

October 4, 2010

Nancy McNeil
Clerk of the Board
Nova Scotia Utility and Review Board
1601 Lower Water Street, 3rd Floor
P.O. Box 1692, Unit "M"
Halifax, NS B3J 3S3

Re: U&U Load Control Demonstration Project

Dear Ms. McNeil:

Enclosed for your review and approval is NSPI's Application and Work Order for participation in this Demonstration Project.

U & U – Item Greater Than \$1 Million – (Non-Confidential)

- CI 40103 – Load Control Demonstration Project (U & U) - \$4,293,793
Zero dollars spent to date.

A condition of the Participation Agreement requires that NSPI receive Board approval by November 30, 2010. As such, NSPI respectfully requests approval of this Work Order by this date. To facilitate this expedited approval NSPI will work closely with Board Staff to provide an overview of this project and address any outstanding matters without delay.

Regards,



Lee Thomson-Lutz, MBA, CMA
Manager Capital, Regulatory Affairs

Encl.

UARB APPROVAL SHEET

Project Title: **U&U Load Control Demonstration**

CI Number: 40103

☒ Capital Project Authorization

Head Office Use:

☐ ATO

Project Number:

☐ Final Cost

Date: October 1, 2010

Location:			Division:	
Expenditure Profile			Schedule	
YEAR	Budget Estimate	Project Estimate		
Capital Contribution		(5,700,000)		
2010		516,657	Start Date	2010-10
2011		2,585,642	Estimated In-Service Date	2013-10
2012		2,780,679	Estimated Close Date	2014-03
2013		3,441,938		
2014		668,878		
Total	\$0	\$4,293,793		

COMMENTS

This item is submitted pursuant to section 35

Submitted on behalf of NOVA SCOTIA POWER INCORPORATED

Approved on behalf of NOVA SCOTIA UTILITY AND REVIEW BOARD

M Savory

Oct 3/2010

Authorized Signatory

DATE

DATE

Mark Savory

VP Technical and Construction

Project Number

- U&U Load Control Demonstration

CI Number : 40103

Parent CI Number :

Budget Version - 2010 09/03 Forecast

Cost Centre : 590 - 590-Admin. - Cust. Serv. Mkt & Sale

Forecast

Start :	10/01/2010
Operational :	10/30/2013
Final Cost :	03/30/2014
Capital Contribution	\$-5,700,000.00
2010	\$516,656.73
2011	\$2,585,642.01
2012	\$2,780,678.64
2013	\$3,441,938.39
2014	\$668,877.50
Total :	\$4,293,793.27
Original Cost :	\$0.00

Wind output from a typical wind farm in the Maritime region is intermittent and unpredictable. This demonstration project aims to answer the question 'Can you deploy smart grid technology to control customer demand for electricity in real time and use it to balance intermittent generation sources such as wind, thereby enabling a greater contribution of intermittent generation to the grid?'

The project consortium is proposing a demonstration project, using customer load control (demand response) to supply ancillary services for wind integration. The proposed innovative technologies have not been demonstrated and trialed in Canada and the world, according to an extensive review of technical publications.

Project Overview

The project will:

- Install advanced metering infrastructure to monitor customer load in near real time
- Install load control systems to control customer loads in near real time
- Develop wind forecasting models
- Use wind forecasting models and historical wind generation data to build wind energy production forecasts
- Create software algorithms and control systems to automate the process of controlling customer load to balance customer load with wind actual and forecasted wind generation output.

CI Number : 40103 - U&U Load Control Demonstration Project Number

Parent CI Number : - Approved Date

Cost Centre : 590 - 590-Admin. - Cust. Serv. Mkt & Sale Budget Version 2010 09/03 Forecast

Capital Item Accounts

Acct	Actv	Account	Activity	Forecast Amount	Amount	Variance
092		092-Vehicle Cust. Serv. Reg. Labour		559,279	0	559,279
092		092-Vehicle Cust. Serv. OT Labour A		25,335	0	25,335
094		094 - Interest Capitalized		379,793	0	379,793
095		095-COPS Regular Labour AO		879,491	0	879,491
095		095-COPS Overtime Labour AO		38,595	0	38,595
001	031	001 - CUST. SERV. Regular Labour	031 - HGP - Wind Generating Instal	1,137,500	0	1,137,500
002	031	002 - CUST. SERV. Overtime Labour	031 - HGP - Wind Generating Instal	100,000	0	100,000
011	031	011 - Travel Expense	031 - HGP - Wind Generating Instal	186,000	0	186,000
012	031	012 - Materials	031 - HGP - Wind Generating Instal	2,800,000	0	2,800,000
013	031	013 - COPS Contracts	031 - HGP - Wind Generating Instal	0	0	0
015	031	015 - Frt, Post & Delivery	031 - HGP - Wind Generating Instal	4,000	0	4,000
021	031	021 - Telephones	031 - HGP - Wind Generating Instal	13,800	0	13,800
028	031	028 - Consulting	031 - HGP - Wind Generating Instal	2,450,000	0	2,450,000
034	031	034 - Appl. Software	031 - HGP - Wind Generating Instal	550,000	0	550,000
035	031	035 - Comp.Hrdwr & Op.Sftwr	031 - HGP - Wind Generating Instal	150,000	0	150,000
056	031	056 - Training & Development	031 - HGP - Wind Generating Instal	20,000	0	20,000
066	031	066 - Other Goods & Services	031 - HGP - Wind Generating Instal	700,000	0	700,000
096	031	096 - Capital Contributions	031 - HGP - Wind Generating Instal	(5,700,000)	0	(5,700,000)
Total Cost:				4,293,793	0	4,293,793
Original Cost:						

CI Number : 40103	- U&U Load Control Demo	Project Number
Parent CI Number :	-	Approved Date
Cost Centre : 590	- 590-Admin. - Cust. Serv. Mkt & Sale	

Capital Item Justification

Justification Criteria : Metering Equipment

Sub-Criteria : <Select a value>

Name of Report :

Document Location :

Person Responsible :

Why do this project?

NSPI must increase its renewable generation portfolio. Customer load control as an ancillary service may allow for greater penetration of wind generation enabling new ways for NSPI to meet its environmental regulations.

The installation of this pilot project will serve to demonstrate the performance of load control as an ancillary service and will enable evaluation as to the merits of a future larger commercial installation.

