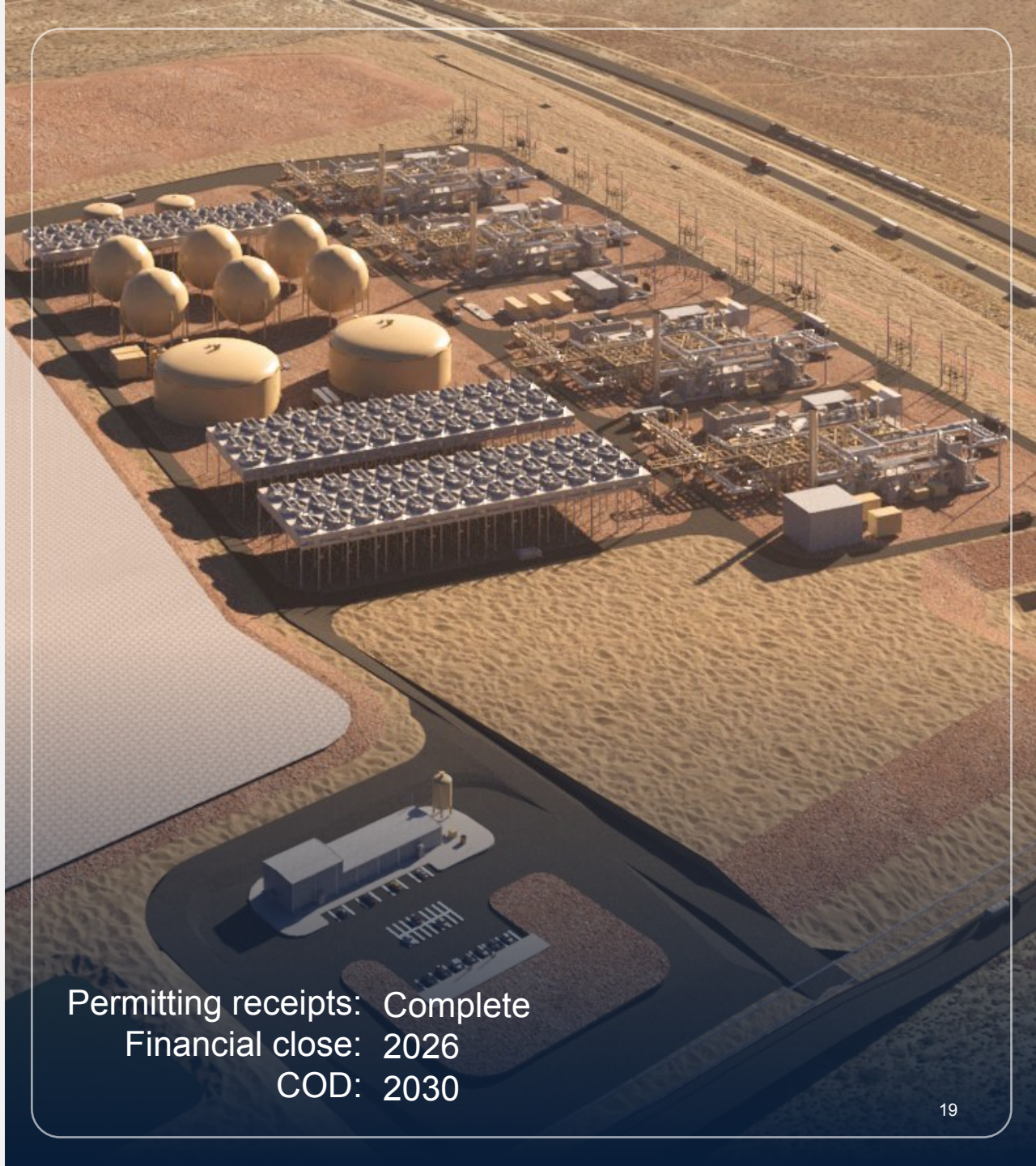


WILLOW ROCK
ENERGY STORAGE

NW of Los Angeles – California, USA

500 MW (4,000 MWh) project in Kern County to help meet California's requirement for utilities to procure long-duration storage resources and ensure reliability statewide.

Status:	**Late-Stage Development**
Ownership:	100% Hydrostor
Site:	Secured
Offtake contracts:	3CE (200MW, capacity + energy settlement) signed Bids for 8 and 12-hour for balance of offtake
Interconnection:	LGIA signed (500MW, full deliverability)
Permits:	CEC permit received
Delivery:	Hatch leading FEED work EPC-M delivery model under RFP
Debt:	$1.8b DoE loan guarantee conditionally approved 50% ITC eligible



