PLUG AND PLAY

NOVEMBER 19-21 2024

SILICON VALLEY SUMMIT

#PNPTCSiliconValley

Join us at **pnptc.com**

PLUG AND PLAY

SV SUMMIT

SUSTAINABILITY EXPO

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OPENING REMARKS

Robert Grey

Director, New Materials & Packaging
Plug and Play

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SUSTAINABILITY BACKGROUND

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PLUG AND PLAY SUSTAINABILITY

Plug and Play Sustainability at a Glance

11
International Hubs

6
Industry Pillars

39
Sustainability Team

9,400+
Sustainability Startups

49
Portfolio Companies

38
Corporate Partners

Established Oct. 2019

JOIN THE PLATFORM
PNPTC.COM/JOIN

Alliance to End Plastic Waste Global Network



ALLIANCE TO END PLASTIC WASTE

Driving Plastics Innovation by Incubating Startups

ALLIANCE TO END PLASTIC WASTE

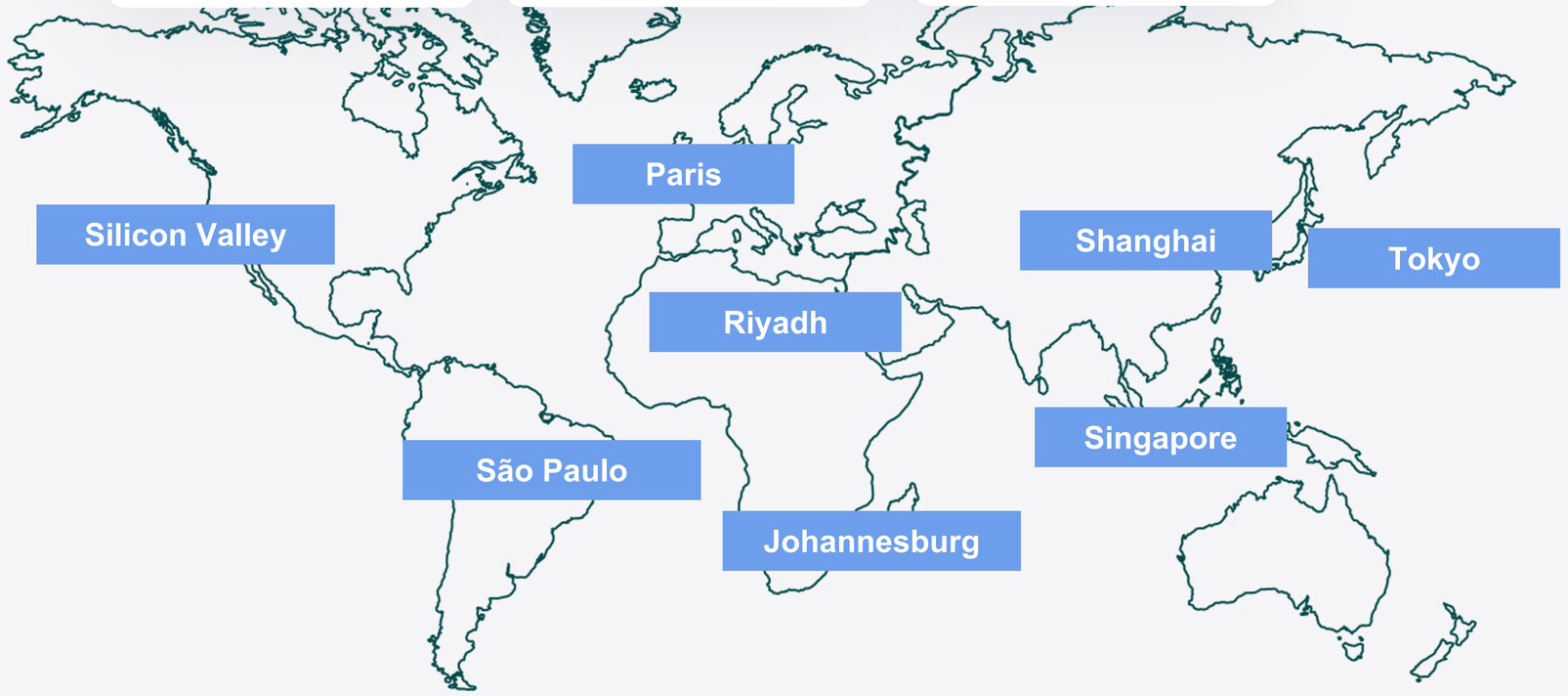
End Plastic Waste

- Collection
- Sorting
- Processing
- End Use
- Finance
- Waste Materials Exchange
- Design

163 Startups Accelerated

240 Pilots & PoCs

$190M Capital Deployed



Established Oct. 2019

PLUG AND PLAY SUSTAINABILITY

Sustainability Pillars - Programs

Circular Economy

- Collection
- Sorting
- Processing
- End Use Markets- Recycling Technologies
- Finance
- Waste Materials Exchange
- Design
- Reusable
- Community Engagement

Carbon Neutrality

- Green Manufacturing
- Materials Decarbonization
- Carbon Neutral Fleets
- Carbon to Value
- Zero Waste
- Sustainable Supply Chain
- Renewable Fuels
- Carbon Footprint & Traceability
- Green & Blue Hydrogen
- CCUS Technology

Clean Resources

- Renewable Energy Production
- Green Hydrogen & Infrastructure
- Water Membranes
- Battery Storage
- Energy Efficiency
- Water Treatment
- Plant Process Optimization

Mining

- EV Battery Passport
- EV Battery Recycling
- Ethical Practices
- Mineral Traceability
- Water Resilience
- Water Membranes
- Water Recycling
- Decarbonizing Heavy Equipment
- Mine Tailings and Brine Utilization
- Carbon Capture
- Bioremediation

Fashion

- Digitalization
- Upcycling
- Sustainable Dyes
- Recommerce
- Textile Recycling
- Water Treatment
- Bio-Based Materials

Sustainable Aviation Fuel

- Carbon to Fuel
- Bioenergy
- Waste-to-Fuels
- Feedstock Innovation
- Hydrogen to SAF
- F.T. Power to SAF
- Production
- Fuel Blending
- Transportation
- Equipment Retrofitting

PLUG AND PLAY SUSTAINABILITY

Plug and Play Sustainability Global Corporate Partners



JOIN THE PLATFORM
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PLUG AND PLAY SUSTAINABILITY

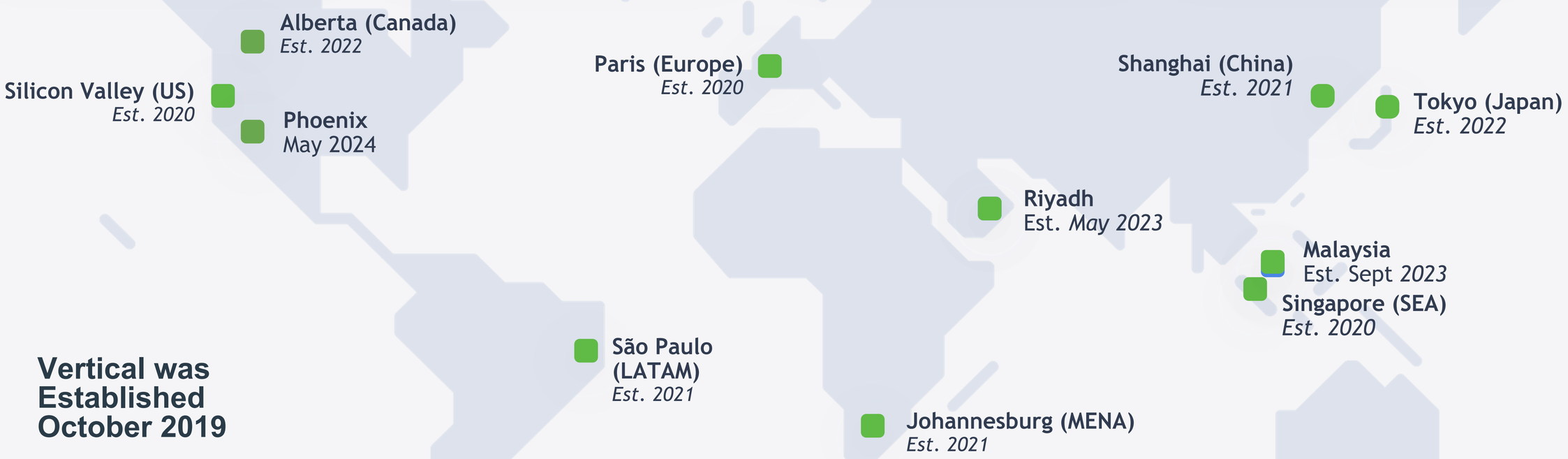
An Unmatched Sustainability Platform

11 Sustainability Hubs

347 Startups Accelerated

32 Batch Programs

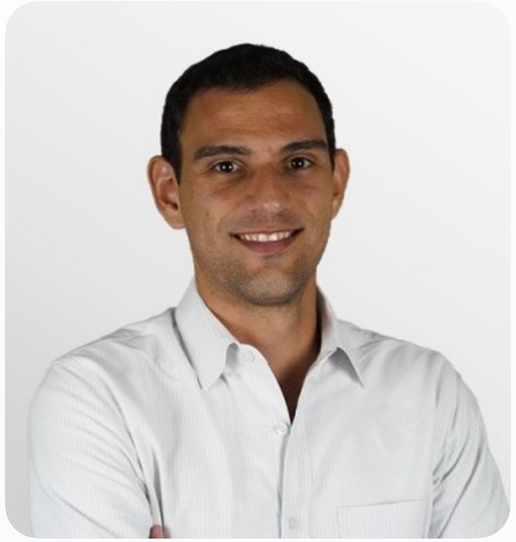
49 Portfolio Companies



Vertical was Established October 2019

PLUGANDPLAY

SV SUMMIT



Plug and Play Updates

Matthew Claxton

Partner & Global Head of Sustainability

Plug and Play

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INSPIRE, INFORM, AND ENGAGE

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SUSTAINABILITY INVESTMENTS

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PLUG AND PLAY SUSTAINABILITY

Sustainability Portfolio

49	Portfolio Companies
55%	Deep Tech
47%	Female Founder
~$1B+	Capital Raised by the Portfolio

Investments since 2019

DECARBONIZATION

Heirloom, Circulor, Basetwo, RUBI, Sylvera, Checkerspot, Connect Earth, epoch BIODESIGN, Thalo labs, Journey Foods, minimum, helios L'alternative bancaire, QAPTIS, Acquired Bluebird, sopht, Carbon Ridge, Carbon Reform, vaulted deep, SIMPLIFYBER, FINRES, APOHA

CIRCULAR ECONOMY

nilus, Acquired, greyparrot, rePurpose, KUBIK, alterpacks™, SUN BEAR BIOWORKS, BLUUMBIO, babaco market

CLEAN ENERGY

SolarMente, mona lee, SUNSAVE, ren

WATER RESILIENCE

KETOS, Acquired

PLUG AND PLAY SUSTAINABILITY

Plug and Play Sustainability Fund 1

8	Portfolio Companies
67%	Deep Tech
44%	Female Founder
$100M+	Capital Raised by the Portfolio

Portfolio

mona lee

vaulted deep

GIGABLUE
Nature's Carbon Credit

UCANEO

General Galactic

ISOMETRIC

QUEENS CARBON

CarbonRun

Vaulted Deep Series A

Marking First Full Year of Operations, Vaulted Deep Secures $32.3 Million Series A Funding Led by Prelude Ventures

November 14th, 2024

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NEW PARTNER & LOCATION ANNOUNCEMENTS

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PLUG AND PLAY | accelerateAZ
A PROGRAM OF THE ARIZONA COMMERCE AUTHORITY

PLUG AND PLAY SUSTAINABILITY

May 2024
Program Launched

4
Partners

11
Startups Accelerated

10+
Deal Flow Sessions

Founding Partners

ARIZONA COMMERCE AUTHORITY

Honeywell Aerospace

EPCOR

SWSIE

SUSTAINABILITY

Ampcera® | higherwire Energy Solutions, Elevated | HolosGen™

OXbyEL Technologies, Inc. | airth.iO | BE BREATHE EV

SorbiForce first sustainable batteries | SUNFLEX | Beyond Silicon

Carbon Utility | sylvan source

- Energy
- Circular Economy
- Water Resiliency
- Hydrogen
- Nuclear Fusion
- Decarbonization
- Battery Technology
- Sustainable Mining

“Plug and Play sets the standard for accelerating innovation and collaboration, finding the next generation of breakthrough technology. Their new office in Arizona will be a powerful force connecting promising startups with leading industry companies to create deep social and societal impact.”
Katie Hobbs, Governor of Arizona



PLUG AND PLAY ARIZONA


Allianz
BREMER BANK
CARLSON
GREATER MSP
3M
MINNEAPOLIS
MINNESOTA
PLUG AND PLAY
PLUG AND PLAY SUSTAINABILITY

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FIRESIDE CHAT

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SUSTAINABILITY FIRESIDE CHAT



Matthew Claxton

Partner & Global Head of Sustainability

Plug and Play



Stephen Lamm

Head of Sustainability

Bloom Energy

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PLUG AND PLAY SUSTAINABILITY

Fireside Chat Quote

“Policy is only one part of what helps climate tech — the growth of wind, solar, and EVs took place under both Republican and Democrat presidents. Those who succeed in this environment will be the ones focused on fundamentals: strong unit economics, reduced reliance on incentives, and clear paths to profitability. While some funds may pause deployments or chase crowded deals, opportunities exist for both disciplined investors and entrepreneurs who understand that climate tech encompasses far more than edge cases requiring heavy subsidization. Remember: long-term investment cycles mean crucial sectors continue to progress, bolstered by international mandates and market demand.” - by CTVC on Nov. 11, 2024

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SUSTAINABILITY FIRESIDE CHAT



Matthew Claxton

Partner & Global Head of Sustainability

Plug and Play



Stephen Lamm

Head of Sustainability

Bloom Energy

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Master of Ceremonies

Anna-Sophia Haub

Corporate Partnerships Manager
Plug and Play

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STARTUP PRESENTATIONS

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STARTUP PRESENTATION

GENERAL GALACTIC

General Galactic

Fueling our future with fossil-free fuels

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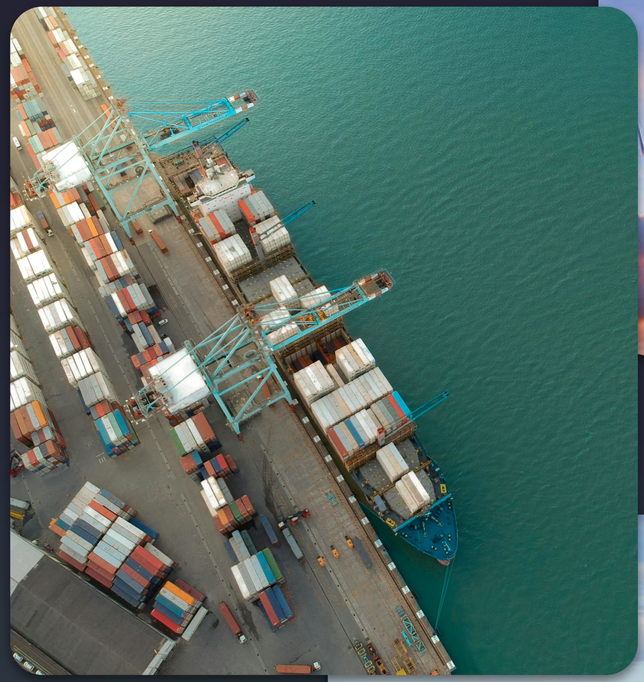
GENERAL GALACTIC

OUR MISSION

Build a fossil-free future.

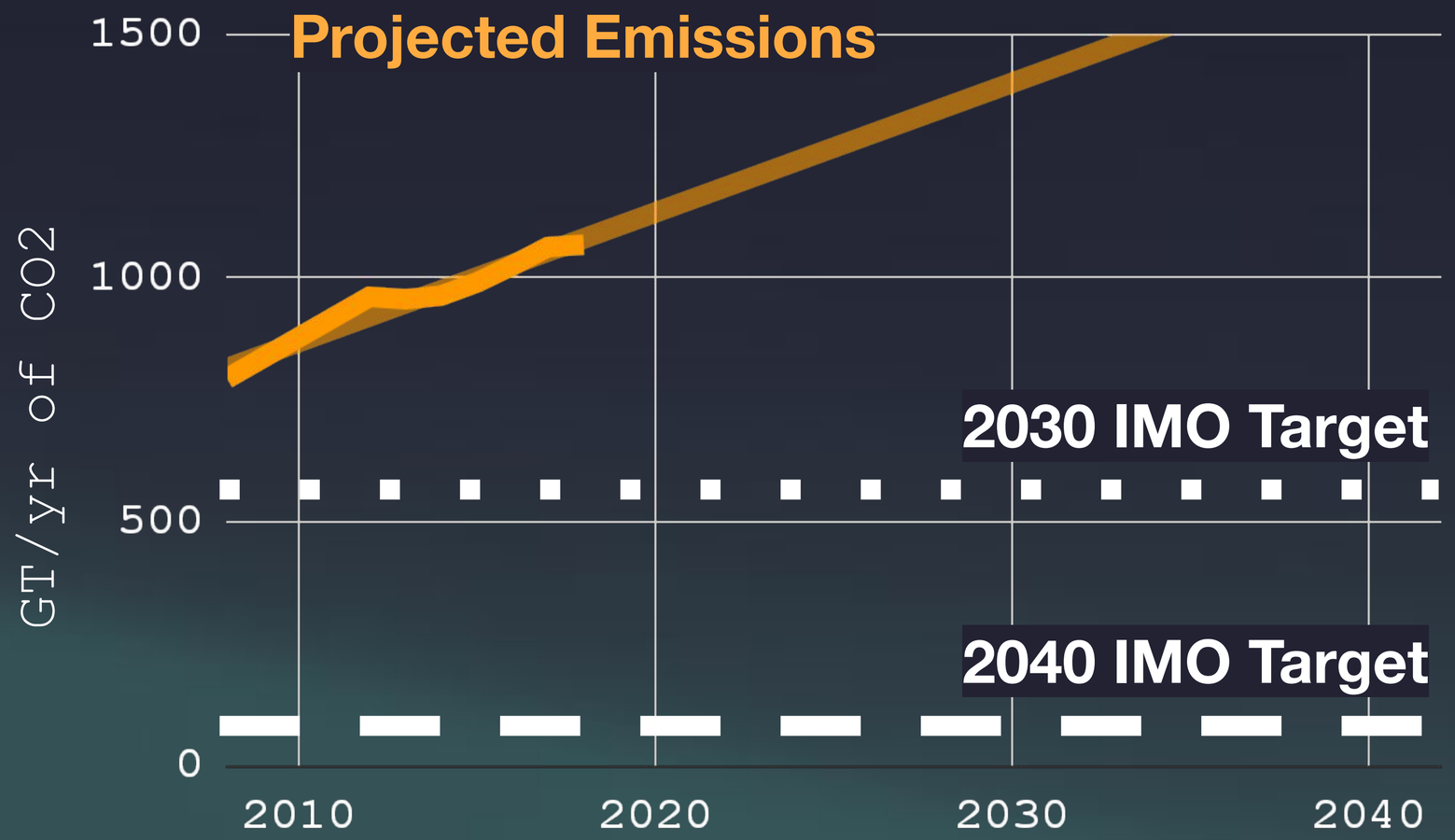
General Galactic will deliver fossil-free fuel to critical industries around the planet.







MARITIME INDUSTRY CASE STUDY



Despite new regulations, industrial emissions are projected to increase.

Industry needs a solution to meet climate goals.

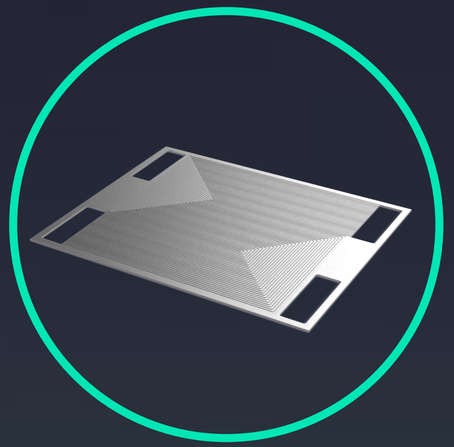
Our novel CO2 capture & conversion technology delivers fossil-free fuel at the lowest cost



Dual-Function Catalyst & Sorbent

CO2 capture and conversion with 99+% selectivity

EXCLUSIVE LICENSE



Ultra-Low-Cost Electrolyzer

Intermittent hydrogen production at low cost

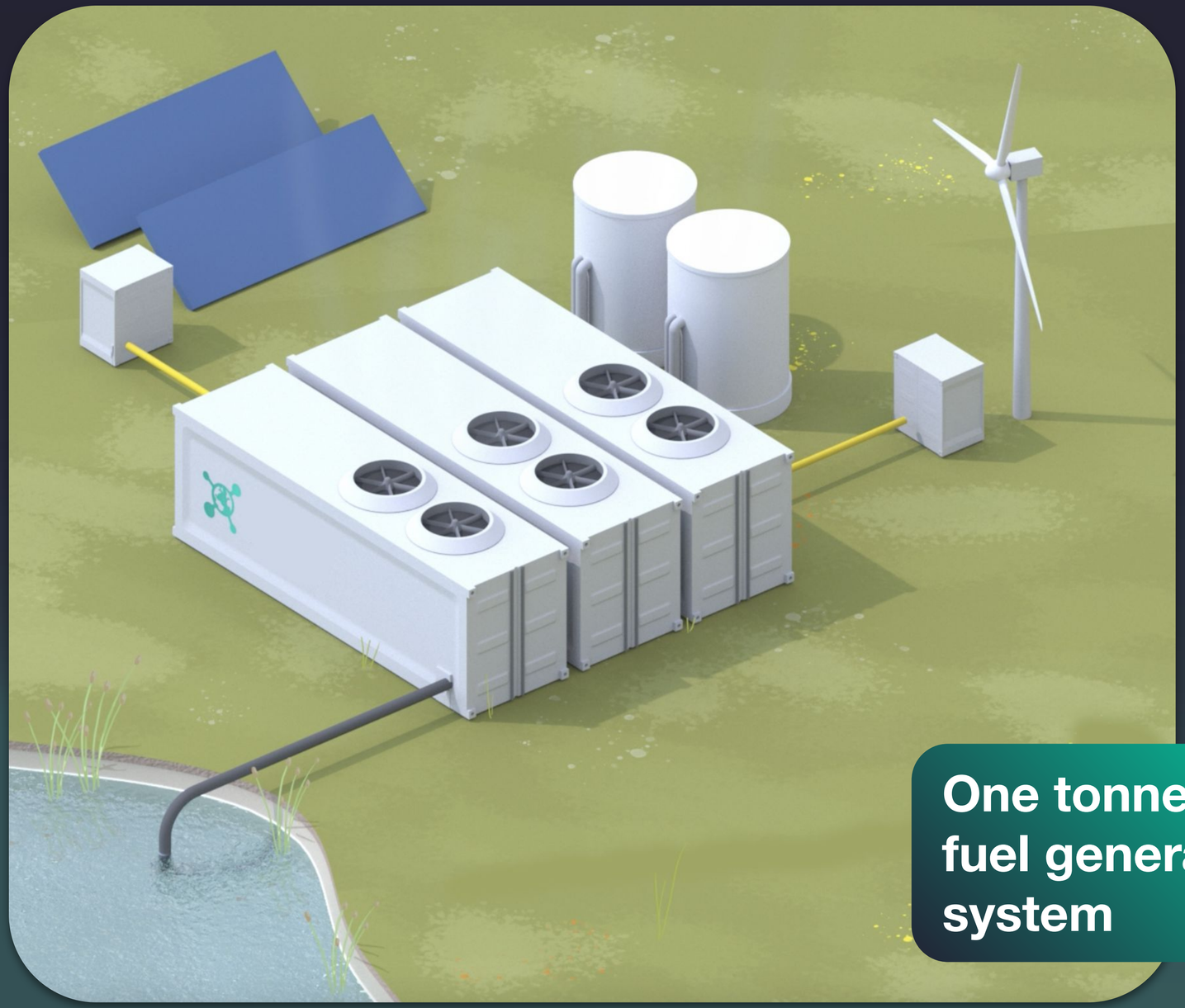
TRADE SECRET



Compact & Scalable CO_2 Reactor

High single-pass efficiency enables direct offtake

PATENT PENDING



Modular on-site production enables the lowest costs of feedstocks and fuel.

One tonne-per-day fuel generation system

Fossil-Free Fuel is a scalable solution to achieve carbon-neutrality



Identical energy density and compatibility as traditional fuels



More feedstock availability and lower product variability than bio-fuels

0

Zero sulphur (SO_x), nitrous oxides (NO_x), or black carbon emitted

Backed by leading scientists and investors.

Ready to scale with you.

LEADERSHIP TEAM



Halen Mattison
CEO

SpaceX Engineer



Dr. Badawi Dweik
Sr. Tech Consultant

CTO of Giner



Luke Neise
CTO

NSF Researcher



Michael Adeyi
Founding Engineer

Fuels Researcher

TECHNOLOGY PARTNERS

OAK RIDGE National Laboratory

NREL Transforming ENERGY

INVESTORS

Refactor

BOX GROUP

climate capital

PLUG AND PLAY

PATHBREAKER VENTURES

GENERAL GALACTIC

gengalactic.com

info@gengalactic.com

@gengalactic on X

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STARTUP PRESENTATION

GIGABLUE

Gigablue

The world's first safe, affordable and gigaton-scale marine carbon dioxide removal

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GIGABLUE
Plug and Play Sustainability Expo // November 2024

FAILING TO MEET CLIMATE GOALS // THE CHALLENGE

We need to remove 950 gigatons of carbon dioxide from the atmosphere.
In 2023, we emitted 34, and removed only 2.

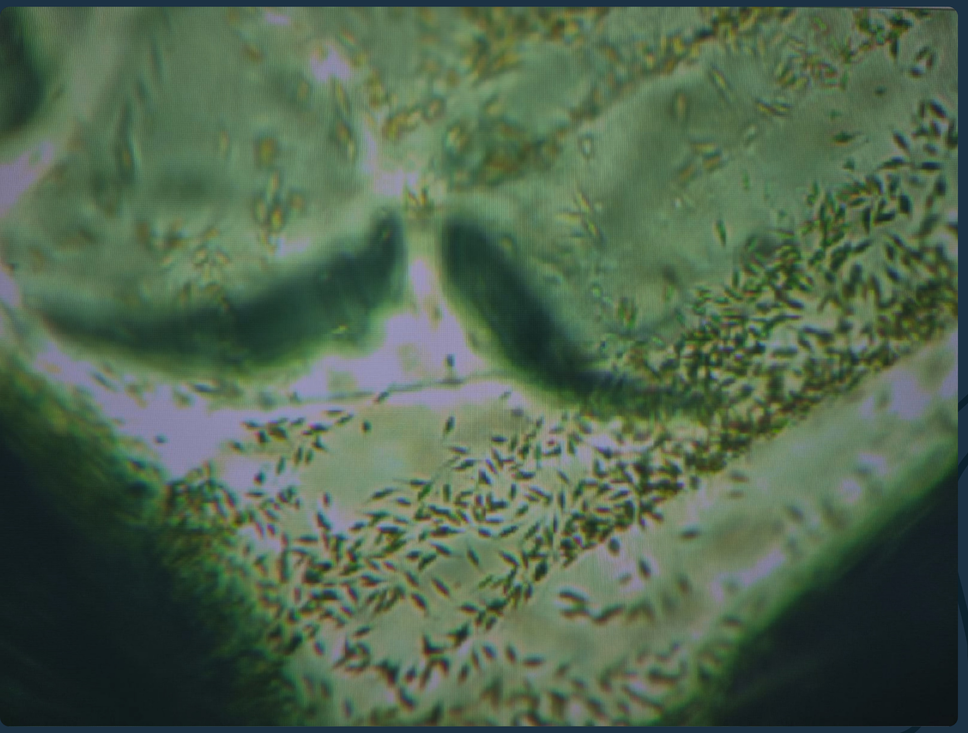
"The pathway to a 1.5°C-aligned future that avoids catastrophic climate change will require massive amounts of CDR to extract CO2 from the atmosphere and durably store it"

RMI, 2023

RMI
ENERGY. TRANSFORMED.

GIGABLUE

SAFE, AFFORDABLE AND DURABLE OFFSETS // MEET GIGABLUE



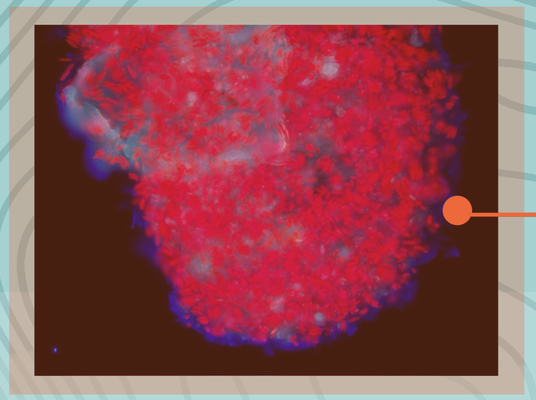
Gigaton-scale marine carbon dioxide removal (mCDR) using phytoplankton, sunlight and gravity.