NSPI participation in this project is in our customers' interests for the following reasons:

- The Maritime Provinces have among the best wind resources in Canada. Over the next 15 years, the Maritime region of Canada could potentially have the highest penetration of installed wind capacity in the country. If a successful technology can be developed and demonstrated, a large indigenous renewable resource would be the result, with the environmental and economic opportunities this would bring to the region.
- NSPI participation increases the probability that a viable technology will emerge from the demonstration project.
- NSPI recognizes that significant transformation is occurring in the utility industry and important customer care processes will be impacted by the evolution and convergence of both information and operational technologies (i.e. smart grid). The Maritime Load Control Demonstration Project for Wind Integration will provide enabling technology that will facilitate more customer participation in all aspects of energy use and reduction. The scope of the project will also contribute to new learning about customer program design and benefits.

Why do this project now?

NSPI is required to increase the percentage of energy provided from renewable sources to 25% by 2015 with a goal of 40% by 2020. Wind generation has been identified as a significant contributor to meeting these challenges.

Load control for wind integration is a promising and potentially viable technological solution to enable greater penetration of intermittent renewable energy sources. A successful pilot could lead to a larger deployment of load control technologies.

In addition, federal government funding has been secured that will assist the demonstration project. NRCAN through the Clean Energy Fund will contribute 50% of the project costs up to a maximum of \$15.9M. Other contributing Partners will supply over \$9 Million of cash and in kind contributions to the project.

The federal government's contribution provides a timely opportunity to cost effectively test this technology.

Why do this project this way?

NSPI recognizes two principal alternatives to the proposed approach:

1. Conduct the research independently.
2. Wait for other jurisdictions to conduct the research and try to transfer the learnings to the Nova Scotia marketplace

NSPI believes the recommended approach is superior to the conducting the research independently because:

- It takes advantage of the financial leverage achieved by working together on a joint Maritime project with matching federal funding.
- It leverages specific partner strengths, for example, UNB's research expertise, and utilities direct relationship with customers and knowledge of their usage patterns.

NSPI believes the recommended approach is superior to waiting for similar research to occur in other jurisdictions because

- The Maritimes has a large wind resource and therefore more to gain from the results.
- Results from other areas may not be transferrable as Maritime customer load characteristics differ from other areas.

CI # 40103

Load Control Demonstration

Project Work Order Submission

October 4, 2010

NOVA SCOTIA
POWER
An Emera Company

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Executive Summary

NSPI is facing substantial challenges with respect to environmental regulation in the form of renewable energy targets and emissions constraints. To date, wind generation has been identified as a significant contributor to meeting these challenges. The Maritime Provinces have among the best wind resources in Canada. Over the next 15 years, the Maritime region of Canada could potentially have the highest penetration of installed wind capacity in the country. However, wind generation presents operational challenges with respect to its variability. Maritime utilities must ensure sufficient resources in ancillary services to balance variable wind generation. This can be achieved through a coordinated effort within the Maritimes for the benefit of all Maritime utilities and their customers.

A consortium of Maritime utilities, including NB Power, Nova Scotia Power, Maritime Electric and the Power Commission of the City of Saint John, as well as the University of New Brunswick are pursuing an innovative demonstration project to provide fast acting ancillary services for wind integration, by controlling commercial and residential loads using smart grid technology.

The consortium submitted a proposal to the Government of Canada's Clean Energy Fund (see Schedule A of Appendix 1) for a \$38 Million Maritime Provinces Customer Load Control for Wind Integration project (now branded Powershift Atlantic). This demonstration project will evaluate the potential for smart grid technology to enable the utilities to control customer load by altering the duty cycle of connected devices without affecting the customer's overall process. The purpose of the project is to determine if load control can provide an economical integration of wind relative to supply-side alternatives. The intended goal of load control assisted ancillary services is to increase wind supply penetration in the Maritimes, enabling utilities to cost effectively meet their renewable energy targets and to reduce emissions.

On January 5, 2010, the project was accepted by NRCAN (see Appendix 2) and the consortium has been actively advancing the project since.

On April 22, 2010, NB Power, the Proponent, signed a Contribution Agreement (see Schedule B of Appendix 1) with NRCAN for a \$32 Million Load Control Demonstration Project spanning 2010-2014.

On October 1, 2010, signed a participant agreement with NB Power (see Appendix 1) which details NSPI's planned involvement with the 4 year project. This agreement also confirms that NSPI's planned participation is subject to UARB approval.

The project is to be jointly funded by the consortium members and NRCAN as illustrated in Figure 1.

