

TERRESTRIAL ENERGY

Delivering zero-carbon thermal and electrical energy



Innovative, proven IMSR technology

IMSR at a glance: High-temperature and low-pressure operation combined with high inherent safety delivers superior capital efficiency over legacy nuclear technologies

585 vs 290°C

IMSR heat supply is **best-in-class**, vs ~290°C from both legacy nuclear and other Gen IV reactor technologies

45% vs 30%

Electricity is generated **50% more efficiently** than conventional nuclear power plants

\$6 Heat

Best-in-class levelized cost of heat (LCOH) \$6 per MMBTU / \$20 per MWh(th) for industrial applications

\$50 Electric

Best-in-class levelized cost of electricity (LCOE) \$50 per MWh(e) for dispatchable/ base load applications

822 MWth

IMSR provides **co-located “behind the fence” cogeneration at industrial scale** (822 MWth / 390 MWe)

65 years

IMSR builds on 65 years of **proven, prototyped and demonstrated** molten salt technology using innovative enhancements

50+ years

Long **operational life** of IMSR plant

Standard fuel

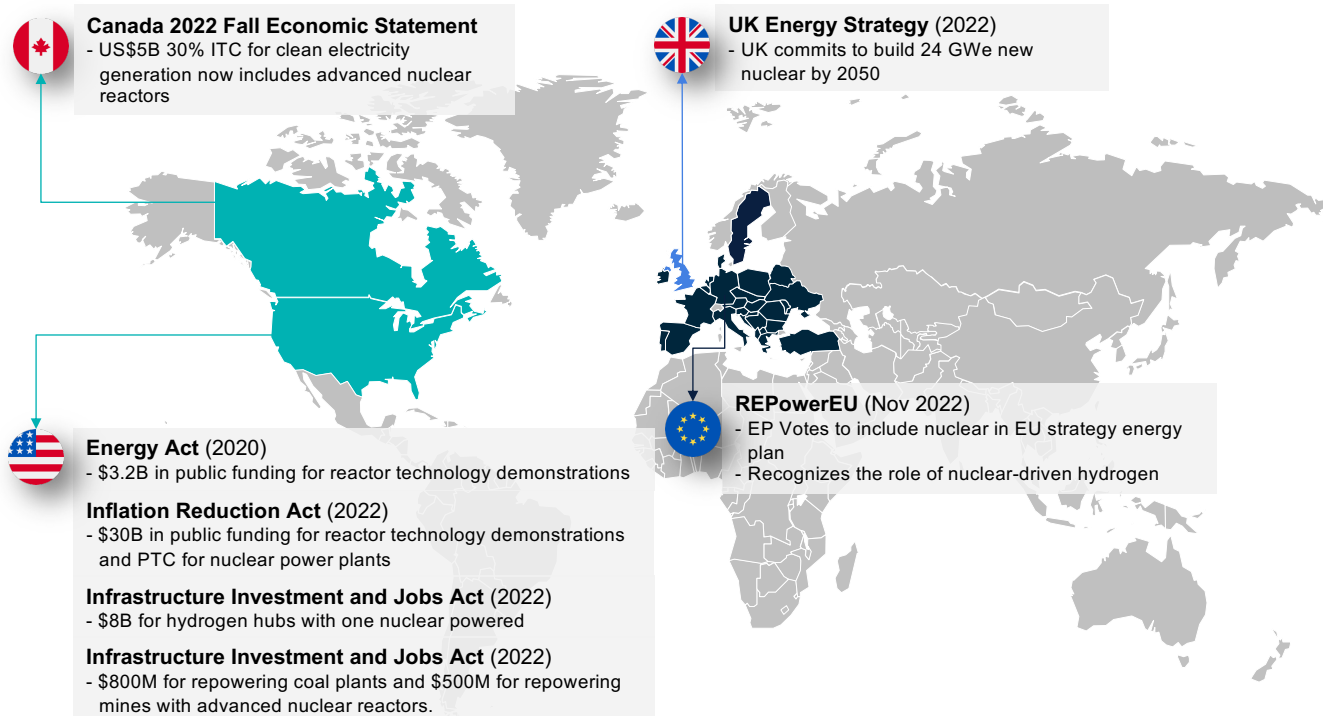
IMSR plant uses standard-assay low-enriched-uranium (<5% enrichment), today’s **only commercially accepted and available nuclear fuel**

Governments and the private sector have taken notice

We are in the early stages of a “nuclear energy renaissance”

“We’re witnessing some of the best market fundamentals we’ve ever seen in the nuclear energy sector”
Tim Gitzel, CEO of Cameco

Recent public commitments:



Recent private transactions:

- Westinghouse sold to Brookfield and Cameco for \$8B
- >\$1.6B equity capital raised for advanced and innovative nuclear technology developers since 2022, including multiple SPAC processes underway

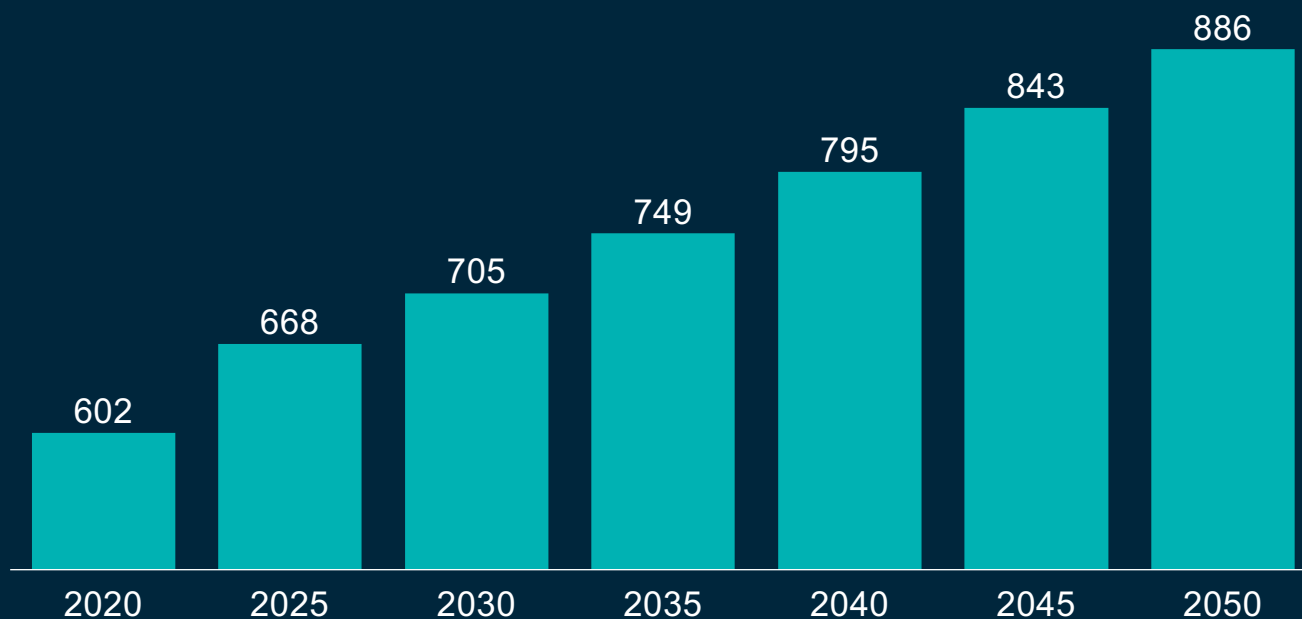


Large, growing TAM

Energy is the defining risk and opportunity of the 21st century

Forecasted global primary energy consumption

Quadrillions of British Thermal Units (BTU)