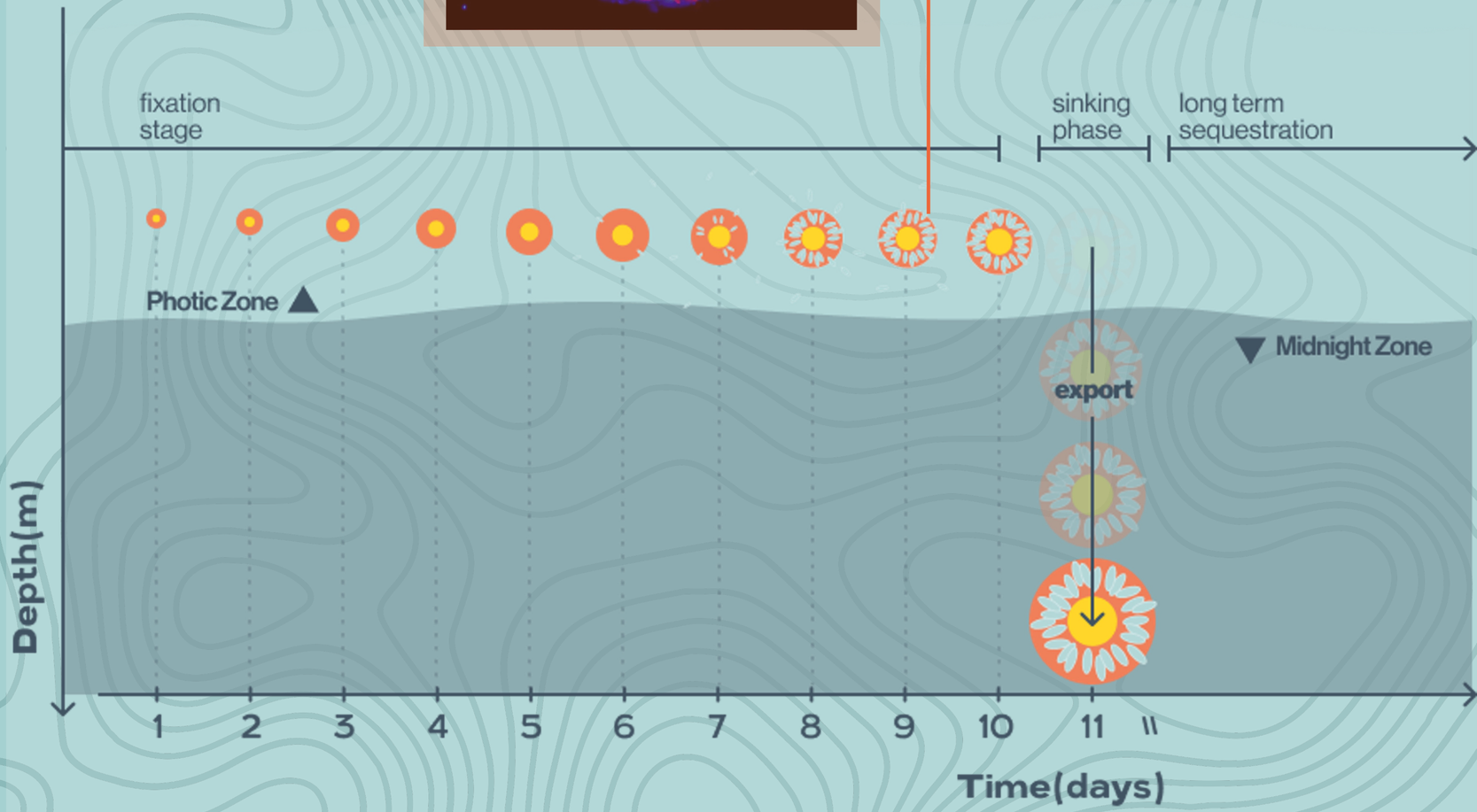
GIGABLUE

DEEP SEA ELEVATOR // THE SOLUTION

Phytoplankton grow on Gigablue's geo-optimized micro-substrates that float in the ocean for 7-10 days. They consume carbon and add biomass. When a chemical trigger pulls, the substrates become dense and sink down to the seabed, where the carbon will stay for thousands of years.

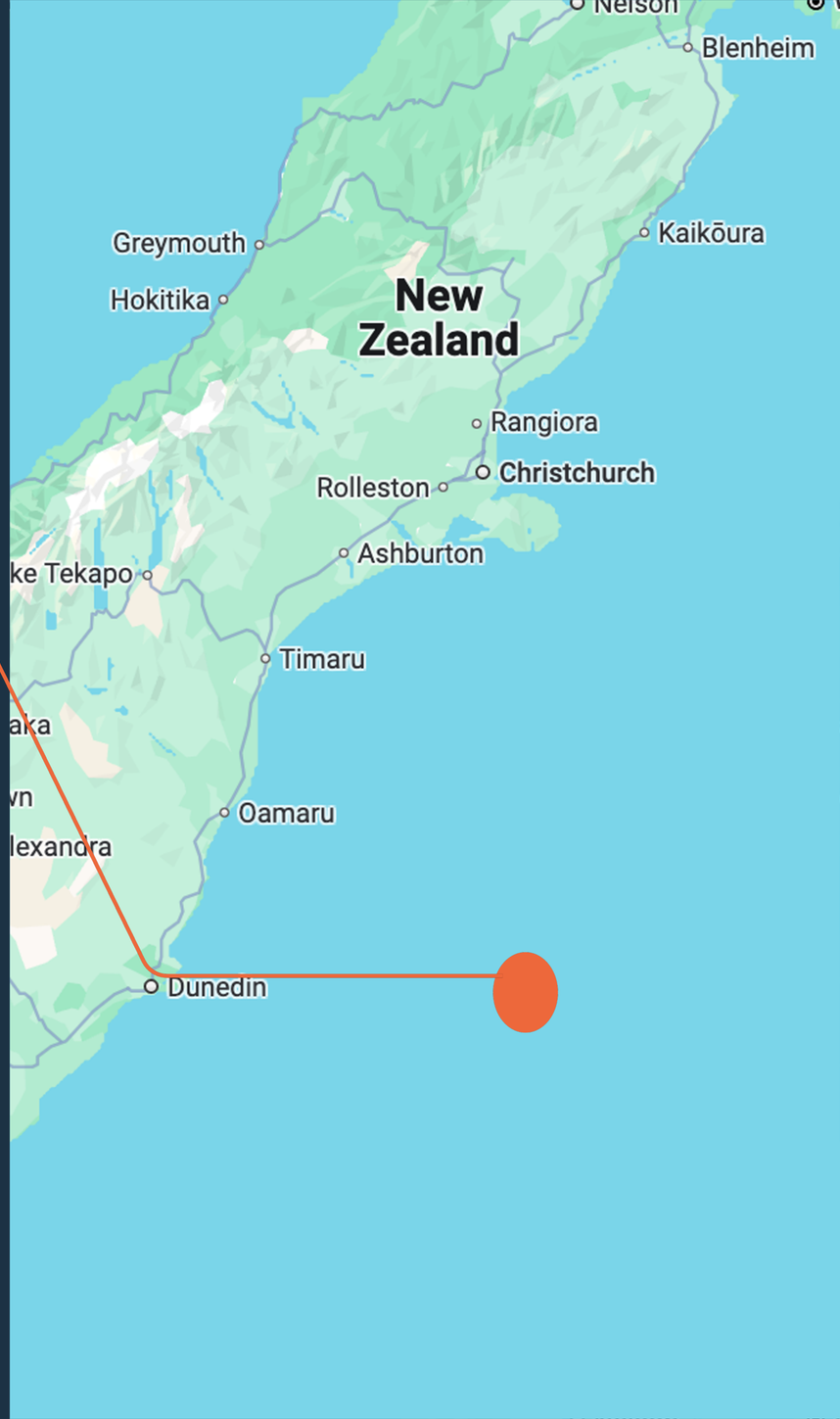
This method can scale up to 1 gigaton CO2 per year, at 1/3 of the cost of other durable methods.





GIGABLUE





OCEAN BOUND

Gigablue operates in New Zealand’s Exclusive Economic Zone (EEZ), 100 miles from the shore.

GIGABLUE

IT TAKES A TEAM // THE GIGABLUERS



Dotan Levy, CEO



Sapir Alford Markus, CTO



Guy Shafran, COO



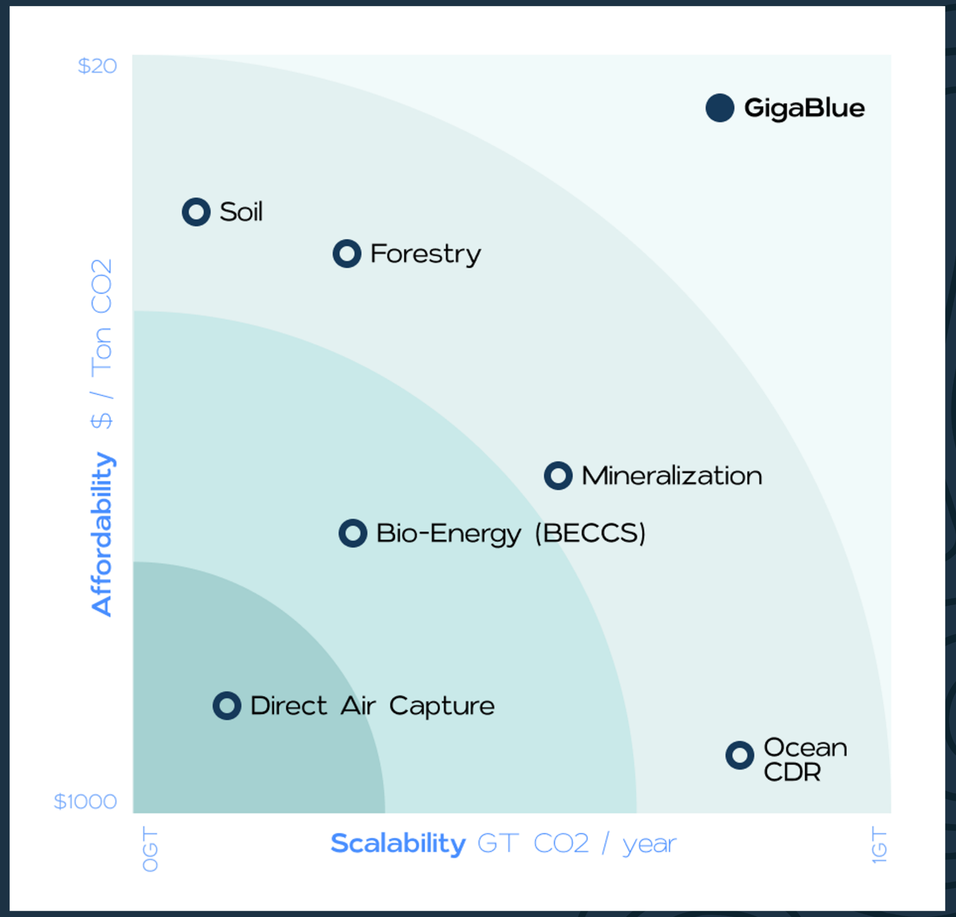
Ori Shaashua, COO



Advisors

Prof. Itay Halevy, Biogeochemistry, The Weizmann Institute
Prof Adi Torfstein, Oceanography, The Hebrew University
Rafael Danieli, Former CEO, ZIM Maritime Shipping
Blair Jamieson, Maori community developer
Sarabeth Brockley, former ESG at UN, World Bank, NASDAQ

LEADING THE CHARGE // CDR LANDSCAPE



A global leader in biotic mCDR

High scale, low Capex

Future-proof CoGS

Strategic access to permits

Ground truth MRV

GIGABLUE

WE DON’T HAVE TIME // ACCOMPLISHMENTS

Founded in 2022, offtake-ready in 2024

Proven core technology

Successful demonstration of floating and sinking mechanisms

2 Patents

EPA permit

Operational environment experiments in the Southern Ocean

Environmental Protection Authority
Te Mana Rauhī Taiao

2 3 Successful ocean deployments

End-to-end MRV with ground truth data

XPRIZE™

Scientific approval by NIWA

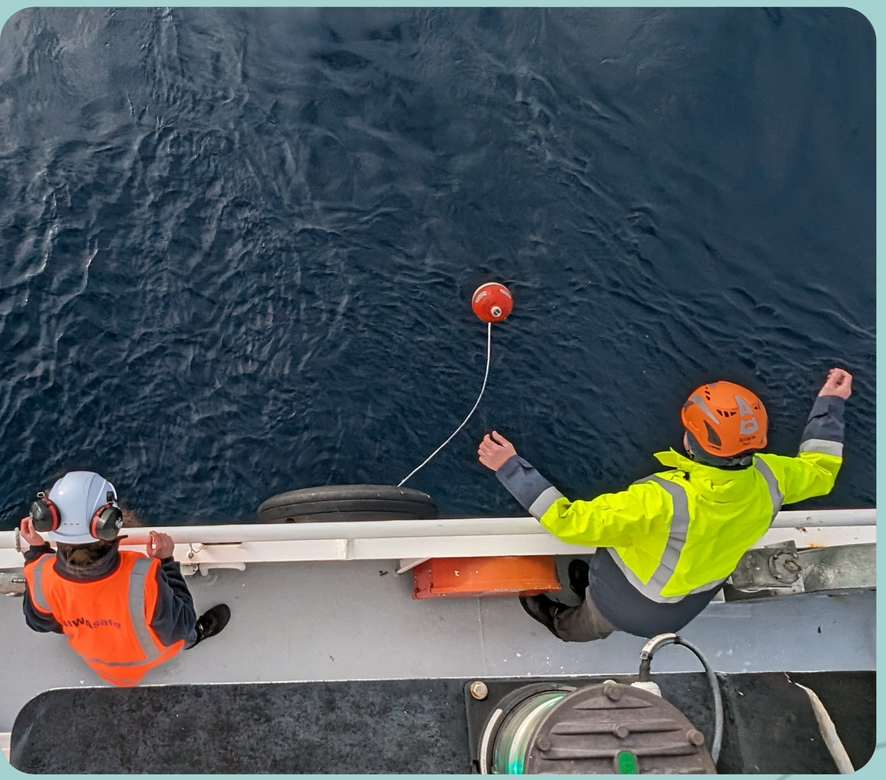
Compliance-market grade verification

NIWA

GIGABLUE

THE FIRST MEGATON // OFFTAKES

Gigablue is already committed to deliver hundreds of kilotons CO2e to leading aviation companies.



“For the aviation industry, carbon removals are a critical part of the decarbonization journey. Gigablue has one of the most effective, scalable and durable carbon capture solutions we have seen.”

Krishnan Narayanan, Founding Partner

CLEAR SKY

PARTNERSHIPS

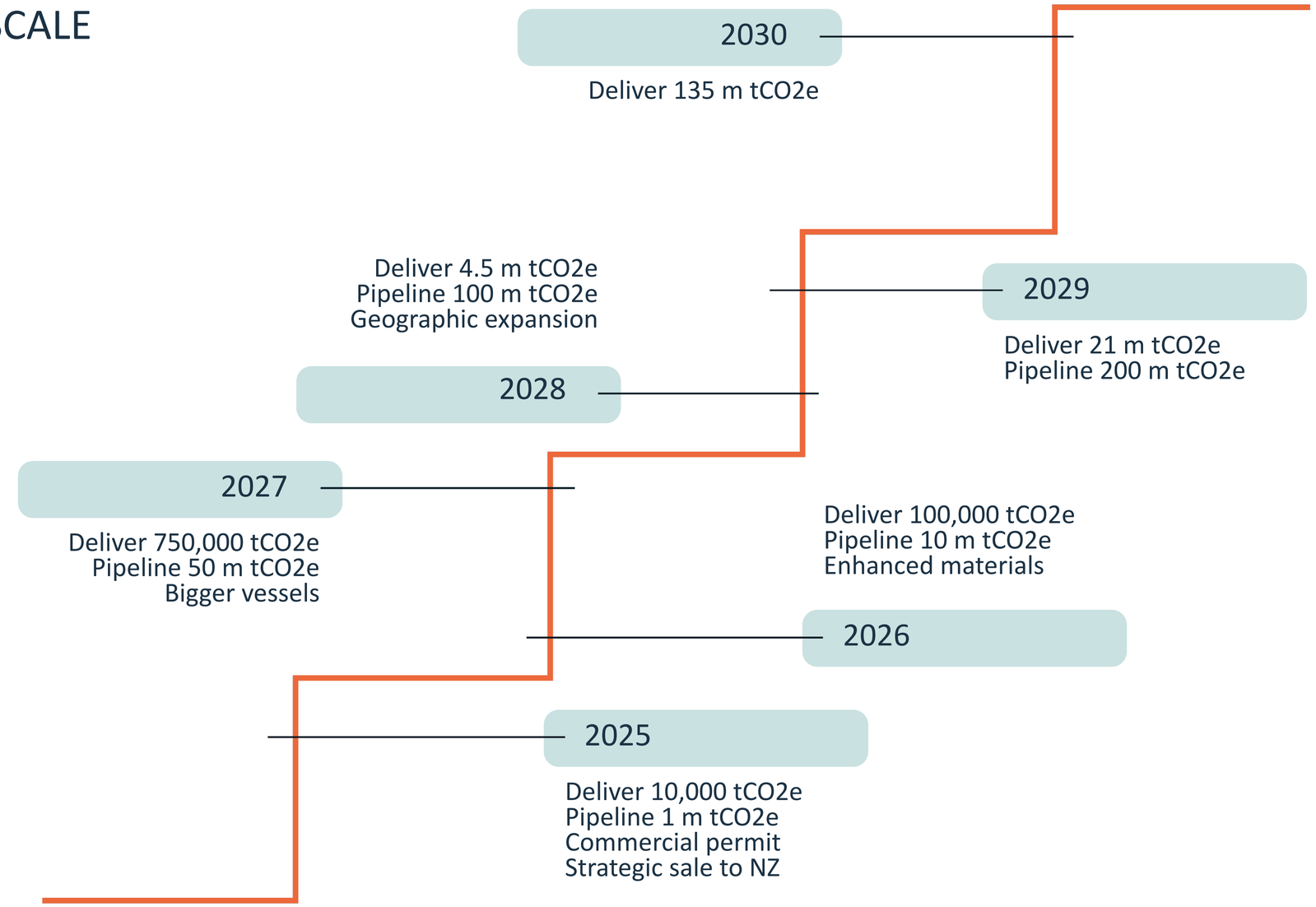
WORLD OCEAN COUNCIL

CAWTHRON

TĀMATA HAUHĀ

GIGABLUE

ON TRACK TO A GIGATON SCALE



BECOME PART OF THE STORY // OPPORTUNITIES

BUY CARBON



High quality credits
Kiloton-size offtakes
Ideal for aviation, shipping, pharmaceuticals and manufacturing companies

INVEST



Round A

GIGABLUE



GIGABLUE

MATAN RUDIS
DIRECTOR, BUSINESS DEVELOPMENT
MATAN@GIGABLUE.CO
+1(347)415-7599

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SV SUMMIT

STARTUP PRESENTATION

PETRAM

Petram Technologies

Petram provides the most energy efficient sustainable rock breaking technology on Earth that is economical without subsidies.

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PETRAM



Petram is the Cleanest and the Most Energy-Efficient Rock-Breaking Technology on Earth

Our mission is to cut global CO2 emissions by
1,000,000 metric tons annually



EMPOWERING INDUSTRIES WORLDWIDE WITH SUSTAINABLE, FAST ROCK-BREAKING SOLUTIONS

ECO-FRIENDLY | EFFICIENT | ECONOMICAL

- We Break Rock with Electricity
- Sustainable Natural Resource Recovery
  - Oil
  - Gas
  - Geothermal
  - -Lithium
  - -Hydrogen
  - -Water
- Fast, Safe, Clean Construction, Demolition, Excavation
- Funded by NASA for solutions on the moon
- Reduce Earth's CO_2 emissions by 1 million metric tons annually

PETRAM

PETRAM

NOVEL TECHNOLOGY

POWERFUL SHOCK WAVES

REMARKABLE EFFICIENCY



PETRAM'S HIGH-POWER ELECTRIC PULSE (HPEP) FRACTURE SYSTEM



1 kWh

+



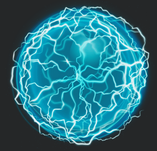
1 oz

=



224,900 Psi (1.55 GPA)





Plasma Ball (Shock Wave)

Step #1

Energy Input

A small amount of electricity -- just 1 kWh -- charges a capacitor bank the size of a mini fridge.



Step #2

Water

Just one ounce of water is required in a small pre-drilled hole or within a well casing, keeping resource usage minimal while supporting powerful results.



Step #3

Plasma Activation

Stored electricity is released instantly through Petram's exclusive cable and probe system, creating a powerful reaction with the water. This discharge forms a dense plasma ball at 10,000°F.



Step #4

Impact Delivery

Plasma shock wave is precisely directed by the probe to create long and complex crack structures resembling the roots of a plant to break rock.



PETRAM

ENHANCED SUBSURFACE PERMEABILITY

Oil | Gas | Geothermal

- Supports energy transition
- Enables precise subsurface rock-breaking
- Increases resource extraction
- Minimizes environmental impact
- Reducing water and energy use

Lithium | Hydrogen | Water | Carbon Storage

SUSTAINABLE NATURAL RESOURCE RECOVERY

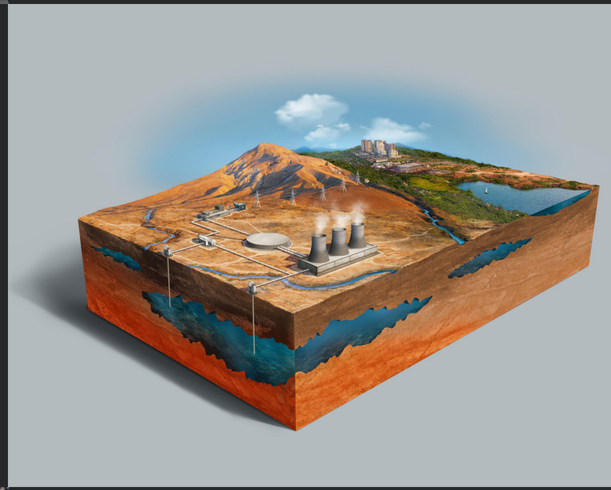


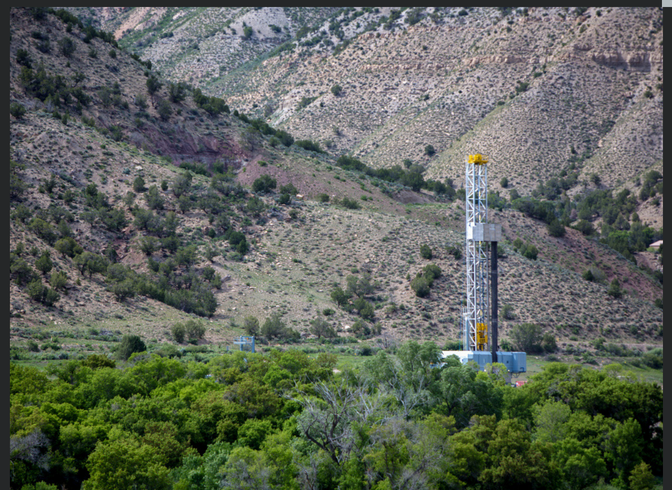
DENDRITIC COMPLEXITY

Our HPEP technology supports eco-friendly extraction, with complex fractures and operational efficiency.

EFFECTIVE

- 10+% INCREASE IN YIELD
- >$6 BILLION IN COST REDUCTION
- REDUCING WATER CONSUMPTION BY BILLIONS OF GALLONS





ZERO CHECMICALS

Eliminates need for chemicals and pollutants. Reduces fuel usage, exceeds environmental standards and ensures safety.

PETRAM

SURFACE APPLICATIONS

Construction | Demolition | Excavation

- Ideal for urban and large-scale infrastructure projects
- Minimal disruption
- Reduced noise, dust, and vibration

INCREASED SAFETY, ENHANCED PERFORMANCE & EFFICIENCY WITH MINIMAL ENVIRONMENTAL IMPACT



60% Cost Reduction

20X Yield Increase





Unmatched **Safety**

Proven Surface Performance

SAFER. INCREASED PERFORMANCE & EFFICINECY. MININAL ENVIRONMENTAL IMPACT



Crack Length and Complexity

More cracks and longer cracks with dendritic patterns.



Less Noise

HPEP is incredibly quiet and can be used at night.



Less Dust and Debris

No fly rock and virtually dustless.



Less Vibration

High precision quick pulses can be used near sensitive infrastructure.

PETRAM

PETRAM

Deep Patent Portfolio

10 ISSUED PATENTS AND NUMEROUS PENDING



Pulse Power Experts

Expertise in HPEP applications for NASA, Department of Defense, and leading academic and research institutions.

Technology Veterans

We have a team of scientists and engineers with a proven record of delivering cutting-edge hardware and software systems for industry.

Customer Focused

Passionate company builders that are experienced in delivering powerful solutions that exceed customer expectations.

PETRAM

Accelerating Growth

EXPANDING REVENUES, PROFITS, & CUSTOMER COUNT



Fortune 500 Customers

- Utility
- Energy



Profitable

- Cash flow positive
- 131% revenue growth
- Accelerating margins 50+%



Scaling

- Now at commercialization
- Capital light, scaling efficiencies

PETRAM

Multiple Revenue Streams

UPFRONT, ONE-TIME, RECURRING



Franchise Fees

Dealer network $100K / location with up to 150 independently owned Petram dealers for **Surface systems.**



Equipment Sales

New equipment sales of **$400K** for **Surface** units and **$2.4M** for **Subsurface** systems.

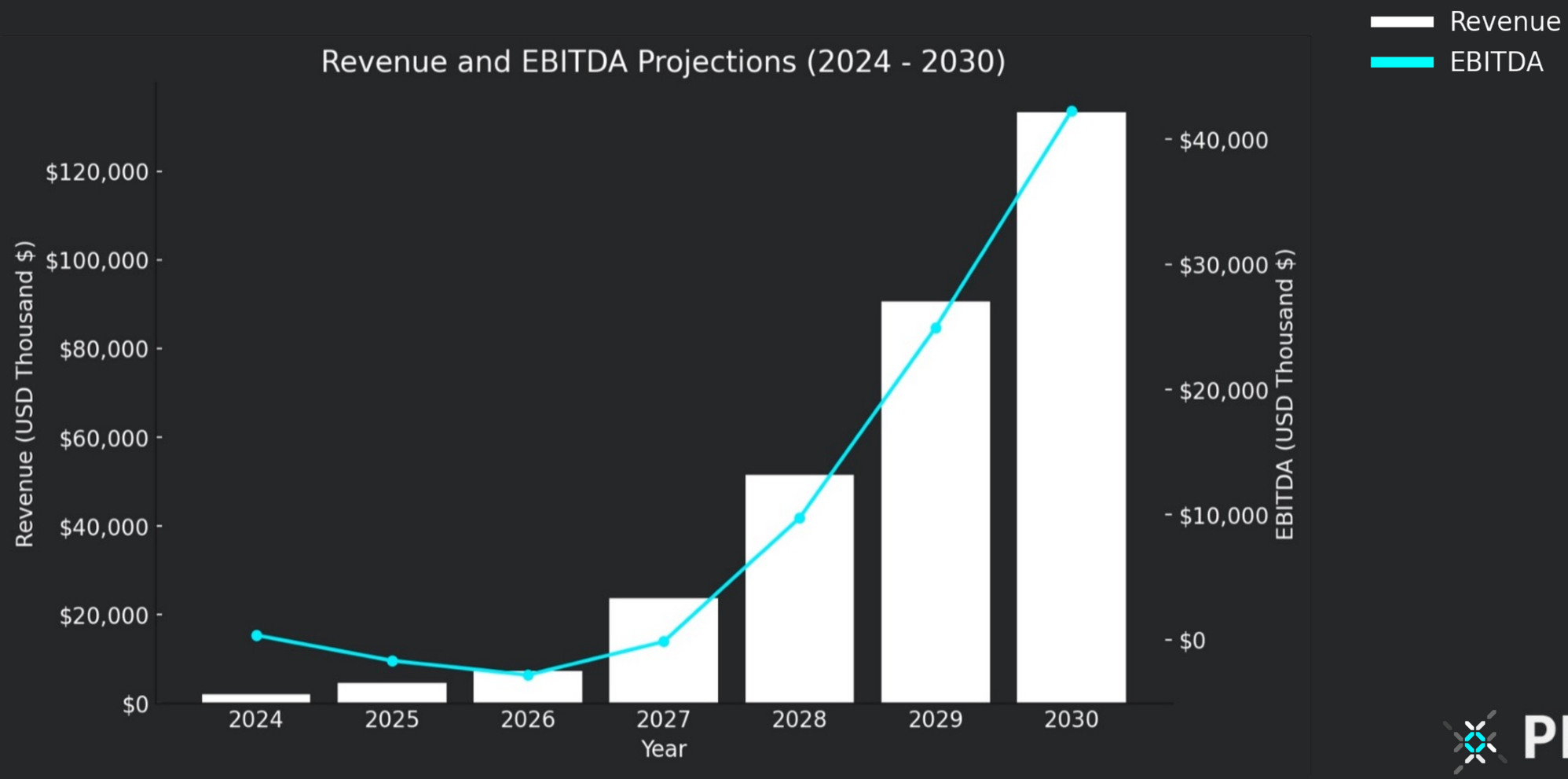


Consumables

Replaceable probes (the tip of the tool) sell for **$1.5K** each with 1/day recommended.

EXCEPTIONAL TOP LINE GROWTH WITH SOLID PROFITABILITY

STRONG UNIT ECONOMICS | GROSS MARGINS EXCEED 50%



PETRAM

Dream Team

BUILT AND RUN BY AN EXPERIENCED TEAM WITH STRONG TECH BACKGROUND AND DOMAIN EXPERTISE



CEO has led both private and public companies. Engineers and Scientists from leading universities. Go-to-Market experience selling to over 500 utilities in 50 countries. Products designed, developed and deployed in utilities, refineries, gas pipelines & compressors, and space.

Seeking Strategic Partners & $10M Growth Capital

FIRST INSTITUTIONAL CAPITAL



LAUNCH PARTNERS

- PRODUCT REFINEMENT
- PILOT PROJECTS
- CHARTER CUSTOMERS

INVEST IN GROWTH

- ADD PRODUCT & ENGINEERING STAFF
- CONTRACT MFG. CAPACITY
- CREATE DEALER NETWORK
- BUILD SALES PIPELINE
- COMPLETE DEEP WELL PRODUCT

PETRAM

The World’s Leading Companies Trust Petram

Franco Magnotti, CEO

www.petramtechnologies.com

15 Wilkinson Ave. Jersey City, NJ

PLUG AND PLAY

SV SUMMIT

STARTUP PRESENTATION

Ampcera, Inc.

