



# JV JERICHO

ENERGY VENTURES

ADVANCING A LOW-CARBON ENERGY TRANSITION

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- Presentation and Reader Advisory

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# *JERICHO ENERGY VENTURES*



LOW-CARBON ENERGY  
SOLUTIONS



**JEV** JERICHO  
ENERGY VENTURES



## OUR VISION

- Jericho Energy Ventures envisions a transition towards affordable, accessible and resilient clean energy

## WHY

- Meeting today's demands while solving tomorrow's climate challenges for Fortune 500 and sustainability-focused corporations and governments will take a multi-faceted approach and a rethinking of our current energy systems

# INVESTMENT AND VALUE PROPOSITION



- Identify pre-revenue or early-revenue growth companies with promising h2 technology and applications
- Portfolio of venture stage companies with synergistic attributes in the hydrogen, energy storage, and CCUS markets
- Sustain oil portfolio for value



- Capability to attract highly strategic partners and customers to enable efficient scaling of capital-intensive technological innovations
- Support from enviable, long-term and dedicated shareholders



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ENERGY VENTURES

# THE ENERGY TRANSITION: RESILIENT AND LOW-CARBON

## Government and Public Policy

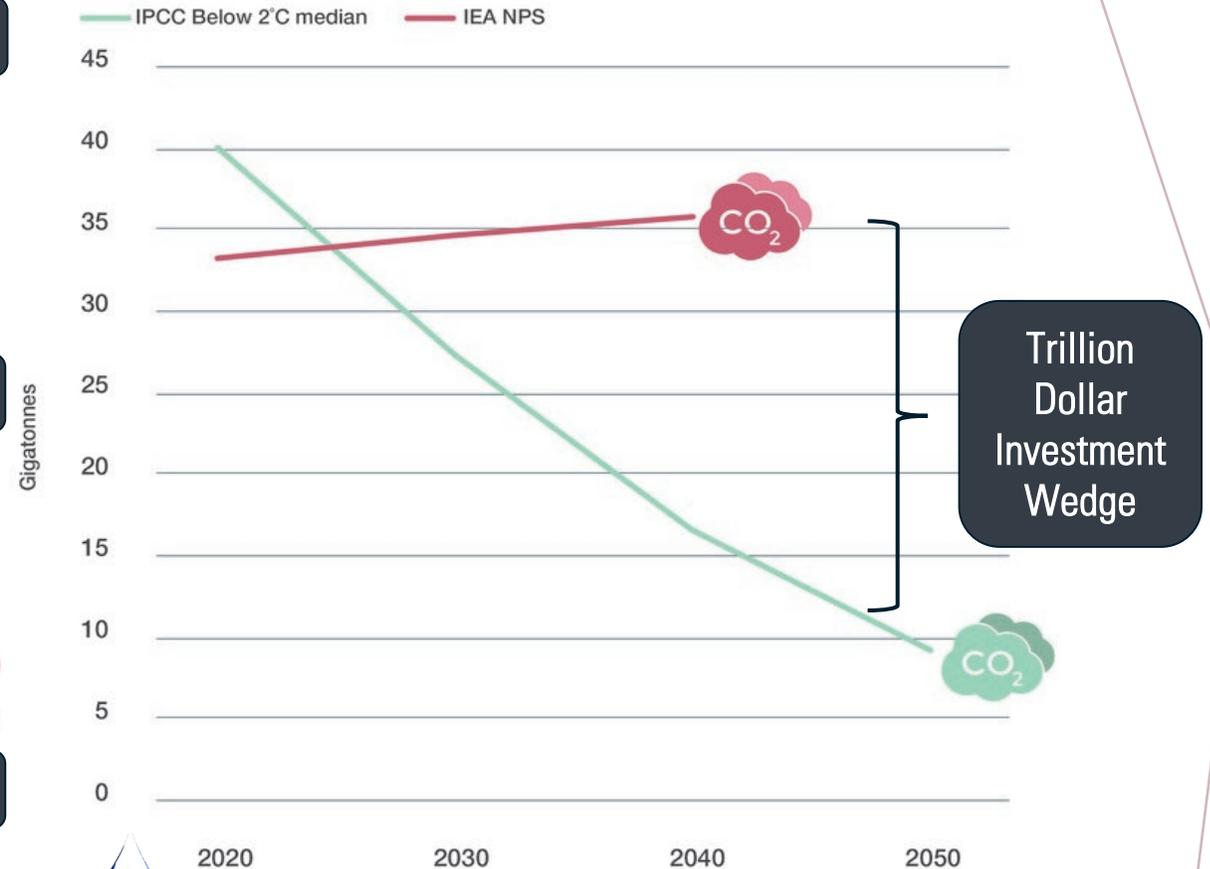
- 197 Countries that have adopted the Paris Climate Accord
- 4 Largest Economies have announced Net Zero Carbon Emissions targets (U.S. China, Japan, EU)
- 1.5 Degree Limit on Global Temperature Increase (vs. pre-industrial)

## Corporate Investment with Ambitious Net-Zero Carbon Pledges



## Investor & Societal Demands<sup>1</sup>

- 30 global institutional investors representing >\$5trn assets formed the Net-Zero Asset Owner Alliance, aligning portfolios with the Paris Agreement
- Blackrock, the largest asset manager, and other global funds holding \$18trn in assets have announced reallocating capital towards sustainable and purposeful investments
- ESG ETF assets have increased more than 700% from just \$6.6bn in 2018 to nearly \$50bn in 2020

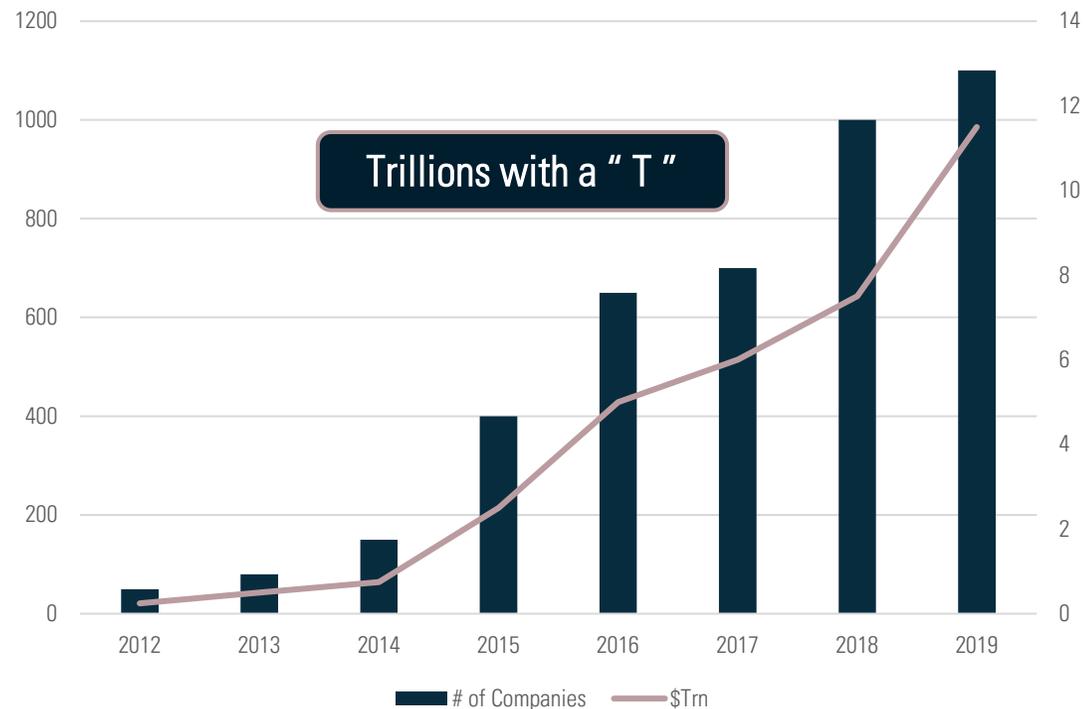


Triumvirate of forces present a New Energy Reality – rapidly shifting towards sustainable practices, assets and businesses with an aim towards a Low-Carbon Economy

<sup>1</sup> Source: Wall Street Equity Research; Raymond James (2020), BAML (2020)

# THE ENERGY TRANSITION MOVEMENT...

## Growth in total assets of divesting institutions<sup>1</sup>



## What is the net result ?

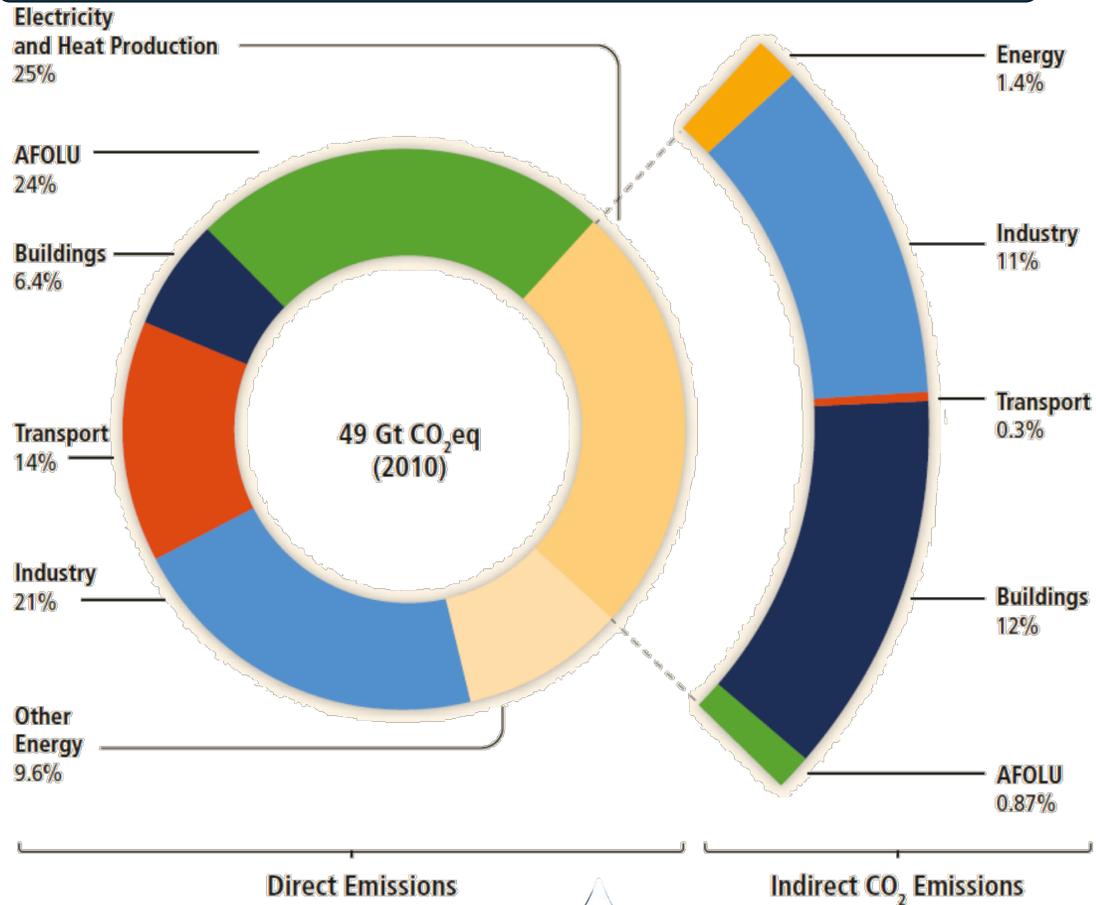
- The cost of capital for hydrocarbon projects reaching as high as 20%, where renewable projects are as low as 3%
- Renewable Capex is slated to surpass Oil & Gas drilling capex in 2021
- Renewable spend accounting for ~25% of all new Energy Spending



Divestment commitments include sovereign wealth funds, pension funds, insurers, universities, foundations and cities leading to a divergence in the cost of capital for fossil fuel and renewables projects driving investment decisions and capital allocation

