



**HNO**  
HYDROGEN GENERATORS

# BUSINESS PLAN

SEPT 2022

# EXECUTIVE SUMMARY

HNO Hydrogen Generators is poised to help industries and communities accelerate the transition to clean energy with fully integrated green hydrogen solutions at an efficiency and cost never seen before.

We aim to solve three critical issues facing our society:



## Decarbonizing Hydrogen Production



## Enabling Zero Emissions Vehicles



## Supporting Grid Growth and Resilience

# COMPANY

HNO Hydrogen Generators provides custom engineering solutions to help communities and industries address the challenges of transitioning from fossil fuels to clean energy. While there are a growing number of green hydrogen-related products coming on the market, there are few providers that can create simple, integrated solutions for the average client that draws on the best commercial technologies across various companies. We are looking to fill this gap by providing valuable consulting, engineering design, and development projects that can lead to energy sovereignty, resiliency, and clean electricity.

Starting in 2008, our team has been researching and developing hydrogen solutions with cost-effective green hydrogen generation and distribution systems. Our mission is to produce affordable green hydrogen to help businesses and communities become energy self-sufficient and combat climate change. Through aggressive research, innovative technological development, and establishing diverse partnerships, we can be a significant changemaker in the marketplace.

With the Inflation Reduction Act and tax credit programs, green hydrogen production is heavily incentivized with up to \$3/kg in production tax credits. Additional federal, state, and local tax credits further lower the cost of green hydrogen production and application to be less expensive than dirty hydrogen and opens up access to new hydrogen applications considered too costly before.

HNO's technology and integrated solutions allow for more companies and communities to participate in the clean energy transition. Thus, contributing to improving air quality and efficient energy access for end users. HNO is currently providing engineering design services for various companies and communities. We've partnered with hydrogen storage companies, compressor and component manufacturers, and electrolyzer & fuel cell manufacturers to provide integrated systems that meet customers' green hydrogen needs.

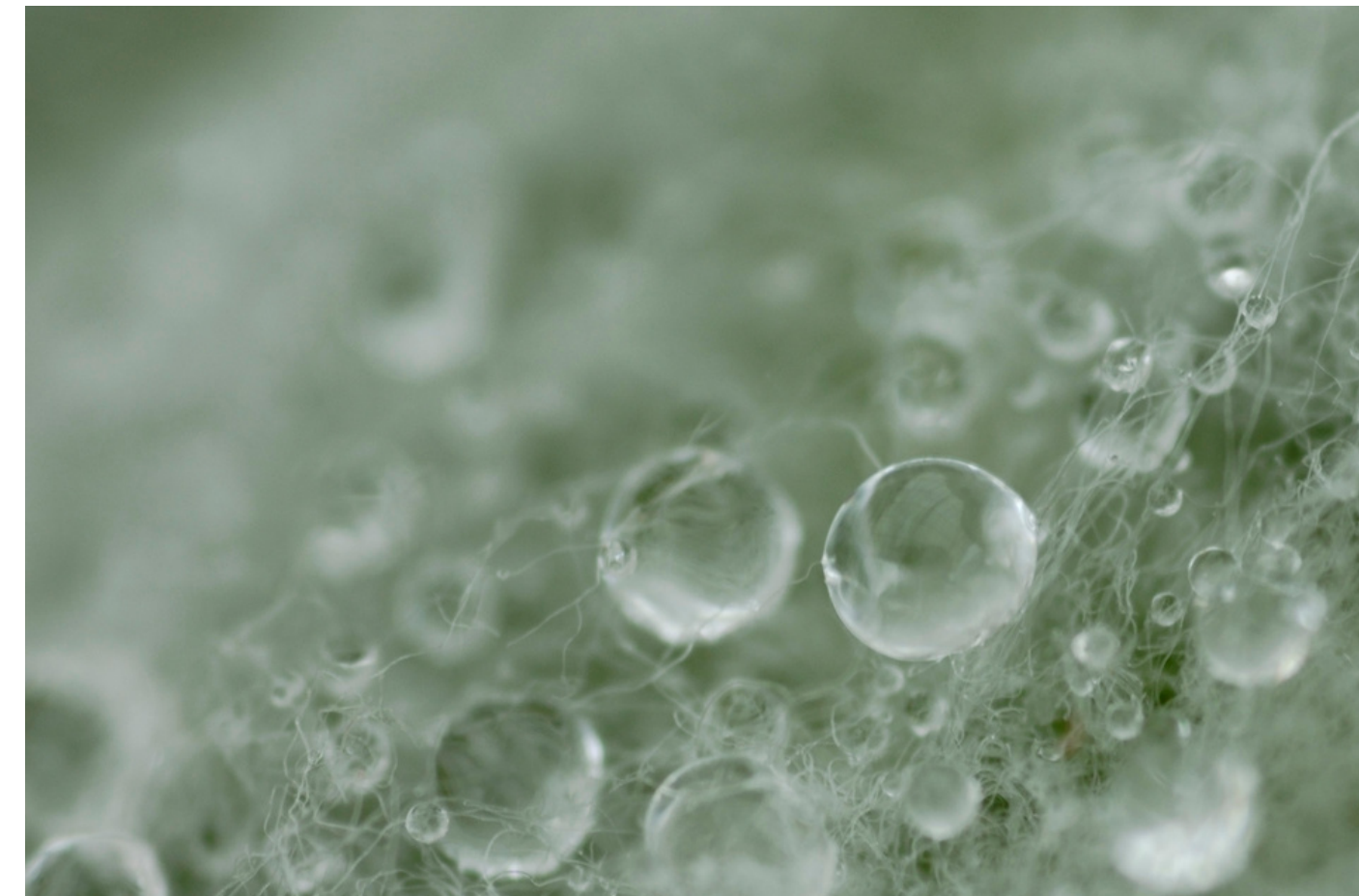
We've partnered with intertribal consortiums and clean energy groups to design green energy projects. Our experience consulting with the needs of customers surrounding hydrogen and designing systems for commercial applications, has well suited us to become a market leader.



