



NextHydrogen

Innovation in Water Electrolysis™

Investor Presentation

November 2022

NXH:TSXV
NXHSF:OTC



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What is Next Hydrogen?

Next Hydrogen is the only public pure-play designer & manufacturer of electrolyzers in North America.

Our electrolyzers use electricity and water to produce hydrogen, which is utilized as a clean energy source.

- **Electrolysis is the only way to produce green hydrogen**
- **Our design has unique advantages which overcome limitations of conventional electrolyzers and benefit from cost & durability advantages**
- **Our electrolyzers are purpose-built for use with renewable power sources to most efficiently & economically produce 'green hydrogen'**



Hydrogen Economy Tailwind

- **US\$80B Addressable Market and less than 10 notable electrolyzer players** globally
- Applications in materials handling, heavy mobility and industrial processes, which **cannot be electrified**
- **Unprecedented government budgets, grants and subsidies** driving investment

Scarcity Premium

- **Only publicly listed pure play water electrolysis company in North America** and one of few globally
- **Climate change initiatives & investors' push towards ESG** have increased market interest in clean tech companies

Pioneers in Water Electrolysis

- **12+ years of IP development** with proven track record at Stuart Energy and Cummins (Hydrogenics)
- Combined **60+ years** of experience in designing hydrogen generation systems
- **Tremendous bench strength:** Technical, Operational, Manufacturing & Board

Advanced Electrolyzer Design

- **Significant advancement in electrolyzer design architecture** validated by AECL, Canadian Tire and Hyundai
- Combines the attractive features of PEM and alkaline systems to **reduce the levelized cost of green hydrogen**

Extensive IP Portfolio

- 39 patents to cover **multiple alkaline and PEM product roll-outs** to expand value proposition
- **Commercialization** of 1, 2, 3 MW alkaline electrolyzer product line underway
- **Technology development roadmap** includes 3, 6, 9 MW alkaline electrolyzers and PEM product line in the next 3+ years

Hydrogen Economy Tailwind



To stabilize or reduce concentrations of CO₂ in the atmosphere, the world needs to **reach net-zero emissions as soon as possible**



Governments globally support the growth of **hydrogen as a clean energy source** for the future

Significant push from corporations, investors, and society to **decarbonize the economy**



Hydrogen is a well-established, **\$120B annual global** existing market



The cost of renewable hydrogen production is expected to **fall drastically by up to 60% over the coming decade** driven by **declining costs of renewable electricity generation** and the **scaling up of electrolyzer manufacturing**

96% of countries are committed to the Paris Agreement

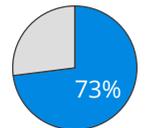
81% of society feel that **companies have a vital role to play in meeting environmental targets**

Global **sustainable funds saw inflows of \$152.3B** in the final quarter of 2020

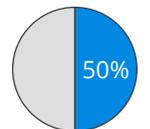
Electrolyzer costs have decreased by 40% during the last 5 years, and **costs of solar and wind power have decreased by 89% and 70%** during the last 10 years

% of Global GDP covered

31 Countries have **hydrogen-specific strategies**



75 Countries have **net zero carbon ambitions**



Unprecedented Commitment on Green H₂ from Countries Globally



Hydrogen could be used to deliver 30% of **Canada's** end-use energy by 2050

EU aims to install 2x40 GW of renewable hydrogen electrolyzers by 2030

The Nord Stream 2 gas pipeline could deliver hydrogen from **Russia** to Europe

Germany targets 5 GW of electrolyzer capacity by 2030

France is targeting H₂ production capacity of 6.5 GW by 2030

Japan was the first to adopt a comprehensive hydrogen strategy and aims to achieve a hydrogen society

Spain targets 4 GW of electrolyzer capacity by 2030

South Korea wants to lead in the production and use of hydrogen vehicles and has set target for fuel cell power generation of 15 GW by 2040

Most hydrogen production in the **U.S.** uses natural gas

China is already the world's largest producer, but mostly from coal

Brazil government included green hydrogen in its long-term energy plan for 2050

Chile aims to produce the world's cheapest green hydrogen by 2030

- 5 GW by 2025
- 25 GW by 2030

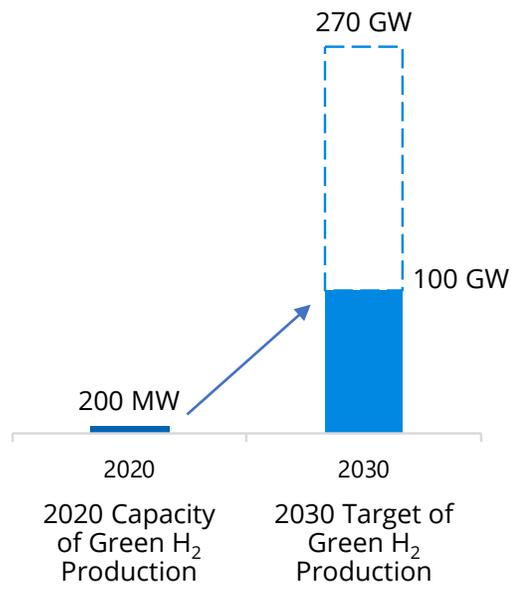
Argentina has been a pioneer for producing hydrogen from renewable electricity

Australia aims to be among the top three exporters of hydrogen to Asian markets by 2030

New Zealand published a vision for hydrogen in 2019

National hydrogen strategy, more robust plans →

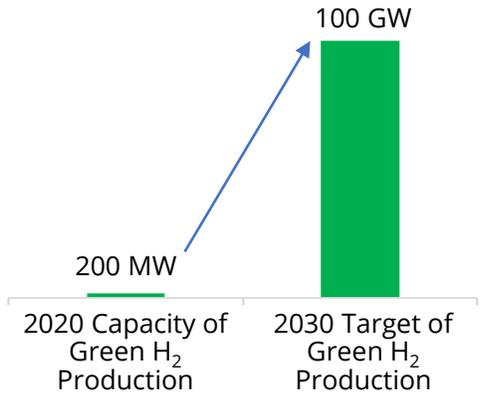
270 GW of electrolyzers will be needed by 2030 to **keep the global temperature increase under 2°C**



