

An aerial photograph of a heliostats field at sunset. The heliostats are arranged in a curved pattern, and their surfaces are reflecting the golden light of the setting sun. The ground is dark and textured, with long shadows cast across it.

**Heliogen**

# Third Quarter 2023 Earnings

November 14<sup>th</sup> 2023

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# Disclaimer

## Forward-Looking Statements

This presentation contains certain forward-looking statements within the meaning of Section 27A of the Securities Act of 1933, as amended, and Section 21E of the Securities Exchange Act of 1934, as amended. Statements that are not historical in nature, including the words “anticipate,” “expect,” “suggests,” “plan,” “believe,” “intend,” “estimates,” “targets,” “projects,” “should,” “could,” “would,” “may,” “will,” “forecast” and other similar expressions are intended to identify forward-looking statements. These forward-looking statements include, but are not limited to, statements regarding our commitment to accelerating our sales and establishing stronger relationships with our commercial partners, our plans to expedite the mechanical completion and first production of large-scale projects, extend our liquidity runway, establish partnerships to sell our heliostat, software and system design services, the expected capabilities and usages of our heliostat for Generations 3-5, achieving our financial and operational goals and future growth opportunities. Forward-looking statements are predictions, projections and other statements about future events that are based on current expectations and assumptions and, as a result, are subject to risks and uncertainties. Many factors could cause actual future events to differ materially from the forward-looking statements in this presentation, including but not limited to: (i) our financial and business performance, including risk of uncertainty in our financial projections and business metrics and any underlying assumptions thereunder; (ii) changes in our business and strategy, future operations, financial position, estimated revenues and losses, projected costs, prospects and plans; (iii) our ability to execute our business model, including market acceptance of our planned products and services and achieving sufficient production volumes at acceptable quality levels and prices; (iv) the suspension of trading of our common stock, and the commencement of delisting proceedings, on the New York Stock Exchange and the commencement of trading of our common stock in the over-the-counter market; (v) our ability to access sources of capital to finance operations, growth and future capital requirements; (vi) our ability to maintain and enhance our products and brand, and to attract and retain customers; (vii) our ability to scale in a cost effective manner; (viii) changes in applicable laws or regulations; (ix) developments and projections relating to our competitors and industry; (x) unexpected adjustments and cancellations related to our backlog; and (xi) our ability to protect our intellectual property. You should carefully consider the foregoing factors and the other risks and uncertainties disclosed in the “Risk Factors” section in Part I, Item 1A in our Annual Report on Form 10-K for the year ended December 31, 2022, as supplemented in our Quarterly Report on Form 10-Q for the quarter ended March 31, 2023 and other documents filed by Heliogen from time to time with the Securities and Exchange Commission. These filings identify and address other important risks and uncertainties that could cause actual events and results to differ materially from those contained in the forward-looking statements. Forward-looking statements speak only as of the date they are made. Readers are cautioned not to put undue reliance on forward-looking statements, and Heliogen assumes no obligation and does not intend to update or revise these forward-looking statements, whether as a result of new information, future events, or otherwise.

# From 2Q 2023 to 3Q 2023

## 2Q Earnings Deck



Addressable Market		Value Differentiators	
Customer Need	Heliogen's Value	Strategic	Operational
<b>Heat</b>	<ul style="list-style-type: none"> <li>30 percent of industrial heating applications require heat below 100°C, another 27 percent can be met with heat between 100 &amp; 400°C.</li> <li>On-site generation and storage.</li> </ul>	<ul style="list-style-type: none"> <li>High Capacity Factor (up to 100%+)</li> <li>Low cost of energy storage</li> <li>No rare earth materials</li> <li>Regulatory (RA) incentives</li> <li>&gt;85% recyclability</li> </ul>	<ul style="list-style-type: none"> <li>Enabled closed loop tracking for mineral field</li> <li>20-3% more vs. its efficiency vs. PV</li> <li>No thermal runaway fire risk</li> <li>Widely available supply chain</li> <li>Modular CSP site ease of permitting &amp; safety</li> </ul>
<b>Power</b>	<ul style="list-style-type: none"> <li>On-demand energy: Industrial &amp; utility load serving assets often require energy all day and all night.</li> <li>Grid-independent: Resilient &amp; economical.</li> <li>Load-following product: 4+ hour duration &amp; cost-effective.</li> </ul>		
<b>Fuel</b>	<ul style="list-style-type: none"> <li>Currently around 95% of all H<sub>2</sub> is produced from fossil fuels.</li> </ul>		

Industry Focus		Solution Oriented Partnership
Energy on Demand	Anticipated Use Cases	
Metals & Mining	35% of total final energy consumption globally and replace aging fossil fuel generation assets.	<ul style="list-style-type: none"> <li>Fully integrated hybrid design</li> <li>Ride through grid outages</li> <li>Minimal auxiliary load</li> <li>Wide operating temperature range</li> <li>Flexible charge / discharge duration</li> <li>Not limited by depth of discharge</li> <li>Autonomous maintenance options</li> <li>Limited degradation</li> </ul>
Fossil Fuel Alternatives	Meet constant demand year-round while maximizing integration of renewables and low-carbon electricity.	
Electric Utilities	Fully integrated co-location of CSP with PV and storage without need to manage multiple renewable assets.	
Technology & Data Centers	Energy independence and cost certainty to support 24/7 operations and shaving peak loads.	
Consumer & Industrials	Grid resiliency and peak shaving improving the reliability of local electricity distribution systems.	

## 3Q Headlines

- ✓ Increased commercial pipeline significantly with **qualified leads** growing to 1.8 GW from 825 MW and Pre-FID activities up 40 MW
- ✓ Initiated **operating Lancaster** as a plant vs. R&D historically
- ✓ Initiated groundbreaking in Oct. 2023 on a high capacity factor steam product ("24/7 Steam") at small commercial scale in west Texas
- ✓ Created design for **PV Hybrid Power product** (CSP+TES+PV) to deliver 24/7 clean green energy
- ✓ Completed **particle receiver design verification** on the world's first fully integrated Gen 3 CSP plant, and deployed it for on-sun testing
- ✓ Developed and **executed** on an \$8MM annual operating cost reduction plan, forecasted to fund both investment and operating needs through the end of 2024
- ✓ Recognized revenue of \$2.3MM for 3Q 2023, **bringing YTD revenue to \$5.6MM**

# Today's Agenda

01

## Business Update

Pathway to Creating Long-Term Shareholder Value | Evolution of Heliogen's Heliostat |  
36-Month Game Plan | Commercial Pipeline Details | Ongoing Commercial Initiatives

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02

## Financial Update

Current Backlog & Orders | 3Q 2023 Income Statement Review |  
3Q 2023 Cash Flow Statement

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03

## Closing Remarks

2023 Recap | 2024 Priorities



# Leading Edge Concentrated Solar Thermal Energy & Storage Technology

Plan, design and build projects for integration into customer operations

- + Solar collection
- + Flux delivery

**ABB** **BECKHOFF**

**FESTO**

- + Reach 500°C+ temperatures
- + High volume / low cost
- + Field efficiency
- + Production automation

- + Proprietary Heliostat design

- + Closed loop AI enabled software



- + Software and plant controls
- + Pointing accuracy
- + Dynamic power delivery
- + Wireless control
- + SOHOT software



Hanwha

- + Scalable, flexible concentrated solar thermal modules
- + O&M | Licensing

- + Green heat/steam
- + Green power
- + Sustainable fuels
- + Desalination
- + Calcination



