

ENERGY VAULT
Enabling a Renewable World

The Energy Storage Solutions Company
for short, long and extra long durations

December 14, 2023

NRGV
LISTED
NYSE

- NYSE publicly traded company since Feb 2022
- Corporate HQ: California, USA
- Offices: USA, Switzerland, UK, Australia and China
- Employees: 215
- Revenues: \$146m (2022)
- ~2.5GWh contracted/under construction

MISSION

IDENTIFY, DEVELOP AND BRING TO THE MARKET

THE MOST ECONOMIC AND SUSTAINABLE

ENERGY STORAGE SOLUTIONS

Premier Customers and Investors

Customer Segment	Technology Focus	Contract Type
<p>Utilities</p> <p>Independent Power Producers (IPP)</p> <p>Large Energy Users</p>	<p>Short Duration (BESS)</p> <p>Long Duration (GESS)</p> <p>Ultra-Long Duration (H₂)</p> <p>Hybrid Systems (Across Technology)</p>	<p>Engineering Procurement and Construction (EPC) + Long Term Service Agreement (LTSA)</p> <p>Engineering and Equipment (EEQ)</p> <p>Licensing Agreements</p> <p>Energy Management System</p>



Selection of Recent Projects Delivered/under Construction



Moapa, Nevada

BATTERY

220 MW / 440 MWh



Fort Stockton, Texas

BATTERY

100 MW / 200 MWh



Calistoga, California

HYDROGEN + BATTERY

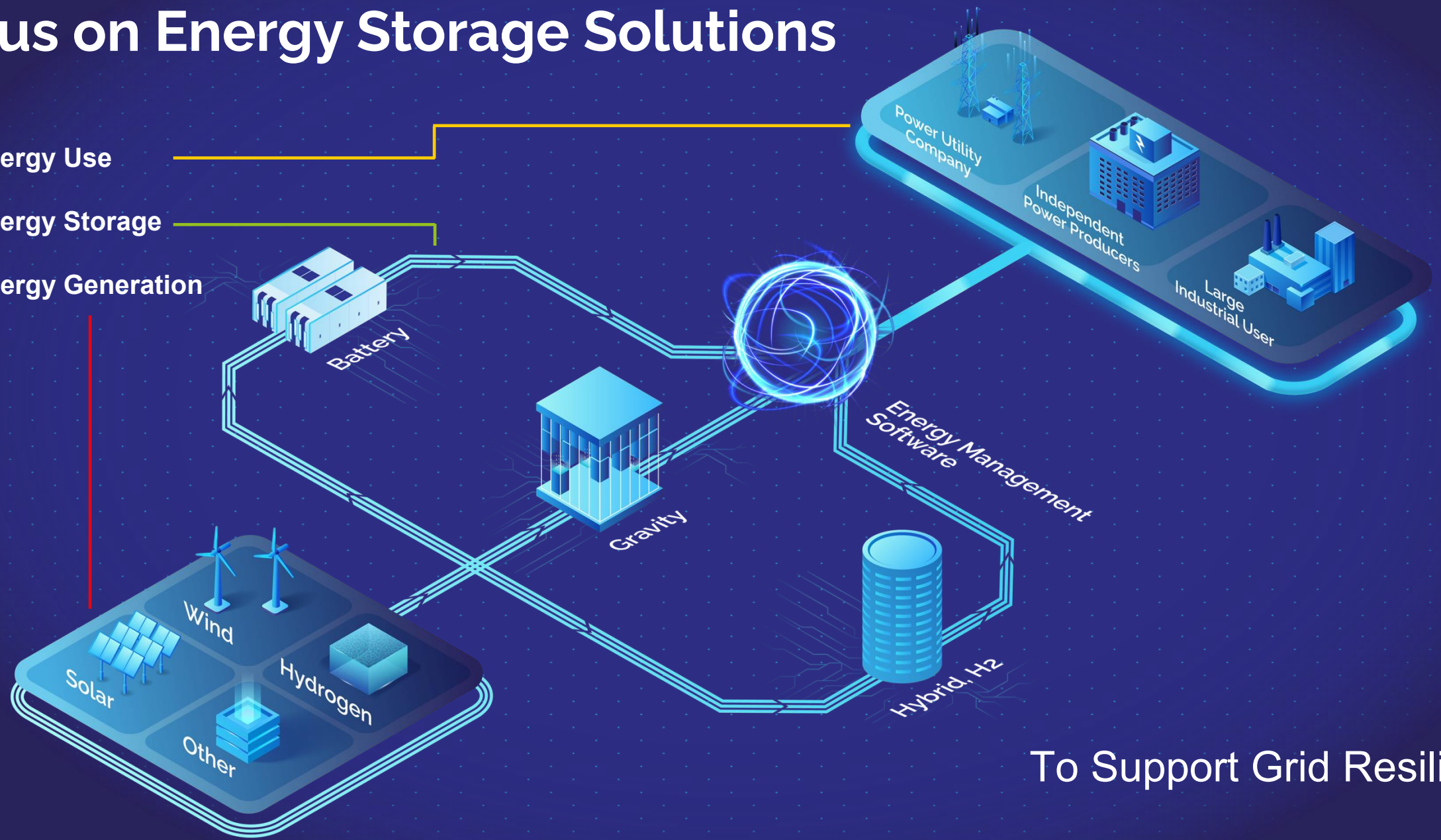
8.5 MW / 48 hours

Focus on Energy Storage Solutions

Energy Use

Energy Storage

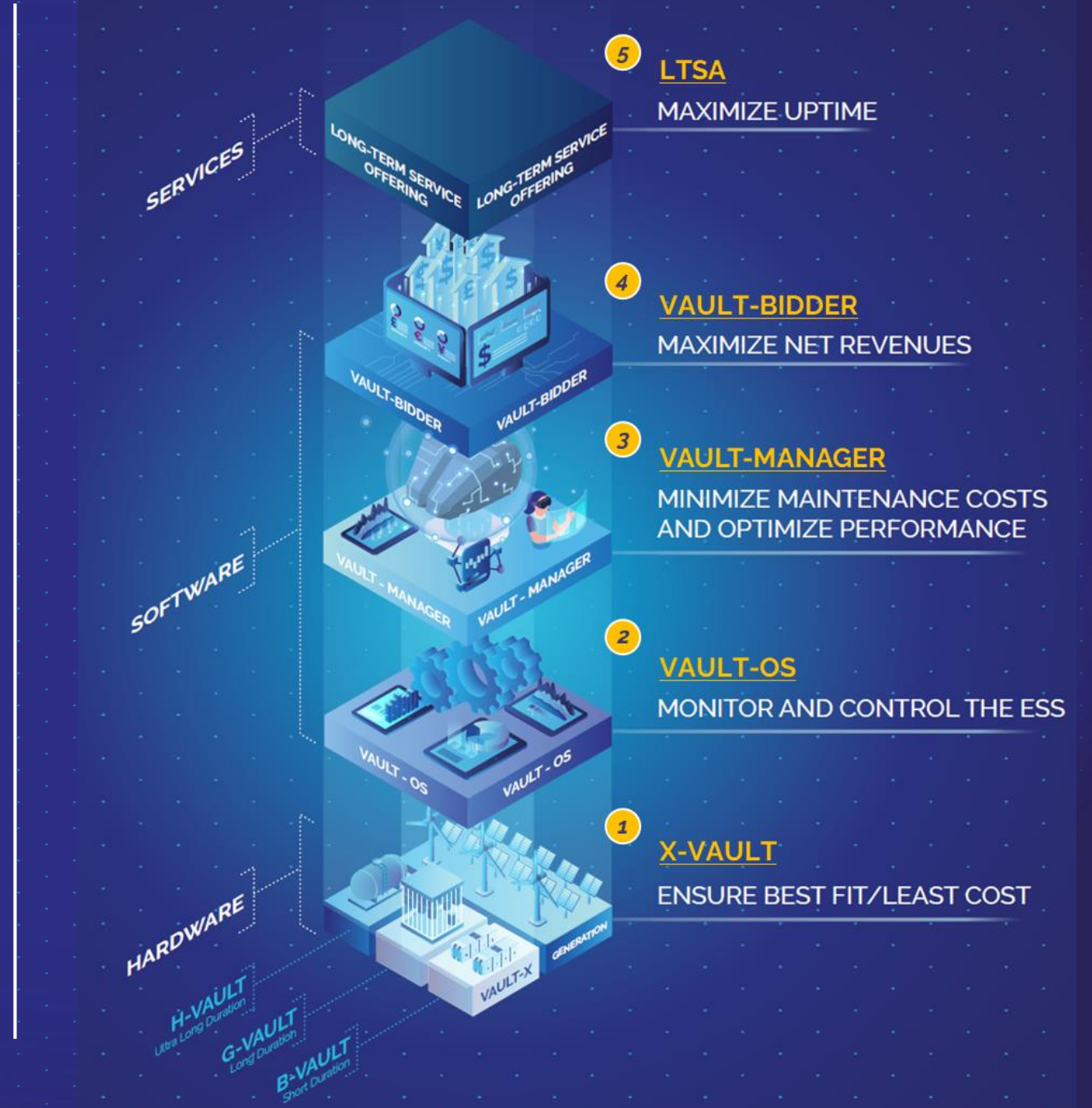
Energy Generation



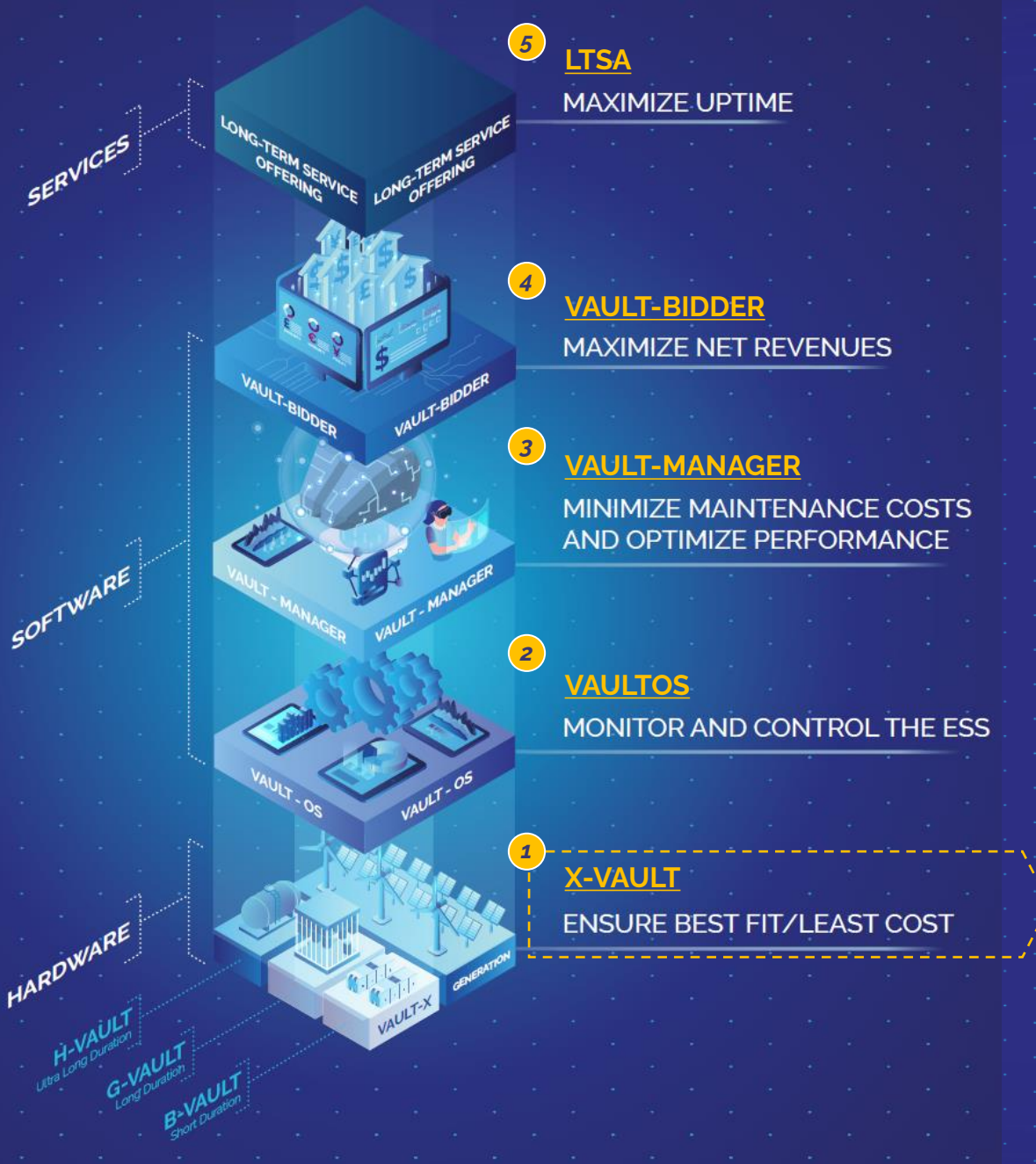