Global primary energy consumption is forecasted to grow **50% by 2050**

Source: US Energy Information Agency, [International Energy Outlook 2021 forecast through 2050](#)



Large, growing TAM

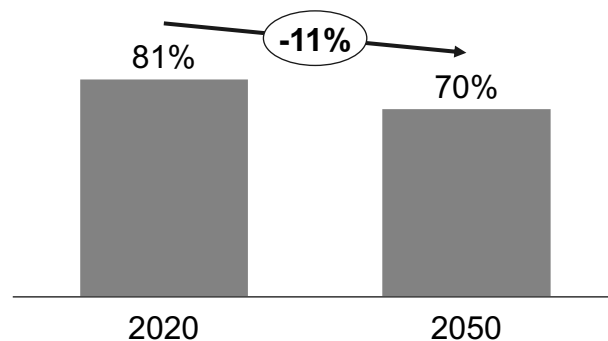
Over 80% of energy demand in our modern world is heat, for which we currently have **no scalable alternative** to fossil fuels



High-temperature **heat is converted into mechanical energy** for electricity generation, cars, planes, ships – and is the essential energy form for the **industrial and chemical processes** that make the materials of our modern industrial world

Source: US Energy Information Agency, [International Energy Outlook 2021 forecast through 2050](#)

% mix of primary energy via fossil fuels



Forecasted use of fossil fuels shows only a **marginal decline by 2050** – as there has previously been no anticipated alternative

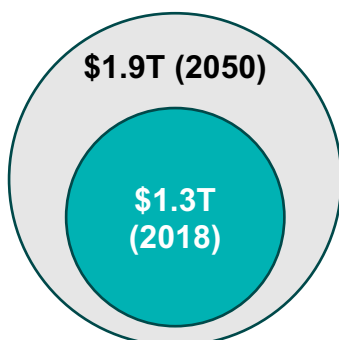
- High-temperature heat is the essential energy form for the modern world
- Without an alternative energy supply, net zero is not possible
- Electrification is only a partial solution – and does not deliver a true carbon/methane/coal replacement
- Change is needed
- **Change is here**



Large, growing TAM

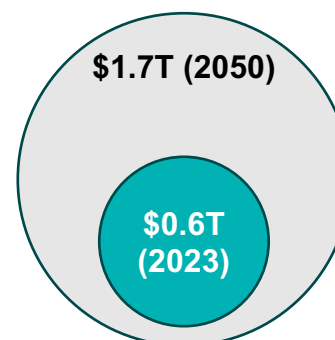
Terrestrial Energy addresses two vast and linked energy markets: heat (\$1.3T) and electricity (\$0.6T) for industry

Global industrial heat market (\$T)



- Industrial processes require high-temperature heat (>500 °C), which is supplied almost universally from fossil fuel combustion – creating a large replacement potential for IMSR
- Molten salt technology enables safe high-temperature, low-pressure operation (beyond the abilities of legacy nuclear), and ability to transport heat across distances required to isolate nuclear activities from industrial activities
- High-temperature output has many uses in industrial processes and is necessary for high-efficiency and low-cost electricity generation
- IMSR Plant “cogenerates” safe and secure high-temperature heat and low-cost electricity for industrial process supply

Global nuclear electricity market (\$T)



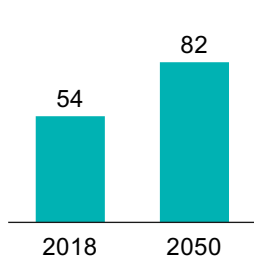
- Grid power generation provides reliable carbon-free electric power for industry and municipal use – and most logical coal plant replacement
- The IMSR Plant generates electricity 50% more efficiently, its output can load-follow and can pair perfectly with intermittent wind and solar power generation on-grid
- IMSR’s design offers ability to deploy contracts with industrial cogeneration “behind the fence” and with grid electric power customers
- IMSR’s smaller and modular plant design provides the ability to target individual industrial sites, smaller grids/electrical markets, and isolated areas



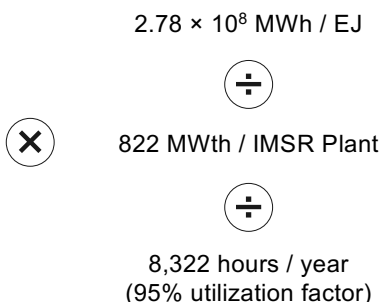
Large, growing TAM

High-temperature, high-quality industrial process heat is Terrestrial Energy's primary market

Demand for high-temperature industrial heat¹ (Exajoules)

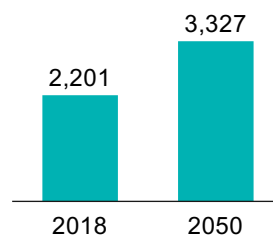


IEA has measured **54 EJ** of high-temperature industrial heat demand in 2018, which growing at total primary energy consumption (1.3% CAGR) implies **81 EJ by 2050**



Each IMSR Plant (2x reactor Core-units) able to generate 822 MWth high-temperature industrial heat

Number of IMSR Plants



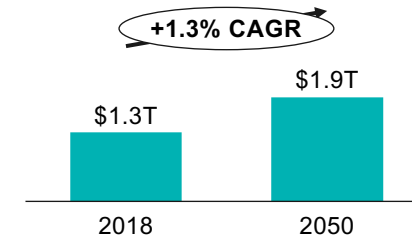
Current market size implied to be **>2,000 IMSR Plants**, growing to **>3,000 by 2050**

\times \$579M / IMSR Plant

Cumulative upfront CapEx and average annual OpEx

$=$

Implied TAM (US\$T)



Implied total addressable market (US trillions)