Advanced solid-state electrolyte technology for next-generation energy storage

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Join us at **pnptc.com**

NOVEMBER 19, 2024

Material solutions for next-generation energy storage

Ampcera

Plug and Play Silicon Valley Summit

Abhishek Kumar
Head, Business Development and Commercial

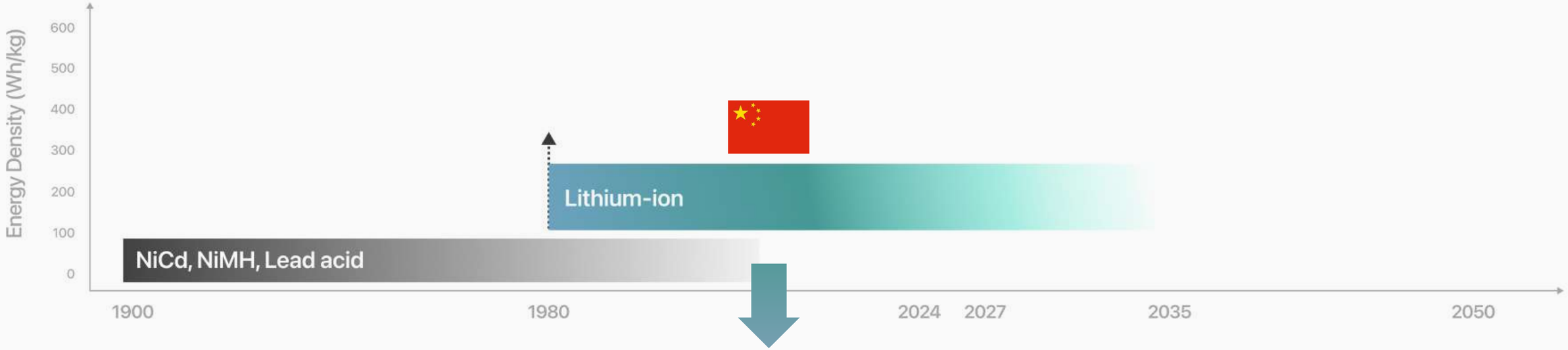
AMPCERA CONFIDENTIAL AND PROPRIETARY

Ampcera

Batteries: long history, powerful future (?)

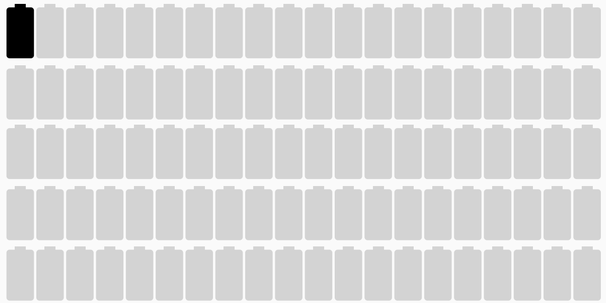


America’s problem: lithium supply chain



1%

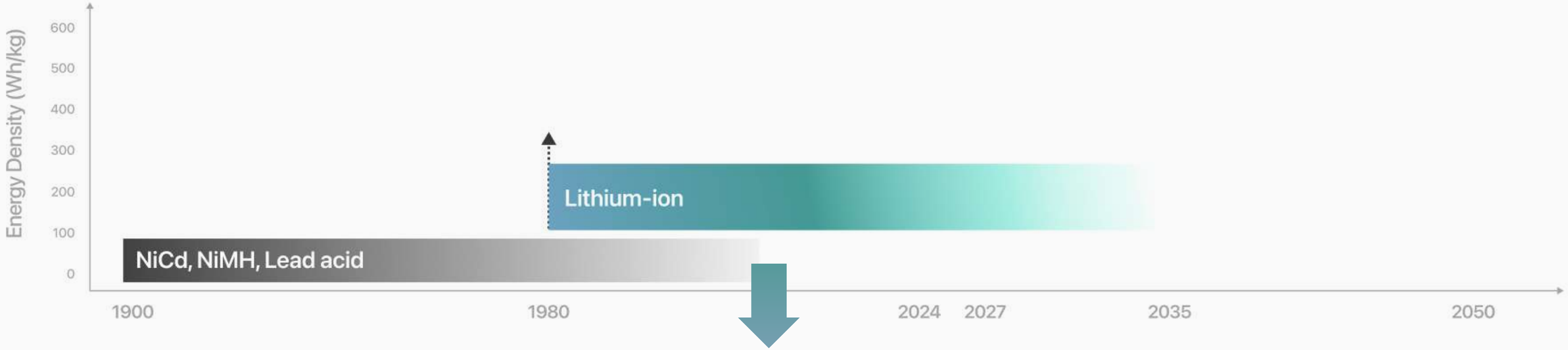
Share of global lithium output that is mined and processed in the U.S.



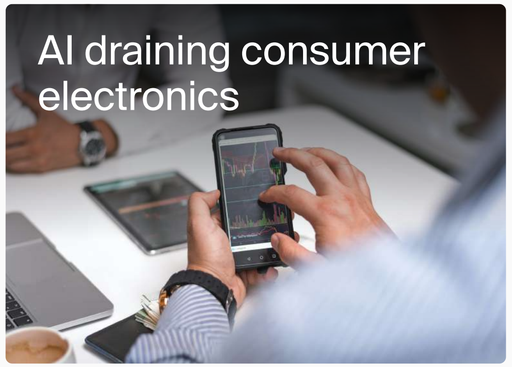
Source: Wall Street Journal

Ampcera

Battery technology needs a fundamental change





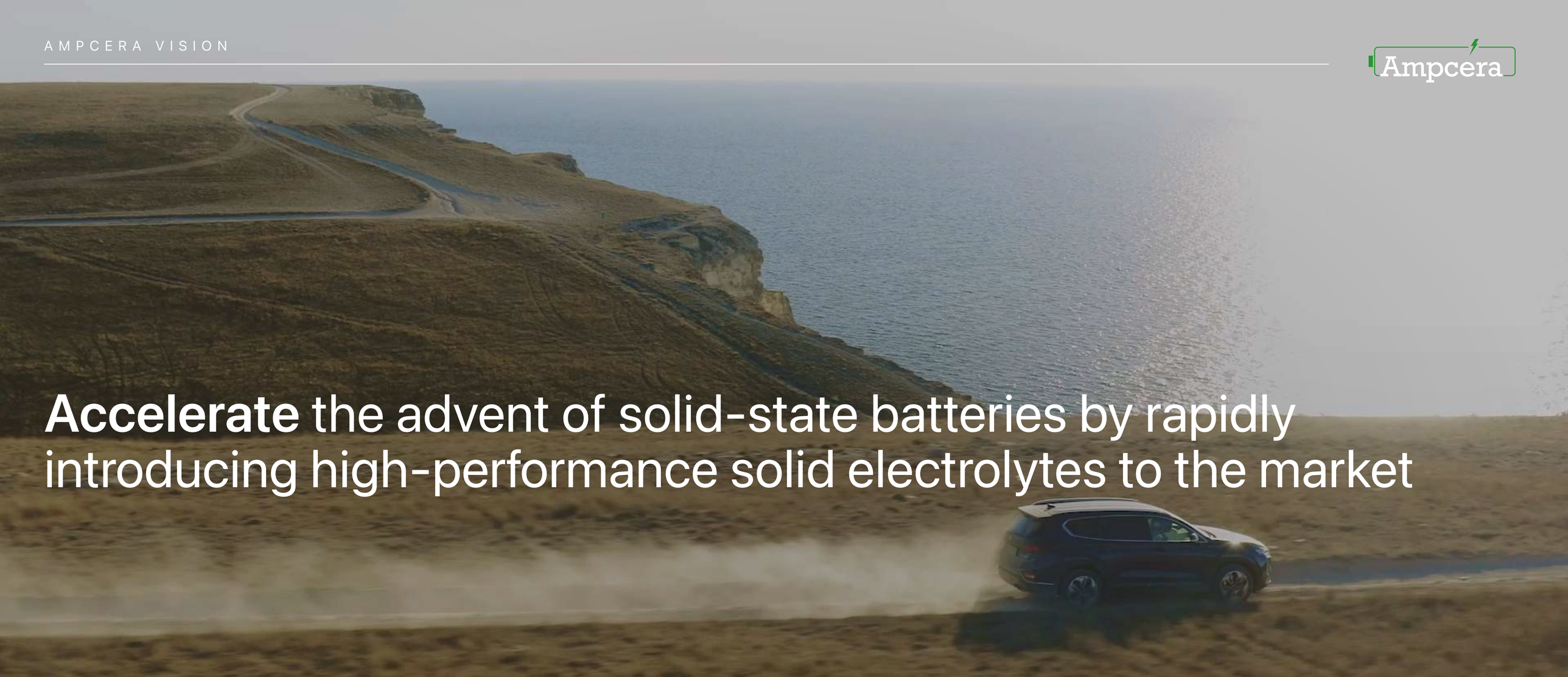




Build the future of energy storage



Supply chain problem + Technology problem



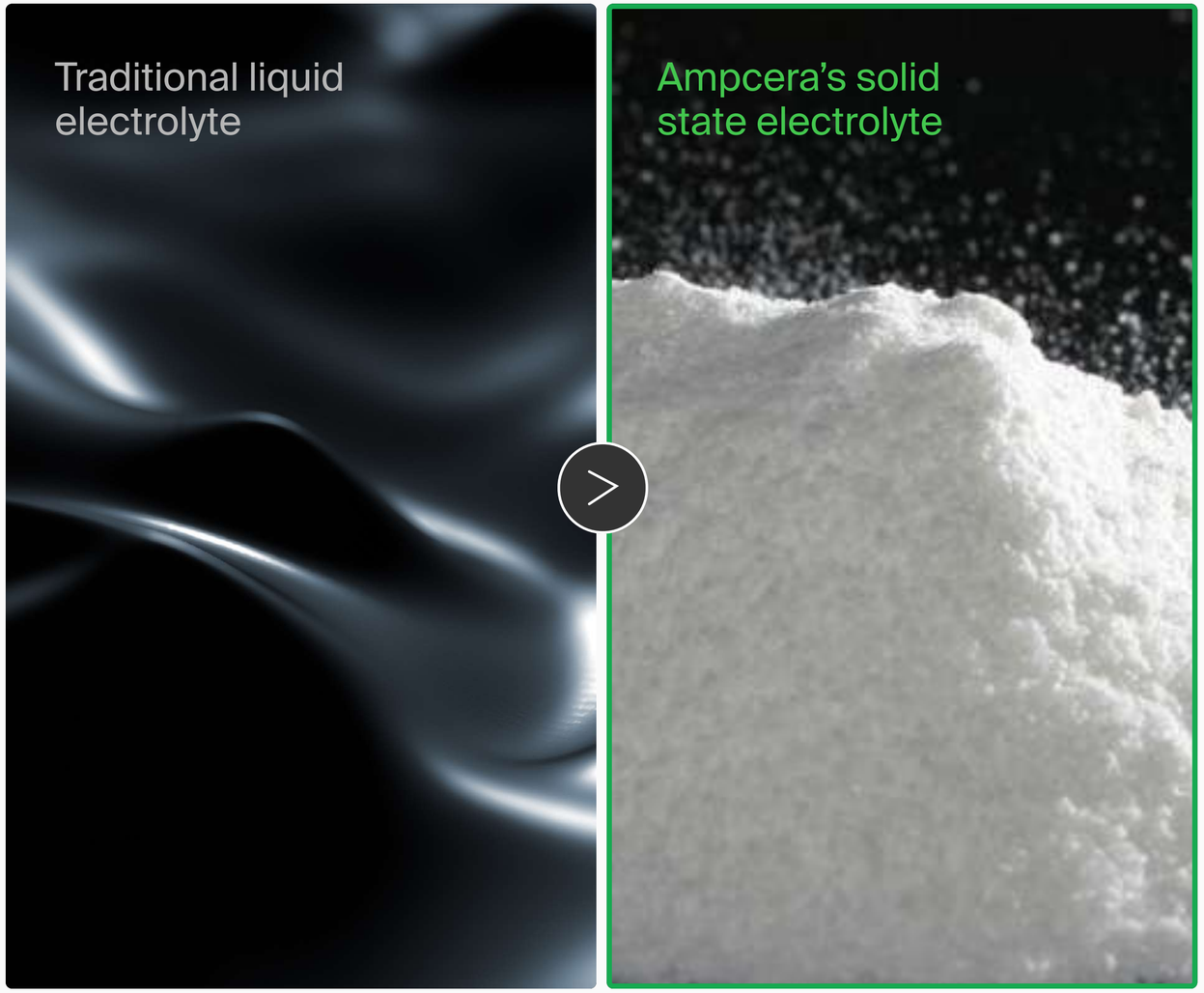
Accelerate the advent of solid-state batteries by rapidly introducing high-performance solid electrolytes to the market

Established	Location	Strategic Partners	Funding
2017	HQ: **Milpitas, CA** Tech & Mfg: **Tuscon, AZ**	U.S. DEPARTMENT OF ENERGY · Hanwha Solutions · Ford	**$18 million** **Series A PMV: $85Mn**

Ampcera

Materials enabling breakthrough battery performance

Ampcera does this by **substituting liquid electrolyte with a solid one** in today's lithium battery



Ampcera

Targeting 25% North American electrolyte market by 2030

Global electrolyte materials

Total Addressable Market (TAM)

3MM Tons
$32Bn Revenue



North America electrolyte materials

Serviceable Addressable Market (SAM)

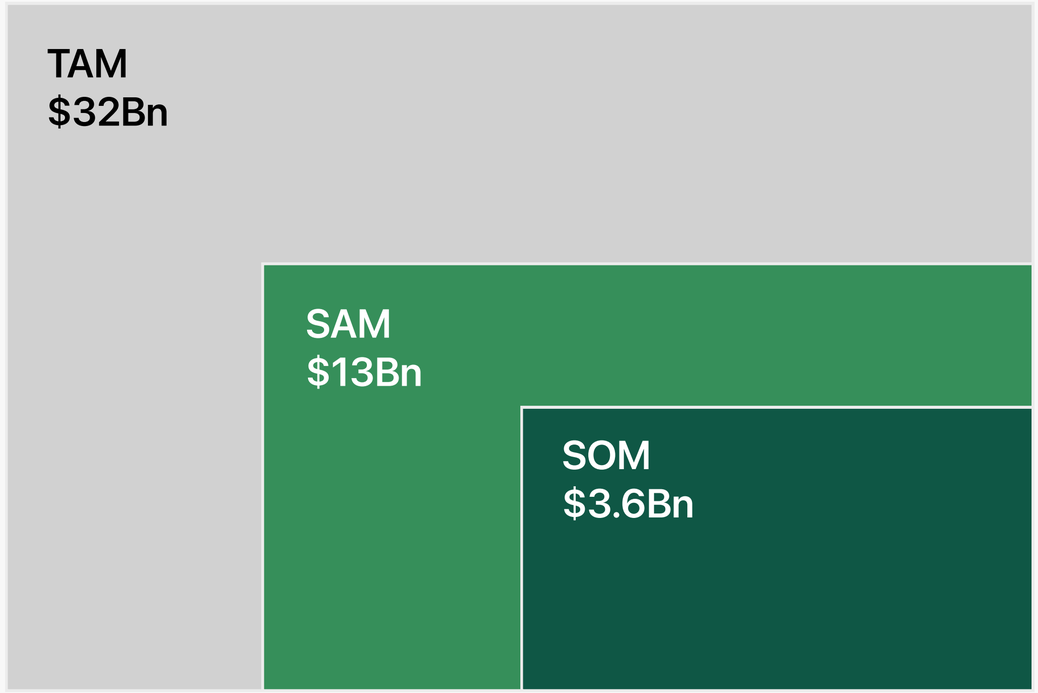
1.3MM Tons
$13Bn Revenue



Sulfide-based solid electrolyte materials

Serviceable Obtainable Market (SOM)

110K Tons
$3.6Bn Revenue



Solid electrolyte technology platform

Solid electrolyte material

(“component”)



ENGINEERED ARCHITECTURE

Cell integration

(“tailor-made”)



CELL ECOSYSTEM DESIGN

Battery cell

(“system”)



HIGH ENERGY DENSITY & FAST CHARGING

Process technologies

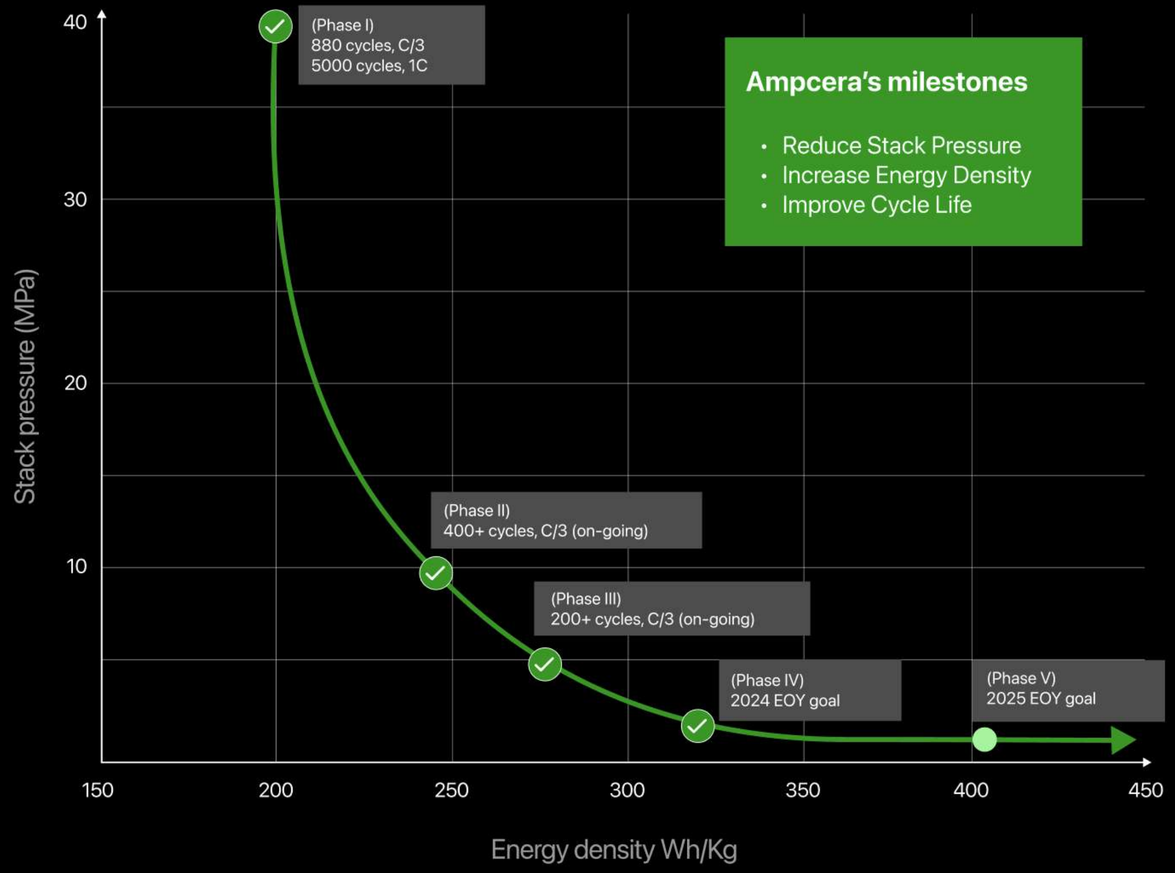
(“manufacturing”)



SCALABILITY AND REPRODUCABILITY

50+ patents and **90+ trade secrets** covering materials, manufacturing, and cell designs

Achieved 1 MPa stack pressure requirement



Ampcera's milestones

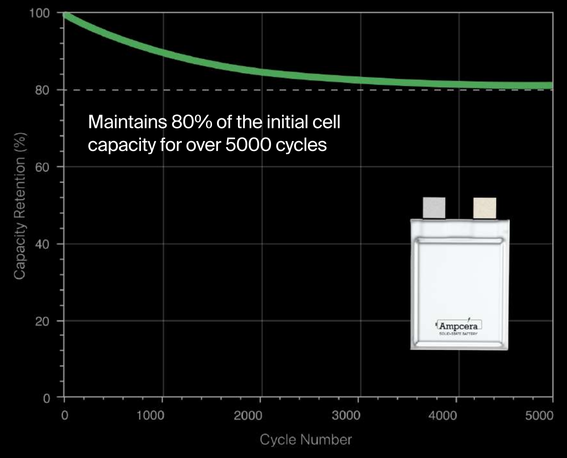
- Reduce Stack Pressure
- Increase Energy Density
- Improve Cycle Life

GM · Ford · Tesla · CATL · Farasis

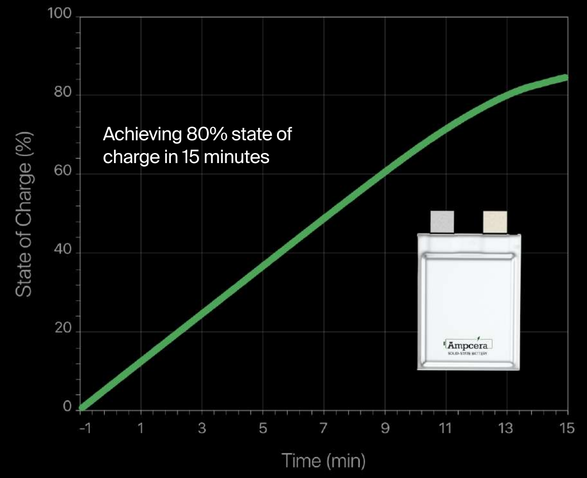
Pacific Northwest National Laboratory · Lawrence Livermore National Laboratory

UC San Diego · University of Washington

Cycle life performance



Fast charging



Realized <$90/kWh for SSB cells

In partnership with Hanwha Solutions, U.S. Department of Energy, arpa·e

Precursor	Electrolyte	Battery
Lithium Sulfide (Li_2S)	Sulfide Solid Electrolyte	Solid State Battery
<$40/kg	<$50/kg <$25/kWh	<$90/kWh

Cost target will be achieved by 2028, through vertical integration, low-cost manufacturing technologies, and scale.

Full-stack cell solution that integrates Ampcera's electrolyte technology

Ability to scale-up the development with the understanding of mass-production requirements and limitations

Enjoy the economy of scale and EV-grade manufacturing know-how learning curve

Provides validation and comfort to battery gigafactories and EV OEMs to embrace solid electrolytes



ELECTRIC VEHICLES

UPSTREAM: RAW MATERIAL SOURCING

Confidential | In-progress

Securing raw materials supply chain for Li_2S, P_2S_5 and other critical materials

MIDSTREAM: EQUIPMENT AND PROCESS DEVELOPMENT CELL AND MANUFACTURING PARTNERS

Confidential | In-progress

- Equipment and process development and scale-up
- Sulfide solid electrolyte manufacturing
- Establishing strong capabilities in building battery cells via partners

DOWNSTREAM: JOINT DEVELOPMENT PARTNER AND CUSTOMER

Confidential | In-progress

EV-grade mass production manufacturing partner helps in swift validation, qualification, and commercialization

CONSUMER ELECTRONICS

MIDSTREAM: CELL PARTNERS

In-progress

Strong capabilities in building pouch cells for CE

DOWNSTREAM: JOINT DEVELOPMENT PARTNER AND CUSTOMER

In-progress

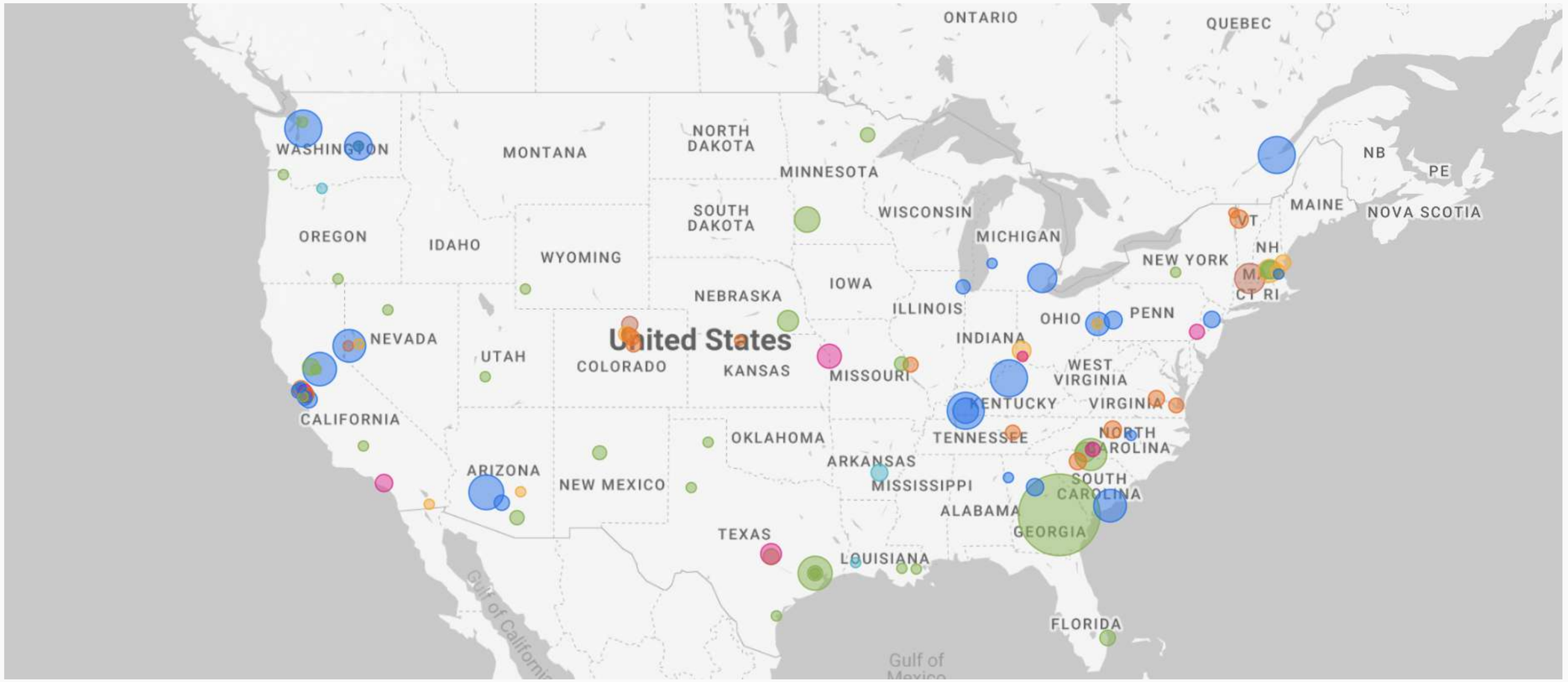
Helps Ampcera achieve premium pricing for its SSE-based products

Ampcera



Accelerate the advent of solid-state batteries by building EV prototype with Ampcera’s solid electrolytes-powdered batteries

US start-ups are building over 100 domestic manufacturing facilities



Source: Milo Werner, The Engine Ventures

Build in America, for the World

Personal journey: Abhishek Kumar

SoftBank

RENEWABLE ENERGY
ENERGY STORAGE

Valuation: $3.5B
(SB ENERGY)



OLA ELECTRIC

ELECTRIC VEHICLES,
BATTERY MANUFACTURING,
ENERGY STORAGE

Market cap: $7.5B
(NSE: OLAELEC)



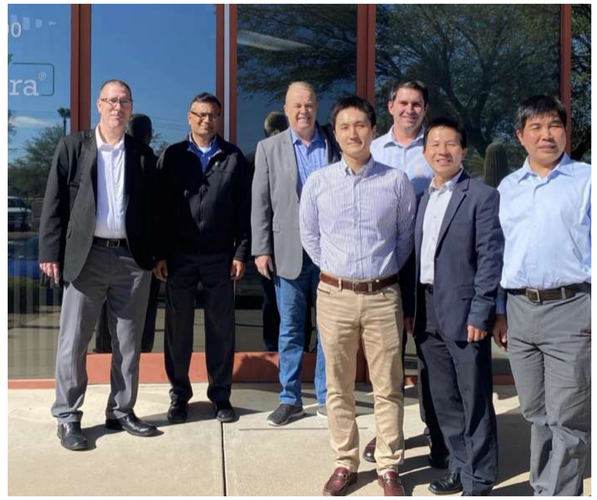
Ampcera®

BATTERY MATERIAL



Team of 30+ domain experts





UNIVERSITIES

Harvard Law School
Carnegie Mellon University
Wharton University of Pennsylvania
Stanford University
University of Oxford
Missouri S&T

COMPANIES

ThermoFisher Scientific
NREL National Renewable Energy Laboratory
Wilson Sonsini
SoftBank
OLA ELECTRIC
REC

Powering towards a sustainable future.

Ampcera

Plug and Play Silicon Valley Summit

Abhishek Kumar
Head, Business Development and Commercial
akumar@ampcera.com

ampcera.com

PLUG AND PLAY

SV SUMMIT

STARTUP PRESENTATION

LUNASONDE

Lunasonde

Lunasonde sells subsurface imagery from space.

#PNPTCSiliconValley

Join us at **pnptc.com**

LUNASONDE

Space-based missions for a changing planet



Our initiative

- Lunasonde aims to address water scarcity and dynamic monitoring of extracted groundwater resources by developing ground penetrating remote sensing platforms.

- Water scarcity is vital to address for drinking water and farming with looming climate insecurity.

"*The next war in the Middle East will be fought over water, not politics.*" -- Boutros Boutros-Ghali, Former Secretary-General of the UN

Strictly Confidential

Lunasonde’s Mission

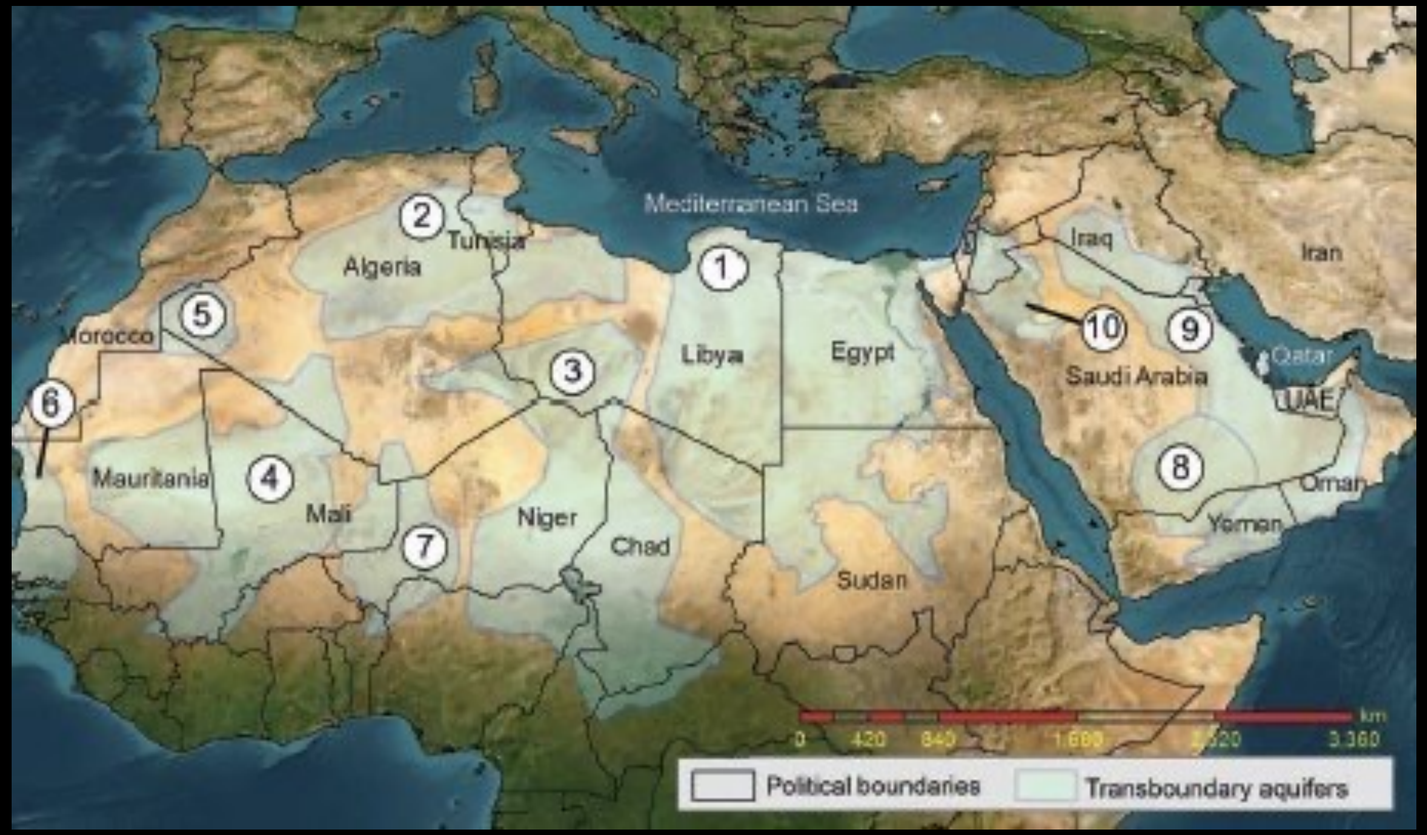
Lunasonde is the first company delivering subsurface images from orbit

Scalable missions compared to traditional airborne collection methods.