- + Plant integration and design

- + Particle technology
- + modular sCO<sub>2</sub> power block
- + High temperature innovation
- + Next Gen industrial solution



- + Gen 3 CSP Innovation

**Creating Long-term Shareholder Value**

**Core IP**

**Technology**

**Partnerships**

**Applications**

**Heliogen**



# Proprietary Heliostat Designed for Manufacturing Excellence

## Generation 3

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**Reflective Area:** 1.5m<sup>2</sup>  
**Production Method:** Manual  
**Install Mechanism:** Driven Pile  
**Install Process:** Manual

**Wind Resilience:** ●●●●●  
**Automation:** ●●●●●  
**Beam Quality :** ●●●●●

**Intended Lifespan:** 3 years  
**Installed Cost:** \$\$

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- + Iterate on R&D
- + Validate modular design
- + Finalize design specifications



## Generation 4

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**Reflective Area:** 1.92m<sup>2</sup>  
**Production Method:** Semi-Automated  
**Install Mechanism:** Concrete Embed  
**Install Process:** Tool Assisted Manual

**Wind Resilience:** ●●●●●  
**Automation:** ●●●●●  
**Beam Quality:** ●●●●●

**Intended Lifespan:** 10 years  
**Installed Cost:** \$\$\$

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- + Currently in production
- + 2024 & 1H 2025 COD<sup>1</sup> projects
- + Expected Use: California | Texas



## Generation 5

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**Reflective Area:** 1.87m<sup>2</sup>  
**Production Method:** Fully Automated  
**Install Mechanism:** Ground Screws  
**Install Process:** Fully Automated

**Wind Resilience:** ●●●●●  
**Automation:** ●●●●●  
**Beam Quality:** ●●●●●

**Intended Lifespan:** 30 years  
**Installed Cost:** \$

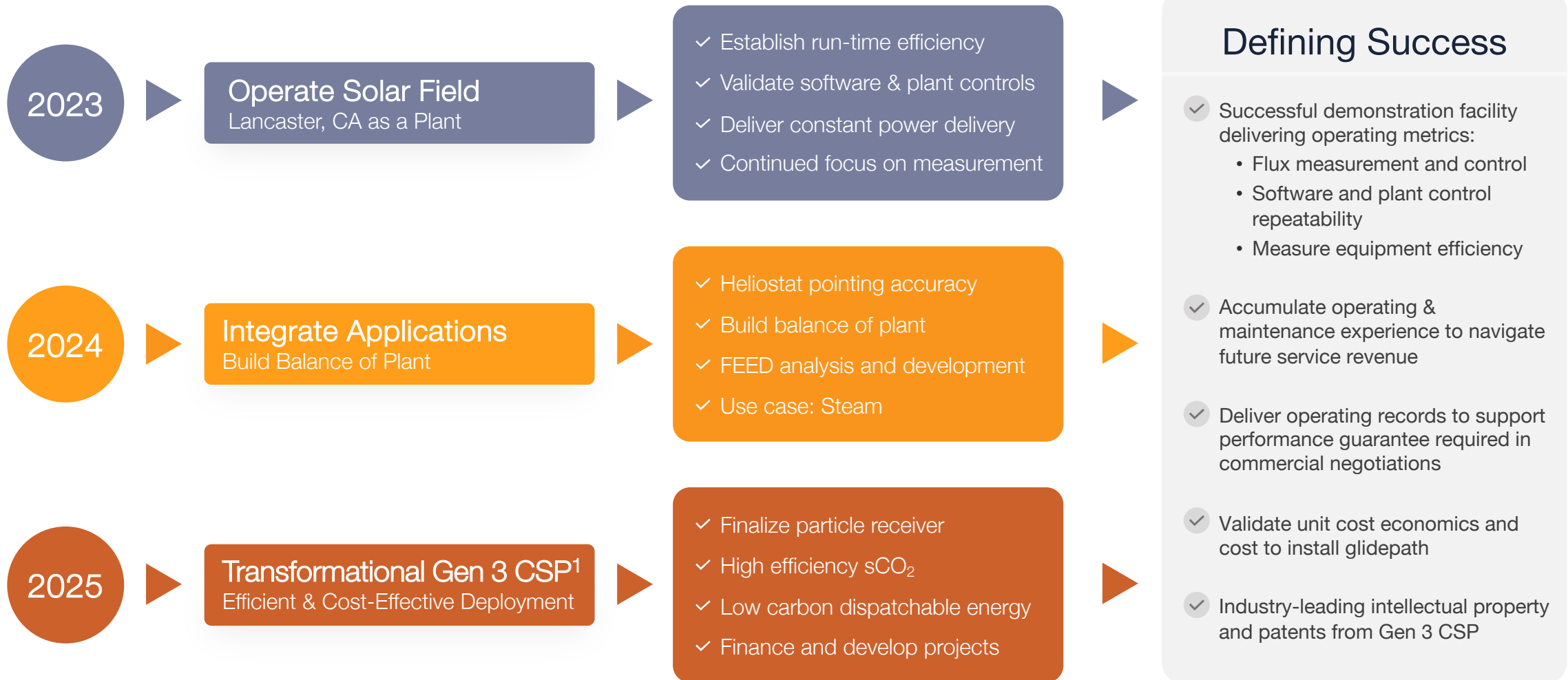
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- + Deliver on 5 MW contracted backlog
- + 2025 – 2027 COD projects

