

# Ivanhoe Electric's 90%-Owned Subsidiary VRB Energy Achieves Milestone Global Safety Certification for its Third Generation Vanadium Redox Flow Batteries

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VRB-ESS® Utilize a Vanadium Electrolyte that Can Be Charged and Discharged Over an Almost Unlimited Number of Cycles

VRB-ESS® Energy Storage Capabilities are Ideal for Daily Cycling Required to Support Utility Substations, Large Commercial and Industrial Sites and for Integrating Solar, Wind and Microgrid Facilities

VRB Energy Currently has Over 500 MWh of Energy Storage Capacity Installed or in Development

PHOENIX, August 30, 2023 - Ivanhoe Electric (NYSE American:IE)(TSX:IE) Executive Chairman, Robert Friedland and President and Chief Executive Officer, Taylor Melvin are pleased to announce that after months of rigorous testing, the Company's 90%-owned subsidiary, [VRB Energy Inc.](#) ("VRB Energy") has obtained Underwriters Laboratories ("UL") 1973 certification for its Third Generation Energy Storage System ("Gen3 VRB-ESS®"). UL 1973 is recognized as a global standard for commercially available battery energy storage.

This milestone third-party certification provides validation that the Gen3 VRB-ESS® product is a viable solution for utility-scale energy storage of renewable power.

The UL 1973 certification paves the way for VRB Energy and the Gen3 VRB-ESS® to meet the growing demand for large-scale energy storage as part of the energy transition.

Mr. Friedland commented: "Countries around the world are committed to net-zero carbon solutions, which will require vast capital investment over the next 25 years in energy storage. Meeting global carbon dioxide emission reduction goals will require large-scale, safe and cost-effective energy storage solutions to store the power generated from renewables for use when the wind is not blowing or the sun is not shining. Achieving this globally recognized safety certification for VRB Energy's new generation of vanadium redox flow batteries validates the technology as a safe and reliable component of the global energy transition."

Mr. Melvin commented: "VRB Energy's newest generation of vanadium redox flow batteries is the result of a tremendous amount of hard work by the dedicated team at VRB Energy, and an important advancement in the Company's proven battery storage platform. Achieving UL 1973 certification is a critical step in VRB-ESS® becoming a key component to meet global demand for large-scale battery storage."

Charles Ge, CEO of VRB Energy, commented: "I am proud of our engineering team and the commitment of the entire company to safety and quality. We adhere to the highest international standards and are committed to delivering the most reliable commercial product in the grid-scale energy storage market."

The Gen3 VRB-ESS® is the Only System Currently Available that is Certified to the UL 1973 Standard for a 1MW Power Module

VRB Energy's current generation of its utility scale energy storage systems, the Gen3 VRB-ESS®, is based on a 60 kilowatt ("kW") cell stack and a 1 megawatt ("MW") power module building block. This is the largest cell stack and the largest and most efficient commercial product in the industry.

CSA Group (formerly known as Canadian Standards Association) is a global organization dedicated to safety, social good and sustainability, and a leader in testing, inspection and certification. CSA Group successfully completed a series of safety tests under UL 1973:2018 for the 60 kW nominal (75 kW maximum) power cell stacks. Testing included material, vibration, high temperature, physical drop, and short circuit tests.

More rigorous tests of the full 1 MW Gen3 system included over-charge, over-discharge, short circuit, voltage limit, ground fault, and high temperature tests, as well as functional safety tests based on International Organization for Standardization ("ISO") 13849-1 2015 and ISO 13849-2 2012 standards.

### Vanadium Redox Flow Batteries are Superior to Lithium-Ion Batteries for Grid Scale Energy Storage

VRB Energy's core technology uses vanadium pentoxide ( $V_2O_5$ ) in a proprietary formulation of a water-based battery electrolyte. The vanadium electrolyte in VRB-ESS<sup>®</sup> can be charged and discharged over an almost unlimited number of cycles without wearing out. This means that vanadium flow batteries have distinct and inherent advantages for long-duration and long-life applications, which means they are the ideal solution for large-scale integration of solar and wind power onto utility grids around the world.

Vanadium flow batteries have significant advantages over lithium batteries for the daily deep-cycling needs of solar and wind power. VRB-ESS<sup>®</sup> have lower degradation, full depth of discharge and lower replacement costs compared to lithium batteries that results in a lower levelized cost of energy ("LCOE"), which is an industry measure for total cost of ownership.

In addition, VRB Energy's proprietary electrolyte formula used in VRB-ESS<sup>®</sup> contains no heavy metals and the liquid electrolyte is non-flammable and 100% reusable, making VRB-ESS<sup>®</sup> fundamentally safer and superior to lithium-ion batteries for grid scale energy storage.

Figure 1. Gen3 VRB-ESS<sup>®</sup> stores water-based vanadium electrolyte in large external tanks (a positive tank and a negative tank per power module). The electrolyte is circulated through cell stacks that charge or discharge the energy from the system in a nearly infinitely repeatable process that is safe and reliable.

