ENERGY STORAGE CANADA

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Energy Storage Canada
International Business Development Plan
2017-2020

Executive Summary

Canada is home to a wealth of innovative energy storage technology companies, project developers and research networks focused on the energy storage sector.

Energy storage offers unique value to energy systems and has tremendous range and potential to meet the needs of decarbonization, grid optimization and resiliency, as well as enhance distribution systems and strengthen behind-the-meter applications. In Canada alone, these technologies include different types of batteries, flywheels, power-to-gas (hydrogen), compressed air and pumped hydro.

Energy storage fundamentally improves the way we generate, deliver, and consume electricity at the transmission, distribution and customer levels. It has the power and versatility to make our power networks more resilient, efficient, and cleaner than ever before.

As an industry association, Energy Storage Canada (formerly Energy Storage Ontario) has been working with members to build and shape the market domestically. While this remains a key priority for the organization, it is a critical time for the association to strengthen efforts to facilitate international partnerships and channels for Canadian companies to export their technology and expertise abroad.

As a newly national organization, ESC is now able to present our industry from a Canada-wide perspective. The industry is at a point of development where amplifying our national efforts on the international stage is becoming increasingly important.

The majority of Canadian energy storage companies are small to medium-sized organizations that must look to international markets in order to grow their companies and remain competitive.

The breadth of innovation in energy storage technology, applications and expertise in Canada means we have much to offer the rest of the world. As other jurisdictions increasingly turn to storage to integrate more renewable generation, cut carbon emissions, and build resiliency into their grids, the more opportunity we see for Canadian companies to fill those needs.

As an Ontario-focused association, Energy Storage Ontario carried out some initial work at trade shows to support export development, but as we present ourselves nationally and the industry grows, the time is right to develop a more strategic foundation and plan to ensure we optimize these efforts.

ESC's three-year international business development plan focuses on establishing this foundation through more strategic research work to target the right markets, and by building consistency into how we approach and maintain international connections as an industry.

We have engaged with the export-oriented members of our organization and will continue to consult with them and others who are poised to do so on issues and priorities. In addition, this strategy document will be posted on the Energy Storage Canada website.

ESC's international business development strategy was approved by the ESC Board of Directors on Friday, January 6, 2017.

Who We Are – Sector Overview

Energy Storage Canada (ESC) is the voice of leadership in energy storage and the only national industry organization that advances the role of energy storage and represents the broad range of companies engaged in the energy storage business in Canada.

Formerly Energy Storage Ontario, our association rebranded as ESC in September 2016 to ensure our members benefited from a broader national perspective and changes in energy and climate change policies. The only other energy storage organization, the Alberta Storage Alliance, has recently agreed to merge with Energy Storage Canada making us a truly national organization.

As storage becomes an increasingly critical part of the energy mix, ESC is now well-positioned to represent the industry in all jurisdictions and at the national level. Today, ESC has members spanning the country from British Columbia to Quebec.

The broader scope of the organization reflects the changes occurring across the country with the increase in renewable generation, requirements for emissions reductions and the need for more sustainable and resilient grids. Ontario has been a leading jurisdiction in North America for energy storage with its 50MW procurement carried out between 2013-15. This was a key step in helping to build a foundation for the industry and important demonstration projects.

Association members are largely made up of small and medium-sized companies focused on either specific technologies (flywheels, power-to-gas, compressed air energy storage (CAES), batteries) or project developers who harness these technologies.

ESC has become the hub for energy storage in Canada. Through networking, knowledge-sharing, advocacy and stakeholder education, we are helping to build a stronger industry and showcase the value that energy storage can bring to improve our energy systems, the environment and our economy.

Our membership represents all players along the energy storage value chain -- technology providers, project developers, investors and operators, local electricity distribution companies, and NGOs, engineering and law firms.

In addition to building and shaping the market in Canada our members are looking to create opportunities in new markets, where new energy policies and procurements are seeking the advantages that can be supplied by energy storage.