<sup>1</sup> COD = Commercial Operations Date

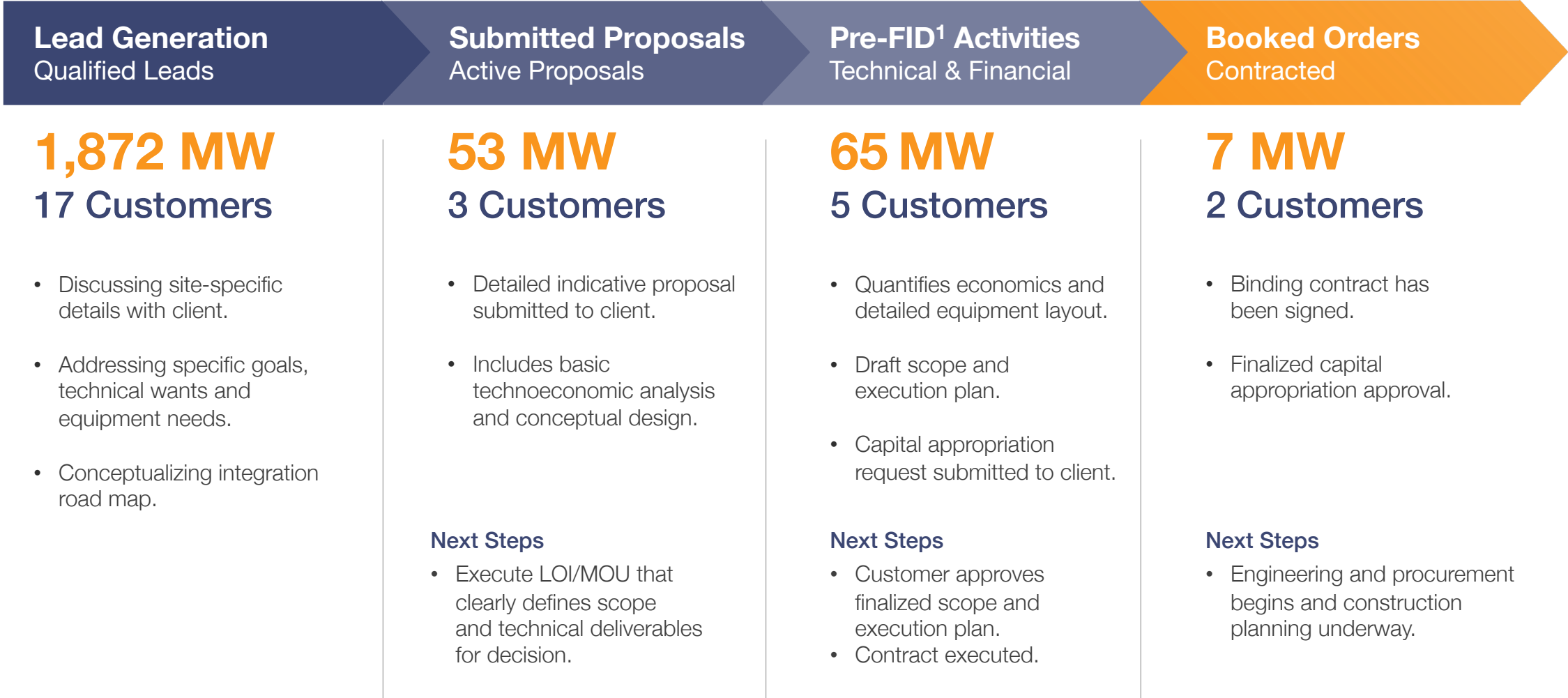


# Executing to Demonstrate Incremental Success



<sup>1</sup> Refer to slide 17 for details

# Current Commercial Activity



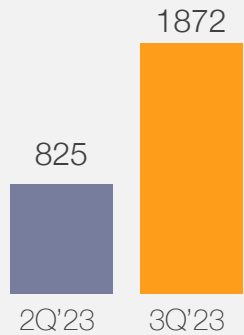
<sup>1</sup> FID = Final Investment Decision



# Anatomy of a Growing Pipeline

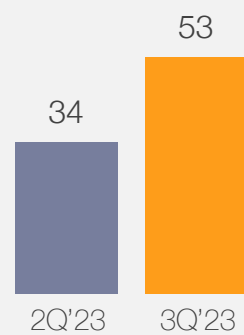
## Lead Generation

(MW)



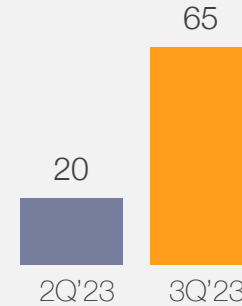
## Submitted Proposals

(MW)



## Pre-FID<sup>1</sup> Activities

(MW)



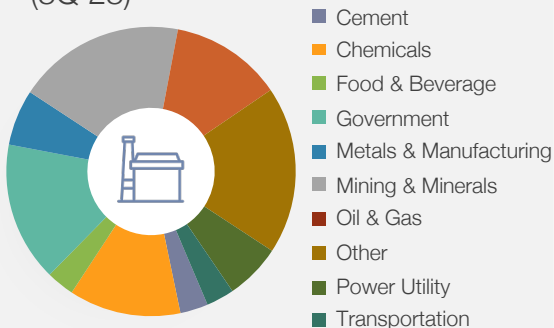
## Booked Orders

(MW)



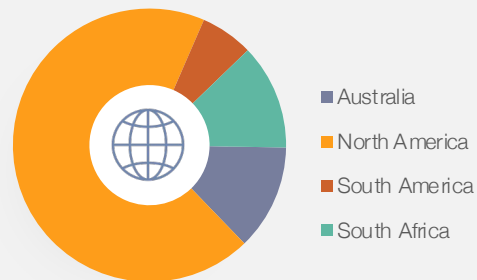
## Industry

(3Q'23)



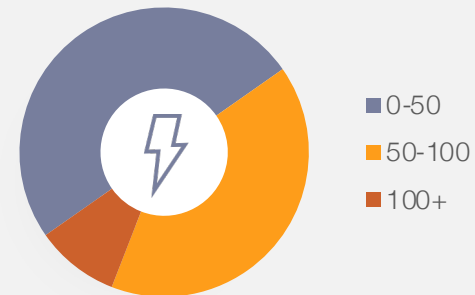
## Continent

(3Q'23)



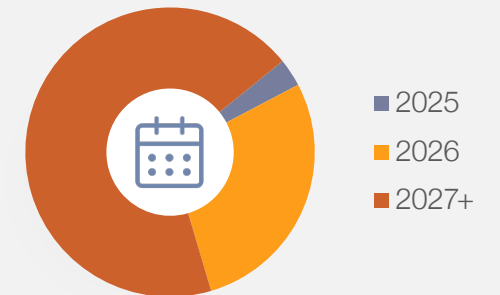
## Megawatt Size

(3Q'23)

