Heliogen

Industrial Decarbonization



REPLACING FOSSIL FUELS WITH CONCENTRATED SUNLIGHT

Heliogen

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This information pack (this "Pack") is being provided for informational purposes only and has been prepared to assist interested parties in evaluating a business combination transaction between Heliogen, Inc. ("the Company" or "Heliogen") and Athena Technology Acquisition Corp. ("Athena") and is not to be used for any other purpose..

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Forward-Looking Statements

The Pack includes "forward-looking statements". Forward-looking statements may be identified by the use of words such as "estimate," "plan," "project," "forecast," "intend," "would," "should," "will," "expect," "anticipate," "believe," "seek," "target" or other similar expressions that predict or indicate future events or trends or that are not statements of historical matters. "Forward-looking statements" include all statements about the Company's future plans and performance, regardless of whether the foregoing expressions are used to identify them. In addition, these forward-looking statements include, but are not limited to, statements regarding: estimates and forecasts of financial and performance metrics; projections of market opportunity and market share, expectations and timing related to the announcement of strategic partnerships; the potential success of the Company's business strategy; the Company's research and development efforts; and the Company's proposed plans to scale and expectations, including statements regarding the effectiveness and efficiency of its services.

These statements are based on various assumptions, whether or not identified in the Pack, and on the current expectations of the Company's management and are not predictions of actual performance.

These forward-looking statements are provided for illustrative purposes only and are not intended to serve as and must not be relied on by any investor as, a guarantee, an assurance, a prediction or a definitive statement of fact or probability. Actual events and circumstances are difficult or impossible to predict and will differ from assumptions.

Many actual events and circumstances are beyond the control of the Company. These forward-looking statements are subject to a number of risks and uncertainties, including changes in domestic and foreign business, market, financial, political and legal conditions, projections of market opportunity and market share, potential benefits and commercial attractiveness to its customers of the Company's services, the potential success of the Company's marketing and expansion strategies, the Company's ability to scale and the timing of expected business milestones, the inability of the parties to successfully or timely consummate the proposed business combination, including the risk that any required regulatory approvals are not obtained, are delayed or are subject to unanticipated conditions that could adversely affect the combined company or the expected benefits of the proposed business combination or that the approval of the stockholders of the Company or Athena is not obtained, failure to realize the potential benefits of the business combination (including with respect to stockholder value), the effects of competition on the Company's future business, the amount of redemption requests made by Athena's public stockholders, the ability of Athena or the combined company to issue equity or equity-linked securities in connection with the proposed business combination or in the future, and expectations related to the terms and timing of the potential transactions and those factors discussed in Athena's final prospectus filed on February 5, 2021, under the heading "Risk Factors," and other documents of Athena filed, or to be filed, including the proxy statement/prospectus expected to be filed in connection with the business combination, with the Securities and Exchange Commission ("SEC"). If any of these risks materialize or if assumptions prove incorrect, actual results could differ materially from the results implied by these forward-looking statements. There may be additional risks that are not presently known to the Company or that the Company currently believes are immaterial that could also cause actual results to differ from those contained in the forward-looking statements. In addition, forward-looking statements reflect the Company's expectations, plans or forecasts of future events and views as of the date of the Pack. The Company anticipates that subsequent events and developments will cause the Company's assessments to change. However, while the Company may elect to update these forward-looking statements at some point in the future, the Company specifically disclaims any obligation to do so. These forward-looking statements should not be relied upon as representing the Company's assessments as of any date subsequent to the date of the Pack. Accordingly, undue reliance should not be placed upon the forward-looking statements.

Use of Projections and Description of Key Relationships

The Pack contains projected financial information with respect to the Company, namely revenue and the non-GAAP financial measures, EBITDA and Free Cash Flow for 2021 – 2026. Such projected financial information constitutes forward-looking information, and is for illustrative purposes only and should not be relied upon as necessarily being indicative of future results. The assumptions and estimates underlying such projected financial information are inherently uncertain and are subject to a wide variety of significant business, economic, competitive and other risks and uncertainties that could cause actual results to differ materially from those contained in the prospective financial information

See "Forward-Looking Statements" above. Actual results may differ materially from the results contemplated by the projected financial information contained in the Pack, and the inclusion of such information in the Pack should not be regarded as a representation by any person that the results reflected in such projections will be achieved. The independent registered public accounting firm of the Company has not audited, reviewed, compiled, or performed any procedures with respect to the projections for the purpose of their inclusion in the Pack, and accordingly, does not express an opinion or provided any other form of assurance with respect thereto for the purpose of the Pack.

Disclaimer

The Pack contains descriptions of certain key business relationships of the Company. These descriptions are based on the Company's management team's discussions with such counterparties and the latest available information and estimates as of the date of the Pack. In certain cases, such descriptions are subject to negotiation and execution of definitive agreements with such counterparties which have not been completed as of the date of the Pack and, as a result, such descriptions of key business relationships of the Company, remain subject to change

Financial Information; Non-GAAP Financial Measures

The financial information and data contained in the Pack is unaudited and does not conform to Regulation S-X. Some of the financial information and data contained in the Pack, such as EBITDA and Free Cash Flow, have not been prepared in accordance with United States generally accepted accounting principles ("GAAP"). EBITDA is defined as net earnings (loss) before interest expense, income tax expense (benefit) depreciation and amortization Free cash flow is defined as net income, plus depreciation and amortization, less capital expenditures (incl. acquisitions) and less change in net working capital. The Company believes these non-GAAP measures of financial results provide useful information to management and investors regarding certain financial and business trends relating to the Company's financial condition and results of operations. The Company believes that the use of these non-GAAP financial measures provides an additional tool for investors to use in evaluating projected operating results and trends in and in comparing the Company's financial measures with other similar companies, many of which present similar non-GAAP financial measures to investors. Management does not consider these non-GAAP measures in isolation or as an alternative to financial measures determined in accordance with GAAP. The principal limitation of these non-GAAP financial measures is that they exclude significant expenses and income that are required by GAAP to be recorded in the Company's financial statements. In addition, they are subject to inherent limitations as they reflect the exercise of judgments by management about which expense and income are excluded or included in determining these non-GAAP financial measures. In order to compensate for these limitations, management presents non-GAAP financial measures in connection with GAAP results. Please refer to the Appendix for a reconciliation of the Company's projected EBITDA and free cash flow for full years 2021-2026 to the most directly comparable measure prepared in accordance with GAAP because the Company is unable to provide this reconciliation without unreasonable effort due to the uncertainty and inherent difficulty of predicting the occurrence, the financial impact, and the periods in which the adjustments may be recognized..

In addition, all the Company historical financial information included herein is preliminary and subject to change pending finalization of the 2020 audit of the Company in accordance with PCAOB auditing standards.

Trademarks

The Pack contains trademarks, service marks, trade names and copyrights of the Company and other companies, which are the property of their respective owners.

Additional Information and Where to Find It

In connection with the proposed business combination, Athena Technology Acquisition Corp. ("Athena") has filed with the SEC a registration statement on Form S-4 containing a preliminary proxy statement and a preliminary prospectus of Athena, which has not yet become effective. After the registration statement is declared effective, Athena will mail a definitive proxy statement/prospectus relating to the proposed business combinations to its stockholders. This communication does not contain all the information that should be considered concerning the proposed business combinations and is not intended to form the basis of any investment decision or any other decision in respect of the business combinations. Additional information about the proposed business combinations and related transactions will be described in Athena's combined proxy statement/prospectus relating to the proposed business combinations and the businesses of Athena and Heliogen, Inc. ("Heliogen"), which Athena has filed with the SEC. The proposed business combinations and related transactions will be submitted to stockholders of Athena for their consideration. Athena's stockholders and other interested persons are advised to read the preliminary proxy statement/prospectus and the amendments thereto and the definitive proxy statement/prospectus when available and other documents filed in connection with Athena's solicitation of proxies for its special meeting of stockholders to be held to approve, among other things, the proposed business combinations and related transactions, because these materials will contain important information about Heliogen, Athena and the proposed business combinations and related transactions. When available, the definitive proxy statement/prospectus and other relevant materials for the proposed business combinations will be mailed to stockholders of GigCapital2 as of a record date to be established for voting on the proposed business combinations and related transactions. Stockholders may also obtain a copy of the preliminary or definitive proxy statement/prospectus, once available, as well as other documents filed with the SEC by Athena, without charge, at the SEC's website located at www.sec.gov or by directing a request to Phyllis Newhouse, President and Chief Executive Officer, Athena Technology Acquisition Corp., 125 Townpark Drive, Suite 300, Kennesaw, GA 30144, or by telephone at (970) 924-0446..

Participants in the Solicitation

Athena, Heliogen and their respective directors and executive officers and other persons may be deemed to be participants in the solicitations of proxies from Athena's stockholders in respect of the proposed business combinations and related transactions. Information regarding Athena's directors and executive officers is available in its Registration Statement on Form S-1 and the prospectus included therein filed with the SEC on March 3, 2021. Additional information regarding the participants in the proxy solicitation and a description of their direct and indirect interests is contained in the preliminary and will be contained in the definitive proxy statements/prospectus related to the proposed business combinations and related transactions when it becomes available, and which can be obtained free of charge from the sources indicated above.

No Offer or Solicitation

This communication shall neither constitute an offer to sell or the solicitation of an offer to buy any securities, nor shall there be any sale of securities in any jurisdiction in which the offer, solicitation, or sale would be unlawful prior to the registration or qualification under the securities laws of any such jurisdiction.