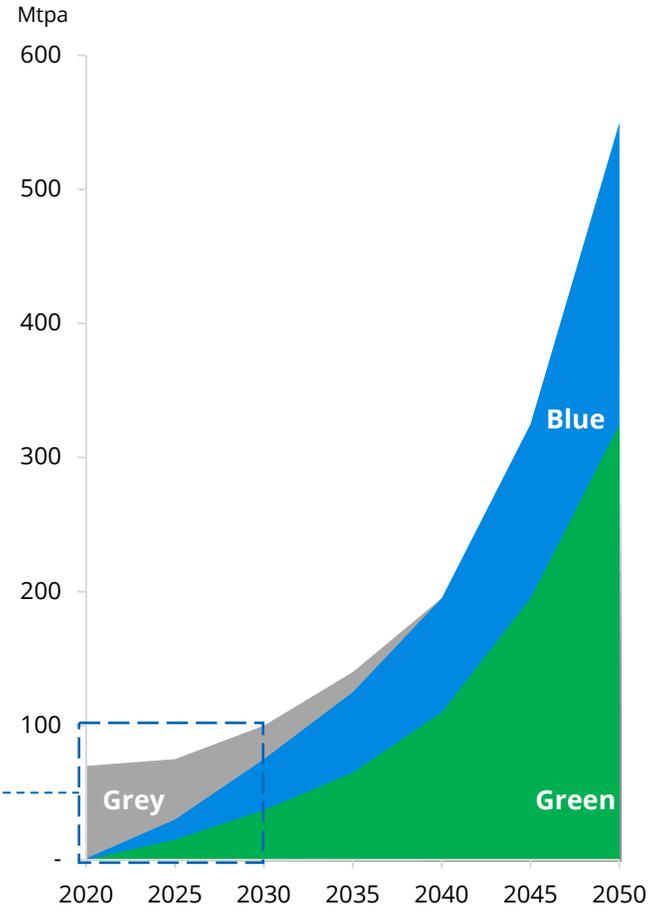
Source: Bloomberg, IRENA, Next Hydrogen, Hydrogen Council, press releases, and publicly available information.

Significant Electrolyzer Market Opportunity

Market Opportunity by 2030

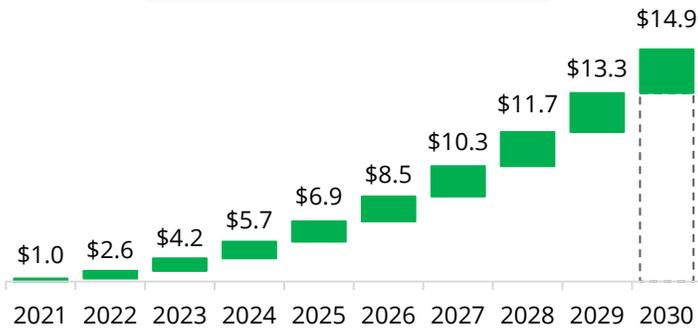


Global Hydrogen Production Scenario



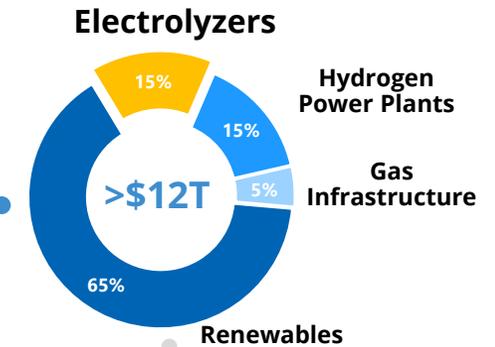
Serviceable Addressable Market

US\$80B Opportunity



Market Opportunity by 2050

>\$12T
TOTAL ADDRESSABLE MARKET
Hydrogen Opportunity by 2050



Electrolyzers expected to represent ~15% of the Addressable Hydrogen Market⁽²⁾

>\$1.8T Serviceable Addressable Market

Note: All figures in USD. EUR/USD rate of 1.20862.

Source: IRENA, Hydrogen Council, Goldman Sachs, September 2020, "Green Hydrogen: The Next Transformational Driver of the Utilities Industry", and publicly available information.

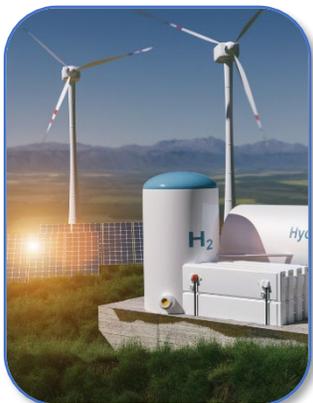
1. Illustrative pricing provided by Next Hydrogen.

2. Share provided for European market – Assumed that these figures held relatively stable for Rest of the World.

Next Hydrogen's Focus on Green Hydrogen Applications

Solutions to Power and Green Industrial Operations

- 95% of hydrogen used for industrial purposes is derived from fossil fuels and is responsible for 830 million tons of CO₂ annually
- Hydrogen produced from green energy can dramatically lower carbon emissions and enhance reliability of supply
- **Solutions that cannot be electrified** – hydrogen is the most viable clean alternative



Agriculture



Cement



Steel

Solutions for Clean Materials Handling and Heavy-Duty Transport

FCEV are better suited for heavy mobility than battery EV

- FCEV have much greater range and carry more weight than EV since long distances and heavy payloads require larger and heavier batteries which leads to diminishing performance and efficiency
- Much faster refueling time (minutes vs hours)
- H₂ has much higher energy density so fuel tanks are more compact and lighter than an array of fully charged batteries
- Ability to operate in cold climates



Mining



Distribution



Trucking



World class hydrogen expertise



Raveel Afzaal

10+ years capital markets experience as an equity research analyst and venture capitalist, former lead of Canadian Sustainability & Special Situations verticals for Canaccord Genuity



President & CEO,
CFA, B.Math, B.Econ.