Ability to monitor remote and denied areas.



Aquifer discovery and monitoring



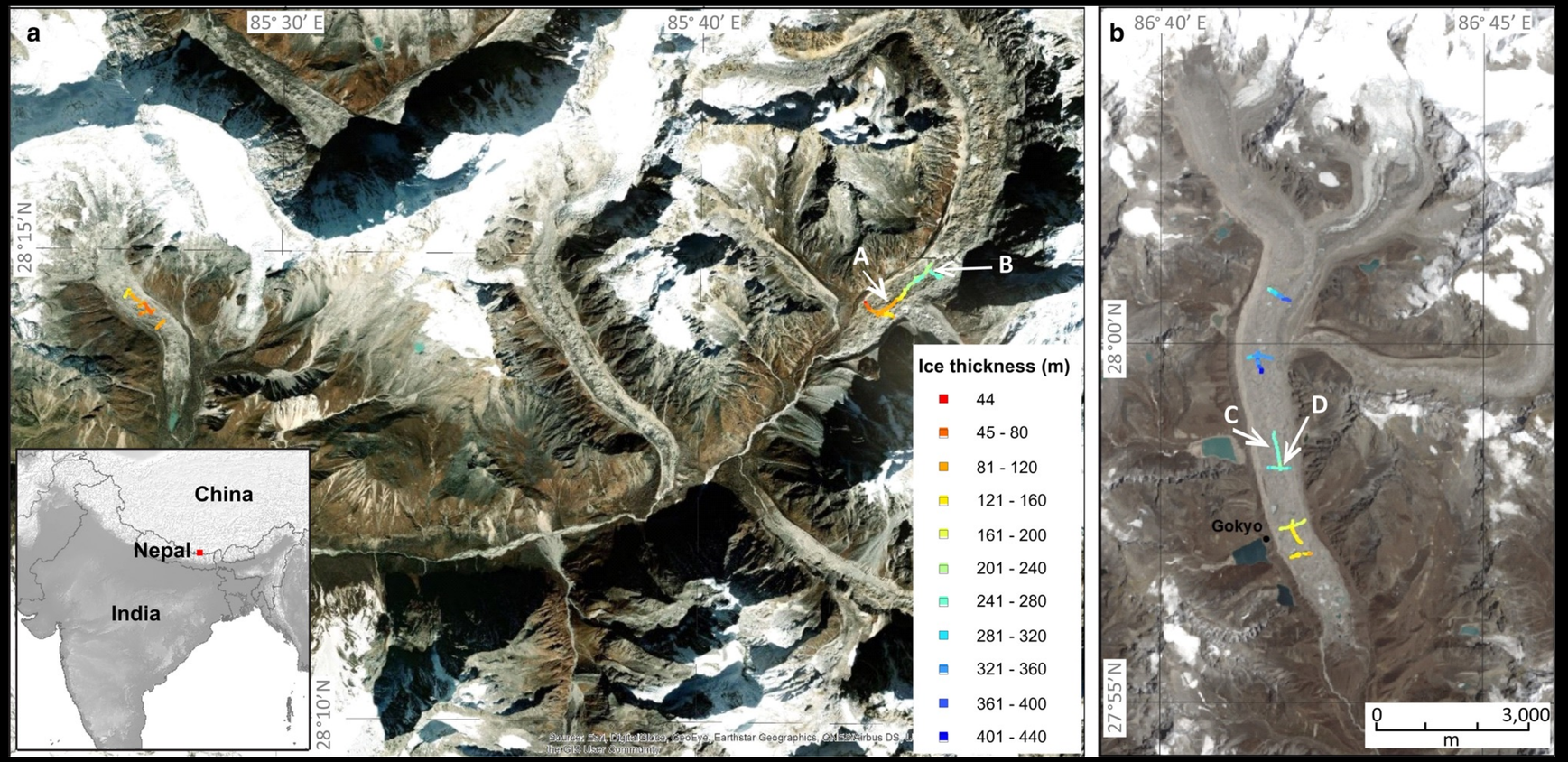
Heggy, 2024 [IEEE Geoscience and Remote Sensing Magazine]

Strictly Confidential

LUNASONDE

Glacial Monitoring

- High Mountain Asia – Source of water for 1 Billion People



Pritchard, 2020 [Annals of Glaciology]

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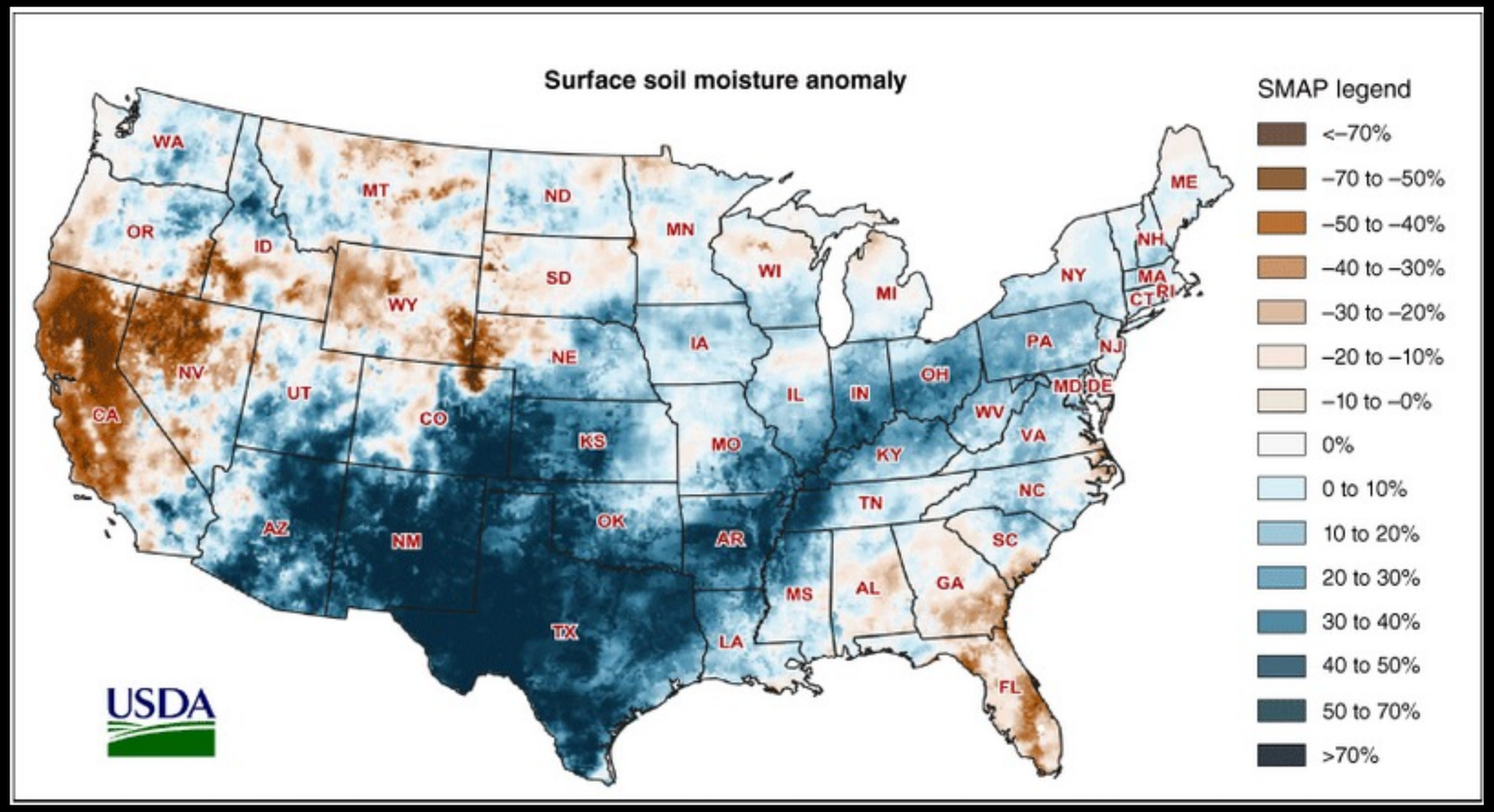
Wildfire Risk Assessment

- Surface reflectants can indicate soil moisture content for wildfire risk assessment and post-fire landslide risk



Krueger et al. 2022; International Journal of Wildland Fire

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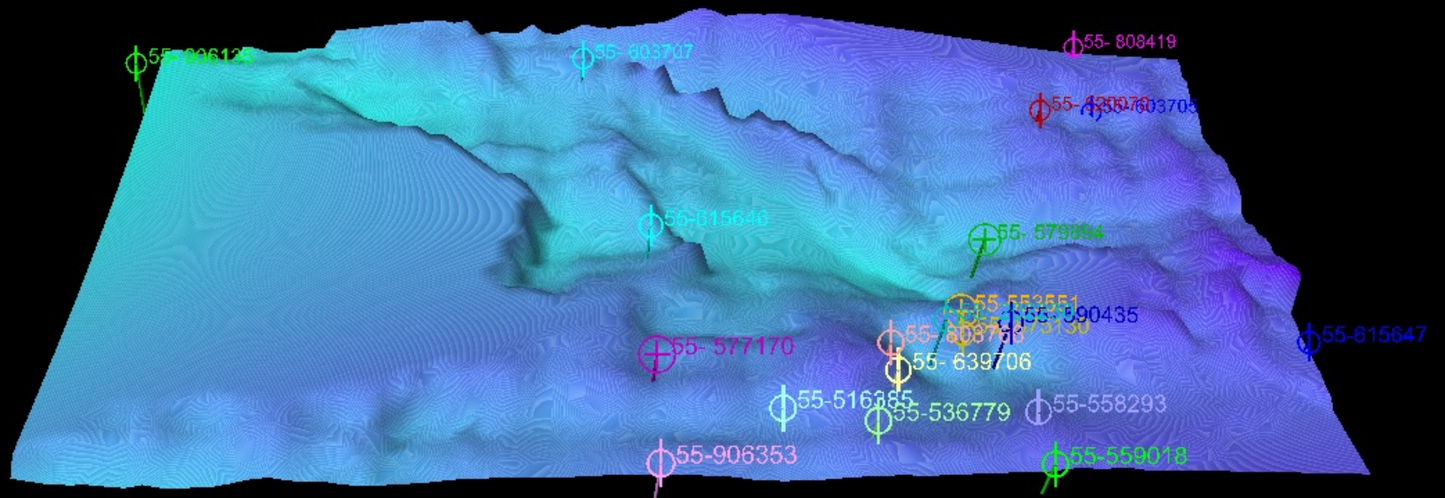
Origin

- Lunasonde was founded to address wasteful extraction of resources.
- This includes more targeted approaches to discover critical mineral deposits.
- Our sensors are particularly suitable for locating and monitoring groundwater in arid regions.



Well derived water table model in region of test site. [Mika Kayle]

Strictly Confidential

Airborne Test Bed

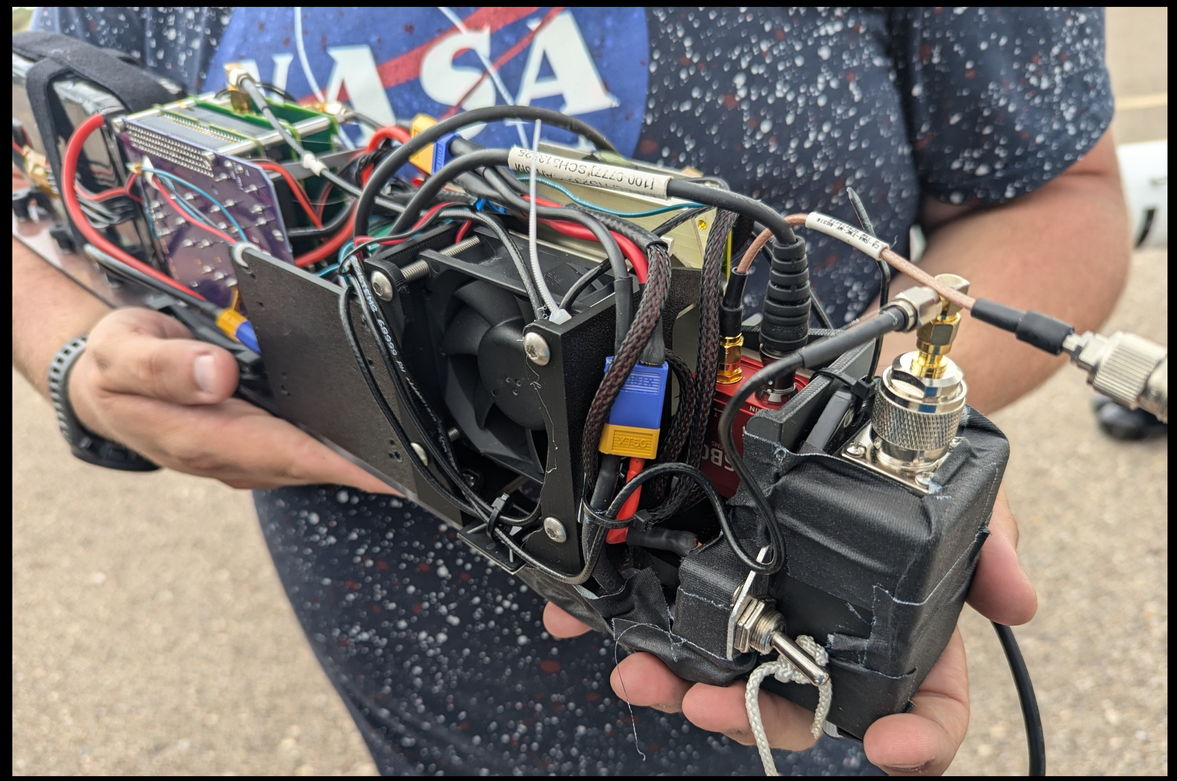


Strictly Confidential

Airborne Test Bed

- Low frequency Radar payload slung from helicopter.

- Ground penetrating radar sounders have been limited to planetary, lunar, and ice sheet missions.





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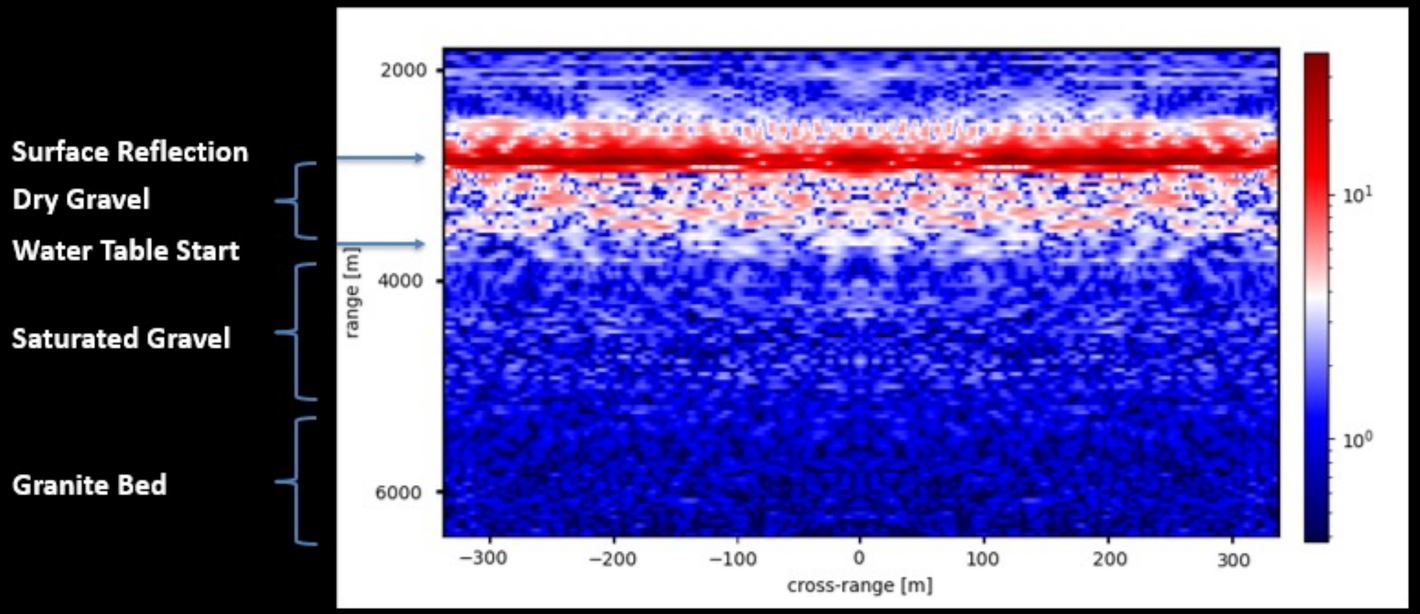
Airborne Test Bed



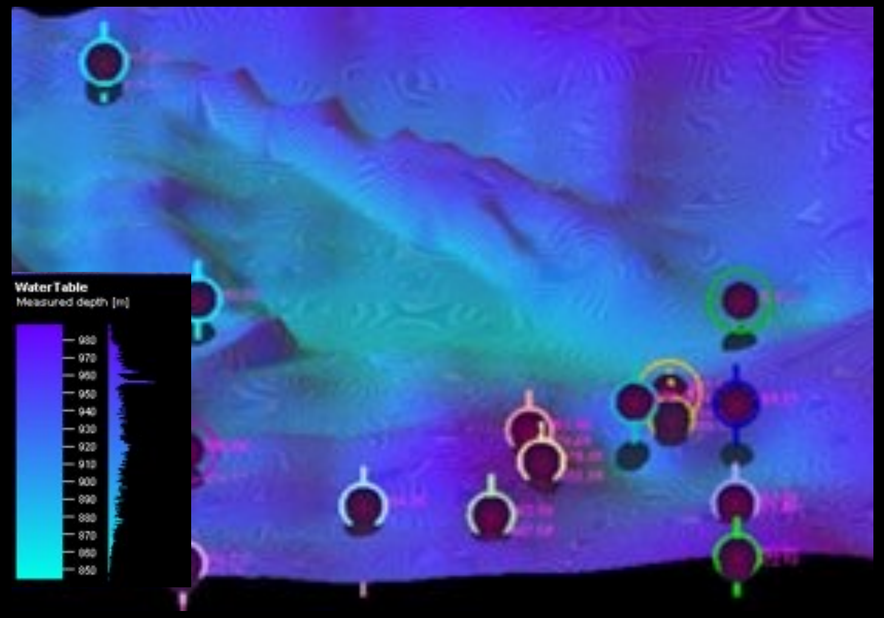


Image constructed from our test bed's radar data.

Strictly Confidential

LUNASONDE

Impact and Outcomes

Our planned results are:

- Providing data to US government agencies supporting critical environmental missions such as NASA, NOAA, USGS, USDA and their international counterparts
- Mapping groundwater in western US, Africa, the Middle East, and Western Australia.
- Mapping glacial changes, derived water budgets, and ice dam risks in High Mountain Asia.
- Data updates bimonthly and spot data for impactful events.

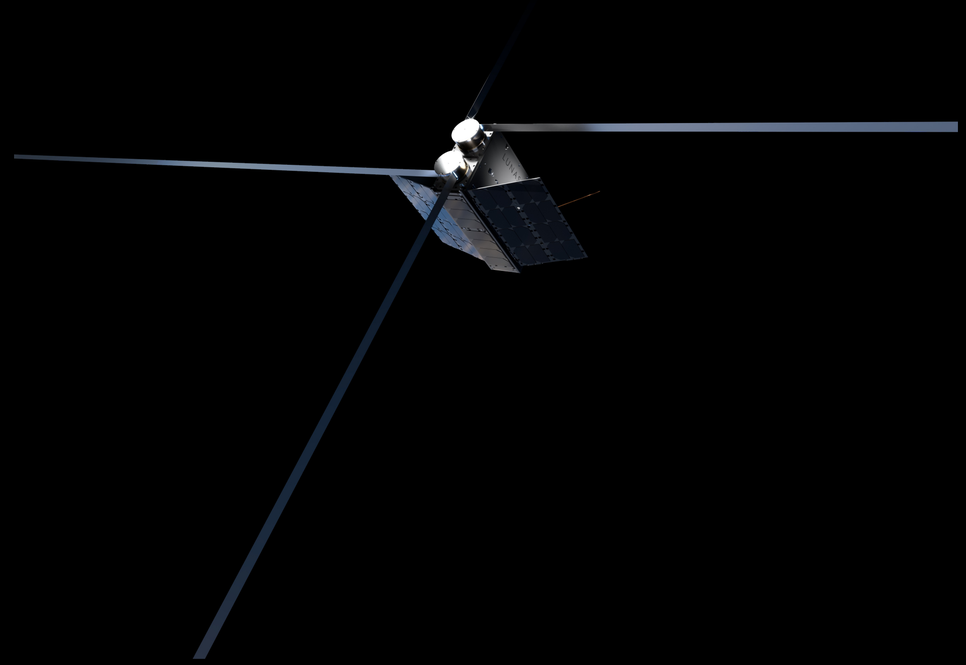
Strictly Confidential

Deployment Roadmap

- First executed satellite-borne radar sounder on Earth at Low Earth Orbit, San Xavier, launching in June 2025.

- Follow-on missions entail constellation of satellites to increase resolution, reduce noise, and increase revisit rate launched in swarm format.

- Additional analytics such as change detection.



San Xavier, launching 2025
on Transporter 14

Strictly Confidential

LUNASONDE

Space-based missions for a changing planet



PLUG AND PLAY

SV SUMMIT

STARTUP PRESENTATION

Green Independence

Green Independence enables decentralized, affordable green hydrogen and clean water production, empowering true independence from fossil fuels

#PNPTCSiliconValley

Join us at **pnptc.com**

LIVE PITCH

Green INDEPENDENCE

EMPOWER EVERYBODY



ALESSANDRO MONTICELLI
Founder & CEO

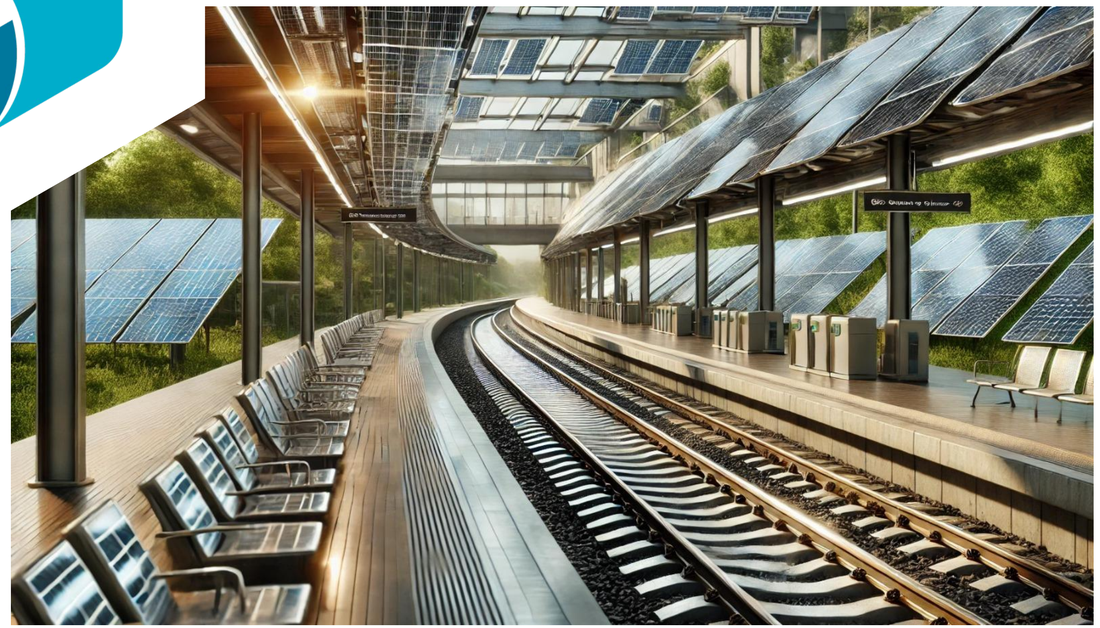
ENERGY...
GREEN or CHEAP?

YOU CAN HAVE BOTH !