Permitting receipts: Complete
Financial close: 2026
COD: 2030

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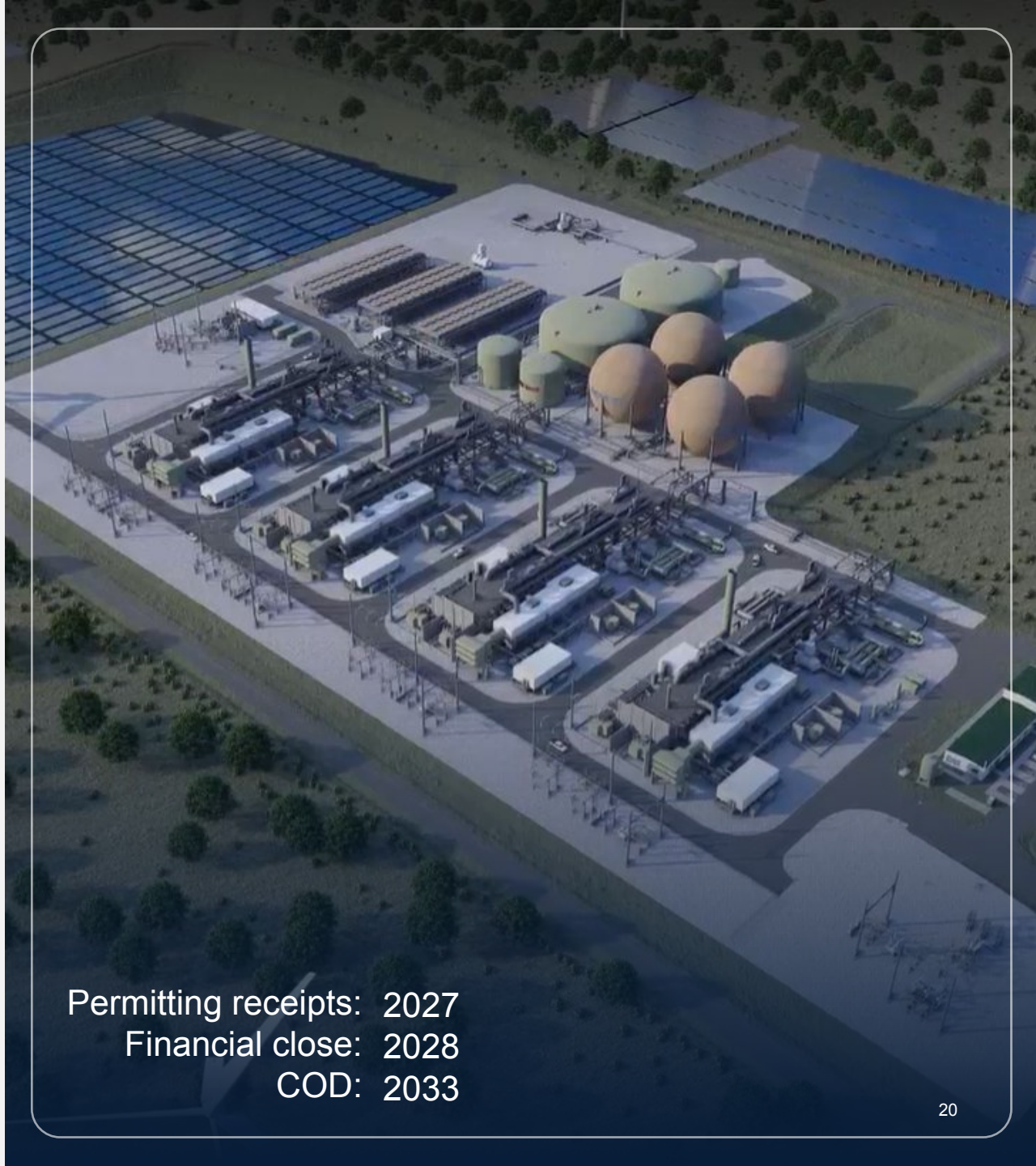
QUINTE ENERGY STORAGE

