



# JV JERICO

ENERGY VENTURES

ADVANCING THE LOW-CARBON ENERGY TRANSITION

# *FORWARD LOOKING STATEMENT*

- Presentation and Reader Advisory

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# JEV JERICHO

## ENERGY VENTURES

### What We Do

Developing high growth technology companies across the hydrogen value chain, carbon dioxide removal and searching for technologies to address industry's pain points

JEV invests in hydrogen production, storage, transportation as well as hydrogen applications to address structural constraints which affect many industrial sectors



### The Opportunity

JEV is a publicly traded, deep-tech venture capital and incubator platform, backing world-class companies, founders and technologies, leveraged to long-term decarbonization themes including hydrogen, carbon capture and energy storage

Unique opportunity for public equity investors to gain exposure to and participate in high-growth hydrogen-related themes with a global reach

Differentiated Venture Portfolio Approach Leveraged to High-Growth, Secular Decarbonization Themes

# THE MARKET OPPORTUNITY

## Government and Public Policy

197 Countries that have adopted the Paris Climate Accord

5 Largest Economies have announced Net Zero Carbon Emissions targets (U.S. China, Japan, EU, India)

1.5 Degree Limit on Global Temperature Increase (vs. pre-industrial)

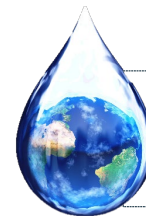
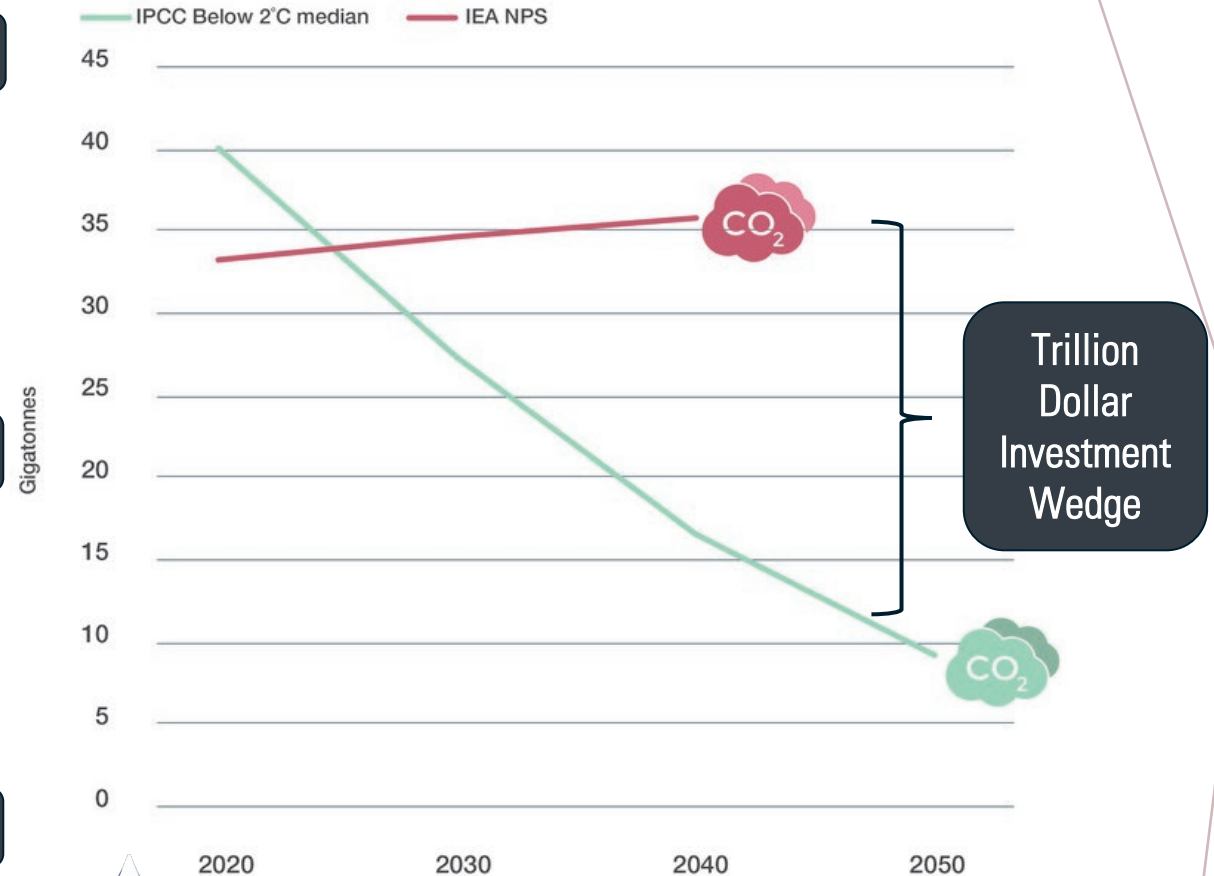
## Corporate Investment with Ambitious Net-Zero Carbon Pledges



