BEYOND THE GRID: CLEAN HYDROGEN PATHWAYS FOR DATA CENTRES

Bord Gáis Energy
Dublin
10th September 2026

ÉIRE2026.EU
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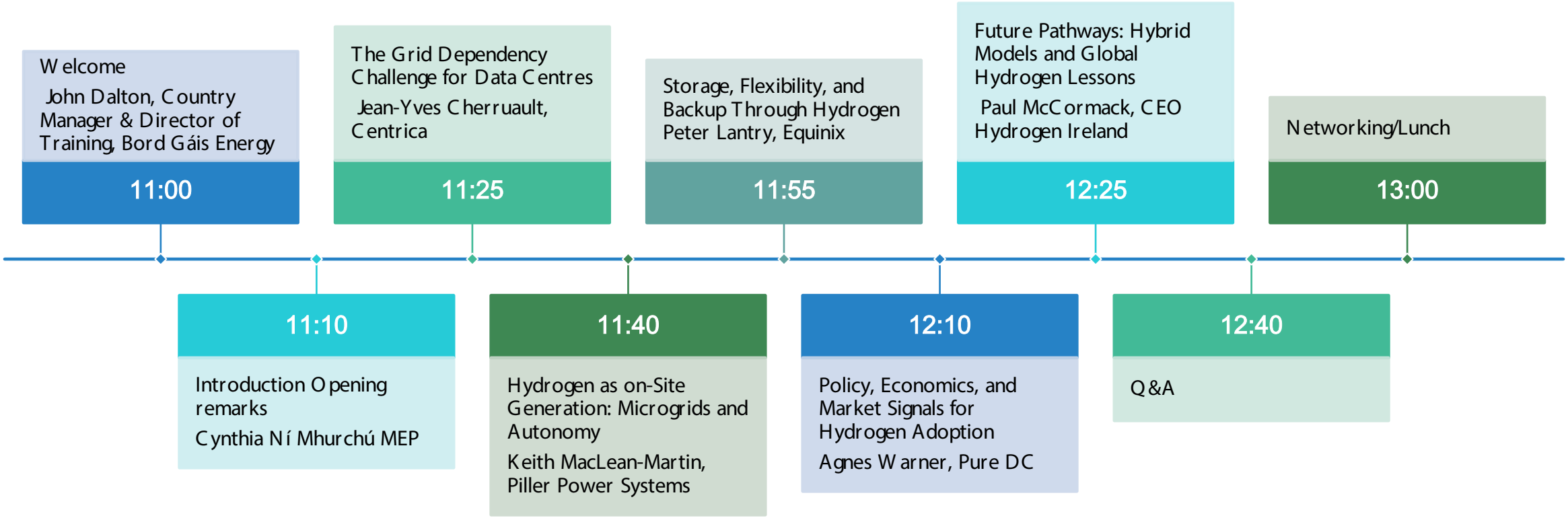
The Association for Energy, Mobility, Industry & Community

Hydrogen Ireland


Welcome
John Dalton, Country Manager & Director of Training, Bord Gáis Energy
11:00
11:10
Introduction Opening remarks
Cynthia Ní Mhurchú MEP
The Grid Dependency Challenge for Data Centres
Jean-Yves Cherruault, Centrica
11:25
11:40
Hydrogen as on-Site Generation: Microgrids and Autonomy
Keith MacLean-Martin, Piller Power Systems
Storage, Flexibility, and Backup Through Hydrogen
Peter Lantry, Equinix
11:55
12:10
Policy, Economics, and Market Signals for Hydrogen Adoption
Agnes Warner, Pure DC
Future Pathways: Hybrid Models and Global Hydrogen Lessons
Paul McCormack, CEO Hydrogen Ireland
12:25
12:40
Q&A
Networking/Lunch
13:00

AGENDA

WELCOME

- John Dalton, Country Manager & Director of Training Bord GáisEnergy

WELCOME

- Hosted by Bord Gáis Energy,
- This webinar will explore how clean hydrogen microgrids can support resilient, sustainable data-centre growth and reduce dependence on constrained grid capacity.
- This webinar forms part of Hydrogen Ireland's coordinated programme of webinars, workshops, and their annual conference, H2 Summit - Hydrogen Ireland developed to align with Ireland's Presidency of the Council of the European Union (July–December 2026). Through this series, Hydrogen Ireland aims to mark this milestone and amplify Ireland's hydrogen leadership and message to a global audience.

THREE AUDIENCE PRIMERS TO SET THE TONE

1. **What happens when data -centre growth outpaces the grid?**
   - Hydrogen offers a new pathway for expansion when traditional electricity supply can't keep up.
2. **Can we replace diesel backup without compromising reliability?**
   - Clean hydrogen provides a zero-emission alternative that still meets the resilience standards operators depend on.
3. **Are data centres destined to be grid -dependent forever?**
   - Hydrogen microgrids open the door to energy independence, flexibility, and new operating models.

CYNTHIA NÍ MHURCHÚ MEP

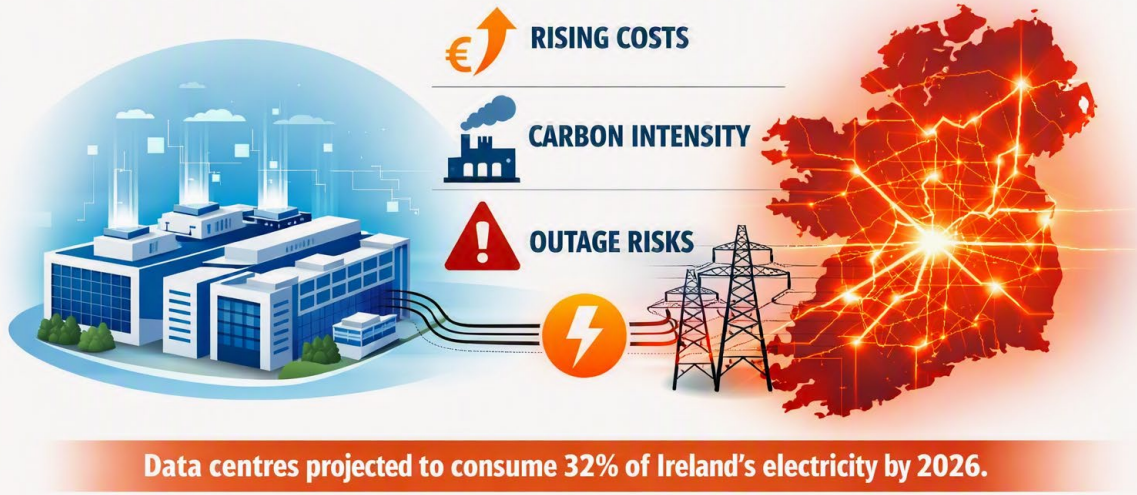
- *Cynthia Ní Mhurchú is a first-time Fianna Fáil MEP representing Ireland South and a member of Renew Europe Group, the centrist political group in the European Parliament*

CRITICAL DIGITAL INFRASTRUCTURE

- *Data centres are critical digital infrastructure, yet their reliance on centralised grids exposes them to rising costs, carbon intensity, and reliability risks. This webinar will examine the challenge and discuss how clean hydrogen can become a potential pathway to reduce dependence while enhancing resilience.*
- Questions we'll explore today
  - Exploring Clean Hydrogen Microgrids for Sustainable Data Centres
  - Reliance on the Grid: Is There Another Way?