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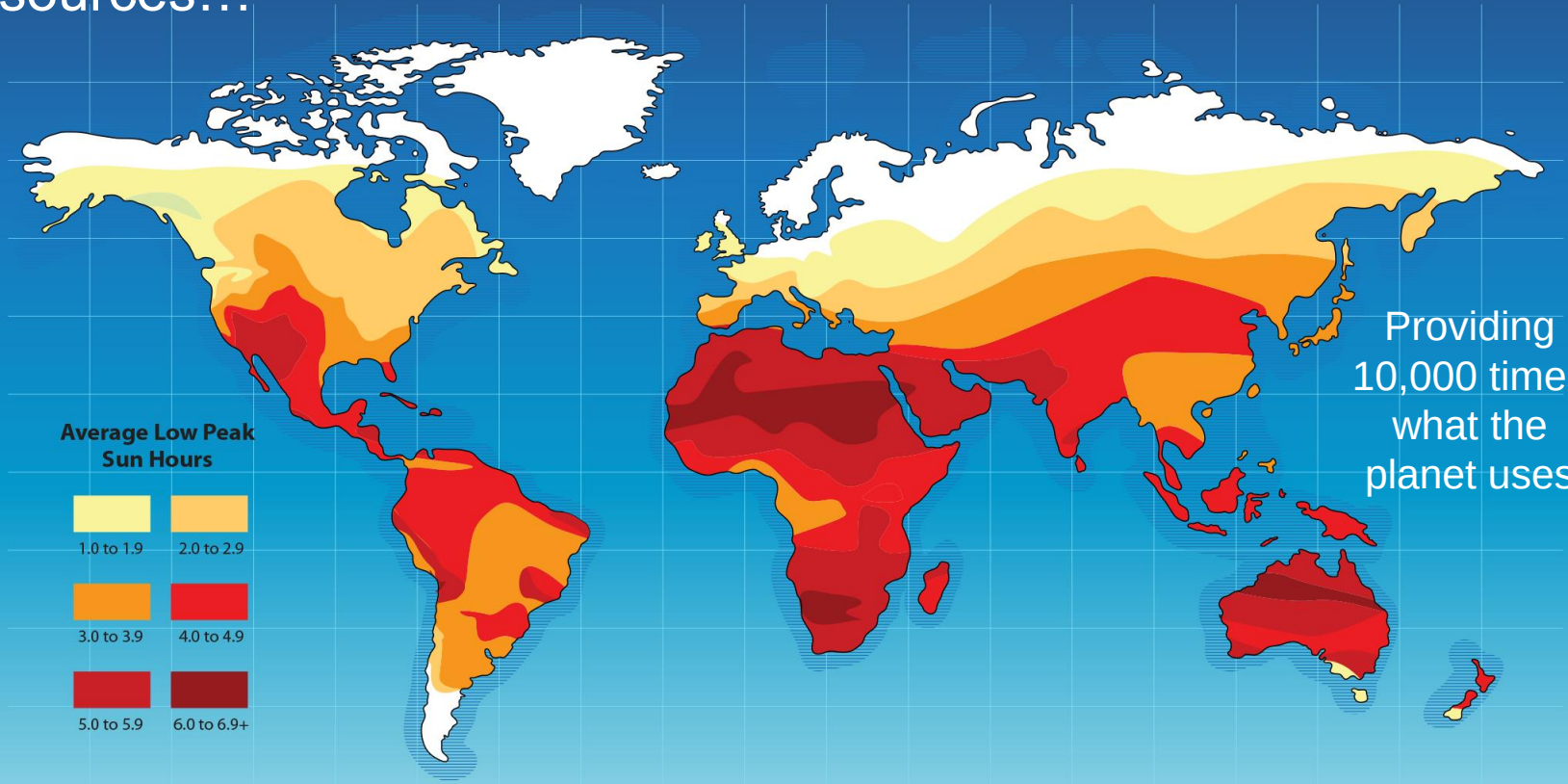
1. Problem / solution
2. Heliogen's differentiation
3. How Heliogen works
4. Executive team
5. Business opportunity
6. Our partner Athena Technology Acquisition Corporation
7. Summary

Industry needs a new resource to power the energy transition including heat, power, and hydrogen



Heliogen

Solar energy is one of the most evenly distributed natural resources…



Providing 10,000 times what the planet uses

Heliogen

However, there are two problems:

Solar / renewable energy is extremely intermittent



Solar / renewable energy is difficult to transport



Heliogen's Sunlight Refinery™ will solve these two fundamental problems



Heliogen aims to produce near always-available and transportable renewable energy – cost-effectively

Heliogen has 4 fundamental insights that set it apart

1. Heavy industry is a critical market for decarbonizing technologies and is currently underserved
2. Renewable energy for heavy industry must be near constantly available *and* cost effective
3. AI / software / computation power can simplify and reduce both hardware, installation, and maintenance cost
4. High volume manufacturing techniques enable reliability, scale, and learning curve cost-reduction

Heliogen is building on these 4 key insights to decarbonize industry, projected to create a profitable, high-growth business

We believe that Heliogen is currently the only public solar technology company poised to meaningfully address climate change for industrial customers

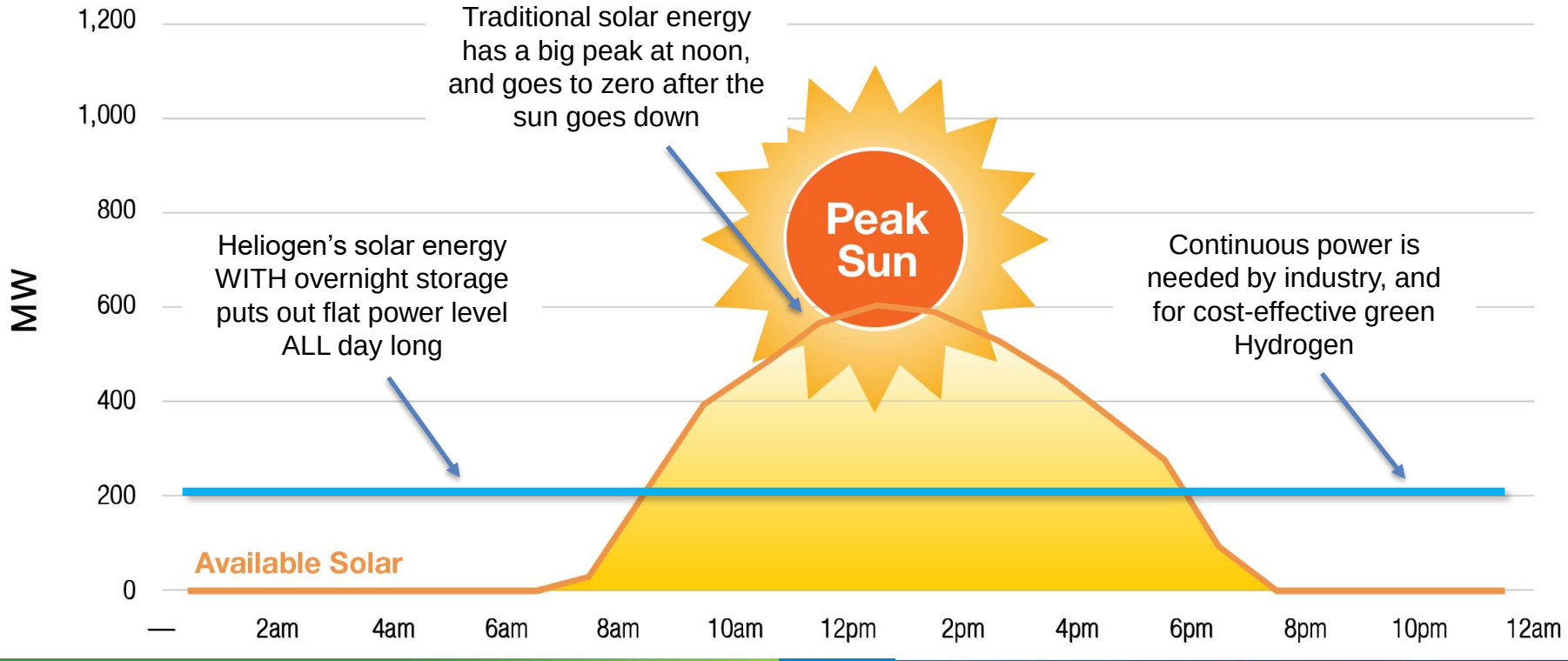
Residential/Commercial	Utility	Industrial Decarbonization
SunRun, Enphase, Tesla, JinkoSolar, Sunnova	NextEra Energy, First Solar, Iberdrola, Shoals, Array Technologies, Canadian Solar	Heliogen





