

Third Quarter 2022 Earnings

Heliogen

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” or the negative version of those words and other similar expressions are intended to identify forward-looking statements. These forward-looking statements include, but are not limited to, statements regarding the Company’s projected financial information and guidance, commercial strategy and progress, market growth, potential additional public-sector funding and reaching key milestones. 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 of which are beyond our ability to control or predict. Although we believe that the expectations reflected in these forward-looking statements are reasonable as of the date made, such forward- looking statements are not guarantees of future performance. 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) 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; (iii) our ability to access sources of capital to finance operations, growth and future capital requirements; (iv) our ability to maintain and enhance our products and brand, and to attract and retain customers; (v) our ability to scale in a cost effective manner; (vi) changes in applicable laws or regulations; (vii) the ongoing impacts of the COVID-19 pandemic and the potential impacts of Russia’s invasion of Ukraine on our business; (viii) developments and projections relating to our competitors and industry; (ix) our ability to access sources of capital to finance operations, growth and future capital requirements; and (x) 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 the Company’s Annual Report on Form 10-K/A for the annual period ended December 31, 2021 and other documents filed by the Company 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. Any forward-looking statements speak only as of the date they are made and the Company 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.

Today's Agenda

- Review of Recent Highlights
- Recent Commercial Agreements
- Update on Key Commercial & Execution Milestones
- Guidance and Financial Update
- Inflation Reduction Act Benefits
- Closing Remarks

Heliogen Overview



Heliogen is aiming to build a multi-billion-dollar business against the multi-trillion-dollar energy transition opportunity

We are addressing the dramatic rise and volatility of fossil fuel prices

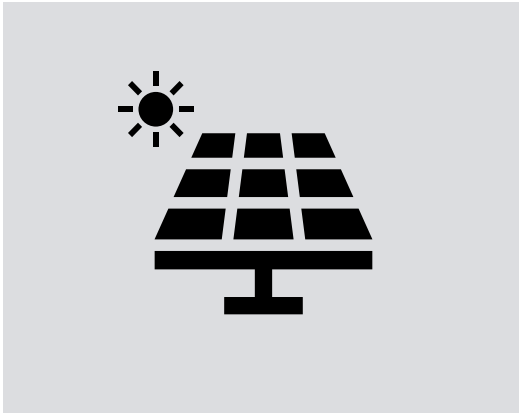
Our technology is a breakthrough that offers what global customers need now

Five Fundamental Characteristics That Set Heliogen Apart

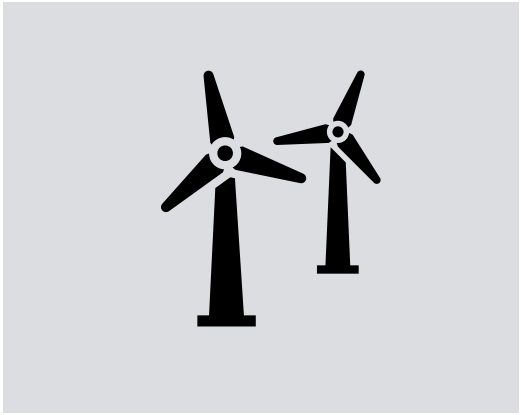
1. **Durable Competitive Advantages:** Extensive patent portfolio, trade secrets and learnings will enable Heliogen to maintain and defend its competitive advantages
2. **Cutting-edge Software Makes It Work:** Utilizes artificial intelligence, software and cost-effective computation power to simplify and reduce hardware production, installation and maintenance costs and to generate more energy
3. **Vertical Integration of AI:** Allows utilization of Heliogen's AI across entire value chain to reduce costs
4. **Modularity Enables Scalability and Execution:** Our offerings are modular, making it possible to scale to our customers' behind-the-meter needs while also supporting more efficient execution
5. **The Right Management Team:** Expertise in technology, financial management, EPC, manufacturing and solar design and sales well-suited to Heliogen's needs

Heliogen has the potential to profitably transform the world's energy production and meaningfully address climate change

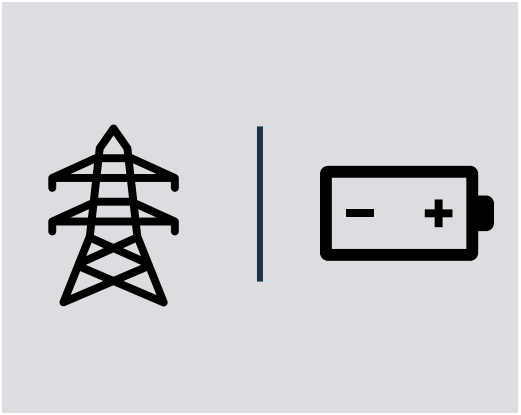
There Is Currently No Efficient Way to Abate Industrial Emissions