## 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 funds holding \$18trn in assets have announced reallocating capital towards sustainable and purposeful investments
- ESG ETF assets have increased over 1000% from just **\$6.6bn** in 2018 to nearly **\$120bn in 2021**

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



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

# THE TEAM



Brian Williamson  
CEO

- Spent 20+ years at various financial institutions and family offices in investment leadership roles (Arthur Anderson, The Harbor Group)
- Collectively managed \$1bn+ in assets focused on oil and gas and energy investments



Ben Holman  
CFO

- Experienced financial leader with 18 years in financial management and accounting
- Held senior-level positions at Apco Oil & Gas, former subsidiary of The Williams Companies and WPX Energy



Ryan Breen  
Head of Corporate Strategy

- Drives company-wide strategy focused on due diligence, deal structuring and execution for new investments
- Prior experience within J.P. Morgan's investment banking group advising Fortune 500 clients focused on Multi-Industrial, Aerospace & Defense and Transportation opportunities



Jourdan Urbach  
Senior Technical Advisor

- Most recently worked at McKinsey & Co., where he helped build their internal venture capital group, serving as Product Manager or interim CTO of a portfolio of over 20 internal startups, called McKinsey Solutions
- Co-founded Mass Lab, Director of R&D at Mimedia, Neurogenomics researcher specializing in bioinformatics at Harvard and MIT



Janet Reiser  
President – HTI

- Policy maker and senior executive over the last 35 years, previously headed up the governmental Alaska Energy Authority
- Chemical Engineer by education



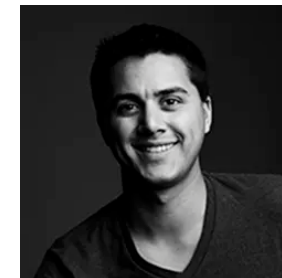
Ed Stockton  
CTO – HTI

- 30+ year career at Florida Power & Light (now NextEra Energy) focused on low-carbon technologies with direct power plant experience including commissioning, maintenance, due diligence, government regulations and regulation promulgation
- Co-inventor and patent holder for the DCC



Tony Blancato  
Director of Business Development & Marketing

- Spearheads new shareholder opportunities & maintain relations with current shareholders, the investment community, and other constituencies
- Oversees online & social media presence to maximize share price and create a positive image



Romi Kadri  
Senior Technical Advisor

- 25+ granted patents, \$100mm+ venture investing experience
- Led innovation at \$1bn+ public company
- Serves on the board of several tech companies and advises fusion energy company TAE & MIT's Martin Trust Center for Entrepreneurship

# INVESTING IN THE ENERGY TRANSITION

## What We Look For

Technology Co. with  
Disruptive Product

Identify pre or early-revenue  
growth companies with game-  
changing H2 technology  
**(\$1 / kg reduction or enabler)**

Large and Growing Global  
Market

> 70 national H2 strategies with  
surge in interest from corporate  
investors to enable the  
transition

Commercialization with  
Identified Market  
Applications

Rigorous technical due  
diligence and product market fit  
analysis verified by corporate  
partners and their pain points to  
adoption

## Macro Backdrop Has Multiple Tailwinds

- COP26 in Glasgow, Scotland created a watershed event for hydrogen setting ambitious 2030 targets
- The U.S. recently passed (Nov'21) the Build Back Better Infrastructure Plan with \$9.5 billion in funding for hydrogen
- The U.S. Reconciliation Bill outlines a \$3 / kg Production Tax Credit, lining up the most consequential piece of hydrogen legislation
- Green hydrogen is the only clean molecule recognized in the Net Zero plans adopted to date by the EU

# HOW DO WE IMPLEMENT STRATEGY?

## Two Investment Pathways to Accomplish Strategic Goals

*Manner by which JEV will invest depends on certain Company criteria*

### Standalone Venture Company

Strategic Co-Investors

Seasoned Leadership

Strong Technical Team

Beyond 'Product Idea'

### Internal Incubation

'Product Idea' Stage

Lack of Customer Conversion

Requires Mgmt. Oversight –  
Benefits from JEV Organization  
(CFO, Accounting, HR etc.)