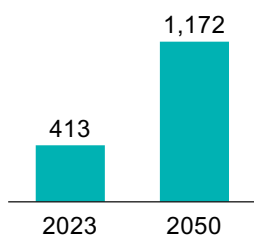
1. Drawn from IEA analysis as up to 400 °C. Underestimate as IMSR can supply up to 585 °C.
Source: IEA, [Industrial heat demand by temperature range](#)



Large, growing TAM

Global nuclear electricity generation represents another large additional market

Demand for nuclear power (GWe)



McKinsey & Company projects up to **800 GW** of new nuclear capacity to meet both dispatchable power demand and net-zero targets



1,000 MWe / GWe

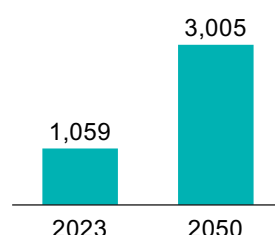


390 MWe / IMSR Plant

Each IMSR Plant (2x reactor Core-units) able to generate 390 MWe electricity (net)



Number of IMSR Plants



Current market size implied to be **>1,000 IMSR Plants**, growing to **>3,000 by 2050**

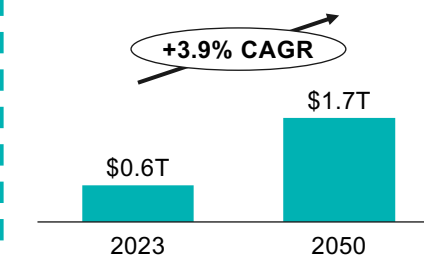


\$579M / IMSR Plant



Cumulative upfront CapEx and average annual OpEx

Implied TAM (US\$T)



Implied total addressable market (US trillions)



Large, growing TAM

The twin mandates of both **energy security** and the net zero **energy transition** are driving nuclear technology innovation and adoption as there is **no other choice**



THE WALL STREET JOURNAL

U.S. Rethinks Uranium Supply for Nuclear Plants After Russia's Invasion of Ukraine



The energy security case for nuclear power is building



Energy security gives climate-friendly nuclear-power plants a new appeal



Carper, Capito, Whitehouse Introduce Bipartisan Nuclear Energy Bill, the **ADVANCE Act**



Bloomberg

Net Zero Isn't Possible Without Nuclear



Nuclear energy can help make the energy sector's journey away from unabated fossil fuels faster and more secure.

The New York Times

Nuclear Is Back on the Table for a Green Future



Biden-Harris Administration Announces Major Investment to Preserve America's Clean Nuclear Energy Infrastructure

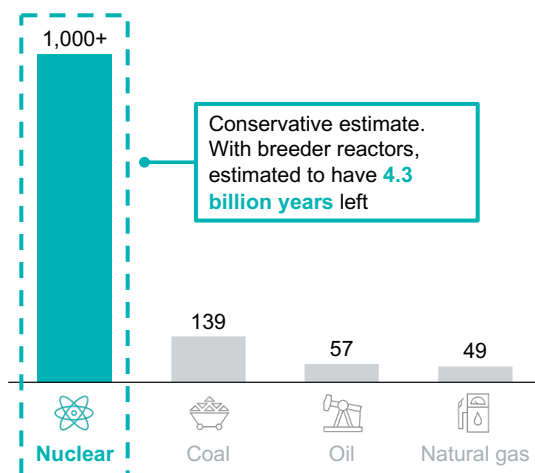


Large, growing TAM

Nuclear energy is **scalable**, **clean**, and **secure** – the most suitable solution to both energy security and energy transition

Nuclear energy is *scalable*

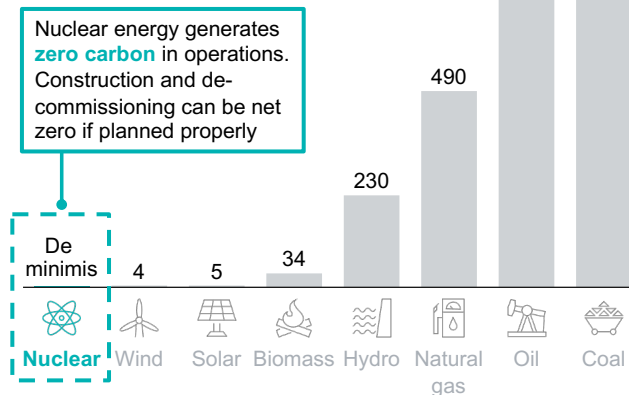
Years of sustainable supply



Nuclear energy is *clean*

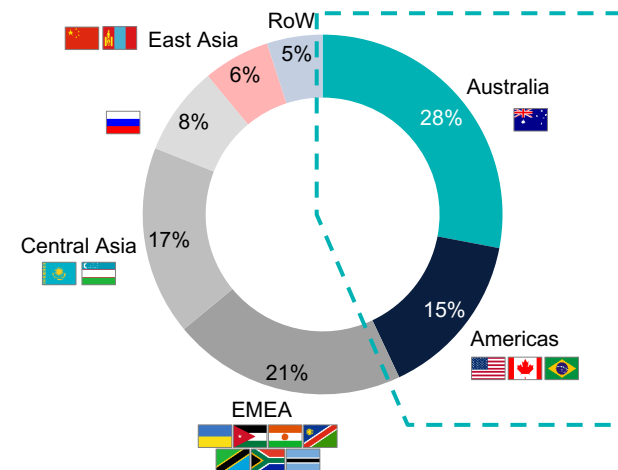
Carbon impact of energy source

Tons CO₂e / GWh over lifecycle
(inclusive of construction, production, waste management, decommissioning)



Nuclear energy is *secure*

% global distribution of identified uranium resources





Large, growing TAM

But nuclear energy is currently unaffordable

Power plants built with legacy nuclear technology are fundamentally uneconomic

- Low-temperature heat
- Capital inefficient
- Huge upfront CapEx
- Unfinanceable without government support
- Limited to on-grid electricity generation only



Study identifies reasons for soaring nuclear plant cost overruns in the U.S.