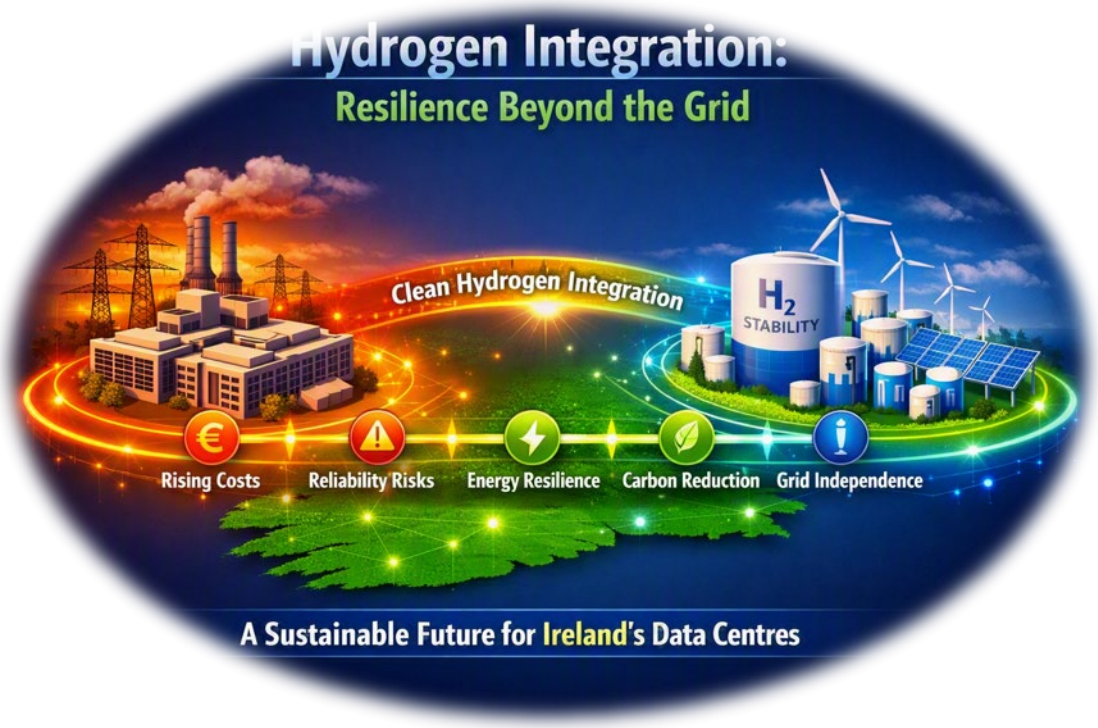
ELECTRICITY DEMAND

- Data centres consume vast amounts of electricity, often straining national grids. In Ireland, for example, data centres are projected to account for 32% of national electricity demand by 2026.
- This dependency creates risks:
  - rising costs,
  - carbon intensity,
  - and vulnerability to outages.



PATHWAY TO RESILIENCE

- Hydrogen offers a pathway to resilience. By reframing the challenge around autonomy and sustainability, hydrogen can reduce reliance on the grid while aligning with decarbonization goals.
- Microsoft's pilot project in Dublin, which powered a data centre building with 250kW of green hydrogen fuel cells, demonstrates how hydrogen can directly substitute for diesel backup systems



ENERGY CROSSROADS

- Ireland's data centre sector is at a crossroads. As these facilities now account for roughly 21% of the nation's electricity usage (with operational capacity at 1.4 GW and set to rise to 2.6GW by 2030) their dependence on the centralised grid is becoming a strategic risk.
- Grid reliance exposes operators to escalating energy costs, connection backlogs, and growing concerns over supply reliability, especially as Ireland's electricity demand is forecast to increase by 45% by 2034. The current grid mix (43% fossil fuels, 42% low-carbon sources, and 15% imports) means that data centres are vulnerable to price volatility, emissions targets, and potential supply disruptions.

OUR INTERDEPENDENT ENERGY-DIGITAL ECOSYSTEM

- The future of digital infrastructure and the future of the grid are now inseparable. Their shared success depends on coordinated action, diversified energy strategies, and a commitment to building a secure, sustainable, and interdependent energy-digital ecosystem

WHERE DIGITAL AND ENERGY CONVERGE TO SHAPE EUROPE'S TOMORROW

- **Ireland can set the European benchmark** for how to power data-centre growth without overwhelming the electricity system.
- **Smart grid management and diversified energy strategies** allow Ireland to meet rising digital demand while strengthening national resilience.
- **Hydrogen, storage, and flexible generation** create the technological and energy headroom needed for long-term digital expansion.
- **Coordinated action between regulators, grid operators, and industry** can turn today's constraints into tomorrow's competitive advantage.
- **By proving that digital growth and decarbonisation can reinforce each other**, Ireland positions itself to lead Europe toward a secure, sustainable, and interdependent energy-digital future.

JEANYVES CHERRUAULT

Dr JeanYves Cherruault

Head of Group Strategic Partnerships at Centrica

centrica

Beyond the Grid

Clean Technologies Pathways for Data Centres

Hydrogen Ireland Webinar | 10 September 2026 | Dr Jean-Yves Cherruault, Centrica

Ireland’s data centre sector at a crossroads

Grid dependency has become a strategic risk and a catalyst for change

22%

of Ireland’s electricity is used by data centres today — up from just 5% in 2015

1.4→2.6 GW

operational capacity today, set to rise to 2.6 GW by 2030 as demand accelerates

+30%

forecast rise in Ireland’s national electricity demand by 2032

December 2025: The regulatory turning point

The CRU’s new Large Energy User policy ends the connection moratorium in place since 2021. New data centres must now **self-supply generation and storage matching their demand**, and **meet 80% of annual demand with new Irish renewables** within six years. Growth is no longer about the grid, it is about clean, self-generated power.

A powerful engine for Ireland’s economy

Data centres already underpin billions in value and constrained capacity means lost opportunity

€21bn

annual contribution to Ireland’s GVA from data-centre customers’ activity around 4% of national GVA

~69,000

jobs supported across the economy through data-centre customers’ activity

€428m

GVA from a single operator’s 10-year Irish capital pipeline (Equinix)

But capacity is the constraint

Globally, an estimated **Hundred bn Euros of demand goes unfulfilled every year** for lack of data centre capacity. Every gigawatt Ireland cannot power is investment, revenue and jobs lost to other markets, making new capacity a national economic priority.

Answering the energy trilemma

New, renewable and sovereign energy is the key that unlocks the sector's growth

Energy security

Reliable, always-on power that reaches beyond a constrained grid, resilience by design, not by chance.

Carbon

An 80% renewables obligation and clean hydrogen delivering ≥70% lifecycle GHG savings versus fossil fuels.

Cost

Affordable, predictable energy that keeps Ireland competitive against other European data-centre hubs.

Sovereignty of supply is now strategic

Clean hydrogen or other technologies microgrids and on-site generation offer **autonomy, resilience and sustainability,** turning today's grid constraint into tomorrow's competitive advantage.

A proven formula for delivery

Align capital, policy and industrial know-how — it has worked before

Patient capital

De-risked, long-term financing at scale, public backing that unlocks private investment.

Policy & politics

Stable, aligned government direction on planning, regulation and renewable connection.

Industrial know-how

Domestic supply chains, skills and delivery capability rooted in local communities.

Proven at scale: France's Messmer Plan took nuclear from 8% to ~80% of supply in ~15 years, the London Underground and US Interstates tell the same story. And the industrial dividend is already visible in Ireland: Equinix's **~€593m** advanced manufacturing facility in Dundalk (14,000 m²) will build power equipment for data centres and support **~200 skilled jobs**, with **~€153m** of GVA from two Dublin builds, and every 10 direct jobs supporting ~3 more across the supply chain.

The prize is bigger than data centres

Get the alignment right and Ireland does more than power its data centres — it **revitalises its wider industrial base, its domestic supply chains and the skilled jobs and communities that come with it.**

KEITH MACLEAN-MARTIN

Keith MacLean-Martin

Technical Director, Piller UK Ltd (subsidiary of Langley Power Solutions Division)

TRANSITIONAL ROLE OF ONSITE GENERATION

Data Centre Power

- Critical Power Requirements
- Redundancy & Resilience key
- Always on Demand delivering > 99.999% Availability

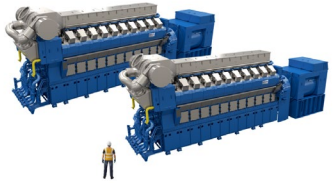
Power Availability

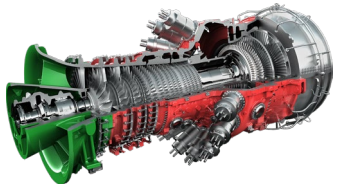
- Grid connections 5 – 10 years
- Standby generation → Prime power generation
- Generation delivers grid services
- Fuel Road Map:

Diesel → HVO → Gas → Biomethane → Hydrogen

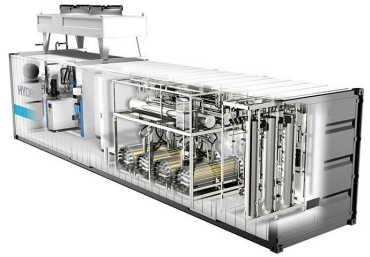
GENERATION & AUTONOMY

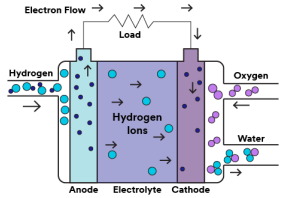
- Reciprocating Engines
- Turbines
- Fuel Cells, such as
  - Solid Oxide (SOFC)
  - Molten Carbonate (MCFC)
  - Phosphoric Acid (PAFC)