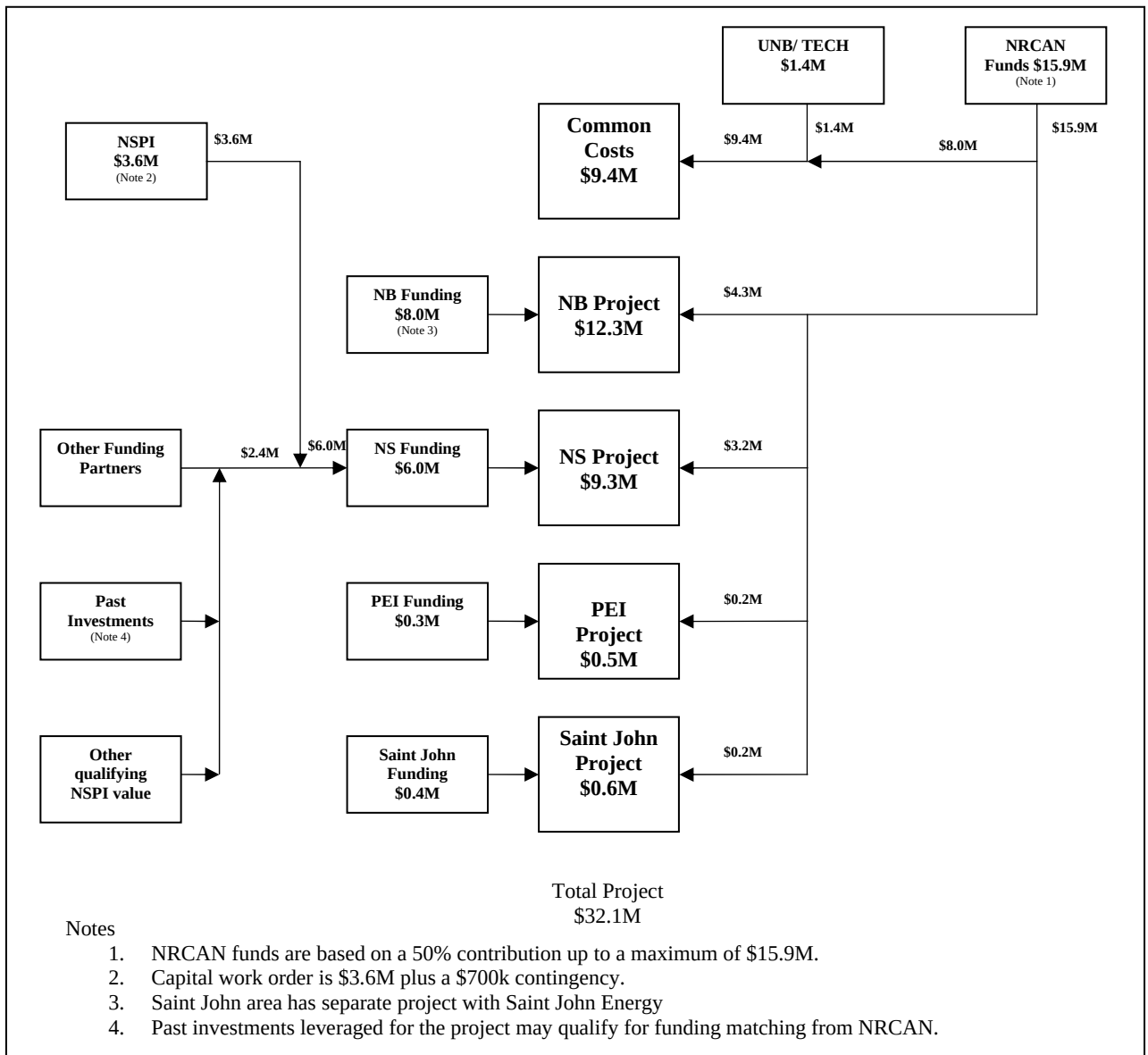


Figure 1 Project Funding Structure

In this application, NSPI seeks UARB approval of a capital work order for \$4.3M, which includes the \$3.6 M amount illustrated in Figure 1 and a \$700K contingency amount.

Along with a strong governance structure (see Schedule D of Appendix 1) and the flexibility to scale the project size depending on final designs and costs, this contingency will help to mitigate any cost risks associated with project uncertainties. NSPI also has until December 31, 2011 to finalize, and size the NS project to align with, the additional value commitment from partners, past investments, and other value (eg NSPI in-kind contributions).

NSPI respectfully requests the Nova Scotia Utility and Review Board's (UARB, the Board) approval of this application to undertake the Maritime Provinces Load Control Demonstration Project at a cost of \$4.3 million.

BACKGROUND

As laid out in Nova Scotia's recently released Renewable Electricity Plan, NSPI is required to increase the percentage of energy provided from renewable sources to 25% by 2015 with a goal of 40% by 2020. Wind generation has significant potential to contribute to achieving these targets.

The challenges with wind generation are the variability and uncertainty of production levels to match customer demand. If proven commercially viable, load control as an ancillary service may provide an effective means of dealing with wind energy intermittency.

NSPI and NB Power have been working together on a number of mutually beneficial research and technology transfer projects which will result in the improvement of operations, the advancement of emerging technologies and renewable energy in the Atlantic region.

In the spring of 2009 NSPI and NB Power began a collaboration to investigate ways to solve the challenge of integrating intermittent renewable energy sources on the grid. Through the spring and early summer of 2009 a growing consortium of partners collaborated on solving this problem. The consortium members included NB Power, NS Power, Maritime Electric, Saint John Energy, the New Brunswick System Operator (NBSO), and the University of New Brunswick (UNB).

In September, 2009 the consortium, with NB Power acting as the lead proponent, made an application to the federal Clean Energy Fund (CEF) for a Load Control Demonstration project. The Maritime Provinces Customer Load Control Demonstration for Wind Integration Project proposal laid out a \$38 M project proposal to demonstrate load control for wind integration. (see attached CEF project proposal in Schedule A of Appendix 1).

NB Power received notification January 5, 2010 from Natural Resources Canada that the Maritime Provinces Customer Load Control Project was selected as one of 19 projects to enter contribution agreement negotiations with NRCAN with contribution from NRCAN of up to a maximum of \$15.9 million.

Under the terms of NRCAN funding, the maximum CEF funding per project can not exceed 50% of total demonstration costs. Total Government assistance (federal, provincial and municipal) can not exceed 75% of total demonstration costs.

In April, 2010 NB Power completed its Contribution Agreement with NRCAN for a \$32 Million Load Control Demonstration project spanning 2010-2014. The contribution agreement requires NB Power, as the lead proponent, to establish participant agreements with each of consortium partners. NSPI signed its participant agreement on October 1, 2010.

PROJECT DESCRIPTION

As illustrated in Fig 1, wind output from a typical wind farm in the Maritime region is intermittent and unpredictable. This demonstration project aims to answer the question “Can you deploy smart grid technology to control customer demand for electricity in real time and use it to balance intermittent generation sources such as wind, thereby enabling a greater contribution of intermittent generation to the grid?”