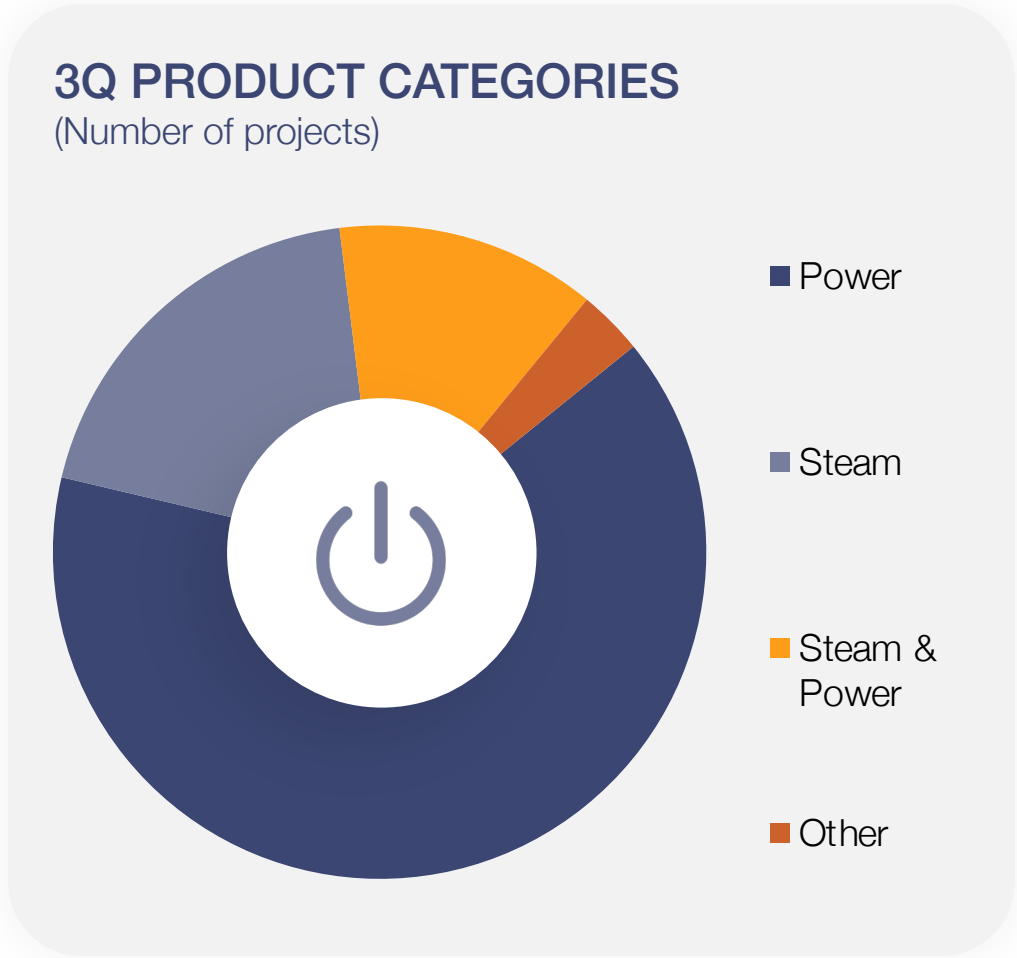
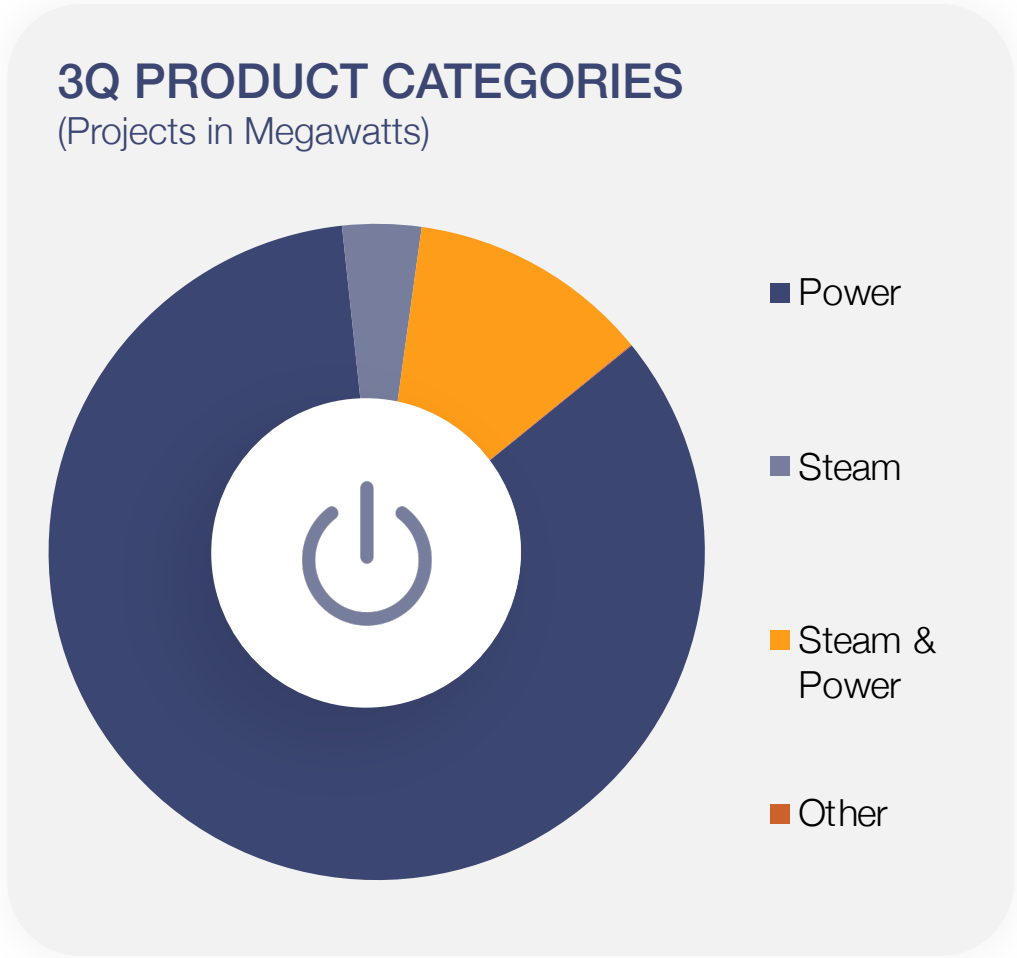


## COD<sup>2</sup>

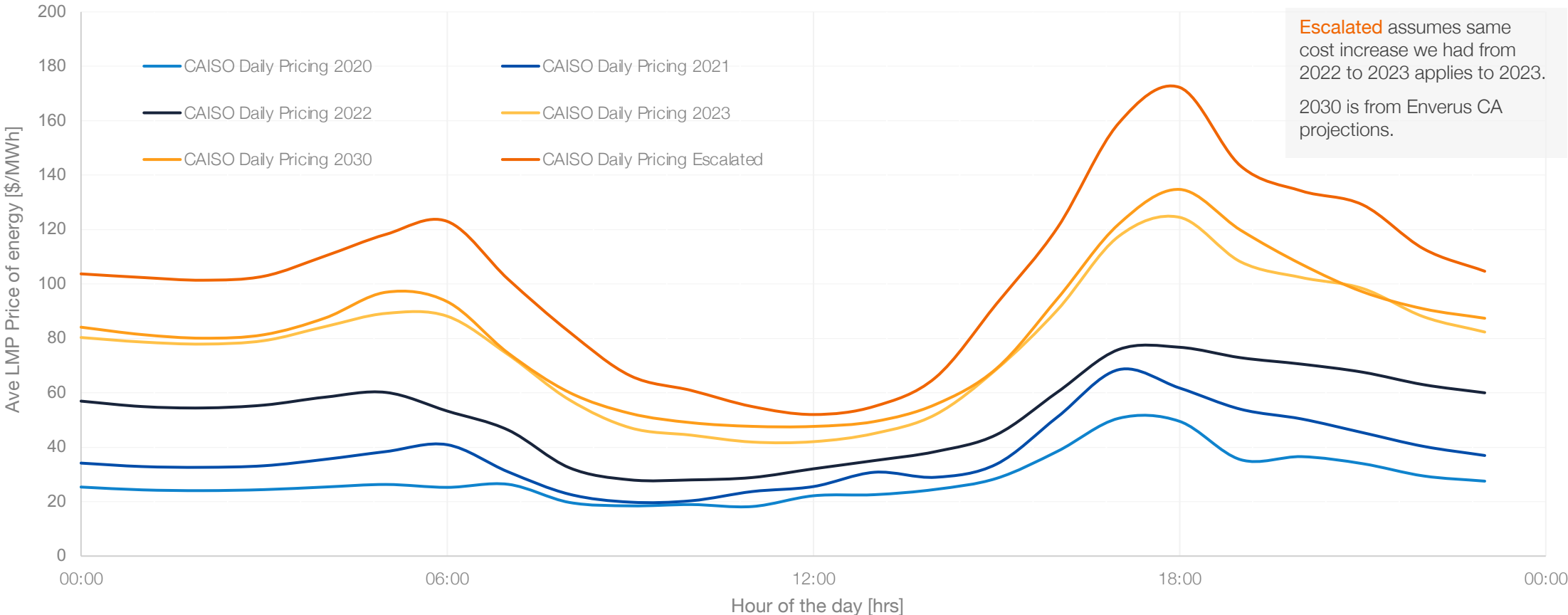
(3Q'23)