- Battery Energy Storage (BESS)
- Flywheel Energy Storage (FESS)
- Electrolysers

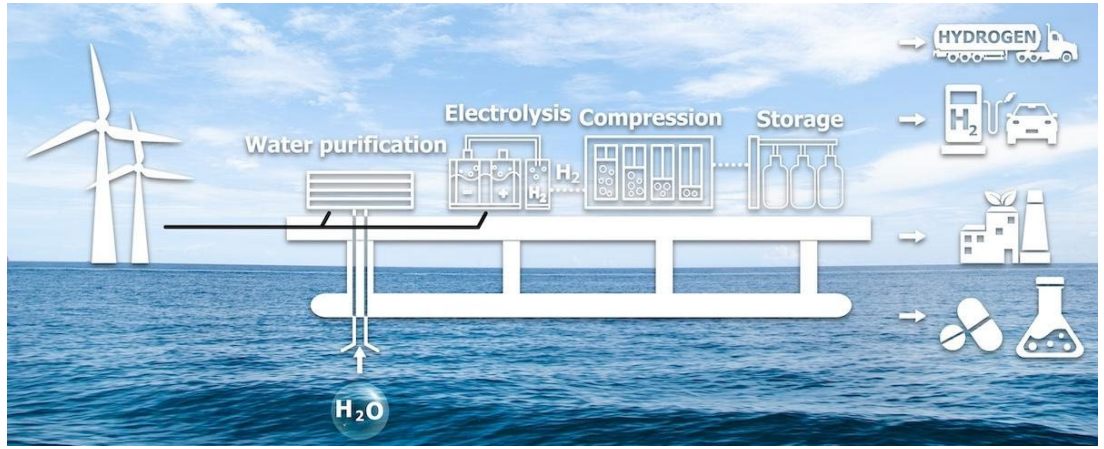




Autonomy	Seconds	Minutes	Hours	Days	Weeks	Continuous
Flywheel Storage						
Battery Storage						
Standby Generation						
Prime Generation						

RENEWABLE ENERGY INTO DISPATCHABLE POWER

- Curtailed wind generation – 2.1TWh
- Electrolysis to generate Hydrogen
- Local storage or pipe network transfer
- Hydrogen delivered to generation
- Power delivered as required
- Battery Energy Storage System (BESS)



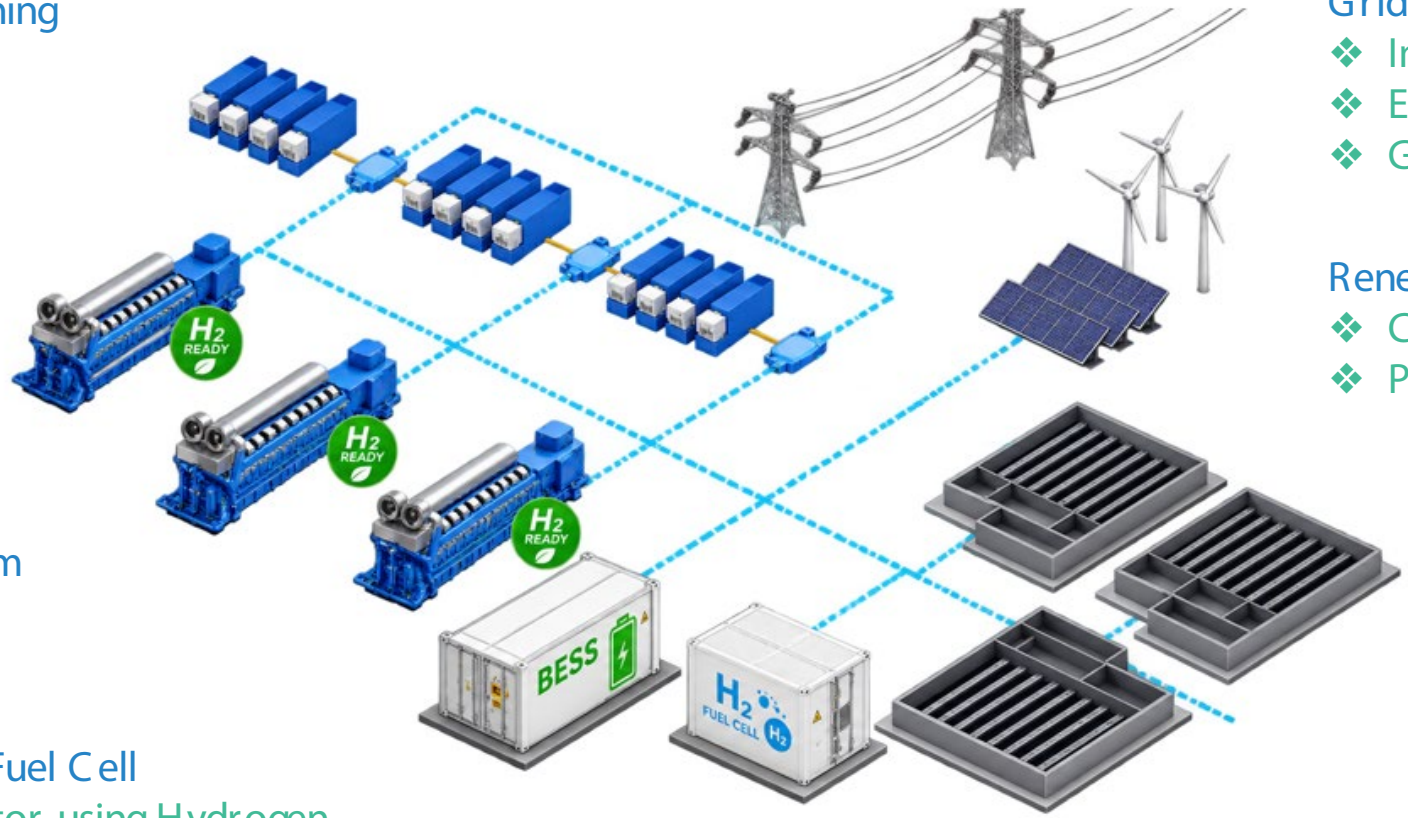
MICROGRID & AUTONOMY

UPS & Power Conditioning
- Stability
- Grid Forming
- Power Quality

Prime Power Generation
- Despatchable Power
- Grid Services
- Demand

Battery Energy Storage System
- Medium Term Storage
- Hours

Hydrogen Fuel Cell
- Generator using Hydrogen
- Grid Forming
- Power Quality



Grid Connection
- Import Demand
- Export Demand
- Grid Services

Renewable Generation
- Clean Power
- Produce Green H_2

Data Centre Power
- Clean
- Reliable & Secure
- High Quality

PATHWAY AND REMAINING CHALLENGES

- Data Centre Scale from 100s kW to 10s MW
  - Deliver a mix of generation assets powered by different fuels
  - Consider generation assets power using blended fuels delivering pathway to 100% Hydrogen
  - Diverse assets helps to deliver reliability, redundancy and security
  - Microgrid stability key in all operational modes and combinations of assets.