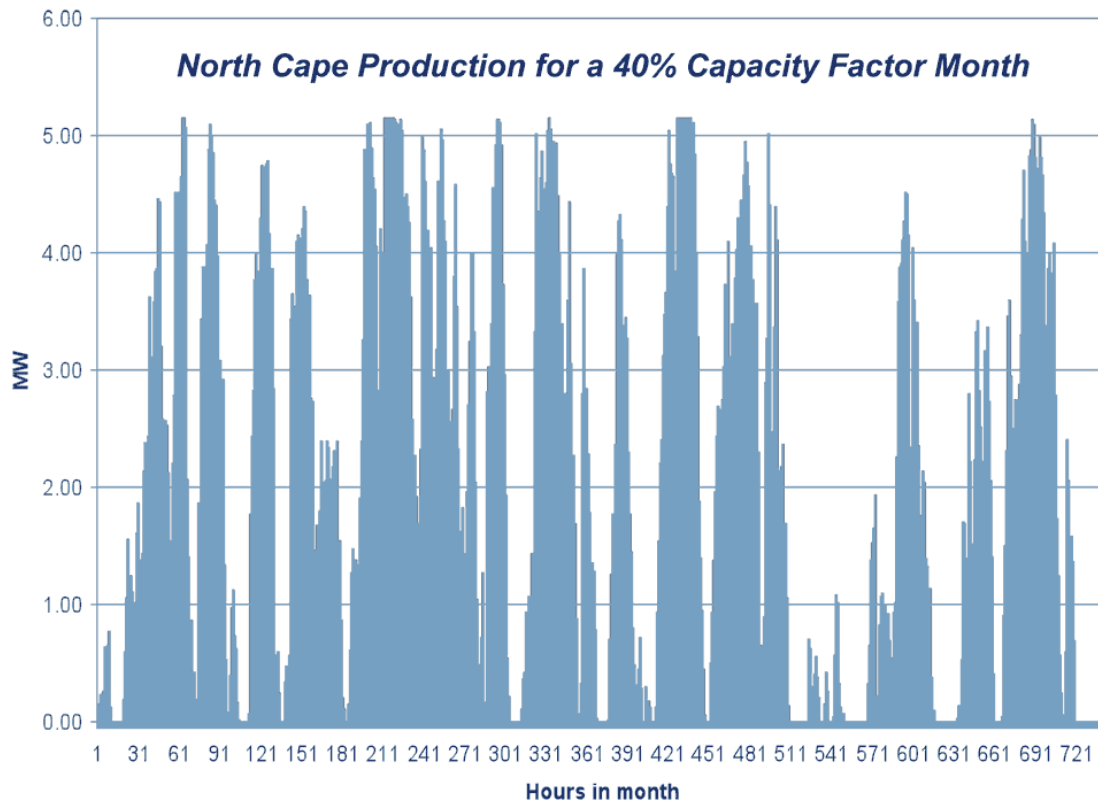


Figure 2 Typical wind farm output

The project consortium is proposing a demonstration project, using customer load control (demand response) to supply ancillary services for wind integration. The proposed innovative technologies have not been demonstrated and trialed in Canada and the world, according to our extensive review of technical publications.

Project Overview

The project will:

- Install advanced metering infrastructure to monitor customer load in near real time
- Install load control systems to control customer loads in near real time
- Develop wind forecasting models
- Use wind forecasting models and historical wind generation data to build wind energy production forecasts

- Create software algorithms and control systems to automate the process of controlling customer load to balance customer load with wind actual and forecasted wind generation output.

A high level concept diagram is shown in Figure 3.

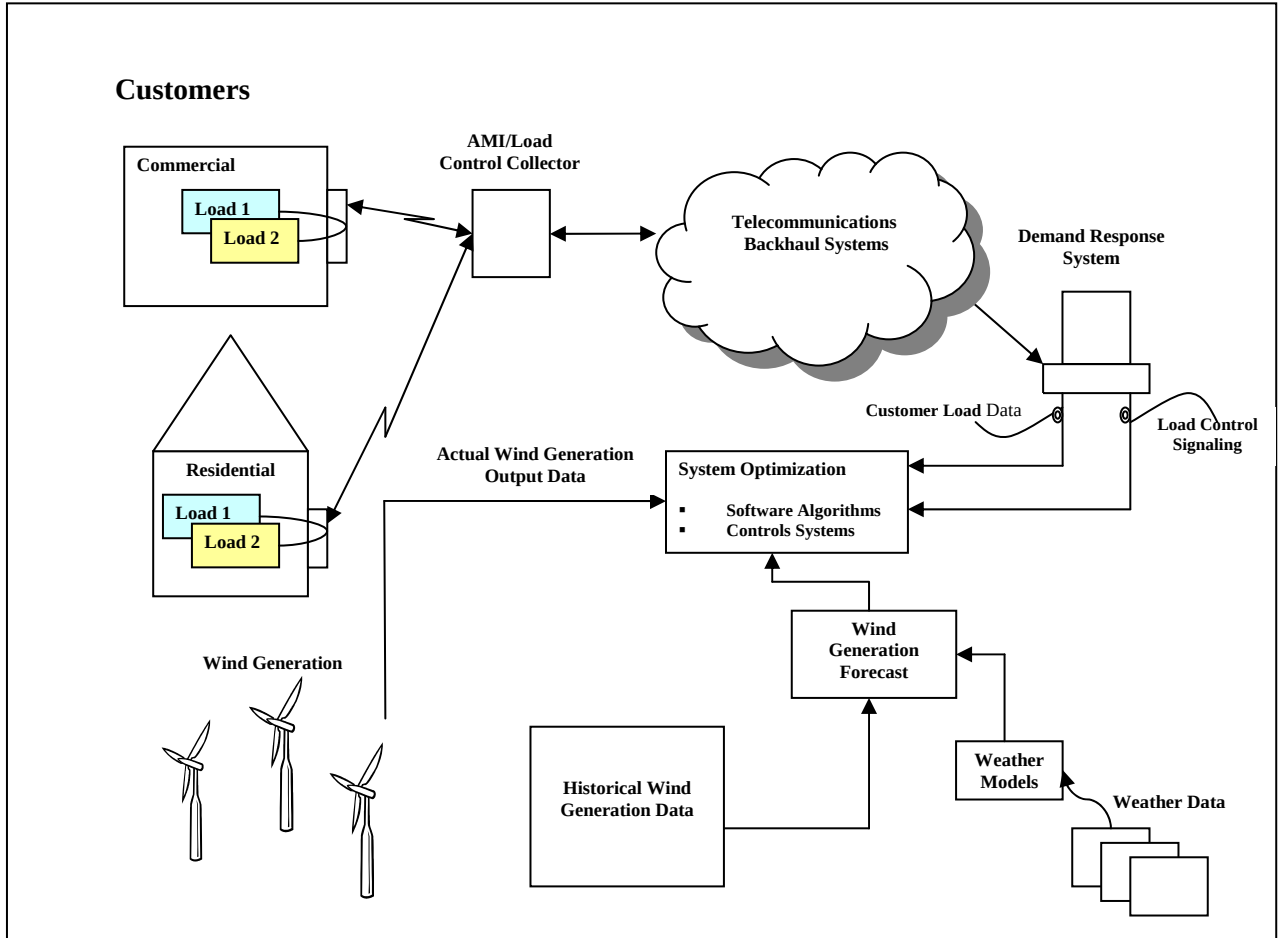


Figure 3 High Level Concept Diagram

The technology solution presented in this project has three key elements:

1. Demand management and demand response system technology
2. Advanced communications networks and advanced metering infrastructure as an enabler for demand response system
3. Automatic optimization systems technology to match load with wind generation

The concept described above would enable the utility to control the customer's load by altering the duty cycle of each connected load (e.g. turning a hot water heater on or off) with minimal impact on the customer's overall process. Using real time demand from the Automated Metering Infrastructure (AMI) the effect of demand response could be monitored for all customers participating in the program. By aggregating numerous

customer loads and load types the utility seeks to be able to control enough load in near real time to balance wind generation output.

