



# RECOMMENDATIONS IN ADVANCE OF FEDERAL BUDGET 2022



To help reduce GHG emissions, lower electricity costs, and make our electricity grids more efficient Energy Storage Canada recommends the federal government:

- ➔ Establish a 30% tax credit for the installation of residential and commercial energy storage systems
- ➔ Launch initiatives or establish targets to eliminate market and regulatory barriers, such as reducing the cost of grid-scale, long duration energy storage by 90% within ten years
- ➔ Develop a grant program and/or subsidy to remove the financial risk with building energy storage programs to help remote communities reduce reliance on diesel-based generation
- ➔ Create a Residential Battery Incentive (RBI) program, which will increase the pace of market uptake and penetration of distributed energy resources (DERs)

**Written Submission for the Pre-Budget Consultations in  
Advance of the 2022 Budget**

**By Energy Storage Canada**

## About Energy Storage Canada

Energy Storage Canada (ESC) is the trade organization representing the diverse companies engaged in Canada's energy storage industry. We represent over 70 member organizations, which range in size from large multinationals to smaller, innovative technology companies. Our goal is to build a sustainable market and demonstrate the value that energy storage contributes to our energy systems, our environment, and our economy. Canada can become a global leader in the energy storage industry by reinforcing innovation, creating expertise, providing employment, and ensuring the establishment of a strong supply chain.

## Introduction

As Canada emerges from the social and economic impacts of the Covid-19 Pandemic, our electricity grid will play a critical role in our recovery, as well as in addressing the challenge of climate change and meeting our 2030 and 2050 GHG reduction targets.

Energy storage is an essential component to ensure a low-carbon economy via electrification. It has the unique ability to extract more value from existing zero-carbon assets, such as nuclear, solar, wind and hydro. It is also unique in its capacity to provide multi-service benefits, including flexible capacity, peak capacity, ancillary services, deferral of additional investments in generation, transmission and distribution, improved reliability of the grid, and empowerment of customers.

These optimization services will become even more important as stimulus dollars are invested in energy assets. If stimulus dollars are used to reinforce existing systems, it will hamper Canada's economic recovery and competitiveness. Critically, it will also slow Canada's transition to a low-carbon economy.

A Budget 2022 investment in energy storage, combined with an effort to reduce regulatory and market barriers that are stalling storage deployment, is a cost-effective way to help achieve Canada's GHG reduction targets, create jobs, and reduce costs to ratepayers.

## Climate Change

Energy Storage investments address climate change by:

1. Increasing deployment of new and existing renewable energy by enhancing renewable energy output;
2. Reducing reliance on peak gas and coal via energy arbitrage to deliver at peak; and
3. Enabling multi-service capability (e.g., capacity, energy, regulation service, fast ramping, voltage support, black start) whereby energy needs can be met using stored energy from zero carbon resources (e.g., wind, solar, hydro, tidal, geothermal) rather than fossil fuels.

No other grid resource offers this flexibility in its value proposition.

Climate impacts, including flooding and extreme weather events, will greatly increase the risks to electricity infrastructure. Preparing for this will require distributed energy, system redundancy and other approaches in which energy storage plays a key role.<sup>1</sup>

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<sup>1</sup> See National Renewable Energy Laboratory, "Distributed Energy Planning for Climate Resiliency," April 2018: <https://www.nrel.gov/docs/fy18osti/71310.pdf>.

Storage also offers a compelling value proposition to mitigate climate change. According to the National Research Council, adding 2,636 MW of installed energy storage would reduce Ontario's GHG emissions by 11% by 2030, while increasing Ontario's GDP by \$768 million, and adding 5,781 jobs.<sup>2</sup>

Energy storage can also be employed to address back-up power needs for homes and businesses, replacing diesel, gas, and propane options. In addition to reducing GHGs, the options offered by energy storage will improve quality of life by reducing other air contaminants, noise pollution, as well as the time and money spent on maintaining these resources.

Investments in Canada's electricity system in the coming years will determine whether Canada can meet its GHG reduction potential for this sector. While the federal government has introduced a number of positive measures to reduce GHGs from electricity, its infrastructure, energy, and climate programs have generally had a blind spot when it comes to investing in storage. Continuing this pattern will create a longer-term dependency on GHG-intensive options.