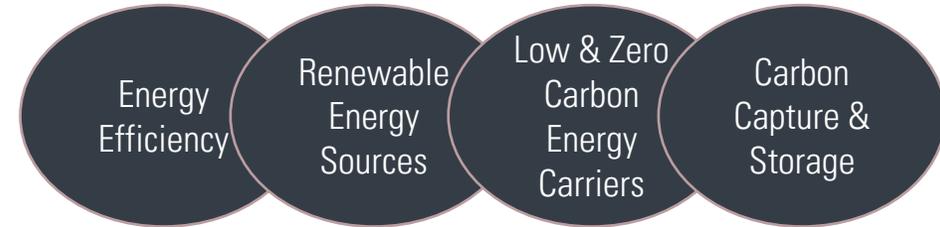
# ...WILL HAVE A MULTI-FACETED APPROACH

## Greenhouse Gas Emissions by Economic Sector<sup>1</sup>

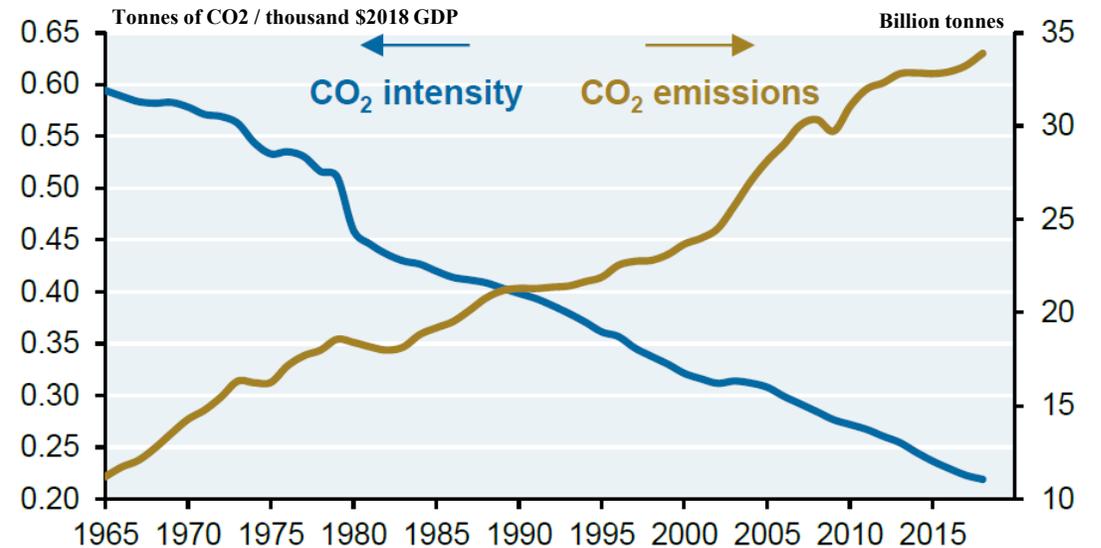


AFOLU: Agriculture, forestry and other land use

## Main Levers for De-Carbonization



## Global CO<sub>2</sub> intensity declining, CO<sub>2</sub> emissions rising



The energy transition will not be an 'all or nothing' solution – the investment wedge will be multi-faceted

# THE PRICE OF CARBON

## What is Carbon Pricing?

- GOAL: Capture the external costs of greenhouse gas (GHG) emissions and ties them to their sources through a price, usually in the form of a price on the carbon dioxide (CO<sub>2</sub>) emitted.
- Instead of dictating who should reduce emissions where and how, a carbon price provides an economic signal to emitters, and allows them to decide to either transform their activities and lower their emissions or continue emitting and paying for their emissions.
- Placing an adequate price on GHG emissions is of fundamental relevance to internalize the external cost of climate change in the broadest possible range of economic decision making and in setting economic incentives for clean development. It can help to mobilize the financial investments required to stimulate clean technology and market innovation, fueling new, low-carbon drivers of economic growth.



Global jurisdictions are pushing the price of carbon up – an eventual ubiquitous tool for decarbonization – handing current energy providers and consumers a clear signal: cut CO<sub>2</sub> emissions or seek increased competitiveness with alternative clean fuels and technologies

## Key details on Regional, National and Subnational Carbon Pricing

- 64 Carbon Pricing Initiatives implemented or scheduled for implementation
- 46 National and 35 Subnational
- In 2020, these initiatives would cover 12 GtCO<sub>2</sub>e, representing 22% of global GHG emissions
- A carbon price approaching \$100 / CO<sub>2</sub>e tonne would see many fossil fuel-based energy systems become cost competitive with clean alternatives
- EU: ~\$30
- Canada: Phased in to reach C\$50 by 2022 and \$133 by 2030



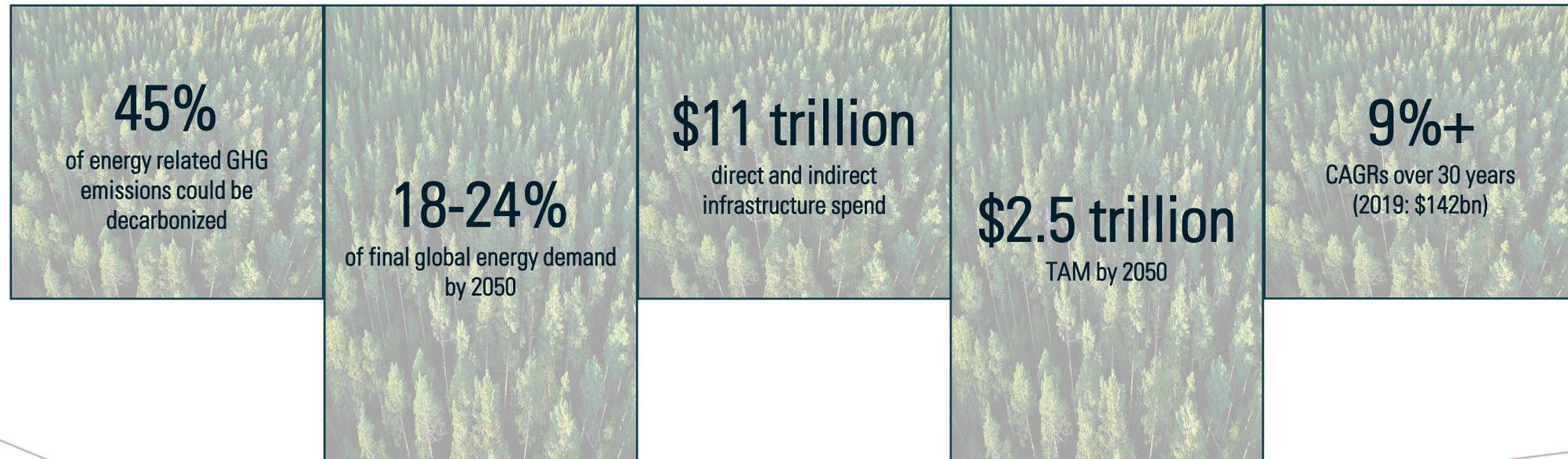
# *H<sub>2</sub> IS KEY TO A LOW CARBON FUTURE*

Hydrogen is a clean molecule set to decarbonize our energy needs...

## Hydrogen (H<sub>2</sub>) – An Advantaged Molecule:

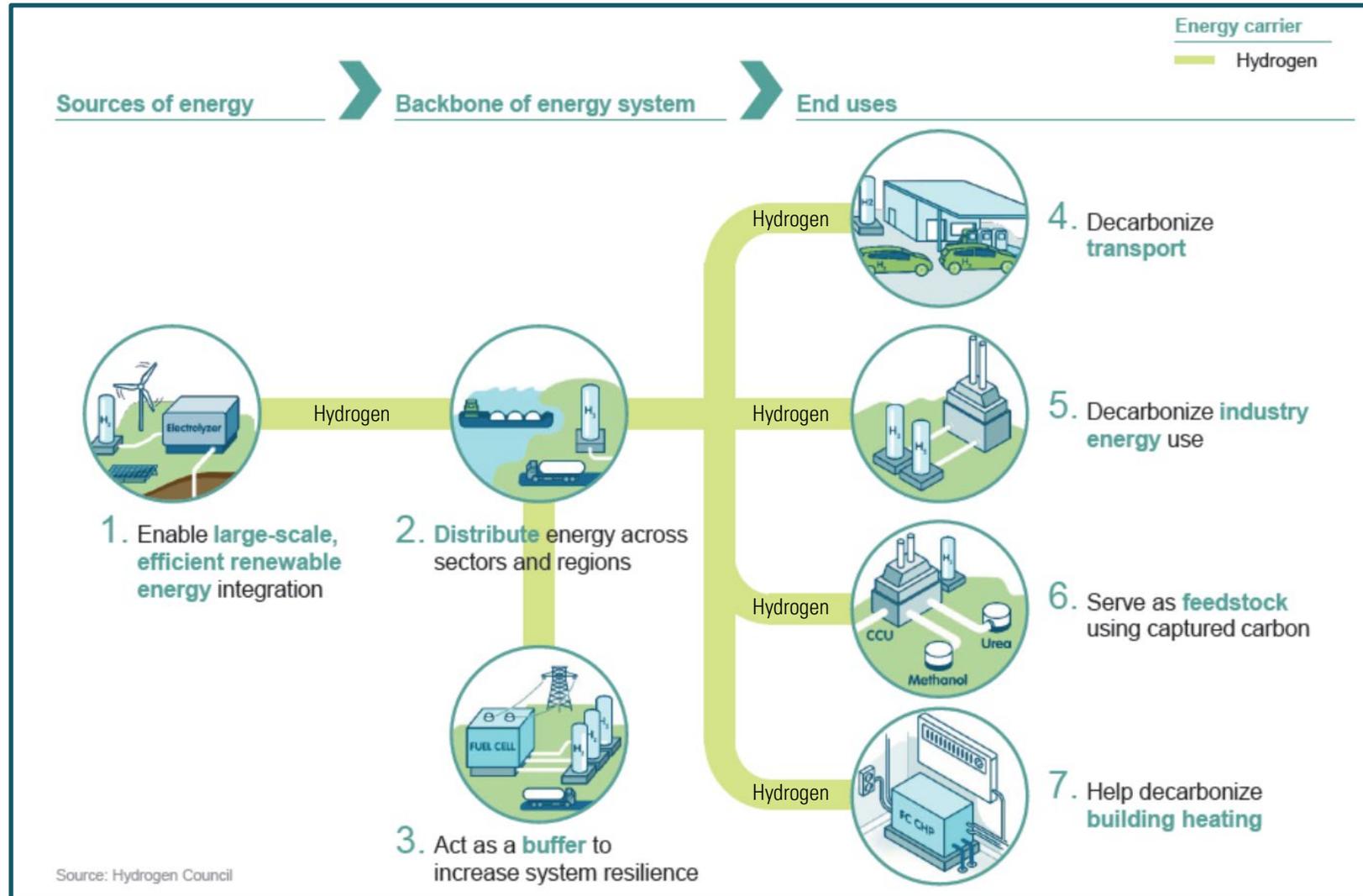
- Most abundant and simple element in the universe, colorless and odorless
- Clean-burning, zero emission fuel for storing and releasing energy and to be used as a feedstock
  - >2.5x the energy content per unit mass of gasoline and >2x that of natural gas
- Largely found in compound forms: water and hydrocarbons (water = H<sub>2</sub>O, methane=CH<sub>4</sub>)
- Occurs as a gas under ambient pressure and temperature and liquid at low temperatures

...with a Large and Growing Global Addressable Market<sup>1</sup>



<sup>1</sup> Source: Wall Street Equity Research; Raymond James (2020), BAML (2020)

# HIGHLY VERSATILE – MULTIPLE MARKET APPLICATIONS



# THE ENERGY TRANSITION – ROLE OF HYDROGEN

## 1 Enable Large-Scale, Efficient Renewable Energy Integration

- Renewable power (wind, solar, hydro) slated to become 56% of the electricity mix, increasing between 3-5x the current deployments by 2050<sup>5</sup>
- Timing of variable and intermittent electricity supply and demand is not well matched (neither over the day nor between seasons)
- Ideally suited for both Solar PV and wind generation enhancement – co-location of h2 assets on solar or wind farms to store off-peak intermittent renewable energy production and provide on-peak energy at higher prices across daily and seasonal swings

