

October 29, 2012

Ms. Kristen Walli  
Board Secretary  
Ontario Energy Board  
27th Floor  
2300 Yonge Street  
Toronto, ON M4P 1E4

Your reference  
RRFE Proceedings

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Dear Ms. Walli:

**Renewed Regulatory Framework (“RRFE”)  
Board File Nos.: EB-2010-0377, EB-2010-0378, EB-2010-0379, EB-2011-0004 and EB-  
2011-0043**

We are counsel to NRStor Inc. (“NRStor”) on the RRFE Proceedings.

NRStor is an innovative, Ontario-based electricity storage company that is implementing new and very efficient compressed air and high powered flywheel electricity storage technologies in the Ontario market place. NRStor also intends to use its Ontario base and expertise to export its electricity storage technologies and services to support the efficient development of renewable energy and distribution transmission infrastructure in Canada and emerging economies throughout the world. It is in this context that NRStor believes that consideration of electricity storage issues is integral to the Ontario Energy Board’s (the “Board’s”) full and considered development of the RRFE outcomes include changes to the transmission and distribution system codes, the smart grid development and related performance matters that facilitate the reliability and efficiency of Ontario’s electricity system.

Given the many critical efficiencies and system benefits that result from electricity storage that are outlined in Appendix A to this letter, we respectfully submit that the Board’s consideration of prudent planning and performance based outcomes in the electricity sector would be remiss, absent an informed consideration of electricity storage in each and all of the RRFE proceedings.

NRStor therefore wishes to request funding for its participation in all of the RRFE working groups, consultations and related proceedings.

**Representation and Experts**

NRStor will be represented by Elisabeth (Lisa) DeMarco, a senior energy lawyer at Norton Rose, whose credentials are attached as Appendix B to this letter. We are hereby also requesting funding for an electricity storage expert to speak to the technical and reliability benefits associated with storage that may arise in each proceeding.

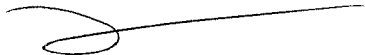
**Practice Direction and Other Funding**

Given the fledgling state of the electricity storage sector, there are currently no other sources of funding to support NRStor's participation in these integral processes.

In accordance with Section 3 of the Board's Practice Direction on Cost Awards, NRStor is eligible for an award of cost and should be awarded cost eligibility given that it is the only collective entity that represents the new and developing electricity storage sector reflective of various electricity storage technologies (including, without limitation, flywheel storage, compressed air storage and battery storage). As such, NRStor represents a unique unrepresented and emerging class of transmission and distribution consumers in the Ontario electricity sector. NRStor hopes to cooperatively collaborate with renewable electricity generation entities and other entities that will undoubtedly benefit from the system reliability and related benefits that storage will bring to bear for the electricity sector. The views and insights provided by NRStor and the collaborative approach espoused by its CEO, Annette Verschuren, will assist in the efficiency and ultimate performance based results that the Board is hoping to achieve through the RRFE process.

NRStor therefore respectfully requests that the Board find NRStor eligible for an award of costs in these RRFE proceedings.

Sincerely,

A handwritten signature in black ink, appearing to read "Elisabeth L. DeMarco".

Elisabeth L. DeMarco

Attachments

cc: Annette Verschuren, O.C., NRStor

## **APPENDIX A**

Energy storage technologies provide benefits to electricity generators, utilities, and end users. Storage has the capability to reduce the costs of new generation facilities and existing inefficiencies in the system. It helps extend the investment in both generation and transmission and distribution assets and defer the cost of upgrades. Storage also plays a critical role in controlling electricity demand, stabilizing the grid, and ultimately benefiting ratepayers through lower overall costs.

### ***Electricity Supply Management Benefits***

Energy storage can be used to defer or reduce the need to develop or purchase new central station generation capacity or generation capacity from the wholesale electricity marketplace. Storage technologies provide flexible solutions that can be used to minimize system inefficiencies that occur when baseload power cannot be adjusted down, resulting in a surplus baseload generation, which is often inefficiently sold at a loss. In this manner storage may solve many of the issues that the Province has recently incurred in siting and developing thermal power generation facilities.

Breakthroughs in storage technologies, such as compressed air energy storage, provide greater efficiencies when compared to traditional thermal power, including: a faster ramp rate, more flexible minimum outputs, fewer operational constraints, and zero net fuel requirements. Energy storage facilities may therefore constitute a viable alternative to thermal generation, particularly in dense urban areas. In this manner storage may solve many of the issues that the Province has recently incurred in siting and developing thermal power generation facilities.