To Support Grid Resiliency

Solution Architecture Brings Unique Value to Customers

Modular open stack architecture maximizes solution breadth and flexibility

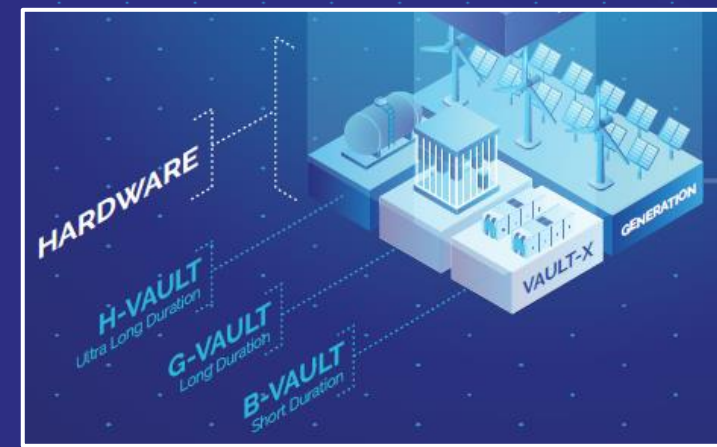


ENERGY VAULT OPEN STACK



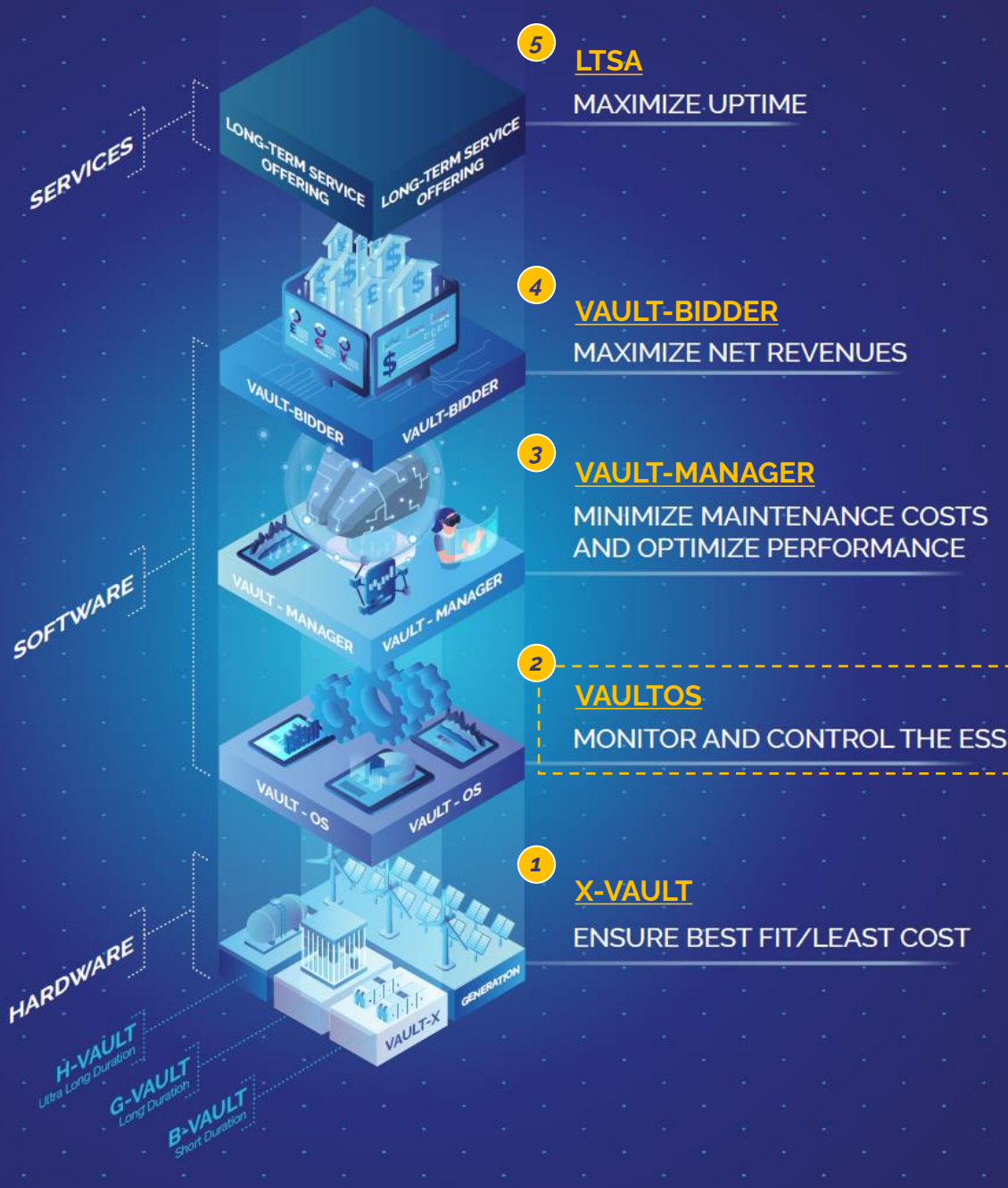
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X-VAULT



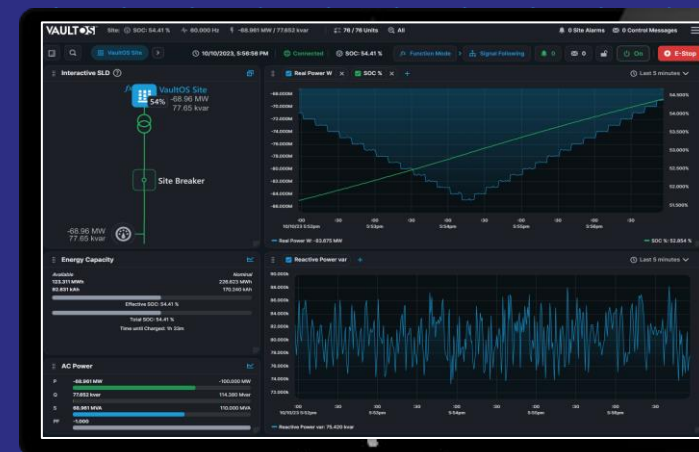
X-Vault™

is a technology-neutral ESS integration platform that delivers least cost/best fit energy storage solutions to optimize site layout, energy density, capacity oversize, mix/match between energy and power components, and combination of storage technologies to fit specific use cases