## 2 Distribute Energy Across Sectors and Regions

- Resource poor regions (countries or states) that cannot generate sufficient energy from wind and solar will need the ability to import / export
- h2's high energy density and gaseous and liquid state allow for effective and flexible transport by pipeline or ship vessel
- Unlike electricity energy losses over long distances, h2 reaches almost 100% efficiency making it an economically attractive option at scale / distance

## 3 Act as a Buffer to Increase Electric Grid System Resilience

- h2 as a means of flexible power generation is uniquely positioned as a replacement for older vintage gas-fired generation
- h2 is well positioned for grid congestion solution, whereby hydrogen is used for peak shaving in specific locations where infrastructure constraints create need for transmission and/or distribution upgrades and market congestion is highly volatile
- h2's ability to act as a means of energy dense storage provides variable and flexible backup power capacity and serves as a strategic reserve

## 4 Decarbonize Transport (14%)

- Fuel cell electric vehicles (FCEVs) can be an alternative de-carbonization solution for transport, with short refueling time, longer ranges and lower weight useful in long-haul and heavy transportation
- Rail / Shipping / Marine: h2 could be useful de-carbonization tools particularly for rail and shipping freight
- Aviation: h2-based synthetic fuels (power-2-liquids) can be a solutions with minimal changes to existing infrastructure

## 5 Decarbonize Industry Energy Usage (20%)

- Sectors such as steel, cement, aluminum, paper, glass and building could uses hydrogen as a source or blend for low and high-grade process heat
- h2 as both a source of heat and power (via fuel cell) will help industry move towards a lower-carbon footprint
- Cement and concrete alone account for 7% of all GHG emissions and would rank 3<sup>rd</sup> behind China and the US, if compared

# THE ENERGY TRANSITION – ROLE OF HYDROGEN

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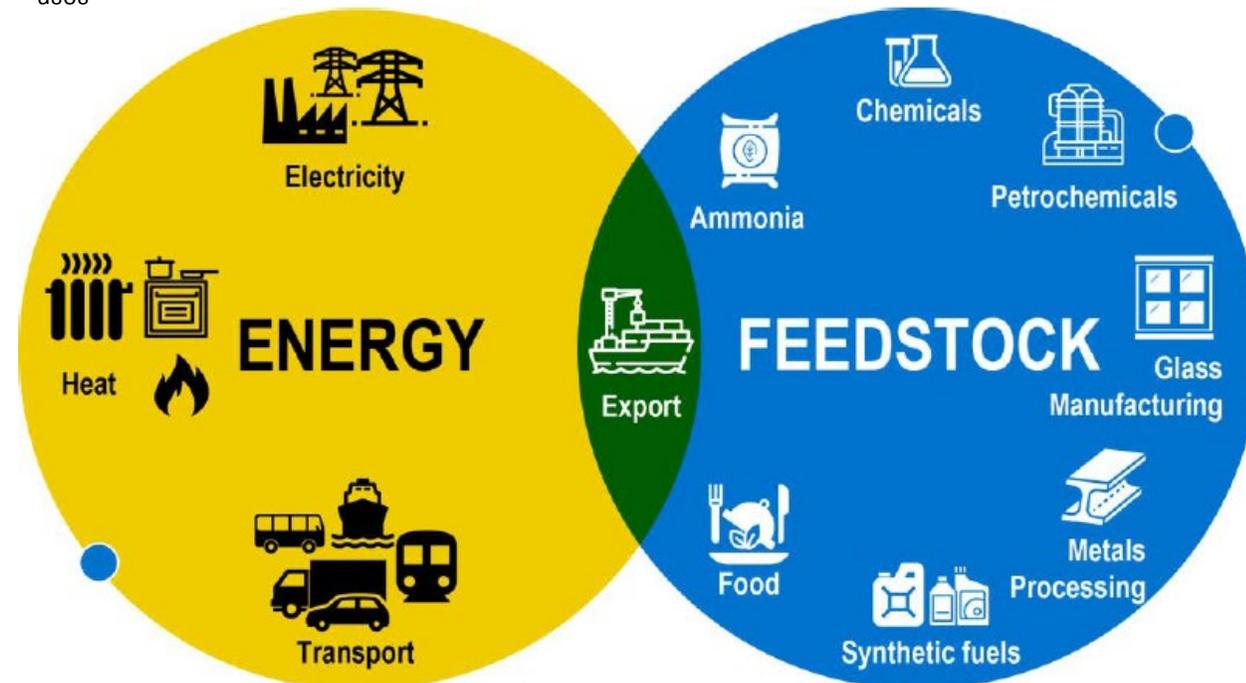
Serve as Feedstock using Captured Carbon

- h2 is central to many primary chemical industrial processes including production of ammonia and methanol and to process crude oil into refined fuels such as gasoline and diesel – the use of green h2 would aid in decarbonization
- Oil refining is the largest source of hydrogen demand and the uses of green h2 could be used to replace higher carbon intensity merchant purchases

7

Help Decarbonize Building Heat (12%)

- 15% of global energy consumption (representing 12% of GHG) is dedicated to space and water heating in buildings, mostly burning fossil fuels
- Space and water heating represents 43-60% of total buildings consumption representing a \$240 billion annual market (BAML100)
- h2 is an efficient carbon-free heat AND power source, whether produced by hydrogen-fired boiler or fuel cell to both commercial and residential uses

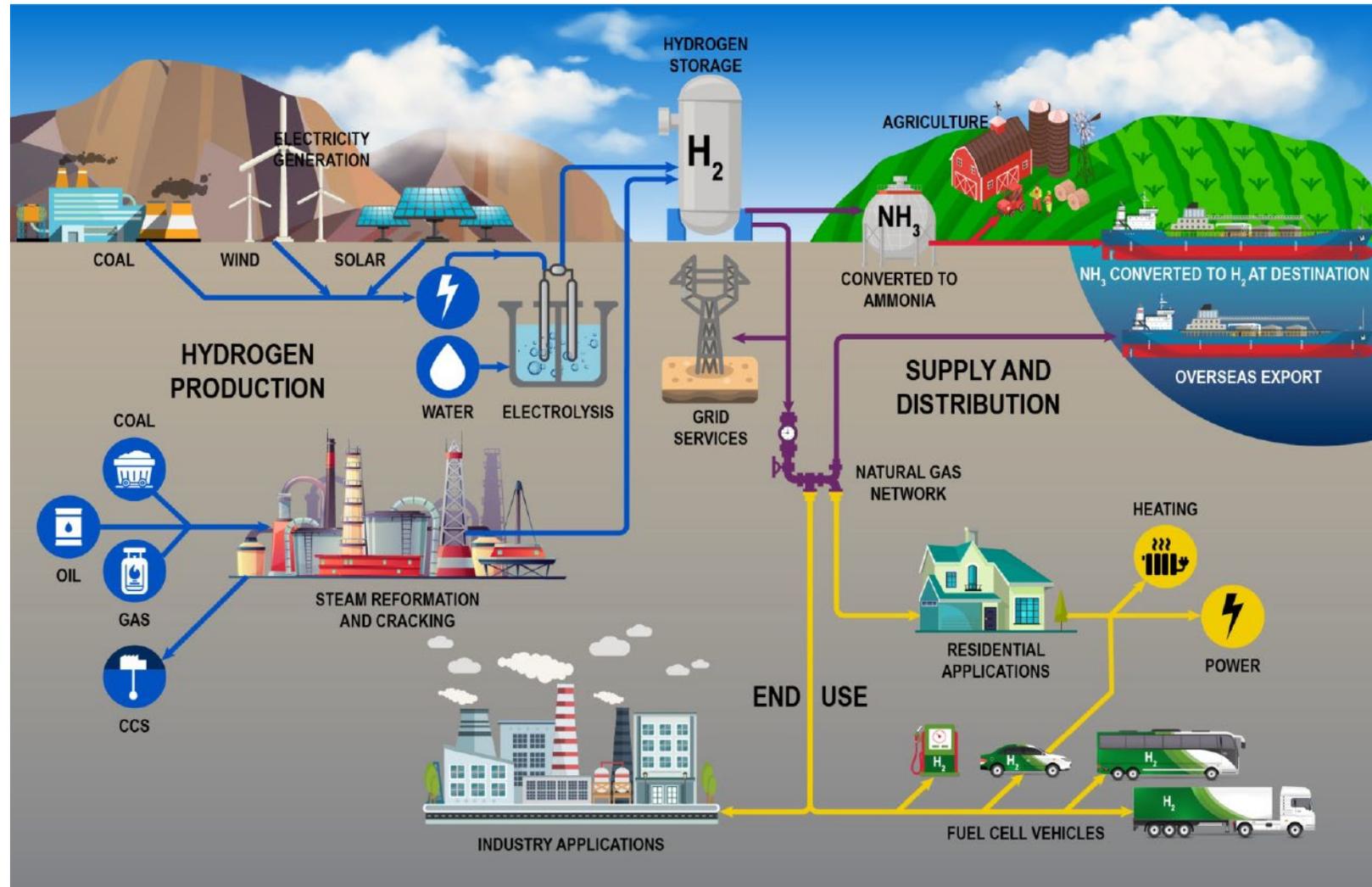


# HYDROGEN ACROSS THE VALUE CHAIN

- Production, storage, transportation and usage across multiple end markets
- End markets include:
  - Power Generation / Grid Balancing
  - Transportation
  - Fuel for Industry
  - Feedstock for Industry
  - Fuel for Residential and Commercial Buildings



Jericho Energy Ventures will look to invest throughout the h2 value chain focusing primarily on production and end use markets



# JERICHO ENERGY VENTURES

## Macro tailwinds, driving trillions in capital flows...

- Jericho Energy Ventures envisions a transition towards affordable, accessible and resilient clean energy
- With the ability to identify and scale advantaged technologies with strategic partners
- Triumvirate of forces present a New Energy Reality – rapidly shifting towards sustainable practices, assets and businesses with an aim towards a Low-Carbon Economy
- Divestment commitments from largest asset managers are leading to a divergence in the cost of capital for fossil and renewables driving investment decisions and capital allocation
- Global jurisdictions are pushing the price of carbon up handing current energy providers and consumers a clear signal
- The energy transition will not be an 'all or nothing' solution – the investment wedge will be multi-faceted and backed by tens of trillions in investment

## ...Encouraging Investment in Decarbonization Solutions

- H2 is an advantaged clean molecule with a large and growing global addressable market
- Energy density and versatility of H2 allows for multiple fuel and feedstock applications
- Certain renewable energy generation technologies have an LCOE that is competitive with marginal cost of existing generation – crucial for green hydrogen generation
- Policy makers are setting investment goals that align with driving the cost of H2 below \$2 / kg – competing with fossil alternatives in large-scale deployment across our energy systems
- Jericho Energy Ventures will look to invest throughout the H2 value chain focusing primarily on production and end use markets
- Current Investments Include: Patented hydrogen-based Heat and Steam Boiler aiming to decarbonize a \$30bn+ market

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Advancing a Low-Carbon Energy Transition

# *HYDROGEN TECHNOLOGIES*

# DISRUPTING THE C&I BOILER MARKET

## Problem with Traditional Commercial & Industrial Boiler Systems<sup>1</sup>

25%

### Price Volatility

Average Monthly Historical Price Volatility in Natural Gas prices during Winter Months

35%

### Carbon Intensive

Percentage of Industrial Boilers still powered by coal in 2019<sup>1</sup>

>85%

### GHG Emissions

Percentage of Industrial Boilers that emit harmful GHG (CO<sub>2</sub> and NO<sub>x</sub>)<sup>1</sup>