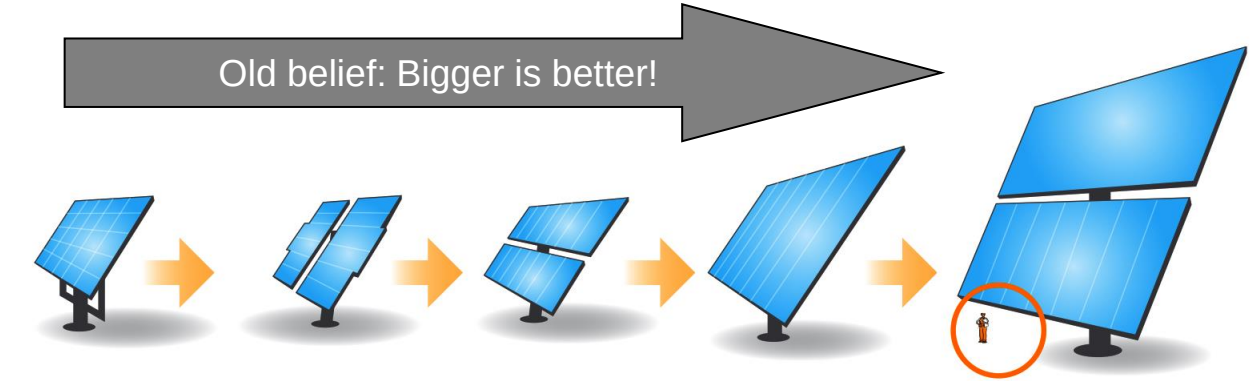


Heliogen's Differentiator Will Be Near Always-Available Renewable Energy



Heliogen

Our Fundamental Insight – More computation now makes smaller better









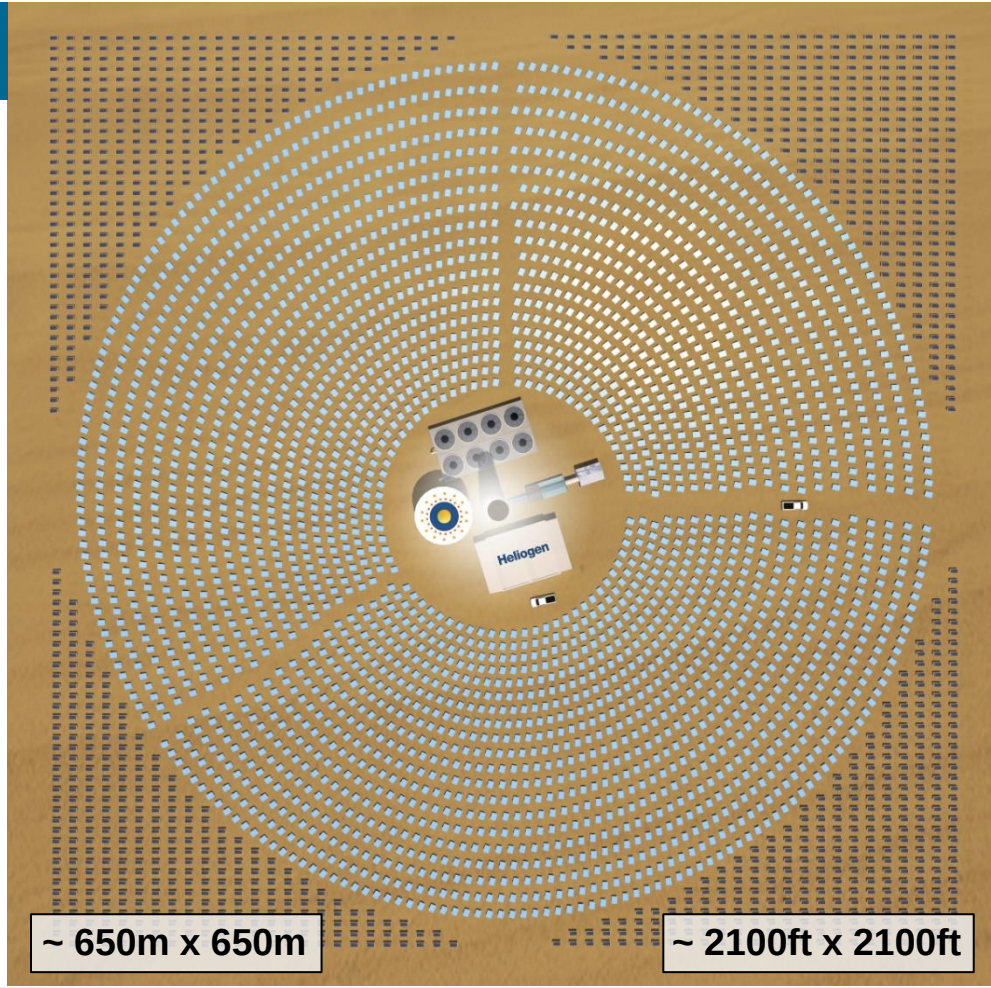
We Reinvented Concentrated Solar to be Modular & Scalable

We build ONE modular 5MW plant and replicate it to meet our customers' demand:

- ~100MW of electrical energy can be produced with ~20 modules
- Modular and easily scalable design will allow for growth to compete with large scale renewable projects

Plant estimated to produce:

- > 85% capacity factor renewable power
- < 5 cents per kW-hour power cost(1)
- < 1/6th square mile footprint (650m x 650m)
- > 850,000 kilograms of hydrogen/year



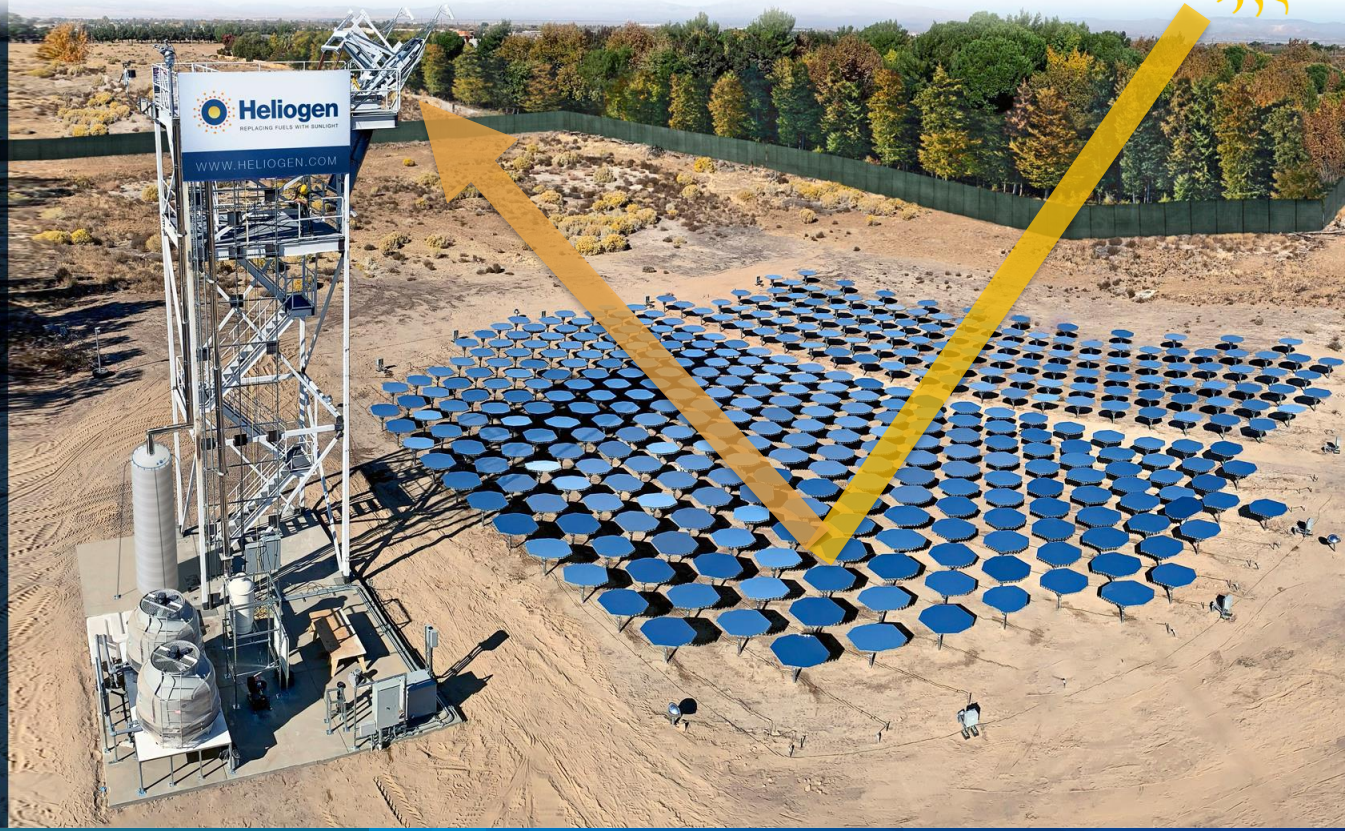
1. Heliogen estimates. Analysis assumes subsidized economics with 60% debt at 8% interest rate and 40% equity at 12% cost over 30 year projection period. Represents the estimated implied LCOE of Heliogen.