Solar power is only available while the sun is shining



Wind power is only available while the wind is blowing



Methods to store or transport renewable energy are expensive

Heavy industry is directly responsible for 25% of global emissions(1), but lacks an efficient way to reduce its carbon intensity; industrial energy must be consistently available, cost-effective and reliable

(1) "The Challenge of Decarbonizing Heavy Industry," (Brookings Institution, June 2021) https://www.brookings.edu/research/the-challenge-of-decarbonizing-heavy-industry/

Heliogen's Offerings: Energy on Demand



HelioHeat™

Converts solar thermal energy into steam or high-temperature heat for industrial processes

Industries
Mining, Petrochemicals, Metal Processing
Delivery range
Up to ~1 mile (approx.)



HelioPower™

Converts solar thermal energy with storage into electricity for dispatchable power

Industries
Utilities, Data Centers
Delivery range
Up to ~100 miles (approx.)



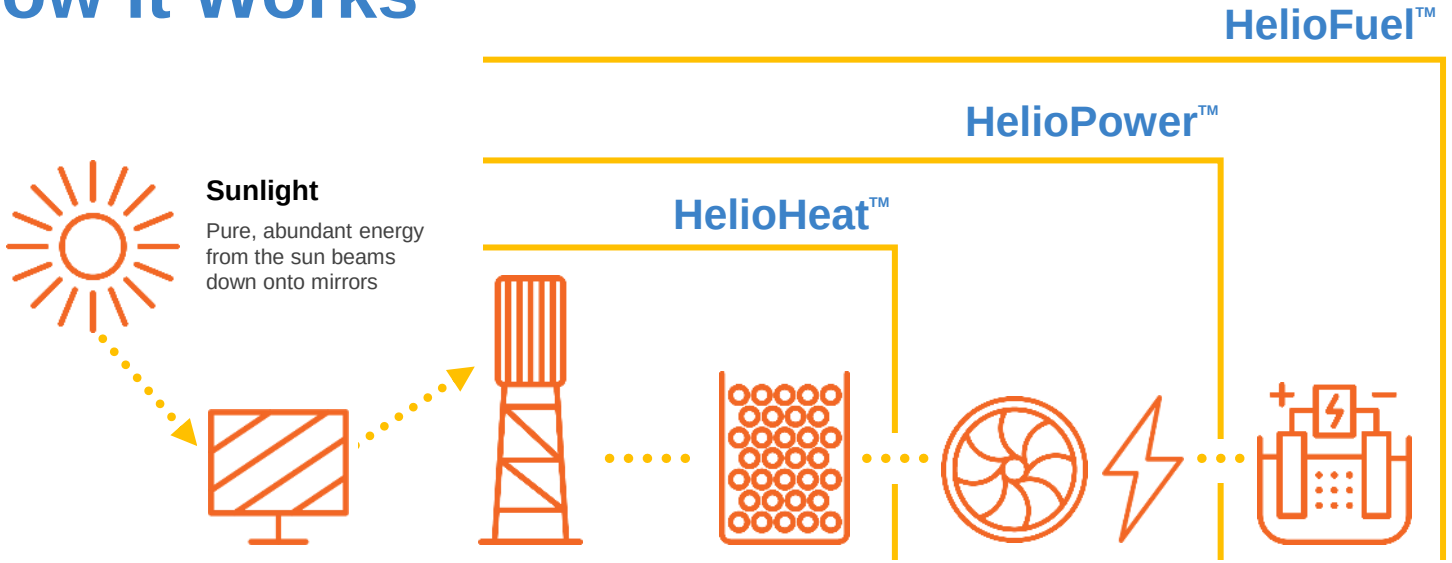
HelioFuel™

Couples HelioHeat and HelioPower with a large-scale electrolyzer to produce green hydrogen fuel

Industries
Transportation, Heavy Equipment
Delivery range
Up to ~10,000 miles (approx.)