# Our Power Product Is Gaining Strong Traction



# The Price of Energy<sup>1</sup> Is Rising

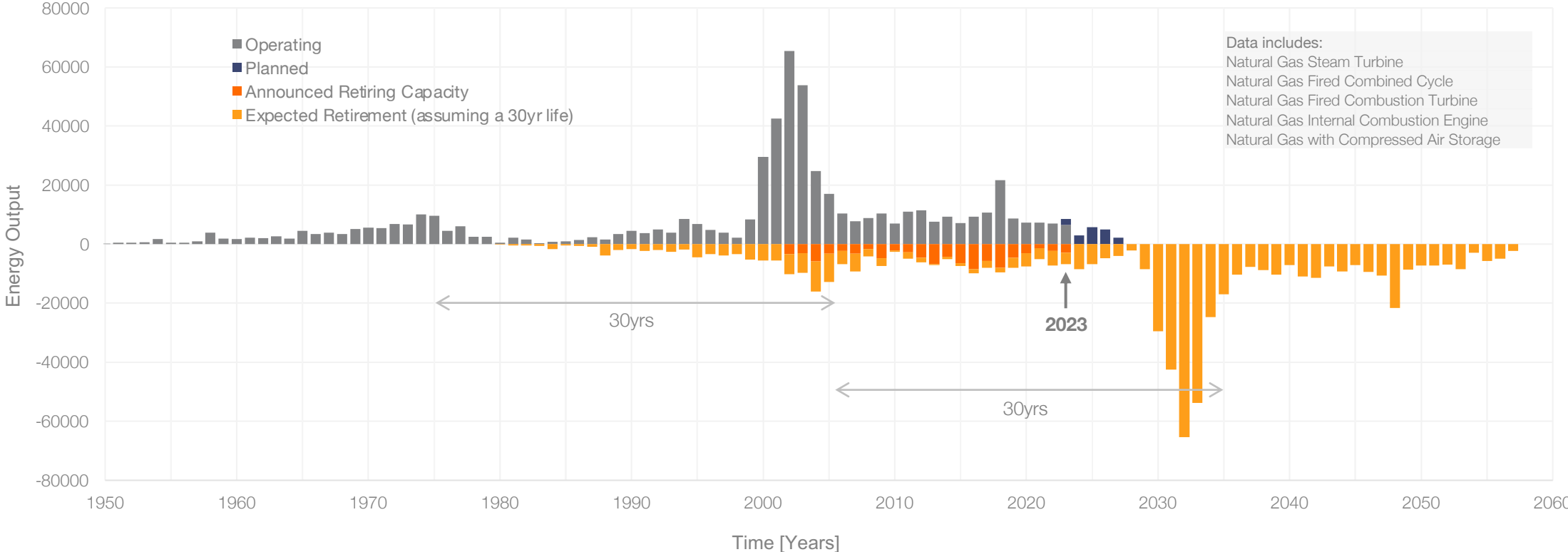


We believe the rising costs are due to two major reasons: 1) the increased cost of natural gas used by power plants and 2) the rising costs to maintain our electric grid as such **significant investments are required to modernize it and ensure reliable power delivery.**

<sup>1</sup>CAISO. California Independent System Operator. A state chartered, California non-profit public benefit corporation that operates the transmission facilities of all Participating TOs and dispatches certain Generating Units and Loads

# We Believe Retiring<sup>1</sup> Natural Gas Plants Will Create Opportunities

U.S. Natural Gas Fired Combined Cycle Generating Capacity Additions & Retirement

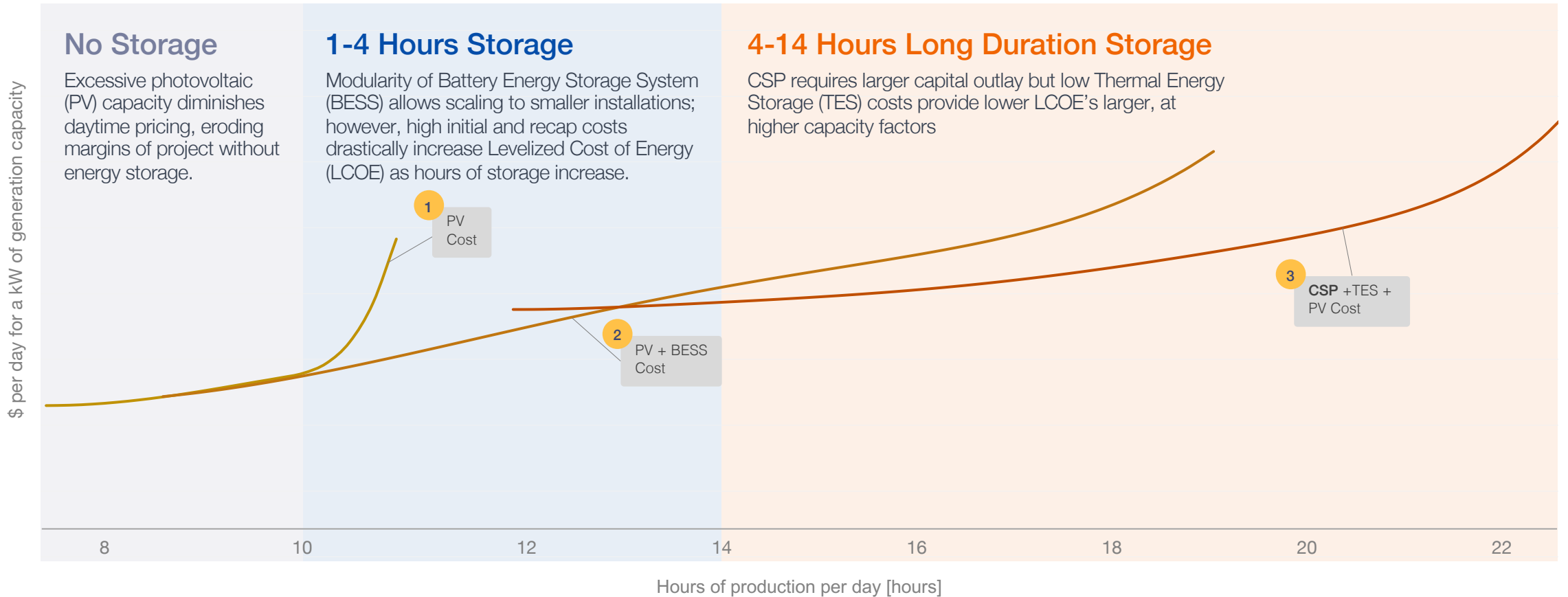


Increasing decommissioning, decontamination and demolition (DDD) of fossil fuel-fired (coal, fuel oil, natural gas) power plants





# CSP Provides Higher Profits Compared to PV or Lithium-Ion



## No Storage

Excessive photovoltaic (PV) capacity diminishes daytime pricing, eroding margins of project without energy storage.

## 1-4 Hours Storage

Modularity of Battery Energy Storage System (BESS) allows scaling to smaller installations; however, high initial and recap costs drastically increase Levelized Cost of Energy (LCOE) as hours of storage increase.