Heliogen

The Heliogen Process

Heliogen's closed-loop system uses computer vision to identify the precise position of every single mirror, then make micro-adjustments in real time to achieve a perfect focus. Closed-loop means that the mirrors are pointed more accurately with optical feedback, not just mechanical stiffness

1. Reflect sun rays to top of tower
2. Generate high temperatures in solar receiver
3. Store heat in solid media
4. Heat exchanger brings heat to heat engine
5. Heat engine makes power
6. Optional electrolyzer makes Hydrogen



Heliogen's operational prototype facility in Lancaster, California

Heliogen

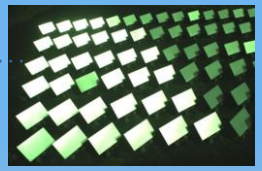
We believe our patented system is the first ever to achieve closed-loop tracking enabling cost-effective ultra-high temperatures at commercial scale



The sky is very bright next to the sun, and the intensity decreases further away

Sun & intensity gradient

4 cameras



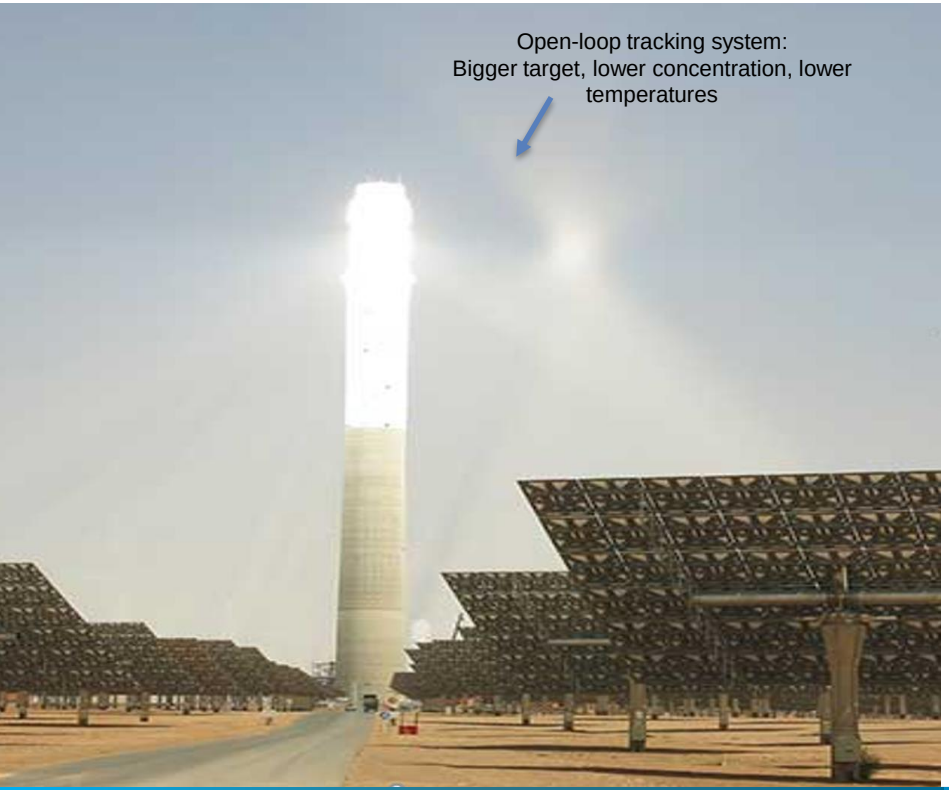
Heliogen's Heliostat Operating System (H.O.S.)

The cameras measure the intensity of sky reflected in each mirror.

Using these four intensity measurements, we calculate the mirror orientation and therefore the direction of the beam, allowing real-time perfect tracking.

H.O.S. is the first commercial closed-loop heliostat field control system.

Heliogen's software/AI-based closed-loop tracking invention:
Better focus, higher temperatures, and higher efficiency will enable lower cost





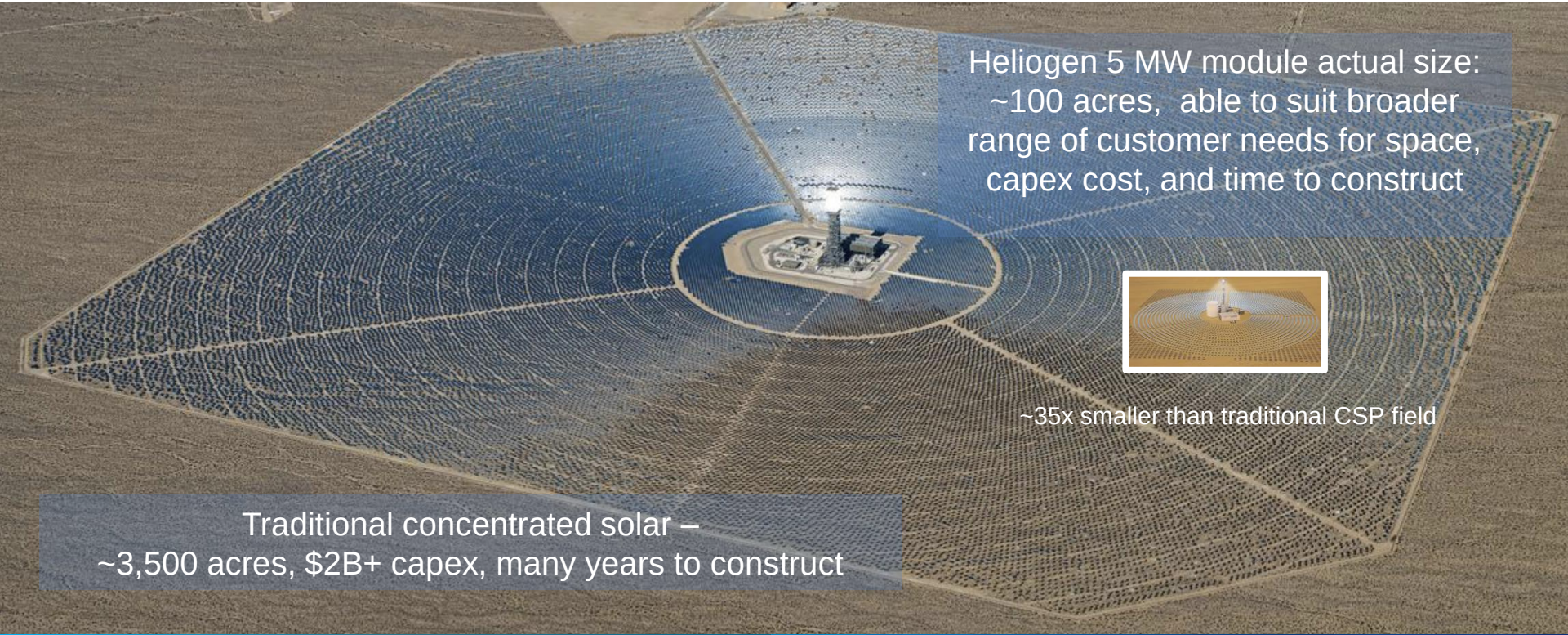
Heliogen reinvented concentrated solar by using Moore's Law to break the huge mirror into 100 smaller mirrors that can be mass-manufactured and controlled by software

Assembled in field

Pre-fabricated in factory and deployed like "farming"

In 2015, the cost of sensors, image recognition, and autonomy dropped enough in price to make our innovation possible for the first time

Heliogen has reinvented concentrated solar with modular, repeatable scale by using AI, computer vision, robotics, and factory automation



Heliogen has a strong portfolio of 6 granted and 13 pending patents

Rich portfolio of technology advancements and proprietary software includes the following issued patents:

- Closed loop tracking system (9,010,317, 10,101,430)
- Heliostat tracking based on radiance maps (11,017,561)
- Heliostat intensity & polarization tracking (10,359,215, ZL 201710278774.4)
- Covered heliostat array (11,035,592)
- Self-ballasted suspended heliostat (appl. no. 16/426599 allowed)
- Solar panel tracking assembly (ZL201721163276.7, ZL201721163153.3, ZL201721163240.9)



To make green Hydrogen affordable, you need low-cost renewable energy **AND** high capacity-factor

(to leverage capex cost of electrolyzer)

20%
Capacity-Factor



Fixed Solar Panels

27.5%
Capacity-Factor



Tracked Solar Panels

46.5%
Capacity-Factor



Wind Farm

50%
Capacity-Factor



Offshore Wind Farm

~85+%
Capacity-Factor

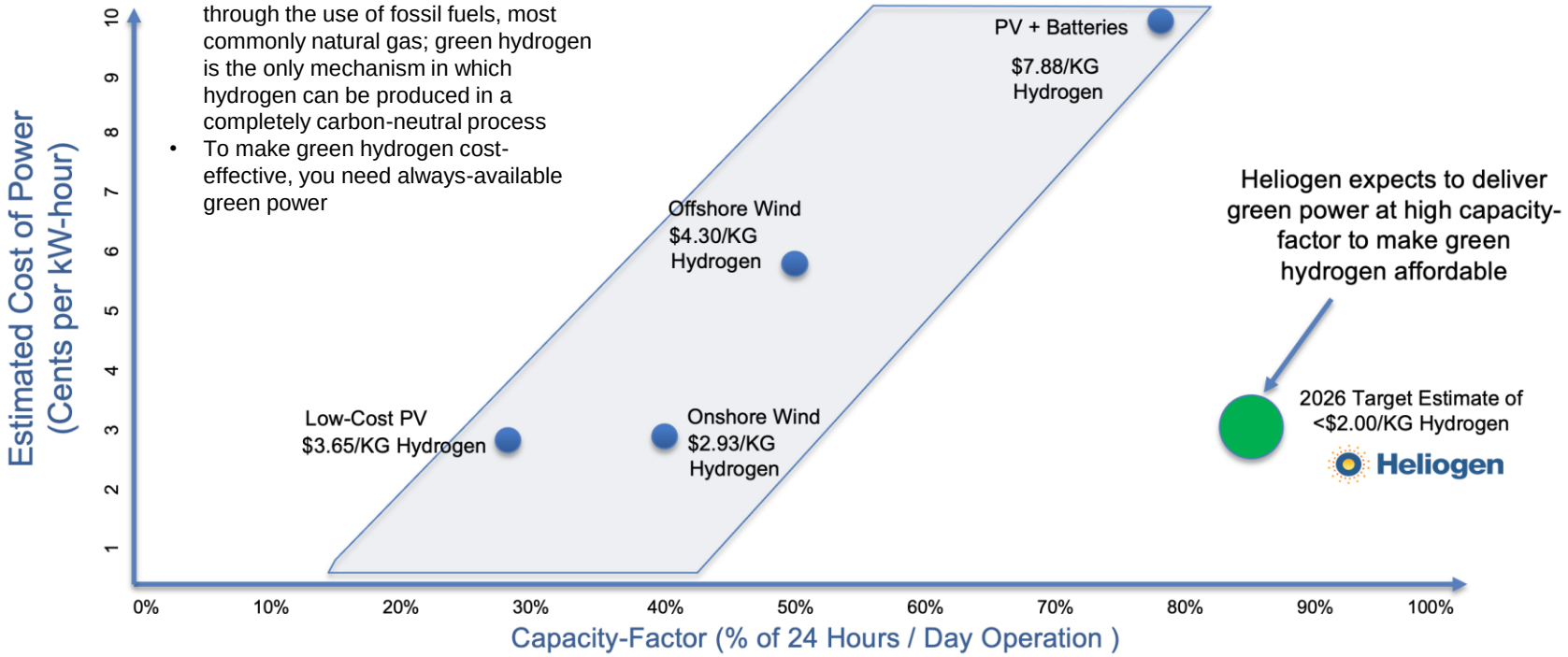


Heliogen

Source: Lazard 's Levelized cost of energy analysis 14.0 – Solar Panels = average of rooftop and C&I, Tracked = Utility-scale average, Wind Farm = Onshore Average, Offshore = Offshore Avg. Heliogen = estimate based on customer target