Lennox and Addington County – Ontario, Canada

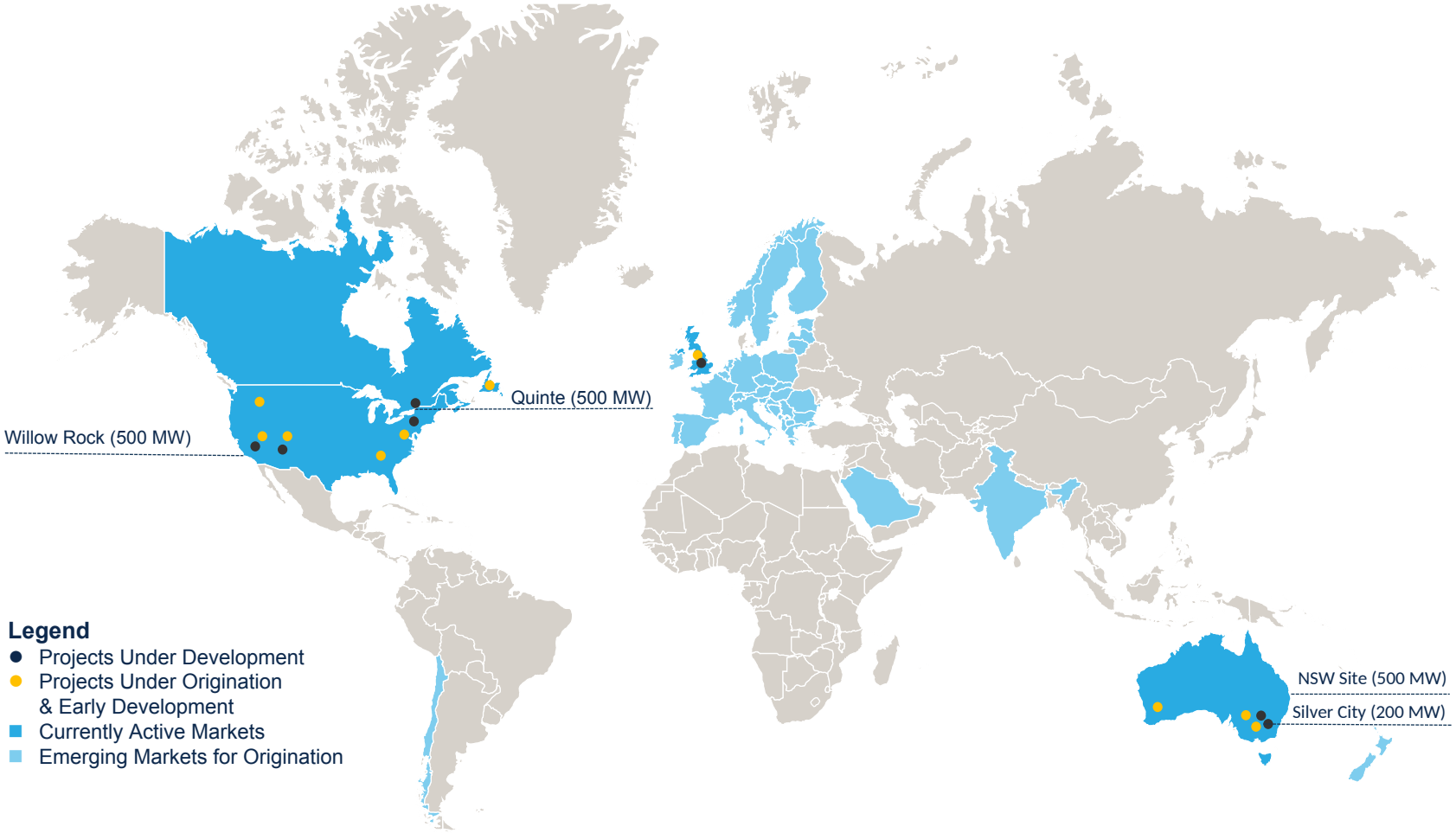
500MW project under development in Ontario. It will be capable of delivering 8 hours of energy storage duration and can be scaled up in both capacity (MW) and storage volume (MWh) at a low marginal cost once operational.

Status:	**Under Development**
Ownership:	Hydrostor / Mohawks of the Bay of Quinte
Site:	Secured
Offtake contracts:	IESO LLT Process 2026
Interconnection:	Lennox TS
Permits:	Being Prepared



Permitting receipts: 2027
Financial close: 2028
COD: 2033

An Active and Growing 7,000 MW Project Pipeline



North America

- Willow Rock ESC (Site, LGIA, Offtake Contract)
- Quinte ESC (1 Project: Site Secured, IA In Progress)
- New York (2 Projects: 3 Sites Secured, 1 IA Submitted)
- Arizona (2 Projects: 1 Site Secured)
- California (2 Projects: 2 Site Secured, 2 IA Submitted)
- Nevada (2 Projects, 2 Site Secured, 2 IA In Progress)
- Pacific Northwest (Screening Complete)
- Virginia (High level geology screen complete, site control & modeling in-progress)
- Southeast (Screening Complete)
- Eastern Canada (Screening Underway)

Australia

- Silver City ESC (Site Secured, Offtake Contract)
- NSW (Site Secured, MOU Underway)
- Victoria (2 Projects; Screening Complete, Site Exclusives)
- South Australia (1 Project, Govt Submittal for Site Contract)
- Western Australia (1 Project; Site Identified)

Other Countries

- United Kingdom (Screening Complete, 2 IA submitted)

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Unleashing Pathways for LDES and A-CAES Investment

Removing barriers for LDES development

PROCUREMENT TARGETS

Launch procurement targets and programs that properly value LDES and incentivize development

CONTRACTS

Establish contracts with workable frameworks for capital-intensive, long-lead-time assets

SYSTEM MODELING

Perform accurate system modeling that accounts for LDES under several scenarios and time horizons

Hydrostor is a Leading Developer of Utility-Scale LDES Technology

Active Pipeline	Advanced Projects	Operational Facilities	Patent Families	Proven Equipment
>7GW	700MW	One pilot, one commercial	10	Bankable Tier 1 OEM suppliers

Siting Flexibility	Emission-free Operation	Asset Lifetime	Round Trip Efficiency	Duration
Purpose-built caverns provide better siting vs. salt caverns & PHS		50yr+	~60-70%	8+ hours

500 MW A-CAES lifetime CO_2 abatement* = **28 million tonnes**

The equivalent to removing 120,000 vehicles off the road, each year of project lifetime

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*Based on analysis from Willow Rock, assumes A-CAES cycles once per day over lifetime, charged by renewable energy vs. natural gas power plant

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Powering a Reliable and Resilient Grid

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