Kasia Malz

10+ years financial leadership experience, former CFO of Titanium Transportation Group, growing the business from \$40M to \$200M in revenue



Chief Financial Officer,
CPA, CA, CPA(IL), MAcc



Matthew Fairlie

20+ years in hydrogen industry, former CTO and Executive VP at Stuart Energy, served as Vice Chair of the US National Hydrogen Association and Chair of the Hydrogen Business Council of Canada



Vice Chairman,
MSc, DBA



Michael Stemp

20+ years of designing and developing hydrogen systems, former Director of Advanced Engineering for Stuart Energy

Chief Technology Officer, PhD



Jim Hinatsu

25+ years commercial experiences with hydrogen and electrochemical systems, including senior roles at Hydrogenics and Stuart Energy

Chief Operating Officer, PhD



Robert McGillivray

20+ years experience in cleantech commercialization including 10 years in hydrogen product sales, marketing, business and corporate development

BD Exec Advisor,
P.Eng, MBA



Jim Franchville

25+ years experience in manufacturing, operations, supply chain, quality, and process improvement across several industries

VP Manufacturing,
MS



Shane Day

25+ years experience managing the installation and integration of > 60 H2 systems and > 200 fuel cells in multiple applications, first TSSA certified H2 technician in Ontario

VP Operations



Producing Hydrogen: The Electrolyzer Landscape

Pure Play Electrolyzer Manufacturers



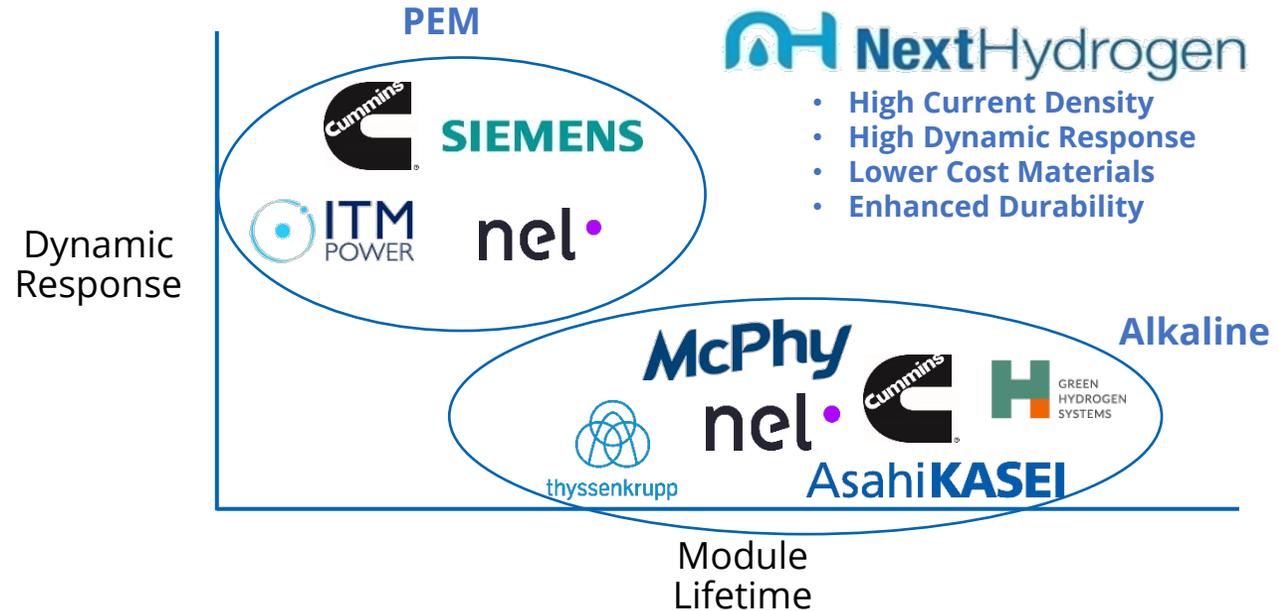
Electrolyzer Manufacturers



Fuel Cell Manufacturers



Next Hydrogen captures key benefits of both electrolyzer technologies

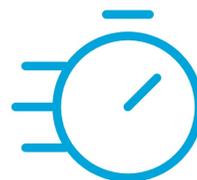


Higher Current Density



Up to **2.5x current density**, leading to **2.5x more hydrogen produced** while using the same commercially proven raw materials as other commercial systems which drives lower up-front capex

Superior Dynamic Response



Superior dynamic response enables Next Hydrogen's electrolyzers to **capture fluctuations in energy at 5% per second** compared to conventional alkaline systems with capabilities of up to 5% per minute

Scalable Design



With approximately the same footprint, Next Hydrogen's electrolyzers are able to **scale up its power by a factor of 300%** which drives significant economies of scale

