



CITY OF

# SUMMERSIDE

## The Smart Storage Demonstration Project

Energy Storage  
on an Industrial Scale



Prince Edward Island  
Canada



SAMSUNG RENEWABLE ENERGY

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Storing energy is not new for small applications, but it's in its infancy when ramped up to an industrial scale.

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Prince Edward Island  
Canada



# { Energy Storage on an Industrial Scale

The boom in the renewable market over the past 10 years has seen Canada become one of the most successful countries adopting renewable energy into its grid system. Approximately 19% of Canada's energy supply is now from renewable energy resource. The City of Summerside in Prince Edward Island has already procured more than 45% of its load from renewable sources.

In partnership with Samsung Renewable Energy Inc., the City of Summerside is now building a smart energy storage system, integrating the City's solar power with other renewable power and conventional energy sources.

The purpose of this ambitious green project is to help Summerside meet its increasing electricity demand while saving on energy costs, reducing carbon emissions, creating jobs and building green tech expertise in the region. It is a demonstration project that will also serve as a model for other communities in North America wishing to collaborate with multiple partners to achieve long-term energy cost savings and environmental benefits.

Located at Credit Union Place in the City of Summerside, the smart energy storage system will blend solar power with traditional power sources and provide a cost-effective way of storing and dispatching surplus energy.

# The First Demonstration of its Kind in Canada

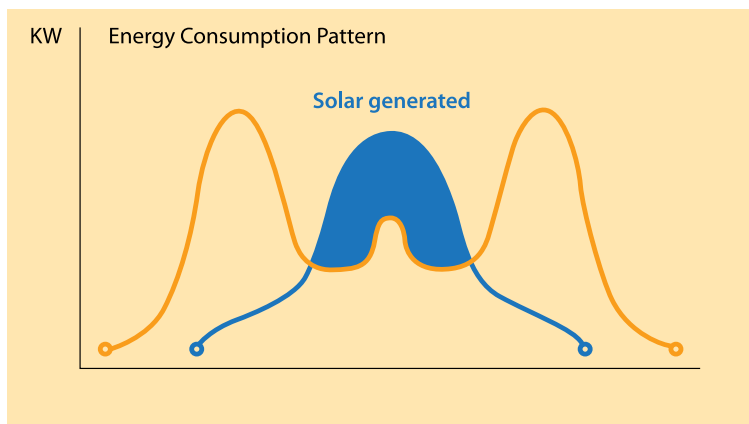


The Summerside Smart Storage Demonstration Project furthers the evolution of the City's green tech investment strategy. It has been developed to provide a platform for energy security, encourage energy conservation, and bring cleaner renewable energy onto a smarter electricity grid. The ultimate goal is to assist Summerside business growth, innovation and export development so that the City can create meaningful quality jobs and wealth as well as cost efficiencies for municipal operations.

This project aims to demonstrate a new approach to costly grid infrastructure capital investment, by integrating at-source storage and demand/supply management. The project's primary mandate is to show how utilities can integrate storage solutions that are modular, impactful, responsive and green, while benefiting the utility grid operator, the customer and the environment.

Specifically, this demonstration will address:

- Integration of renewables and traditional power sources (solar, wind, downstream technologies)
- Storage of wind, solar and other energy generation
- Grid integration management
- Peak shaving
- Back-up green energy
- Grid connected battery storage
- Demonstration of exportable technologies
- Back-up battery storage.



## Financial Results:

- Solar Savings \$60,000
- Battery Savings \$45,000
- Total CUP Savings \$105,000



## Economic Partnerships for Mutual Ambitions

Summerside's approach to collaboration ensures that a project has meaningful impact for the community, leverages the power of our sophisticated infrastructure and provides mutual benefit to all parties. The Smart Storage Demonstration Project will provide such benefits short and long term.

Specifically this project will:

- Generate \$1.03 million worth of incremental GDP for Prince Edward Island (PEI) from the construction, engineering and installation work
- Support 10 full time equivalent jobs on the Island and boost labour income by \$478,000
- Produce \$178,000 in incremental taxes -- or an amount equivalent to 15 percent of GDP -- to other levels of government
- Increase food spending by \$58,000, shelter expenditures by \$103,000, transportation by \$94,000, health and personal care by \$29,000, recreational spending by \$25,000 and gifts / charitable donations by \$12,000
- Save Summerside's Credit Union Place and Electric Utility \$105,000 a year in power savings, which can immediately be rechanneled into more direct programming for the community
- Present a greener public facility with a significantly smaller carbon footprint.  
The new carbon tax soon coming to PEI will also be much less of burden to local taxpayers.

## How the System Works

Summerside's Smart Storage Demonstration Project is designed for ultra-efficient integration of renewable and traditional sources of power and combining these sources with mass storage. On the foundation, our design will also incorporate two-way industrial scale energy flow.