- Hydrogen
  - Challenges remain to scale the production; as use grows solutions evolve
  - Geographic locations and transport to final point of use

PETER LANTRY

Peter Lantry

leads Equinix’s business in Ireland and is responsible for driving the company’s growth as Ireland’s digital economy expands in tandem with data volumes

EQUINIX

Hydrogen Ireland

Storage, Flexibility, and Backup Through Hydrogen

September 2026

Peter Lantry, Managing Director, Equinix Ireland

EQUINIX®

270+
Data centers

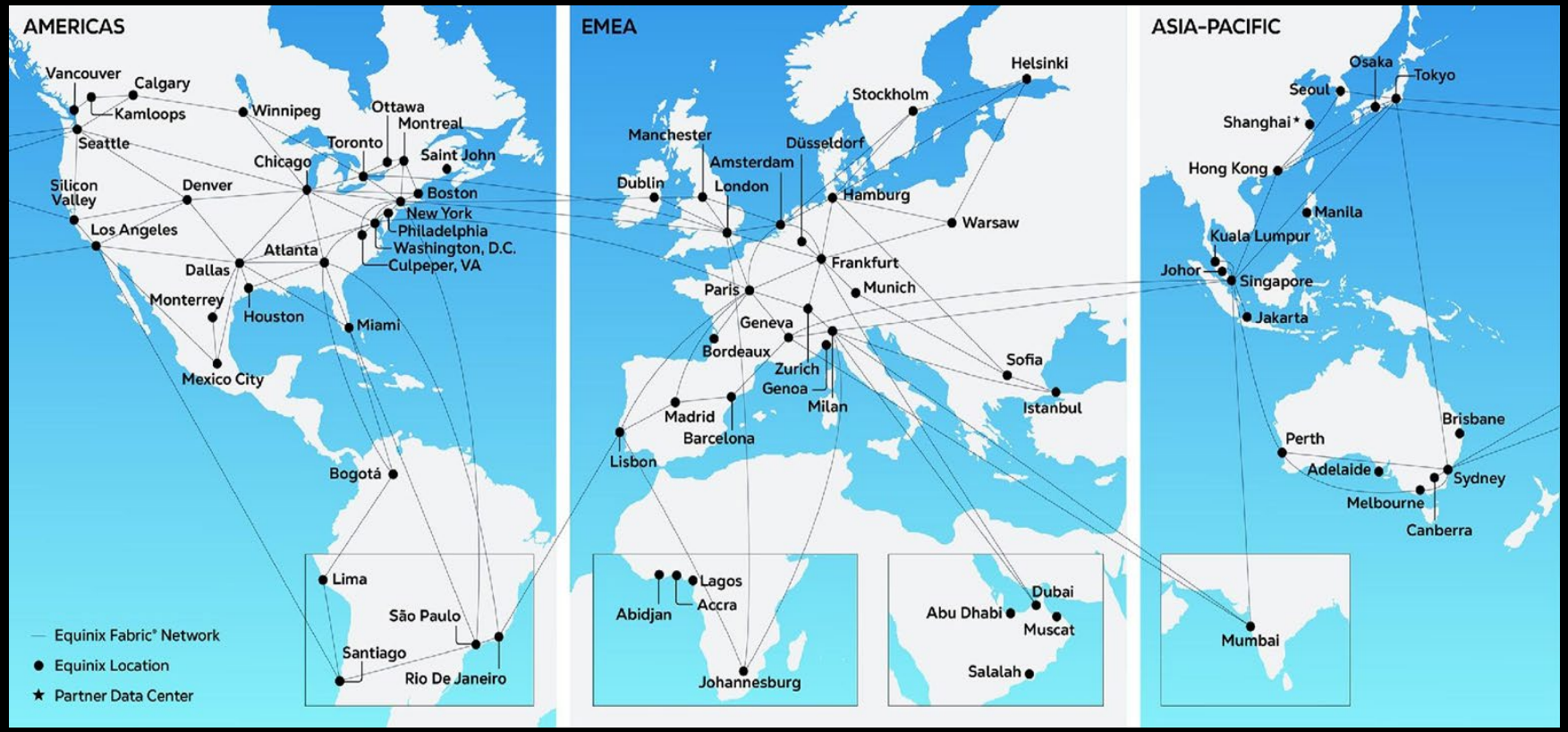
77
Metros

36
Countries

99.999%+
Uptime record*

The world's digital infrastructure company®

Shortening the path to unmatched connectivity and success, enabling digital innovations that shape the world.



HYDROGEN: FROM PILOT TO POSSIBILITY

Hydrogen complements batteries and the grid to deliver long-duration resilience.

TODAY

Batteries cover short-duration needs

EQUINIX IRELAND PILOT

First on-site hydrogen fuel cell pilot at our IBX data centre in Dublin.

FUTURE

Hydrogen provides long-duration resilience

LONG-DURATION RESILIENCE

Reliable backup when it matters most

ZERO LOCAL EMISSIONS

Supporting net zero ambitions

COMPLEMENTS BATTERIES

Ideal for extended duration needs

STRENGTHENS THE GRID

Supports stability and reduces pressure

H_2 HYDROGEN WON'T REPLACE THE GRID. IT WILL STRENGTHEN IT.

HYDROGEN: LESSONS FROM THE DUBLIN PILOT

What we learned – and what still limits large-scale deployment

WHAT DID WE LEARN?

TECHNICALLY FEASIBLE

Hydrogen fuel cells can reliably provide long-duration backup power for mission-critical digital infrastructure.

Supports outages lasting many hours – and potentially days with sufficient fuel.

COMPLEMENTS, NOT REPLACES, THE GRID

Hydrogen is one element in a resilient energy system alongside grid, batteries, renewables and demand response – each solving a different problem.

ZERO LOCAL EMISSIONS

Replacing diesel generators with green hydrogen fuel cells reduces local air pollution, noise and operational emissions.

A clear advantage in urban environments.

WHAT STILL LIMITS LARGE-SCALE DEPLOYMENT?

1. COST

- Biggest barrier today
- Hydrogen systems cost significantly more than diesel backup
- Green hydrogen still relatively expensive

2. HYDROGEN AVAILABILITY

- Reliable access to certified green hydrogen is limited
- Where will it come from?
- How will it be transported?
- Can supply be guaranteed during extended outages?

3. INFRASTRUCTURE

- Ecosystem still developing
- Refuelling logistics
- Storage
- Distribution networks
- Safety standards
- Maintenance expertise

4. SPACE REQUIREMENTS

- Hydrogen storage tanks require more physical space than diesel
- A practical challenge for existing urban data centres

5. STANDARDS & REGULATION

- Need harmonised safety standards
- Consistent permitting
- Building-code guidance
- Insurance frameworks
- Clear operational standards

6. BUSINESS CASE

- Today, hydrogen often needs more than backup power
- Future value could come from:
  - Grid services
  - Flexibility markets
  - Capacity mechanisms
  - Carbon reduction
  - ESG value
  - Avoided diesel compliance costs

THE PILOT SHOWS HYDROGEN HAS A ROLE.
SCALING IT REQUIRES AN ECOSYSTEM TO SUCCEED.

FROM PILOT TO SCALE: WHAT NEEDS TO HAPPEN NEXT

Scaling hydrogen for data centres requires progress across four pillars.

TECHNOLOGY

- Continue improving reliability and efficiency
- Standardise modular solutions for data centres
- Drive down cost through innovation and scale

INFRASTRUCTURE

- Expand green hydrogen production
- Build storage and distribution networks
- Develop refuelling and logistics capabilities
- Ensure safety and operational readiness

POLICY

- Support first-of-a-kind deployments
- Streamline permitting and approvals
- Establish clear safety and operational standards
- Reward low-carbon resilience solutions

MARKET

- Reduce costs through scale and competition
- Develop long-term demand visibility
- Create investable market signals
- Unlock multiple value streams

> The Dublin pilot wasn't about proving that hydrogen will replace diesel tomorrow.
> It demonstrated that hydrogen has a credible role in tomorrow's **resilient, low-carbon energy system.**
> The challenge now is no longer proving the technology.
> **It is building the ecosystem** that allows it to scale.