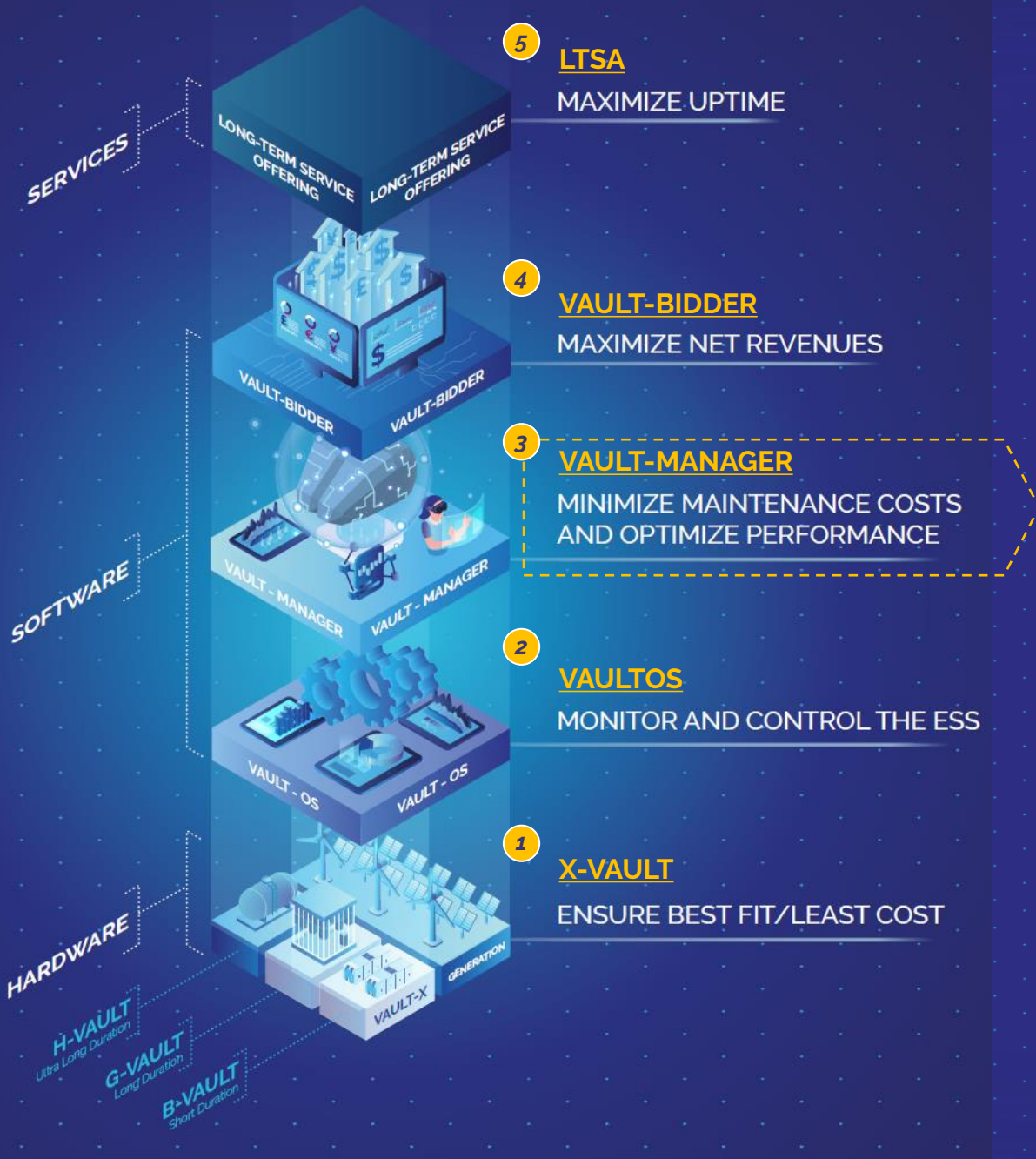
ENERGY VAULT OPEN STACK

2 VAULT-OS



Vault-OS™

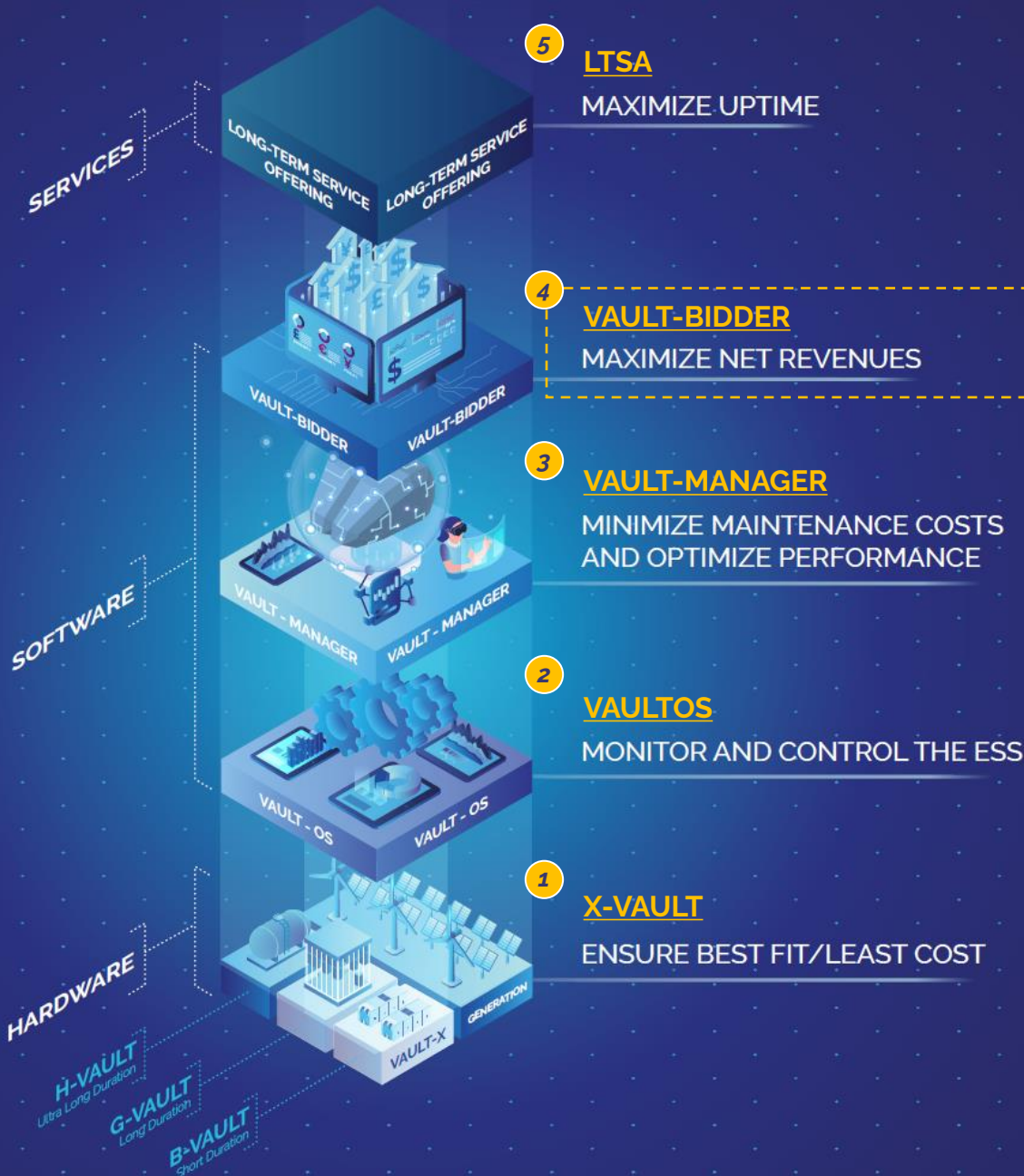
is a massively scalable technology-neutral Energy Management System (EMS), capable of integrating any storage and generation assets, highly sophisticated dispatching strategies, monitoring performances, visualizing architectures and KPIs with the most flexible visual interface to enable users to optimize their operations.