HelioHeat represents near-term growth opportunity;
HelioPower further expands the enormous opportunity set

How it Works



Sunlight

Pure, abundant energy from the sun beams down onto mirrors

Heliostats

An array of computer-controlled mirrors (heliostats) collects and concentrates sunlight

Receiver Tower

Captured sunlight produces carbon-free thermal energy

Storage

Heat will be accumulated safely in thermal energy storage to be dispatched as needed

Turbine / Generator

Generated heat then drives a supercritical CO_2 power block producing on demand electricity

Electrolyzer

Heat and electricity can drive an electrolyzer to make green hydrogen fuel

Heliogen

Third Quarter 2022 Earnings Updates

Heliogen Has Made Significant Progress Since Public Debut

2022

December 31, 2021:
Heliogen becomes publicly traded on NYSE as HLGN

February 8, 2022:
Awarded Exclusive Rights at Brenda Solar Energy Zone

February 22, 2022:
Announced site prep for Long Beach manufacturing facility

March 28, 2022:
Signed contract for commercial-scale demonstration project with Woodside Energy

May 3, 2022:
Began testing & implementation of supercritical SCO_2 system with Hanwha Power Systems for Woodside project

August 8, 2022:
Announced partnership with Dimensional Energy for production of sustainable aviation fuel

September 13, 2022:
Held first Investor & Analyst Day in Long Beach, CA

September 27, 2022:
Selected to receive $4.1 Million award from US DOE to decarbonize cement production

November 4, 2022:
Entered into an MOU with City of Lancaster for a green hydrogen facility

Recent Commercial Progress

- Entered into an MOU with the City of Lancaster, California to build a new commercial hydrogen production facility using Heliogen's technology
- The facility is expected to generate up to 1500 metric tons of green hydrogen annually, which can be sold to industrial customers in Lancaster and the greater Los Angeles area
- Heliogen is expected to be the technology provider, project developer, builder, operator, and equity partner in the project
- Heliogen expects to bring on additional equity partners to support the cost of construction.

- Entered into an LOI to partner with Dimensional Energy to jointly produce sustainable aviation fuel at Heliogen's concentrating solar thermal demonstration facility in Lancaster
- We expect the demonstration project to be a first step to develop a pipeline for approximately three million barrels of fuel over ten years

- Selected to receive a $4.1 million award from the US Department of Energy to accelerate the large-scale deployment and development of a solar thermal calciner to decarbonize cement production
- Project is a collaboration with the Colorado School of Mines, the University of Michigan, Martin Marietta and CTP Advanced Composites

Key Commercial and Execution Milestones

AREA	MILESTONE	EXPECTED TIMING	STATUS
Commercial	First module contracted	1H 2022	**Complete**
	Second module contracted (third module = stretch target)	4Q 2022	----
Execution	Testing of cleaning functionality for autonomous robots	2H 2022	**Complete**
	Assembly line heliostat production	4Q 2022	----
	Key supply chain partners announced	2H 2022	Ongoing
	First groundbreaking	2023	----

Third Quarter 2022 and Subsequent Highlights

Third Quarter 2022 Highlights

- Selected to receive a $4.1 million award from the US Department of Energy to accelerate the large-scale deployment and development of a solar thermal calciner to decarbonize cement production
- Successfully completed initial field testing of ChariotAV, Heliogen's autonomous heliostat cleaning vehicle
- Began final qualification for main production lines at Heliogen's automated, high-volume manufacturing facility
- Appointed industrial energy transition leader Barbara Burger to Heliogen's Board of Directors

Subsequent 2022 Highlights

- Entered into a memorandum of understanding with the City of Lancaster, California to build a new green hydrogen generation facility using Heliogen's technology

Guidance and Financial Update

Updated Key 2022 Performance Metrics

Primary metric	Modules contracted	**2-3**
Secondary metric	Revenue	**$12-$14 million**

Third Quarter 2022 Financial Highlights

($ in millions)	**3Q 2022**	**YTD 2022**
Revenue	$3.1	$9.0
R&D	$11.2	$26.4
SG&A	$18.3	$60.7

Financial Highlights

- Reduced 2022 revenue guidance due to shift in purchase of long-lead time items from 2H22 into 1H23
- Selected to receive an additional $4.1 million award from US Department of Energy
- To-date: One module contracted and two non-binding agreements
- Inflation Reduction Act expected to provide meaningful tailwinds for Heliogen and its prospective customers

Inflation Reduction Act – A win for all

New incentives catalyze the industrial decarbonization and boost project economics, giving the industry some much-needed certainty

ITC Potential for Solar Energy Facilities



10% added to the ITC if a project is in low-income or energy communities

10% added to the ITC if content is domestically sourced

30% base ITC for solar facilities construction if PWAR+ is met

Additional credit and funding opportunities being explored as further guidelines emerge

**Production Tax Credit ; + Prevailing Wage Apprenticeship Requirements*

On top of the Investment Tax Credit (“ITC”), the bill benefits Heliogen and our partners from multiple angles:

Hydrogen

- Hydrogen PTC* at **$3.00 per kg** cost savings

Advanced Manufacturing

- Production credits for manufacturing eligible clean energy components

Thermal Energy Storage

- The Act extends the ITC to energy storage equipment

Sustainable Aviation Fuel

- SAF gets a boost with a credit of up to $1.75/gallon of SAF

DOE Loan Guarantee Program

- An additional **$3.6 billion** for the Title 17 loan program, raising the total funds available to **$40 billion**.