40-80%

### Aged & Inefficient

Efficiencies across traditional boiler systems that reach 40+years old

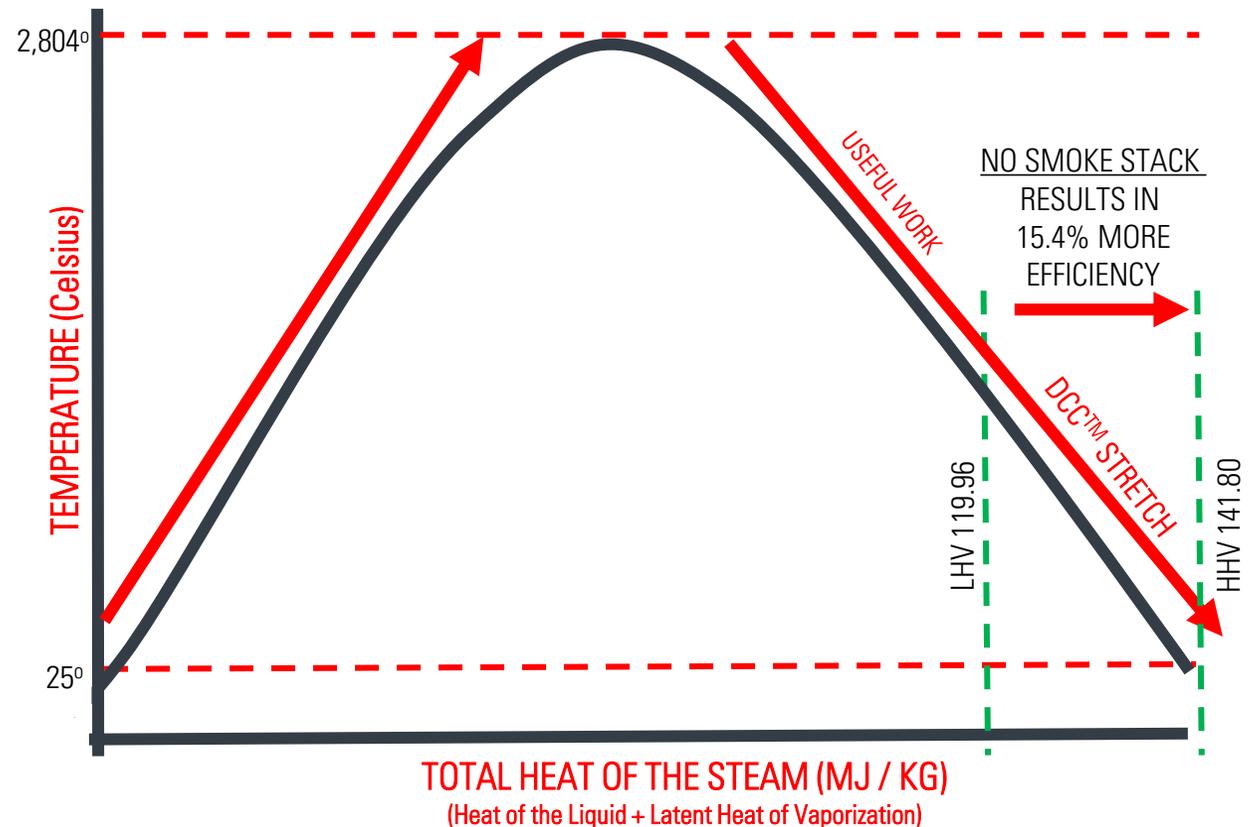
<sup>1</sup> Source: Grand View Market Research, 2020

The cleanH2steam DCC boiler is a unique zero-emissions hydrogen boiler – a bold step in the evolution of hydrogen technology.

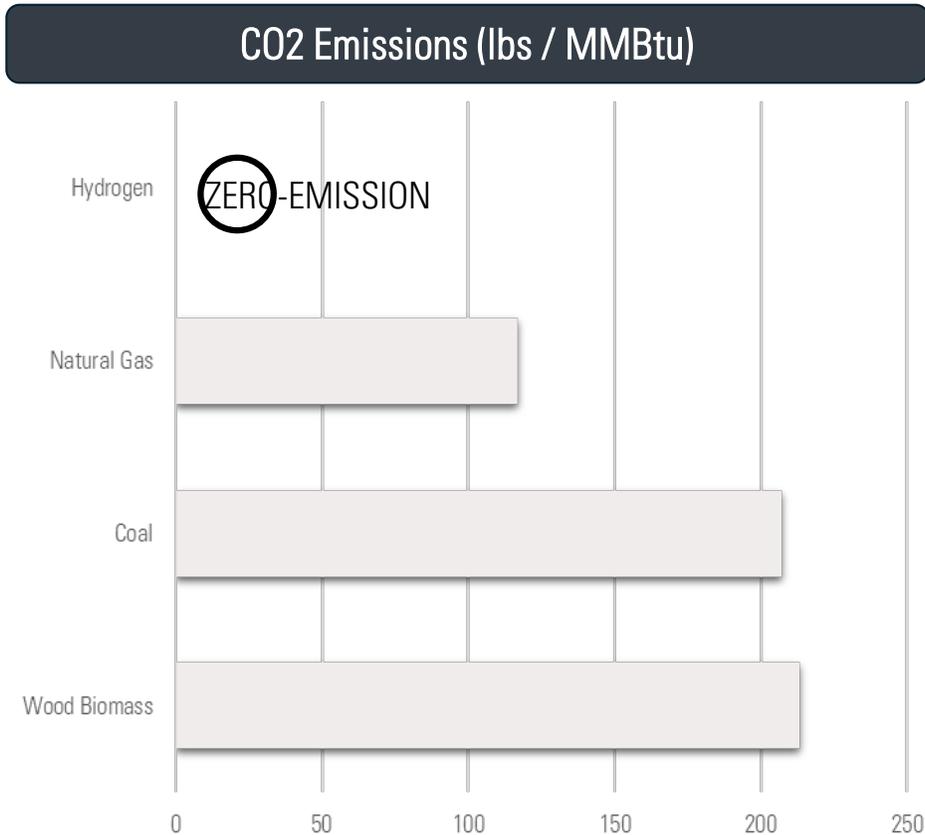
## Chemical Reaction Solution

First principles: the most efficient way to convert H<sub>2</sub> and O<sub>2</sub> into high-temperature steam

- cleanH2steam DCC boiler is HTI's proprietary hydrogen-based boiler
- The scalable process is based on combining pure hydrogen and pure oxygen to form water molecules – this reaction releases 61,000 BTUs (heat index) per pound of hydrogen
- Pure hydrogen and pure oxygen combine (in the presence of a spark) which exothermically converts back to water (think: steam) in a high-temperature reaction, creating a mild vacuum owing to the condensing characteristic of the chemical reaction
- Critically, hydrogen burns in the ultraviolet (with little to no radiant heat) compared to typical fossil-based combustion processes where radiant heat (energy) is released and lost
- The chemical reaction fully captures the total heat of steam, allowing for the greatest amount of heat retained in the combustion reaction of hydrogen and oxygen (**GRAPH** ⇒ "DCC Stretch")
- The boiler system has been specifically designed based on the chemical reaction to function as a closed-loop system, eliminating all need for typical combustion exhaust
- Its extraordinary simplicity allows us to fundamentally rethink hydrogen boilers

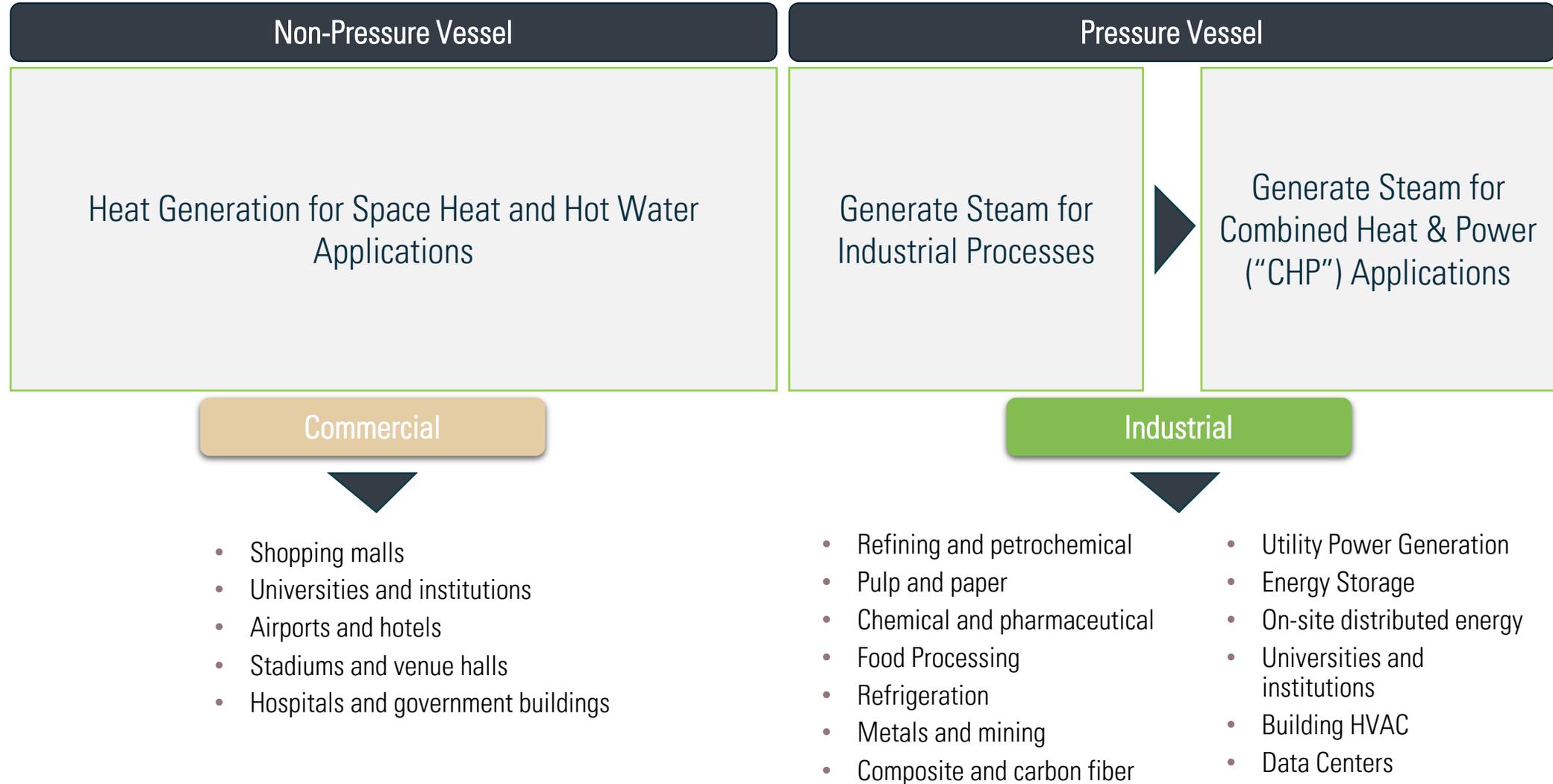


# ZERO EMISSIONS ENERGY SOLUTION



- Breakthrough high-temperature boiler that enables **zero-emissions hydrogen to generate heat, steam and Combined Heat & Power ("CHP")**
  - Water is the only by-product
  - No air permit required
- 30% greater efficiency than traditional hydrocarbon boilers with 97% boiler thermal efficiency
- Eliminates all NO<sub>x</sub> and CO<sub>2</sub> emissions through a closed-loop combustion process
- Total Cost of Production (\$ / lb steam) equivalent to current industrial boiler market

# PRODUCT OVERVIEW AND MARKET



# *BUSINESS MODEL*

Current and Future Business Lines meeting our customers needs.