Energy storage solutions also allow for energy time shifting that lowers the cost of energy to the utility. Time shifting involves purchasing inexpensive electrical energy to charge the storage plant when prices are low so that the stored energy can be sold at a later time when the prices are high, resulting in lower net energy costs, that ultimately benefit the end-use electricity consumer.

Area regulation is a benefit that involves managing energy flows so that supply matches demand on a moment to moment basis. It also helps maintain grid frequency and assists in recovery from disturbances. Thermal and baseload generation is not well suited to area regulation as these types of units are designed to most efficiently operate at near full capacity with constant output. Storage is an attractive alternative because it has superior partial load efficiencies, can provide twice as much area and frequency regulation (regulating while charging and discharging), and can ramp up/down very quickly.

### ***Transmission and Distribution Benefits***

Electricity storage may also result in Transmission and Distribution ("T&D") upgrade deferrals and/or delayed or avoided T&D upgrades. Often T&D systems will be operating near peak capacity and Ontario's transmission system is in critical need of maintenance and upgrading to accommodate the Province's smart grid policy. This pressure can be alleviated by installing storage at downstream nodes. The key is that a small amount of storage can substitute a large and very costly T&D upgrade. Storage installation reduces the overall costs to ratepayers, improves utility asset utilization, and frees constrained capital for other projects, at a time where efficiency, austerity, and prudent investment are critical.

Transmission lines are also often congested during peak times of operation resulting in increased transmission capacity and access charges. When congestion on the transmission system occurs, utilities are forced to shed energy upstream, provide load management and energy efficiency at downstream locations, or add transmission capacity. Locating storage units at downstream sites avoids costs and charges by absorbing energy when there is no congestion and discharging energy during times of peak demand.

Energy storage further stabilizes the grid by compensating for electrical disturbances such as voltage sag, unstable voltage, and sub-synchronous resonance. This type of support requires sub-second response times

and very reliable energy storage technologies, such as flywheels. Stabilizing the grid and increasing the load carrying capacity of the system results in significant benefits from avoided transmission outages. Benefits can accrue here by deferring the costs of adding additional load capacity.

### ***End User Benefits***

Storage can also be used at a customer level to provide higher quality and more reliable electric services. Clean storage solutions can substitute diesel generators and provide storage to consumers lasting minutes to hours; ideal for outages and various shut-down processes.

Time-of-use energy cost management is a benefit much like energy time-shifting but on the consumer level. Customers of utilities with storage can charge their units during off-peak times and discharge their units during peak times. This lower-cost electricity can be stored and used for major demand items such as household laundry or charging an electric car. End-users benefit from reducing the cost of their electricity consumption and controlling their demand.

Storage can be used to protect loads downstream from short-duration events that affect the overall quality of delivered power. It can protect against variations in voltage magnitude, a low power factor, harmonics, and thereby avoid service interruptions. Fast acting storage technologies, such as flywheels, have the capability to significantly increase the overall quality of power delivered to the end user.

In summary, there are numerous technical and financial advantages to electricity storage that are critical to optimizing efficiencies in Ontario's evolving electricity grid and greening electricity generation sector.

## **Lisa DeMarco**

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Lisa represents several leading energy clients in a wide variety of natural gas and electricity matters before regulatory agencies and the Ontario Energy Board. She is also recognized as a Canadian expert, and has over 15 years of experience in the law relating to clean energy, climate change and the evolving area of environmental finance. She also

She also assists leading Canadian and international mining and energy companies on domestic and overseas power project development, renewable power projects, alternative fuel projects, corporate social responsibility, environmental disclosure and business strategy.

Lisa is one of the leading carbon transaction lawyers in the international market, having worked for investment banks and energy companies on deals and projects in India, Brazil, Sri Lanka, Thailand, Argentina, Chile, Ireland, Africa, Mexico, China and Russia. Lisa plays an ongoing and active role in the development of energy and GHG emissions policy and law throughout Canada, and in various countries around the world.

*Chambers Global* have ranked Lisa as a "top climate change practitioner worldwide," and an "expert in carbon transactions." Clients have indicated that she is a top person in the market and "absolutely first-rate." Lisa is also ranked by Chamber Partners as a "leading environmental lawyer in Canada." She is an appointed member of the Premier's Clean Energy Task Force that provides advice on climate change strategies and policies, as well as scientific and economic research to the Premier of Ontario.

Lisa is also involved in legal education and training, as an adjunct professor at Osgoode Hall Law School in Toronto.