# MARKET ANALYSIS

## KEY FACTORS:

- Growing environmental challenges are pressuring industries and countries to transition away from natural gas.
- A total of 99% of hydrogen comes from fossil fuel reforming, but it is not beneficial for the environment due to CO2 emission.
- The European Union (EU) released a unique hydrogen policy in 2020 that combines initiatives to support **green** hydrogen generation capacities' rapid growth.
- Massive credits from the Inflation Reduction Act favoring green hydrogen production
- New revenue from Commercial carbon credits through the Low Carbon Fuel Standard programs in CA, OR, & WA
- Green hydrogen technology rapidly maturing, including being developed as a clean fuel for the transportation industry



WE HELP MEET **UNITED NATIONS** SUSTAINABLE DEVELOPMENT GOALS



# MARKET GROWTH METRICS

## Green Hydrogen Market

\$1B in 2021 to \$72B by 2030 (CAGR of 55%)

## Green Hydrogen Electricity Generation Equipment

\$440M in 2021 to \$4.4B in 2030 (CAGR of 58%)

## Electric Vehicle Supply Equipment (EV Chargers)

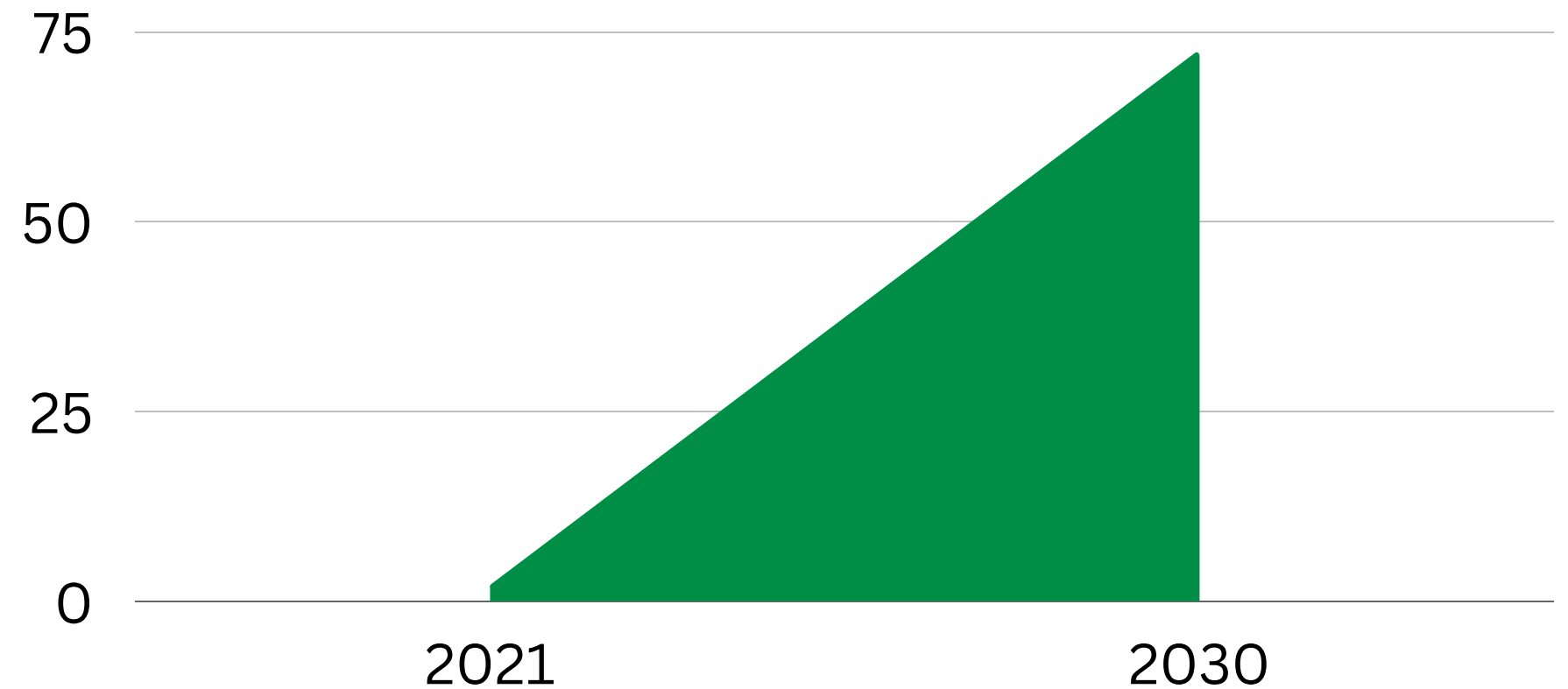
\$17.6B in 2021 to \$112B in 2028 (CAGR of 30%)

## Hydrogen Refueling Station market

\$540M in 2022 to \$2.7B in 2029 (CAGR of 26%)

## GREEN HYDROGEN MARKET

(IN BILLIONS USD)



SOURCE

SOURCE

SOURCE

SOURCE

# MARKET ANALYSIS

## OPPORTUNITIES

### Enabling Green Hydrogen Production

- As of 2019 **40,000 tons** of hydrogen is consumed every day
  - This is expected to grow **5.7 million tons** by 2030
  - Less than 1% of the hydrogen produced today is considered green
- Cornell University reported that **blue hydrogen** (the most dominant form that uses natural gas and carbon capture) is actually **worse than burning coal**.