LONG-DURATION RESILIENCE

When it matters most

ZERO LOCAL EMISSIONS

Cleaner cities, healthier communities

ENERGY SYSTEM PARTNER

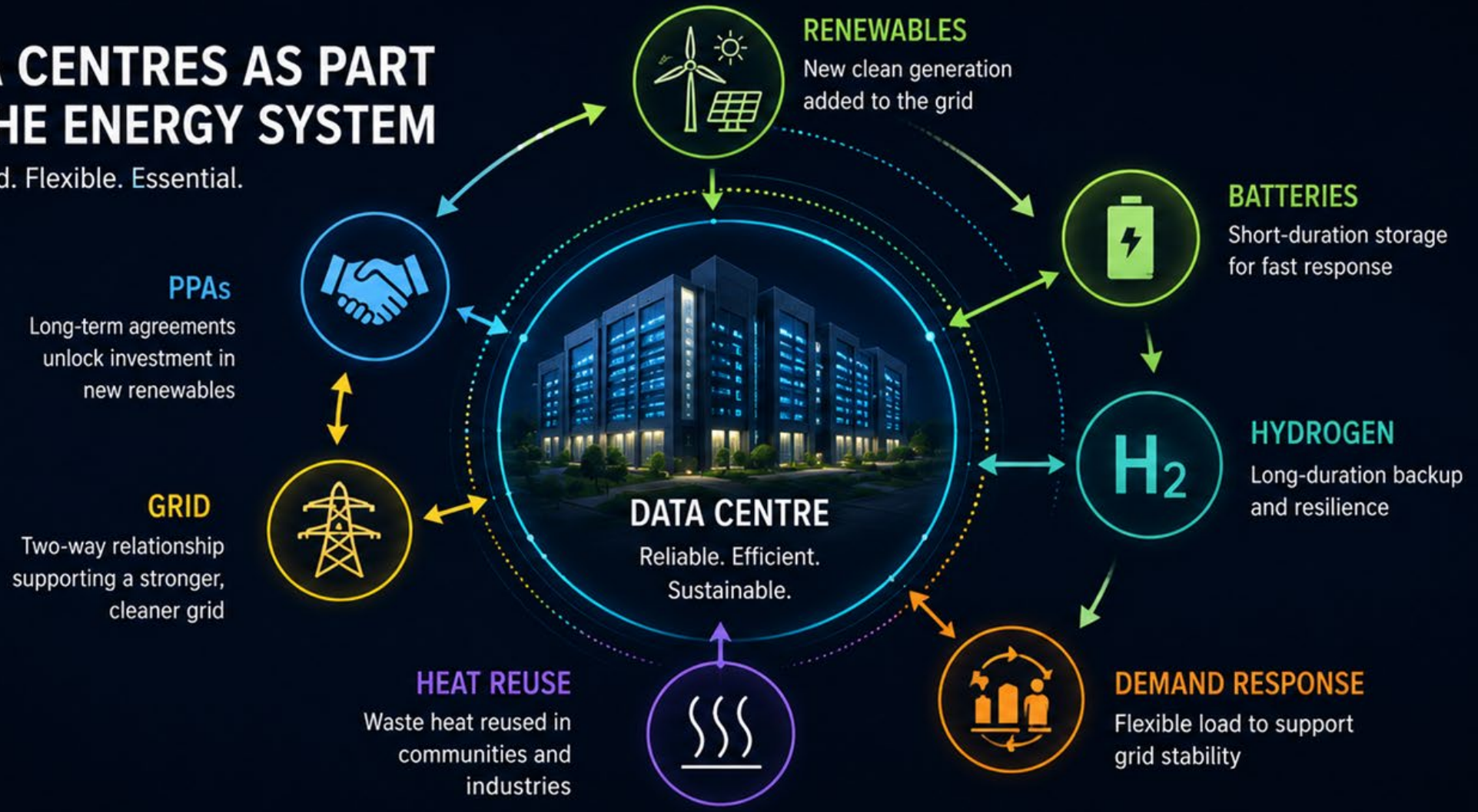
Supporting a stronger, more flexible grid

BUILDING A SUSTAINABLE FUTURE

For digital infrastructure and the planet

DATA CENTRES AS PART OF THE ENERGY SYSTEM

Integrated. Flexible. Essential.

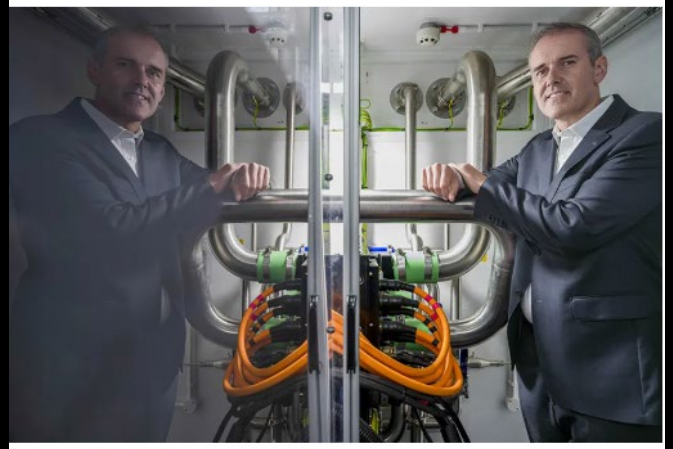


DATA CENTRES ARE INTEGRATED ENERGY PLATFORMS
THAT STRENGTHEN A RESILIENT, CLEAN ENERGY SYSTEM.

IRISH MEDIA RECOGNISED THE OPPORTUNITY

BusinessPlus.ie

Equinix trials Ireland's first hydrogen power unit in Dublin data centre



NEWS / 19TH JUNE 2026 / GEORGE MORAHAN

Email in Linkedin

Data centre company Equinix has trialled its first hydrogen power unit for critical back-up systems in Ireland.

The installation, undertaken in collaboration with ESB and GeoPura, marks a significant step in the exploration of hydrogen as a back-up power resource for large energy users, which could potentially replace diesel and gas.

Irish Independent

Dublin-based Equinix data centre tests hydrogen fuel to ease pressure on Irish energy grid

The move comes as the ESB is set to begin producing green hydrogen as an alternative energy source

L-R: Equinix Ireland managing director, Peter Lantry and GeoPura chief executive, Andrew Cunningham inside a hydrogen electricity converter © No Credit

Adrian Weckler
Technology Editor

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19 Jun 2026 5:30 AM

RTE

New hydrogen power unit trialled at Dublin data centre

Updated / Friday, 19 Jun 2026 10:58

The hydrogen power solution being used at Equinix's Dublin data centre

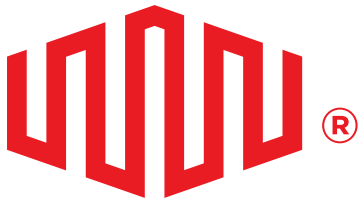
By Brian O'Donovan
Work & Technology Correspondent

Data Centre News

DC CLEAN TECHNOLOGIES ENERGY EFFICIENT

Equinix starts hydrogen power trial at Dublin data centre

Fri, 19th Jun 2026



EQUINIX

AGNES WARNER

Agnes Warner

Property Director at Pure Data Centres Group, responsible for property strategy, utilities and operational leadership across an international hyperscale data centre portfolio.

Speaker Introduction

Agnes Warner MBA

Property Director, Pure Data Centres Group — responsible for property strategy, utilities and operational leadership across an international hyperscale data centre portfolio.

Focus 01

Property & Operations

More than 15 years in the data centre sector, with leadership roles spanning property, operations, energy procurement, commercial strategy and organisational transformation.

Focus 02

Energy Innovation

Led the adoption of one of Europe's first large-scale biomethane-backed energy solutions for data centres in Dublin — a practical, commercially viable route to cut emissions from critical infrastructure.

Focus 03

Strategic Perspective

Work focused on the commercial, operational and strategic challenges of supporting the growth of digital infrastructure and the energy that enables it.

Experience Spans

- **Energy procurement** — customer requirements and long-term supply strategy
- **Operational resilience** — reliability and continuity across a hyperscale portfolio
- **Market growth & sustainability** — the expanding role of energy in enabling digital infrastructure

Credentials & Platform

- Executive MBA graduate and Lean Six Sigma practitioner
- Regular speaker and panellist on energy transition, biomethane and hydrogen
- Contributor on energy security and the future of sustainable digital infrastructure

Beyond the Grid: Clean Hydrogen Pathways for Data Centres — Section 4: Policy, Economics & Market Signals

Policy Frameworks Driving Hydrogen Adoption

A maturing regulatory landscape — from national hydrogen strategies to EU-level mandates — is creating binding demand signals that unlock investment confidence.

Layer 1
EU Mandate

REDIII, Hydrogen & Decarbonised Gas Markets Package, and Delegated Acts set binding blending targets, renewable hydrogen quotas, and certification rules — reducing ambiguity for project developers.

Layer 2
National Strategy

Member state hydrogen strategies translate EU mandates into domestic production targets, subsidy frameworks, and infrastructure roadmaps — creating the national policy architecture for investment.

Layer 3
Project-Level Certainty

Clear certification rules and CBAM competitive pressure on imports reinforce domestic green hydrogen demand — giving project developers bankable offtake and investment certainty.

Key Regulatory Instruments

- **REDIII** — mandatory renewable hydrogen quotas for hard-to-abate sectors
- **Delegated Acts** — additionality, temporal & geographical correlation rules for green certification
- **CBAM** — competitive pressure on carbon-intensive imports reinforces domestic demand

Investment Signals Created

- Binding demand signals in hard-to-abate sectors provide offtake visibility for project finance
- Certification clarity reduces contract risk and supports bankable green hydrogen agreements
- Cross-border trade rules enable EU-scale hydrogen market formation

Key tension: Policy ambition outpaces infrastructure and offtake market development — the gap this section addresses directly.