Vogtle Nuclear Expansion Price Tag Tops \$30 Billion



EDF faces shouldering more of soaring bill for Hinkley Point



Georgia Nuclear Rebirth Arrives 7 Years Late, \$17B Over Cost



Finding a workforce may be nuclear's largest challenge



Keeping contentious nuclear plant open could cost Californians \$45B: report

Terrestrial Energy's Integral Molten Salt Reactor (IMSR) delivers the benefits of nuclear energy by resolving the weaknesses and limitations of legacy nuclear technology



Terrestrial Energy IMSR Gen IV Advanced Modular Reactor

- ✓ **High capital efficiency**
 - High-temperature thermal energy supply
 - Low-pressure operation
 - High inherent safety
- ✓ **Wide range of essential industrial uses requiring high-temperature heat & electric power**
 - On-grid electricity generation
 - Co-located industrial cogeneration

TERRESTRIAL
ENERGY

High commercial viability, and deliverable in a competitive timeframe



Legacy Nuclear Technology Generation III/III+ (including SMRs)

- ✗ **Low capital efficiency**
 - Low-temperature thermal energy supply
 - High pressure operation
 - Active and passive safety
- ✗ **Single use case (electricity generation only)**

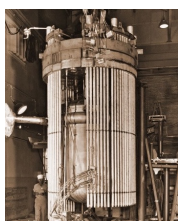


Unaffordable, uneconomic and unfinanceable without gov't support



Innovative, proven IMSR technology

For high deployment-readiness, IMSR is built on 65 years of national lab proven and demonstrated MSR technology

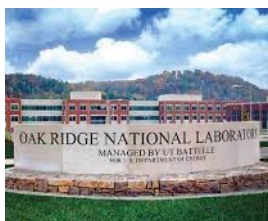


1958-1969

First Molten Salt Reactor (MSR) research program started in the 1950s

Molten Salt Reactor Experiment (MSRE) at Oak Ridge National Laboratory (ORNL) highly successful and lays foundation for future molten salt reactor designs

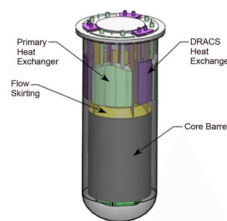
Built/operated for 18,000 hours



1980

Denatured Molten Salt Reactor (DMSR) conceptual design developed at ORNL

Key innovation: Use of Low Enriched Uranium (LEU) with a once-through fuel cycle for strong proliferation defenses



2010

Small Modular Advanced High-Temperature Reactor (Sm-AHTR) design, using solid fuel and molten salt cooling

Key innovation: Cartridge core design



2020

Terrestrial Energy's IMSR combines these critical innovations

- Use of SA-LEU fueled with a once-through fuel cycle
- Integral core architecture

Engineering and regulatory activities in progress for industrial deployment

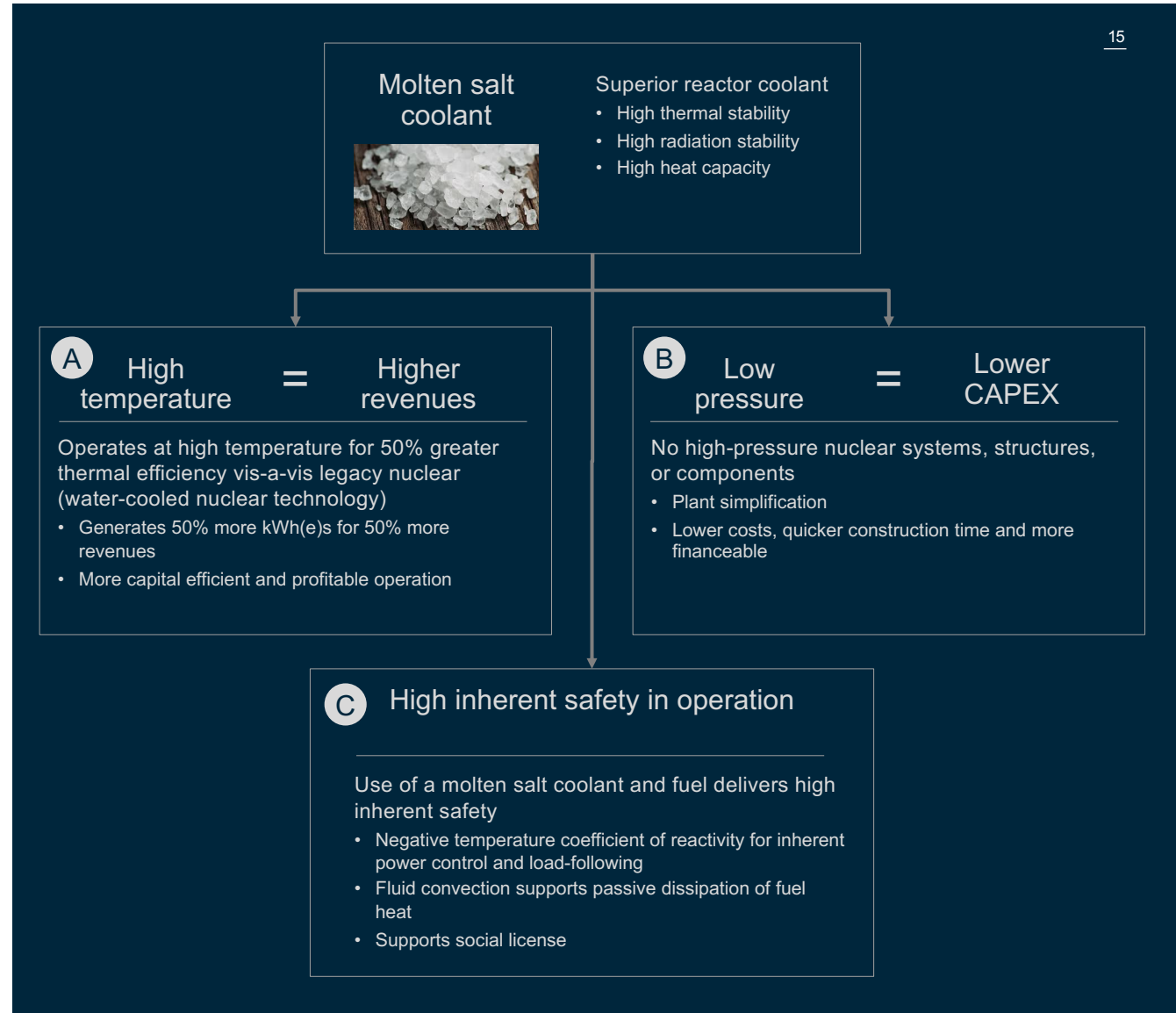




Innovative, proven IMSR technology

IMSR technology and design choices drive economics

High thermal stability of molten salt enables safe high-temperature and low-pressure operation with high inherent safety. This is essential for high capital and operating efficiencies, and hence power plant revenue and profitability

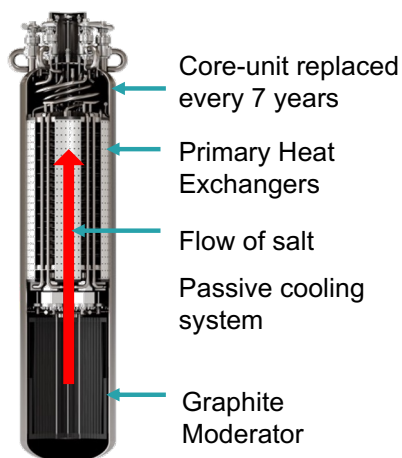




Innovative, proven IMSR technology

IMSR's innovative self-contained and replaceable "Core-unit" solves the key maintenance challenge for molten salt reactors