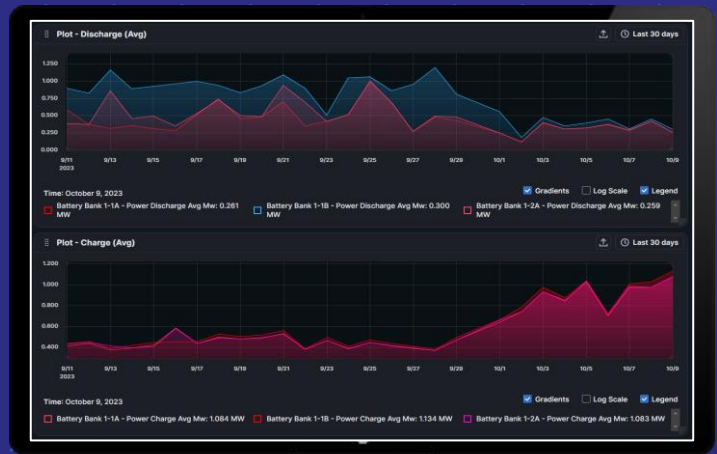
3 VAULT-MANAGER



Vault-Manager™ enables customers to optimize long-term operation of renewable assets and both stand-alone and hybridized ESS; improve portfolio and project ROI; and analyze augmentation and expansion decisions. Deep understanding of storage technologies utilized to provide detailed visibility into performance, reliability, maintenance, financials, and env.tal KPIs for portfolios, sites, and assets.



4 VAULT-BIDDER



Vault-Bidder™ is an advanced monetization platform allowing customers to maximize net-revenues utilizing cutting-edge AI-driven bidding and forecasting. This tech-neutral platform provides automated bidding, simulation environment, comprehensive reporting, configurable multiple bidding strategies, and manual bid overwrite functionalities.

Long-Term Service Offerings

Lifetime service programs to ensure uptime and performance

Long-Term Service Agreement (LTSA) Offering		Level 1	Level 2	Level 3	
SOFTWARE	 <ul style="list-style-type: none"> • EMS Updates & Security • Cloud Storage 	• Hardware Maintenance			
SERVICE	 <ul style="list-style-type: none"> • Preventive Maintenance • Monitoring 	• Training			
EQUIPMENT	 <ul style="list-style-type: none"> • Corrective Maintenance • Spare Parts 				
PERFORMANCE	 <ul style="list-style-type: none"> • Availability Guarantee • Capacity Guarantee 	<ul style="list-style-type: none"> • RTE Guarantee • Extended Warranty 			
ADD-ONS	 <ul style="list-style-type: none"> • Flexible Perf. Guarantee • Augmentation 	<ul style="list-style-type: none"> • Dispatch Optimization • Asset Monitoring 			



Default offer



Upon customer request

Recent Announcements: 6,535 MWh

1. PG&E Teams with Energy Vault to Build and Operate the Largest Green Hydrogen Long-Duration Energy Storage System in the U.S.
2. NV Energy Selects Energy Vault for 440 MWh Energy Storage System in Nevada
3. Energy Vault Issued Notice of Award From Meadow Creek Solar Farm for a 250MW/500MWh Grid-connected Battery in Victoria, Australia
4. Jupiter Power and Energy Vault sign Letter of Intent to Secure 2.4 GWh of Domestic-Content-Qualified Battery Energy Storage Systems
5. 2-Gigawatt Hour (2 GWh) Mandate Announced for Energy Vault's EVx™ Gravity Energy Storage Platform for Initial Zero Carbon Industrial Parks in China
6. Energy Vault, Wellhead Electric and W Power Announce Agreement for 275 MWh Energy Storage Project in Southern California
7. Energy Vault and Jupiter Power Announce Agreement for Battery Energy Storage Projects in Texas and California Totaling 220 MWh



700 MWh



440 MWh



500 MWh



2,400 MWh



2,000 MWh



275 MWh



220 MWh

TOT = 6,535 MWh

SOLUTIONS & PRODUCTS PORTFOLIO

Hardware Product Portfolio for Grid-Scale Applications

Designed to best technically and economically address the diversity and complexity of customer needs



B-VAULT™

SHORT DURATION
UP TO 6 HOURS

Proprietary lithium-ion battery energy storage systems for shorter-duration



G-VAULT™

LONG DURATION
4-24 HOURS

Novel gravity energy storage systems for longer-duration applications.



H-VAULT™

ULTRA-LONG DURATION
12-48 HOURS

Hybrid energy storage systems, including H₂+BESS for multi-day and back-up power applications.



BVAULT

Short Duration



Stanton (CA – USA)

MW: 68.8

MWh: 275.2

COD: 8/23

Site: California

Use: RA, FFR, Energy Arbitrage





St. Gall (TX – USA)