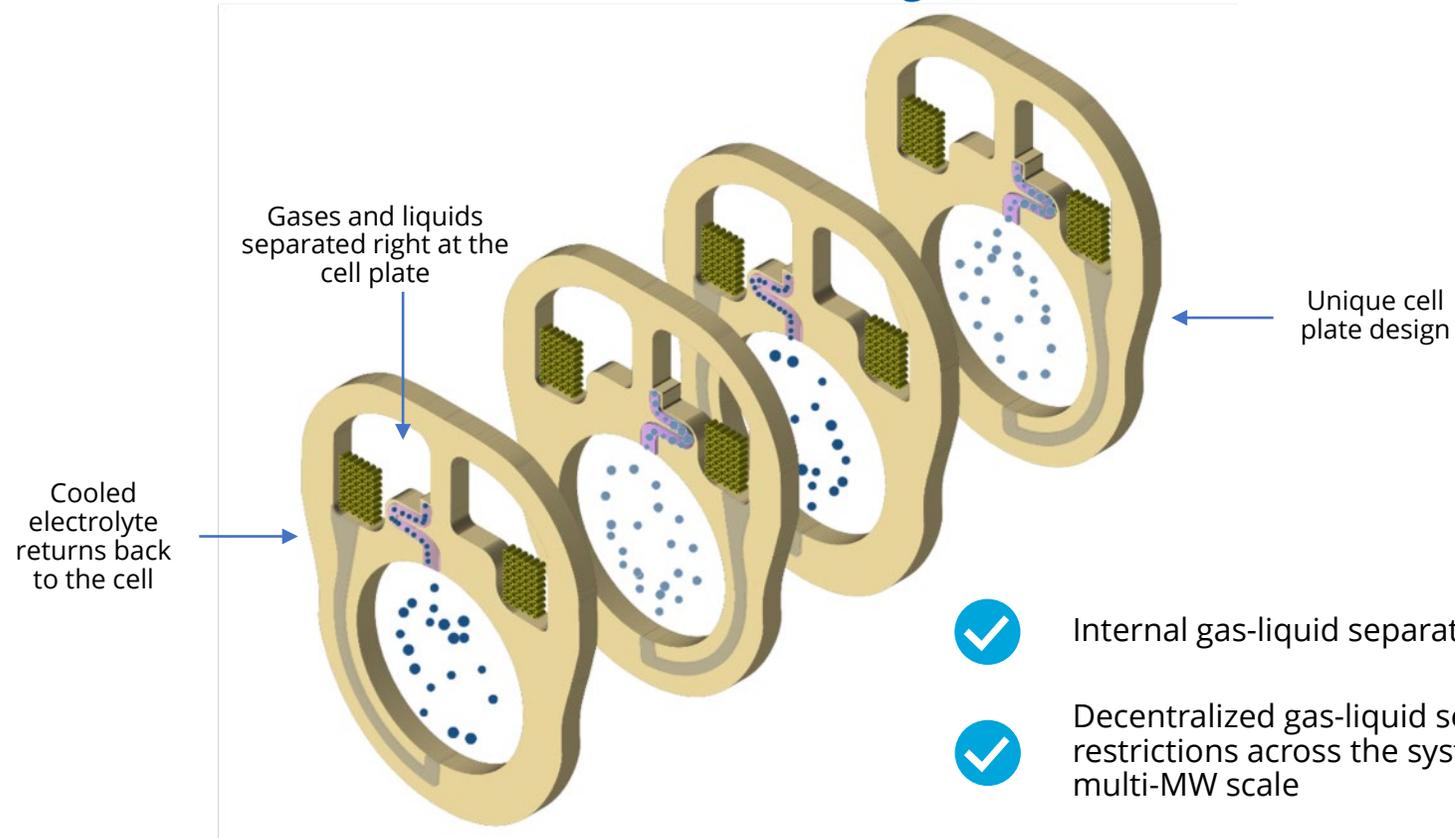
Next Hydrogen's electrolyzers can produce more hydrogen per capex dollar spent when compared to other leading systems⁽¹⁾

1. When compared against competing alkaline electrolyzer technology.

Significant Advancement in Electrolyser Design

NextHydrogen Electrolyzer Design

All electrolyte and gas-liquid separation occurs at each cell plate, removing limiting design features of conventional electrolyzers



- ✓ Internal gas-liquid separators in each half cell
- ✓ Decentralized gas-liquid separator ensures no fluid and gas flow restrictions across the system for higher current densities and multi-MW scale
- ✓ Superior dynamic response as gases and liquids are separated right above the cell plate

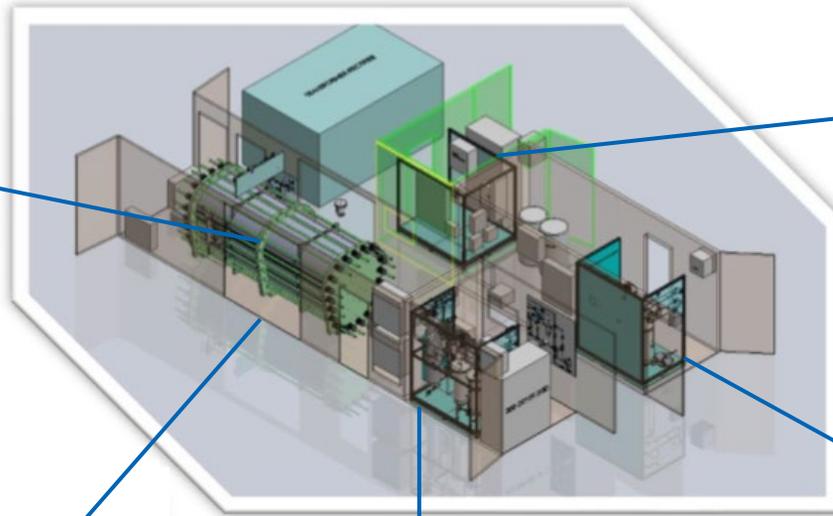
System Overview

NH-300 Hydrogen Generation System Schematic



Electrolyzer Module

Patented cellular architecture removes fluid-gas flow restrictions which limit traditional electrolyzer performance



Electrical and Controls Container



Electrolyzer Container



Hydrogen Container



Oxygen and Feedwater Container

- ✓ Open architecture with the best commercially available cell components
- ✓ Compact units, pre-assembled and ready to drop in at sites
- ✓ Current alkaline electrolyzer product line with significant product roll-out planned:

	NH-100	NH-300
Capacity (MW)	0.6	1.8



Successful Pilot Project

"The team successfully demonstrated the continuous operation of the cell with the required quality of hydrogen stream from the electrolyser in a liquid phase catalytic exchange system." - AECL MD&A



One of the Largest On-site H₂ Generation Project for Materials Handling Applications Globally

The first "green hydrogen system" – hydrogen powered fork lifts and electrolysis fuel production using Next Hydrogen electrolyzers

- Canadian Tire commissioned an NH60 (0.4 MW) unit for a pilot project at their Brampton, Ontario distribution centre
- Subsequently ordered 2 NH300 (1.8 MW) units since the first demonstration unit for their Bolton, Ontario facility. Total hydrogen production capacity of 1.5 tonnes/day



Bolton, Ontario

Hyundai and Kia Partnership



Hyundai Motor Company, Kia Corporation and Next Hydrogen Corporation recently signed an MOU to jointly develop an alkaline water electrolysis system and its related stack for economically generating green hydrogen and exploring new business opportunities and technological applications.