## Technology Sales

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### Manufacturer and Provider of hydrogen boiler solutions

- Sell and install cleanH2steam DCC hydrogen boilers to customers seeking to own and operate their infrastructure
- Develop thermal solutions and CHP plants with global energy service companies
- Future: Full Suite of Engineering Support during feasibility, design and installation stages
- Future: IoT diagnostics and remote monitoring for on-going service & maintenance contracts

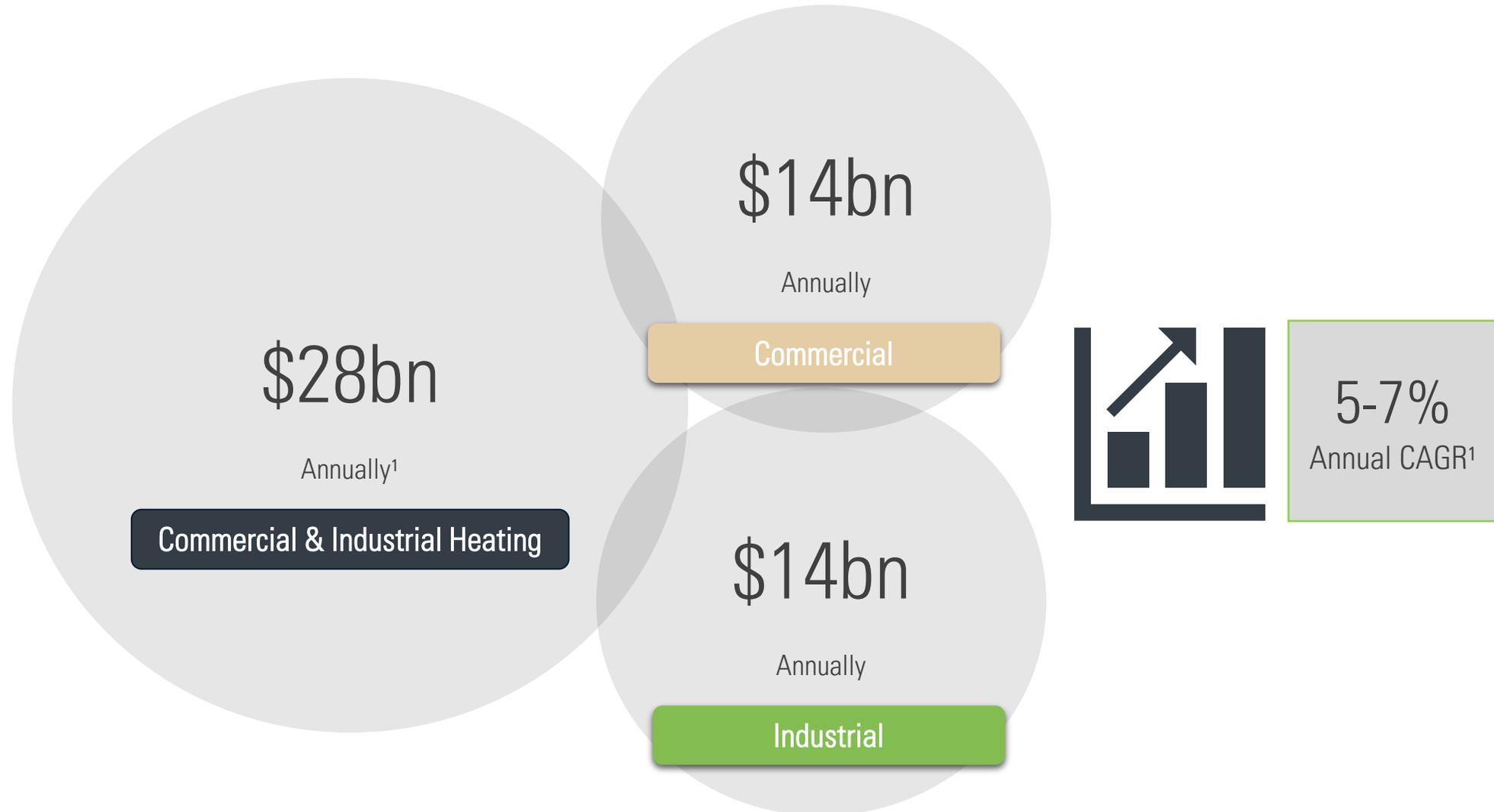
## Steam Sales

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### Seller of Steam as a Service

- Future: Develop, finance and own Thermal plants to sell steam to customers across our target markets
- Future: Sale of steam based on long-term contracts, creating visible and secure cash flow

# ADDRESSABLE MARKET SIZE



<sup>1</sup> Source: Grand View Market Research, 2020

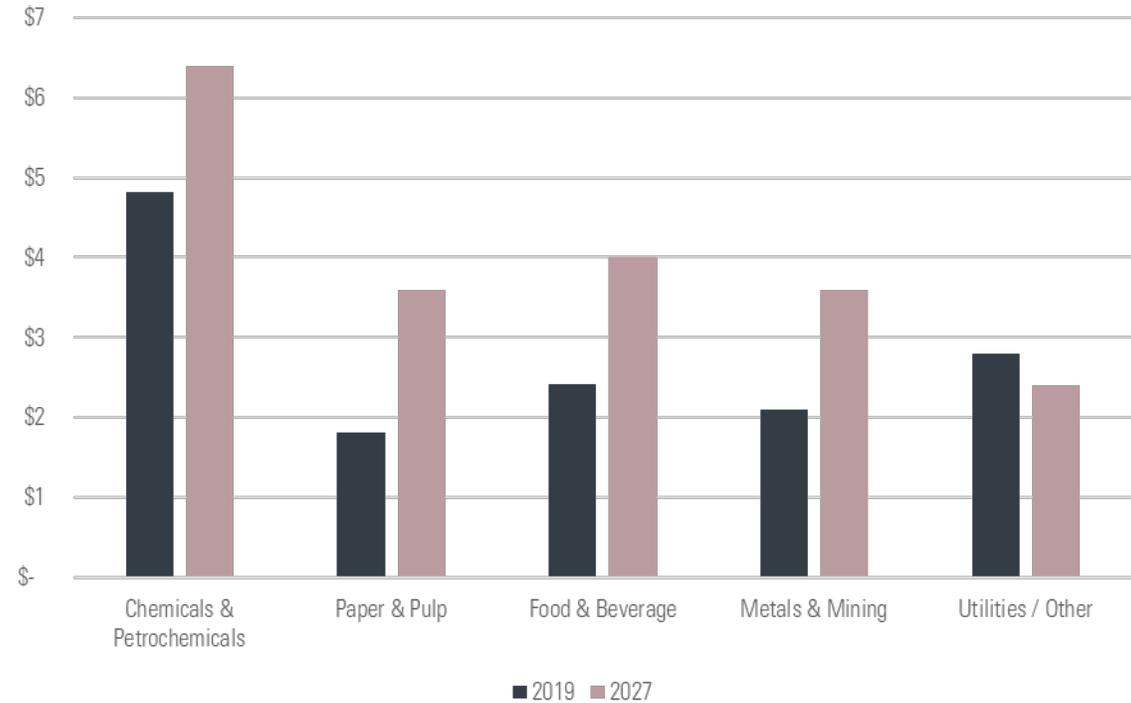
# INDUSTRIAL BOILER MARKET

\$14bn

Annually and Growing<sup>1</sup>

37%

of the Fossil Fuels Burned in US Industry is to produce Steam<sup>1</sup>



<sup>1</sup> Source: Grand View Market Research, 2020

<sup>2</sup> Source: "Steam Systems in Industry, Energy Use and Energy Efficiency Improvement Potentials", Lawrence Berkeley National Laboratory.

# GROWTH DRIVERS AND PROSPECTS

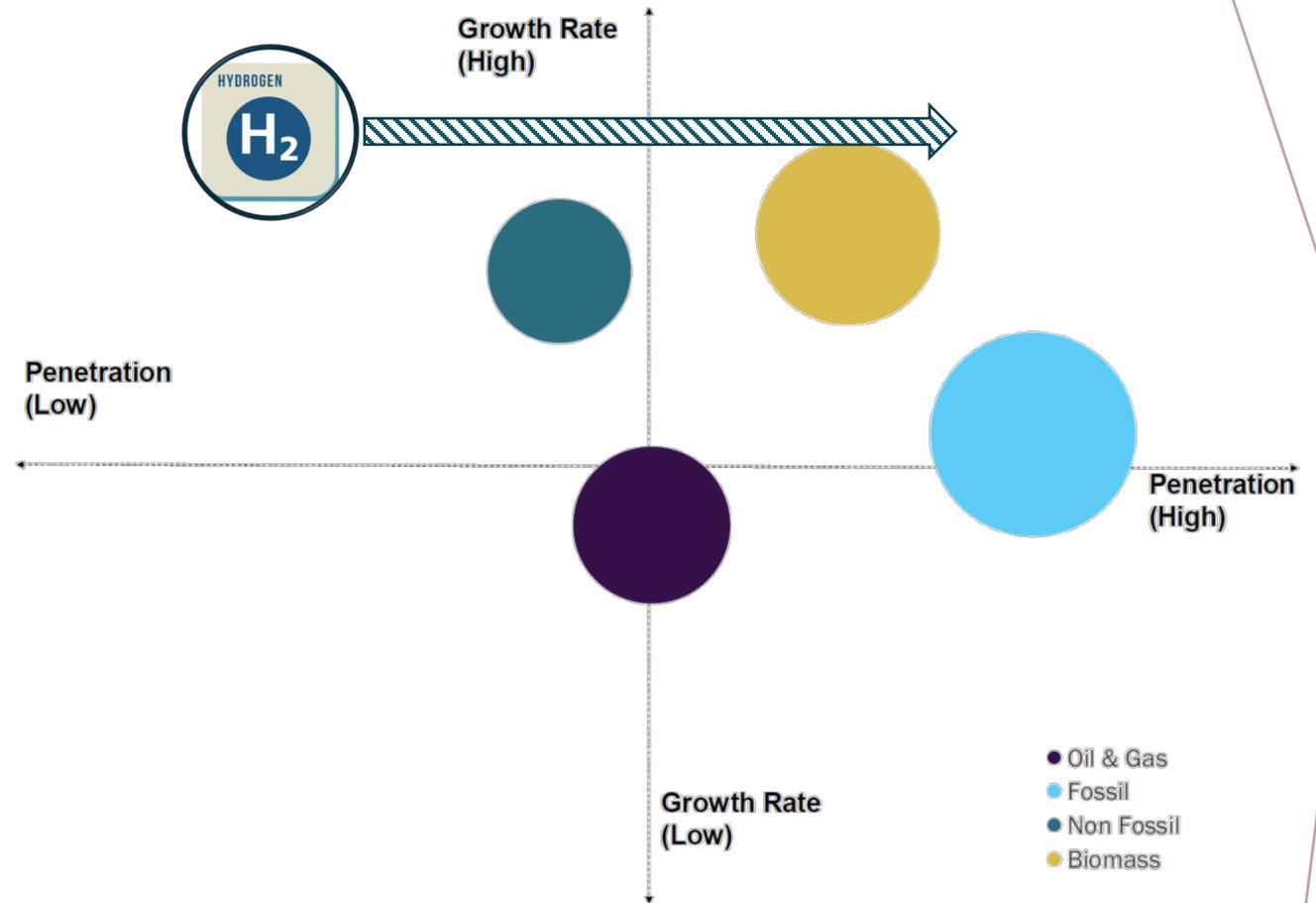
Market growth for decarbonized heating solutions will largely be driven by environmental policy standards and large corporates



Corporate's increased focus on sustainability is driving the adoption of low-carbon boilers



The UK and localities in California have already banned sales of new fossil fuel-based boilers