Economics & Investment

The Economic Case & Cost Trajectories

Green hydrogen is moving from a premium product toward cost competitiveness — but the window for decisive policy and investment action is now.

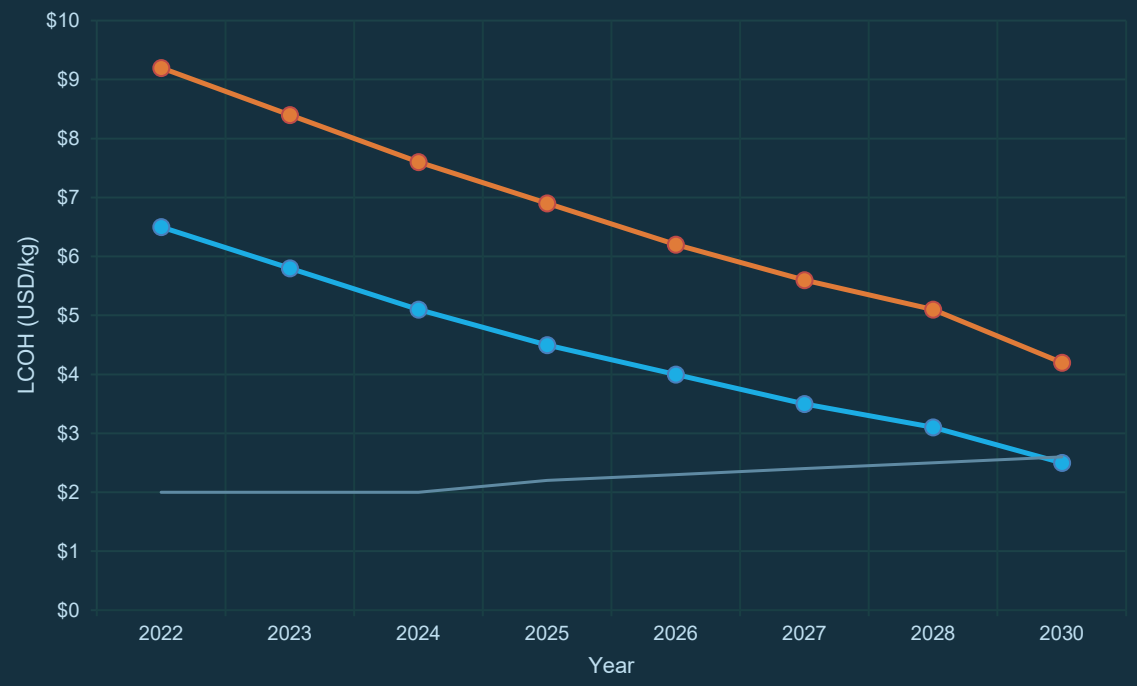
Key Cost Levers

- **Electrolyser CAPEX** — costs have fallen materially; learning rates remain strong
- **Renewable electricity input** — declining prices drive LCOH improvement
- **Capacity factor & financing cost** — key variables at the project level
- **Policy support mechanisms** — CfDs, H2 Global auctions, production tax credits bridge remaining gap

Investor signal: cost trajectory is credible — execution and policy stability are the remaining risk variables.

Indicative LCOH Trajectory

Levelised Cost of Hydrogen (USD/kg) — directional improvement toward cost convergence



Green H_2 (high renewable resource) · Green H_2 (average market) · Cost parity zone

Policy bridge required — near-term economics depend on support mechanisms in markets where cost gap persists

Market Signals — Data Centres & Industrial Demand

Hyperscale data centre growth is emerging as a credible, large-scale demand anchor for hydrogen, alongside traditional industrial offtakers.

Primary Volume Signal

Industrial Demand

Established — Near-Term

Steel · Ammonia · Refining · Chemicals

Primary near-term volume demand for clean hydrogen across hard-to-abate sectors

Offtake structures more mature; sector-specific decarbonisation mandates drive demand signals

Foundational anchor for project economics and bankability in hydrogen project pipelines

VS

Additionality Layer

Data Centre Demand

Emerging — High Growth

Hyperscale · Backup Power · Net-Zero · Grid Services

Power-intensive loads with corporate net-zero commitments create structured hydrogen demand as a flexible, dispatchable carrier

Hydrogen Europe identifies data centres as a material future offtaker — especially where grid decarbonisation lags corporate timelines

CERRE highlights co-location and grid services as value-stacking opportunities; hyperscale operators moving beyond pilot to strategic planning

Sources: Hydrogen Europe Market Monitoring; CERRE Grid Integration Recommendations

Ireland’s Starting Point — Obligation, Not Yet Revenue

CRU’s Large Energy Users connection policy and Ireland’s 2023 National Hydrogen Strategy set the conditions for hydrogen at data centres — but neither creates a hydrogen revenue stream.

Requirement
CRU LEU Obligations

New data centres must provide on-site or proximate dispatchable generation and/or storage matching maximum import capacity, participate in the electricity market, and source at least 80% of annual demand from additional renewable electricity generated in Ireland, subject to a glide path.

Framework
National Hydrogen Strategy

Ireland’s 2023 strategy directs renewable hydrogen to hard-to-electrify uses, long-duration storage and dispatchable power, while direct electrification remains preferable where practical.

Caveat
The Efficiency Caveat

Power-to-hydrogen-to-power carries material conversion losses; hydrogen’s advantage lies in storage duration and sector coupling, not round-trip efficiency.

What the Rules Require

- **Dispatchable capacity** — on-site or proximate generation/storage matched to maximum import capacity
- **80% additionality** — annual demand met with additional Irish renewable electricity, on a glide path
- **Market participation** — obligation to participate in the electricity market, with a 1 MVA de-minimis threshold

What the Rules Do Not Do

- No hydrogen-specific revenue floor — dispatchability is required, but hydrogen earns nothing automatically
- No substitute for additionality — hydrogen does not discharge the separate renewable-electricity requirement
- No guaranteed connection — system operators retain discretion to refuse in constrained regions such as Dublin

Key point: policy creates a role for clean dispatchable assets — the commercial case must still be built from support, market value and avoided fossil cost.

Grid Integration

LEU Connection Policy: Enabler or Bottleneck?

Large Energy User connection policy is a decisive enabler — or bottleneck — for hydrogen projects seeking grid access at scale.

Grid Connection
Queue management, connection agreements, and access conditions governed by CRU LEU policy direction.

Flexible Agreement
Conditional connections accelerate timelines but require operators to manage curtailment exposure.

Electrolyser Operation
Connection terms directly shape electrolyser load factors — a core driver of hydrogen output volumes.

LCOH Impact
Load factor variability feeds directly into Levelised Cost — making connection policy a financial issue, not just regulatory.

Key Policy Considerations

CRU Direction: Conditional Connection
CRU's LEU policy signals a shift toward flexible connection agreements — accelerating grid access timelines while requiring hydrogen operators to define and price curtailment risk upfront.

Coordinated Planning (CERRE Recommendation)
CERRE advocates for coordinated planning between hydrogen demand centres — including data centres — and grid operators, to avoid piecemeal connection outcomes that undermine project economics.

Value Stacking: Co-location & Grid Services
Co-location of hydrogen production with demand centres creates grid services opportunities — curtailment response, demand flexibility — that can improve project revenue stacks.

Policy Ask
Clear, bankable connection frameworks with defined curtailment rules and long-duration contracts — removing project finance uncertainty and enabling investment decisions at scale.

Carbon Pricing — Raising the Fossil Counterfactual

Carbon pricing improves hydrogen's relative position against diesel and gas, but coverage must not be overstated — legal incidence differs by installation.

EU ETS applies to covered stationary installations under Directive 2003/87/EC; inclusion depends on permitted activities and rated thermal input. **Irish carbon tax** applies via excise duties on fossil fuels outside the ETS, with reliefs to avoid double carbon pricing.

EU ETS

Coverage Varies

Applies to covered stationary installations. Standby status alone does not determine inclusion — site-specific permitting and legal review are essential.

Irish Carbon Tax

€100/tCO_2 by 2030

For non-ETS diesel or gas backup, the tax raises fuel cost but is unlikely alone to close the renewable-hydrogen premium. Effect strengthens over asset life.