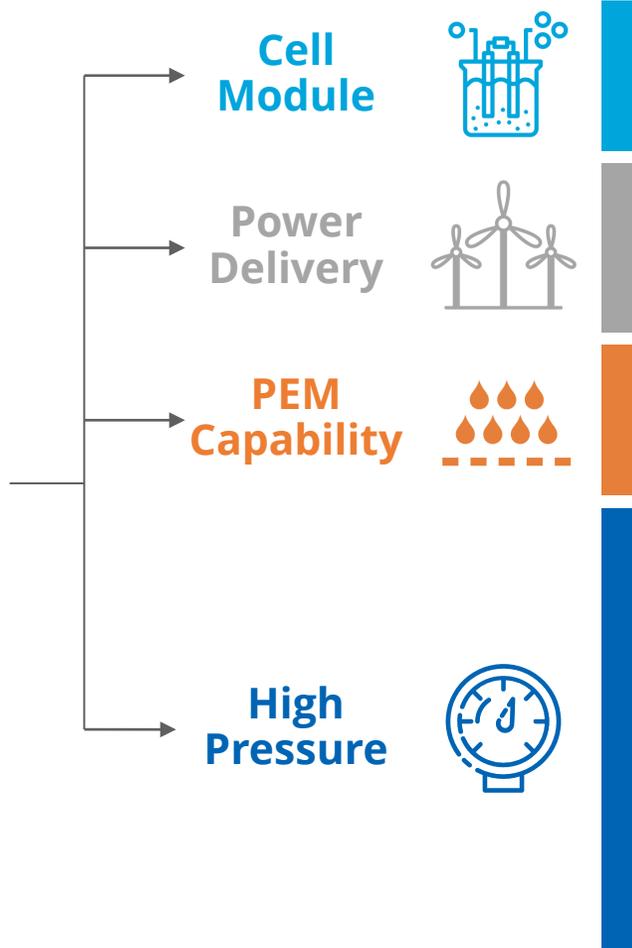
"We are pleased to partner with Next Hydrogen specializing in state-of-the-art water electrolysis technology. This partnership is another leap forward for our hydrogen business and will be our first step into the alkaline water electrolysis market," said Jae-Hyuk Oh, Vice President and Head of Energy Business Development Group at Hyundai Motor Group. "We believe our technology will be an excellent match for Next Hydrogen's technology, and this synergy will help achieve our goal to provide our customers with cost-effective green hydrogen."

Patent Portfolio Geared Towards Green Hydrogen from the Beginning



NextHydrogen

- 39 Patents
- 27 European Registrations
- 1 Pending Application



Electrolyzer Module

- Core water electrolyzer module design

Power Dispatch System for Electrolytic Production of Hydrogen from Wind Power

- Connection of water electrolyzers to wind farms

Polymer Electrolyte Membrane Water Electrolyzer Cell Module

- PEM water electrolyzer module design

Externally-Reinforced Electrolyzer Module

- High pressure water electrolyzer design

Internally-Reinforced Electrolyzer Module

- High pressure water electrolyzer design

End Pressure Plate for Electrolyzer

- End pressure plates for electrolyzer modules and stacks

Priority

Filing Location⁽¹⁾⁽²⁾

July 2008

US (3), PCT, CA, EP, CN, IN

October 2008

US (3), PCT, CA (2), EP (2), CN, IN (2)

August 2009

US (2), PCT, CA (2), EP, CN, IN (2)

September 2012

US, PCT, CA, EP, CN, IN

September 2012

US, PCT, CA, EP, CN, IN

March 2013

US (2), PCT, CA, EP, CN, IN

1. Inclusive of patents and registrations in different stages (issued and pending).
2. US – United States; CA – Canada; EP – Europe; CN – China; IN – India; PCT – Patent Cooperation Treaty.

Next Hydrogen Product Roadmap

- 2022**
 - Advance NH100 and NH300 demonstration projects
 - Implement cost reduction and efficiency improvement upgrades on NH100 and NH300 containerized product line.
 - Develop multi-stack solution with Black & Veatch (20MW)
 - Advance project with Hyundai and Kia to develop improved electrolyser
 - Initiate development of the next generation ~10 MW EM (Green Giant)
- 2023**
 - Deliver NH100s and NH300s to commercial customers
 - Deliver multi-stack solutions (20MW) with EPC partner (B&V)
 - Advance development of the Green Giant program
- 2024**
 - Demonstrate next gen Green Giant for 100+ MW projects

Producing the lowest levelized cost of hydrogen through increased efficiency and decreased capital cost

Financial Highlights

Share Capitalization

		Management	
Issued and outstanding	22,888,436	4,873,197	21.3%
Options	3,271,626	2,321,626	71.0%
DSUs	135,288	135,288	100.0%
Fully diluted shares	26,295,350	7,330,111	27.9%

No single shareholder owns more than 20%

Balance Sheet at September 30, 2022

Assets	
Current	
Cash and cash equivalents	\$25,834,547
Trade and other receivables	540,804
Prepaid expenses and deposits	810,651
Inventory	<u>3,745,676</u>
	30,931,678
Prepaid expenses and deposits	90,328
Equipment	4,717,906
Right of use asset	1,755,570
Patents	696,397
Intangible assets and goodwill	<u>296,273</u>
	\$38,488,152
Liabilities	
Current	
Bank indebtedness	\$ 60,000
Trade and other payables	1,733,947
Contingent liability	14,968
Deferred revenue	2,774,888
Provisions	907,910
Finance lease liability	67,108
Long-term debt	<u>97,189</u>
	5,656,010
Contingent liability	48,216
Deferred revenue	381,203
Provisions	1,672,318
Finance lease liability	1,774,822
Long-term debt	<u>100,357</u>
	9,632,926
Shareholders' Equity	
Share capital	76,393,695
Contributed surplus	5,321,677
Retained deficit	<u>(52,860,146)</u>
	28,855,226
	\$38,488,152

Conclusions

- Next Hydrogen has developed the world's first Alkaline electrolyzer that is designed to:
 - Integrate with intermittent renewable power
 - Operate at up to 2.5X the current density of competitors
 - Produce the lowest levelized cost of green hydrogen
- Next Hydrogen is partnered with Black & Veatch to develop optimized hydrogen plants
 - Next Hydrogen is working with Black & Veatch to develop a 20+MW solution
 - Next Hydrogen is developing ~10MW stack as building block for mega scale projects
- Next Hydrogen has created a center of excellence that provides a scalable foundation for manufacturing and technology development
- Next Hydrogen is in active conversations with strategic partners in countries that have low-cost manufacturing and a desire to decarbonize through the deployment of electrolysis