LT Spinout Optionality

# WHAT IS THE VALUE OF OUR STRATEGY?

Privileged, early access to Seed Stage, Series A and Growth Equity energy transition technology companies with high impact and upside (looking for 5-10x + potential returns)

JEV's deep technical experts clearly identify and understand upfront technology risks: JEV helps develop a cogent plan and financing structure for removing those risks for the least amount of money

JEV's ability to scale advantaged technologies with strategic and corporate partners (read: *first commercial adopters*) significantly reduces market risk



Recognizing voids in the hydrogen value chain and marketplace creates opportunities to incubate proprietary product ideas within JEV

Identifying unfair advantages through technological innovations and reducing barriers to success



# *JEV'S PORTFOLIO: CATALYSTS FOR VALUE*



Multiple Investments  
Across Critical Industry  
Pain Points

Wholistic Bet on  
Hydrogen's Ability to  
Decarbonize Commercial  
and Industrial Markets

Ample catalysts for value creation and market recognition over the short and long-term

# JEV'S PORTFOLIO

## Critical Hydrogen Technologies

### Hydrogen Generation and Enabling Technologies

### Hydrogen-Based Application Technologies



Low-Cost Electrolyser

Co-Led Minority Investment Stake




AI-Driven Electro-Catalyst Discovery

Co-Led Minority Investment Stake



Membrane-less, high pressure Electrolyser

Lead Minority Investment Stake



Zero Emissions Hydrogen Boiler

OWNED BY JEV

### H2 Generation

### Enabling Catalysts

### H2 Generation

### H2 Boiler

Novel and disruptive PEM design with upgradeable catalysts

Ultra-high throughput AI and data-driven process which prepares, characterizes, and quantifies the catalytic activity of millions of compositions per month (fuel cell and electrolyser)

Eliminates the need for membranes and stages of gaseous compression in an ultra-efficient, high-pressure output electrolyser (200bar+) for use in H2 applications

Patented method for combining H2 and O2 in a vacuum to create high-temp heat and steam

# *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 'one solution fits all' – 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 US\$1 / 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
- Current Platform: High-quality and high-impact venture scale deals, with commercialization co-investors setting up critical short-term and long-term catalysts



# JV JERICHO

ENERGY VENTURES

*Portfolio Overview*

# SUPERCritical: HIGH-PRESSURE ELECTROLYSIS

H2 Production

## Ultra-Efficient, High-Pressure, Membrane-less Electrolyser

- **Pain Point:** Nearly all H2 today is utilized in high pressure applications - However, current electrolyzers output low-pressure H2 (membranes cannot tolerate heat and pressure), thus requiring costly compression (US\$1.00-1.50/ kg) for nearly every current H2 application
- **Solution:** Membraneless electrolyser architecture that can output H2 at pressure *required by end-users*

### How does SC's EL work?

- High-pressure electrolysis is performed by removing the membrane and applying heat and pressure to the WATER before the electrolysis process which reduces the thermodynamic barriers and increases kinetics, allowing for lower overpotential (i.e., increased efficiency)
  - SC's design exploits the benefits of electrolysis of water under thermodynamic **supercritical** conditions
  - The result is >200bar output of H2 and O2 gases
- **Why is this important?**
  - Eliminating the need for expensive multi-stage compression (US\$1.00-1.50/kg)
  - 55% of all H2 today is used for Ammonia, which requires the same pressure that Supercritical produces H2, allowing for clear go-to-market strategy
- **Co-investors / Commercialization Partners:** Lowercarbon Capital, Anglo American, New Energy Technology, Deep Science Ventures

## Key Deal Terms

- Seed Preferred Shares
- Total Round: US\$3.45mm
  - JEV Lead Investment: US\$1.78mm (PF Ownership: 10.3%)
  - Use of funds: Technology Pilot