MW: 100

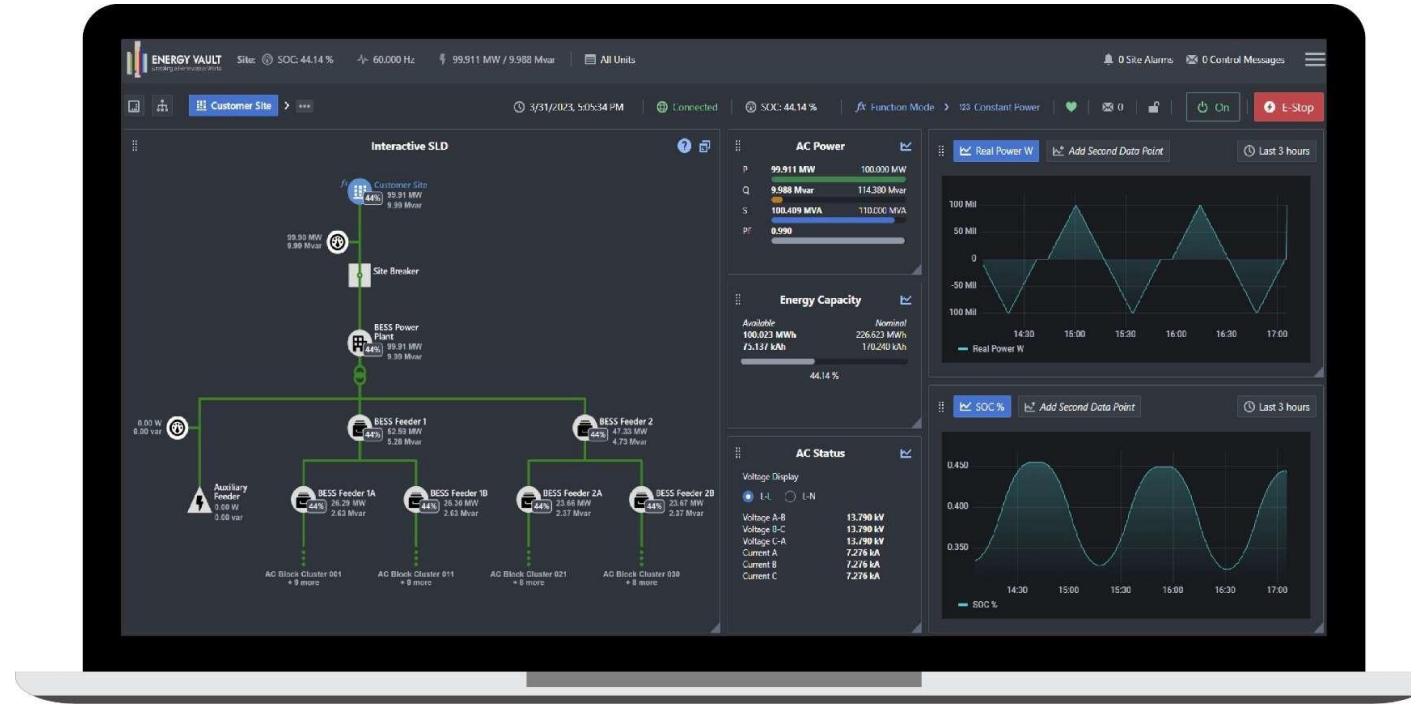
MWh: 200

Site: Texas

Use: FFR, Energy Arbitrage



VAULTOS™: Plant Controller



MASTER PPC,
HYBRID PPC

SYSTEM
SECURITY

FAST RESPONSE
TIME

SYSTEM
UPTIME

SAFETY & THERMAL
MANAGEMENT

BIDDER, SCADA
MODULES

H-VAULT

Ultra long duration



Customer Challenges

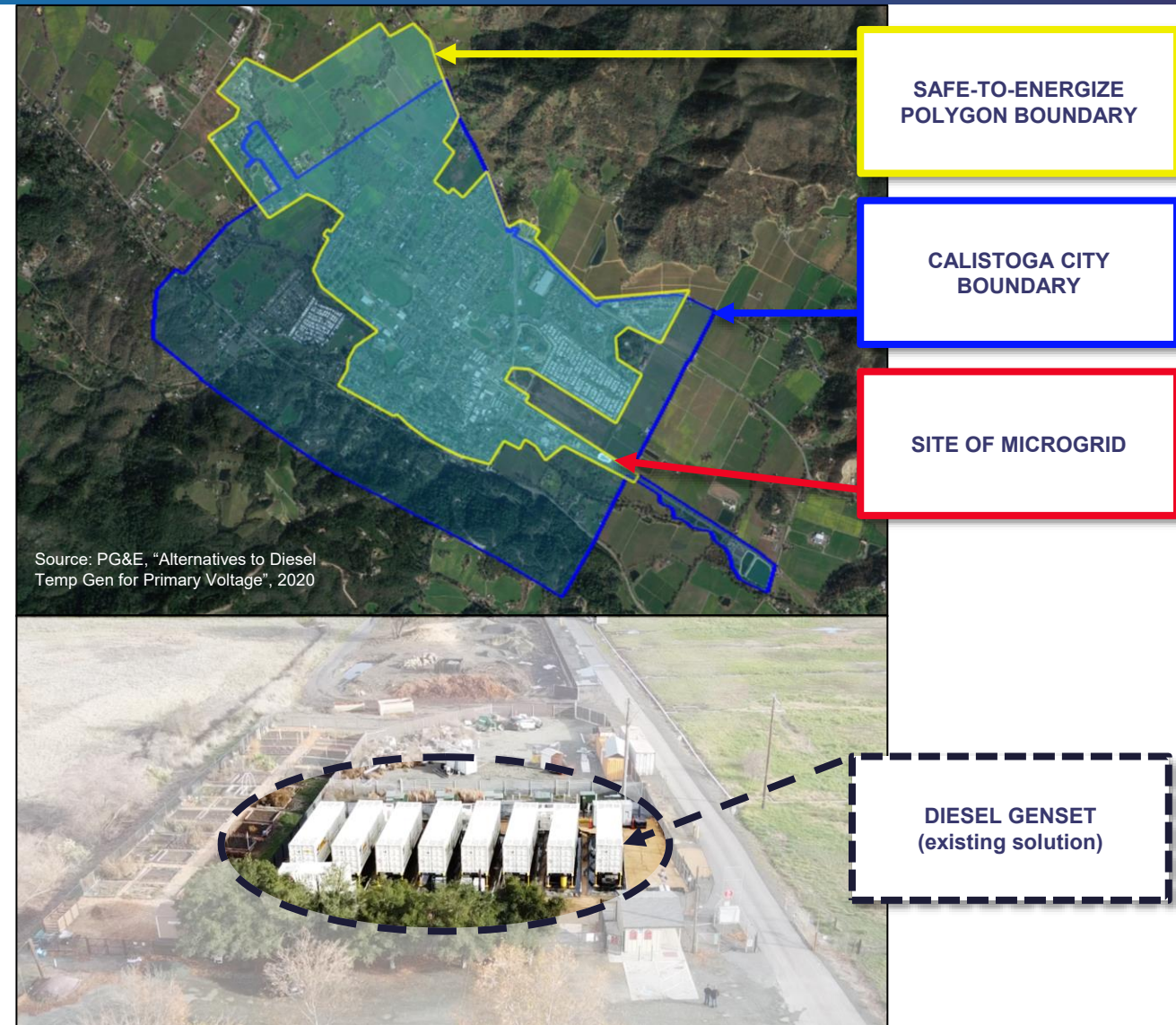
City of Calistoga, Napa County

- ▶ High frequency of PSPS events
- ▶ No secondary transmission lines
- ▶ Main regional commercial district is within shutdown zone
- ▶ Limited space

Current solution is array of diesel gensets

- ▶ Temp install only...sited in dog park
- ▶ Expensive
- ▶ 4-8 hrs of fuel onsite
- ▶ 6 mos. fuel life
- ▶ Emissions

Powell, D., Regan, J. and Wan, F. (n.d.). *Alternatives to Diesel Temp Gen for Primary Voltage*. [online] Available at: <https://www.cpuc.ca.gov/-media/cpuc-web-site/divisions/energy-division/documents/resiliency-and-microgrids/resiliency-and-microgrids-events-and-materials/pgc.pdf> [Accessed 7 Sep. 2023].