Appendix

Senior Leadership



President & CEO
CFA, B.Math, B.Econ

Raveel Afzaal

- 10+ years capital markets experience as an equity research analyst and venture capitalist
- Most recently led Canadian Sustainability & Special Situations verticals for Canaccord Genuity



Chief Financial Officer
CPA, CA, CPA(IL), MAcc

Kasia Malz

- 15+ years diverse financial leadership experience
- 10 years public company CFO and start-up experience, most recently with Titanium Transportation Group where she took the company public and grew the business from \$40M to \$200M in revenue



Chair of the Board
BSc, BA, MBA

Allan Mackenzie

- Owner and principal of Disruptive Ventures
- 15+ years of total investing experience, previously, a partner of Octane Venture Partners
- Has served as Chairman of two software technology companies, Tynt and Optessa



Board Director
M.Eng, MBA

Walter Howard

- Extensive career spanning operations, business development, finance, and M&A in the utility industry
- 35+ years in senior executive positions in related syngas, wind energy, and cogeneration firms

cg/Canaccord
Genuity

xpv

TITANIUM
Transportation Group Inc.

EY

Optessa
Intelligent Planning & Scheduling

OCTANE
VENTURE PARTNERS

Westinghouse

ZeGen
Accelerating The Transition

Noble
ENVIRONMENTAL POWER

GE Capital

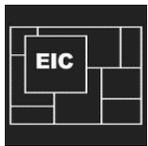
Board Contributes Invaluable Leadership Experience



Board Director
BA, MBA

Michael Pyle

- CEO of Exchange Income Corporation and previously President of The Arctic Glacier Income Fund
- Director of CentrePort Canada Inc. and of the Winnipeg Blue Bombers Football Club



Board Director
BSc, MSc

JP Clausen

- VP of Engineering - Data Center Advanced Technology Innovation at Google
- Has held executive roles in manufacturing, engineering, and operations at LEGO Group, Tesla, and Zymergen



Board Director
CPA, CA, MAcc, EMBA

Susan Uthayakumar

- 25 years experience in finance and executive management
- President of Schneider Electric Canada since 2018
- Executed global growth strategies and acquisitions across North America, Europe and Asia previously at McCain



Board Director
BA, MBA

Anthony Guglielmin

- Previously SVP and Chief Financial Officer of Ballard Power Systems
- Also board member of Westport Fuel Systems, Information Services Corporation, and other private and not-for-profit organizations



Alkaline and PEM Industry KPIs

Parameter	PEM				Alkaline		
	Unit	State of the art	FCH-JU Target		State of the art	FCH-JU Target	
		2020	2024	2030		2020	2024
Electricity Consumption at Nominal Capacity	kWh/kg	55	52	50	50	49	48
Capital Cost	US\$/(kg/d)	2,500	1,800	1,200	1,500	1,200	940
	US\$/kW	1,100	820	590	700	560	470
Current Density	A/cm ²	2.2	2.4	3	0.6	0.7	1
Hot Idle Ramp Time	sec	2	1	1	60	30	10
Cold Start Ramp Time	sec	30	10	10	3,600	900	300

Based on a 100MW system

Sources: EERA & Hydrogen Europe Research Multi-Annual Work Program, 06/08/2020, Key Performance Indicators (KPIs) for FCH Research and Innovation, 2020-2030, Version: 5.0.

Hydrogen Europe & Hydrogen Europe Research Strategic Research and Innovation Agenda Clean Hydrogen for Europe, Final Draft, October 2020

Clean Hydrogen Joint Undertaking Multi-Annual Work Plan 2021-2027, Working Draft Version 3, 29/07/2021

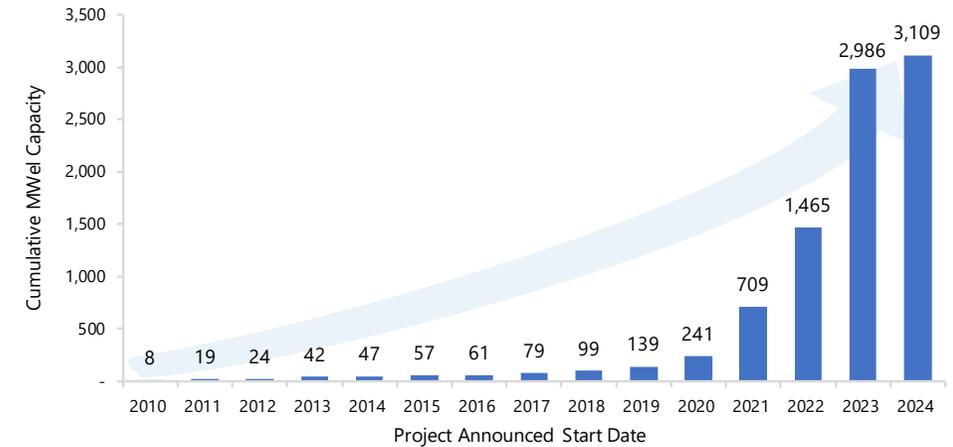
Exchange: 1 USD= 0.86 Euro

Corporate Led Hydrogen Projects Increasing Globally



Many large corporations have announced plans to operate green hydrogen production plants globally