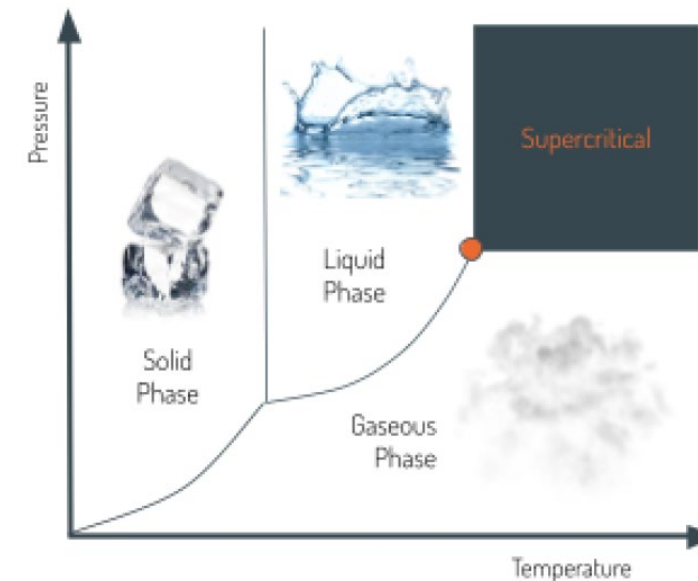


Figure 2 - Phase diagram for water (H<sub>2</sub>O)

 **SUPERCritical**

# H2U: CATALYST DISCOVERY & PEM ELECTROLYSIS

H2U is the leading developer of abundant, low cost, efficient, and durable catalysts and systems for hydrogen generation and fuel cells.

H2 Production

## H2U Technologies: Catalyst Discovery

- Caltech spin-out startup using AI-driven chemistry to catalyze the Hydrogen Economy
  - Caltech scientists awarded \$122M from DOE - IP licensed exclusively to H2U
- H2U has developed a proprietary electrocatalyst platform focused on the discovery of non-rare earth catalysts for generation of clean hydrogen – accomplished one million times faster than any other method
- Initial Catalyst Discovery has found cheap, earth abundant Oxygen Evolution Reaction and Hydrogen Evolution Reaction catalysts
  - Relationship with De Nora (Top 5 MEA manufacturer) to screen and license a new chlorine catalyst in addition to MEA testing of H2U's family of non-rare earth catalysts for electrolysis

## H2U Technologies: Low-Cost PEM Electrolyser

- Proprietary low-cost PEM electrolyser, utilizing in-house earth abundant catalysts
- Commercial Pilot to verify non-rare earth catalyst PEM design with SoCalGas, the largest gas distributor in the United States

## Key Deal Terms

- Series A Preferred Shares
- Total Round: US\$7.0mm
  - JEV Investment: US\$1.5mm (PF Ownership: 6.5%)
  - **Co-Investors: Hess Oil Corp, Dolby Family Ventures, Motus Ventures**
    - Use of Funds: Setup HTE catalyst discovery system and technology pilot EL with SoCalGas



# HYDROGEN TECHNOLOGIES: ZERO-EMISSION, HYDROGEN POWERED BOILER

H2 Application



With a patented Dynamic Combustion Chamber™ (DCC) technology, Hydrogen Technologies manufactures and sells its patented, innovative, hydrogen-based boilers for commercial and industrial scale.