The technologies developed and demonstrated under this project include:

- Wind production forecasts for wind generators pertinent to the Maritime climate and geography
- Aggregated load control for residential and commercial customer loads
- Balancing intermittent wind power through aggregated load control based on short-term wind forecast; as well as integration of wind forecast, demand response, communication and control into a synergistic system.

Additionally, the demonstration will permit the evaluation of optimum load characteristics and customer program parameters, including enrollment, incentive and communication protocol.

The project will select both residential and commercial customer load to complete this demonstration project. The parameters of the demonstration project in Nova Scotia include up to 1500 Residential customers up to 150 Commercial customers. Customers will be enrolled based on their type of load. The most likely loads are those that have some inherent ability to store energy and can thus be shifted with minimal impact to the customer. Commercial customer loads may include heating, ventilation and air conditioning (HVAC), compressors and chillers, lighting, etc. Residential loads may include electric hot water heaters, electric thermal storage heating systems, and electric space heating.

The intended outcome of the demonstration is to evaluate the effectiveness of a demand response system to provide a fast reacting and timely response to measured changes in wind energy generation and forecasts of wind energy generation. It is expected that the technologies developed for the demonstration will be scalable to the entire utility customer base.

The project's primary objectives are:

1. Evaluation of load control performance in response to measured and forecasted wind power.
2. Evaluation of load control as a tool to maintain and improve power system reliability and efficiency.
3. Evaluation of the customers' role and their acceptance of utility load control for the purposes of renewable energy integration.

The project's secondary objectives are:

1. Development of Smart Grid technologies that include demand response concepts and wind energy forecasting tools that will result in cost savings and operational efficiencies for Maritime power utilities.

2. An articulation of the costs to install the new technologies and a refinement of a business case and technological capability for scalability and a broader application of load control.
3. A determination of customer load potential and best load characteristics for Demand Response.
4. Determination of additional benefits from 2-way communications such as innovative rate design.
5. Determination of additional benefits/applications of the smart grid configuration for Maritime utilities.

Project Phases

The project is broken into Three Phases as described below:

Table 1 Project Phases

Project Phase	1
Timeframe	Jun 2010-March 2011
Description	Project Design and Technology Development
Key Milestones/Deliverables	Assessment of the Smart Grid technologies available for an effective Demand Response program which will result in provision of fast acting ancillary services for wind integration, thus achieving cost savings and operational efficiencies for Maritime utilities.
Project Phase	2
Timeframe	March 2011-2013
Description	Technology Integration
Key Milestones/Deliverables	- Demonstration of the proposed control, communication and smart grid systems to provide ancillary services for wind integration, including procurement and installation. - Creation of an algorithm for aggregated control of commercial and residential loads and associate technologies for wind integration.
Project Phase	3
Timeframe	2013-March 2014
Description	Project Evaluation and Reporting
Key Milestones/Deliverables	- Completion of business case and cost framework for ancillary services supplied by load control. - Implementation of the proposed load control and communication systems as

	an integral part of the System Operator's operation for balancing load and generation including wind power generation. • Reduction of GHG emissions through the demonstration project in terms in enabling integration of wind power, and avoiding addition of thermal power for ancillary services. • Creation of a load control and customer program for the purposes of wind energy integration, where both customers and utilities will receive environmental and economic benefits from higher level of wind penetration.
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Project Governance

Considering the involvement of multiple jurisdictions and companies, as well as the technical and the financial risk involved, the development of an oversight committee was determined by the Parties to be the appropriate means of addressing such complexities and risks. Therefore, as part of the Proposal to the Minister, NB Power committed to establish an Executive Oversight Committee (the "Executive Oversight Committee") and associated project governance structure. Details of the project Governance structure, roles and responsibilities are detailed in Schedule D of Appendix 1.

PROJECT JUSTIFICATION

Why do this project?

NSPI must increase its renewable generation portfolio. Customer load control as an ancillary service may allow for greater penetration of wind generation enabling new ways for NSPI to meet its environmental regulations.

The installation of this pilot project will serve to demonstrate the performance of load control as an ancillary service and will enable evaluation as to the merits of a future larger commercial installation.

NSPI participation in this project is in our customers' interests for the following reasons:

- The Maritime Provinces have among the best wind resources in Canada. Over the next 15 years, the Maritime region of Canada could potentially have the highest penetration of installed wind capacity in the country. If a successful technology can be developed and demonstrated, a large indigenous renewable resource would be the result, with the environmental and economic opportunities this would bring to the region.
- NSPI participation increases the probability that a viable technology will emerge from the demonstration project.
- NSPI recognizes that significant transformation is occurring in the utility industry and important customer care processes will be impacted by the evolution and convergence of both information and operational technologies (i.e. smart grid). The Maritime Load Control Demonstration Project for Wind Integration will provide enabling technology that will facilitate more customer participation in all aspects of energy use and reduction. The scope of the project will also contribute to new learning about customer program design and benefits.