PROBLEM



H_2 DEMAND ANNUAL GROWTH

PROBLEM



H_2 DEMAND ANNUAL GROWTH



REQUIRED CO_2 REDUCTION

PROBLEM



H_2 DEMAND ANNUAL GROWTH



REQUIRED CO_2 REDUCTION



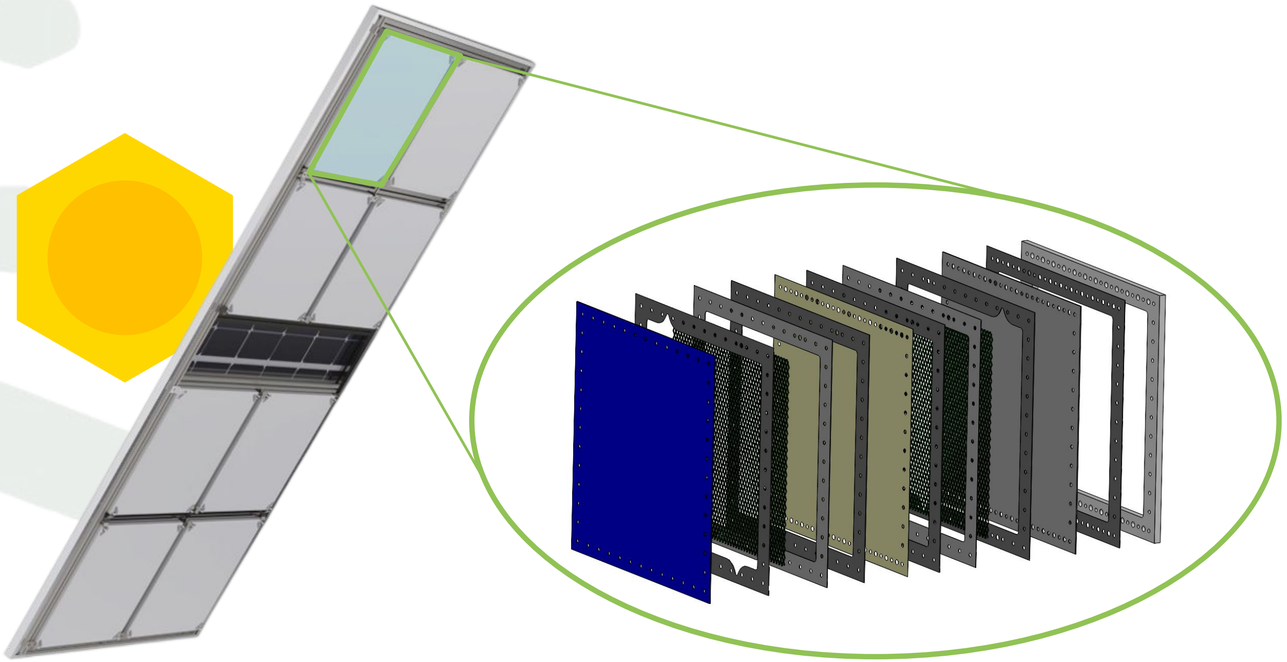
CURRENT H_2 PRODUCTION COST

SOLUTION

Green INDEPENDENCE
EMPOWER EVERYBODY

New Artificial Leaf

The multifunctional solar panel

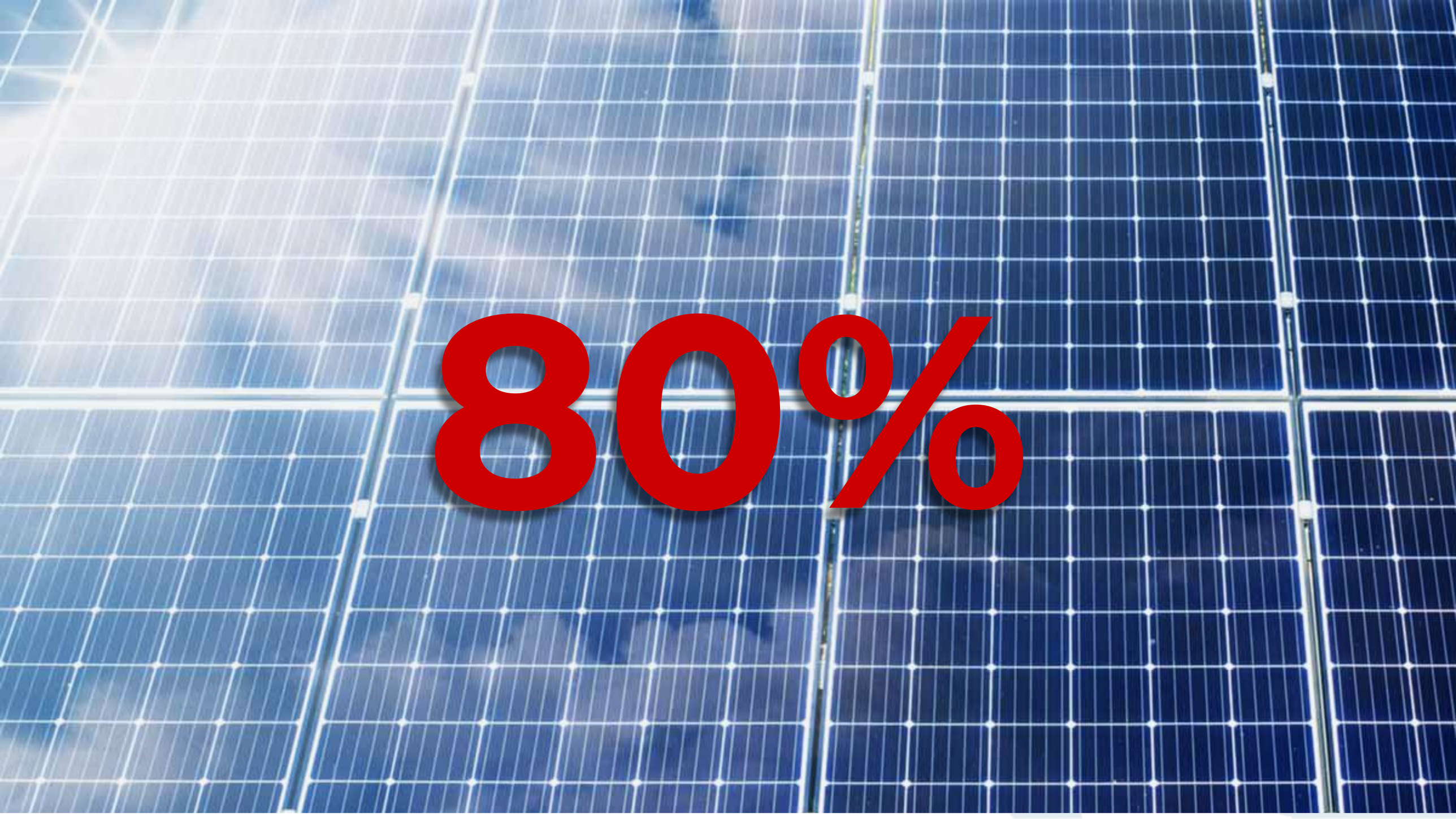


Solar Energy

Water Desalination

Green Hydrogen

6 CLEAN WATER AND SANITATION
7 AFFORDABLE AND CLEAN ENERGY
9 INDUSTRY, INNOVATION AND INFRASTRUCTURE
11 SUSTAINABLE CITIES AND COMMUNITIES
12 RESPONSIBLE CONSUMPTION AND PRODUCTION
13 CLIMATE ACTION
14 LIFE BELOW WATER
15 LIFE ON LAND


80%

SOLUTION



SOLUTION



X3 VS PHOTOVOLTAIC (PV)

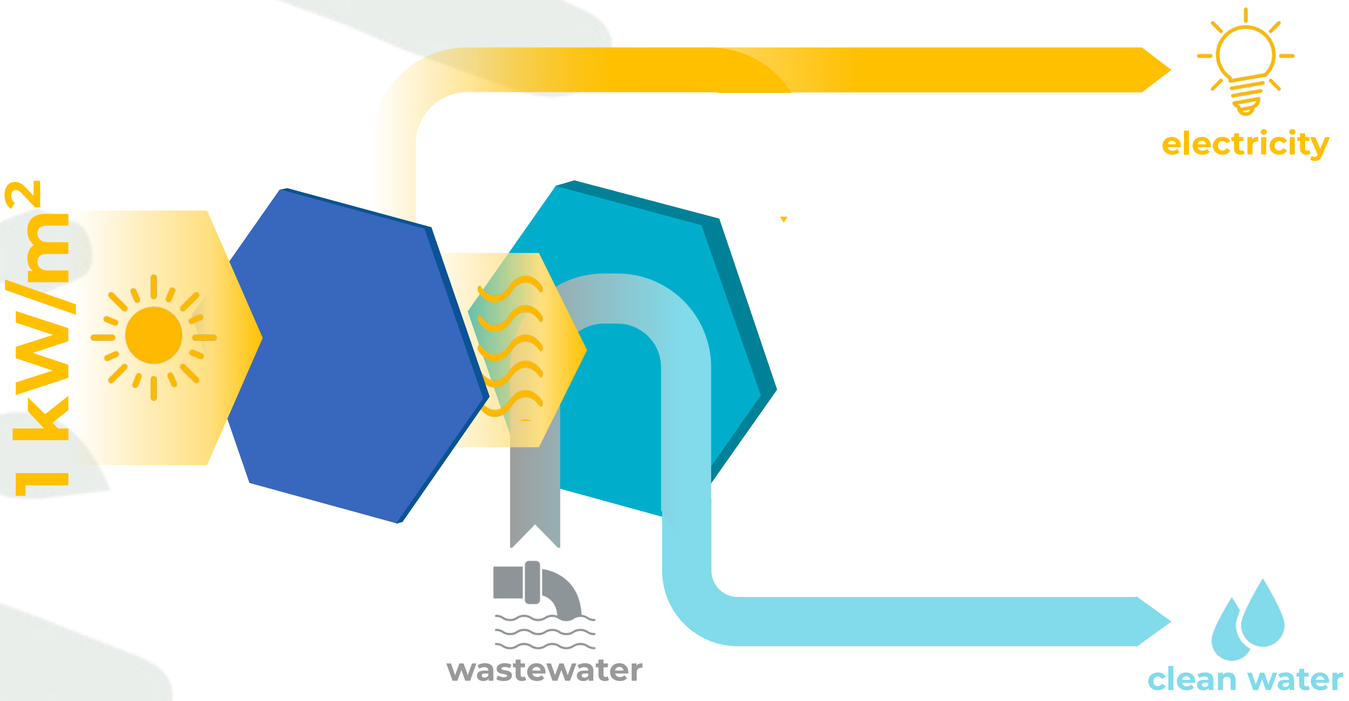
SOLUTION



X3 VS PHOTOVOLTAIC (PV)

ENERGY POSITIVE
Water Desalination

SOLUTION



X3 VS PHOTOVOLTAIC (PV)

X20 VS REVERSE OSMOSIS

SOLUTION



New Artificial Leaf

X3 VS PHOTOVOLTAIC (PV)

X20 VS REVERSE OSMOSIS

OFF-GRID ELECTROLYZER
with ZERO PLATINUM CATALYST

SOLUTION



New Artificial Leaf

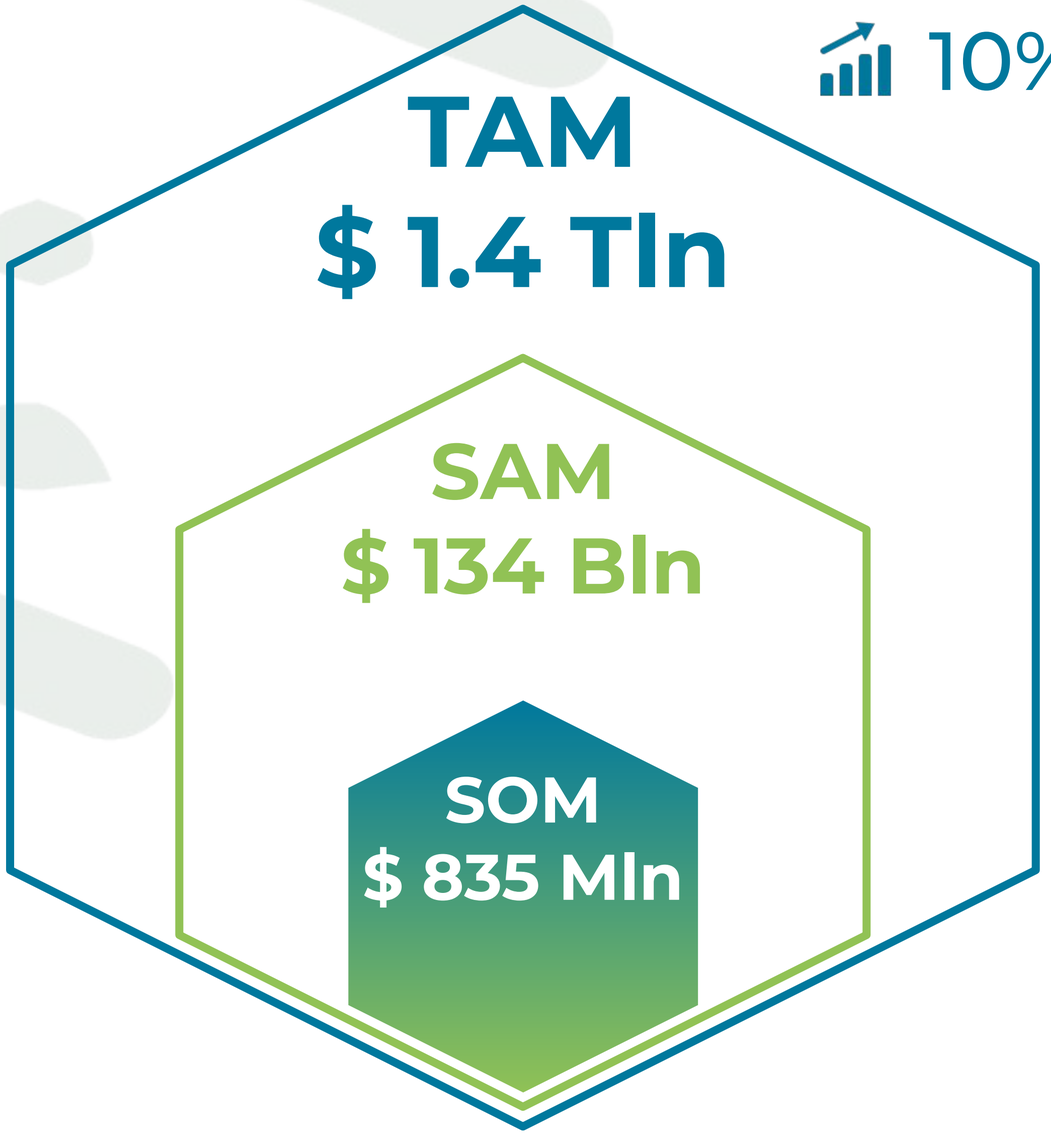
X3 VS PHOTOVOLTAIC (PV)

X20 VS REVERSE OSMOSIS

X10 VS ELECTROLYZER

1$/Kg

MARKET & CUSTOMERS



B2B

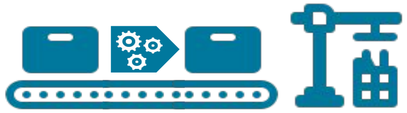
Utilities Industries

F&B Industries

Transportation Infrastructures

BUSINESS MODEL

ORIGINAL EQUIPMENT MANUFACTURER



Production & Installation

2,5 M€/ha / 4,5 M€/ha



Operation & Maintenance

200k €/ha per yr

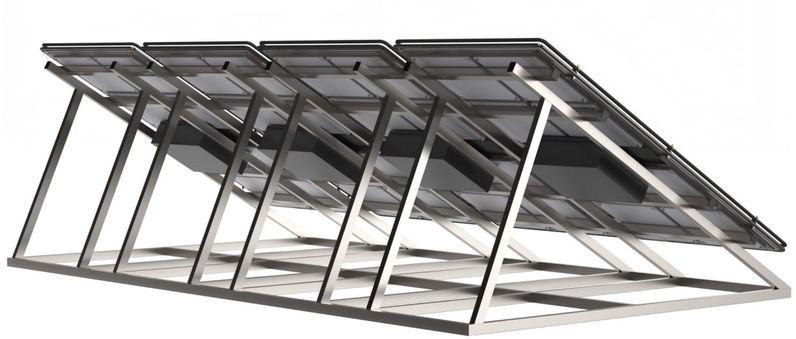


Annual Revenue Share

30-60k €/ha per yr

TRACTION

2 POCs
100k$



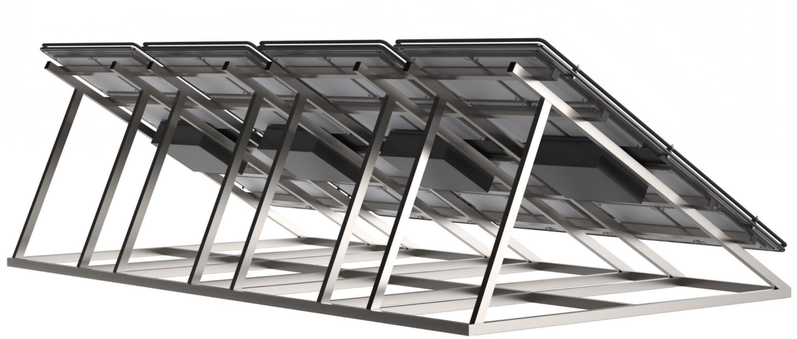
Pilot
220k$

ELLE

TRACTION

Green INDEPENDENCE
EMPOWER EVERYBODY

2 POCs
100k$



Pilot
220k$

ELLE

Letters of Interest & Support:

Early Adopters

snam

eni

SIRAM VEOLIA

Italgas

acea

acquedotto pugliese
l'acqua, bene comune

Tech Partners

3SUN

enel Green Power

CETMA

Fluid-o-Tech
POWER THE FLOW

proplast
PLASTICS INNOVATION POLE

ATHENA

PUNCH | Hydrocells

Sirti
building the future

FaradaIC

MASMEC

Institutions

MINISTERO DELL'AMBIENTE
E DELLA SICUREZZA ENERGETICA

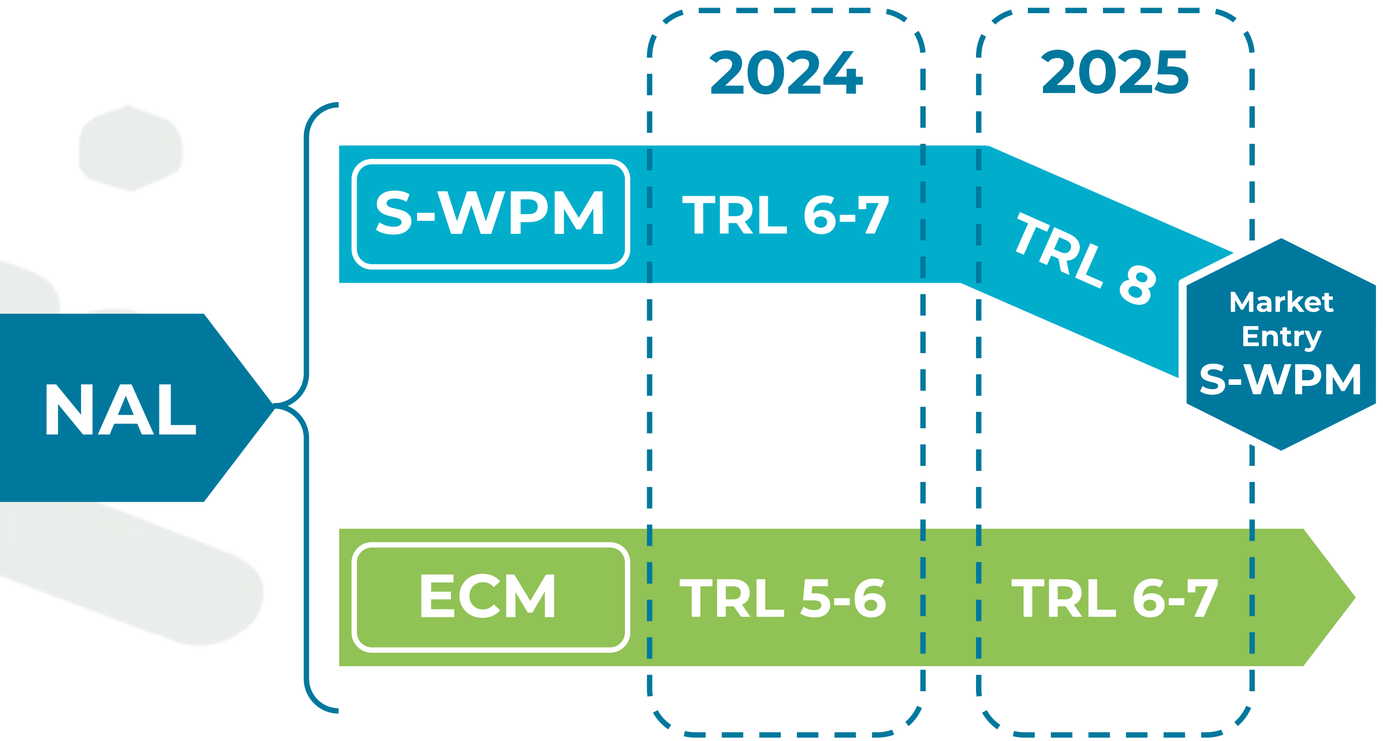
UniCredit

REGIONE PUGLIA

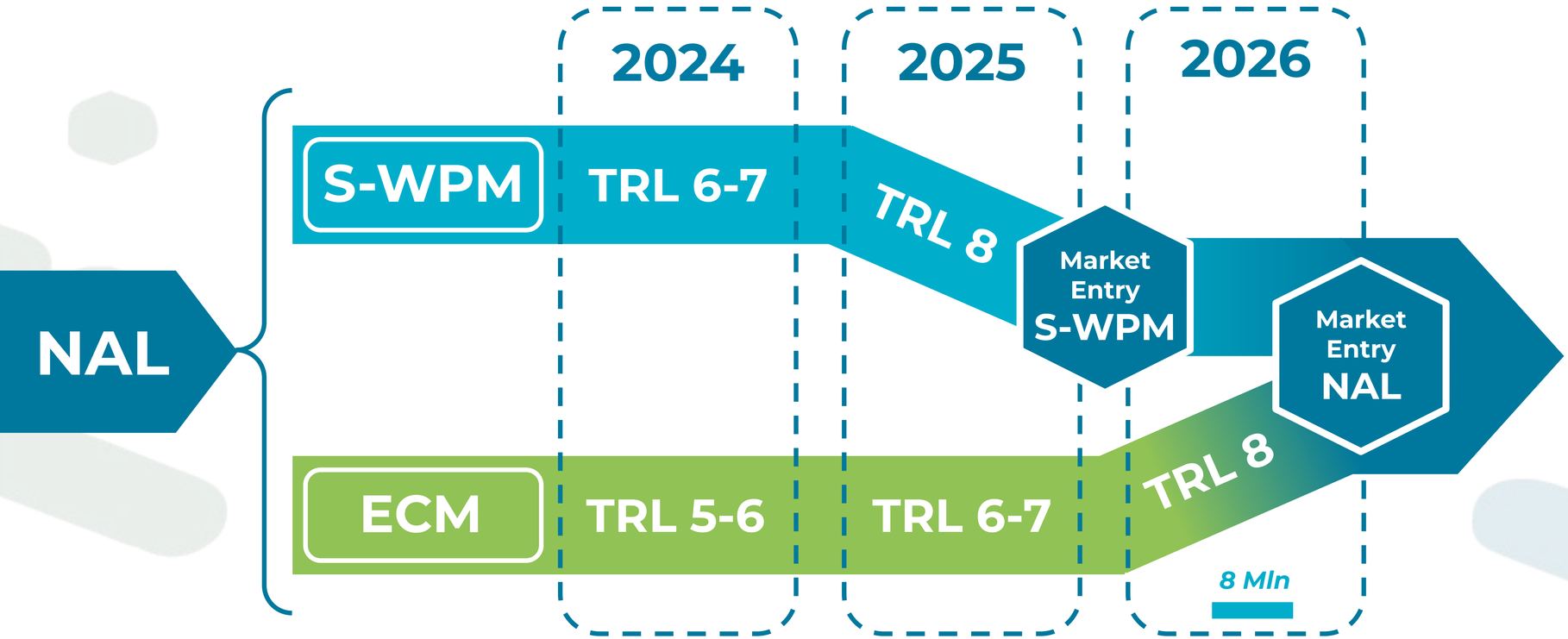
INTESA SANPAOLO
INNOVATION CENTER

DiTNE

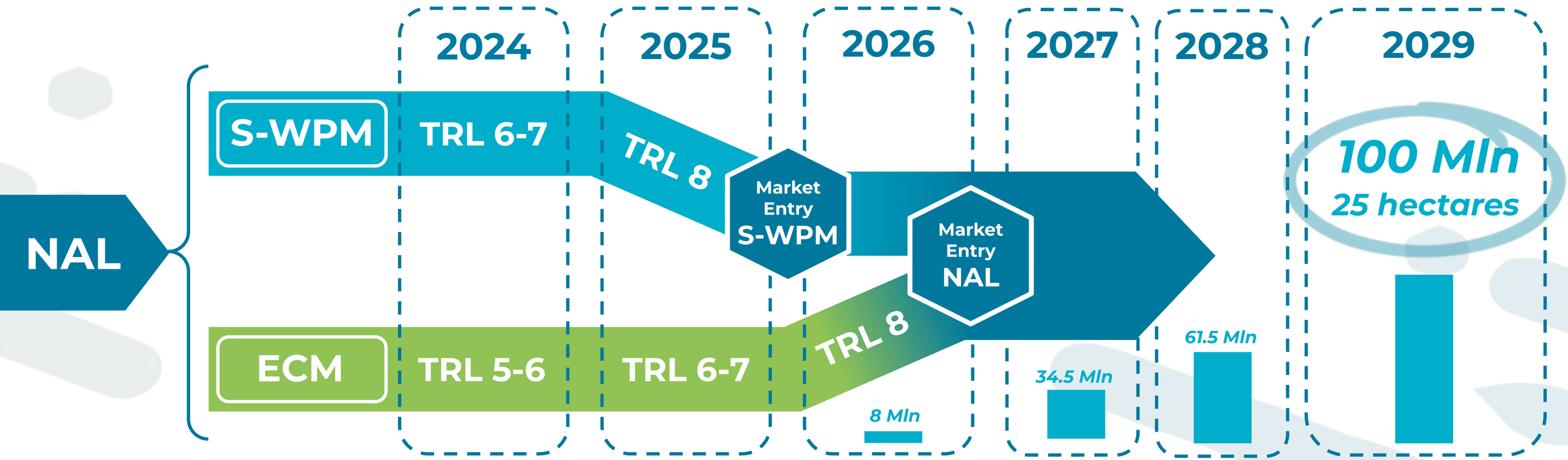
ROADMAP


2024
2025
NAL
S-WPM
TRL 6-7
TRL 8
Market Entry S-WPM
ECM
TRL 5-6
TRL 6-7

ROADMAP


2024
2025
2026
NAL
S-WPM
TRL 6-7
TRL 8
Market Entry S-WPM
Market Entry NAL
ECM
TRL 5-6
TRL 6-7
TRL 8
8 Mln

ROADMAP


2024
2025
2026
2027
2028
2029
NAL
S-WPM
TRL 6-7
TRL 8
Market Entry S-WPM
Market Entry NAL
ECM
TRL 5-6
TRL 6-7
TRL 8
8 Mln
34.5 Mln
61.5 Mln
100 Mln
25 hectares

MARKET POTENTIAL

LOI

3SUN by enel

2.500 ha

MARKET POTENTIAL

LOI

3SUN by enel

2.500 ha X 4M$/ha

MARKET POTENTIAL

LOI

3SUN by enel

2.500 ha X **4M$/ha** = **10 B$** *Yearly Revenue*

MARKET POTENTIAL

LOI

3SUN by enel

2.500 ha X 4M$/ha = 10 B$ Yearly Revenue

1%

MARKET POTENTIAL

3SUN by enel — LOI

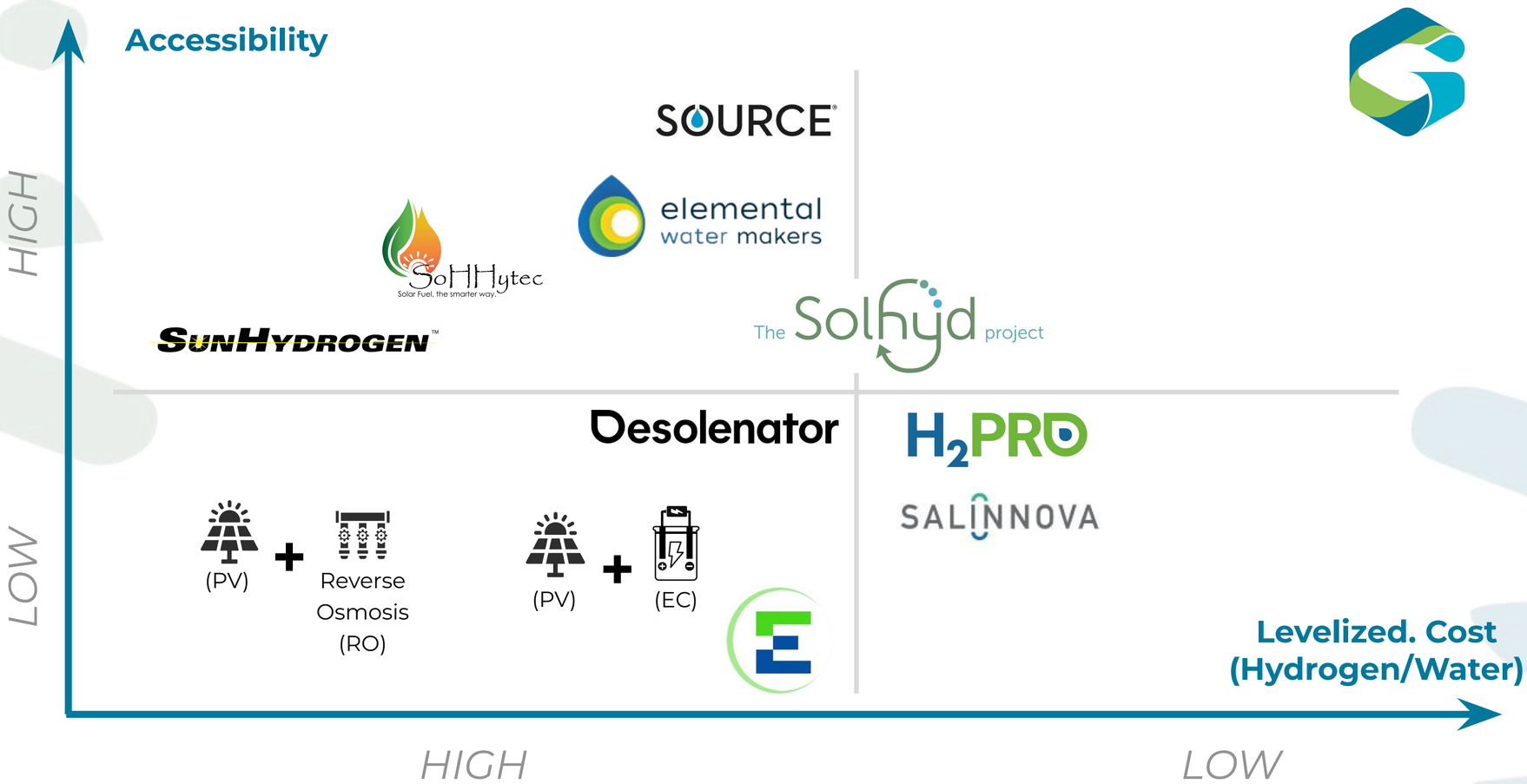
2.500 ha X 4M$/ha = 10 B$ Yearly Revenue

1%

25 ha X 4M$/ha = 100 M$ Yearly Revenue

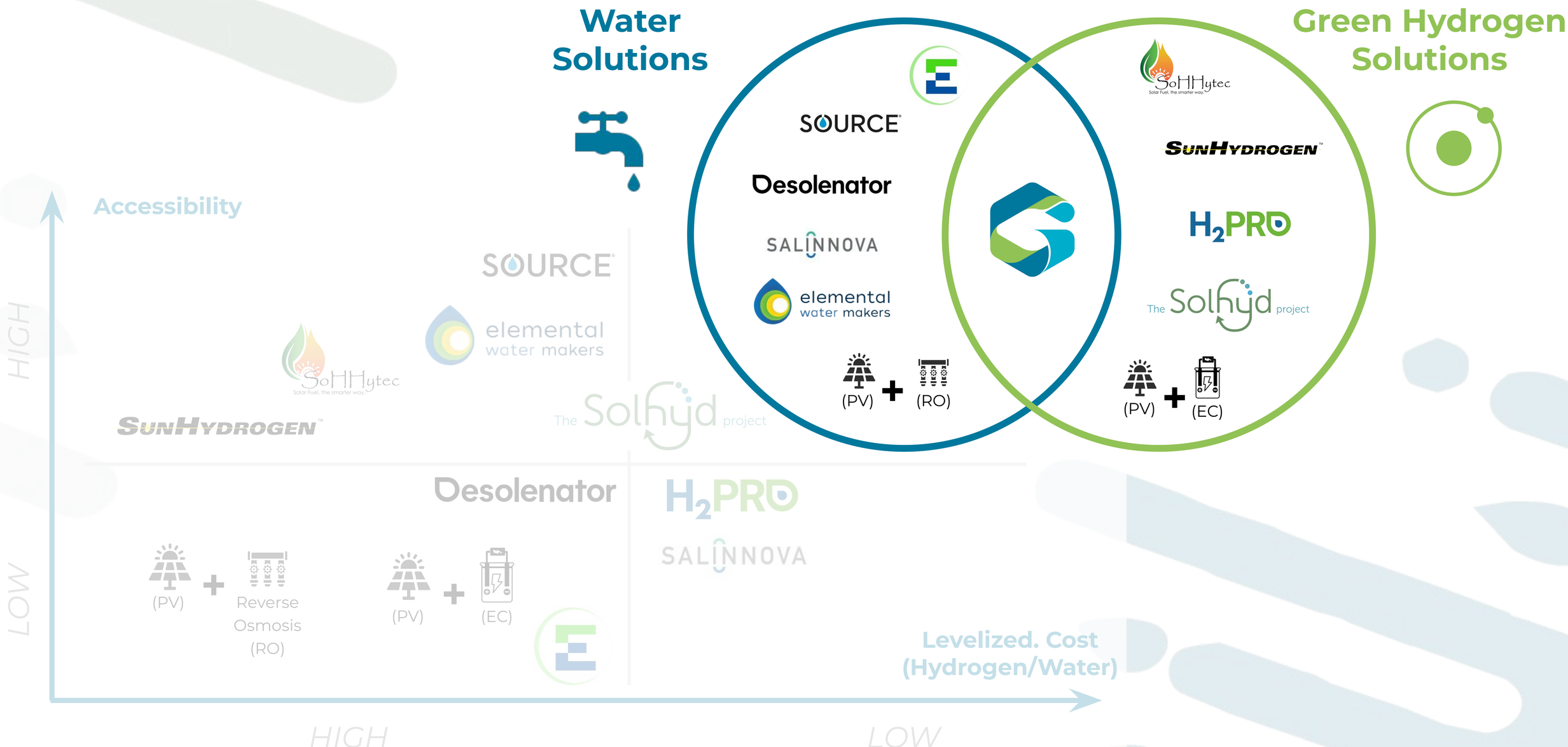
COMPETITORS

Green Independence
EMPOWER EVERYBODY



COMPETITORS

Green Independence
EMPOWER EVERYBODY



OUR TEAM

Green Independence
EMPOWER EVERYBODY



ALESSANDRO MONTICELLI
Founder & CEO
Supply Chain Expert | NAL's Inventor

Politecnico di Torino · UIC · GE



MARTA PISANI
Co-Founder & COO
B2B Marketing & Sales Expert

Università di Pavia · INNOVATEC · SEEDBLE



FEDERICO CRESPI
Project Coordinator
Economics & Sustainability

Università di Pavia · Tilburg University · molex



MATTEO MORCIANO
R&D S-WPM Coordinator
Prof. Politecnico di Torino | Eni
"Researcher of the year" 2021