Industry and Green Hydrogen Needs Always-Available Green Power

- Grey and blue hydrogen are made through the use of fossil fuels, most commonly natural gas; green hydrogen is the only mechanism in which hydrogen can be produced in a completely carbon-neutral process
- To make green hydrogen cost-effective, you need always-available green power



Source: Heliogen estimates.
Note: Analysis assumes subsidized economics with 60% debt at 8% interest rate and 40% equity at 12% cost over 30 year projection period. Represents the estimated implied LCOE of Heliogen assuming a capital cost range of approximately $3,600–$5,000 $/kW.

Heliogen

Heliogen's Solar Refinery™ designed to capture, concentrate and refine sunlight into cost-efficient energy on demand.

This 24/7, low-carbon energy can be available as heat, power, or fuel in modular/scalable deployments.

HelioHeat

HelioHeat creates heat up to 800°C+ 24/7 to power industrial processes or mining.



~ 1 mile →



Delivery range of this product is approximately 1 mile.

HelioPower

HelioPower delivers the HelioHeat solar thermal energy to a heat engine to produce electrical power 24/7.



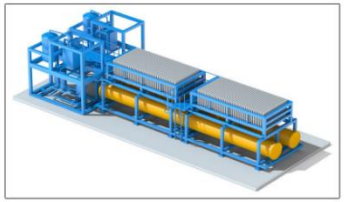
~ 100 miles →



Delivery range of this product is approximately 100 miles.

HelioFuel

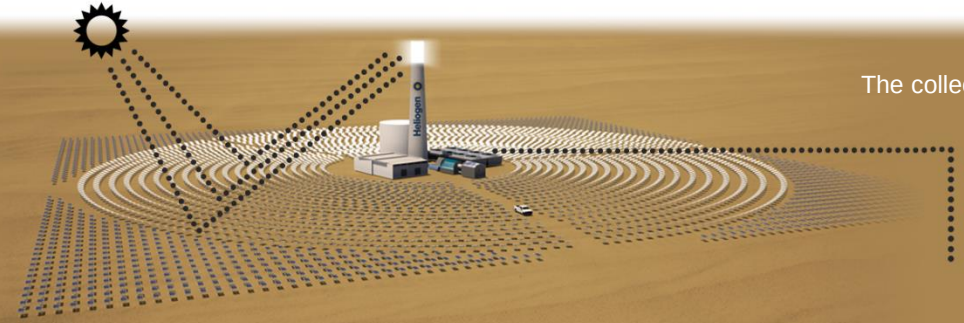
HelioFuel systems couple a HelioPower plant with a large-scale water electrolyzer to produce green Hydrogen fuel.



> 10,000 miles →



Delivery range of this product is greater than 10,000 miles.



The collected sunlight is processed and converted to:

- HelioHeat
- HelioPower
- HelioFuel

Heliogen has built a committed, experienced and entrepreneurial team around these insights to build a multi-billion-dollar profit opportunity this decade

= Speaker



Bill Gross
Founder & CEO

Bill is the founder of more than 150 companies over the last 30 years. Bill has a mechanical engineering degree from Caltech and his specialty is solar energy.



Thomas Patrick
Chief of Staff

Tom served as CEO of DB USA Corp and Co-Head for Americas of the Corporate & Investment Bank. Prior to Deutsche Bank, Tom held senior positions at BofA Merrill Lynch.



Christie Obiaya
Chief Financial Officer

Christie brings experience in building some of the world's most complex energy projects, most recently serving as CFO and head of strategy for Bechtel Energy. Christie holds MIT engineering and business degrees.



Steve Schell
CTO & Chief Engineer

Steve is a mechanical engineer with over 20 years of experience in R&D and commercialization of new technologies spanning solar energy, robotics, and 3D printing.



Vikas Tuteja
Head of Strategy & Analytics

Vikas is an operations, finance and strategy professional with over 25 years of experience as an engineer, management consultant, and investor/operator in a variety of industries.



Rashaun Williams
Co-Head of Development Group

Rashaun brings extensive sales, business development, venture, fundraising, and deal making experience to Heliogen.



Andy Lambert
SVP Manufacturing

With extensive experience delivering high-quality products large scale low cost, Andy led the manufacturing of one of BMW's fastest selling cars (the Mini) and SpaceX rockets.



Tanya Peterson
VP of Human Resources

Tanya is a senior Human Resources leader who translates business vision into HR initiatives that improve performance, growth and employee engagement.



Tom Doyle
Co-Head of Development Group

Tom has extensive experience developing billions of dollars of renewable energy projects around the world & specific experience in large scale concentrated solar.



Debbie Chen
General Counsel

Debbie has over 20 years of legal experience, most recently as General Counsel of Idealab. Debbie has helped form more than 100 companies, and helped manage more than 300 financings and 20 acquisitions.

Bill Gross

Founder & CEO of Heliogen



Heliogen

Founder & CEO

idealab®

Founder & Chairman

Idealab has participated in 150+ companies, with 40+ M&A exits and IPOs. Through Idealab Bill has started and sold multiple solar companies.

College – Patented a new loudspeaker design and started his second company, GNP Loudspeakers Inc., which he sold soon after graduating from Caltech

1991 – Started Knowledge Adventure, an educational software publisher that eventually sold to Havas Vivendi

2013 – Started working on what would become Heliogen, looking to create a company that could solve the Earth's climate crisis

Childhood – Started his first company, Solar Devices, in high school during the 1973 energy crisis, helping him pay for college

1980s – Started GNP Development Inc., which made a natural language product for Lotus called HAL. Sold in 1995 to Lotus

1996 – Started Idealab, a technology incubator in California that was the first of its kind, proving to be a wildly successful concept

2019 – Announced Heliogen broke 1,000ºC, and we believe has become the first and only company prepared to create cost-effective hydrogen without fossil fuels

"Powering the planet renewably I believe is the biggest financial opportunity in history. I have spent most of my life inventing and refining a solution to enable solar energy to compete with fossil fuel, and Heliogen's solution is the result."

Technology & Product Engineering – Steve Schell

eSolar

- CSP plant design
- Engineering leadership
  - Heliostats
  - Steam generating solar receivers
  - Heliostat cleaning systems
  - Performance modeling
- Structural design & procurement of towers

AMONIX

- Concentrating photovoltaic energy system design
- Advanced development leadership
  - Next-generation product design
  - Electrical & controls redesign
  - Structural optimization
  - Value engineering
- Test site operations

NEW MATTER®

- Founder / CEO of consumer 3D printer manufacturer
- Product design & engineering
- Supply chain & manufacturing
- Sales & distribution
- Fulfillment, logistics, customer support
- Finance, fundraising

Heliogen

- Technology development & engineering leadership
  - Heliostats & controls
  - Receivers & thermal energy storage
  - Power block
  - System design & integration
- Grow company from 12 employees onward

Accomplishments in 20 years leading new product development and commercialization

- 1st power tower plant in the US
- World's then-largest CPV plant
- Award-winning 3D printer w/ Wi-Fi & online ecosystem
- Led deployment of Heliogen tech to Lancaster demonstration site
- Patents in robotics, 3D printing, and solar energy
- 100% CEO rating on Glassdoor

Technology & Product Engineering Capabilities

By controlling every critical plant subsystem, we optimize our design for performance, cost, reliability, manufacturability, and constructability

Heliostats
Experienced team of product design engineers designing low-cost, high-performance solar collector, optimized for integration with our solar receivers

Solar Receiver & Thermal Energy Storage
Our technologies and team have produced some of the world's highest temperature solar receivers and thermal storage systems

Field Control Systems
Computer vision and AI experts leverage improvements in computing to increase performance and reduce cost of heliostat field

Systems Engineering & Modeling
Using state of the art numeric modeling techniques, we optimize plant design and predict performance given historical or real-time weather conditions

Advanced R&D
Pathfinding R&D to produce product improvements over time (e.g. autonomy, higher temperatures)

Power Block
We've hired and partnered with some of the most experienced developers of supercritical CO_2 turbomachinery in the world

Production & Supply Chain Introduction – Andy Lambert

Career success leading manufacturing, enabling disruption & innovation

ROYAL AIR FORCE

- Airframe & Powerplant Apprenticeship
- Aerospace Engineering
- Harrier Jump-Jet Air Display Team
- **~9 years service in Total**

LAND ROVER · BMW · MINI

- Manufacturing Management
  - Body in White
  - General Assembly
  - Supply Chain
  - Logistics
- Strategic Planning
- Vehicle Reliability & Validation
- **~13 years service in Total**