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- The Maritimes has a large wind resource and therefore more to gain from the results.
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Appendix 1
Participation Agreement

**PARTICIPATION AGREEMENT – MARITIME PROVINCES CUSTOMER
LOAD CONTROL FOR WIND ENERGY INTEGRATION DEMONSTRATION
PROJECT**

THIS PARTICIPATION AGREEMENT is made as of the 4th day
of May, 2010 (“Effective Date”),

AMONG:

NEW BRUNSWICK POWER HOLDING CORPORATION,
a Crown Corporation under the laws for the Province
of New Brunswick, having its head office at the City
of Fredericton, in the Province of New Brunswick

(hereinafter called “NB Power”)

-and-

NOVA SCOTIA POWER INCORPORATED,
a body corporate with Head Office at Halifax,
in the County of Halifax, Province of Nova Scotia

(hereinafter called “NSPI”)

- and -

MARITIME ELECTRIC COMPANY, LIMITED,
a body corporate with Head Office at Charlottetown in the County
of Queens, Province of Prince Edward Island

(hereinafter called “Maritime Electric”)

-and-

POWER COMMISSION OF THE CITY OF SAINT JOHN,
a body corporate with Head Office at Saint John, in the County of Saint John,
Province of New Brunswick
(hereinafter “Commission”)

-and-

UNIVERSITY OF NEW BRUNSWICK,

a university incorporated under the laws of the Province of New Brunswick, having an office at the Office of Research Services, Sir Howard Douglas Hall, Fredericton, New Brunswick

(hereinafter called "UNB")

(All of which are hereinafter sometimes referred to collectively as "Parties" or individually as a "Party")

WHEREAS:

- A. The Parties are proposing an innovative technology cluster to provide fast ancillary services for wind integration, by controlling commercial and residential loads, as outlined in the proposal entitled the "Maritime Provinces Customer Load Control for Wind Energy Integration Demonstration Project" (the "Project").
- B. A proposal was submitted on behalf of the Parties to the federal Minister of Natural Resources ("Minister") under the Natural Resources Canada Clean Energy Fund, for the funding of the Project, a copy of which is attached hereto as Schedule "A" (the "Proposal").
- C. The Minister and NB Power have entered into a federal contribution agreement ("Federal Contribution Agreement") setting out the terms of the financial assistance to be provided by the Minister for the Project, a copy of which is attached hereto as Schedule "B".
- D. The Parties wish to set out the terms and conditions of their participation, financial and other, in the Project.

IN CONSIDERATION of their respective obligations set out below, and other good and valuable consideration provided by each of the Parties to the other, the sufficiency and receipt of which is hereby acknowledged, the Parties agree as follows:

1. INTERPRETATION

1.1 All capitalized terms utilized in this Agreement shall, unless otherwise defined herein, have the meanings ascribed thereto in the Federal Contribution Agreement.

1.2 In this Agreement:

"Affiliate" means a company that directly or indirectly controls, is controlled by or is under direct or indirect control of a Party. For the purposes of this Agreement, Emera Incorporated and all affiliates of Emera Incorporated shall be deemed to be "Affiliates" of NSPI.

"Agreement" means this Participation Agreement and the Schedules attached hereto.

"Business Day" means any day, other than Saturday, Sunday or any statutory holiday in the provinces of New Brunswick, Prince Edward Island or Nova Scotia.

"Confidential Information" means all information, regardless of the form in which it is communicated or maintained and regardless of whether or not it has been marked or communicated as being confidential that is provided by a Party (the "Disclosing Party") and is disclosed, directly or indirectly, to another Party (the "Receiving Party") in connection with the Project. Confidential Information includes, but is not limited to the following: all reports analyses, notes, memoranda, correspondence, spreadsheets, drawings, survey plans, maps, contracts, commercial arrangements, intellectual property, trade secrets, corporate strategies, business plans or other information that is based on, contain or reflect any Confidential Information.

"Intellectual Property" means all information and technical data, including without limitation, all designs, specifications, technical information, know-how, software, data, drawings, plans, reports, patterns, models, prototypes, demonstration units, practices, inventions, methods, applicable special purpose equipment, or the foreign equivalents of any of the foregoing, and the related technology, processes, or other information discovered, created, conceived, produced, reduced to practice, or developed, and all rights therein, including without limitation, patents, copyrights, industrial designs, trade-marks, integrated-circuit topographies, and any registrations or applications for the same and all other rights of intellectual property therein, including any rights which arise from the above items being treated as trade secrets.

“Profit” means profits as defined by the Generally Accepted Accounting Principles (the “GAAP”).

“Pro-rata” means the percentage share calculated based on the total contributions made by or credited to a Party in relation to the total contributions made by all Parties.

“Representatives” means any of the Receiving Party’s officers, directors, employees, consultants, subcontractors and agents and any of Affiliates of the Receiving Party and their respective officers, directors, employees, consultants, subcontractors and agents.

“Utilities” means collectively, NB Power, NSPI, Maritime Electric and the Commission and **“Utility”** means each individually.

- 1.3 All schedules referred to in this Agreement are deemed to be attached to and form part of this Agreement.
- 1.4 In the event of any conflict or inconsistency between the provisions of the Federal Contribution Agreement and its schedules, this Agreement and the provisions of the Schedules or any document referred to in this Agreement (other than the Federal Contribution Agreement) or the Schedules, the following order of priority will prevail and govern the interpretation thereof:
 - (i) the Federal Contribution Agreement and its schedules;
 - (ii) the body of this Agreement;
 - (iii) the Schedules; and
 - (iv) all documents referred to herein (other than the Federal Contribution Agreement).
- 1.5 The inclusion of headings in this Agreement is for convenience of reference only and shall not affect the construction or interpretation of this Agreement.
- 1.6 In this Agreement, unless the context otherwise requires, words imparting the singular include the plural and *vice versa* and words importing gender include all genders. Where a word or phrase is defined, its other grammatical forms have a corresponding meaning.
- 1.7 Except where otherwise expressly provided, all amounts in this Agreement are stated in Canadian dollars.
- 1.8 As all Parties were actively involved in preparing the terms and conditions of this Agreement and as they all had access to and relied upon counsel in this process, there shall be no presumption that any one or the other Party prepared this Agreement and no provision of this Agreement shall be construed against either Party based upon the process of preparation of proposals and drafts of the Agreement.