1 IMSR Core-unit cut-away



All primary reactor components are contained in the sealed and replaceable "Core-unit"

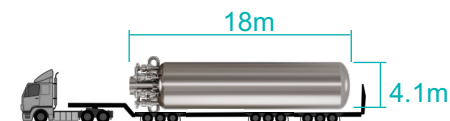
Key innovation is integration of all primary reactor components into a sealed, compact and replaceable reactor vessel that has a 7-year operating life:

- Reactor core
- Primary heat exchanger
- Pumps

This "integral" design captures commercial value through:

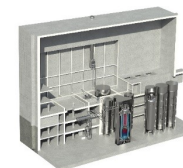
- Maintenance and operational simplicity
- High capital efficiency
- Highly defensible IP, with 65 patents granted across 5 invention families

2 Truck transport of IMSR Core-unit



Core-units transportable via truck, rail, sea.

3 Cut-away reactor building, one of two in the IMSR Plant



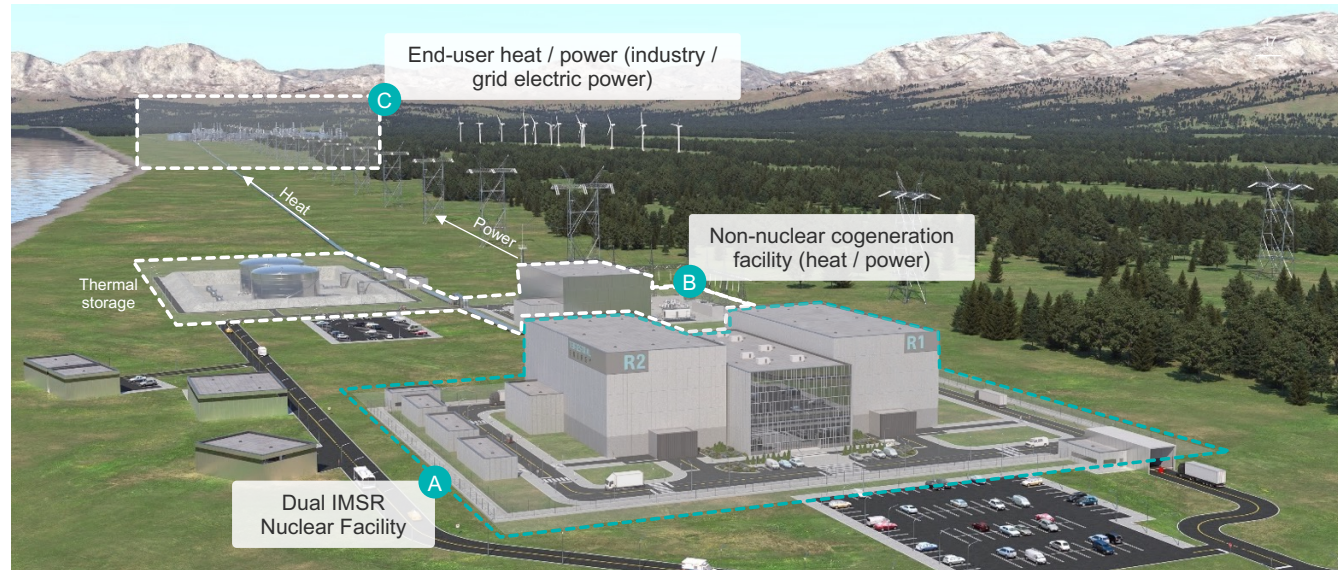
One Core-unit in each reactor building, forms part of the dual-reactor facility.

IMSR Plant is uniquely flexible to deliver – “behind the fence” – customized cogeneration to industry

Separation of nuclear from thermal and electrical systems allows a standardized reactor design, while giving the end-user **the flexibility to use thermal, electric, or both**



Note: Example is for a dual reactor core IMSR Plant. Scaling up is possible.



A Standardized dual IMSR Nuclear Facility

- Subject to nuclear regulation
- Standardized, simplifying design and saving costs
- 884 MW (gross) thermal energy production for 585°C supply

B Customized non-nuclear Thermal and Electrical facility

- Converts 884 MW (gross) thermal energy from two IMSRs to 585°C 822 MW (net) thermal or 390 MW (net) electric power for commercial supply – or any heat/electric power mix in between
- Can include molten-salt thermal energy storage and buffering to enhance its inherent strong load-following capability for commercial advantage
- Separate nuclear island and non-nuclear balance-of-plant allows for safe harbor of incentives past 2035

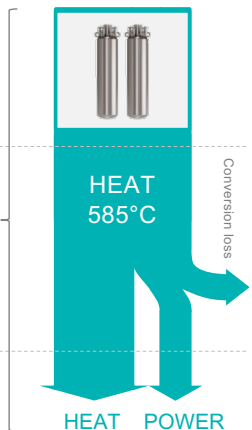
C Industrial cogeneration off-takers

- Chemical and petrochemical plant
- Hydrogen / ammonia / fertilizer plant
- Other industrials requiring clean heat & power