Policy Direction

Avoid Exemptions

Ireland should avoid a data-centre-specific carbon exemption, maintaining predictable fossil-carbon escalation without overlapping ETS and tax liabilities.

Three Counterfactuals Operators Should Model

1. **Diesel Backup**
   Generator capital and maintenance, fuel, carbon exposure, emissions permitting and replacement risk
2. **Natural-Gas Generation**
   Lower point-of-use carbon than diesel, with allowance or tax exposure over asset life
3. **Hydrogen / Fuel-Cell Resilience**
   Modelled on lifecycle emissions — point-of-use zero does not mean zero lifecycle emissions under EU rules

Renewable-Hydrogen Subsidies — Reducing Price and Offtake Risk

Two external mechanisms address the two risks that matter most to a new Irish supply chain: uncertain price and uncertain early offtake. Ireland should adapt both, not copy them wholesale.

Price-Gap Support

EU Hydrogen Bank

Auction-Based — Proven

Competitive auctions under the Innovation Fund award a fixed premium per kilogram of verified renewable hydrogen for up to ten years.

Competition reveals the minimum support requested, closing part of the gap between production cost and the price buyers will pay.

Verdict — ADAPT: Irish projects may be too small or fragmented to compete alone; DECC and SEAI should aggregate demand and create a top-up or demonstration window.

VS

Bankability Layer

UK HPBM / LCHA

Contractual — Stronger Template

The Low Carbon Hydrogen Agreement provides long-term contractual revenue support through a strike-price and reference-price structure.

It includes mechanisms addressing qualifying volume risk — the stronger template for producer bankability.

Verdict — ADAPT: a competitive Irish Renewable Hydrogen Agreement could offer a time-limited premium and limited volume protection, conditional on certified supply, additional renewable electricity and firm offtake.

Contracts should normally sit with the hydrogen producer or cluster — not subsidise individual fuel-cell assets indefinitely.

Electricity-Market Reform

Pay for the Service, Not Merely the Molecule

Hydrogen-to-power is credible only when measured against the complete fossil-resilience alternative — not against wholesale electricity alone.

Avoided Diesel
Displacing diesel backup removes fuel, emissions permitting and replacement-risk costs from the counterfactual.

Connection Optionality
Dispatchable on-site capacity can ease connection constraints and defer network reinforcement.

Capacity & System Services
The Single Electricity Market can value energy, capacity and system services where assets qualify.

Curtailment & Resilience
Electrolysers can absorb constrained renewable output that would otherwise be lost, while longer-duration autonomy reduces exposure to extended grid outages.

Key Policy Considerations

Obligation Is Not Revenue
CRU policy creates a duty to participate in the market, not a guarantee of revenue — participation is subject to technical qualification, availability and market rules.

Publish a Qualification Pathway
CRU, EirGrid and SONI should set out a technology-neutral route showing how hydrogen fuel cells or engines qualify as dispatchable generation, capacity and system-service providers — including testing, metering, minimum run-time and fuel-security evidence.

Enable Private Wire & Co-location
Irish rules should let additional or constrained renewable generation supply electrolysers and shared storage where efficient and consistent with EU rules.

Reward Duration, Not Throughput
A demonstration auction should reward verified availability, duration and emissions performance rather than energy throughput — avoiding unnecessary hydrogen combustion while valuing resilience that batteries or grid reinforcement cannot provide at the required duration.

The Integrated Economic Test for Irish Data Centres

Hydrogen is commercially credible only where the combined value stack closes the gap against the best alternative — compared on total annualised cost and service quality, not fuel price alone.

The assessment must set the full hydrogen system against the full fossil counterfactual, then add the system value the asset is demonstrably qualified to earn **and any transparent, competitively awarded subsidy** net of grants — with no double recovery and a defined route to declining support.

Fossil Counterfactual — Baseline

Generator capital and maintenance, diesel or gas, legally applicable EU ETS or carbon-tax exposure, emissions permitting, testing, fuel security and expected replacement risk.

Hydrogen System — Full Cost

Fuel-cell or hydrogen-ready generator capital, certified hydrogen delivered cost, storage and safety infrastructure, efficiency losses, maintenance and contracted fuel availability.

System Value — Upside

Capacity and system-service revenue the asset is qualified to earn, avoided connection or network costs, curtailed-renewable capture, and the value of longer-duration resilience.

Where the Test Lands

1 Strongest — Backup & Long-Duration Resilience
Annual hydrogen consumption stays low while the value of dependable capacity is high.

2 Possible — Flexible Peaking
Viable where market revenue and renewable fuel supply are contractable.

3 Weakest — Continuous Prime Power
Electrolysis and reconversion losses mean direct renewable electricity is normally more efficient, and high utilisation magnifies fuel-price exposure.

ACER & Hydrogen Europe Market Monitoring — What the Data Says

Independent market monitoring confirms momentum but flags execution gaps that require coordinated action from regulators, operators, and investors.

ACER provides the regulatory baseline — tracking project pipelines, offtake contracts, infrastructure utilisation, and cross-border flows. **Hydrogen Europe** complements with industry-side data: electrolyser deployment rates, financing close rates, and demand-side contract activity.

Project Pipeline Growth — Strong

Pipeline of announced and permitted hydrogen projects is expanding across EU member states. ACER monitoring confirms healthy project formation rates.

Offtake Contract Formation — Lags Pipeline

Offtake contract formation consistently lags the project pipeline. Without committed offtakers, projects stall before reaching final investment decision.

Financing Gaps — Persist

Financing gaps persist where policy certainty is lowest. Early offtake commitments from large consumers — including data centres — convert pipeline into operating capacity.

Prioritised Ireland Action Plan

1 — Irish Renewable Hydrogen Agreement (2027–2029)

DECC, with SEAI and Finance, to competitively award a declining, time-limited price premium with narrowly defined volume protection to certified producers or multi-user clusters.

2 — Data-Centre-Linked Hydrogen Valley

One competitively selected, location-led demonstrator combining data-centre resilience demand with other users, shared electrolysis, storage and logistics.

3 — Hydrogen-to-Power Market Pathway

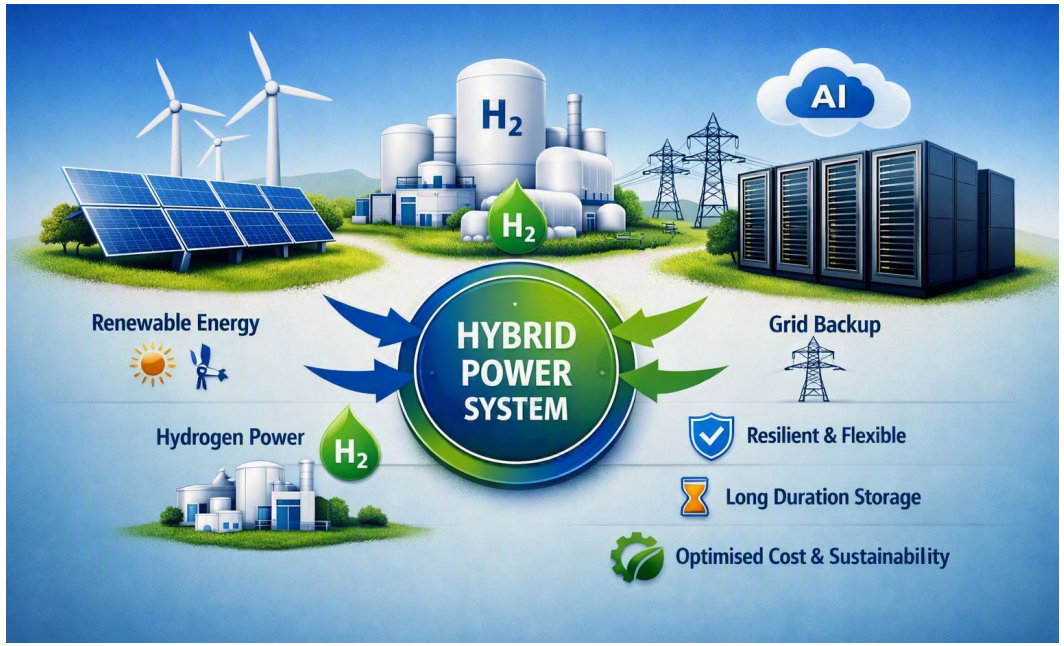
CRU, EirGrid and SONI to publish how certified hydrogen assets meet LEU obligations and qualify for energy, capacity and system services — clarity, not preferential dispatch.

