NRC·CNRC

Strengthening the grid

Energy storage for grid security and modernization

National Research Council Canada
Conseil national de recherches Canada

Canada

Access world-class research, evaluation and technology risk management resources

The National Research Council Canada (NRC) helps advance the Canadian energy storage sector by working on leading edge research and managing the technical risks inherent in the development and adoption of new technology. Focusing on electrical energy storage technologies that can be placed close to the electrical load, NRC works to strengthen the domestic energy storage value chain and facilitates technology export opportunities for industry in Canada.

Solving industry's challenges

Through its multi-year investment in NRC's Energy Storage for Grid Security and Modernization Program, the Government of Canada has committed to help industry tackle the greatest obstacles to adopting and using energy storage technologies, including: durability, cost and risk associated with the development and implementation of energy storage in Canada.

Specifically, through our research efforts, we aim to reduce the average installed cost to under $500/kWh and $1,250/kW, while increasing the operating lifetime to greater than 15 years. Ultimately, these gains will help industry defer the cost of transmission and distribution infrastructure investment, integrate variable generation and enable the peak shaving required to build and maintain an efficient, reliable and economic grid.

Defer infrastructure investment | **Peak shaving and arbitrage** | **Integrate variable generation**

Why energy storage?

Over the next 10 years, the world-wide market for grid-scale energy storage is expected to grow to over $200 billion and Canadian companies have the skills and resources to gain a significant foothold in this rapidly emerging sector. Whether you are a raw material supplier, technology developer, component manufacturer, integrator or end-user, we can work with you to address your specific technical challenges or help you better understand how your product can fit into the new technical and economic realities of an optimized electrical system.

In addition, by bringing together participants across multiple geographic areas facing similar challenges, we help create critical mass to overcome issues and leverage opportunities shared by multiple jurisdictions, both nationally and internationally.

Our Program works for you

By working with key industry stakeholders, NRC is in a unique position to foster the development and acceptance of energy storage technologies. In these partnerships, we can help your organization to:

- **Understand value and risk** Offer strategic analysis and decision-making support to de-risk technology adoption through techno-economic assessment, technical support of codes and standards development and technology road-mapping.
- **Maximize benefits from component development and demonstration projects** Design and evaluate the success of individual demonstration projects, analyze and reduce system integration issues and provide performance and durability testing of individual system components.
- **Provide targeted research and development** Conduct targeted R&D that will lead to the necessary technical improvements to reduce costs and improve the durability of energy storage systems through: accelerated testing, material improvements and manufacturing process optimization.

Technology focus

NRC's collaborative research focuses primarily on energy storage technologies that are electrically rechargeable and can be placed close to load centres. These technologies include:

- Advanced Flow Batteries
- Advanced Lead Acid Batteries
- Lithium-Ion Batteries
- Compressed Air Energy Storage (above-ground)

The Program also engages in projects designed to further develop and understand the potential benefits associated with:

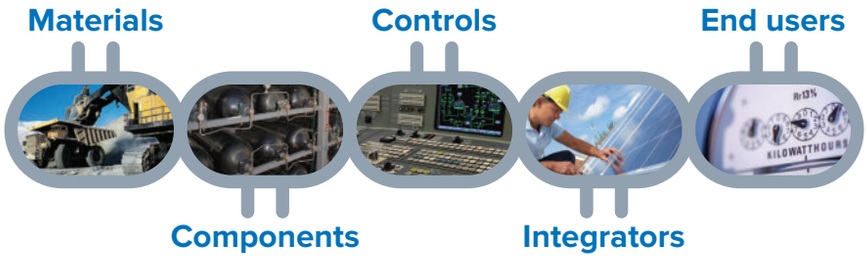
- Rechargeable Metal Air Batteries
- Hydrogen Storage (including Power to Gas)

Working with NRC

Working with NRC means you can tap into NRC's wealth of expertise in a wide range of scientific disciplines and have access to specialized facilities across Canada. Our growing team includes experts in system design, mathematical modeling, material science, electrochemistry, component testing and analysis.

We co-invest in projects where the scope, deliverables and timelines are driven by our industry partners. We look for projects that will generate clear benefits for our individual clients, but also strengthen the Canadian energy storage value chain. By doing so, we believe our work will result in the greatest impact possible to the Canadian economy.

We are flexible in our business arrangements to best meet specific client needs. This can range from fee-for-service testing or research contracts to collaborative strategic R&D. We also establish multi-client projects and consortia to connect suppliers and end-users, and channel multi-partner R&D funding and capacity towards targeted innovation goals.



Enablers: venture capital, business/technology experts, incubators, regulators

Helping Transport Canada make battery transportation safer

When Transport Canada needed to better understand the public safety risks involved with the transportation of lithium batteries by air, they came to NRC.

From identifying key transportation risks and mitigation measures for batteries and packaging to recommending new codes and standards, our assessment provided critical information that will inform future public policy on battery transportation.

Collaborate with us

NRC is engaging in critical research aimed at modernizing and strengthening the electricity grid. We are looking for key industry partners to collaborate and co-invest with us to develop and de-risk energy storage solutions. Contact us for more information on our capabilities, and how we can work together to enable your success.

Energy storage for grid security and modernization

Reducing risk and supporting adoption for a competitive energy storage industry

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