## 4-14 Hours Long Duration Storage

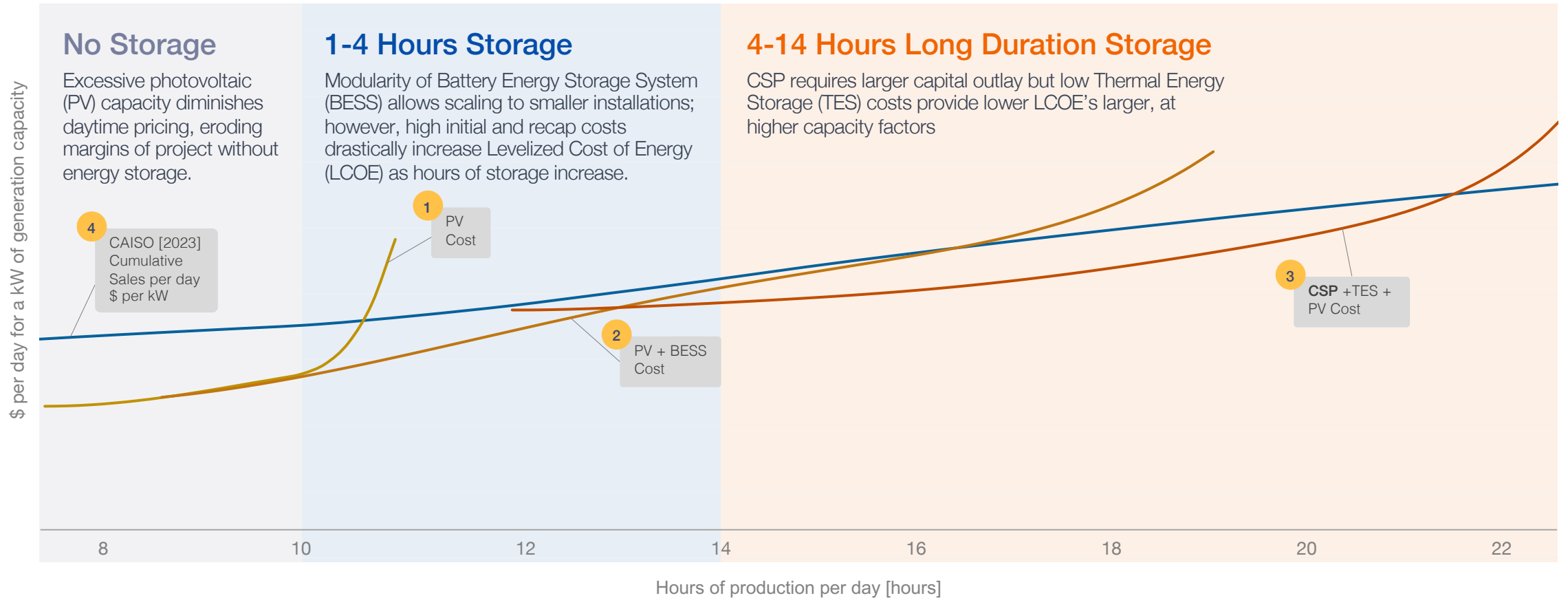
CSP requires larger capital outlay but low Thermal Energy Storage (TES) costs provide lower LCOE's larger, at higher capacity factors

### Assumptions:

- PV assumes +10% cost uncertainty
- PV + BESS assumes +20% cost uncertainty
- Hybrid assumes +30% cost uncertainty
- ITC applied to all (PV, BESS, CSP, TES)



# CSP Provides Higher Profits Compared to PV or Lithium-Ion

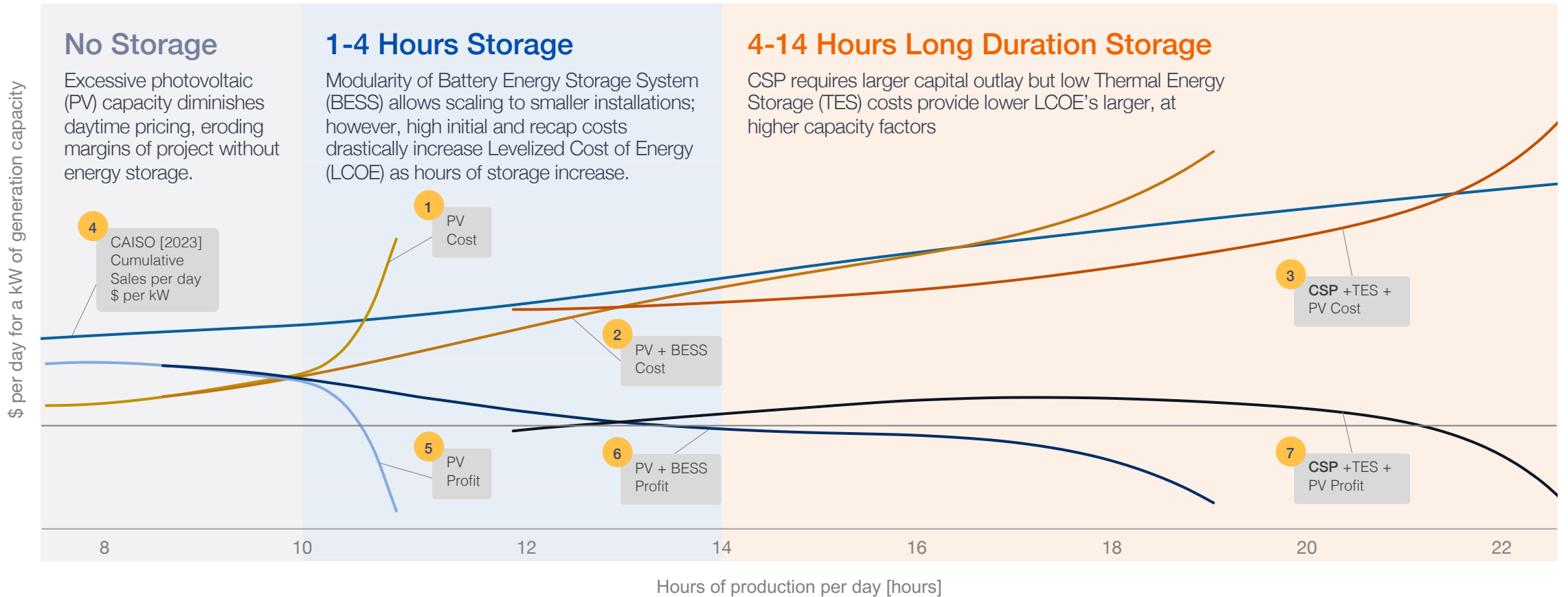


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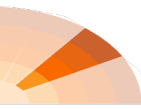