## Chemical Reaction Solution

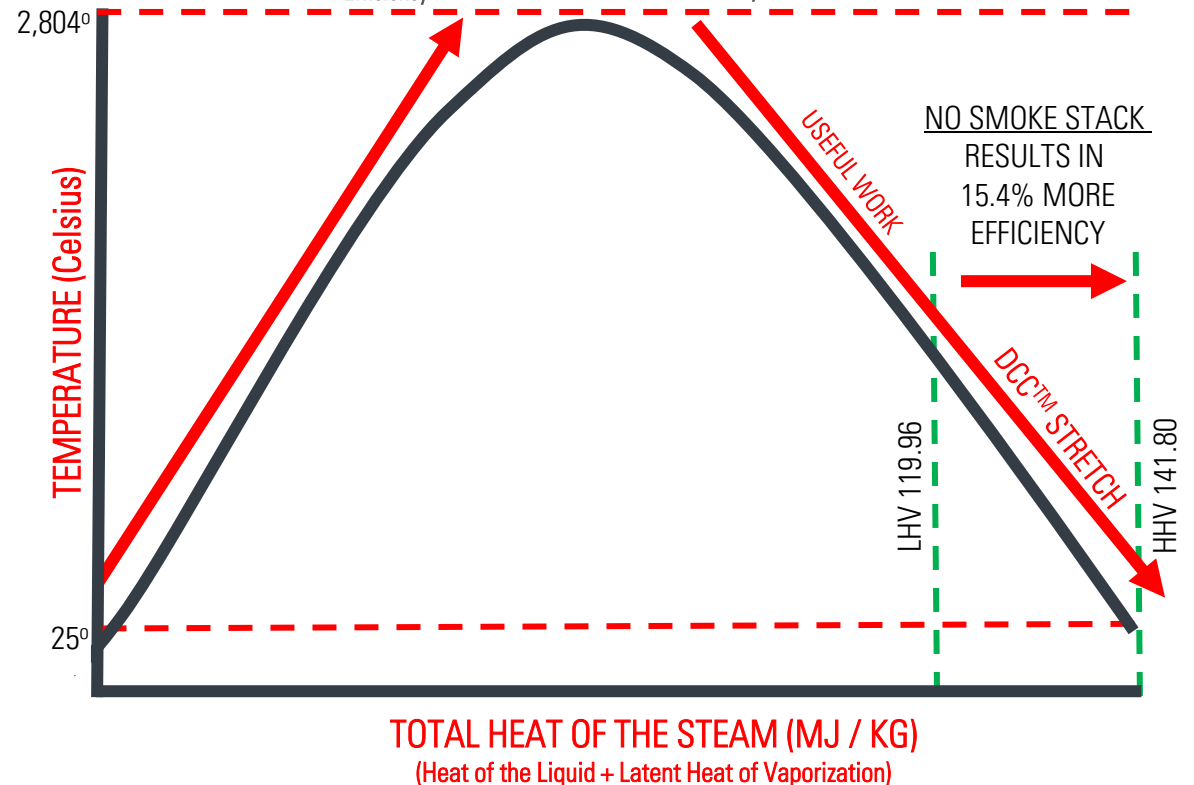
First principles: the most efficient way to convert H2 and O2 into high-temperature steam

- CleanH2steam DCC™ boiler is HT'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 was designed based on the chemical reaction to function as a closed-loop system, eliminating all need for typical combustion exhaust

>97%  
Total Efficiency

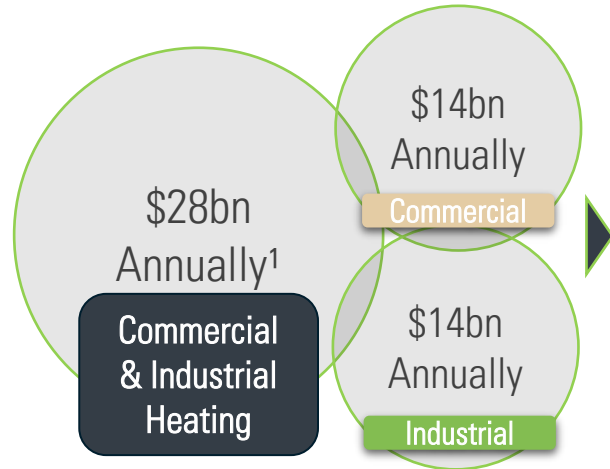
Zero  
Emissions

100%  
Water Fuel Recycled



JW JEV is currently deploying / Installing DCC boilers around the world

# INDUSTRIAL BOILER MARKET



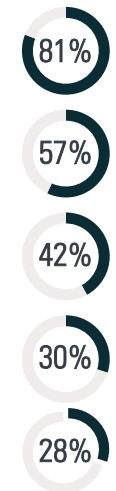
- 37% of fossil fuels burned for Industrial Utilization in the US is to produce steam
- Global heating and steam markets account for >15% of all CO<sub>2</sub> emissions
- Replacing carbon-emitting boilers with a zero-emission hydrogen boiler is an easy solution for Fortune 500 and sustainability minded corporations
- Macro-tailwinds driven by rising carbon pricing and policy decisions to eliminate sales of new fossil-based boilers and will increase adoption