Politecnico di Torino · Massachusetts Institute of Technology



NOEMI FIGLIOLINI
Financial Advisor / CFO
Senior Manager PwC

Università Ca'Foscari Venezia · KPMG · pwc



ALESSANDRO MONTEVERDE
R&D ECM Coordinator
Prof. Politecnico di Torino

Politecnico di Torino

ADVISORY BOARD



MASSIMO SANTARELLI
Full Professor

Politecnico di Torino · KTH Vetenskap och Konst · UIC



LUCA BIAGINI
Former CEO China

MARELLI · CNH INDUSTRIAL



FABRIZIA FAGGIANO
Attorney

FEDRIGONI PAPER · WHITE & CASE



VITO ALFARANO
GM Global Supply Chain

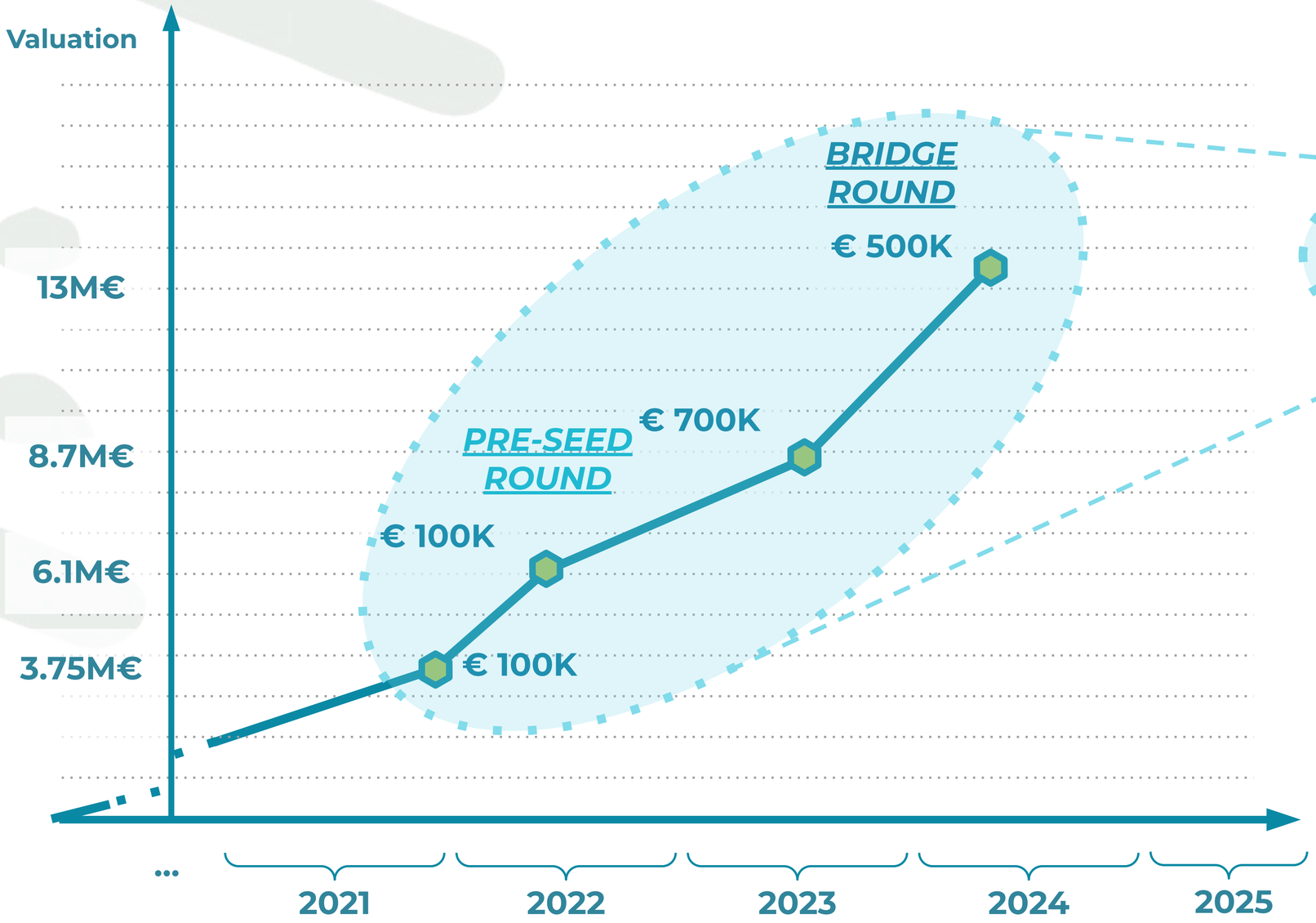
GE · FPT Powertrain Technologies



GIANCARLO AMBRUOSI
BD Renewable Energy

MASMEC · FCA Fiat Chrysler Automobiles

FUNDING



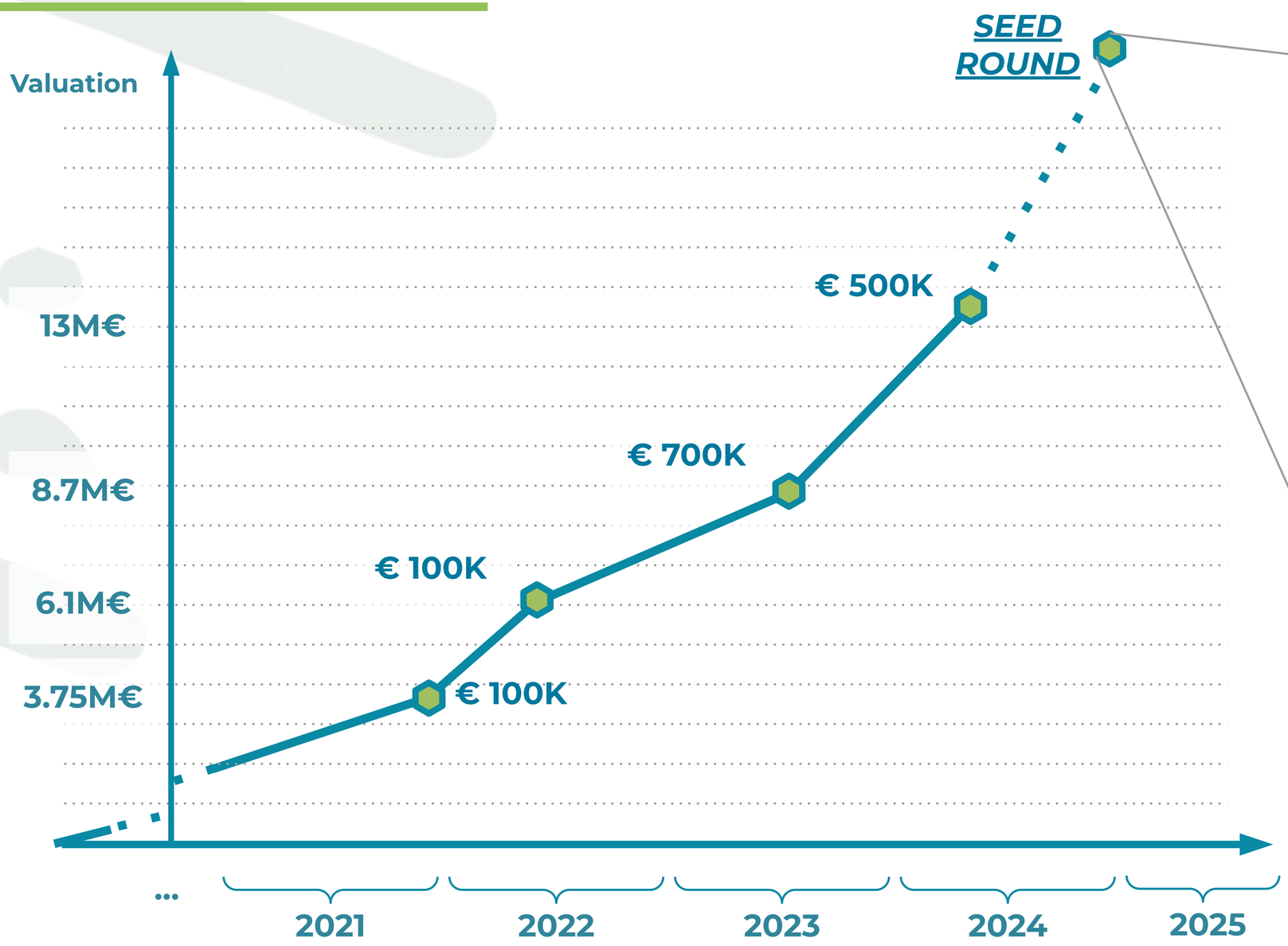
$1.5M equity inv.

\+

$1.2M grants

$2.7M total available funding

FUNDING



SEED ROUND

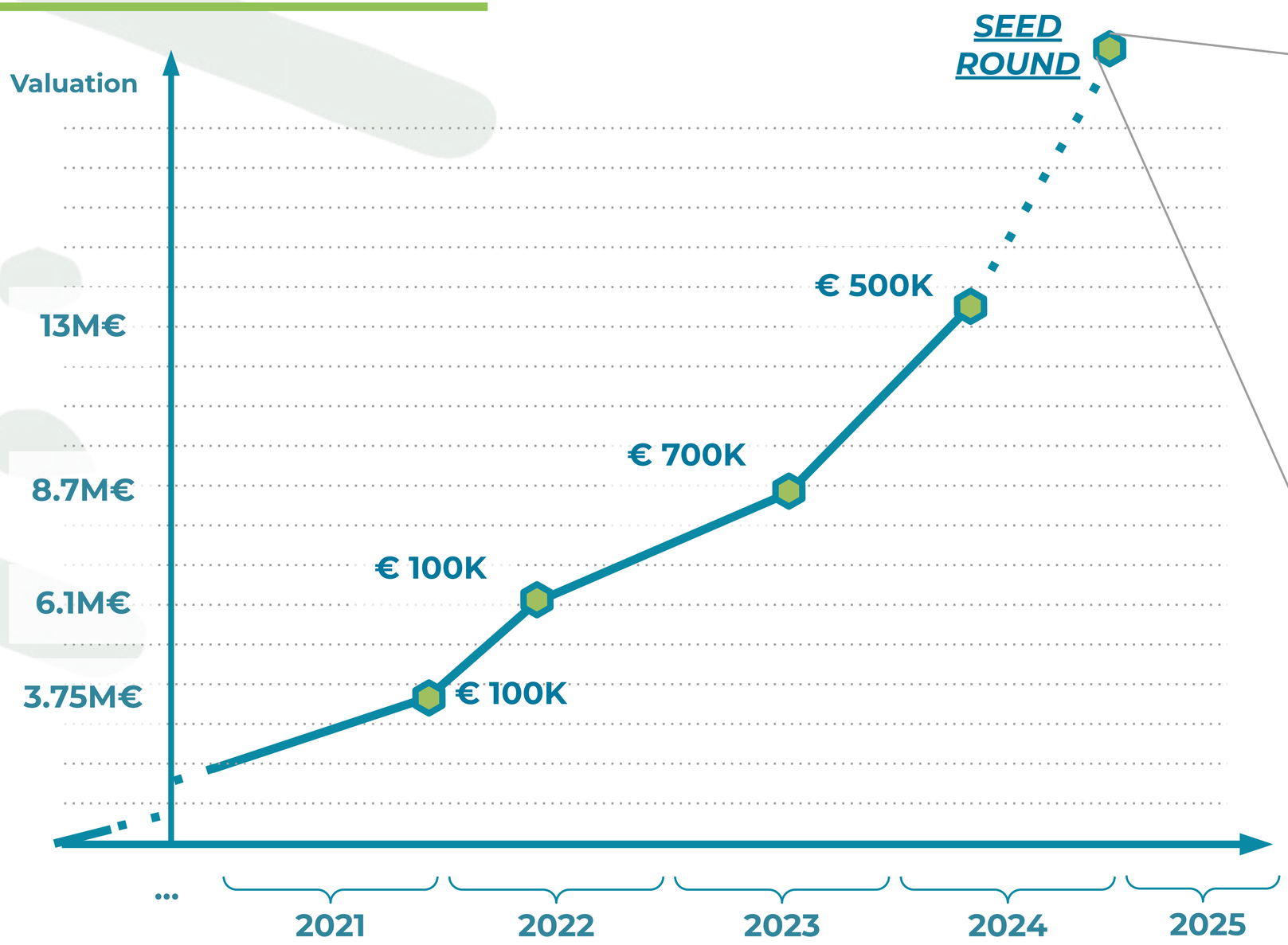
(Q1 2025)



USE OF FUNDS

- 25% Product & R&D
- 40% Operations
- 30% CapEx
- 5% Sales & Marketing

FUNDING



SEED ROUND

(Q1 2025)



USE OF FUNDS

- 25% Product & R&D
- 40% Operations
- 30% CapEx
- 5% Sales & Marketing

\+

potential

€ 20M GRANT

Green Independence

EMPOWER EVERYBODY

We are building
a better and greener world
empowered only by
sun and water

alessandro@greenindependence.eu

marta@greenindependence.eu

PLUG AND PLAY

SV SUMMIT

STARTUP PRESENTATION

JANTA POWER

Janta Power

Pioneering the first-of-its-kind 3-Dimensional solar that minimizes land usage, while delivering more power, more energy, and cheaper electricity.

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Join us at **pnptc.com**

JANTA POWER

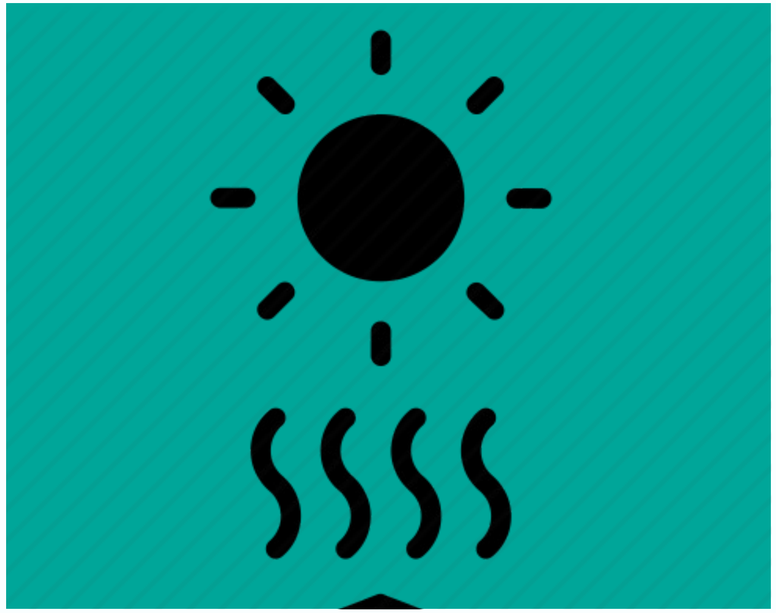
Powering the Future, One Tower at a Time



Limitations Of Solar Energy



Low Power Density



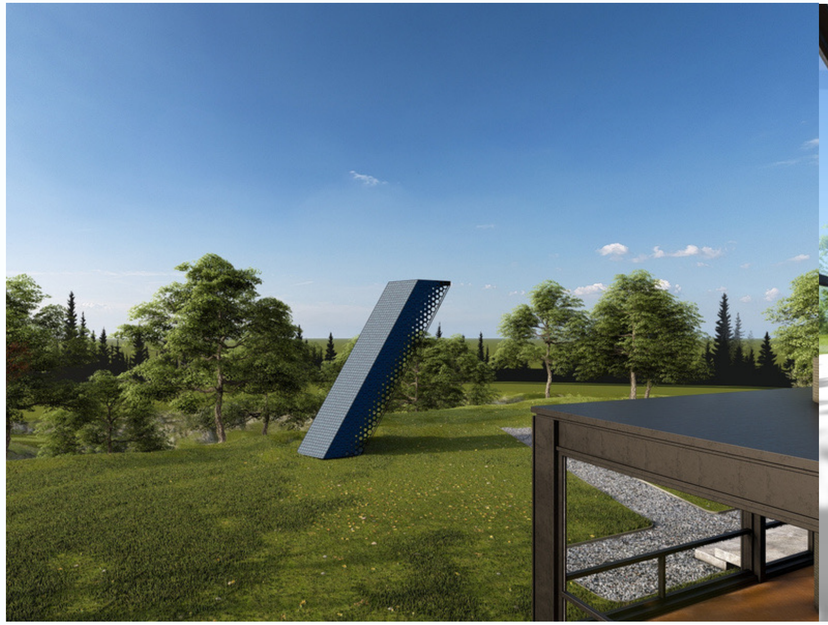
Low Capacity Factor



Cost

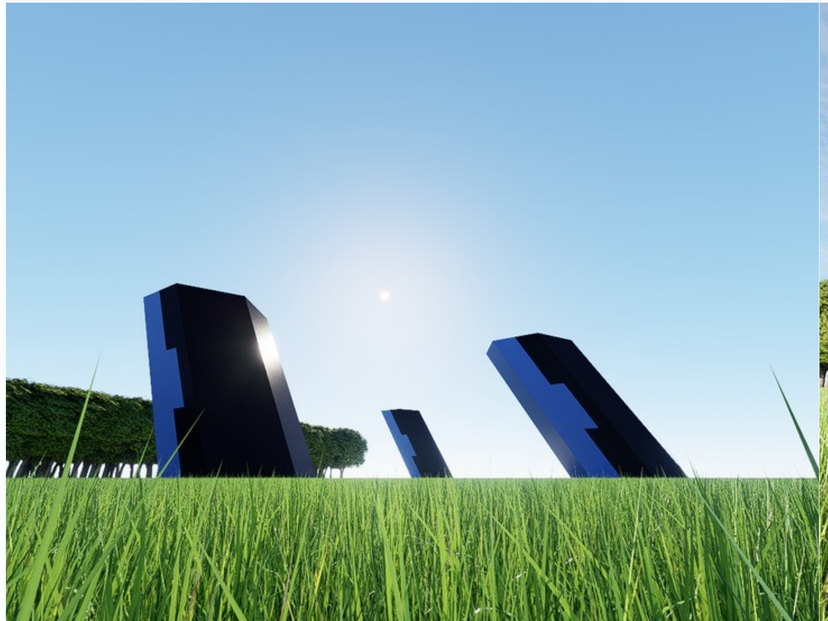
The Solution

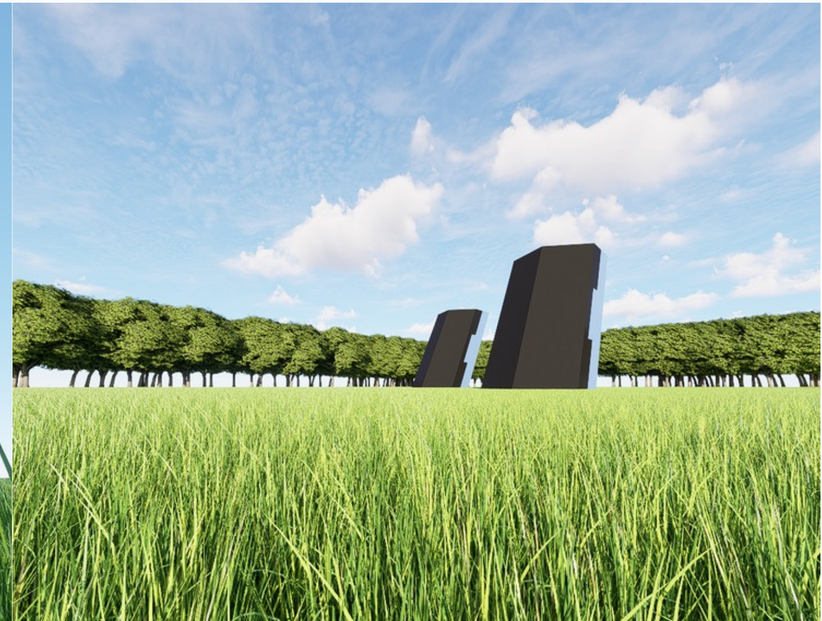














Product

3D approach: Vertical scaling, less land, more power!

Design: Angle, height, and tracking allow for higher energy output and capacity factor

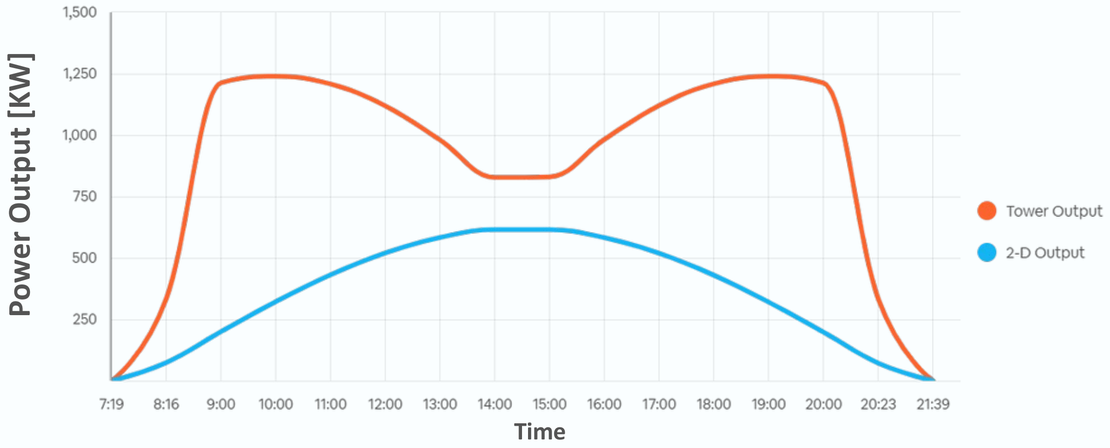
Cost: Less land, more power, more energy, and extended lifespans equal to lower energy costs (~2 cents/KWh)

A smart 3D solar technology

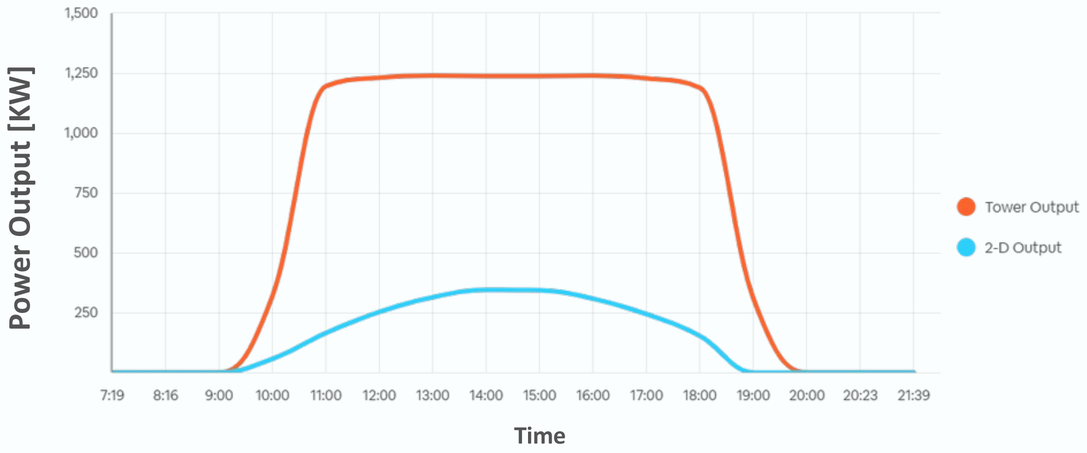
- AUTONOMY
- PREDICTIVE MAINTENANCE
- SELF-CLEANING
- 4-TIER RESILIENCE
- SMART CONTROL
- OTA

Comparative Analysis

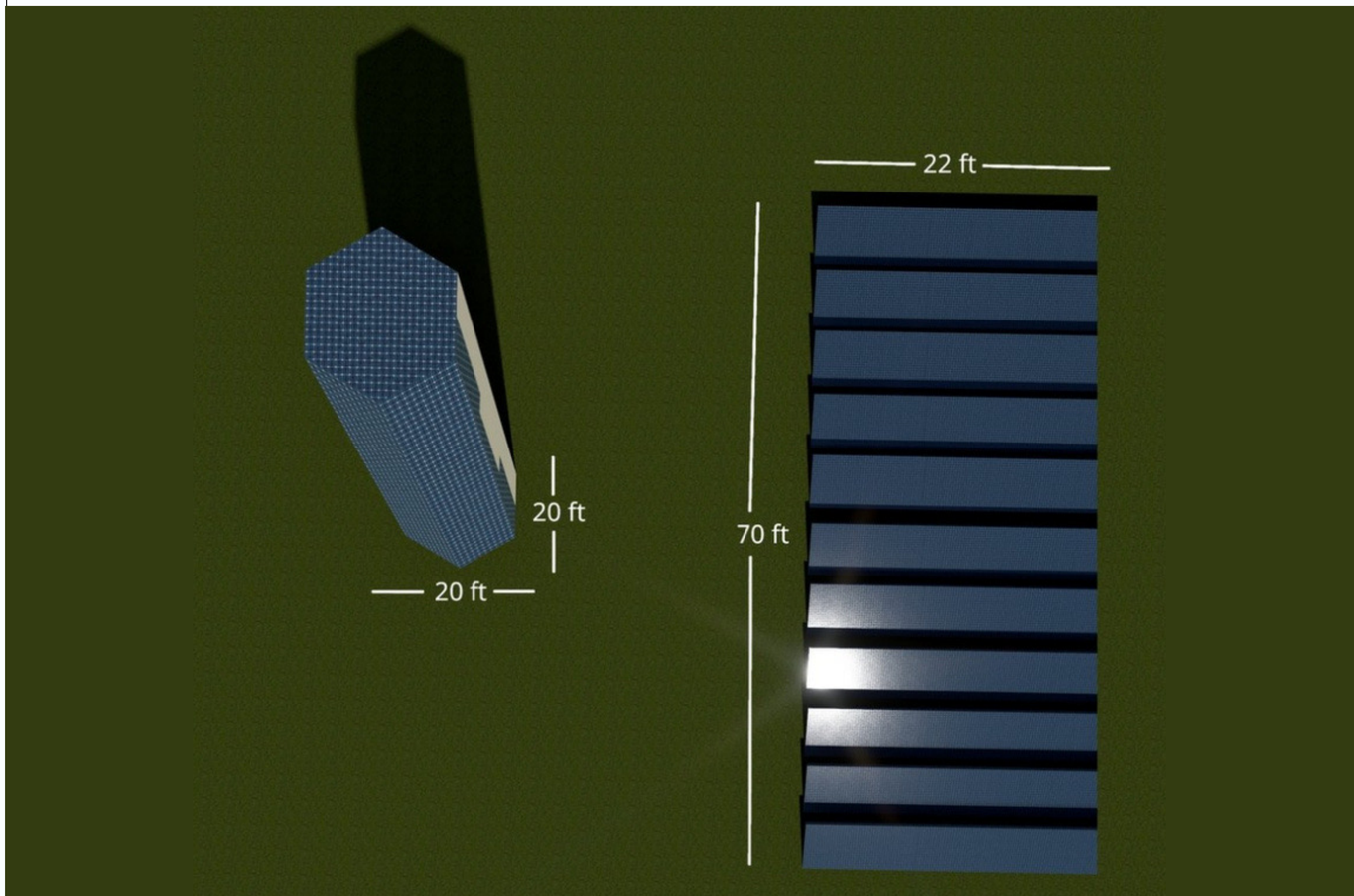
Summer



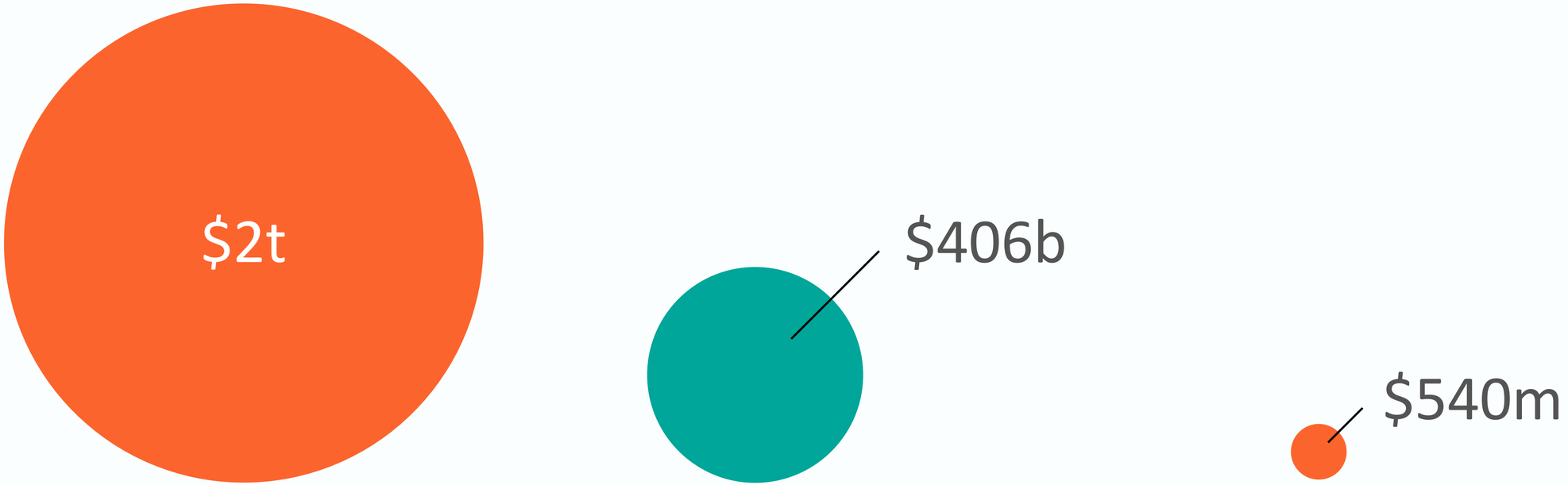
Winter



- **Power Density**
  3x. more power/unit area
- **Capacity Factor**
  35% for Janta vs. 22% for 2D
- **Daily Output**
  68% more energy
- **Result**
  6x Advantage!



