SOLID-STATE LITHIUM-ION BATTERY EVALUATION PROGRAM

Advancing next-generation solid-state electrolytes and scalable cathode development towards early prototype battery cell development.

- **Evaluation program commenced**: Critical Resources has initiated a structured assessment of next-generation solid-state battery technologies with the South Dakota School of Mines & Technology (SDM) under the American National Science Foundation (NSF) supported Centre for Solid-State Electric Power Storage (CEPS) framework.

- **Low-cost access to world-class infrastructure**: The CEPS network provides multidisciplinary research capabilities, advanced diagnostic facilities and federal-grade laboratory environments rarely available to industry, significantly reducing development risk and costs.

- **Application-relevant technical program:** Designed to generate independent, reproducible datasets on electrolyte performance, interface behaviour and solid-state cathode structures to directly inform future programs and prototype battery development.

- **Six-month program targeting prototype readiness**: ASE (electrolyte) and DSD (dry-deposited cathode) workstreams are progressing through a structured workflow aligned to early solid-state lithium-ion prototype cell configurations.

- **Accelerating safer, high-performance solutions:** The evaluated solid-state systems seek to deliver improved safety, higher energy density and enhanced cycle reliability, supporting demand from data centres, defence, mining and other high-temperature, high-reliability applications.

- **Strategic integration across the value chain**: Strengthening CRR's capability from upstream lithium supply through to downstream battery technology development, enhancing optionality across partnerships, IP generation and future commercial pathways.

Critical Resources Limited ('**Critical Resources'** or the '**Company**', **ASX**:**CRR**) is pleased to advise that it has formally commenced its solid-state battery **evaluation program** through the South Dakota School of Mines & Technology (**SDM**) under the American National Science Foundation **(NSF)** supported **Centre for Solid-State Electric Power Storage (CEPS)** framework. This marks the Company's advancement from preliminary optioning activities into structured, laboratory-based evaluation of next-generation solid-state battery materials.

The evaluation program follows the commencement of an exclusive option agreement with SDM (refer ASX announcement dated 18 November 2025). This partnership enables the Company to assess advanced sulphur-free electrolytes, lithium-metal interface architectures, and solvent-free cathode manufacturing technologies using world-class U.S. infrastructure.

Through the CEPS framework, CRR gains direct access to coordinated U.S. research capabilities spanning materials science, electrochemical testing, interface engineering, and advanced manufacturing (refer ASX

announcement dated 2 February 2026). The NSF supported CEPS environment is specifically designed to accelerate early-stage validation while reducing technical risk, development timelines, and overall cost.

EVALUATION PROGRAM OVERVIEW

Global battery markets are rapidly pivoting toward solid-state systems as industries seek safer, higher-performance and more thermally robust energy storage solutions. Unlike conventional liquid-electrolyte lithium-ion batteries, solid-state systems offer:

- **Non-flammable electrolytes**, significantly improving safety.
- **Higher energy density** and **longer cycle life,** improving performance and reliability.
- **Broader operating temperature ranges,** including high-temperature environments – data centres, defence, high-reliability sectors, broadening application potential.

CRR's exclusive option with SDM provides a unique pathway to evaluate non-sulphide solid-state electrolyte systems and solvent-free cathode manufacturing technologies designed to address key limitations of current lithium-ion batteries. This **positions the Company to develop capability and build optionality as the solid-state battery sector evolves.**

Critical Resources' solid-state battery evaluation program is being conducted through the NSF-supported Centre for Solid-State Electric Power Storage (CEPS) at the South Dakota School of Mines & Technology (SDM), providing coordinated access to specialist researchers, advanced characterisation capabilities, U.S. federal laboratory infrastructure, and advanced industrial partners.

The program comprises complementary projects—the evaluation of sulphur-free amorphous electrolytes and solvent-free, low-temperature cathode/electrolyte manufacturing—with **the objective of generating independent, application-relevant data that will guide the next steps for potential prototype cell development.**

AMORPHOUS, SULPHUR-FREE SOLID-STATE ELECTROLYTES (ASE) PROJECT

The Amorphous, Sulphur-Free Solid-State Electrolytes (ASE) project is advancing a new class of solid electrolytes engineered through a simple, scalable manufacturing route. Unlike conventional liquid or crystalline solid electrolytes, ASE materials use an amorphous atomic structure that enables safer and more efficient lithium-ion transport.