## Industries that consume the highest % of fossil fuel to generate steam:

Pulp and Paper	<ul style="list-style-type: none"> <li>• Steam is the key component in refining and treating wood chips before they are pulped</li> <li>• High fossil fuel emissions from steam generation</li> </ul>
Food and Beverage	<ul style="list-style-type: none"> <li>• Steam heat used for sterilization, disinfecting, cooking, curing, and drying</li> <li>• Hot water and steam for boiling and pasteurization</li> </ul>
Chemical / Petrochemical	<ul style="list-style-type: none"> <li>• Steam is utilized to heat and cool reactors that operate in a cyclical fashion</li> <li>• Steam is used to produce various by-products (jet fuel, ammonia, chlorine, etc.)</li> </ul>
Oil Refineries and Production	<ul style="list-style-type: none"> <li>• High-pressure condensate return systems conserve energy by pumping hot water directly from the process into steam boilers</li> <li>• Utilize steam as a key component in enhanced recovery operations (i.e. SAGD)</li> </ul>
Commercial Properties	<ul style="list-style-type: none"> <li>• Commercial properties typically use a boiler as part of a district energy system</li> <li>• Utilize steam as the major input for space heating and hot water</li> </ul>

% of Total Fossil Fuel Usage for Steam Generation



<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.



# *DCC HYDROGEN™ BOILER AWARDED C\$4.5MM*

Our zero-emission hydrogen technology is set to decarbonize production of single-malt Scotch whiskey at the Remy-Cointreau owned Bruichladdich Distillery after winning the UK Government Green Distilleries Competition



## **HYDROGEN BOOST TO DECARBONISING DISTILLATION PLANS**

### **GREEN LIGHT FOR MORE WORK ON HYDROGEN**

Major funding has been granted to Bruichladdich and our partner energy company Protium to further develop innovative hydrogen combustion technology. This green hydrogen technology does not emit any carbon, or any other greenhouse gases, which would give us a renewable alternative to our current fuel.