Market Opportunity



Global Market

Total Available Market

U.S. Market

Serviceable Available Market

Initial Target Market (US Commercial Solar market)

Serviceable Obtainable Market (2% of US C&I Market)




fast charger
fast charger







Janta Power's

Traction & Ask

Funds Raised

$2M raised; Investments from the likes of Shell

Market Traction

+$7M Current Pipeline +$60m in Negotiations

Intellectual Property

Application No : 17 / 668,465
Publication No : US 2022/0344526 A1

The Ask

$5m Seed Raise

Management Team Highlights



Mohammed njie

Founder/CEO

- Serial Inventor
- Built first Electric Car after high school
- During Electrical Engineering Undergrad, partnered with SMU to bring electricity to schools that have never had electricity in The Gambia
- Inventor of the Janta’s Power Tower



Andrew woglom

CFO

- 20 Years of Experience in investment banking and private equity and being CFO for multiple businesses
- Most recently CFO for Unimacts Global, a supply chain and manufacturing company for the solar industry
- Oversaw growth from $90 million to $300 million
- Helped guide Unimacts to a successful exit



Matt Arnold

VP Business Dev.

- Founder and former CEO of Unimacts Global
- Took Unimacts from startup to $300 million in revenue
- Manufacturing and Supply Chain expert
- Has founded, operated, and exited multiple companies

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QUBE

Qube Technologies

Detect, measure, reduce; emissions reduction through continuous monitoring.

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QUBE

Detect, Measure, Reduce.

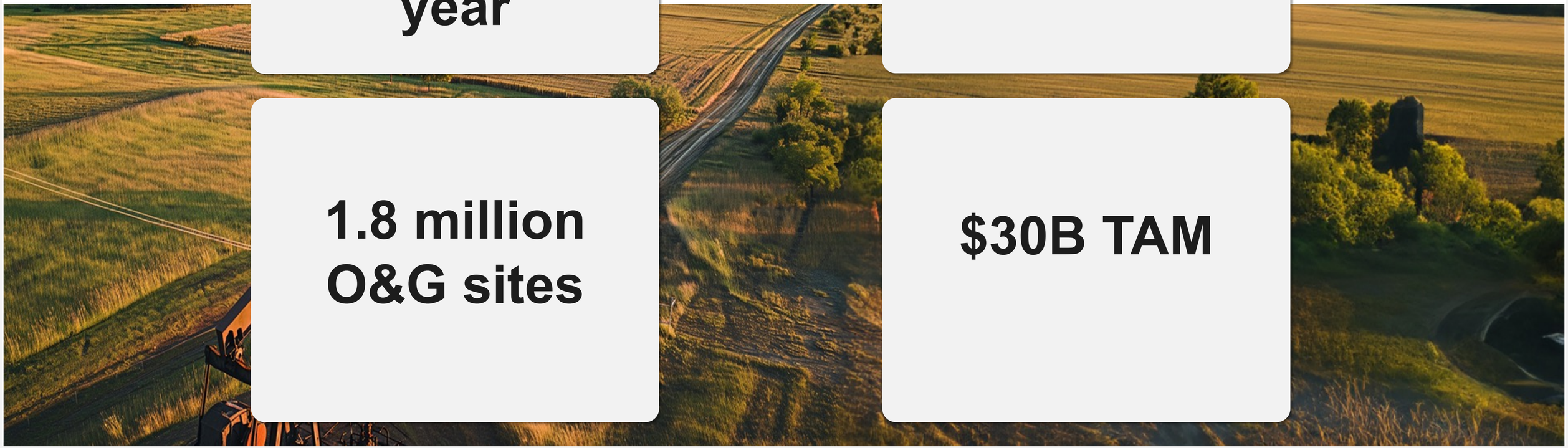
Emissions management through continuous monitoring



The Methane Problem

570 million metric tonnes per year

80X GWP vs CO_2



1.8 million O&G sites

$30B TAM

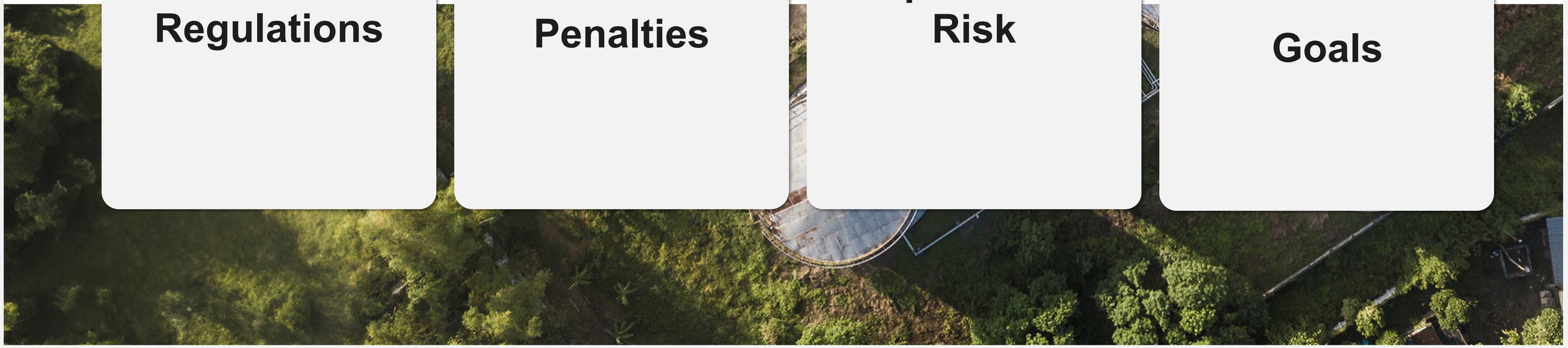
Problem: New Challenges

New Regulations

Emission Penalties

Reputational Risk

Net-zero Goals

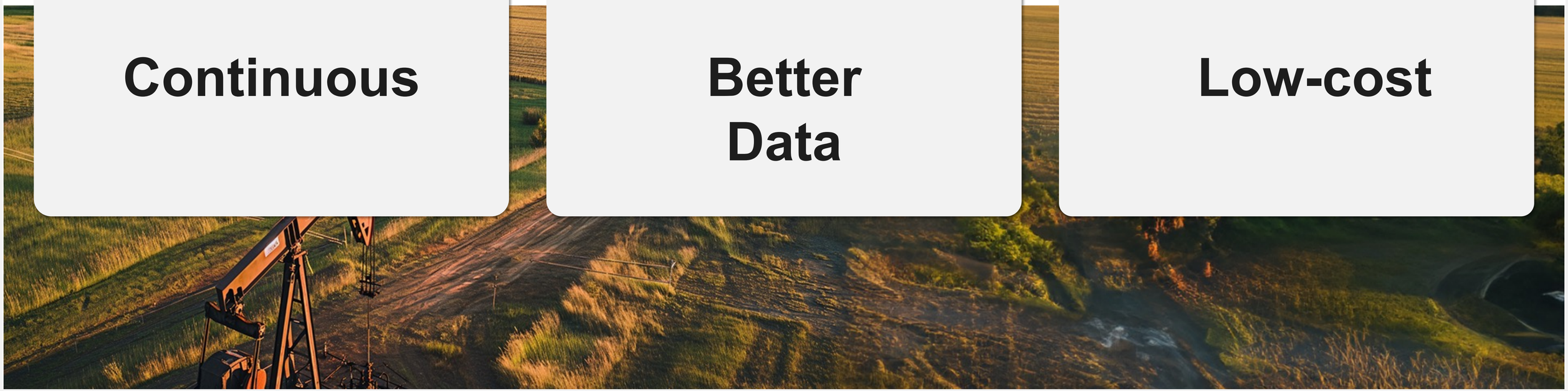


Solution: Scalable, Accurate, & Affordable

Continuous

Better Data

Low-cost

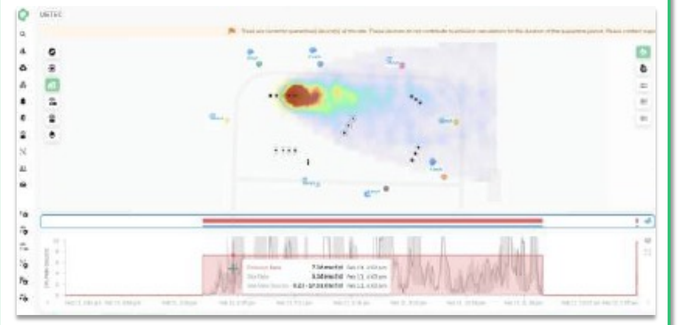


Qube: A continuous monitoring solution



Qube Device

Analytics Platform



Dashboard

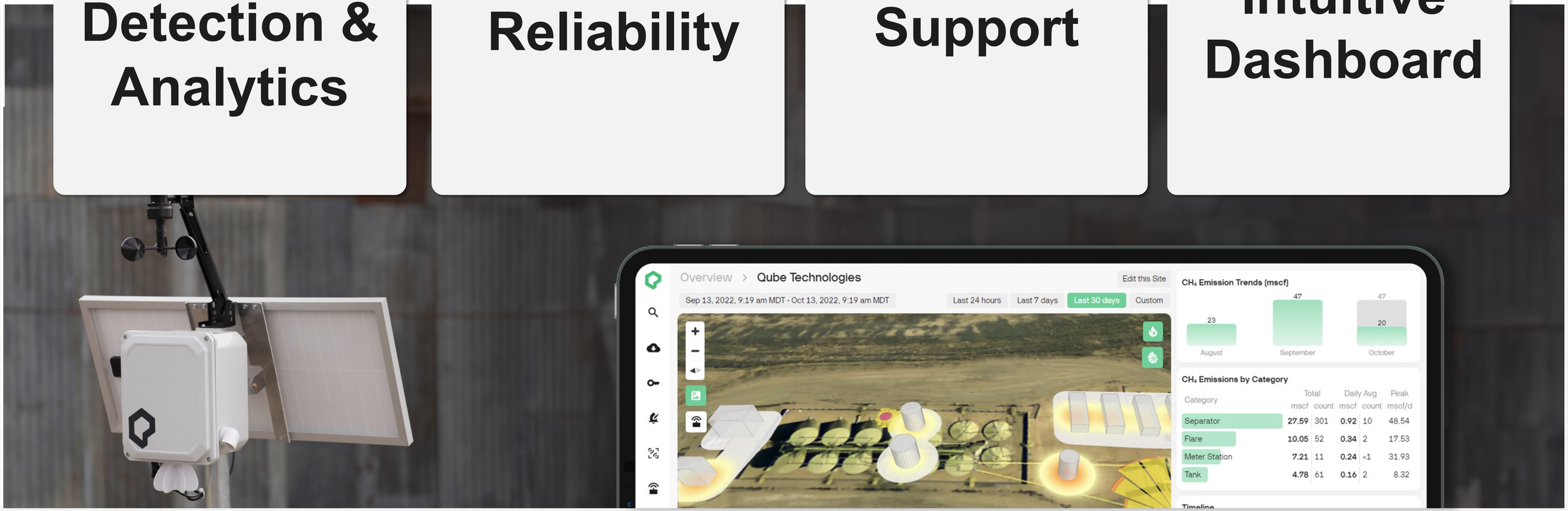
Qube: Key differentiators

Detection & Analytics

Reliability

Support

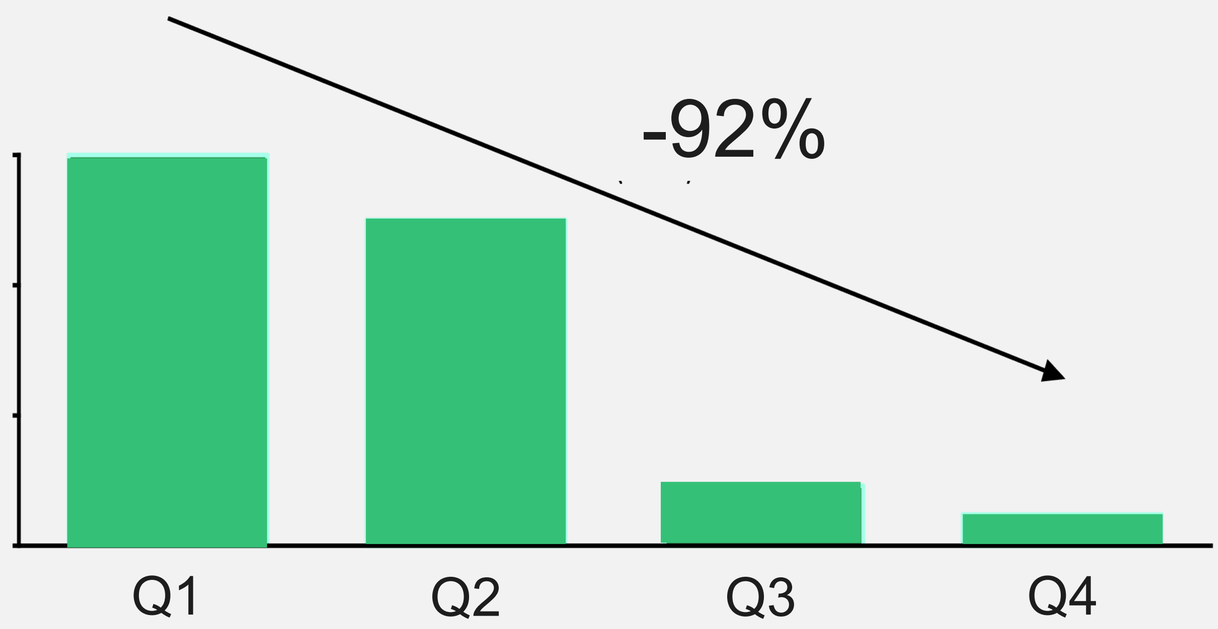
Intuitive Dashboard



Case study

- 100 sites across 3 basins with CM
- >90% emissions reduction
- Decreased super-emitters (>100 kg/hr) from 100/mo to 10/mo

Detected emission volumes, ‘000 kg CH4, 2023



Our traction: 20x since 2021

5,000+
deployments

10+
countries

80+
operators

Our team: Experienced Energy Professionals

Management team

Name	Role	Experience	Education
	**Alex MacGregor** Chief Executive Officer	enhance; Aucerna; Ambyint	UBC; Georgia Tech
	**Eric Wen** Chief Operating Officer	REPSOL; Aucerna; BAIN & COMPANY	UBC; London Business School
	**Greg Taylor** Chief Technology Officer	CHAORDIX; ARCURVE	The Art Institute of Vancouver
	**Tej Grewal** VP, Innovation & Founder	PE; NetMax Technologies; Quadtech solution	SAIT
	**Taryn Humphreys** VP, International Business Development	TALISMAN ENERGY; Crescent Point Energy Corp; Modern Resources	University of Alberta
	**Gretchen Kern** VP, Regulatory & External Affairs	PIONEER NATURAL RESOURCES	University of San Diego; Pepperdine University
	**Matt Blair** VP, Operations	CALFRAC WELL SERVICES; BLAIR	Queen's University
	**Andrew Walsh** VP, Customer Success	cenovus ENERGY; IKKUMA RESOURCES CORP.; PIERIDAE ENERGY; quorum software	UBC; University of Calgary
	**Steve Matthews** VP, Sales	zedi; APPDYNAMICS; snowflake	University of Calgary

Funding History

2018
- Pre-seed

NORTH WEST CAPITAL PARTNERS INC.

2020
- $7M in non-dilutive funding grants

EMISSIONS REDUCTION ALBERTA

SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA

2021
- $12M in Series A

SCF VENTURES
ACCELERATING GROWTH

NESR

PINE BROOK

2022
- $5M in non-dilutive funding grants

SUSTAINABLE DEVELOPMENT TECHNOLOGY CANADA

2024
- $15M in Series B

RIVERBEND ENERGY GROUP

NGIF CAPITAL

QUBE

Ask: Corporate Partners for Pilots



taryn.humphreys@qubeiot.com
www.qubeiot.com

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STARTUP PRESENTATION

Enelon

We reduce H2 costs by 45%, improve efficiency, and cut deployment time by 10x, all while addressing emissions in hard-to-abate sectors

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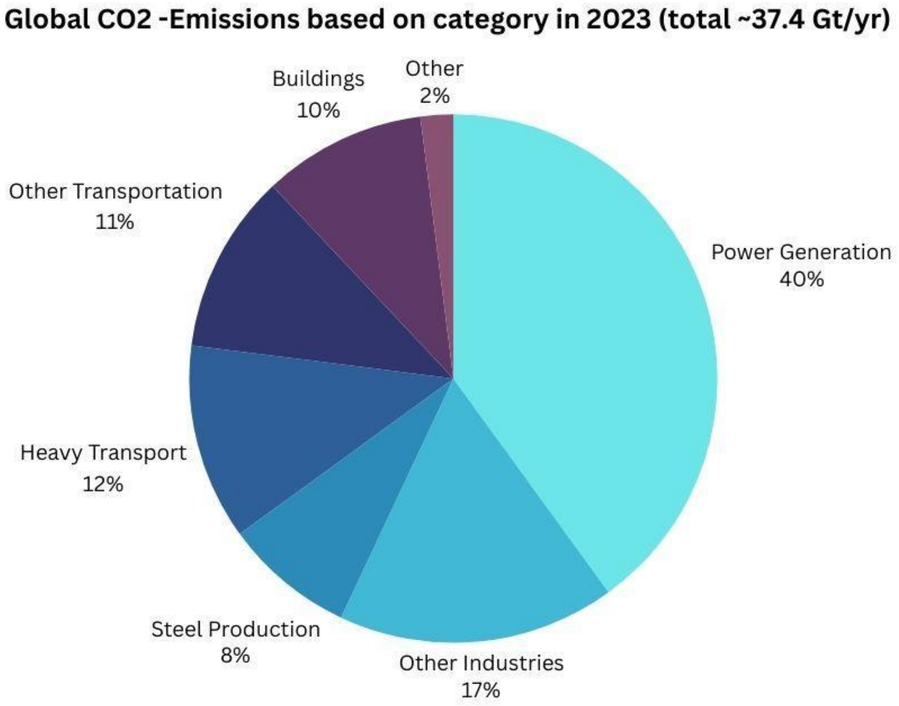
ENELON

Modular on-site hydrogen refuelers

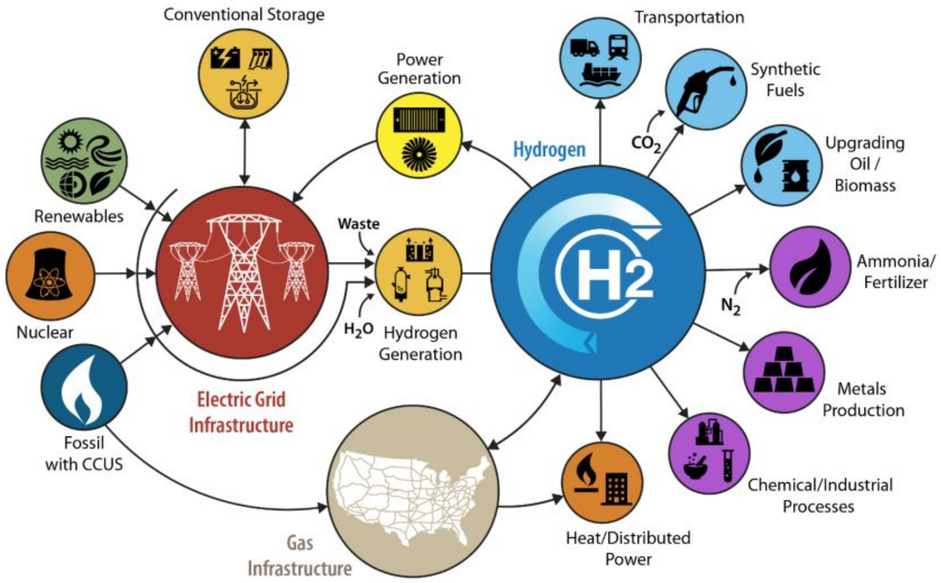
WHY?



Heavy-duty transportation & steel sectors difficult-to-decarbonize

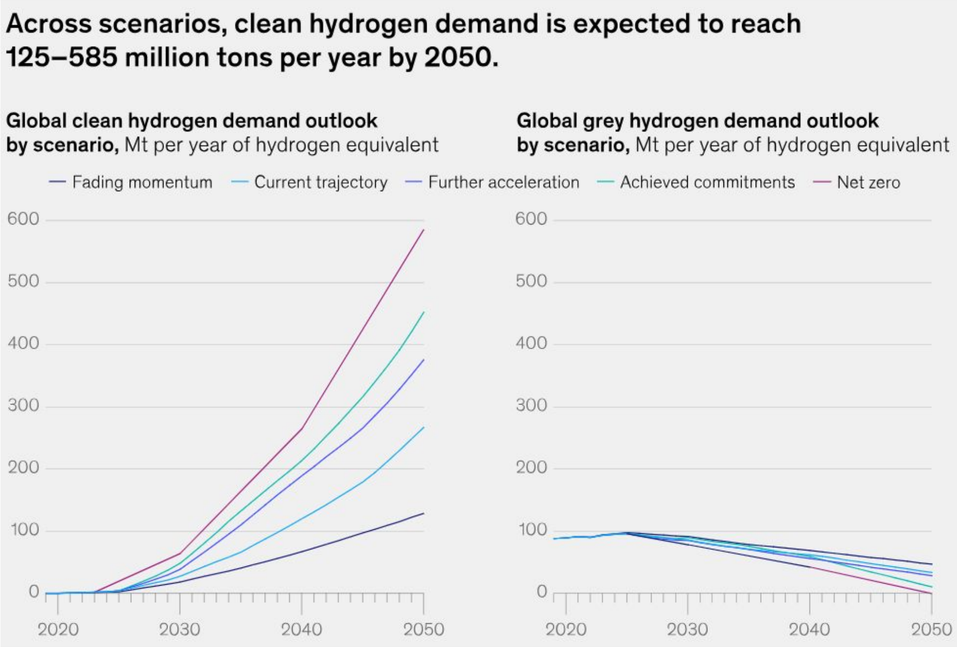


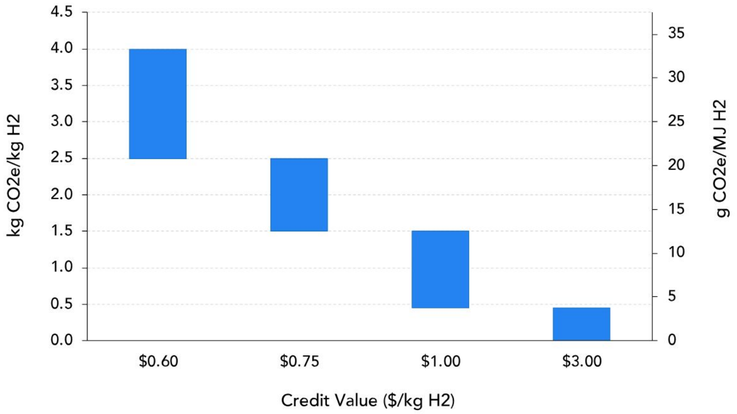
Could reduce 25% of global carbon emissions (*DOE)



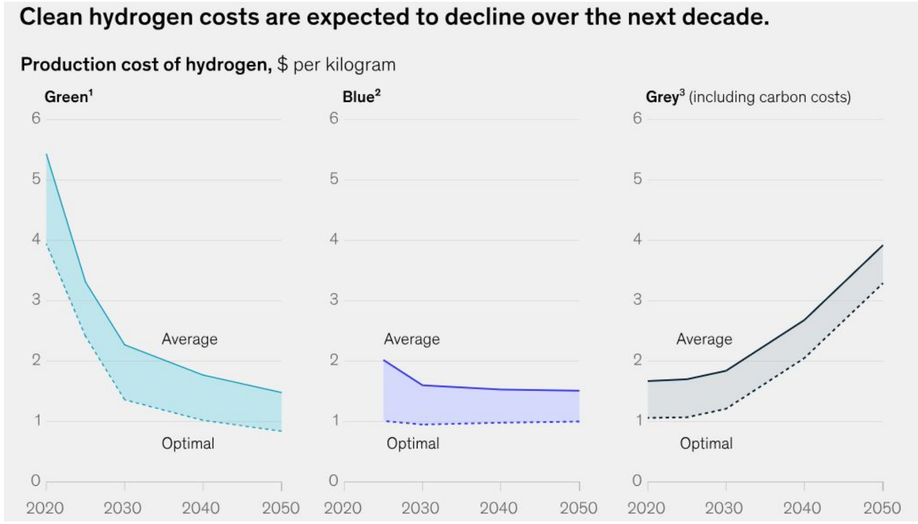
WHY?

96% of H2 produced today is not clean (Brown & Grey Hydrogen)
(2-3% global CO2 emissions- 0.8 Gt/yr)





Clean hydrogen tax credit - upto $3/kg[9]

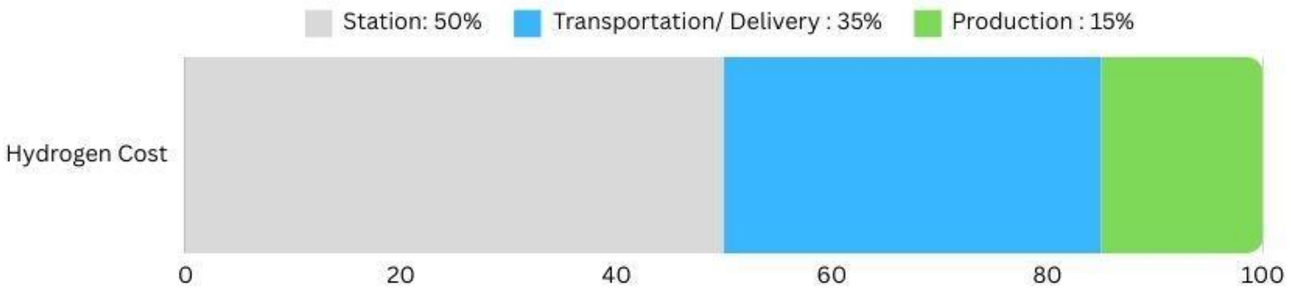


Funding & govt. investments (Hydrogen Shot)[6]
to reduce green hydrogen cost to 1$/kg

Clean hydrogen (<4 kg CO2e/kgH2) is expected to grow 30X by 2030[5]
Green hydrogen: Electrolysis (Zero CO2 emissions)

Heavy focus on Green Hydrogen

Problem

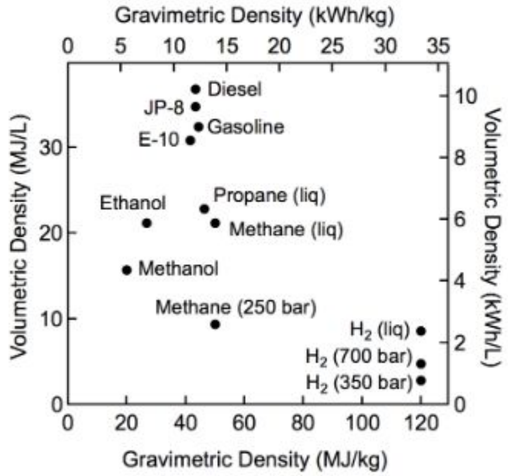


Data from the Argonne National Laboratory for $16/kg avg.H2 pricing in 2019



Cost of hydrogen at fuel stations in California (36$/Kg) -07/24

- Move away from grey hydrogen (carbon costs)
- Transportation challenges & increased costs
- Distribution Complexities



Low volumetric energy density, but high mass energy density

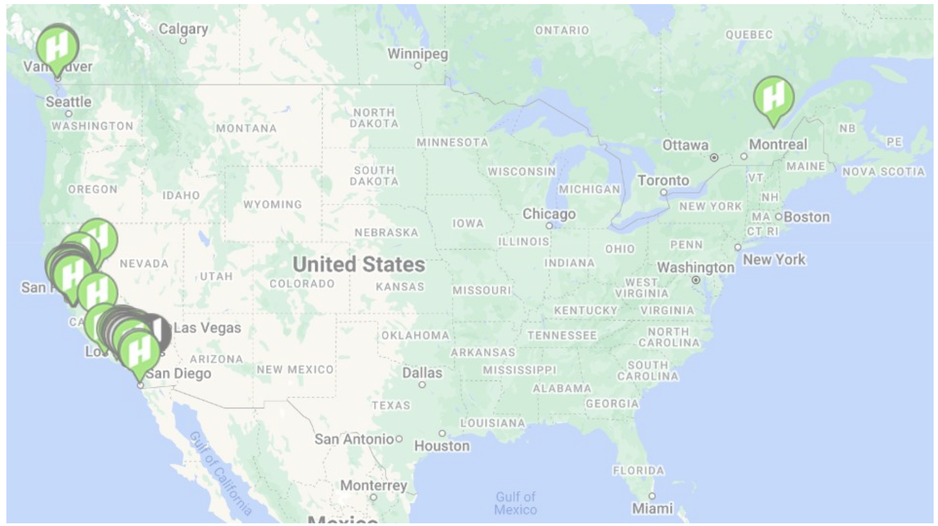
Truck delivery is expensive and won't meet the demand:
Compressed H2, liquefaction etc.

Existing gas pipelines won't work
H2 embrittlement, high pressure H2, easy to leak etc.