PAUL MCCORMACK

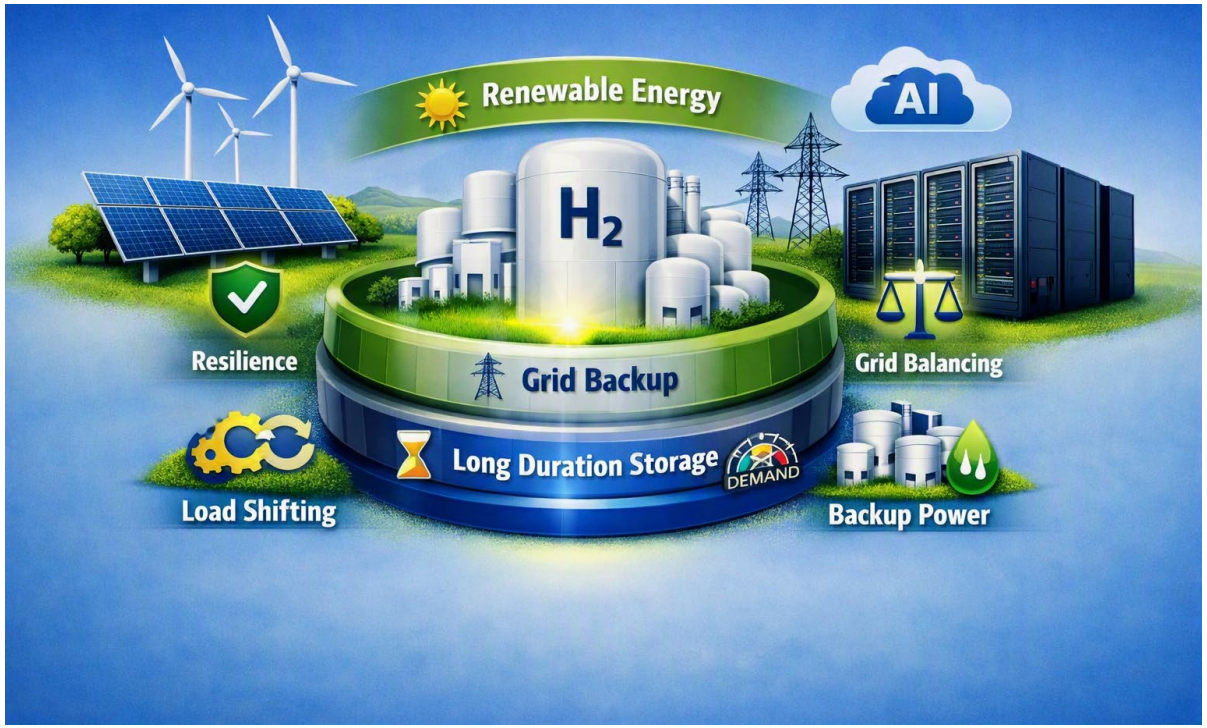
Paul McCormack,
CEO of Hydrogen Ireland

HYBRID MODELS & GLOBAL HYDROGEN LESSONS

- **Hybrid Energy Models**
- Data centres are shifting to hybrid systems combining renewables, hydrogen, and limited grid reliance.
- This blended model delivers resilience, flexibility, and long-duration stability for AI-driven workloads.
- Hybrid operation reduces exposure to grid congestion and optimises cost and sustainability.



HYDROGEN AS THE FLEXIBILITY LAYER



- Hydrogen provides firm, dispatchable power and long-duration storage.
- It stabilises renewable-heavy systems and supports microgrid or near-grid operation.
- Hydrogen Europe's 2025 briefing highlights hydrogen's role in securing reliable energy amid grid constraints.

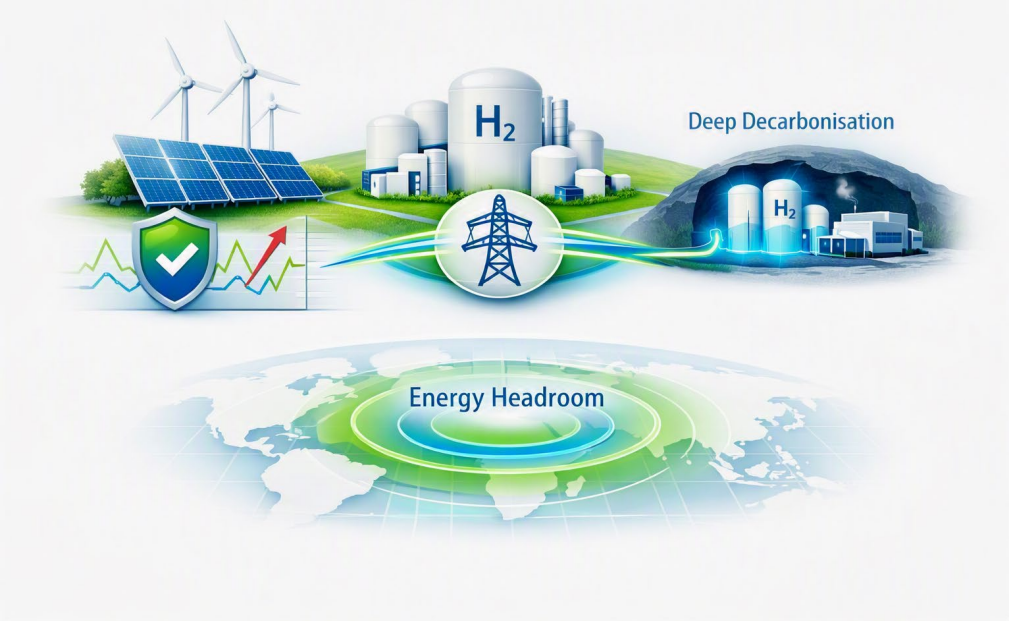
GLOBAL HYDROGEN VALLEYS

- Europe, Asia, and North America are demonstrating scalable hydrogen ecosystems.
- Netherlands, Germany, Austria, and Japan show how hydrogen valleys anchor industrial demand.
- These models offer a blueprint for hydrogen-enabled digital clusters.

DATA CENTRES AS EARLY ADOPTERS

- Microsoft's hydrogen trials in Ireland and W yoming prove feasibility and scalability.
- Singapore's hydrogen-ready testbeds show adaptability in dense urban environments.
- South Korea's digital campus pilots integrate hydrogen with microgrids for high-density clusters.

STRATEGIC ADVANTAGES



- Hybrid hydrogen-renewable systems hedge risk and reduce exposure to volatile electricity markets.
- They enable deep decarbonisation of backup systems and long-duration storage.
- They create new energy headroom where grid expansion is slow or constrained.

IRELAND'S LEADERSHIP OPPORTUNITY

- Ireland can pioneer hydrogen-enabled digital infrastructure and set the European benchmark.
- Offshore wind and emerging hydrogen strategies position Ireland for first-mover advantage.
- Success here would allow Ireland to lead Europe toward secure, sustainable, interdependent digital-energy ecosystems.

THREE KEY TAKEAWAYS FOR THE AUDIENCE

1. Clean Hydrogen Microgrids Offer a Viable Path to Data-Centre Energy Autonomy

- Hydrogen-powered microgrids can provide secure, dispatchable on-site generation that reduces dependence on constrained grid capacity. For operators facing grid connection delays or curtailment risk, hydrogen offers a credible alternative route to expansion.

2. Hydrogen Enables Resilience, Flexibility, and Zero-Carbon Backup Power

- Hydrogen systems can deliver long-duration, emissions-free backup power — overcoming the limitations of diesel and battery-only solutions. This strengthens operational resilience, supports sustainability commitments, and aligns with emerging regulatory expectations for low-carbon standby generation.

3. Early Adoption Creates Strategic Advantage in a Tightening Energy Landscape

- Data-centre operators who integrate hydrogen early will be better positioned to secure energy capacity, meet ESG targets, and future-proof operations against tightening emissions rules. Hydrogen is not a distant technology — it is deployable now, and early movers will shape the next phase of Europe's digital energy infrastructure.

THANK YOU

Q & A

‘Hydrogen delivers the three pillars of a secure energy future, stability, sovereignty, and security, by enabling nations to produce, store, and dispatch their own clean power on demand.’

Hydrogen transforms energy independence into reality, stabilising grids, strengthening sovereignty, and safeguarding Europe’s energy and data systems for generations to come.’

The Association for Energy, Mobility, Industry & Community

Hydrogen Ireland