Electrolysis Produced Hydrogen Capacity Increasing Exponentially

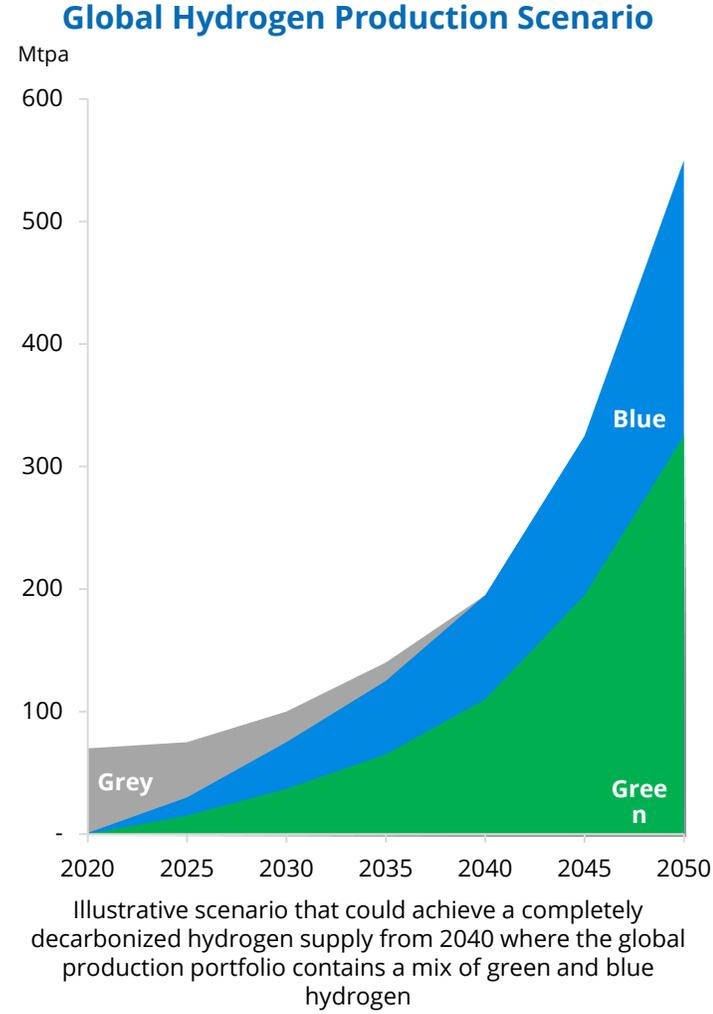
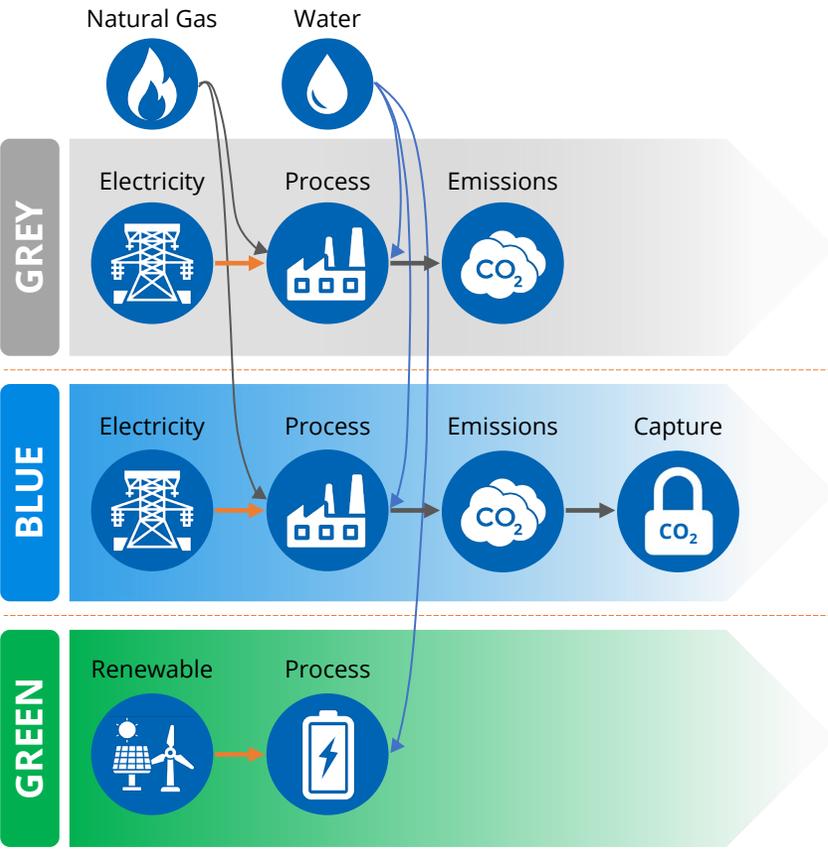


Select Projects Expected to Come Online

Start Date	Project Name	Companies	Capacity
2020	Air Liquide Bécancour	Air Liquide, HYDROGENICS	20 MW
2021	Port Lincoln, Eyre Peninsula	H2U, thyssenkrupp	30 MW
2022	ECB Paraguay	thyssenkrupp	310 MW
2022	H2V France Phase 1	H2V, Air Liquide	100 MW
2023	H2V France Phase 2	H2V, Air Liquide	100 MW
2023	Hybridge Germany	amprion, OGE	100 MW
2023	Shell - Port of Rotterdam	Shell, Eneco	200 MW
2023	Hydro-Québec	Hydro Québec, thyssenkrupp	88 MW
2024	GreenHydroChem Central	SIEMENS, Linde	120 MW

Source: IEA Hydrogen Project Database, press releases, and publicly available information.

Hydrogen's Supply Needs to be Decarbonized



Currently, green hydrogen makes up less than 0.1% of the world's hydrogen supply

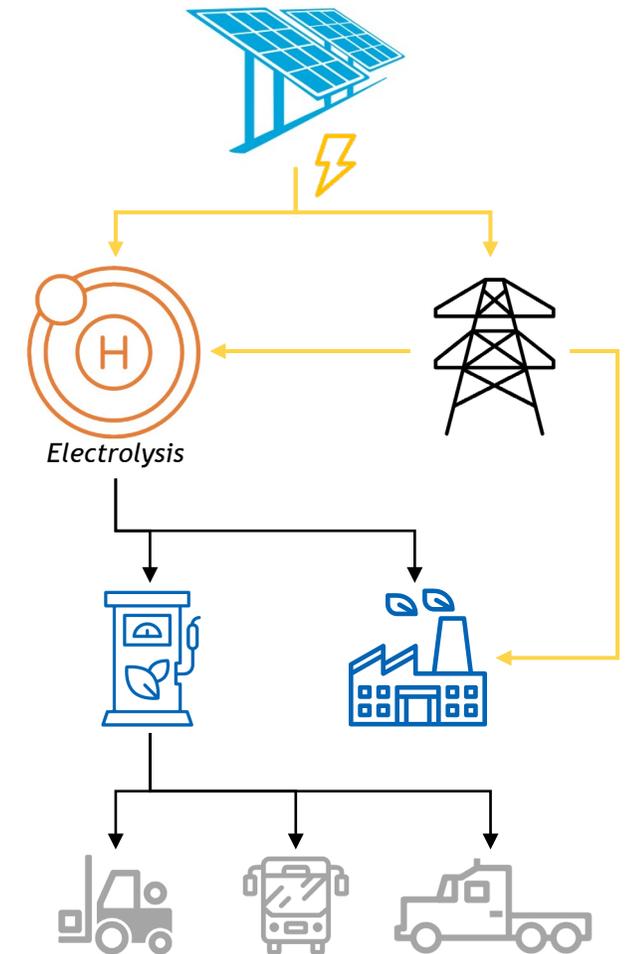
To take a central role in the energy transition, existing and new uses of hydrogen need to be met with decarbonized or clean hydrogen production sources

Source: Hydrogen Council reports, Green Hydrogen Coalition, Pembina Institute, press releases, and publicly available information.