Traditional solid-state programs rely heavily on crystalline electrolytes, which contain rigid atomic frameworks. These structures can restrict ion mobility, create stress concentrations that lead to cracking, and form unstable interfaces when paired with lithium metal. Amorphous electrolytes avoid these constraints. With no fixed lattice, they allow lithium ions to move more easily and maintain a more stable contact with lithium metal surfaces. Amorphous, sulphur-free solid-state electrolytes support:

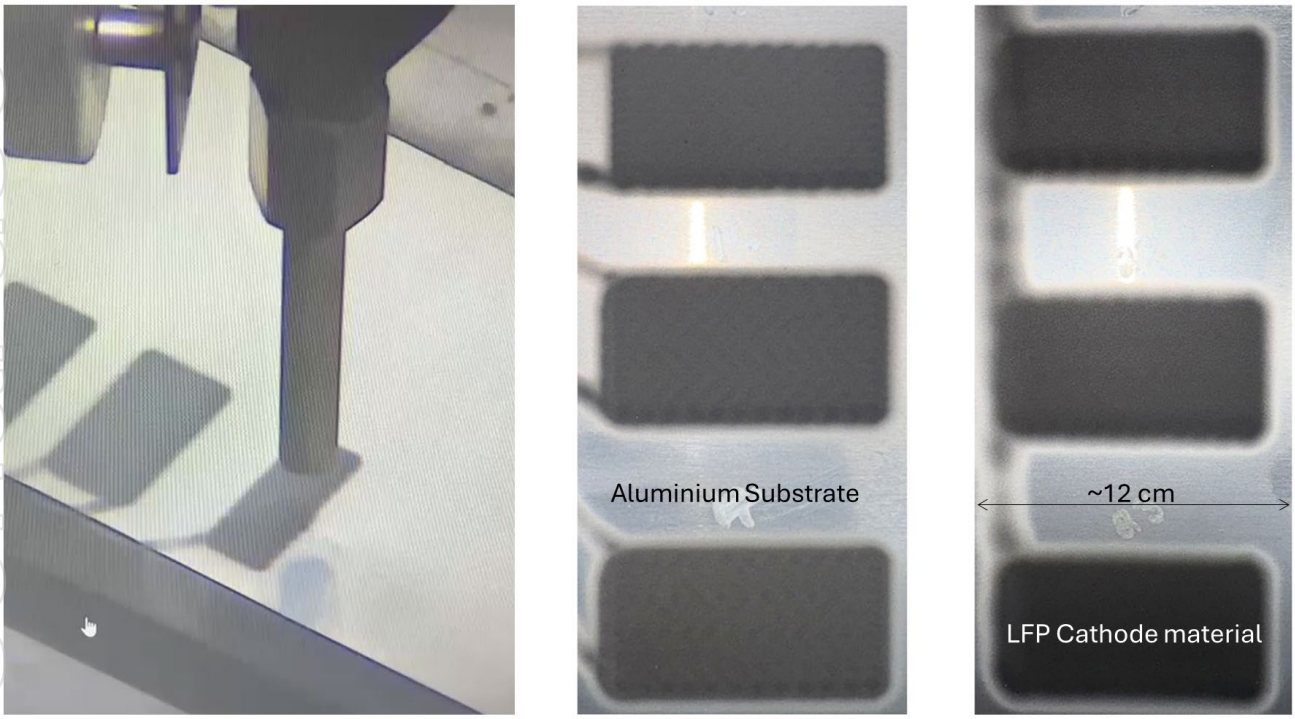
- **More stable lithium-metal interfaces, reducing dendrite risk** – improving safety.
- **Higher ion conductivity and improved power capability** – improving performance.
- **Enhanced safety and mechanical durability** – improving reliability.

Over the six-month program, the ASE workstream will generate an independent dataset to validate performance, manufacturability and scalability. This gives CRR early access to insights around one of the most

commercially promising pathways in solid-state battery design—materials that combine stability, safety, and scalable production potential.

DRY DEPOSITION CATHODE (DSD) PROJECT

The **Dry-Supersonic-Deposition (DSD)** project is evaluating a new solvent-free manufacturing method for producing solid-state battery components. Deposition is the process of building up a solid layer by placing atoms or fine particles onto a surface, where they bond chemically or physically to form a dense, uniform structure essential for solid-state battery components.



Demonstration of cathode material being deposited onto aluminium substrate.

Trials with different application parameters/

Figure 1 *– Early successful tests of dry-supersonic-deposition (DSD) of Lithium-Iron-Phosphate (LFP) cathode material onto battery pouch cell aluminium foil substrate.*

The Dry-Supersonic-Deposition (DSD) process uses supersonic particle acceleration to build "3D printing" dense, uniform cathode and electrolyte layers directly onto a surface. This approach eliminates toxic solvents, long drying cycles, and high-temperature furnace steps, resulting in a cleaner, more consistent, and potentially more scalable manufacturing method for next-generation solid-state batteries.