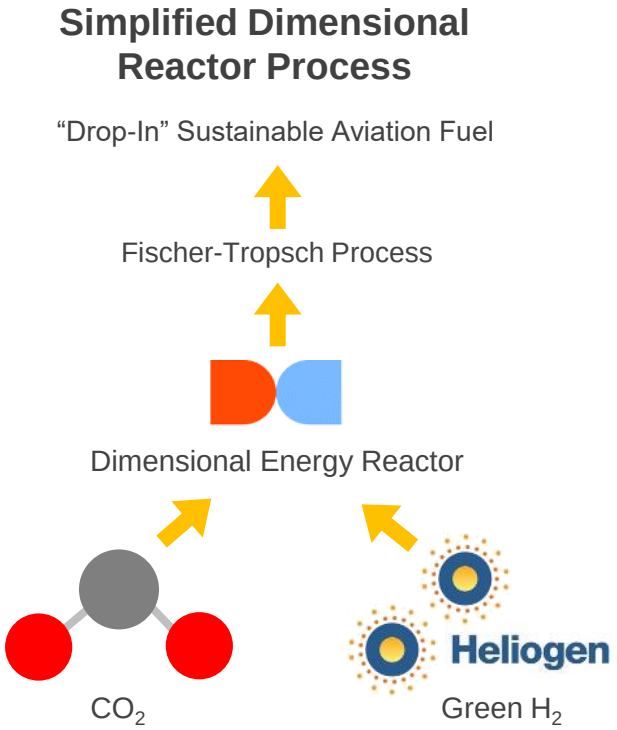
Partnership with City of Lancaster for Green Hydrogen Production



- Entered into a Memorandum of Understanding (“MOU”) with the City of Lancaster, California to build a new commercial facility to produce up to 1,500 metric tons of hydrogen annually using Heliogen’s technology
- The facility is expected to generate hydrogen which can be sold to industrial customers in Lancaster and the greater Los Angeles area
- Heliogen is expected to be the technology provider, project developer, builder, operator, and equity partner in the project
- Heliogen expects to bring on additional equity partners to support the cost of construction.

Dimensional Energy Partnership to Produce Sustainable Aviation Fuel

- Heliogen entered into a non-binding letter of intent to partner with Dimensional Energy to jointly **produce sustainable aviation fuel (SAF)** at Heliogen's concentrated solar thermal demonstration facility in Lancaster, California
- The project will work to deploy HelioHeat technology to convert sunlight directly into thermal energy in the form of high temperature steam and air, which will be used to produce green hydrogen for Dimensional Energy's Reactor platform
- Green hydrogen and CO_2 are the main feedstocks for Dimensional's Energy Reactor platform
- Goal is to build a fully **integrated ~1 barrel per day drop-in ready SAF demonstration**
- We expect the demonstration project to be a first step to develop a pipeline for approximately 3 million barrels of fuel over the next ten years
- Dimensional Energy has supported Heliogen in providing technical information for our Conditional Use Permit with the City of Lancaster. Dimensional Energy is ready to work with Heliogen to install their equipment as soon as the CUP is approved



US Department of Energy Award for Solar Thermal Cement Calciner

- Selected to receive a $4.1 million award from the US Department of Energy to accelerate the large-scale development and deployment of a solar thermal calciner to decarbonize cement production

- Heliogen, in collaboration with the Colorado School of Mines, the University of Michigan, Martin Marietta and CTP Advanced Composites, aims to demonstrate a solar-driven calciner utilizing the Heliogen concentrated solar thermal system to heat up the feedstock and drive endothermic chemical decarbonation up to 950^{o}C

- Energy-intensive cement production contributes approximately 7% of global CO2 emissions, while over 80% of the energy used in cement production is consumed by calcination

Appendix

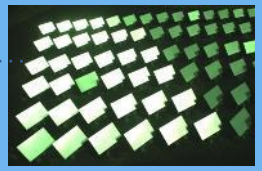
Our patented control system is the first ever to dynamically track thousands of mirrors with real-time feedback



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.