# CSP Provides Higher Profits Compared to PV or Lithium-Ion

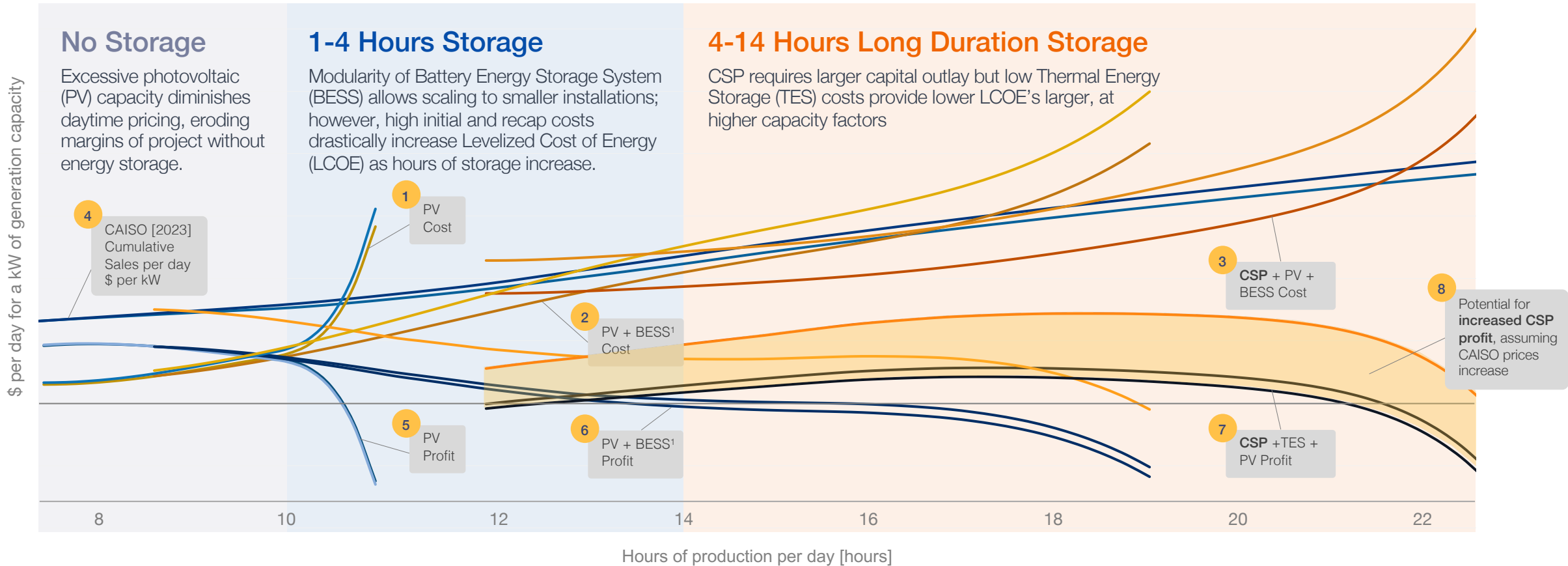


## Assumptions:

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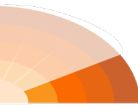
# CSP Provides Higher Profits Compared to PV or Lithium-Ion



### Assumptions:

- PV assumes +10% cost uncertainty
- PV + BESS assumes +20% cost uncertainty
- Hybrid assumes +30% cost uncertainty
- ITC applied to all (PV, BESS, CSP, TES)





# Next Generation Dispatchable Power with Woodside Energy

Innovation that will disrupt the industry

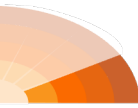
## Objective

- + Validate integrated operation of an sCO<sub>2</sub> power cycle with a thermal energy storage system charged from concentrating solar thermal heat to demonstrate commercial readiness for full scale plants.

## Investors



	Current Solution (Hybrid PV + CSP)	Next Generation (Gen 3 CSP)	Innovation
<b>Overview</b>	PV generates daytime power while CSP acts as a battery	High-capacity factor CSP + high temperature storage	Lower LCOE, smaller modular tower drives flexibility and greater gross margins
<b>Power Conversion Cycle</b>	Steam	Supercritical CO <sub>2</sub> ("sCO <sub>2</sub> ")	High thermal efficiency, for a single tower, even at smaller scale
<b>Thermal Energy Storage</b>	Molten salt	High-temperature solid particles	Higher storage temperatures enables high efficiency power generation and high temperature industrial processes
<b>Heliostats</b>	Heliogen's Gen 4	Heliogen's Gen 5	Significant reduction in manufactured + installed cost improves gross margins



# Executing on Project Brenda in Next 24 Months Will Be Instrumental for Demonstrable Value Creation



Heliogen was awarded exclusive rights to lease in the Brenda Solar Energy Zone by the US Bureau of Land Management after a competitive application process.



## Making Progress Towards Breaking Ground

### Attractive Brenda Site Characteristics:

- + Excellent solar resource (DNI > 2670 kWh/m<sup>2</sup>/year)
- + Over 3,300 acres of flat, consistent topography supports efficient, large-scale development
- + Accessible underground water to support power generation and hydrogen production
- + Proximity to transportation corridors: direct access to US-60 and close proximity to Interstate 10 for access to Phoenix metro area and Port of Los Angeles for domestic and international shipping
- + Close proximity to electricity transmission tie-ins and fiber optic line for data center access
- + Streamlined permitting process as designated Solar Energy Zone (Programmatic Environmental Impact Study “PEIS” completed by federal government)

### Initial Steps

- ✓ Secured world-class renewable energy production site

### Confirmation of sufficient water deliverability and rights

- ✓ Confirmed presence of water rights on lease for duration of Brenda project
- Concluding empirical testing of water deliverability

### Permitting process is underway

- National Environmental Policy Act (“NEPA”) permitting process
- Conditional User Permit (“CUP”) application with La Paz County

### Securing access to power transmission grid

- Conducting feasibility study on identified tie-in point
- Injection or load application request

### DOE Loan Programs Office (“LPO”) loan guarantee

- Began the DOE loan guarantee application process

### Finalizing project design and defining scope

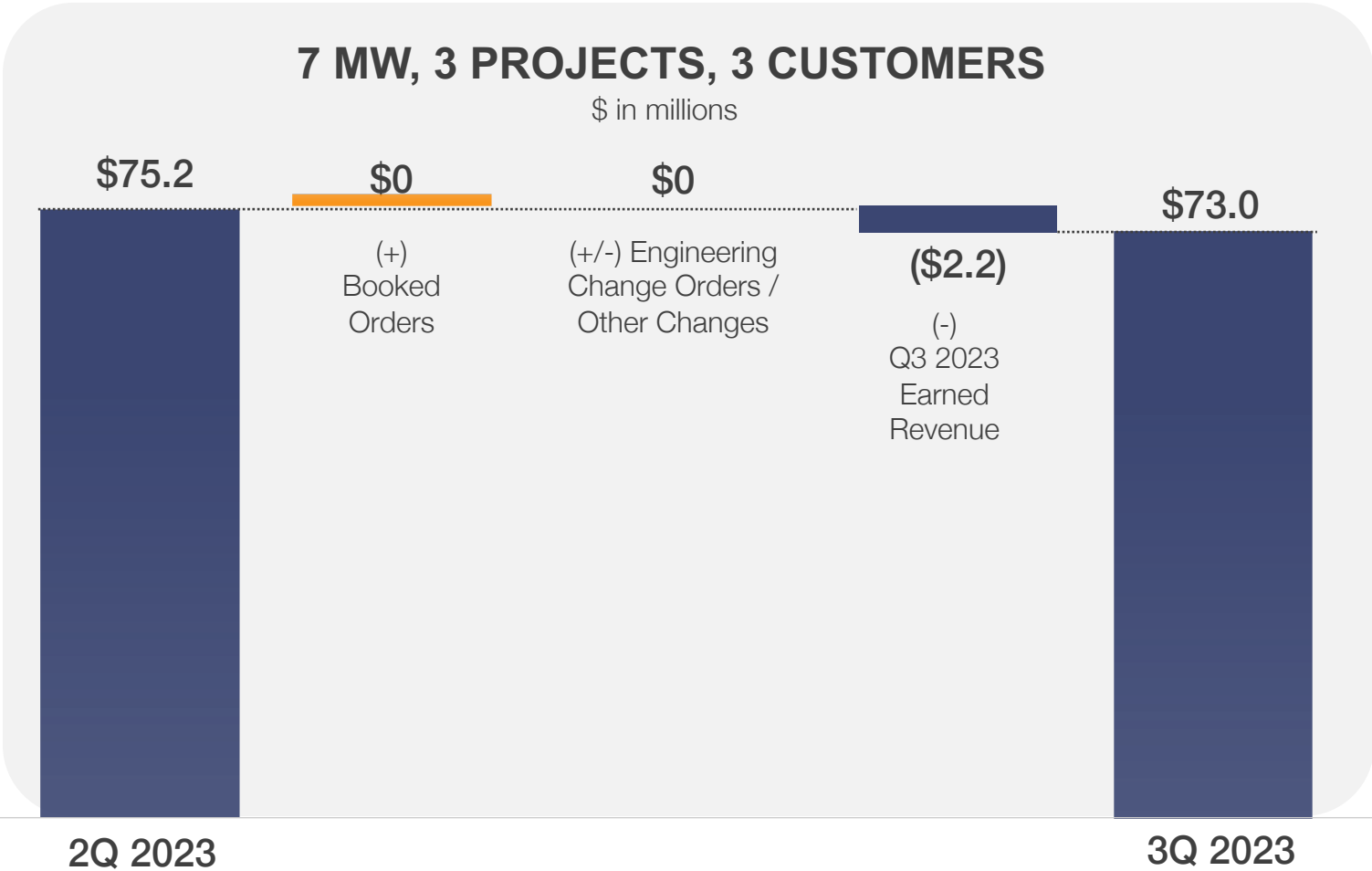
- Conducting pre-FEED study
- Front-End Engineering & Design (“FEED”) process