### Supporting Grid Growth and Resilience

- NREL estimates that energy grid-scale storage needs are set to **increase by 500% by 2050** with the proliferation of intermittent sources like wind and solar.
- The global energy storage addressable market is slated to attract roughly **\$1 trillion** in new investments over the next decade.

### Powering Zero Emissions Vehicle Infrastructure

- The percentage of Zero Emissions vehicles on the road in the US is set to grow from 4% in 2021, to 18% by 2030
- Given 1.1 million EVs in service by 2030, estimates show that electric grids will need to make transmission and distribution investments of \$2.8 billion through 2030 to support EVs.



The Inflation Reduction Act offers up to

**\$3/kilogram**

for green hydrogen produced as a Production Tax Credit that can be sold or kept by developers



Large hydrogen fueling stations is expected to

**grow 700%**

by 2030.

## Products:



### GREEN HYDROGEN PRODUCTION PLANTS

- Up to 450kg of hydrogen a day per container. Customers get to produce hydrogen at \$2-3/kg (hydrogen market rate is \$7-8/kg, up to \$15/kg)

### HYDROGEN FUEL CELL ELECTRIC GENERATORS

- For grid scaling-
  - This costs a fraction of the cost of constructing new transformers and grid lines to provide additional electricity. With no below-ground construction and minimal space requirements, new electricity is delivered in weeks, not years.
- For clean, reliable backup power for buildings and utilities.
  - Scaling backup power means scaling storage only. It's cheaper and cleaner than lithium batteries.