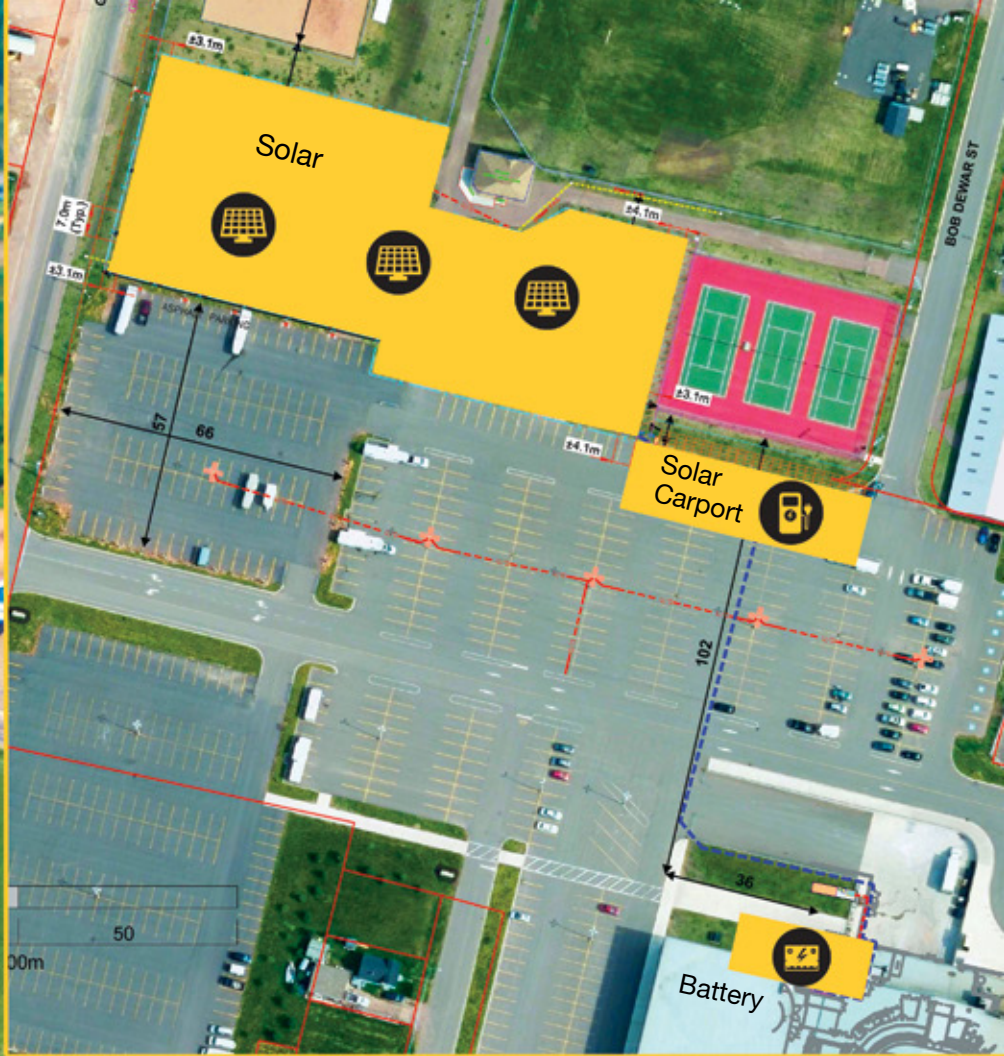
Management of the multi-functional system will address all economic, environmental and next generation energy applications.



144 Carport Panels  
contributing to system  
total of 603,800 kwh

890 kwh  
250 kw transfer

1,404 Ground-Mounted  
Panels contributing to  
system total of 603,800 kwh



## Project Results

### Battery Use:

- Backup Generation — Replace Conventional Diesel
- Peak Shaving — Reduce Customer Demand
- Energy Shifting — Use Energy when Best
- Regulation use for solar instability causes

### Solar:

- Exacting Data for PEI — Industrial Scale
- Proof of data for energy production
- Demonstration of removing barriers to industrial scale use

### Integration:

- Utilization of best battery / solar components for three stakeholders — the Utility, the Consumer/ Customer and the Environment

### Research:

- Remote Community and Recreational Facility Use
- Utility solutions for integration to distribution

# Summerside

# Solar Panels

1,404 ground-mounted panels and 144 carport panels will produce a yearly output of 603,800 kwh. The solar panels are expected to offset greenhouse gas emissions (GHG) from the electrical grid by 424 metric tons of carbon dioxide per year. Direct economic savings are expected at \$60,000 per year.



# Lithium Ion Batteries

Lithium ion battery technology will store 890 kwh of electricity with a 250 kw power transfer system. This system is expected to shift the building's energy use from on-peak to off-peak by a volume of 324,850 kwh per year. Energy shifting is expected to save an additional 50 tonnes of carbon dioxide per year by eliminating the need of peaking units for diesel or natural gas.



Other functions include solar production smoothing to the grid for better integration with less variability to feeders, and short duration back-up energy rather than old diesel/propane technology. Direct economic savings are expected at \$45,000 per year.