The early program focuses on evaluating how key cathode materials—LFP, LMO and NMC—respond to supersonic deposition, how effectively the layers bond, and how the resulting structures perform electrochemically. These insights provide valuable **understanding of cutting-edge solid-state manufacturing techniques** and help determine how future prototype cells could be constructed efficiently and at scale.

All technical work is being undertaken within the CEPS research framework, ensuring strong IP protection for all new materials, processes and structures developed. In line with this strategy, two separate 12-month provisional U.S. patent applications have been filed covering both projects, reinforcing CRR's ability to secure early commercial and technological advantages.

Deliverables from the DSD program will guide the Company in assessing which manufacturing pathways offer the greatest technical and commercial potential as solid-state technologies evolve, including potentially:

- **Optimised deposition parameters** for dense cathodes and solid-state electrolyte layers.
- **Structural and electrochemical** datasets of performance under realistic solid-state configurations.
- **Prototype cathode and electrolyte structures** produced entirely through solvent-free, low-temperature techniques.
- Process and interface insights to **support future prototype cell assembly** and downstream commercial opportunities.

Over the six-month program, **the DSD project will progress from optimising cathode deposition conditions to evaluating solid-state electrolytes** and developing composite and bilayer structures. Key risks—such as layer adhesion, deposition quality and process efficiency—are being actively managed through controlled parameters to ensure consistent, scalable outcomes aligned with prototype-ready solid-state cell development.

Critical Resources Managing Director, Tim Wither, commented: *'Commencing this evaluation program is a significant step in positioning Critical Resources within the emerging solid-state battery landscape. Our partnership with SDM and the CEPS network gives us direct access to world-class analytical capability and scientific leadership, allowing us to validate performance and assess next-generation materials in a way that dramatically reduces technical risk and accelerates our development pathway. Importantly, it ensures we are developing our understanding inside a coordinated U.S. innovation ecosystem rather than in isolation — a major strategic advantage at this stage of the industry's evolution.*

'This work establishes independent data, early insight into development pathways, and a clearer view of where the strongest opportunities lie across solid-state electrolytes, interfaces and cathode technologies. By connecting this U.S.-based technical work with our upstream lithium position, we are building a balanced, scalable strategy that enhances our optionality across partnerships, IP, future licensing and downstream technology development.

'This program is designed to give the Company clarity on which technologies work, where the advantages lie, and how we can position ourselves across the next phase of the energy storage landscape.'

NEXT STEPS

Critical Resources will continue advancing both evaluation projects through the structured six-month work programs being delivered in partnership with the Centre for Solid-State Electric Power Storage (CEPS) and the South Dakota School of Mines & Technology (SDM). Under the terms of the collaboration agreement under the CEPS framework, the Company will make a total payment of US$100,000 for both the ASE and the DSD projects over the six-month projects.

The immediate priority is to complete ASE project electrolyte refinement, expand electrochemical and interface datasets, and progress solvent-free cathode and electrolyte development under the DSD project, toward early **prototype solid-state cell architectures**.

These activities are designed to build the technical foundation of CRR's solid-state battery strategy without implying commercial manufacturing at this stage. Over the coming months, key priorities include:

- **Advancing materials development with SDM and CEPS:** Refine electrolyte formulations, improve interface stability, and optimise dry-deposited cathode and electrolyte structures using CEPS' world-class research infrastructure.
- **Building out evaluation datasets:** Generate deeper structural, morphological, electrochemical and interface data to support independent validation and guide next-stage program decisions.
- **Progressing toward prototype cells:** Integrate the strongest electrolyte candidates and solvent-free manufacturing pathways into initial prototype solid-state cell assemblies for laboratory assessment.
- **Strengthening commercial and IP positioning:** Identify further provisional patent opportunities and evaluate early-stage collaboration pathways aligned with long-term downstream technology development.
- **Providing ongoing updates to market:** Report material evaluation milestones and program advancements as they are achieved, maintaining transparent communication throughout the evaluation phase.

This announcement has been approved for release by the Board of Directors of Critical Resources.

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ABOUT CRITICAL RESOURCES LIMITED

Critical Resources Limited (ASX:CRR) is an Australian mining and technology company focused on the exploration and development of metals and advanced next-generation battery technologies essential for a sustainable future. The Company's portfolio includes the Mavis Lake Lithium Project in Ontario, Canada, the Halls Peak Base Metals Project in New South Wales, Australia, and a growing gold portfolio in New Zealand.

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