Calistoga (CA – USA)

MW: 8.5

MWh: up to 700

COD: 6/24

Site: California

Use: PSPS

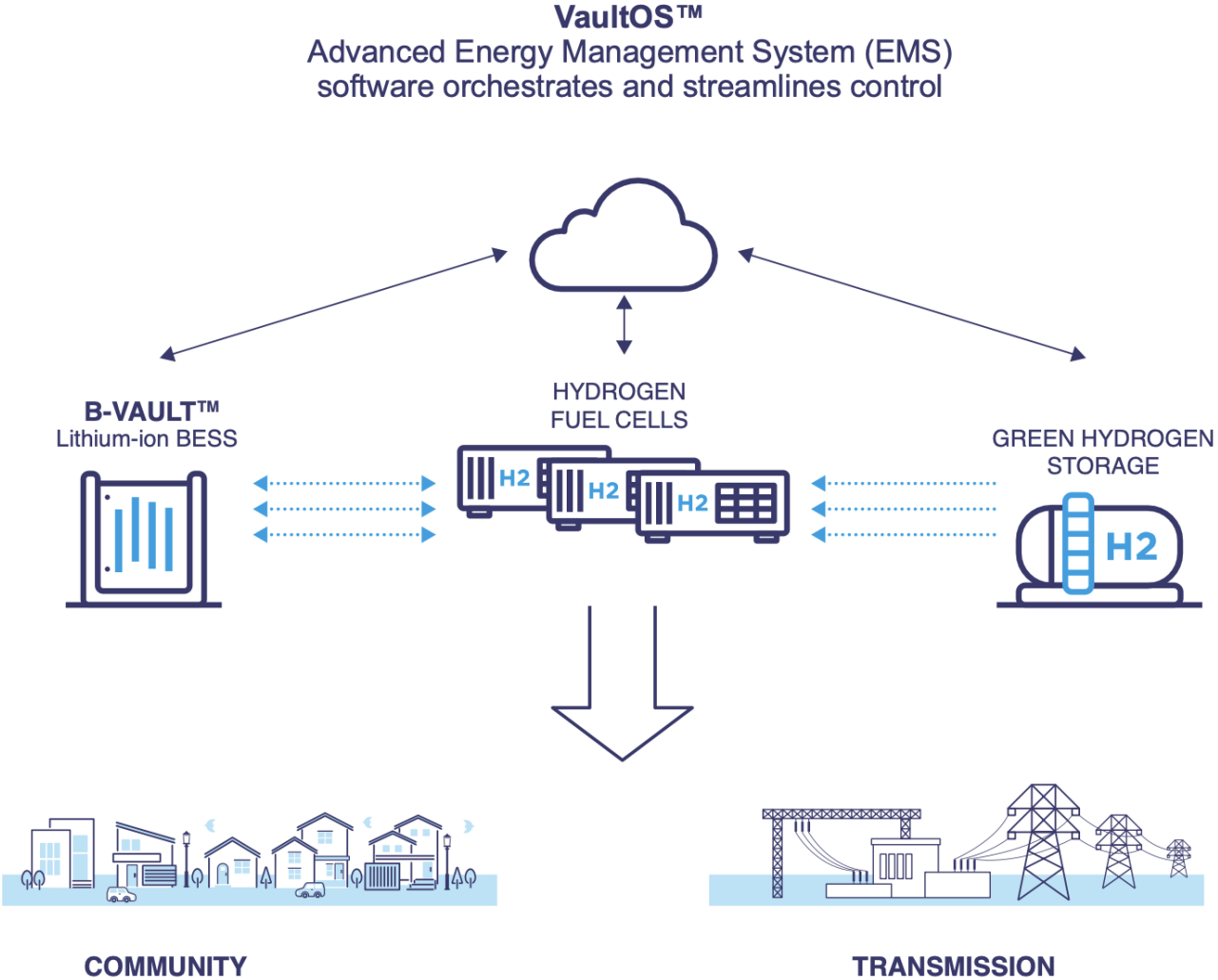


H-VAULT™
ULTRA-LONG DURATION
hybrid energy storage project

California, USA
8.5 MW | 48 Hour Duration Hybrid H₂+Battery Energy Storage Project
for Zero-Emission Public Safety Power Shutoff



H-Vault is specifically designed for resilience



THERE WHEN YOU NEED IT

Be prepared with stable long-term energy storage ready to be called upon at a moment's notice



MULTI-DAY DURATION

Ensure power through extended transmission outages or other contingency events



EMISSION-FREE

Operate as needed, knowing there are zero local greenhouse gas or particulate emissions



BLACK-START

Repower safely and rapidly after a loss of power with black-start and grid-forming capabilities



SAFETY

Leverage passive and active fire safety design along with industry-leading cybersecurity architecture

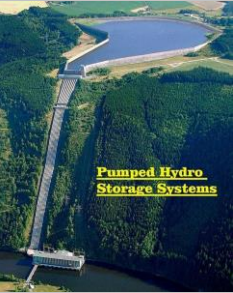





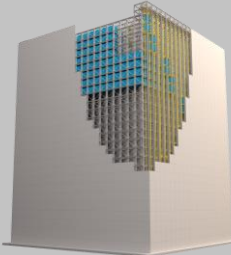
G-VAULT

Long duration



Gravity Technology Evolution

Technology Timeline

<p>Technology Principles Validation</p>  <p>Pumped Hydro Storage Systems</p>	<p>Concept Design and 1/4 scale Prototype</p> 	<p>Computer AI & Machine Vision Software</p> 	<p>CDU Design & Mobile Masses</p> 	<p>CDU Construction & Testing</p>  <p>EVx™ Design Initiation</p>	<p>35 MWh CDU Commissioning</p>  <p>Grid-Connected July 2020</p>	<p>EVx™ Product Launch</p> 
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Rudong China Project