Illustrative Excess Solar Energy Capture for H₂ Production Scenario Assumptions

Key Assumptions

- Solar Energy
 - Large solar installation that sells the first 50% of its name plate capacity through a Power Purchase Agreement
 - Electrolysis capacity to capture the remaining 50% of solar generation for hydrogen production
 - Excess power would often be wasted, therefore Next Hydrogen expects to be able to capture that energy at a cheaper rate of \$15/MWh
 - Overall solar plant capacity factor of 26%
- Electrolysis
 - Base case electrolysis is based on future electrolysis KPI targets published in the European FCH2JC 2020 Report
 - Next Hydrogen's electrolysis unit is based off being able to achieve the base case targets while running at 50% of our rated capacity due to the 2x higher current density
 - The cost reduction for a Next Hydrogen electrolyzer only applies to the cell stack cost, with external balance of plant costs being held constant
- Economics
 - Project is projected to be built in 2024
 - Discount rate and cost of acquiring capital at 8%
 - Project lifespan estimated to be 25 years

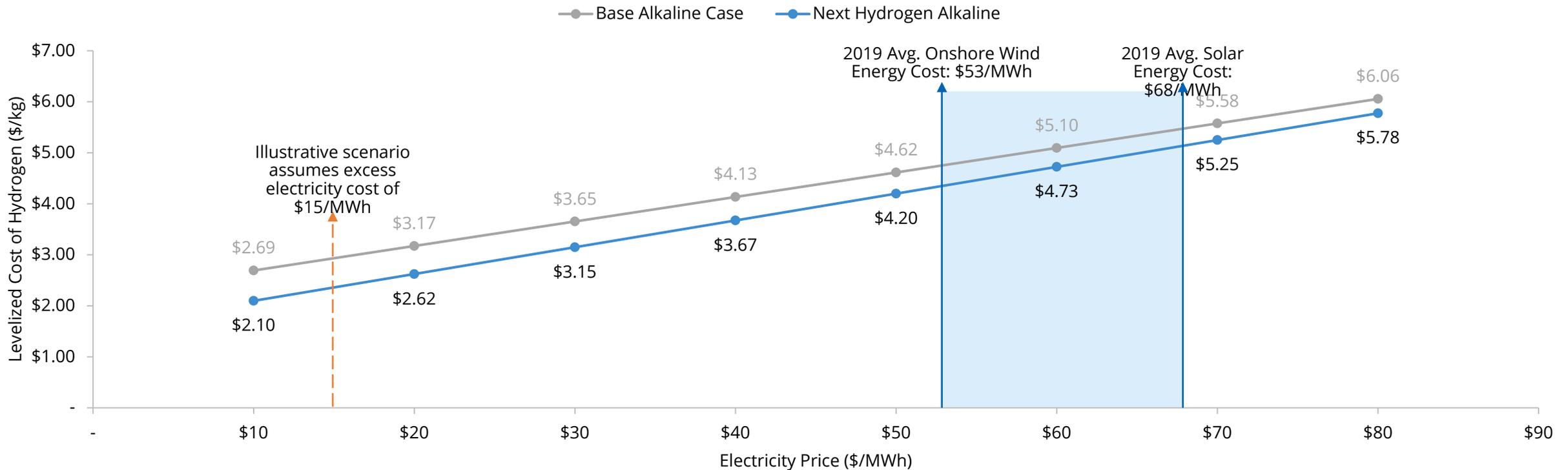


Illustrative Excess Solar Energy Capture for H₂ Production Scenario Sensitivity

Sensitivity Analysis – Impact of Electricity Pricing

- The lower the electricity price, the better Next Hydrogen's capital cost advantage becomes
- The low-capacity factor for capturing excess solar energy results in Next Hydrogen's capital cost advantage making it more economical for most electricity prices

2024 Excess Solar Energy Green H₂ Production - Electricity Price Sensitivity



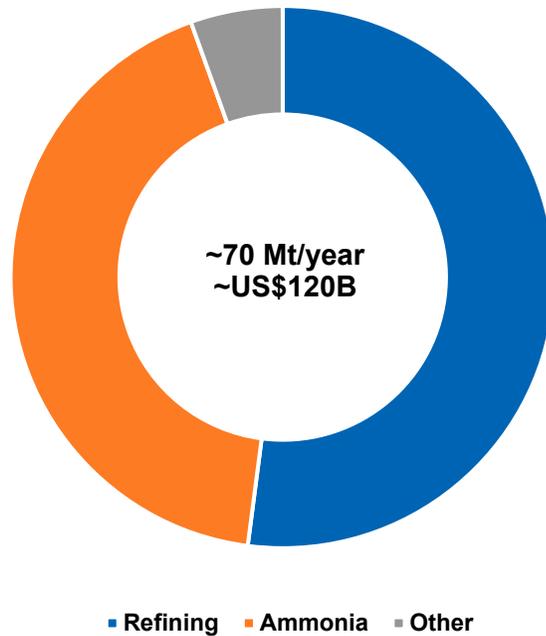
Source: Next Hydrogen, IRENA Renewable Power Generation Cost 2020, and publicly available information.

The Green Hydrogen Opportunity

Large Existing Market for Hydrogen – Green To Replace Grey

- 70 million tons per year = US\$120 billion annually
- 95% of hydrogen used for industrial purposes is derived from fossil fuels
- 830 million tons per year CO₂ emissions

Global hydrogen market by end use
Mt H₂ per year



Hydrogen Market Set To Grow 8x

Global energy demand supplied by hydrogen, Mt