Municipal off-takers

- Electric grid
- Desalination

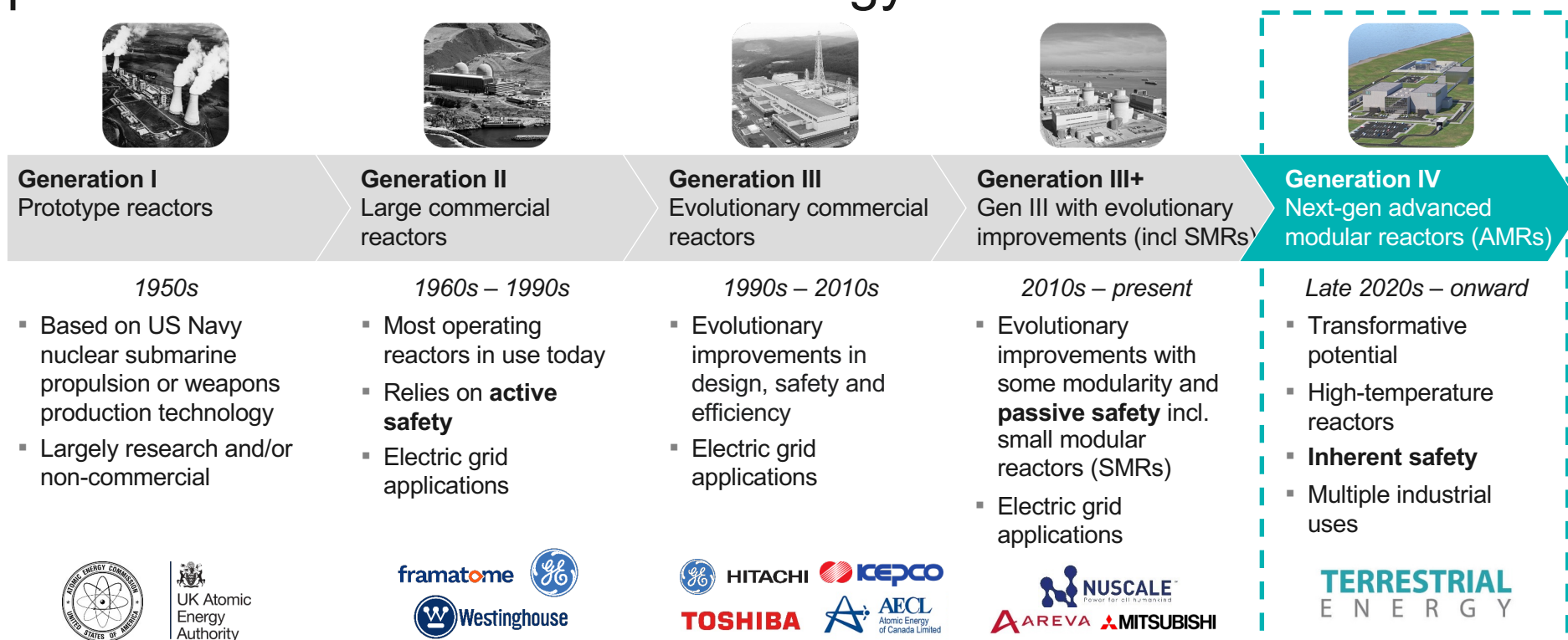
822 MWt (thermal) <<< 585°C >>> 390 MWe (electrical)





Clear and compelling differentiation

Only Gen IV reactors operate at high temperatures and have the potential to transform nuclear energy use





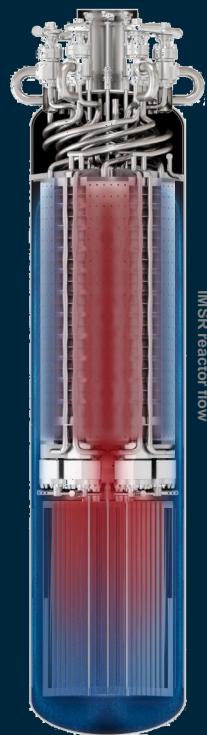
Clear and compelling differentiation

Against legacy nuclear technology, IMSR compares favorably on every technical or economic factor...

IMSR key technology advantage is the use of a molten salt coolant and fuel. This is a superior coolant and foundational to the compelling economic and use-case advantages of the IMSR Plant



1. Thermal efficiency for a 1GWe Legacy Nuclear unit is 33%, but it's ~30% for a unit of similar size to IMSR
Source: Company



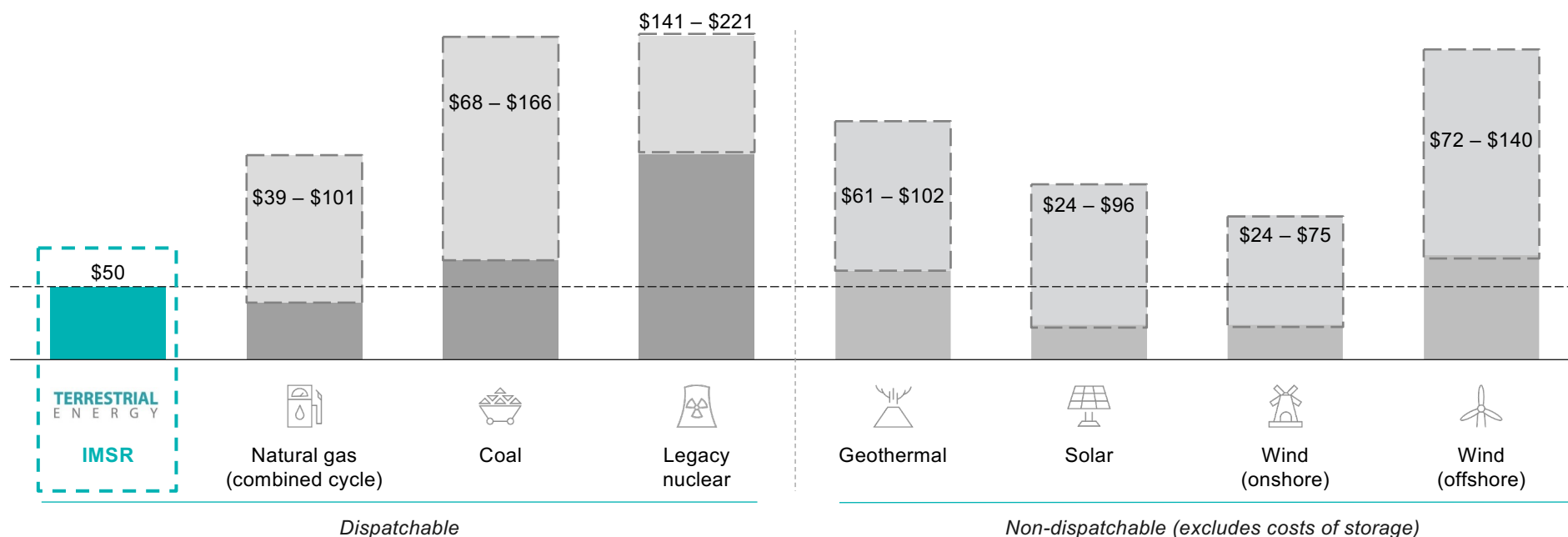
	IMSR Plant	Legacy Nuclear Plant
Coolant	Molten Salt	Water
Temperature of Thermal Supply	585°C	290°C
Net Thermal Efficiency of Electricity Generation ¹	44%	~30%
Pressure	Low: 1 bar (atmospheric)	High: 70-160 bar
Application	Industrial heat & electric power	Electric power only
Modularity	Standardised, factory prod.	Bespoke on 1-off basis
Inherent load-following	Yes	No
Construction Time	Under 4 Years	Over ~10 Years
Unit Capital Cost	~\$1-2 Bn	Over \$10 Bn
Capacity (net)	822 MWt / 390 MWe	1,000 MWe
Levelized Cost of Heat (\$/MMBTU)	Under 6	N/A
Levelized Cost of Electricity (\$/MWh)	Under 50	Over 100
Fuel Cycle	7 years	18 months
Waste	33% less fission product waste per kWh by mass	



Large economic upside

IMSR offers the best-in-class levelized cost of electricity for new dispatchable and base load electricity generation