- 1st Premium small car
- 1st mass-produced electric car
- Largest improvement - JDPower
- Most configurable car, ever

SPACEX

- Manufacturing Management
  - Hawthorne Production
  - Texas test site
  - Supply Chain
  - Logistics
  - Prototyping
  - Tooling & Ground Support Equipment
- Operations Improvement
- Build Reliability / Certification
- **~9 years service in Total**

- 1st Re-useable rocket
- Largest satellite constellation ever operated
- Launch market dominance across Science/Commercial/Government/Private

Heliogen

- Manufacturing Management
  - Heliostat Production
  - Test/Reliability
  - Supply Chain
  - Logistics
  - Prototyping
  - Tooling
- **~5 months and counting…**



Production & Supply Chain Strategy

In-house rapid prototyping capability, to support innovation

- Rapid development of automation & autonomy solutions
- Virtual creation & programming of robotic solutions
- Rapid product and process iteration to continually improve costs

Global manufacturing flexibility/reliability

- Establish highly flexible shift models and the ability to ramp production rapidly
- Manufacturing lines developed as mobile cells – supports world expansion
- Vertically integrate, to leverage internal talent, technologies and control delivery
- Quantified, demonstrated, validated & measured product reliability

Global supply chain flexibility/reliability

- Develop thorough commodity understanding & forecasting, to support product trades, hedging and competitive sourcing decisions
- Develop strategic partnerships for major commodities
- Build logistics engineering competence to optimize routes, packaging & 3PL vs in-house trades



Autonomous sensor suite & control development



Automated Heliostat cleaning evaluation



Virtual automated production line design & programming

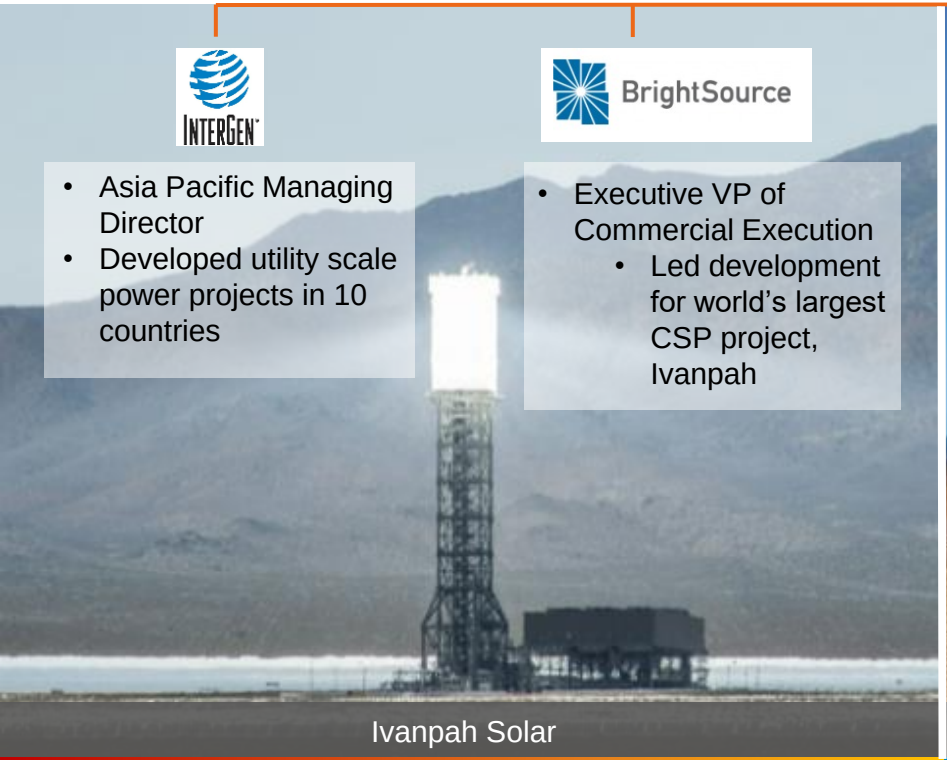
Production & Supply Chain Strategy

Planned layout of first facility



Global Project Development – Tom Doyle

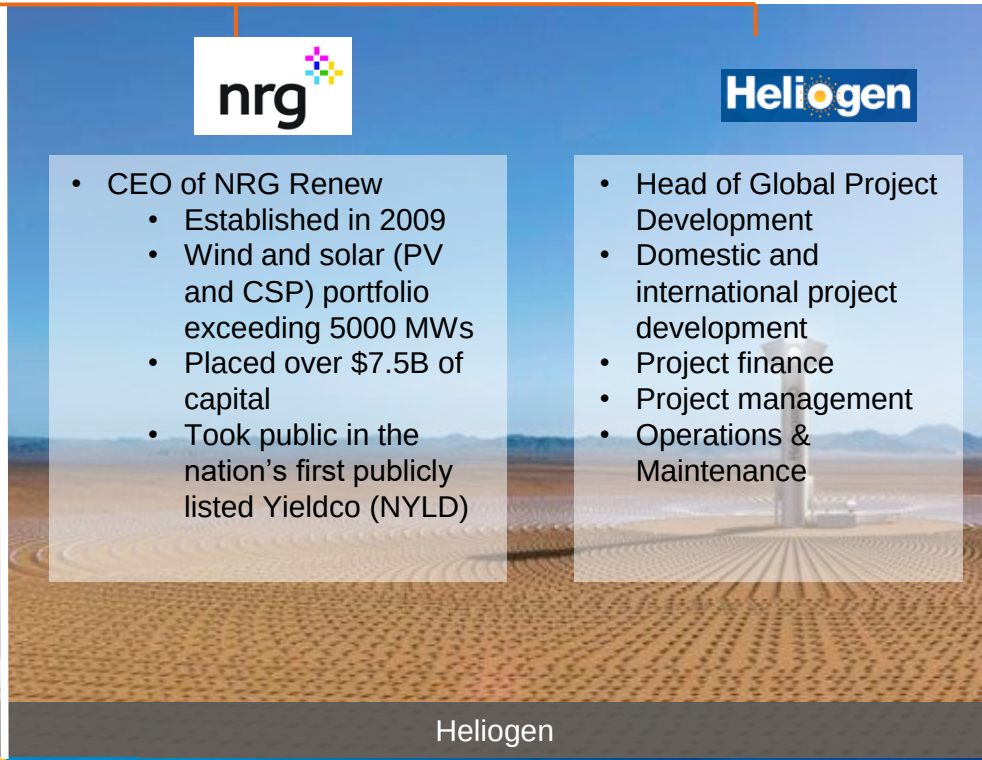
25 years experience developing utility scale energy projects globally



- Asia Pacific Managing Director
- Developed utility scale power projects in 10 countries

- Executive VP of Commercial Execution
  - Led development for world's largest CSP project, Ivanpah

Ivanpah Solar



- CEO of NRG Renew
  - Established in 2009
  - Wind and solar (PV and CSP) portfolio exceeding 5000 MWs
  - Placed over $7.5B of capital
  - Took public in the nation's first publicly listed Yieldco (NYLD)

- Head of Global Project Development
- Domestic and international project development
- Project finance
- Project management
- Operations & Maintenance

Heliogen

Part 4: Heliogen's executive team

Global Project Development to Support Our Customers

Domestic Development

- Site control
  - Locking up acreage under purchase option at attractive U.S. locations
- Interconnection
  - Interconnection evaluations underway; key filings begun
- Permitting & Regulatory Planning
  - Plan of Development submittals
  - Environmental studies underway
  - Engaged with SWCA, Capital Air Space & Nova Engineering Services

Asset Optimization

- Project Execution
  - Recruited experienced project execution team
  - Engaged with customer's commercial and technical teams to develop project scope and design
  - Partnering with world-class contractors
- Lancaster
  - Recruited facility test engineer to lead the existing team of technicians in supporting on-going R&D projects
  - Installed latest generation heliostats and associated equipment for ongoing testing
  - Upgraded site infrastructure to support current and future technology development

International Opportunities

- Solid understanding of the competitive landscape – thermal power, wind, PV, battery storage
- Existing overseas network of international developers, 3rd party legal and financial advisors
- Initial target markets outside U.S. – Australia, Mexico, Chile, South Africa
- Focused on self-generating, off-grid opportunities

CFO – Christie Obiaya

Nearly 20 years of experience spanning energy, finance, and commercial scale-ups

- Chemical engineer leading scale-up of global manufacturing facilities for new commercial products
- Recognized for award-winning process innovation

- CFO and head of strategy at Bechtel Energy, a global multi-billion-dollar EPC business
- Launched strategic investments program to accelerate innovations and risk mitigations
- Led commercial strategy, deal structuring, and contract negotiations for major projects
- Extensive onsite construction experience
- Supported multiple project-financed energy projects over 11 years
- Served on board of directors of EPC joint stock company in Canada

- CFO
- Focused on enabling commercial scale-up by linking best-in-class financial operations to company strategy
- Built finance team with strong public company experience

Key Investment Highlights

1. **Differentiated Product**: Disruptive, patented design and A.I. that addresses intermittency of renewables to help decarbonize heavy industry through clean heat, power, and/or hydrogen

2. **Large & Growing Market**: Forecast capex investment of ~$8.5 Trillion for renewable energy [1], and >$150 billion for hydrogen[2], by 2030

3. **Strong Economics**: Projected cost competitive with other sources of energy [3]

4. **Exceptional Team**: Committed, entrepreneurial team with industry leading technical, operational, development and commercial experience

5. **Diverse Pipeline**: Broad range of prospective customers and geographies

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➡ **Transformational Potential**: We believe Heliogen's technology has the potential to transform the world's energy production and meaningfully address climate change