Objectives

The objective of the three-year international business development plan is to help support and leverage Canada's thriving energy storage, clean-tech innovation, manufacturing companies and project expertise to sell in new markets abroad. It will be the first time we are showcasing our industry from a "Canada" platform as opposed to just Ontario.

As a nascent industry in Canada, energy storage players have until recently been more focused on building projects and developing the market domestically. This has been a critical step in building expertise and having the ability to showcase domestic success to potential foreign buyers.

Increasingly, energy storage companies are seeking opportunities abroad in jurisdictions where policies are necessitating a move towards greater deployment of renewable energy sources, more emphasis on climate change priorities, and a recognition that energy storage creates more efficiency and resilience in energy systems.

International Engagement to Date

Since 2014, the association has worked to build a program to leverage domestic growth in energy storage technologies and expertise for economic development and export opportunities. However, as an Ontario-focused and smaller organization supported largely by membership dues, our activities were necessarily limited. Most important, as a small organization we have not had the resources to develop a strategic action plan to support our members or the industry at large.

Today, as a national organization, Energy Storage Canada can now build the Canadian energy storage brand.

Over the last few years, the Ontario association has made one-off efforts to promote the energy storage industry internationally. In 2015, we had representation at the Energy Storage North America Conference in San Diego, and in 2016 we were at the Energy Storage Association Conference in Charlotte, North Carolina. We also had representation at the Energy Storage Europe Conference in 2016 and piggybacked our participation with a Board member (who represented both his company and the association) in order to save travel costs. He also represented the association at a Canadian Trade Commission energy storage event in the U.K. (March, 2016).

We have also begun to develop association partnerships with the India Energy Storage Association, and the China Energy Storage Alliance, and collaborates with the U.S. national Energy Storage Association. Going forward, ESC plans to intensify these relationships to facilitate cooperation, knowledge sharing and trade capabilities.

In 2016, Energy Storage Canada organized the largest conference in Canada solely focused on energy storage. Held in association with the National Research Council of Canada and Energy Storage Association (U.S.), it was a highly successful conference that explored all aspects of energy storage, including channels for Canadian companies to export globally. In 2017, we plan to be the sole organizers of this conference and to focus a broader component on energy storage in other markets.

Areas of Focus

The Canadian energy storage industry is small and therefore virtually industry players interested in export can benefit from international business development initiatives. However, we believe technology manufacturers will have the most to gain at this initial stage.

International Market

Worldwide demand for grid-scale energy storage is estimated to reach over 185.4 gigawatt-hours (GWh) in 2017 (this does not include distribution-level or behind-the-meter storage). This represents a $113.5 billion incremental revenue opportunity for an industry that currently generates sales of $50-60 billion a year. According to the U.S. Department of Energy Global Energy Storage database, globally there is currently 171.05 GW of energy storage in 1,267 projects. [1]

Energy Storage Canada members currently do business in the U.S., U.K., Germany, and the Caribbean. In addition to other expertise and technologies, Canada also boasts technologies that are differentiable and exportable, such as:

- Power-to-Gas
- Flywheels
- Underwater Compressed Air Energy Storage (CAES)

For example, we highlight here just three examples of Canadian-based companies who are pioneers in energy storage in Canada – as creators and manufacturers of innovative technologies, and a developer that seeks deployment opportunities and harnesses the value of these technologies:

- **Temporal Power** makes large steel flywheels respond to two-second signals from the electricity system operator to help regulate and match the power supply and demand

[1] http://www.energystorageexchange.org/projects/data_visualization

- **Hydrogenics** has pioneered high power density electrolysers which split water to produce hydrogen allowing longer term energy storage as renewable fuel or renewable gas

- **NRStor** is a developer that has won contracts with Ontario's Independent Electricity System Operator to develop projects with flywheels and compressed air energy storage technology as well as partnering with Tesla Energy and Opus One (another Ontario start-up) to bring the Tesla Powerwall home battery to Canada.