New H2 pipeline costs (Avg. $2M per mile)

Transportation of H2 is very expensive, less efficient & produce extra emissions

Problem



55- Hydrogen stations in the USA in 2024

Demand for 4300 stations in US by 2030
(already falling behind & only 1/8th as projected)





18-24 months: Current setup time for a new H2 station

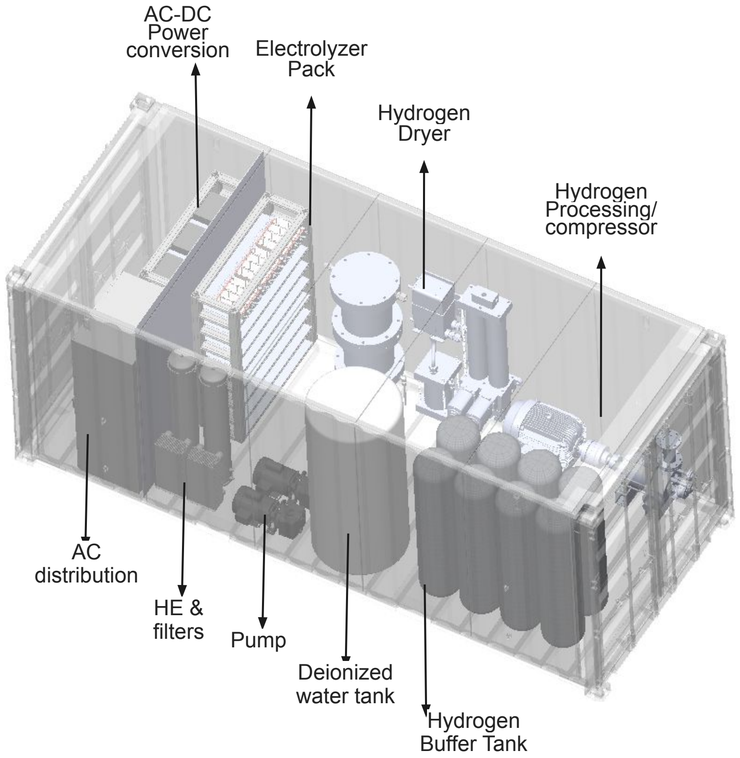
H2 stations will need to be scaled up fast at lower infrastructure cost

Solution

ENELON 20

Each device consists of

- ★ 10 modules (100KW each) generating 20 kg/hr of H2
  - ○ Each module has multiple small electrolyzers
- ★ Water processing
- ★ H2 processing & dispensing



Generate hydrogen (max.20 kg/hr) on-site using city water & electricity

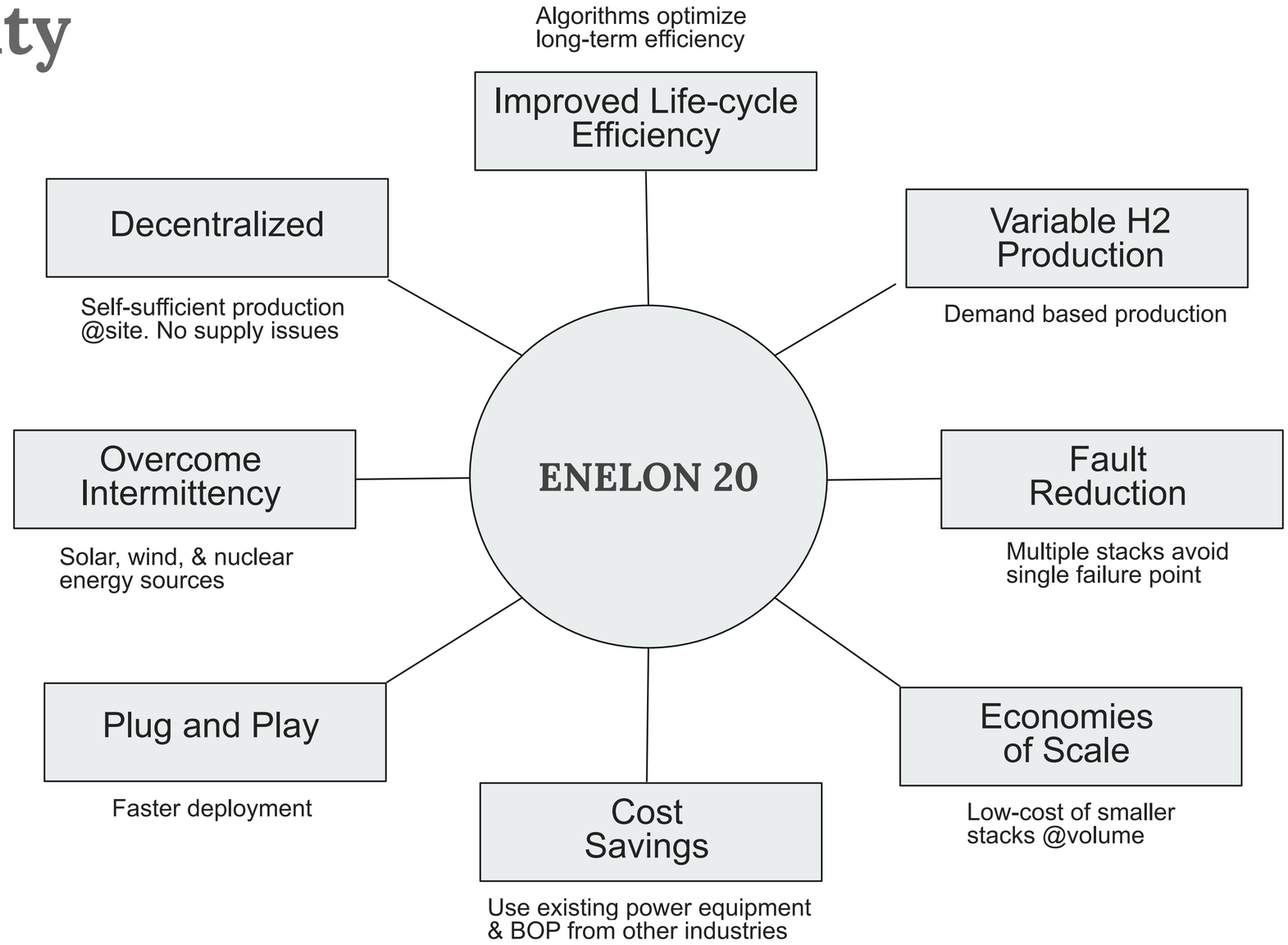


Decentralized modular hydrogen generation & integrated refuelling station

Modular design for easy scaling

On-site H2 generation, easy to deploy & run the device in < 2 weeks

Modularity



Modularity improves performance, & reduces cost

Business Model

Sales and service model*

Cost of device = 1396$/KW (Med volume~ >25-30 units)

Sale Price ~ 2750$/KW

Service/maintenance = 5% of device cost

Gross Profit = $1.41M per device (Med. volume)

Pay per use model*

Cost of H2= 7.2 $/kg** (Med volume~ >25 units)

Sale Price ~ 9.5 $/kg

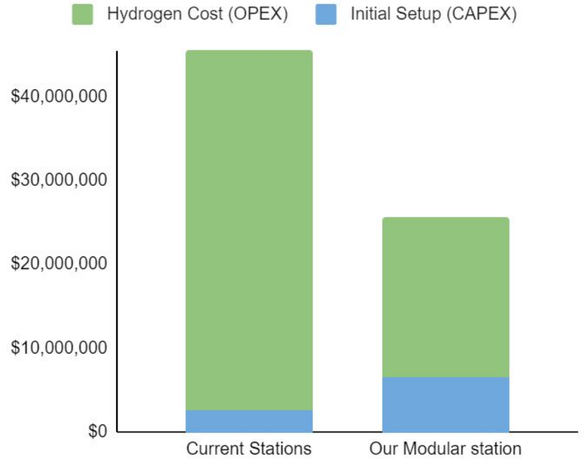
Avg. H2 volume = 0.357 MT/yr (70% utilization)

Gross Profit = $0.82M per device per yr. (Med. volume)

**Based on electricity from Grid (profits could be higher when clean electricity is used as green H2 gets tax credits*

***H2 cost include generation and dispensing @ 70% utilization*

Scenario 1: 10 yr. cost comparison for a 1400 kg/day refueller station @70% capacity



Station Utilization	50%	70%	90%
Our Modular station	$7.85	$7.20	$6.85
Current station	$13.03	$12.73	$12.58

Hydrogen cost comparison $/kg (Hybrid)

Station Utilization	50%	70%	90%
Our Modular station	$10.20	$9.55	$9.21
Current station	$17.83	$17.53	$17.38

Hydrogen cost comparison $/kg (Green)

Profits of $1.2M to $4M per year per station based on H2 type, sales model & utilization

Customers – Transported H2

H2 generation + fuel dispensing

Mobility - H2 fuel

H2 station for cars: 400-500 kg/day

H2 station for heavy duty trucks: 1000-1500 kg/day

H2 station for transit buses: 1000-2000 kg/day

H2 device for prototype FCEV testing: 50-150 kg/day





EVTOL & Aircrafts





Long-Haul Trucks





City Transit Buses

H2 generation

Industry- H2 feedstock

Chemical processing: 400-500 kg/day

Pharma companies: 40-150 kg/day

Food processing: 20-100 kg/day





Hydrogenation

Chemical Synthesis





Extend shelf life

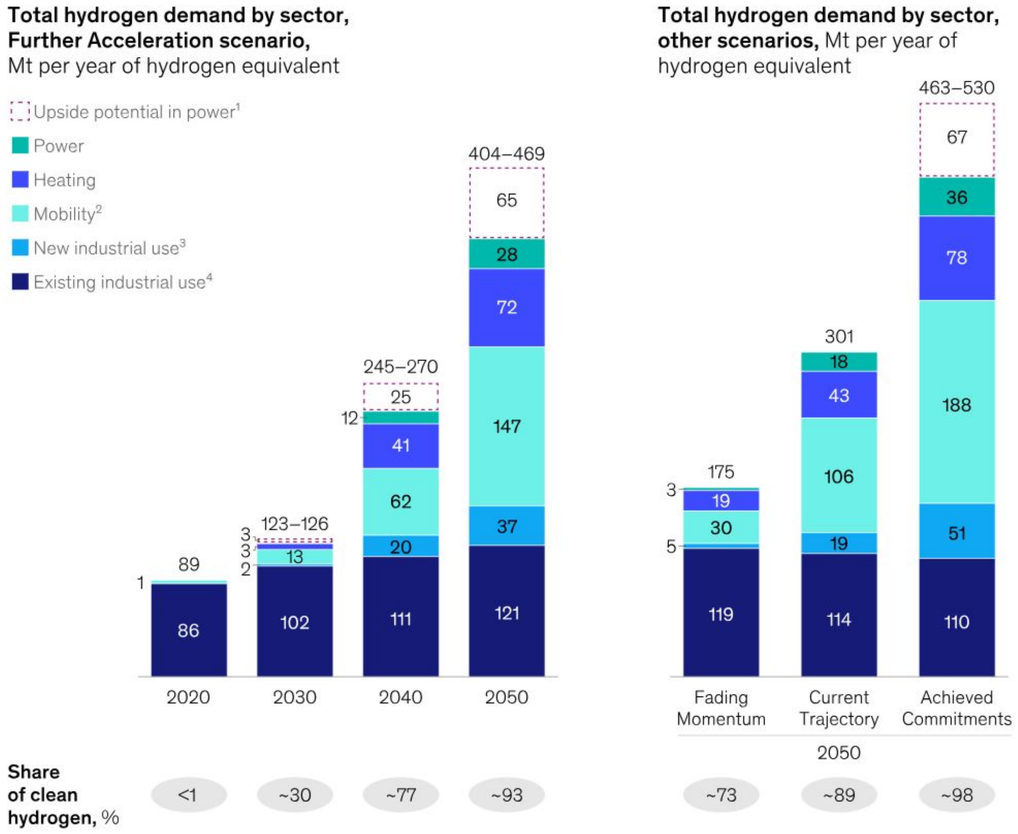
0 to 20 kg/hr of H2 generation was selected for production device (ENELON 20)

Hydrogen Market Size

$220B

Global market for Hydrogen 2024

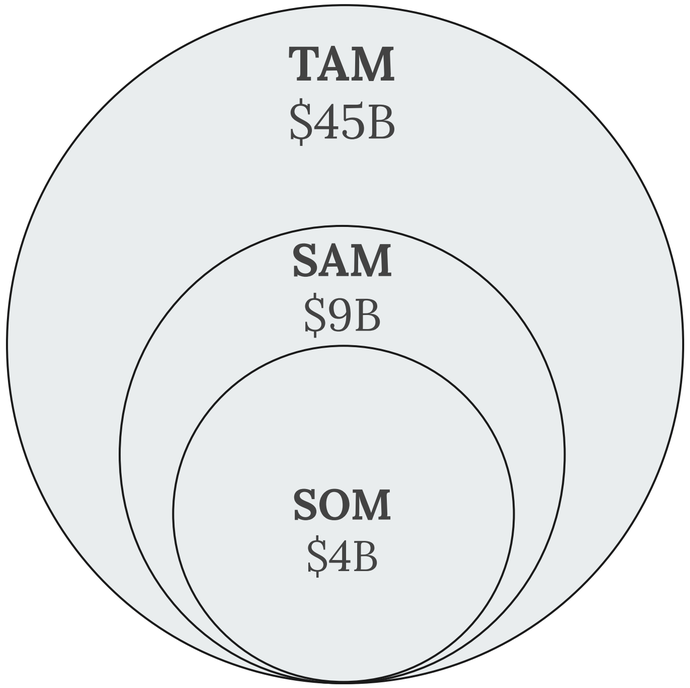
Transition to fully clean hydrogen Market projected to reach **$600 Bn** in 2030 and to **1.4 Trillion** in 2050



Hydrogen production market - projected growth

Transported Hydrogen Market Opportunity

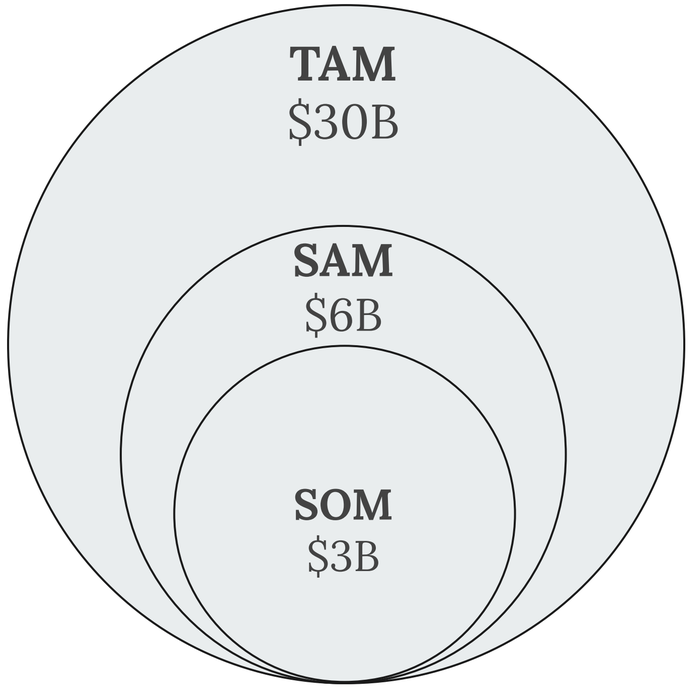
Mobility Sector



H2 generation for Fuel cell electric vehicles in 2030

TAM Projected 14% CAGR to $600 Bn in 2050

Existing Industrial use



H2 generation for existing industries in 2024
(pharma, chemicals, food etc.)

TAM Projected 3% CAGR to $75 Bn in 2050

Team



Revanth Bodepudi
Founder/ CEO



Hareesh Parepalli
Director Software Engineering

Battery Software Lead

Battery Pack lead
High power battery modules
Green Hydrogen production

Cell Engineering

Completions Product Design



Divya Pentela
Director of Operations

Prototyping firm owner
& software engineer

Fundraise

We are **seeking $1 million in our pre-seed round** to accelerate product development & run customer pilots

Pre-Seed Funds

- ➔ $250K in POC ~ build one module with max. production of 2 kg/hr *(pilot runs @customers*)*
- ➔ $500K EVT, tools, lab rental and equipment
- ➔ $250K in customer engagement, legal, & operations

** Smaller device size POC for FCEV prototypes/ chemical/ pharma companies*

Roadmap

Current status:

- **MVP Build**: Version 1 complete, with over 300 hours of testing to validate optimization models and demonstrate cost savings
- **Version 2**: Currently being built and expected to be tested by the end of Oct 2024
- **Pre-Production Device**: CAD and vendor selection for the pre-production device are complete
- **Funding**: Bootstrapped to date



*current plan as of Oct 2024. Roadmap could change based on market and other circumstances

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Maiven Energy

Maiven is the AI powered platform transforming utilities' energy programs to fast-track decarbonization and cut costs.

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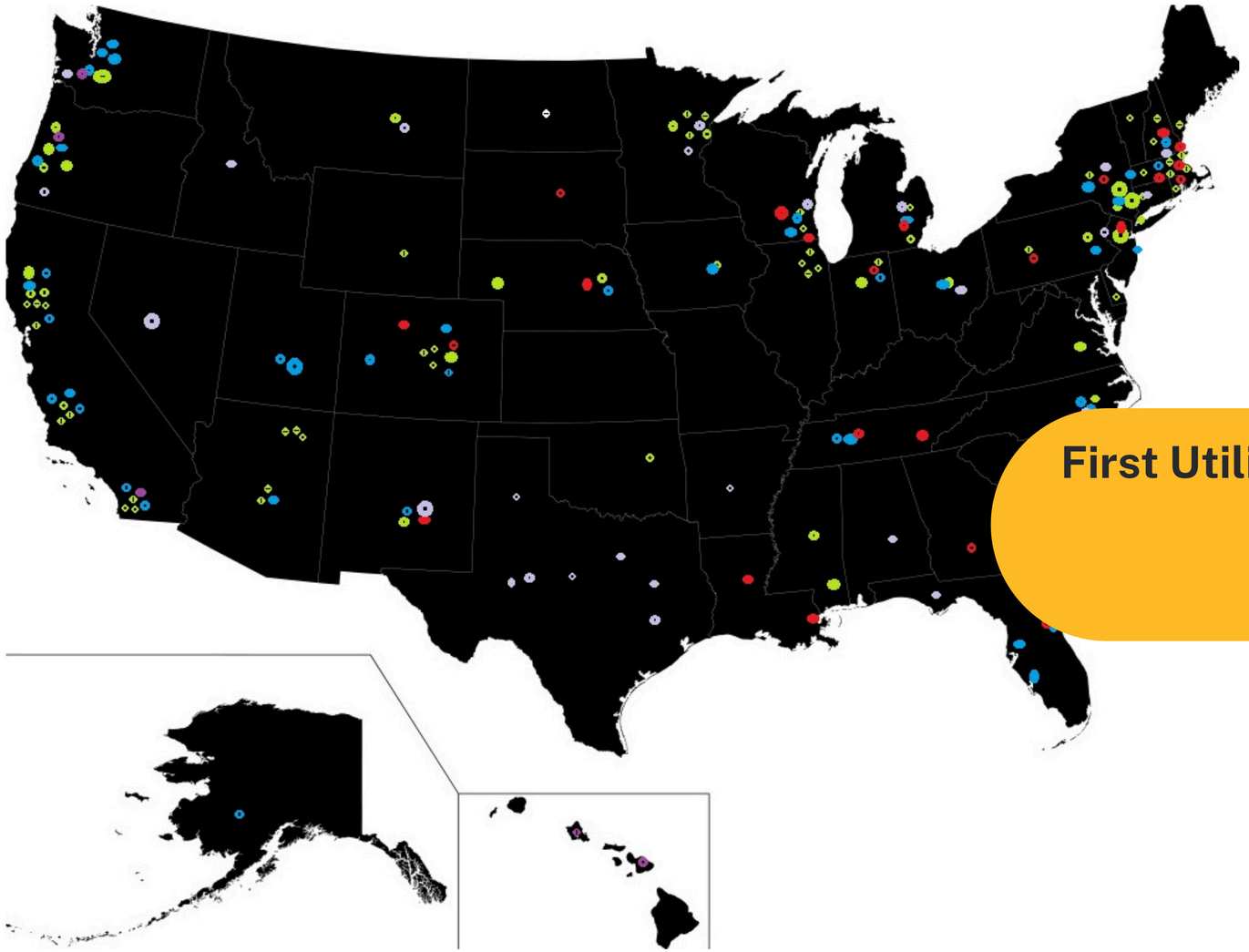
maiven

AI-Powered Home Energy Upgrades

A software platform that helps utilities reach energy program goals faster and at less cost.

Utilities → Consultants → Maiven



First Utility Scale Contract:

$685,000

x2

- Urgent Mandates
- Unprecedented Funding
- Complex Deliverables

30 neighborhood decarbonization pilots allowed under bill passed in California

If the governor signs it, the legislation will let gas utilities planning to replace gas pipelines decarbonize pilot areas, potentially via electrification or installing thermal energy networks.

Published Sept. 4, 2024

Ysabelle Kempe
Editor



Meet **Maiven**



Jacqueline Hall

Founder/CEO

40+ Utilities



Ryan Bright

Lead Developer

David Energy, Built a system to optimize Charge Point



Brandon Roth

Design, UI/UX



Renan Zelaya

Fullstack Engineer

Inefficient & Expensive



Utilities (and ratepayers) spend

$5.9 BILLION PER YEAR

+ $8.9 Billion this year

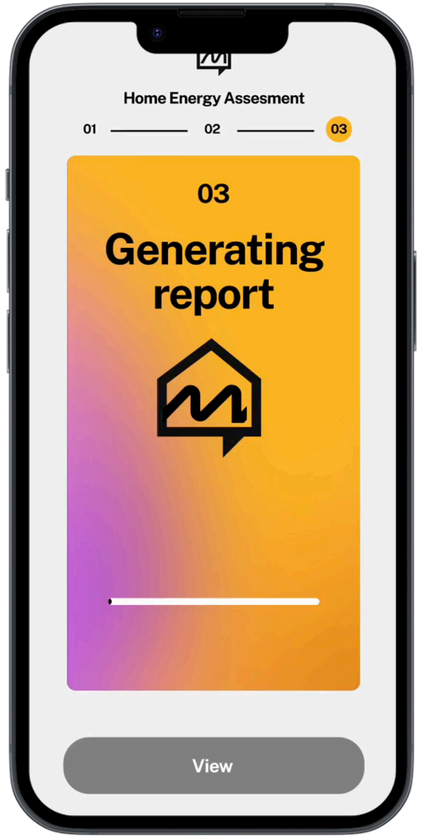


Maiven is a tech partner for energy programs.

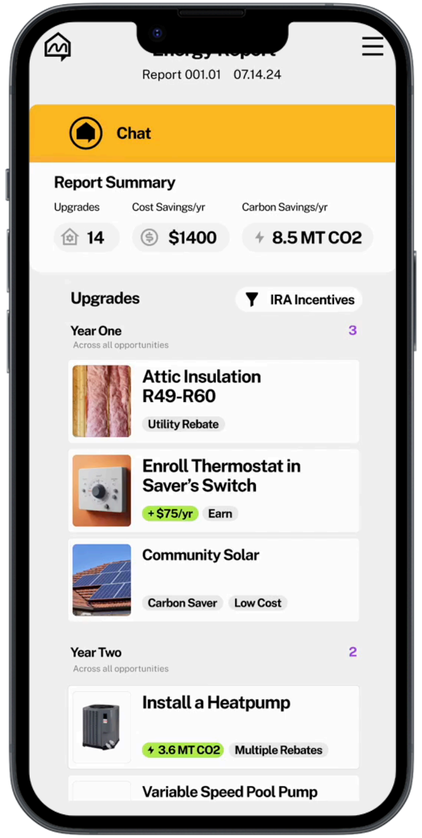
How it works: Maiven



Virtual Energy Audit



Personalized Report



Instant Adoption

+25%

INCREASED ELECTRIFICATION CONVERSIONS

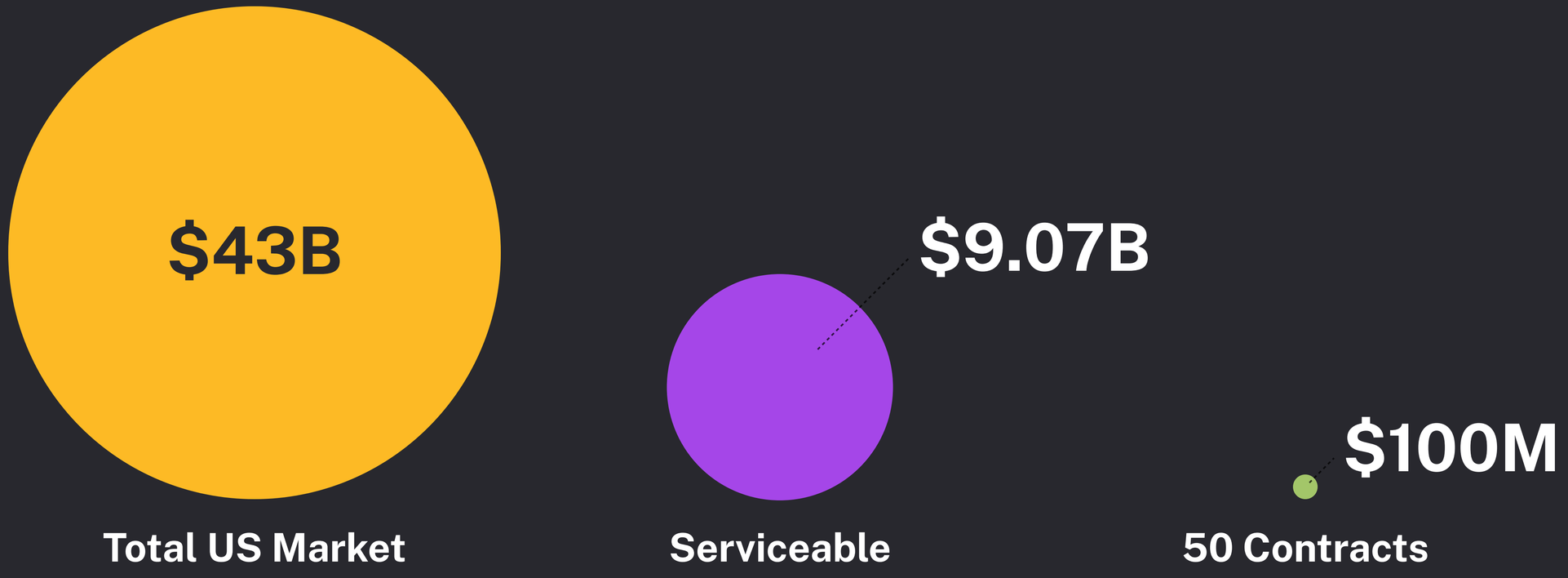
(87%)

REDUCED LABOR COSTS

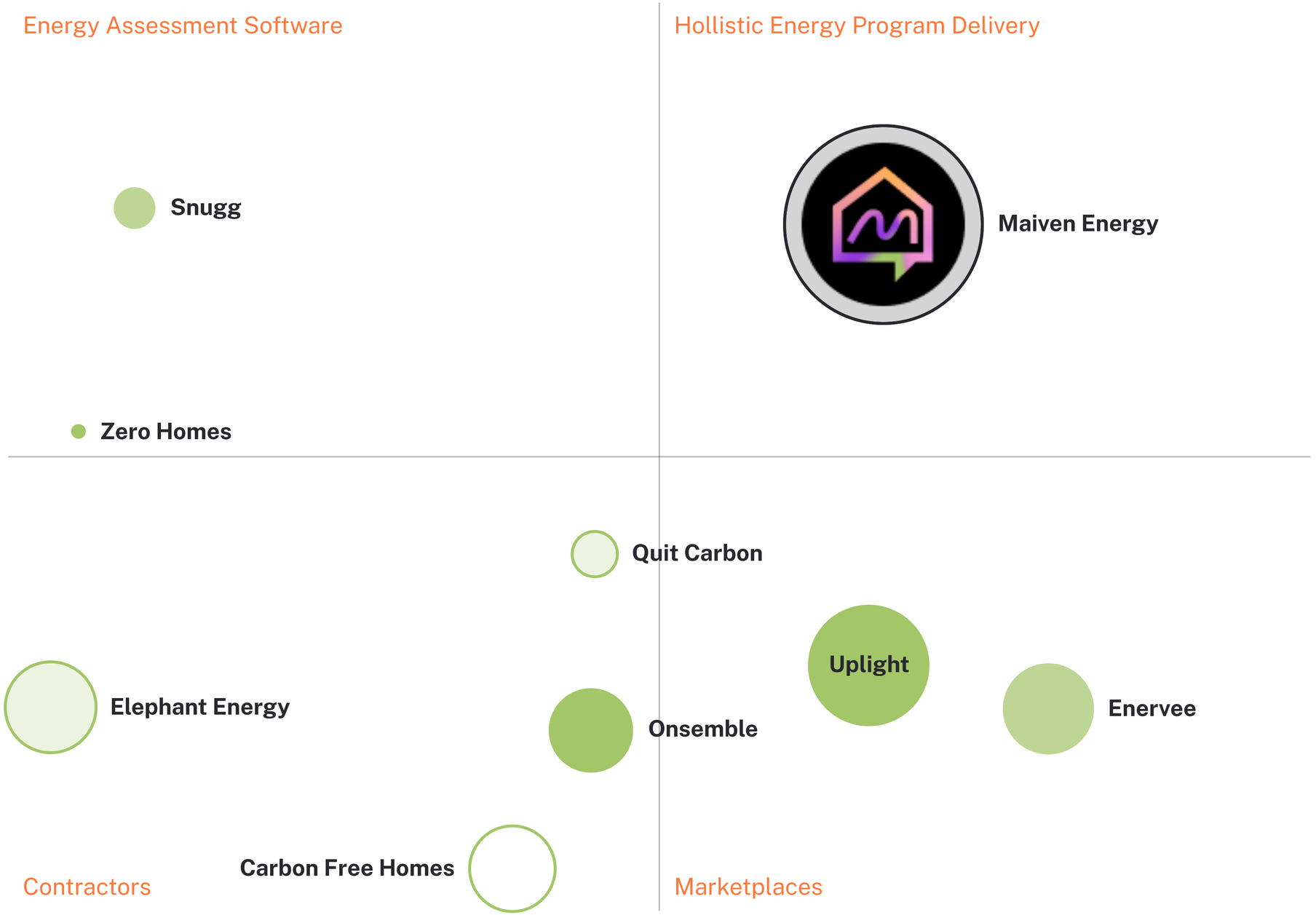
$700,000 saved per 1,000 homes

Average Contract

$1.9M/year, 3-5 yr contracts



Category Defining Solution





Next

Milestones | Deliver Programs, 5 Deals & Data Products

Raise | Strategic Partners for Energy Programs

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CLOSING REMARKS

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CLIMATE TECH INVESTMENT 1:30PM - TEAM ROOM

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