# MANAGED PIPELINE ACROSS MARKETS

10+

Clients Engaged

19MWe

Sales Pipeline

Food &  
Beverage

Consumer  
Products

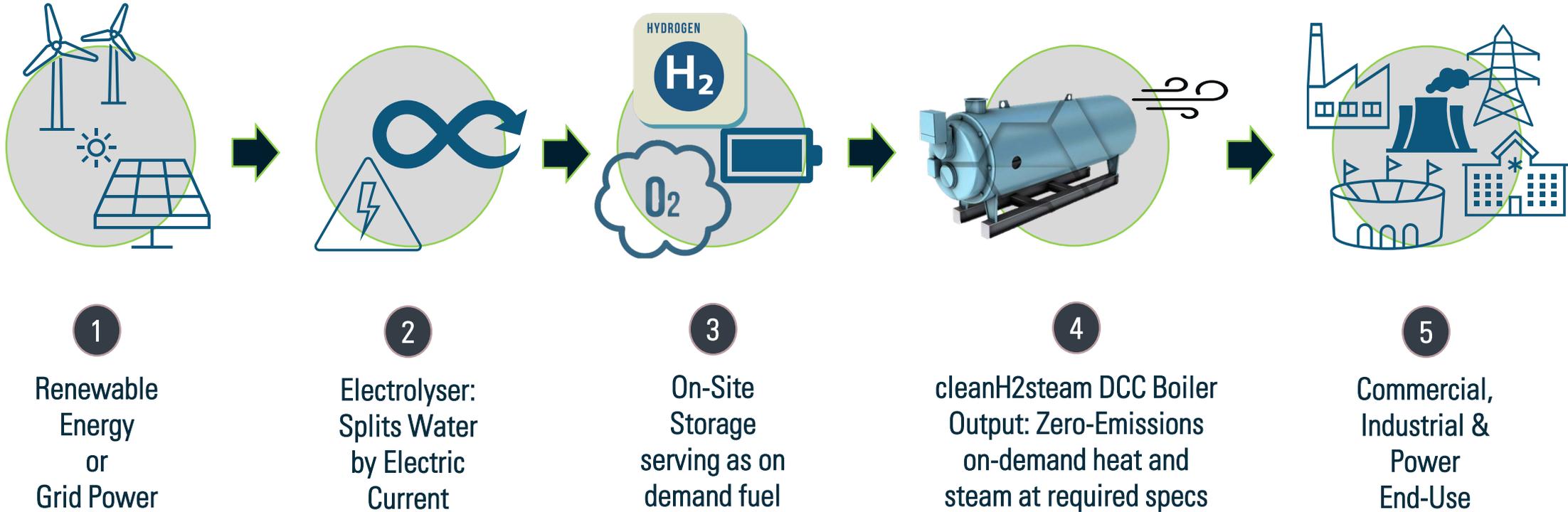
Chemicals

EPCs

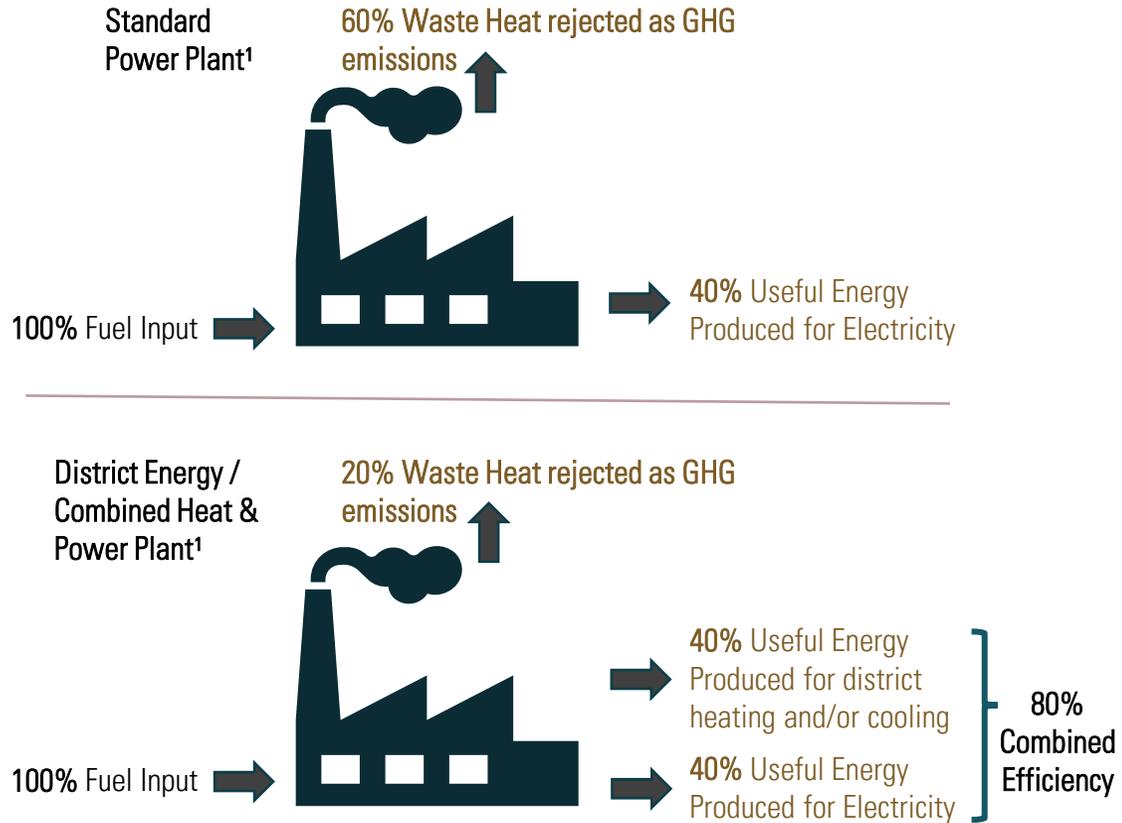
<sup>1</sup> Pipeline Data as of 2/25/2021; Sales Pipeline includes client engagement with technical exchanges and non-binding quotes; there is no guarantee pipeline clients turn into revenue generating orders

# HOW IT WORKS

## Simplified Process Overview

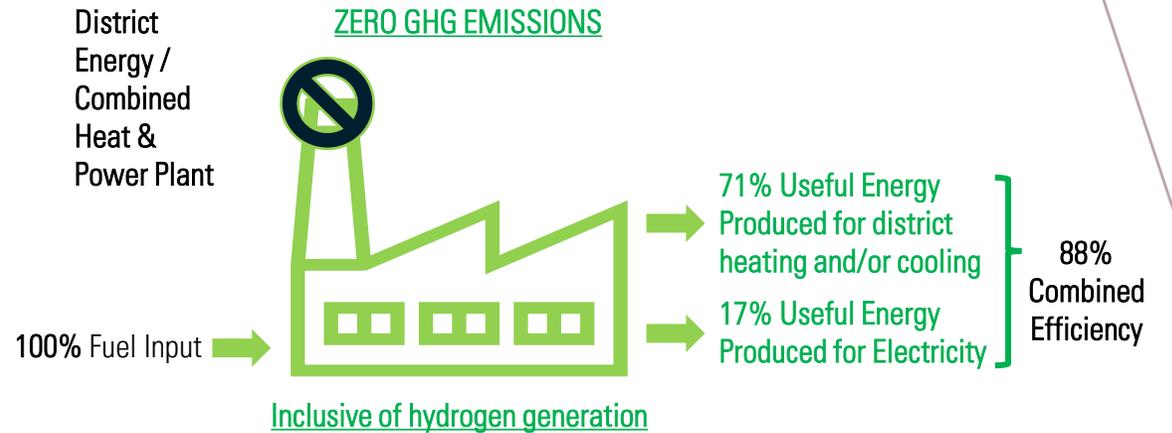


# ENERGY EFFICIENCY ILLUSTRATION



~58% of all energy we produce is wasted resulting in > \$1.2 trillion dollars lost every year

## Hydrogen-Based ZERO Emissions Solution...



- Emits only useful heat and water
- Only 12% Energy Losses in Equipment
- 10% more efficient than traditional CHP systems
- 30% more efficient than traditional heating systems

## ...with higher energy efficiencies





*APPENDIX*

# *MARKET HIGHLIGHTS*

## JEV by the Numbers

- TSX-V: JCO
- FRA: JLM
- OTC PINK: JROOF
- Shares Issued & Outstanding – 179,608,142
- Warrants – 49,000,000
- Options – 16,960,000
- Market Cap – 111,357,048
- Closing Price as of January 29<sup>th</sup> 2021 (CDN) – 0.62

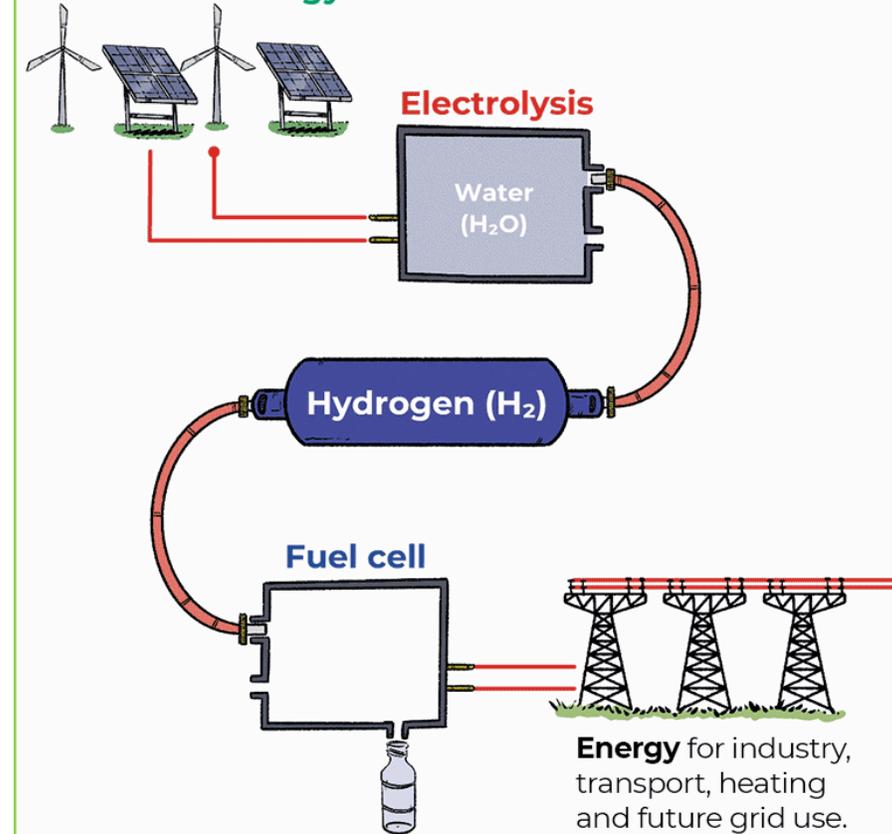
# HYDROGEN: THE BASICS

## Electrical-2-Chemical-2-Electrical

- Unique to hydrogen is its ability to utilize electrolysis: splitting water into its components by electrical current
- An electrolyser converts electrical energy to chemical energy, while a fuel cell converts chemical energy back into useable electrons for work