# How We Plan to Succeed

The Smart Storage Demonstration Project is designed to succeed by advancing Summerside to the head of the pack as a major innovator in the electricity business. It is a strategy that will assist the City in attaining all of its goals – business growth, export development, quality jobs, and cost effective community services.

## Environmental Results:

GHG Reductions  
474 tons / Yr CO<sub>2</sub>  
Diesel Backup  
Generator  
Displacement

Specifically the project's formula for success is:

- Heed international decrees to reduce GHGs by more than 474 tons annually, displacing diesel, reducing imported energy and increasing exports of surplus Summerside Electric energy
- Commandeer over \$60 million in existing assets (wind farm, MyPowerNet, Credit Union Place), allowing extension of asset life-cycles
- Tap into the market potential of 135-plus communities in Canada that can utilize a variety of off-the-shelf or design spin-offs of the system\*
- Build strong productive relationships with local and international partners who also have green technology expertise
- Attract follow-up investment and collaboration with municipalities, all levels of government and private sector partners
- Be a first, whereby industrial-scale integration of existing generation with add-on renewables means a win-win situation for the electric utility and a publicly owned building
- Escalate efficiencies to such an extent that \$900,000 in utility/municipal capital upgrades can be eliminated or deferred.

**\*Success with this project** offers immediately marketable benefit to over 130 remote and Northern communities struggling to find cost effective energy sources. We believe this issue can be addressed and resolved right here in Summerside.

# Present and Future Partnerships

Since the development of Summerside's wind farm, investment in clean technology has become key to advancing the City's sustainability, economic development and environmental reputation. It is definitely the global sector presenting the most promise for municipalities and business to drive economic prosperity. Summerside is well positioned to take full advantage of this limitless opportunity with partners who share our vision.

The Summerside Smart Storage Demonstration Project steps into the future with a global partner possessing depth of knowledge and expertise in renewable innovation. Samsung exemplifies community values and brings the necessary expertise to accelerate our agenda.



### **Summerside/Samsung Partnership goals are to:**

- Achieve national recognition of Summerside as the City of Excellence and City for Eco-Initiatives
- Develop Summerside as the Eco Centre for testing and validation of eco solutions
- Solidify relationships with additional partners for mutual advancement of business interests

The partnership between Summerside and Samsung Renewable Energy Inc. is a prime example of how likeminded parties can work together on mutually beneficial projects to address the needs of the present and future generation.

#### **Please note:**

Summerside is now looking for more partners, especially those wishing to participate in demonstration projects. New partnerships will be engaged within the Summerside Living Lab framework.

## { The Summerside Living Lab

Summerside recently launched its Living Lab as a means to develop a common framework for industry and the City to work in collaboration towards mutual goals. Through this program, Summerside has positioned the community as a test bed destination for firms looking to develop market solutions, validation and full-scale deployment of products and services.

A Living Lab is essentially a platform for industry to collaborate with government in exploring real-world issues and demonstrating how innovation can provide solutions. For example...

**Problem:** Business faces challenge validating its technology through rapid testing, prototyping and commercialization. The ability to provide product credibility presents a major barrier.

**Solution:** As a municipality devoted to reducing development time and validation in a fail-fast / fail-cheap environment, Summerside offers an ecosystem for rapid commercialization in North American markets.

**Proof:** Summerside provides a robust and sophisticated environment with a full range of assets including electrical company, renewable energy and fibre network. It operates on an open and mutually beneficial collaborative model to support SME validation.

# Your Invitation to Summerside



Summerside's value proposition, given its unique deployment of enabling infrastructure and long list of experienced partners, is the ability to test, accelerate and produce results that have substantive benefit for other jurisdictions.

We plan to become a City that not only develops renewable technology, integration and next-generation green products, we intend to be an early adopter demonstration source that grows jobs and exportable solutions for other jurisdictions worldwide.

To strengthen the City's renewable energy cluster, we seek meaningful R&D and development activities that facilitate renewable technology adoption through the linking of global industries.

Summerside is committed to solutions that are replicable around the world.

Your interest would receive a warm welcome.

## Test, Invest, Succeed

Summerside is a true validation centre where you can develop, test, refine and prove products and technologies and then export them to worldwide markets.

Summerside understands the challenges companies face when looking to grow and expand. Our municipality is both business and employee focused and believes we have the right cost environment, access to markets and business partners to help ease the challenges of growth.

If you're interested in validating your technology for a North American marketplace in an infrastructure-rich environment, contact our team today.

Summerside Economic Development is committed to marketing Summerside's competitive advantages, pro-business climate and superior lifestyle across Canada and around the world.

Get started today!

### Call Summerside

We look forward to hearing from you.

Summerside, Real World Validation Centre  
for the North American Marketplace

Let's build the future  
together!

**Come and grow with us!**

Contact:

**Mike Thususka** Ec.D.  
Director of Economic Development

**Economic Development**  
**City of Summerside**  
275 Fitzroy Street  
Summerside, PE C1N 1H9  
+1 (902) 432-0103  
mike@summerside.ca  
www.bigpossibilities.ca  
Follow Us on Twitter:  
@SummersideBiz