Many member companies also have extensive experience developing projects and executing the full value chain of project development for energy storage from financing to construction.

Target Markets

Over the next three years, ESC is focused on helping Canada's industry in markets where there is growing potential for storage – specifically ones where increased renewables and carbon emissions-reductions priorities are paramount.

Most important, we plan to seek assistance from a consultant to finetune our international business development strategy with up-to-date research both on the most exportable Canadian companies and capabilities and needs in foreign markets.

Initially (2017-18) we plan to marshal our efforts on two broad areas: the U.S. (as a means to introduce ourselves to a broader global audience as well as the key U.S. market itself) and Europe. In years two and three, we will have developed the resources and fine-tuned our plan to expand to markets in China and India.

1. U.S./Global – In this plan, we have first targeted the annual (2017) Energy Storage Association trade show in the U.S. as our unveiling in the broader market as a Canadian-focused industry association. This is the biggest and most comprehensive energy storage conference in North American. It serves as a hub for representatives from other international markets to gather. For example, in 2016 the conference hosted a reverse trade mission with representatives from around the world. We have found this a cost-effective way to meet buyers from the U.S. as well as overseas, especially Europe and Asia. Our tactical plans for this show include:
    a. Exhibit rental and booth design
    b. Marketing materials showcasing Canada's energy storage industry

2. Energy Storage in Canada conference – At the ESC national conference (September 2017), we will invite a key buyer from Europe to address our delegates.

3. In early 2018, we are looking at the EU via Energy Storage Europe (2018), the largest conference for a broad range of European buyers. Tactical plans include:
    a. Exhibit rental
    b. Marketing materials

4. In subsequent years, and once we have created a consistent foundation for our efforts, our plan envisions a focus on large markets such as India and China. As ESC finetunes the plan, we can make more informed decisions on the most advantageous choices.

Target Clients

- Governments
- Utilities
- System operators
- Project development partners
- Distribution partners

INTERNATIONAL STRATEGY

1. Strategic Objectives and Desired Outcomes

The key objective of this plan is to build a foundation for export success and to support the industry in creating sustainable partnerships. To date, this has not been a focus for our association although many of our members carry out their own individual initiatives. We believe we can generate better efficiencies and successes by coming together to underpin some of these endeavours. We can help reduce their risk in venturing beyond Canada and ensure an overlay of consistency for the Canadian industry.

This builds on the Canada's clean-tech successes and builds growth and competitiveness in the local Canadian economy.

The energy storage industry in Canada is at a critical juncture in its development. The industry has had a head start over many other countries, which has given rise to innovative companies that are ready to expand on the world stage.

As an industry association, our own efforts in this regard have been sporadic due largely to resource constraints. However, there is great potential in this industry to showcase and position a strong Canadian clean-tech industry and carry this out in a consistent and cohesive manner.

Measurement of Results

We will measure success by the numbers of contacts, channels and overall exposure that our efforts have achieved. Ultimately, we would measure success by contracts entered into by industry players with foreign clients. We will also consult with members and other players in the industry to ensure our work is serving them in a useful and appropriate way.

Conclusion

Energy Storage Canada is well-positioned to build a strong and consistent foundation for our Canadian energy storage industry. As a newly national organization, ESC is now ready to brand and promote our innovation in this field.

The innovation and success stories in this sector need to be amplified via a broader industry/association-led initiative. This consistent framework will help the industry at large and help build Canada's reputation as a leader in innovation and clean-tech solutions. It will also support local economies and jobs.

This plan will be updated for subsequent years with the assistance of a consultant able to identify the areas of greatest potential both in terms of needs and targets.

ESC will be highlighting our activities on international development with our members via our communications channels (webinars, newsletters, networking events, conference) and will seek regular feedback from members and other industry stakeholders.

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