1. *Source: McKinsey & Company, https://www.mckinsey.com/industries/oil-and-gas/our-insights/the-big-choices-for-oil-and-gas-in-navigating-the-energy-transition.*
2. *Source: The Hydrogen Council in partnership with McKinsey, https://hydrogencouncil.com/wp-content/uploads/2021/02/Hydrogen-Insights-2021-Report.pdf*
3. *Heliogen estimates. Analysis assumes subsidized economics with 60% debt at 8% interest rate and 40% equity at 12% cost over 30 year projection period. Represents the estimated implied LCOE of Heliogen.*

Our 1st Strategic and Commercial Relationships

ArcelorMittal

- One of the world's leading steel and mining companies
- Largest steel manufacturer in North America, South America and Europe

U.S. Department of Energy

- Selected to negotiate $39mm[1] award to develop, build, and operate supercritical carbon dioxide power integrated with thermal energy storage supplied by heliostat field

Global Oil & Gas Producer

- Australian oil and gas company with global presence

Rio Tinto

- Mining and metals company operating in 35 countries around the world
- One of the largest producers of iron ore, copper, diamonds and gold

Bloom energy®

- Leading provider of electrolyzer uniquely suited to amplify key benefits of Heliogen's technology

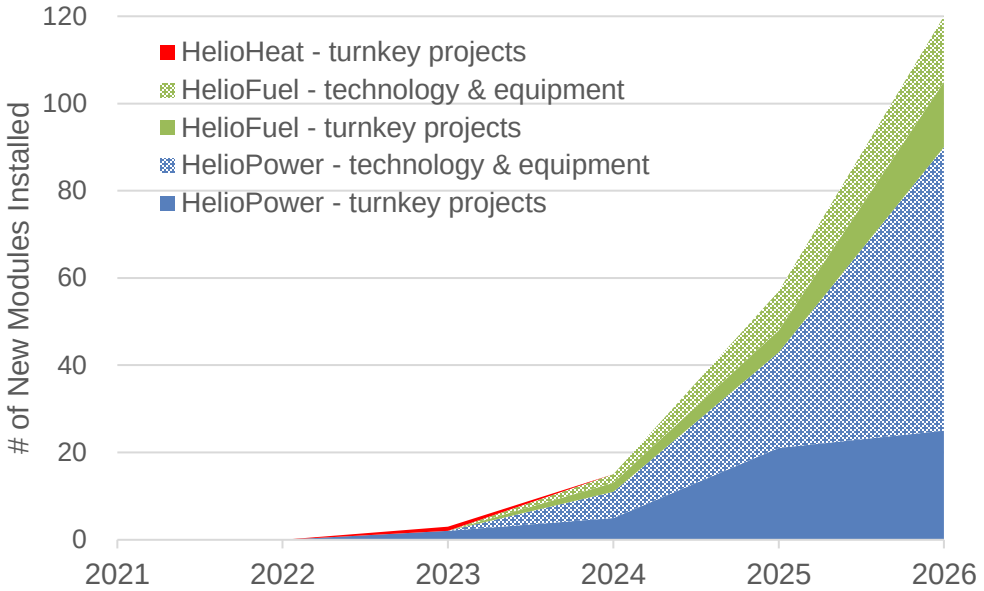
1. *Value of total project is expected to be ~$70mm with ~$31mm funded from private investor.*

Overview of Heliogen Business Model

Flexible Business Model – Able to Evolve

- Two main business models included in 5-year outlook*:
  1. Build complete “turnkey” projects which deploy Heliogen technology & equipment
  2. Supply Heliogen technology & equipment
- Forecast assumes revenue will come primarily from 2 of our 3 offerings: HelioPower and HelioFuel (Hydrogen)
- Ultimately plan to expand into a pure licensor role, which offers greater potential for scalability and recurring revenue – but this is not part of our financial projections through 2026

Forecast # Modules Built, by Segment & Business Model



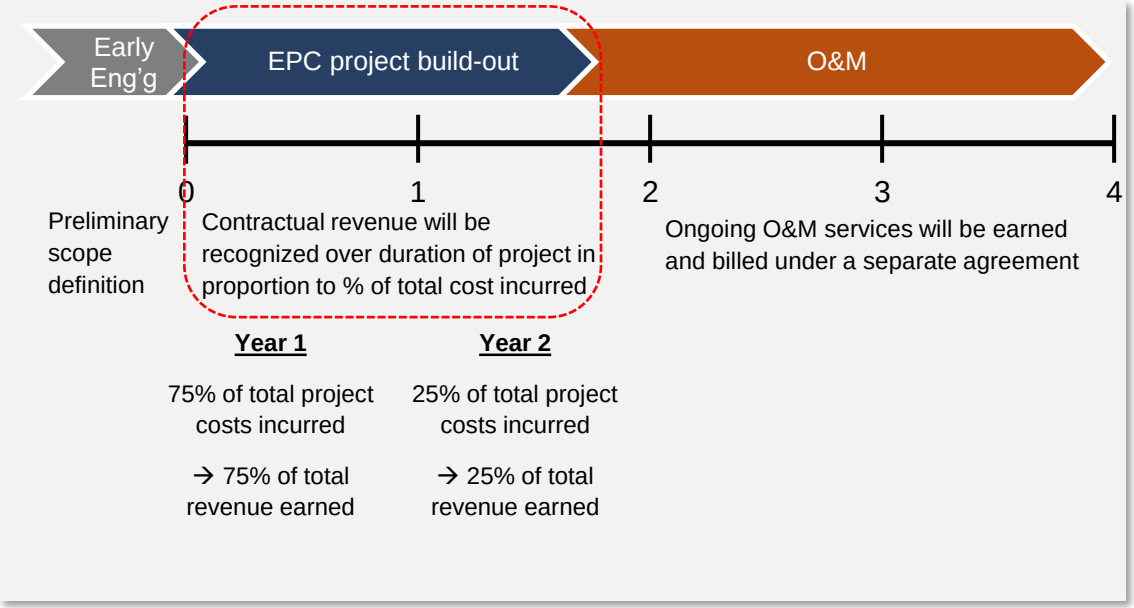
**Note: Forecast includes smaller sources of revenue from project development, front-end engineering services, and O&M services – all assumed breakeven, therefore immaterial to profit*

Revenue Profile under Turnkey Project Business Model

Comments

- Turnkey projects will recognize revenue using the percentage of completion method
- A typical project has 3 phases:
  1. Front end / early engineering
  2. Engineering, Procurement, Construction (“EPC”)
  3. Operation & Maintenance (“O&M”)
- Heliogen engages with the owner across all three phases, but the primary source of revenue will be during EPC phase

Example Project Life Cycle – EPC Phase Highlight



Attractive Long Term Financial Model

- Significant growth profile
- Attractive EBITDA margins through multiple segments
- Subsidies for power projects are not reflected and represent potential upside
- Cash flow positive beginning in 2025
- No debt currently on the balance sheet
- Capital light business model we believe optimizes efficiency

($ in millions)	2021E	2022E	2023E	2024E	2025E	2026E
Total New Modules Installed per Year	**-**	**-**	**3**	**15**	**57**	**120**
Projects Installed [1]			***3***	***4***	***4***	***5***
Revenue [2]	**$8**	**$24**	**$197**	**$569**	**$1,414**	**$2,396**
Revenue Growth	*N/A*	*204%*	*709%*	*189%*	*149%*	*69%*
EBITDA [3]	**($29)**	**($59)**	**($92)**	**($114)**	**$287**	**$831**
% Margin	*NM*	*NM*	*NM*	*NM*	*20%*	*35%*
Capital Expenditures	(10)	(15)	(34)	(36)	(56)	(97)
Free Cash Flow [4]	**($40)**	**($70)**	**($132)**	**($183)**	**$84**	**$433**

Source: Heliogen estimates – as of July 7, 2021

1. *Assumes 4 modules per project in 2024E, 16 modules per project in 2025E and 27 modules per project in 2026E. Project numbers have been rounded to the nearest whole number*
2. *Revenue from 2021E and 2022E are from work in progress projects.*
3. *EBITDA is defined as net earnings (loss) before interest expense, income tax expense (benefit) depreciation and amortization. EBITDA is a non-GAAP financial measure and may be different from measures of EBITDA used by other companies. Please refer to the Appendix for a reconciliation of non-GAAP financial measures. See "Disclaimer – Financial Statements; Non-GAAP Financial Measures".*
4. *Free cash flow is defined as net income, plus depreciation and amortization, less capital expenditures (incl. acquisitions) and less change in net working capital. Free cash flow is a non-GAAP financial measure and may be different from measures of free cash flow used by other companies. Please refer to the Appendix for a reconciliation of non-GAAP financial measures. See "Disclaimer – Financial Statements; non-GAAP Financial Measures."*

Strong Potential for Upside Opportunities

Our model does not include the following potential upsides or alternatives:

- Government subsidies besides the investment tax credit
- Government or country mandates for renewable energy percentages
- Carbon taxes or credits
- Ability to capture incremental additional revenue due to failure by other companies to meet their commitments to green energy
- Pure licensing economics (potential for further scale and boost to margins)

Transaction Summary

HLGN

Transaction Structure

Heliogen and Athena Technology Acquisition Corp (“ATHN”) would enter into a business combination structured as a reverse merger with Heliogen becoming a wholly-owned subsidiary of ATHN

The transaction is expected to close in 4Q 2021

It is anticipated that the post closing company, Heliogen, will be listed on NYSE with ticker symbol “HLGN”

$2.0bn

Valuation [1]