### How sustainable hydrogen energy works:

#### Renewable energy



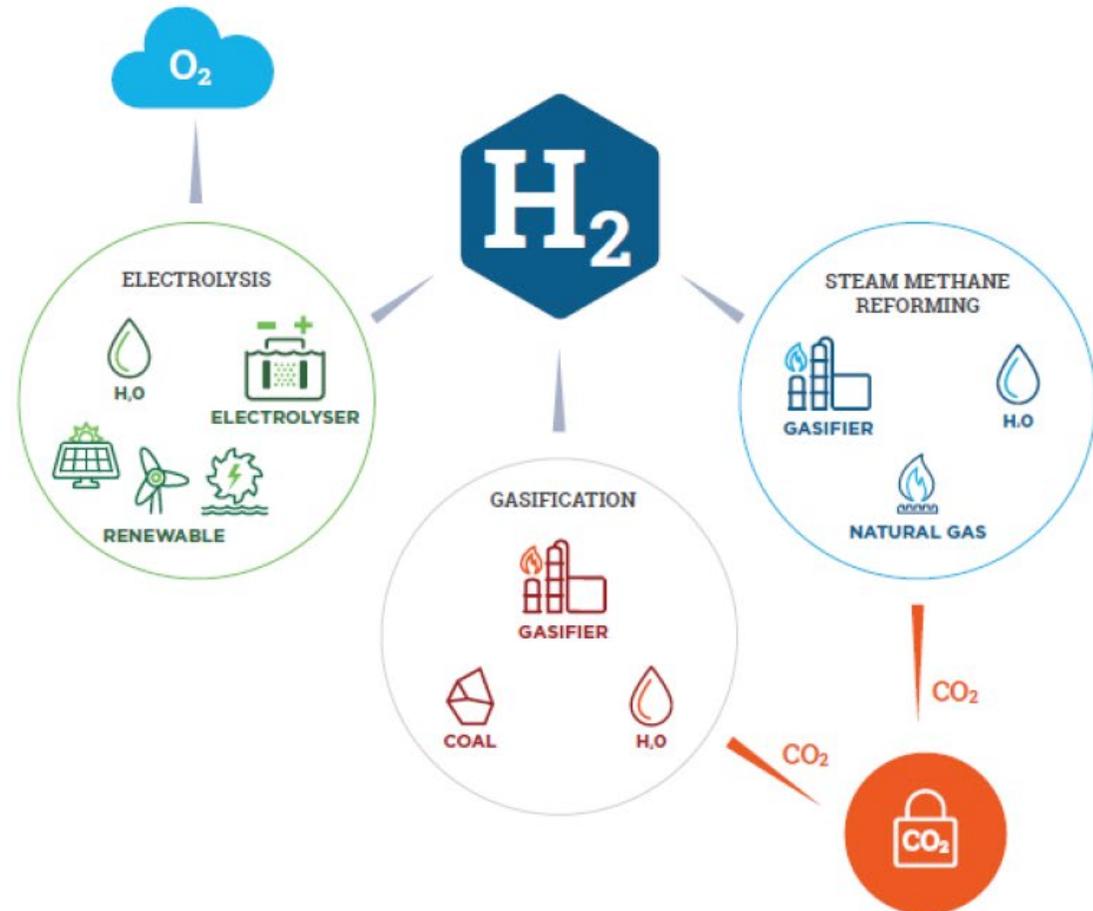
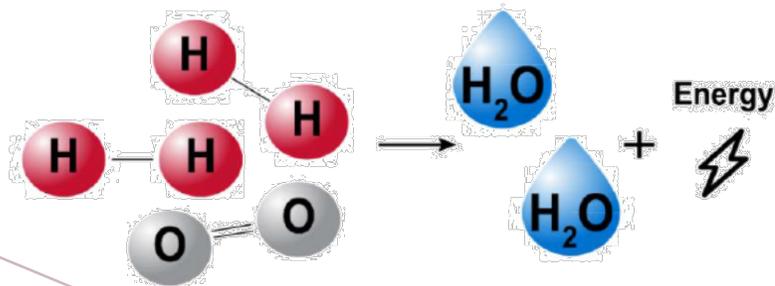
# HOW IS HYDROGEN PRODUCED TODAY?

## H2 production today (blue and grey)

- 99% of h2 produced today is made using fossil fuels, accounting for 6% of natural gas demand, 2% of coal and consequently 2.2% of global carbon emissions<sup>5</sup>
- Most common method, steam methane reforming (SMR), reacts natural gas (primary component methane) with high-temperature steam – stripping methane (CH4) of hydrogen molecules and emitting CO2
  - Carbon capture and storage technologies

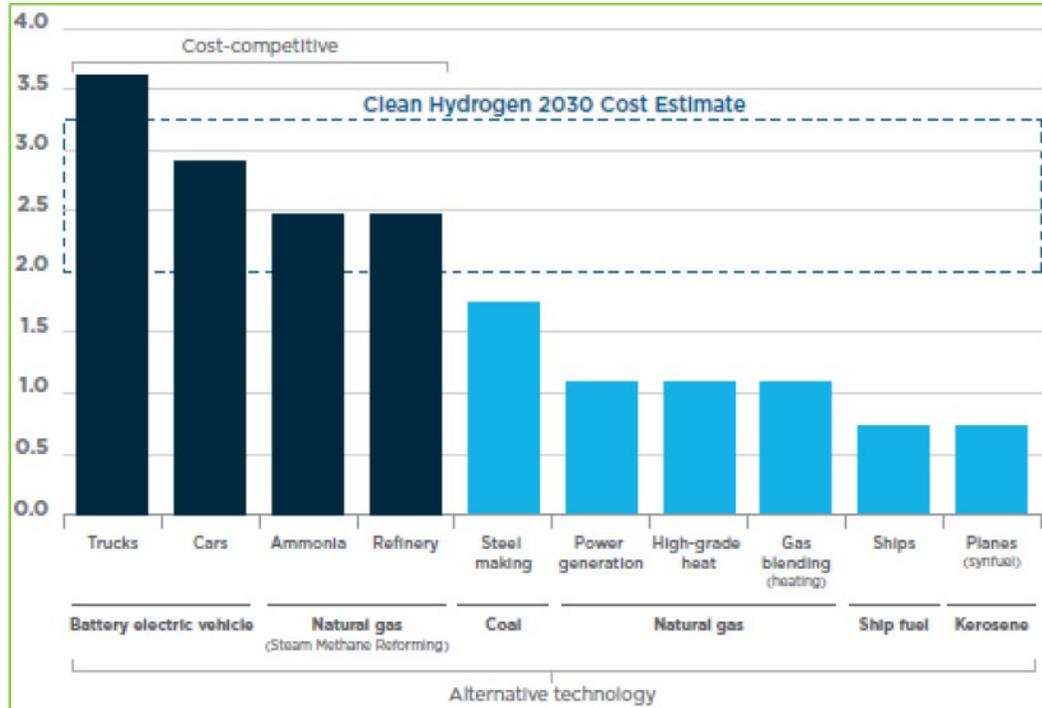
## H2 production tomorrow (green)

- Zero carbon hydrogen or 'green' hydrogen, can be produced if renewable energy (wind, sun, hydro) is used to power an electrolyser
- Electrolysis is a chemical process splitting hydrogen and oxygen from water using electricity ( $H_2O + \text{Energy} \rightarrow H_2 + O_2$ )