### Project execution

- Identify and secure EPC partnership
- Create detailed engineering design
- Project execution; construction, start-up, and commission

- ✓ Completed
- On-Going
- Next Steps

# \$73MM in Contracted Revenue Backlog<sup>1</sup>



- Turnkey Customer Centric Facility**
  - + \$61.4MM Green Energy production (Capella) in partnership with Woodside Energy (\$45MM) and DOE (\$35MM)
- Dimensional Energy**
  - + \$0.4MM partnership to develop sustainable aviation fuel
- What's Not Included in Backlog**
  - + \$4.1MM DOE Calcination
  - + Up to \$5MM engineering services agreement with NantG Power
  - + **Estimated \$10MM project cost** to design, build, and operate a high capacity factor steam product ("24/7 Steam") at small commercial scale in west Texas

<sup>1</sup> Contracted revenue backlog represents contracted revenue with customers and government entities we expect to realize for the construction of facilities, engineering services agreements, operating agreements, and products delivered under purchase agreements.

# 3Q 2023 Income Statement Review

Three Months Ended				
\$ in millions	3Q 2023		2Q 2023	
Revenue	\$	2.3	\$	1.4
Cost of revenue		1.9		1.5
Gross profit (loss)		0.4		(0.1)
Operating expenses:				
Selling, general and administrative		15.0		17.7
Research and development		5.2		4.9
Total operating expenses		20.2		22.6
Operating loss		(19.8)		(22.7)
Interest income, net		0.3		0.3
Gain (loss) on warrant remeasurement		0.1		(0.1)
Other income, net		0.8		0.8
Net loss before taxes		(18.6)		(21.7)
Benefit (provision) for income taxes		-		-
Net loss	\$	(18.6)	\$	(21.7)

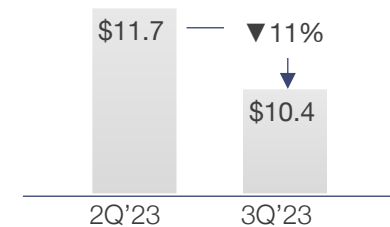
## Revenue:

- + \$2.1MM of project revenue from the Capella project.
- + \$0.2MM revenue from sustainable aviation fuel (SAF) project, HEHTRES and other small projects.

Capella	Contract (\$ in MM)
Lifetime revenue	\$80.6
Lifetime revenue recognized	\$19.2
Backlog	\$61.4

## SG&A:

- + Adjusted SG&A<sup>1</sup> excludes non-cash SG&A expenses, Heliogen ongoing project development costs, and one-time costs.



- Forecasting \$2MM in cost savings in SG&A per quarter for 2024 based on operating cost reduction plan

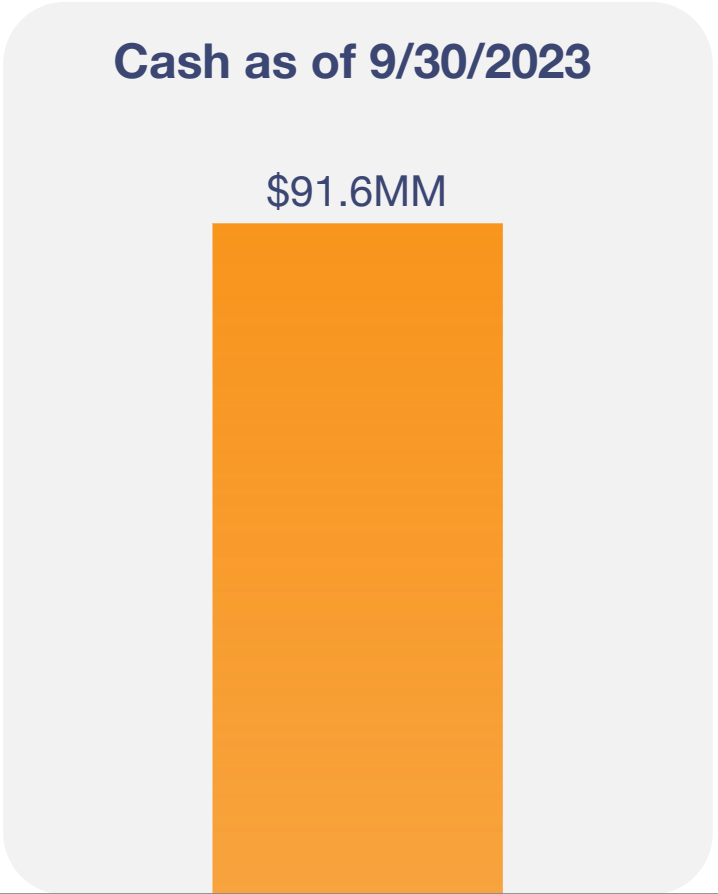
## R&D:

- + R&D includes the internal labor and third-party costs incurred to progress our product development efforts.

<sup>1</sup> Adjusted SG&A is a non-GAAP financial measure. Non-GAAP definitions and reconciliations are accessible on the Events & Presentations page in the Investor Relations section of the Heliogen's website at [www.heliogen.com](http://www.heliogen.com).



# Cash Activity



Available Liquidity<sup>4</sup>

## Year-to-date, Sources & Uses

**\$12.4MM**<sup>1</sup> Cash Collections from Customers & Partners

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**(\$12.6MM)**<sup>2</sup> Heliogen Project Development

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**(\$32.9MM)**<sup>3</sup> Adjusted SG&A

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**(\$12.4MM)**<sup>3</sup> Adjusted R&D

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**(\$6.1MM)** Changes in Working Capital & Restricted Cash

<sup>1</sup> Primarily cash received from Woodside and US Department of Energy for Project Capella

<sup>2</sup> Includes labor and materials allocated to Heliogen's ongoing projects

<sup>3</sup> Adjusted SG&A and Adjusted R&D are non-GAAP financial measures. Non-GAAP definitions and reconciliations are accessible on the Events & Presentations page in the Investor Relations section of the Heliogen's website at [www.heliogen.com](http://www.heliogen.com).

<sup>4</sup> Includes \$63.4MM of cash and cash equivalents and \$28.2MM of investments

# 2023 Recap | 2024 Priorities



Our commitment to providing transparent and efficient access to our investors will continue; Our core mission remains unchanged: to decarbonize industry with our breakthrough concentrating solar energy technology

- Advance our Gen 2 CSP-PV hybrid product
- Operate Lancaster as a Plant
- Complete installation of first project, with delivery and installation of ~1600 Gen 4 Heliostat subassemblies to the Texas site and supporting activities; First commercial-scale balance of plant integration with Heliogen core IP
- Complete the Capella project design and begin the next phase of Gen 3 CSP
- Advance at least one of the new 2023 contracts to FID
- Operate with a fully-funded operating and investment plan in 2024