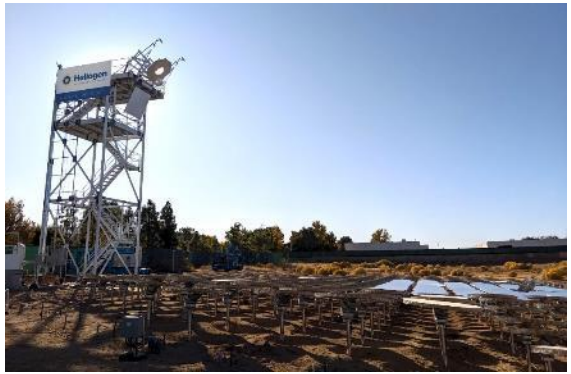
Lancaster Solar Concentrating Facility

Since 2019, Heliogen has operated a concentrating solar thermal energy facility in Lancaster, California

Technologies are tested and validated here before moving to commercial-scale applications

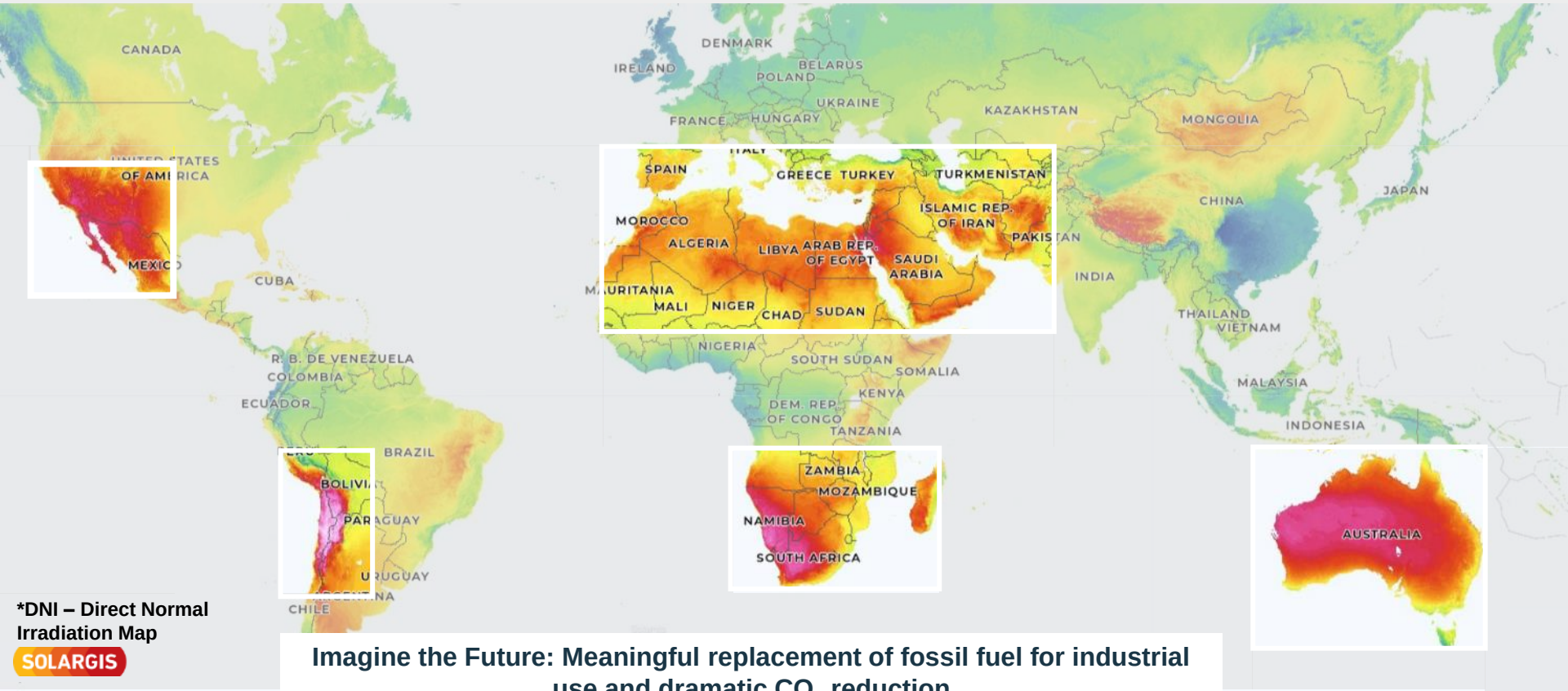
- Successful green hydrogen production demonstration with Bloom Energy
- First field test of autonomous installation/maintenance robots
- Plan to produce sustainable aviation fuel (SAF) with Dimensional Energy on-site







Heliogen's Bold Vision: 1000s of Towers in the 5 Sunniest Areas on Earth



*DNI – Direct Normal Irradiation Map

SOLARGIS

Imagine the Future: Meaningful replacement of fossil fuel for industrial use and dramatic CO_2 reduction

Heliogen