## Competitiveness

What inhibits broader deployment of energy storage is risk mitigation, access to capital and procurement processes that tend to benefit incumbent sectors. Despite acknowledged benefits that storage brings to an electricity system, as a new market entrant, storage is disadvantaged against traditional market players that are already built and operating.

Federal government officials now recognize that storage often falls through the cracks in the existing suite of government energy and climate programs. Other North American jurisdictions that have fully recognized the value of energy storage are reaping the benefits of energy storage – specifically lower costs and savings to ratepayers and governments.<sup>3</sup>

Canada has emerging technologies ready for export and deployment in domestic markets, but we risk falling behind our major trading partners on storage deployment due to a lack of investment and the prioritization of incumbent technologies by various levels of government.

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<sup>2</sup> National Research Council *Canadian Energy Storage Report: 2019 Case Study for the Ontario Market*: <https://nrc-publications.canada.ca/eng/view/ft?id=5c38ed85-541c-4b7b-8b41-a97f544ce637>

<sup>3</sup> See *State of Charge: Massachusetts Energy Storage Initiative Study*, 2016, <https://www.mass.gov/doc/state-of-charge-report/download>. The study found system savings associated with storage of \$2.2 billion, at a cost of between \$907 million and \$1.3 billion. An Ontario study done by Power Advisory LLC, concluded that by fully enabling energy storage in the province by introducing at least 1,000 MW, ratepayers could potentially enjoy a net savings of \$2B over the next decade: <https://static1.squarespace.com/static/54485dc4e4b0f7bd2239a06b/t/5f11ca45f37fcb7b7e77584a/1595001417141/nlocking+Potential+-+An+Economic+Valuation+of+Energy+Storage+in+Ontario+%28July+2020%29.pdf>

U.S. programs at the state and federal level remain unmatched in Canada. Several U.S. jurisdictions have stipulated targets or developed incentive programs for energy storage to help integrate renewables, reduce GHG emissions, stimulate clean-tech jobs and ensure grid resilience. These include federal measures such as FERC Order 841, which instructs the utility commissions of each state to ensure that storage resources are eligible to participate in all capacity, energy and ancillary services markets, and FERC Order 2222, which enables Distributed Energy Resource (DER) aggregations to fully participate in wholesale electricity markets.

At the state level, measures to incentivize storage include establishing storage targets, as in California (1,825 MW), New York (3,000 MW by 2030), Massachusetts (1,000 MWh), and New Jersey (2,000 MW by 2030).

This is in addition to other state-level programs:

- California's Self Generation Incentive Program initially spurred the behind-the-meter storage market there and continues to invest US\$166M/year.<sup>4</sup>
- New York has committed nearly \$350M in incentives for both retail and bulk level storage.
- Massachusetts launched the SMART program with a storage adder in 2018 and the state's utilities include an innovative energy storage program in their energy efficiency plans.<sup>5</sup>

The US is seeing solid results from these programs. Jobs in the energy storage sector increased 235% from 2015 to 2019. By 2025, the U.S. Energy Storage Association estimates 200,000 jobs will be created in the sector, with annual deployment expected to reach 7.5GW. Research in Canada shows we could see similar job figures if Canada were to step up its storage investments.<sup>6</sup>

Storage is also featured prominently in President Joe Biden's Infrastructure Plan. Congress has already approved an investment of over US\$1 billion in energy storage and Biden has included an additional 26% tax credit for storage as one of his top legislative priorities.

Moreover, building on state-level leadership, the U.S. federal government has initiated an ambitious "**Long Duration Energy Storage Shot**" initiative, as a second stage to its Earthshot Initiative, which successfully reduced the costs of solar energy deployment. According to the U.S. Department of Energy, the Energy Storage Shot will "set bold goals to accelerate breakthroughs that store clean electricity to make it available anytime, anywhere and support more abundant, affordable, and reliable clean energy solutions."