Commercial Deployment Offers Market Validation of the DCC Hydrogen Boiler



*APPENDIX*

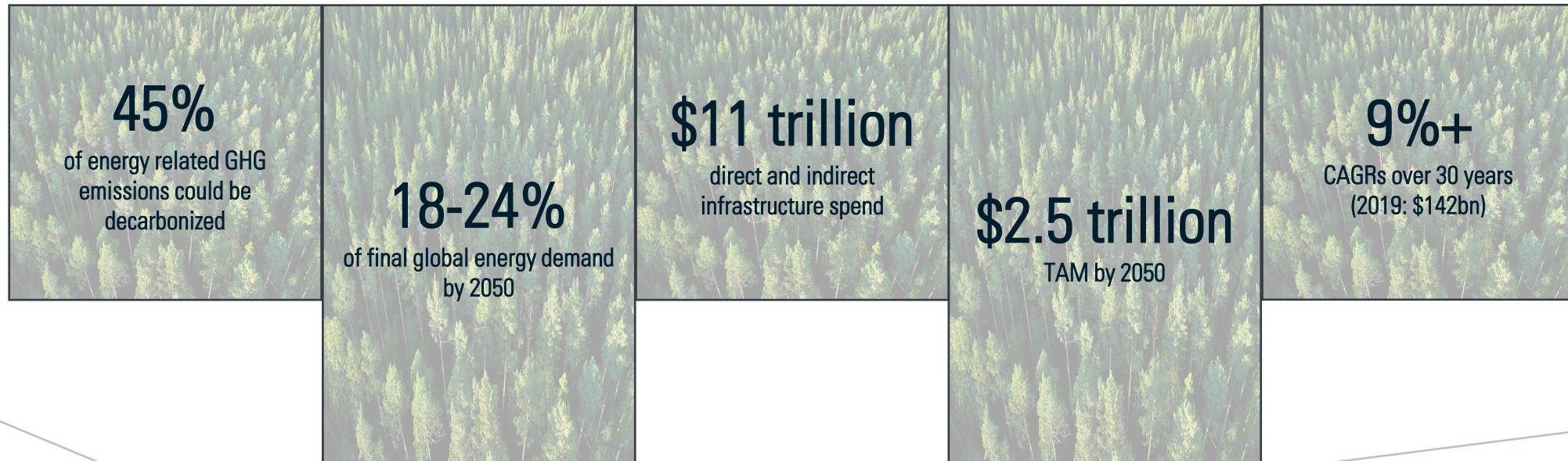
# WHY HYDROGEN

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

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

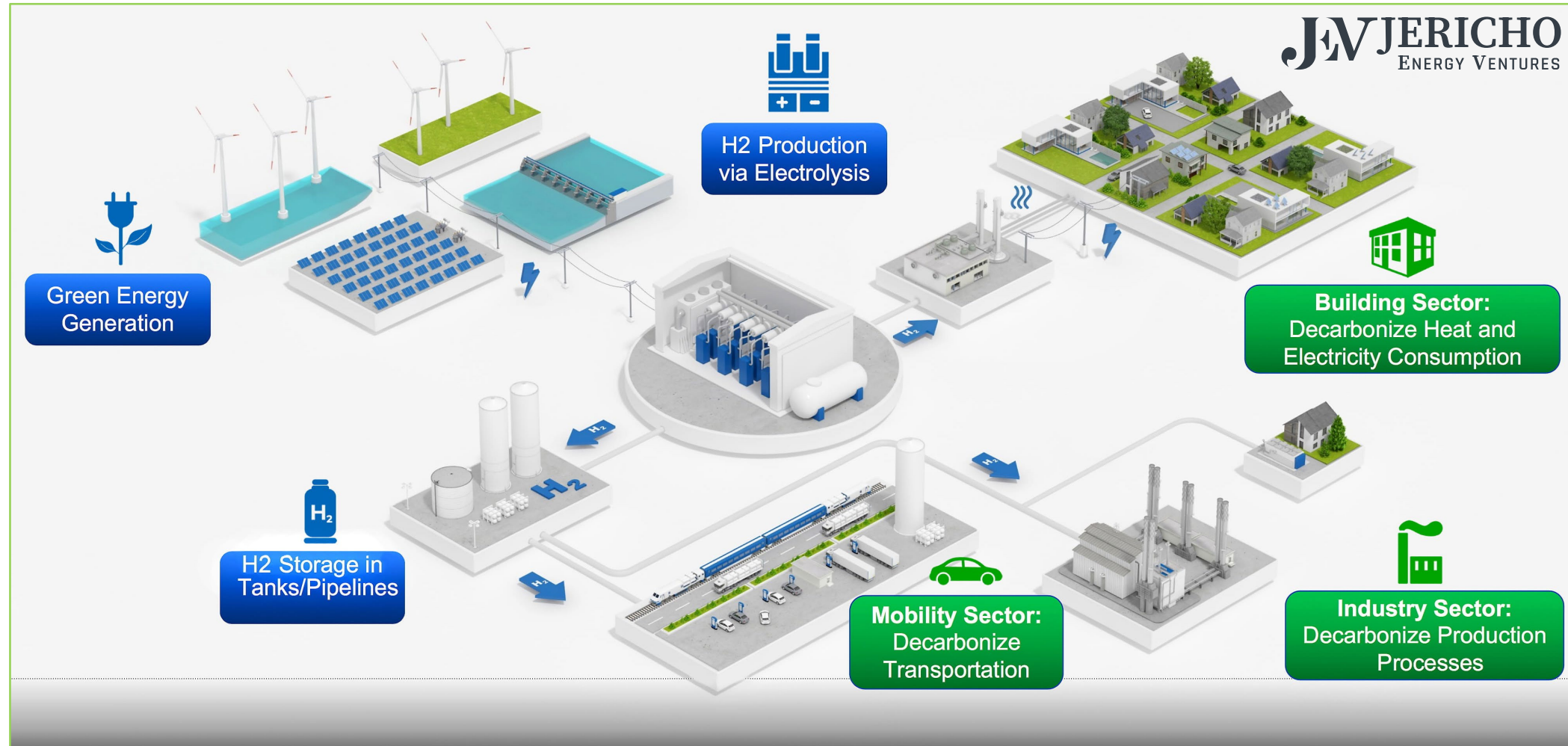
- Most abundant and simple element in the universe, colorless and odorless
- Clean-burning, zero emission fuel for storing and releasing energy and to be used as a feedstock always available
  - >2.5x the energy content per unit mass of gasoline and >2x that of natural gas
- Largely found in compound 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)