Construction and Commissioning

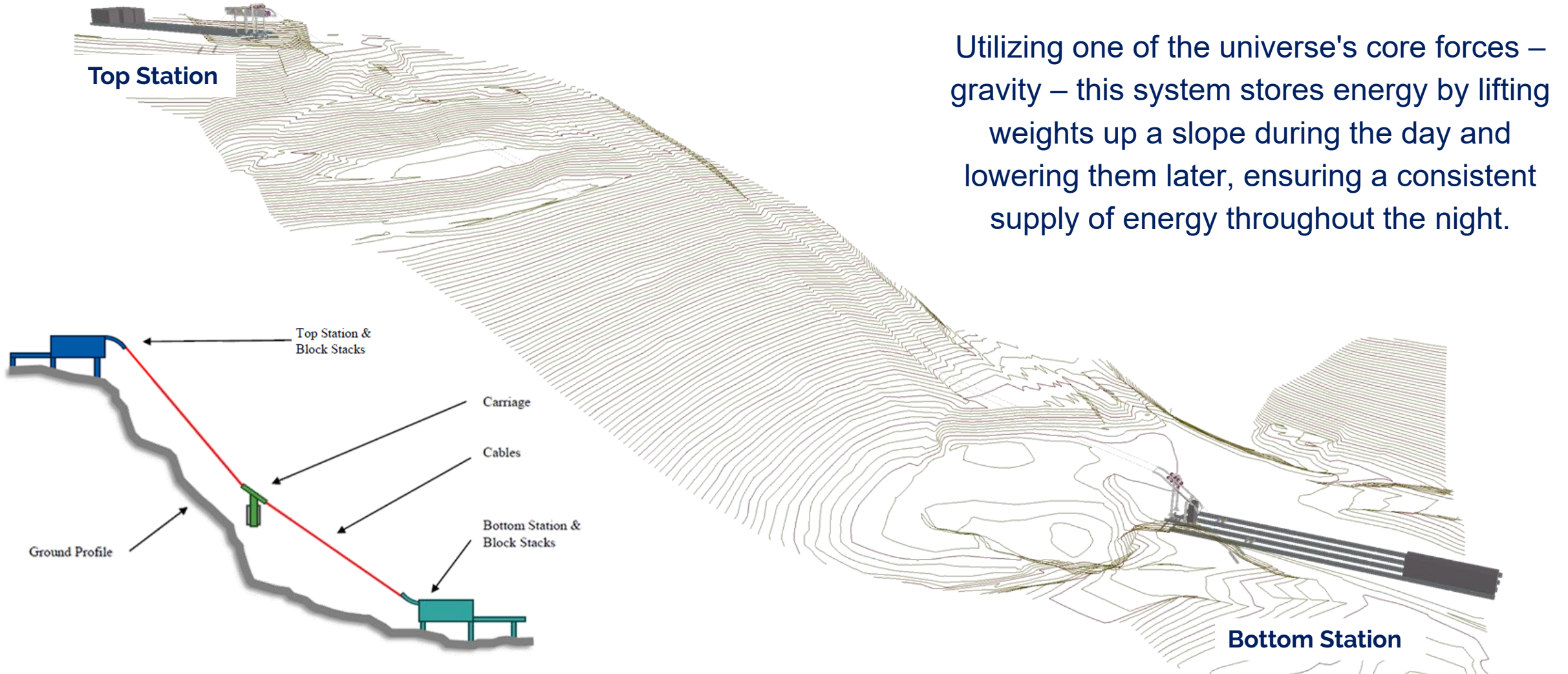
- Construction complete on the world's first commercialized gravity energy storage system. Structure successfully capped on October 15th, 2023
- Completed the final 35kV overhead power line to the substation
- Commenced state grid connection process in September 2023
- Testing and commissioning ongoing and supported by the Energy Vault CTO and team of experts

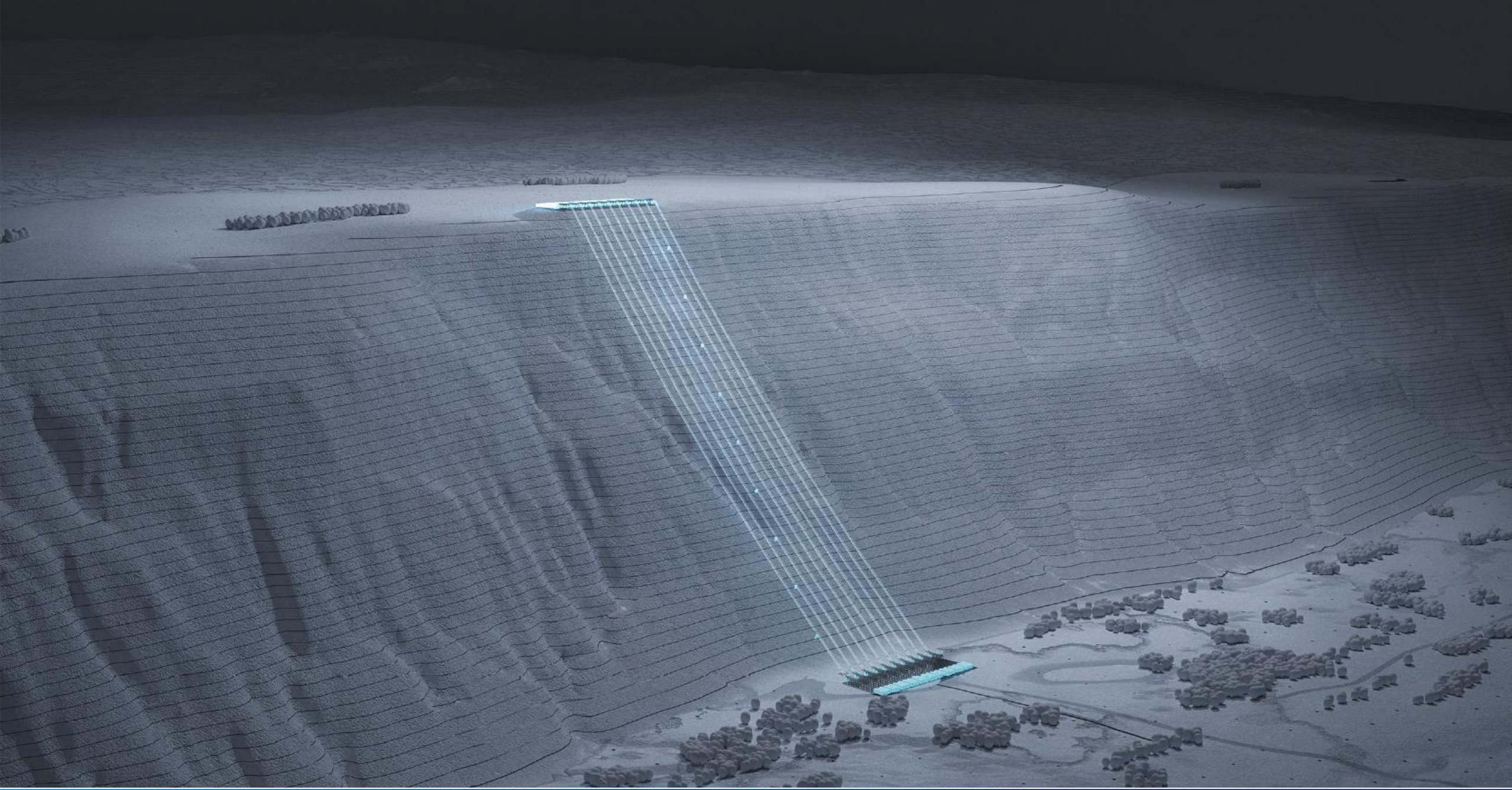
CNTY Project Portfolio

- Five additional projects confirm the strategic value of gravity energy storage technology for China, the world's largest storage market
- To date, CNTY has announced 7 total projects in China totaling 3.3 GWh, or \$1B+ in project scope
- Energy Vault to collect 5% recurring revenue royalty on all projects



EVy: leveraging existing slopes for least cost/best fit





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