2. REPRESENTATIONS AND WARRANTIES

- 2.1 Each Party represents and warrants to the other Parties that, as of the Effective Date:
- (a) all factual matters contained in this Agreement respecting the Party and all supporting material submitted by it are true and accurate, and that all estimates, forecasts and other related matters involving judgment were prepared in good faith and to the best of its ability, skill and judgment;
 - (b) it is duly incorporated and validly existing and in good standing under the laws of its constating jurisdiction, and has the power and authority to carry on its business, to hold property, and to enter into this Agreement and undertakes to take all necessary action to maintain itself in good standing and preserve its legal capacity during the term of this Agreement;
 - (c) the execution, delivery and performance of this Agreement does not and will not conflict with, result in the breach of, constitute a default under or accelerate performance required by any of the terms of its constituent documents or any material agreement binding upon it;
 - (d) this Agreement has been duly and validly executed and delivered and constitutes a legal, valid and binding obligation enforceable against it in accordance with its terms, except to the extent that its enforceability may be limited by bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the rights of creditors generally or general principles of equity;
 - (e) it shall comply with all applicable laws in its performance of its obligations under this Agreement; and
 - (f) it is under no obligation or prohibition, nor is it subject to or threatened by any actions, suits or proceedings, including those arising out of the *Canadian Environmental Assessment Act*, which could or would prevent its compliance with this Agreement and undertakes to advise the other Parties forthwith of any such occurrence during the term of this Agreement.
- 2.2 NB Power represents and warrants that as of the Effective Date no amounts are owing by it to Canada under any legislation or contribution agreements and, in the event Canada invokes its set-off rights against NB Power under the terms of the Federal Contribution Agreement, the amount of the set-off shall be taken from NB Power's share of the Contribution under the Federal Contribution Agreement and NB Power shall advance the necessary funds to the Project to replace the set-off amount.

3. **TERM OF AGREEMENT**

3.1 Except as otherwise stated in Sections 3.2 and 3.3, this Agreement shall commence as of the Effective Date and shall terminate 12 months after the latest of:

- (a) The completion of the Project by the Parties to the satisfaction of the Minister;
- (b) March 31, 2014;
- (c) the date on which all amounts due by NB Power to the Minister under the Federal Contribution Agreement have been paid in full;

subject to earlier termination or extension in accordance with the terms of this Agreement.

3.2 The following provisions shall survive the termination or expiry of this Agreement for an additional five (5) years only:

- (a) Repayment of Contributions;
- (b) Accounts and Audit;
- (c) Monitoring;
- (d) Access; and
- (e) Reports and Documentation.

3.3 The following provisions shall survive the termination or expiry of this Agreement:

- (a) Intellectual Property;
- (b) Liability and Indemnities;
- (c) Confidentiality;
- (d) Dispute Resolution; and
- (e) Governing Law.

4. **DELIVERABLES:**

4.1 The scope of the Project is set out in the Proposal and the performance of the Project shall be shared among the Parties according to the tasks and contributions set out herein.

4.2 NB Power agrees that it is obligated to carry out the Project in accordance with the terms and conditions of the Federal Contribution Agreement.

- 4.3 The Parties agree to perform their respective obligations in connection with the Project, specifically those outlined in Schedule "C". In particular, each Party undertakes to:
- (a) perform the work in connection with the Project assigned to it in Schedule "C";
 - (b) deliver the deliverables identified as its deliverable as set out in Schedule "C" by no later than the date for delivery set out therein; and
 - (c) to promptly notify the other Parties of any delay in the performance of its work or deliverables.
- 4.4 The Parties shall carry out their respective obligations in connection with the Project promptly, diligently and in a professional manner and in accordance with the terms and conditions of this Agreement.
- 4.5 The Parties shall complete their respective obligations in connection with the Project by no later than March 31, 2014, unless such obligations are terminated earlier pursuant to the provisions of this Agreement or the Federal Contribution Agreement.
- 4.6 The Parties shall comply with all applicable federal, provincial and municipal laws in relation to the Project, as such laws apply to the respective Parties' deliverables or obligations under this Agreement.
- 4.7 The Parties shall make all reasonable efforts to assist in providing any information that NB Power is required to provide to Canada under the Federal Contribution Agreement.
- 4.8 Each Party shall comply with all conditions arising out of any environmental assessment of the Project within its jurisdiction, in accordance with the provisions of the *Canadian Environmental Assessment Act*, including the implementation of mitigation measures and any follow up program.
- 4.9 Notwithstanding any other provision of this Agreement, if a change that would trigger a reassessment of the Project under the Canadian Environmental Assessment Act is proposed for or made to the Project, the Parties acknowledge that Canada's obligation under the Federal Contribution Agreement will be suspended until an environmental assessment is completed and Canada determines that the Project as modified is unlikely to result in any significant adverse environmental effects.
- 4.10 No material change will be made to the scope or nature of any element of the Project without first being submitted to and approved by the Executive Oversight Committee as defined and described in Section 8 in accordance with the process set out in the governance provisions contained in Schedule "D". For the purposes of this Section, the term "material" refers to any change proposed by a Party that

would impact the overall scope of the Project. The Executive Oversight Committee, acting reasonably, shall determine whether a proposed change would impact the scope of the Project.

- 4.11 Each Party shall bear its own costs in connection with the preparation of the Proposal and the negotiation of the Federal Contribution Agreement.
- 4.12 Cost overruns and losses incurred in connection with the Project will be handled in the manner set out in Schedule "C".

5. **FUNDING**

- 5.1 The Parties shall:
 - (a) make funding contributions to the Project in accordance with Table 1, "Funding Contribution Table" set out in Schedule "E" ("Table 1"); and
 - (b) provided that they not in default of their respective obligations hereunder, each of the Utilities shall receive funding under the Federal Contribution Agreement on a quarterly basis in arrears throughout the Term of this Agreement in accordance with the Fairness Formula defined and set out in Schedule "E".

Notwithstanding s. 5.1(a) herein and the contribution amounts set out in Table 1 or any other provision contained in this Agreement, each Party shall have the right to reduce the total amount of its funding contribution and its scope of the Project at any time prior to 5:00 pm Atlantic Time on December 31, 2011 without any liability whatsoever to any other Party, whether under this Agreement or otherwise, or any obligation to provide any additional funding for the Project; provided, however, a Party shall not reduce the total amount of its funding contributions to the Project to less than sixty per cent (60%) of the amount to which it is obligated to contribute under Table 1 without the prior consent of the Executive Oversight Committee (as defined in Schedule "D").