Figure 2. VRB-ESS<sup>®</sup> cell stacks.

Figure 3. VRB-ESS<sup>®</sup> tanks.

### About VRB Energy

VRB Energy is engaged in the design, manufacture, installation, and operation of large-scale energy storage systems using vanadium redox batteries, VRB-ESS<sup>®</sup>. Vanadium redox batteries are a type of rechargeable flow battery that employ vanadium ions as the charge carriers. We believe they are safe, scalable and have the lowest lifecycle cost of energy compared to other types of batteries, making them ideal for grid-scale energy storage. VRB Energy's goal is to deliver the best technology at the lowest cost to large-scale utility energy storage projects globally. VRB Energy has over 500 MWh of energy storage capacity installed or in development, and has completed over one million hours of testing and operation. Ongoing research and development and project experience have allowed VRB Energy to produce larger, more cost-effective and more efficient systems in each successive battery generation.

### About Ivanhoe Electric

We are a U.S. company that combines advanced mineral exploration technologies with electric metals exploration projects predominantly located in the United States. We use our accurate and powerful Typhoon&TRADE; geophysical surveying system, together with advanced data analytics provided by our subsidiary, Computational Geosciences Inc., to accelerate and de-risk the mineral exploration process as we seek to discover new deposits of critical metals that may otherwise be undetectable by traditional exploration technologies. We believe the United States is significantly underexplored and has the potential to yield major

new discoveries of critical metals. Our mineral exploration efforts focus on copper as well as other metals including nickel, vanadium, cobalt, platinum group elements, gold and silver. Through the advancement of our portfolio of electric metals exploration projects, headlined by the Santa Cruz Copper Project in Arizona and the Tintic Copper-Gold Project in Utah, as well as other exploration projects in the United States, we intend to support United States supply chain independence by finding and delivering the critical metals necessary for the electrification of the economy. We also operate a 50/50 joint venture with Saudi Arabian Mining Company Ma'aden to explore for minerals on ~48,500 km of underexplored Arabian Shield in the Kingdom of Saudi Arabia. Website: [www.ivanhoeelectric.com](http://www.ivanhoeelectric.com).

#### Contact Information

Investors: Valerie Kimball, Director, Investor Relations 720-933-1150

Follow us on Twitter

Ivanhoe Electric's Executive Chairman Robert Friedland: @robert\_ivanhoe

Ivanhoe Electric: @ivanhoeelectric

Ivanhoe Electric's investor relations website located at [www.ivanhoeelectric.com](http://www.ivanhoeelectric.com) should be considered Ivanhoe Electric's recognized distribution channel for purposes of the Securities and Exchange Commission's Regulation FD.

#### Forward-Looking Statements

Certain statements in this news release constitute "forward-looking statements" or "forward-looking information" within the meaning of applicable US and Canadian securities laws. Such statements and information involve known and unknown risks, uncertainties and other factors that may cause the actual results, performance or achievements of the company, its projects, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. Such statements can be identified by the use of words such as "may", "would", "could", "will", "intend", "expect", "believe", "plan", "anticipate", "estimate", "scheduled", "forecast", "predict" and other similar terminology, or state that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved. These statements reflect the company's current expectations regarding future events, performance and results and speak only as of the date of this news release.

Such statements in this news release include, without limitation: the effectiveness of vanadium flow batteries and VRB Energy's Gen3 VRB-ESS® as a large scale energy storage system, the timing and ability of VRB Energy to deliver Gen3 VRB-ESS® to projects in the United States and globally to meet demand, VRB Energy's grant proposal applications and its ability to deploy projects, and the integration of solar and wind power onto utility grids globally.

Forward-looking statements are based on management's beliefs and assumptions and on information currently available to management. Such statements are subject to significant risks and uncertainties, and actual results may differ materially from those expressed or implied in the forward-looking statements due to various factors, including changes in the prices of copper or other metals Ivanhoe Electric is exploring for; the results of exploration and drilling activities and/or the failure of exploration programs or studies to deliver anticipated results or results that would justify and support continued exploration, studies, development or operations; the final assessment of exploration results and information that is preliminary; the significant risk and hazards associated with any future mining operations, extensive regulation by the US government as well as local governments; changes in laws, rules or regulations, or their enforcement by applicable authorities; the failure of parties to contracts with the company to perform as agreed; and the impact of political, economic and other uncertainties associated with operating in foreign countries. These factors should not be construed as exhaustive and should be read in conjunction with the other cautionary statements and risk factors described in Ivanhoe Electric's Annual Report on Form 10-K filed with the U.S. Securities and Exchange Commission.

No assurance can be given that such future results will be achieved. Forward-looking statements speak only

as of the date of this news release. Ivanhoe Electric cautions you not to place undue reliance on these forward-looking statements. Subject to applicable securities laws, the company does not assume any obligation to update or revise the forward-looking statements contained herein to reflect events or circumstances occurring after the date of this news release, and Ivanhoe Electric expressly disclaims any requirement to do so.

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