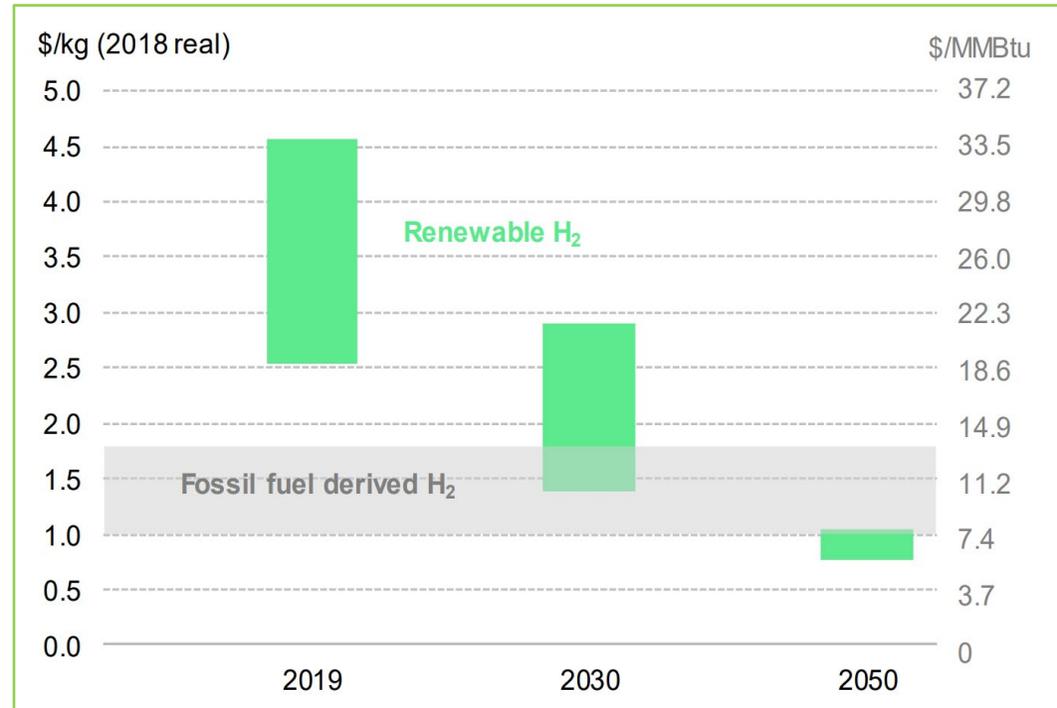


# HYDROGEN PRODUCTION COST – H2 UNDER \$2

Green h2 vs. Current Fuel Sources

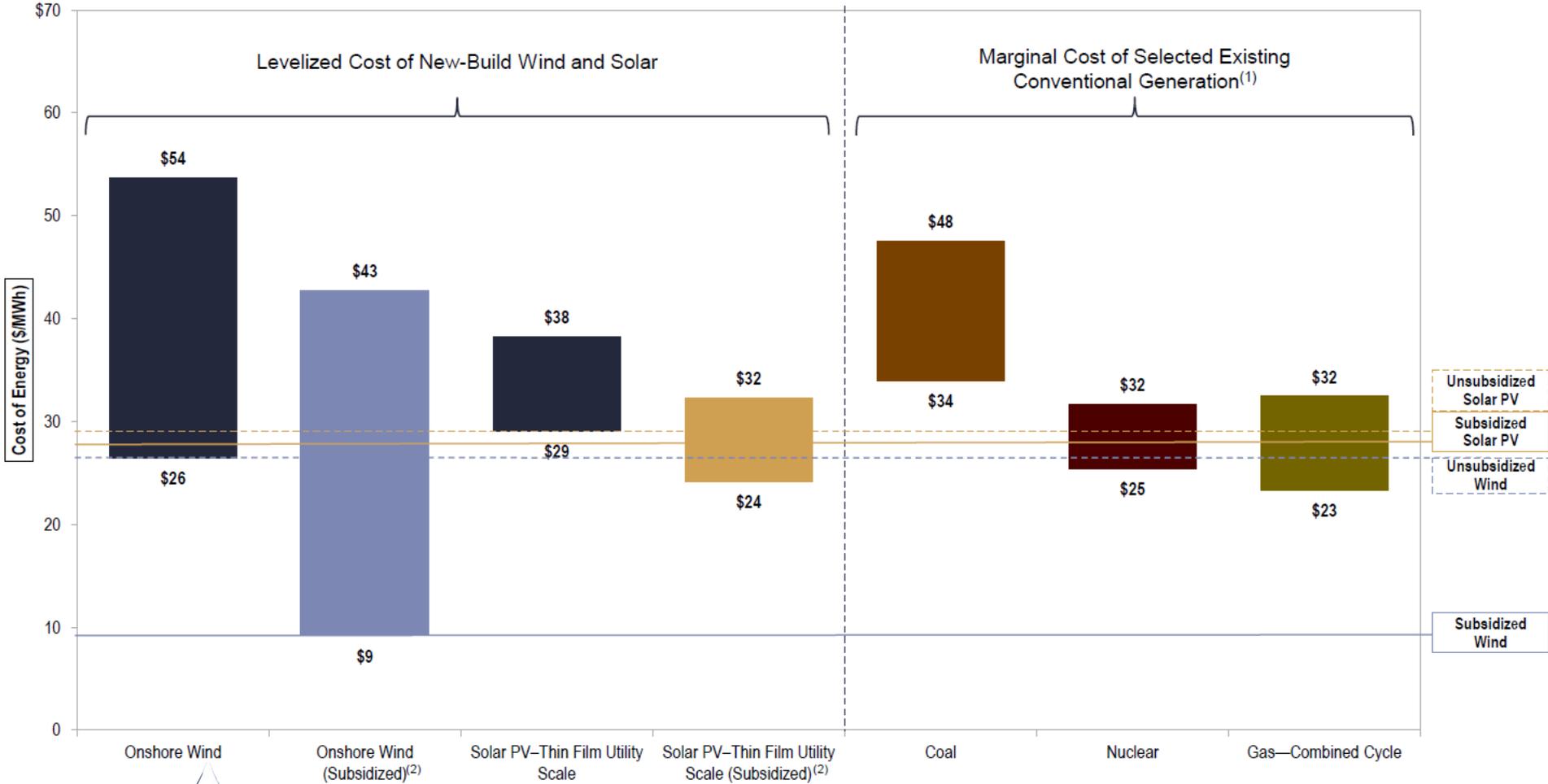


Projected Green h2 vs. Fossil Fuel-derived h2



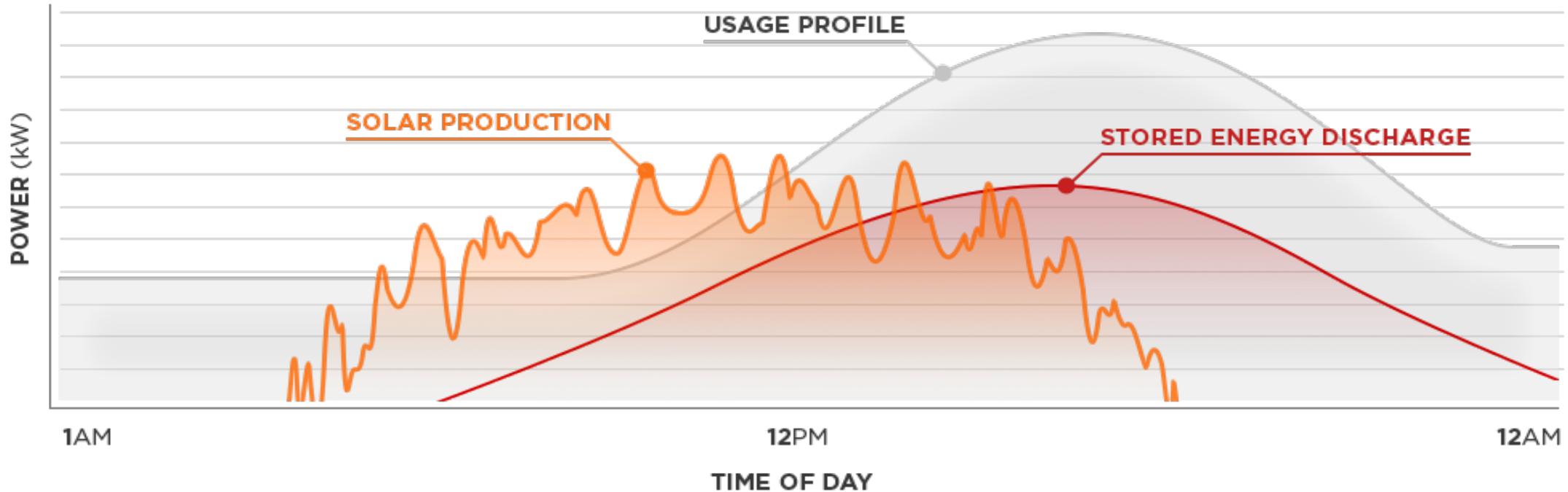
Policy makers, corporations and investors alike are setting goals that align with driving the cost of h2 below \$2 / kg – the point where it competes with alternatives in large-scale deployment across our energy systems

# RENEWABLE PENETRATION HAS REDUCED COSTS



Certain renewable energy generation technologies have an LCOE that is competitive with marginal cost of existing generation – crucial for green hydrogen generation

# RENEWABLES INTERMITTENCY PROBLEM

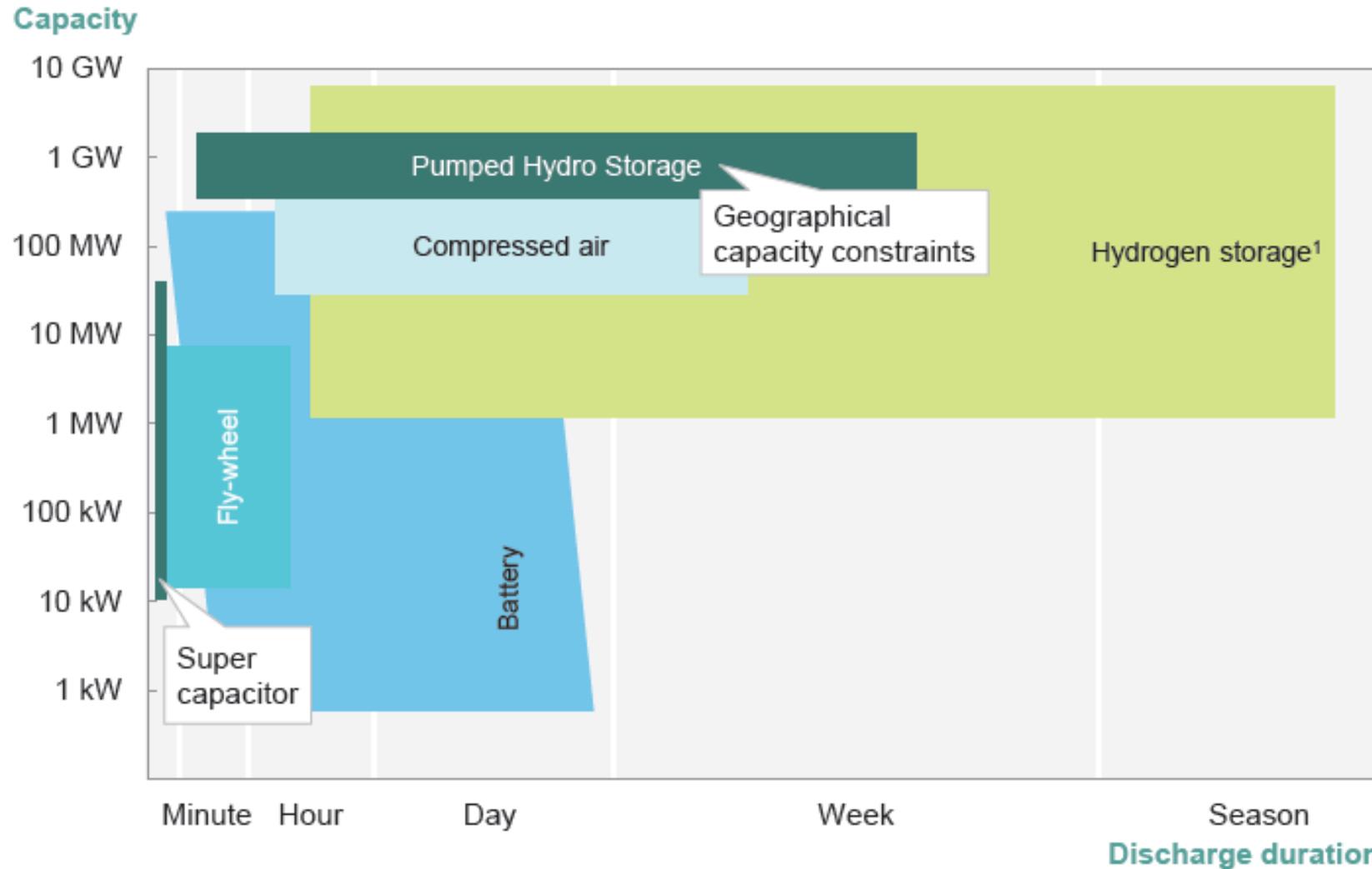


- Renewables represent 63% of all new US electricity generating capacity additions in 1H-2020 (37% NG)
- Renewable energy is supplied on an 'as available' basis – when the wind is blowing, and the sun is shining
- This increase in renewable energy will create the need for flexible technologies and storage solutions with:
  - Ability to time shift excess solar and wind energy during times of peak demand (daily and seasonally)
  - Alleviate grid congestion when wind and solar energy ramps up during the day and night
  - Altogether replace ageing or uneconomic gas peaking generation



Hydrogen's ability to be a carbon-free energy carrier will be further required as renewables meet tomorrow's energy demand – demand for electricity is slated to increase by 56% to 2050.

# RENEWABLES INTERMITTENCY SOLUTION

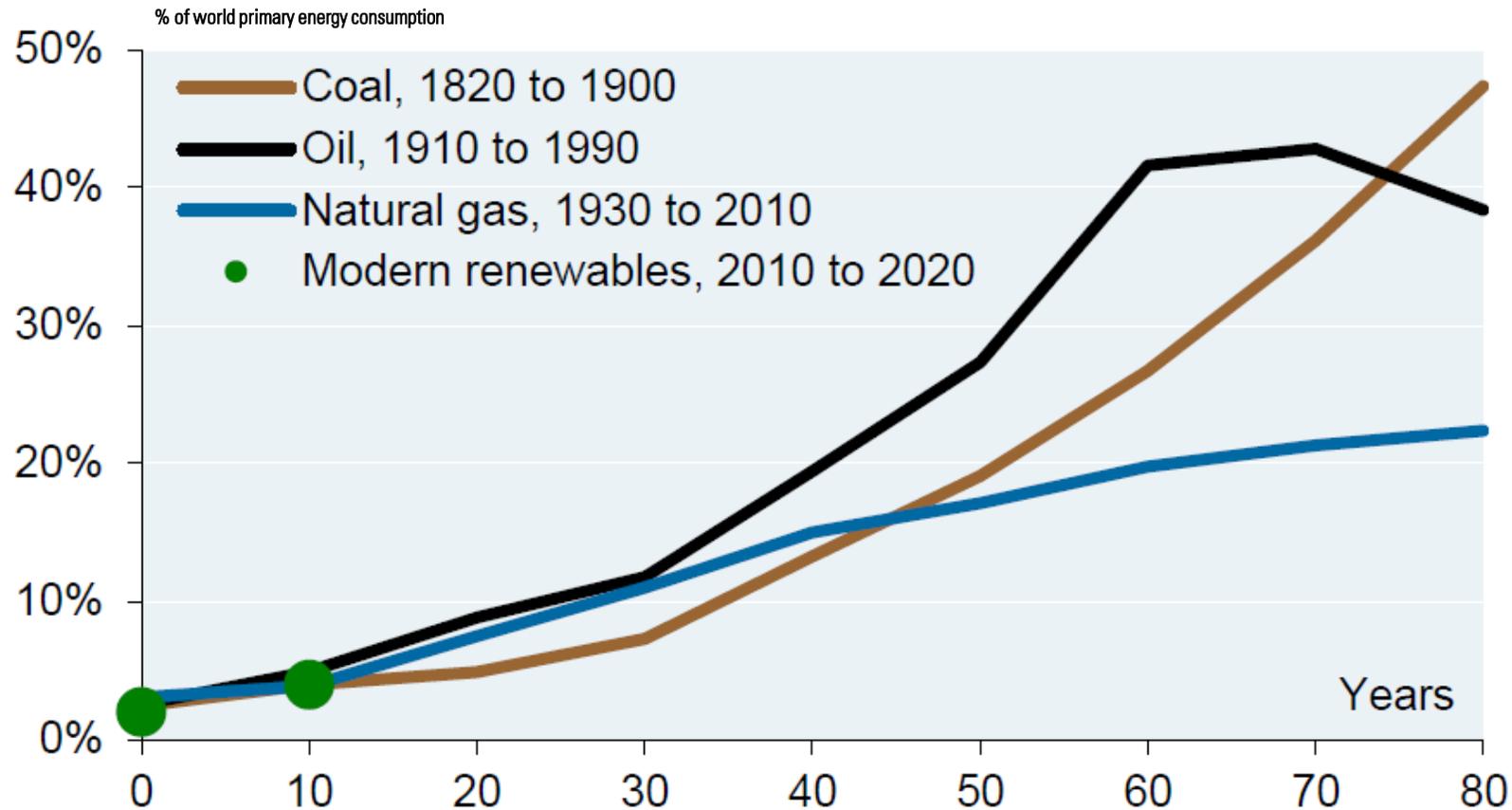


<sup>1</sup> IEA data updated due to recent developments in building numerous 1MW hydrogen storage tanks

Source: IEA Energy Technology Roadmap Hydrogen and Fuel Cells, JRC Scientific and Policy Report 2013

# COMPLEXITY OF ENERGY TRANSITIONS

The last three energy transitions took ~40yrs to reach 15-20%



A clean molecule is required to help decarbonize a world with ever-growing emissions