# HYDROGEN VALUE CHAIN

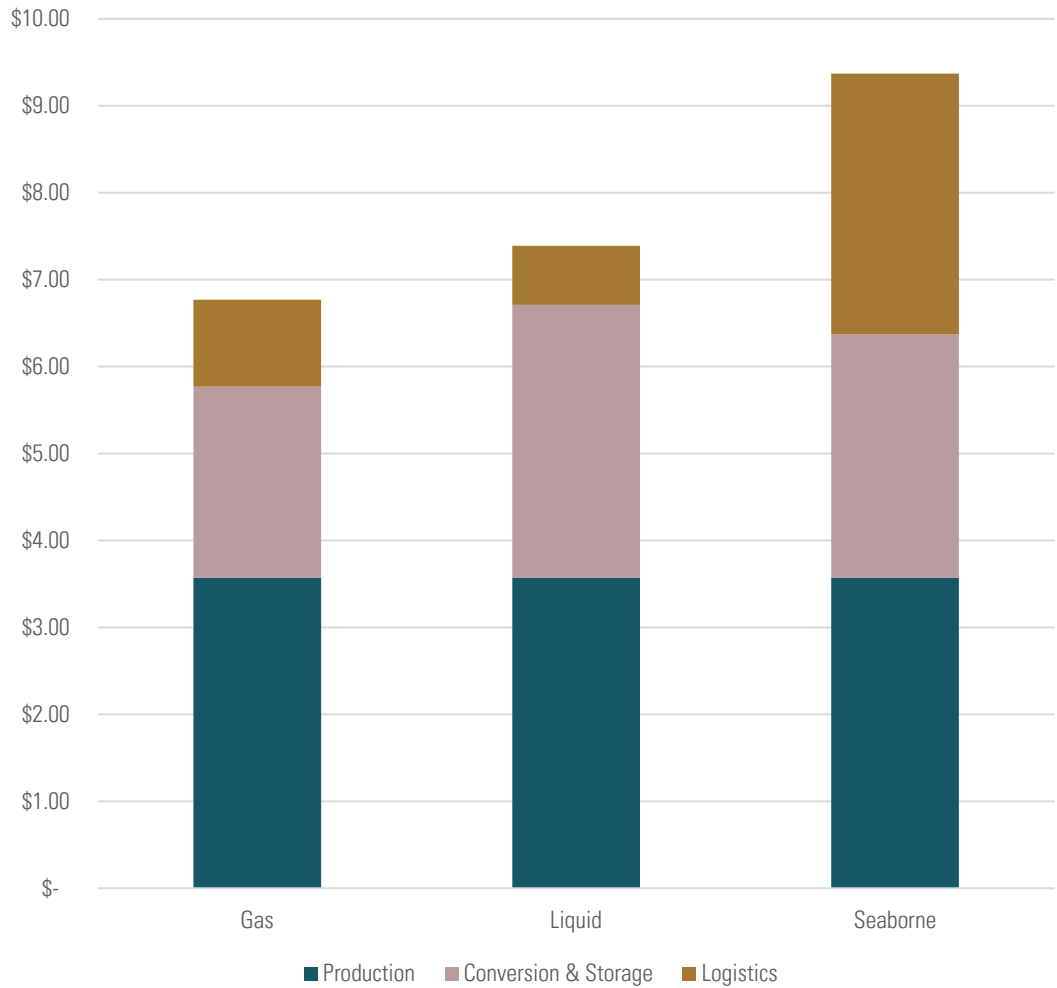


Leading Technologies across H<sub>2</sub> Production, Storage and Applications with Advantaged Economics

# CRITERIA: US\$1 / KG OR ENABLER

US\$1 / kg

Delivered Hydrogen Cost Stack<sup>1</sup>



# MARKET HIGHLIGHTS

## JEV by the Numbers

- TSX.V: JEV
- FRA: JLMO
- OTC PINK: JROOF
- Shares Issued & Outstanding – 220,400,000
- Warrants – 16,000,000
- Options – 16,700,000
- Market Cap (CDN) – \$130,036,000
- Closing Price as of October 1<sup>st</sup>, 2021 (CDN) – \$0.59