Unsubsidized levelized cost of electricity (LCOE) across multiple sources, \$ / MWh (high and low)

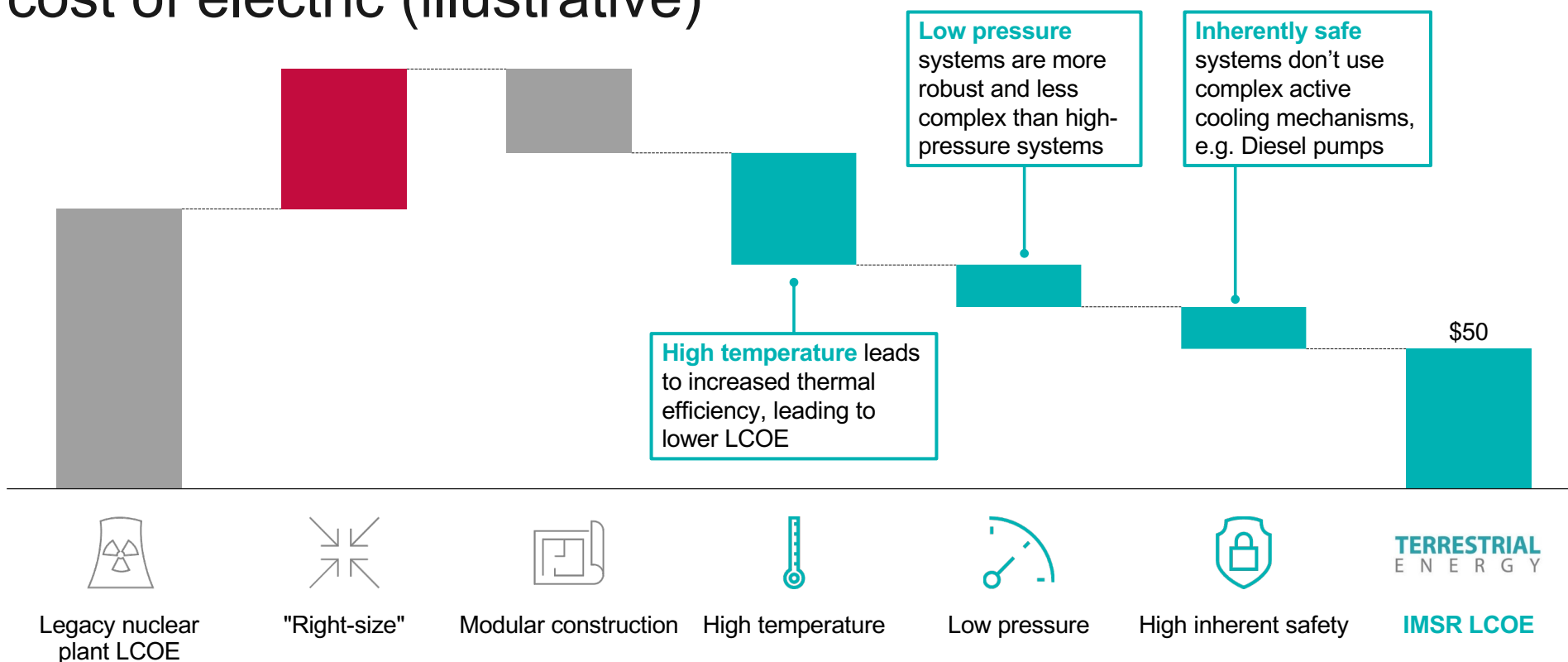


Source: Lazard 2023 LCOE+ report

1 2 3 4 5 6 7

Large economic upside

IMSR's fission technology choices drive down the levelized cost of electric (illustrative)





Large economic upside

IMSR Plants can uniquely and actively support energy transition across multiple use cases

Deep dive follows



Retrofitting
existing grid
generation

- IMSR Plant supplies steam at 585 °C, the **equivalent of steam temperature and pressure of a coal-fired boiler** (the “polluting part of a coal plant”)
- IMSR’s non-nuclear thermal and electrical facility can be customized to **“retrofit” existing heavily-polluting coal plants** into fully carbon-free electric generating facilities



Chemicals
processing

- IMSR Plants have two discrete parts: a **structurally separate nuclear facility and the non-nuclear thermal and electrical facility**
- Chemicals processing requires **extensive safety zones, which the IMSR can accommodate**, but most other nuclear designs cannot



Green fuels
and materials

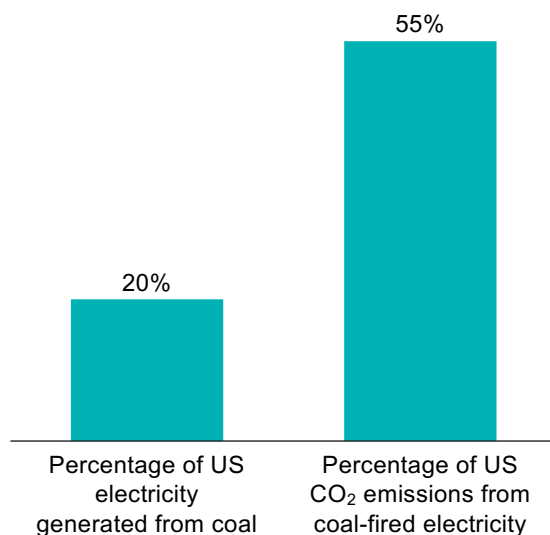
- Hydrogen, ammonia, and urea are **essential energy-intensive industrial commodities** – which IMSR Plants can supply zero-carbon cogeneration at industrial scale to produce “100% green”
- IMSR also provides a **“gateway” to lower-carbon** transport fuels, as well as for cement, glass, ceramics, and metal refining – all made with high-temperature industrial processes



Large economic upside

IMSR Plants can uniquely “retrofit” existing coal plants for **zero-carbon** and **zero-air-pollution** electricity generation

Coal is dirty yet essential



Nuclear in general and IMSR in particular are an ideal “hand-in-glove” solution



In 2022, US DOE commissioned a report finding:

- 80% of all retired and operating coal power plant sites can host an advanced nuclear reactor
- Significant primary and secondary environmental and economic benefits



- IMSR Plants operate at 585 °C, the equivalent temperature and pressure of a coal-fired boiler (the “polluting part of a coal plant”)
- IMSR Plants’ spread-out construction fits coal plants’ safety requirements (0.5 mile distance)

Retrofitting coal-to-nuclear results in significant primary and secondary benefits

86%

Reduction in green-house gas emissions per region

650

Permanent new jobs created per region

\$275M

Additional economic activity, implying a 92% increase in tax revenue

15-35%

Capital costs savings vs. greenfield due to ability to reuse existing equipment and infrastructure