Transaction implied a pro forma Enterprise Value (“EV”) of approximately $2.0 billion, EV / Revenue of ~0.8x based on 2026E revenue

Heliogen shareholders will rollover 100% of their equity and own $1.85 billion shares, or ~78.3% of the pro forma equity; ATHN public shareholders will own ~10.6%; PIPE investors will own ~7.0%; and the ATHN founders will own ~4.1%[2]

~$415mm

Total Proceeds [3]

The transaction will be funded by a combination of Athena cash in trust, newly issued shares of Heliogen common stock, and proceeds from a PIPE

Transaction expected to result in ~$415 million of total proceeds raised to fund growth, comprised of ~$250mm cash in trust and ~$165mm of PIPE proceeds[2]

1. *Assumes $0 million of net debt and cash in excess of net working capital requirements due to Company financials, assumes no redemptions and assumes no shares issued pursuant to the public warrants, private warrants, equity incentive plan or employee stock purchase plan.*
2. *Post-closing percentage ownership assumes $165mm in aggregate PIPE investments and no redemptions. Excludes dilution from 8,566,667 as-converted shares from public warrants and private warrants, as well as equity incentive plan and employee stock purchase plans. Includes the impact of 510,000 additional class A shares that will be issued to Athena’s sponsor in consideration for its waiver of anti-dilution rights under Athena’s organization documents.*
3. *Excludes transaction costs of $30mm.*

Heliogen's Business Combination with Athena Technology Acquisition Corp.

Athena Technology Acquisition Corp. ("Athena") (Ticker: ATHN)



Isabelle Freidheim

Chairman of the Board and Director

- Venture capitalist and the co-founder of Magnifi (acquired by the Tifin Group), for which she served as CEO
- Co-founder and managing partner at StarwoodVC, where she leads late-stage investments in technology companies



Phyllis W. Newhouse

Chief Executive Officer and Director

- Founder and CEO of XTreme Solutions, a cybersecurity company with $500m in revenues, 6,500 employees globally and a state-of-the-art proprietary ethical hacking technology
- Ernst and Young Entrepreneur of the Year
- Previously served in the United States Army with a focus on National Security where she established the Cyber Espionage Task Force



Grace Vandecruze

Chief Financial Officer

- Founder and Managing Director at Grace Global Capital, a boutique investment banking advisory firm providing M&A financial advisory, restructuring, and valuation services
- Extensive expertise in mergers and acquisitions and capital raising with over 20 years of experience and over $25bln in transactions

Athena Investment Thesis

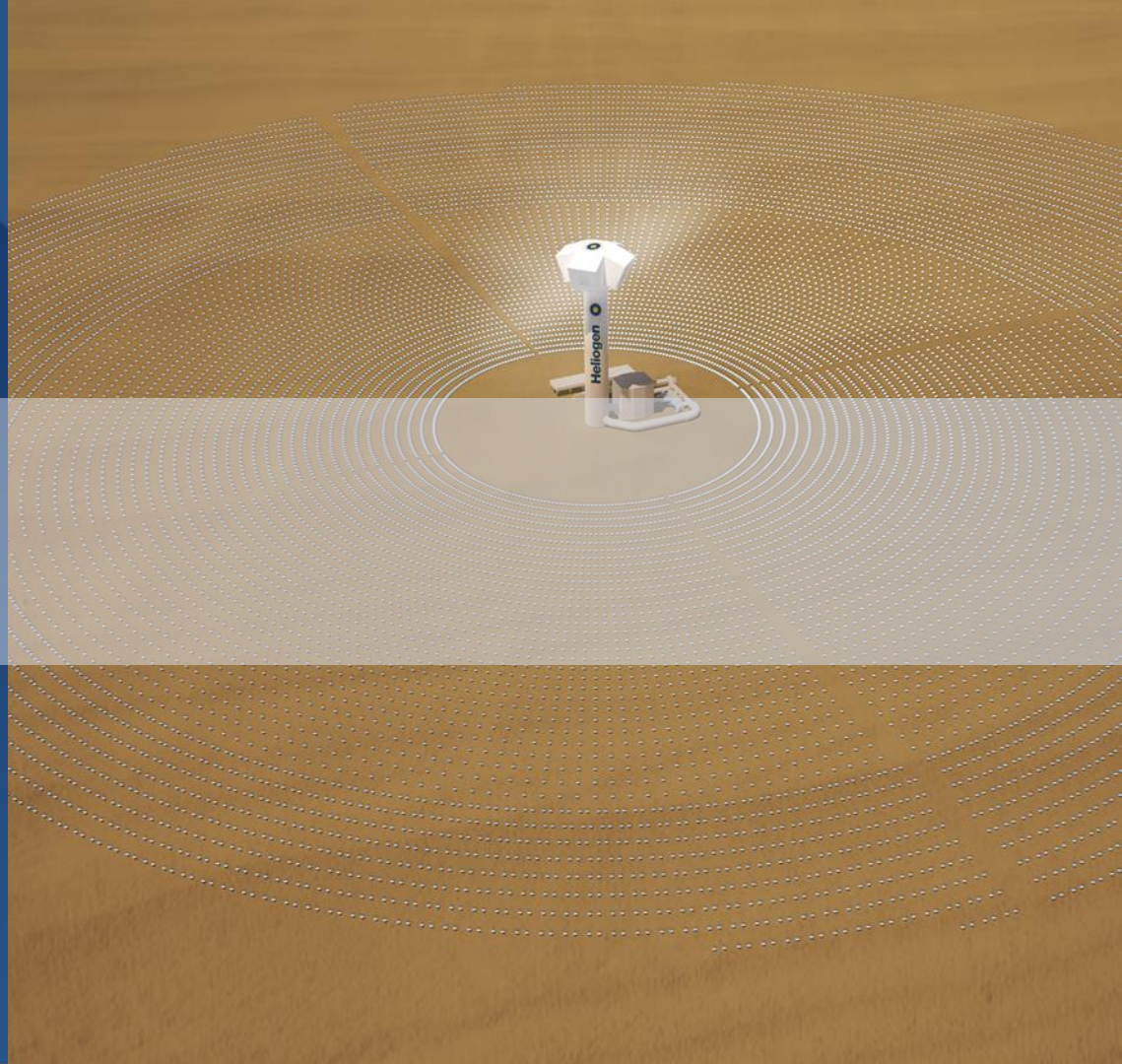
- Athena's mission is to work with world-class disruptive technology companies
- Athena believes Heliogen has the potential to transform the world's energy production and positively impact climate change
- Heliogen is a leader in next generation Concentrated Solar Power ("CSP")
  - Unique and differentiated technology
  - Highly accomplished leadership team
  - Strong customer and business pipeline
- Heliogen uniquely enables an Industrial and Green Fuel Energy transition
- Athena is a SPAC committed to Diversity & Inclusion and found a target in Heliogen sharing this commitment

Summary

- Heliogen is working to be the leading technology provider enabling industrial decarbonization
- There is staggering demand and trillions of dollars of spend this decade
- Heliogen’s technology is superior for meeting this customer demand
- Heliogen’s technology is patented and combines software, hardware, and know-how to realize superior expected margins
- Heliogen’s team is strong, experienced, and capable of seizing this opportunity
- We welcome you to join us in reducing climate change through industrial decarbonization

Heliogen

Appendix



Reconciliations to EBITDA and Free Cash Flow

($ in millions)

Consolidated EBITDA	2020A	2021E	2022E	2023E	2024E	2025E	2026E
Net Income / (Loss)	**($3.4)**	**($27.2)**	**($56.9)**	**($94.2)**	**($124.1)**	**$202.5**	**$604.3**
Plus: Depreciation & Amortization	0.2	-	2.1	5.1	11.5	18.1	28.7
Plus: Income Tax Expense	-	-	-	-	-	67.5	201.4
Less: Interest Income	0.0	(2.2)	(3.9)	(2.9)	(1.3)	(0.8)	(3.4)
EBITDA	**($3.2)**	**($29.4)**	**($58.7)**	**($92.0)**	**($113.8)**	**$287.4**	**$831.1**
% Margin	*NM*	*NM*	*NM*	*NM*	*NM*	*20.3%*	*34.7%*

	2021E	2022E	2023E	2024E	2025E	2026E
Net Income / (Loss)	**($27.2)**	**($56.9)**	**($94.2)**	**($124.1)**	**$202.5**	**$604.3**
Plus: D&A	0.0	2.1	5.1	11.5	18.1	28.7
Less: Change in NWC	0.0	(0.3)	(8.9)	(34.1)	(80.7)	(102.6)
CFO	**($27.2)**	**($55.2)**	**($98.0)**	**($146.6)**	**$139.9**	**$530.5**
Less: Capital Expenditures	(10.4)	(14.9)	(30.0)	(30.0)	(50.0)	(90.0)
Less: Capitalized R&D	-	-	(4.4)	(6.0)	(6.4)	(7.2)
Less: Cash used for acquisitions	(2.0)	-	-	-	-	-
CFI	**($12.4)**	**($14.9)**	**($34.4)**	**($36.0)**	**($56.4)**	**($97.2)**
Free Cash Flow	**($39.6)**	**($70.0)**	**($132.4)**	**($182.6)**	**$83.6**	**$433.3**

Source: Heliogen estimates.
Note: EBITDA is defined as net earnings (loss) before interest expense, income tax expense (benefit), depreciation and amortization Free cash flow is defined as net income, plus depreciation and amortization, less capital expenditures (incl. acquisitions) and less change in net working capital. See "Disclaimer –Financial Statements; Non-GAAP Financial Measures" for additional information.