### ZERO EMISSIONS VEHICLE INFRASTRUCTURE

- Private Fleet and Commercial Battery EV charging stations (EVSE)
- Private Fleet and Commercial Battery Hydrogen Refueling Stations

## Services:



- Grid augmentation and new electrification services to support new electric equipment
- ZEV Mobility
- Tax Credit guidance
- Custom integration of subsystems
- Engineering design and consulting for hydrogen applications



# Marketing Plan

Hydrogen Generators' marketing plan is primarily focused on securing community and industry partnerships, while educating the public about green hydrogen.



## Objectives

- Share information/education about green hydrogen
- Collaborate with partners and community leaders
- Engage with audiences
- Build and strengthen brand awareness/advocacy
- Target communities that need energy (energy communities, tribal nations)



## Primary tactics

- Direct marketing and lead generation
- Website and online sales funnels
- Pay per click search ads



## Secondary tactics

- Blogs, whitepapers, articles, and SEO, Podcasts, etc
- Email B2B Newsletter
- Social media (YouTube, Instagram, TikTok, LinkedIn)
- Event Marketing
- Networking
- Partnerships/Joint Ventures
- Press Releases/PR
- Trade Shows/Conferences

Content focus: hydrogen, energy, climate change, energy sovereignty, power to people, hydrogen news



# Traction

In order to provide high-quality technology, installations, and integration plans, HNO relies on the expertise of its employees and the strong relationships that we have built across the many industries.

## Education and Community Driven Partnerships

In an attempt to make a significant impact in the industry HNO partners with multiple universities and organizations:

- Indian Energy
- California State University San Marcos
- California State University San Diego
- Cleantech San Diego
- Southern California Energy Innovation Network
- and more



## Manufacturing

We've partnered with proven manufacturers and developers across many industries to deliver full green hydrogen solutions.

- Renewable Energy (wind and solar)
- Water Purification & Generation
- Hydrogen Generation (electrolyzers)
- Hydrogen Compression & Purification
- Hydrogen Storage, Transportation & Distribution
- Fuel Cell Electrification

Some notable partnerships we have gained, include:

- **Enapter:**
  - Named one of Fast Company's 10 most innovative energy companies in 2022
  - Capable of producing 10,000 Green Hydrogen Generators a month by 2023 with their new 82,000m<sup>2</sup> facility
- **Chargepoint:**
  - 7x more market share (at more than 70%) in networked level 2 charging than the closest competitor in North America
  - >200K places to charge on the ChargePoint network in North America and Europe
- **Haskel:**
  - Haskel components have been used in over 200 hydrogen refuelling projects around the world, and sell annually \$85million+ of equipment



Enapter



# Financial plan

Projected Revenue (\$ millions)	2023	2024	2025	2026
Green Hydrogen Production Plants	\$ 1.7	\$4.5	\$16	\$34
Hydrogen Fuel Cell Electric Generator	\$0.5	\$3.5	\$7.0	\$15
Zero Emissions Vehicle Infrastructure	\$0.3	\$1.5	\$3.5	\$5.5
Projected Gross Profit Margins				
Green Hydrogen Production Plants	15%	25%	35%	50%
Hydrogen fuel cell electric generator	15%	18%	20%	22%
Zero Emissions Vehicle Infrastructure	20%	25%	30%	35%
Expenses				
Salaries	\$0.2	\$0.5	\$1	\$2
R&D, Non Recurring Engineering, and Product Dev	\$0.25	\$0.5	\$1	\$2
Marketing & Sales Campaigns	\$0.2	\$0.5	\$0.75	\$1
General & Administrative	\$0.1	\$0.25	\$0.5	\$1

# OUR TEAM



**President**  
Don Owens



**Chief Development Officer**  
Greg Heller



**Executive Vice President**  
Jasmine Louis



**Chief Financial Officer**  
Hossein Haririnia



**Chief of Operations**  
Paul Mueller



**Counsel**  
Jim Gaumond



**Vice President of Sales**  
Brian Hill



**Development Director**  
Kristina Mabry



# THANK YOU

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