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<sup>4</sup> See <https://www.selfgenca.com>

<sup>5</sup> See <https://www.mass.gov/solar-massachusetts-renewable-target-smart>

<sup>6</sup> The National Research Council estimates energy storage would create 2.19 jobs for every MW of energy storage installed: *Canadian Energy Storage Report: 2019 Case Study for the Ontario Market*: <https://nrc-publications.canada.ca/eng/view/ft/?id=5c38ed85-541c-4b7b-8b41-a97f544ce637>

## The Opportunity for Canada

There are three major areas where Canada can expand its energy storage opportunities:

- **Wholesale Market:** Energy storage can provide a range of wholesale market savings, including energy arbitrage and reduced prevalence of Surplus Baseload Generation, which is an issue Ontario.
- **Maximize Transmission and Distribution Investment:** Energy storage investments can be made at specific locations on the grid to better utilize existing transmission and distribution assets. Provincial regulators are increasingly focusing on the role of Non-Wire Alternatives, such as energy storage.
- **Direct-to-Customer Savings:** Energy storage can help electricity customers manage individual costs by shifting peak consumption, resulting in lower Time-of-Use rates and reduced demand charges. Energy storage can also help shift renewable energy output – largely from solar generators – from low-value to high-value hours.

From time to time, government programs introduce targeted measures that address one or a few of these opportunities (most notably, NRCan's new Smart Renewable Energy and Grid Modernization Program, which invests in front-of-the-meter projects), but given the barriers that exist in the market, the storage sector needs more stable and broad measures to provide consistency and bankability for investment across the three areas noted above.

Such an investment should be comparable in scale to supports available elsewhere, particularly in the US.

### An Investment Tax Credit (ITC)

To help reduce GHG emissions, lower electricity costs, and make our electricity grids more efficient, the federal government should establish a 30% tax credit for the installation of residential and commercial energy storage systems.

This tax credit, modelled on a current program in Maryland,<sup>7</sup> would apply to stand-alone energy storage systems as well as hybrid storage-renewables systems. As in the US, the tax credit should be eligible along with any funding from other programs, including Canada's Infrastructure Bank.

The experience in the US with such measures is instructive. A similar ITC launched for renewables in 2006 has been characterized by the US solar industry as "one of the most important federal policy mechanisms to support the growth of solar energy in the United States. Since the ITC was enacted in 2006, the US solar industry has grown by more than 10,000% -- creating hundreds of thousands of jobs and investing billions of dollars in the US economy in the process."

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<sup>7</sup> See <https://energy.maryland.gov/business/Pages/EnergyStorage.aspx>.

## Reducing Market and Regulatory Barriers

While Canadian companies are leading the way in many energy storage technologies, market and regulatory barriers often stand in the way of a rapid deployment. While many of the regulatory barriers are at the provincial level, U.S. efforts demonstrate that the federal government can play an important role in facilitating and incentivizing the elimination of these barriers.

The federal carbon price can play a role in this process, but the price will not have a significant impact on market prices for several years, especially as subsidies continue for fossil fuel alternatives like natural gas, which already have a substantial incumbency advantage on the grid. In the meantime, procurement processes will lock in reliance on these fossil fuel alternatives, delaying the transition away from fossil fuels for perhaps decades.

The federal government should therefore launch an initiative, led by NRCan and the National Research Council, to identify these barriers, map out alternatives, and provide incentives for the private sector, provincial utilities, and regulators to level the playing field for energy storage. One lesson from the U.S. Earthshot initiative is to set a clear target (e.g., 90% reduction in deployment cost), and to identify each market barrier, as well as an incentive for eliminating it. While this process should be undertaken collaboratively with provincial government and regulatory bodies wherever possible, the desire for unanimity should not stand in the way of federal measures.

Further, the creation of a Residential Battery Incentive (RBI) program will rapidly increase the market uptake and penetration of distributed energy resources (DERs), helping to meet local energy needs in an unobtrusive way. Residential storage systems can dramatically increase homeowner energy security – more important than ever with people working from their homes - while making distribution systems more resilient and efficient, when facilitated through an LDC. When controlled in aggregate (e.g., as a virtual power plant [VPP]), these resources can deliver clean peaking capacity and flexibility, leading to meaningful electricity cost savings to customers and reduced carbon emissions. The program could be expanded to include hybrid functions.

Finally, to help reduce market barriers to assisting communities in the Far North to reduce the reliance on diesel generation the federal government should develop a grant program/subsidy to remove the financial risk associated with building energy storage projects to help remote communities reduce reliance on diesel generation.