Clear path to revenue growth

IMSR is further advanced and more commercial ready for fleet deployment than any other Gen IV nuclear technology

- A Systematic development program with a track record of milestones achieved
- B Market leading regulatory engagement with government support
- C Review by Canadian regulator completed
- D Supported by top-tier suppliers and has available fuel
- E Growing industrial customer pipeline pointing to large-scale fleet deployment



Clear path to revenue growth

D Contracted today with leading group of suppliers for services and components

Blue-chip service and major component suppliers support **near-term deployment schedule**

Terrestrial Energy's contracted supplier network

Equipment	
Nuclear fuel	
R&D	
Graphite	
Services	



Seasoned, experienced team

Management and Board of Directors



Simon Irish – CEO

- 20 years investment banking and investment management experience in London and New York with CSFP and Man Group Plc
- Former head of Man Global Strategies in North America, a division of Man Group Plc
- MA Cambridge University. MSc London Business School



David LeBlanc, PhD – CTO, President

- Globally recognized expert scientist in field of MSR technologies
- Over a decade of post-doctoral research focused on design improvements to facilitate the commercial development of MSR technologies in the modern economy
- PhD in Physics from University of Ottawa



William D. Johnson – Independent Director

- Former CEO of Progress Energy, TVA, and Pacific Gas & Electric with broad utility sector experience including operations, finance, mergers and acquisitions, and government affairs
- Serves on a number of corporate boards including TC Energy and Nisource
- Undergraduate degree from Duke University and a graduate degree from UNC School of Law



William Smith, P.Eng. – SVP of Operations and Engineering

- 35+ years experience in nuclear power industry in Canada, with Ontario Hydro and Ontario Power Generation
- Former Senior Vice President of Siemens Canada, a \$3.2 Billion annual turnover organization with 4,800 personnel
- BEng from Carleton University and MBA from Schulich School of Business at York University



Louis Plowden-Wardlaw – General Counsel, Company Secretary

- Former Head of Legal at the Royal Bank of Canada, London
- Experienced lawyer and executive with more than 20 years' experience in private practice, and in-house in public and private companies
- LLB University of Birmingham. MSc London Business School



Hugh MacDiarmid – Chairman, Independent Director

- Former President and CEO of Atomic Energy of Canada Limited
- Over a 35+ year career held numerous executive management positions in technology-intensive businesses and transportation-related industries
- Former partner with McKinsey & Company. MBA Stanford University



Fred Buckman, PhD – Independent Director

- Former President and CEO of Shaw Group (now Chicago Bridge & Iron). Former President and CEO of PacifiCorp
- Serves on a number of corporate boards including General Fusion and Standard Insurance
- Adjunct Professor of Nuclear Engineering at University of Michigan; PhD in Nuclear Engineering from MIT



David Hill, PhD – Independent Director

- Extensive nuclear project, research and laboratory management experience
- Held executive management positions in the foremost national nuclear laboratories in the US from 1984 to 2012, including Argonne, Oak Ridge and Idaho National Laboratories
- PhD in Mathematical Physics, Imperial College, and MBA University of Chicago



Canon Bryan – CFO

- Held multiple management positions, served as officer and director for private and public companies in Canada and the US
- Business experience principally in the energy and natural resource industries



Robin Rickman – VP Business Development North America

- 42 years' nuclear experience including US Department of Defense, Department of Energy, and the civil nuclear power industry
- Former director of the Westinghouse Small Modular Reactor Program
- Bachelor of Science in Business Management from the University of Phoenix



Seasoned, experienced team

Advisory board

Technical, Industrial and Financial



Lord Browne of Madingley – Former CEO of BP

- Chairman of BeyondNetZero, Windward, SparkCognition, Queen Elizabeth Prize for Engineering, Francis Crick Institute, and Courtauld Institute of Art
- Served as CEO of BP from 1995 to 2007, leading it through significant growth and transformation
- Joined Riverstone in 2007 as co-head of the world's largest renewable energy PE-fund until 2015



Ray O Johnson, PhD – Former CTO of Lockheed Martin Corporation

- Served 9 years as SVP of Corporate Engineering, Technology and Operations and CTO of Lockheed Martin Corporation
- PhD in Electrical Engineering from Air Force Institute of Technology, former Officer at United States Air Force for 12 years



Charles Pardee – Former EVP of Tennessee Valley Authority and COO of Exelon Generation

- Three decades of leadership experience in electric utility industry and operations at U.S. nuclear stations
- Former COO of Exelon Energy, President and Chief at Exelon Nuclear



Robert Litterman, PhD – Former Head of Risk at Goldman Sachs & Co

- Founding Partner at Kepos Capital, 23 years at GS where he served in research, risk management, investments and leadership
- PhD in Economics from University of Minnesota



Ray A. Rothrock – Distinguished venture capitalist, nuclear/clean energy advocate

- Ray is a recognized expert in venture technology investments, company building, and governance
- BS Nuclear Engineering from Texas A & M University, MS Nuclear Engineering from MIT, MBA Harvard Business School

Policy, Regulation and Environmental



Rt. Hon. Stephen Harper, PhD – Former Canadian Prime Minister

- Served as Prime Minister from 2006 to 2015
- Known for assertive leadership, principled diplomacy, disciplined economic policy with strong stance on international peace and security with tenures in G-7, G-20, NATO and United Nations memberships



Ben Heard, PhD – Executive Director of Bright New World

- Professor in sustainability and climate change at University of Adelaide, speaker, research and publisher and strategy development in sustainability
- PhD in Clean Energy Systems and Advanced Nuclear



Jeffrey Merrifield, JD – Former USNRC Commissioner and former SVP of the Shaw Group

- Legal Counsel to Advisory Board
- Former Commissioner, U.S. Nuclear Regulatory Commission, appointed by President Bill Clinton and reappointed by President George W. Bush



Ernest Moniz, PhD – Former US Secretary of Energy

- Senior Counsel to Advisory Board
- Served as the 13th United States Secretary of Energy from 2013 to 2017
- Cecil and Ida Green Professor of Physics and Engineering Systems Emeritus at Massachusetts Institute of Technology
- PhD Theoretical Physics, Stanford University



Lord Duncan of Springbank – Life Peer U.K. House of Lords. Former U.K. Minister of Climate Change

- Former Government Minister for Climate Change within Department of Business Energy and Industrial Strategy and elected to the European Parliament in 2014
- PhD in Paleontology from Bristol University

TERRESTRIAL ENERGY

Large, growing TAM

Innovative, proven IMSR technology

Clear and compelling differentiation

Large economic upside

Significant strategic synergies

Clear path to revenue growth

Seasoned, experienced team