- 5.2 When submitting a claim for a quarterly payment, each Utility shall submit to the Project Management Office (as defined and described in Schedule "D") an invoice with the following supporting information in respect of that Utility's obligations in connection with the Project:
 - a. An outline of its eligible costs
 - b. An updated annual cash flow statement and budget
 - c. An update confirming
 - i. its Project schedule;
 - ii. the percentage of the Utility's share of the Project that has been completed to date; and
 - iii. the percentage of the Utility's budget spent to date.
- 5.3 When submitting a claim for a quarterly payment for Common Costs (as defined herein), UNB shall submit to the Project Management Office (as defined and

described in Schedule “D”) an invoice with the following supporting information in respect of its obligations in connection with the Project:

- a. An outline of its eligible costs
- b. An updated annual cash flow statement and budget
- c. An update confirming
 - i. its Project schedule;
 - ii. the percentage of its share of the Project that has been completed to date; and
 - iii. the percentage of its budget spent to date.

- 5.4 Subject to any corrections or amendments deemed necessary by the Project Management Office and provided that the Project Management Office has received the Contribution from the Minister, payment of invoices received from each of the Parties will be made within 30 days of receipt. A copy of any invoice revised by the Project Management Office, together with an explanation of the revision shall be sent to the affected Party for its information.
- 5.5 The Parties acknowledge and agree that final payment from the Contribution (in accordance with the Fairness Formula) will not be made to a Utility until all of the obligations of the Utility in connection with the Project have been completed and are deemed acceptable by the Project Management Office. The Parties hereby acknowledge that a holdback of 10% of the Utility’s entitlement to payment from the Contribution (“Holdback”) will be withheld by the Minister until all conditions of the Federal Contribution Agreement have been fulfilled, as set out in Article 6.2 of the Federal Contribution Agreement. The Holdback will be paid by NB Power to each Utility immediately upon all such conditions under the Federal Contribution Agreement being fulfilled.
- 5.6 Where for any reason the Minister determines under the Federal Contribution Agreement that NB Power is not entitled to the Contribution or a portion thereof, or that the amount of the Contribution disbursed exceeds the amount to which NB Power is entitled, the recipient(s) of the Contribution under this Agreement shall repay to NB Power no later than thirty (30) days after written notice from NB Power (said notice to contain the reason and rationale for the determination of the Minister, if and to the extent known), the amount of the Contribution as directed by the Minister and NB Power shall repay the Contribution to the Minister within the time stipulated under the Federal Contribution Agreement.
- 5.7 Any additional funding obtained for the Project from federal government sources shall be credited as a contribution by each Utility on a *pro-rata* basis.
- 5.8 (a) Any additional funding obtained for the Project from provincial government sources shall be credited as a contribution by the Party who resides in the jurisdiction that provided the additional funding.

(b) In the case of New Brunswick, any additional funding obtained for the Project from the government of the Province of New Brunswick, or from UNB through institutionally directed federal funds, shall be credited as a contribution of the Party that requested the funding.

- 5.9 Only those Eligible Costs specifically approved and detailed in the Federal Contribution Agreement will be eligible for the Project, to a maximum amount set out in Federal Contribution Agreement.
- 5.10 The Parties acknowledge and agree that any amounts owed by a Party and past due under this Agreement shall bear interest at the Interest Rate from the date that such amount becomes overdue until the date of payment, inclusive.

6. REPAYMENT OF CONTRIBUTIONS

- 6.1 For the period commencing on March 31, 2014 and ending on March 31, 2019, the Parties shall pay to NB Power 50 percent of annual Profits derived from equipment, know-how, or other forms of Developed Intellectual Property, as hereinafter defined to enable NB Power to comply with Article 7.1 of the Federal Contribution Agreement. NB Power shall pay any and all such Profits paid by the Parties to Canada in accordance with the terms of the Federal Contribution Agreement.
- 6.2 If, prior to the Completion Date of the Project and for five (5) years thereafter, any of the Parties sells, leases, or otherwise disposes of any property connected to the Project other than Developed Intellectual Property where the cost of such property is part of the Eligible Costs under the Project to which Canada has contributed under the Federal Contribution Agreement, the Party shall immediately notify NB Power of such sale, lease or disposition to enable NB Power to meet its obligations under Article 14.1 of the Federal Contribution Agreement. If the Minister so requires, the Party shall share with Canada the proceeds of the disposition in the same ratio as that of Canada's contribution to the purchase of the property, except that Canada's share shall not exceed its contribution under the Federal Contribution Agreement.

7. ACCOUNTS AND AUDIT

- 7.1 For a period of five (5) years after the completion of the Project, each Party shall, at their own expense:
- (a) keep proper books, accounts, and records of their revenue received and expenses incurred and paid in connection with their respective contributions to the Project and shall keep their invoices, receipts, and vouchers relating thereto;

- (b) keep proper and accurate records relating to the environmental impact (if any) of their portion(s) of Project;
- (c) keep proper and accurate records of all data, analyses, and other scientific or technical assessments and reports, and any and all information relating to the outputs and outcomes of their portion(s) Project; and
- (d) upon request and at a mutually agreeable time, make available to NB Power such books, accounts, records, invoices, receipts, and vouchers referred to above and permit NB Power to examine and audit and take copies and extracts from such documents.

8. EXECUTIVE OVERSIGHT COMMITTEE

- 8.1 An executive oversight committee will be established and maintained in accordance with the parameters set forth in Schedule "D" ("Executive Oversight Committee").
- 8.2 The Executive Oversight Committee shall have no power to obligate any Party to incur any costs or expenses or to perform any task or service, except as provided for herein.
- 8.3 Each Party shall, through a designated official, participate in the workings of the Executive Oversight Committee in accordance with the provisions of Schedule "D".

9. INTELLECTUAL PROPERTY

- 9.1 All Intellectual Property owned by, licensed to or in the possession of a Party up and to the Effective Date of this Agreement, shall be and remain the Intellectual Property of such Party, subject to all of the rights, obligations and interests of such Party as existed prior to its execution of this Agreement ("Pre-Existing Intellectual Property"), regardless of whether or not it is used by the Party for the purposes of the Project.
- 9.2 All Intellectual Property developed by, licensed to or in the possession of a Party in connection with the Project on or after the Effective Date of this Agreement ("Developed Intellectual Property"), shall be deemed to have been developed, licensed or in the possession of a Party for the benefit of the Project, and in particular, for the use and benefit of all Parties to this Agreement.
- 9.3 The Parties agree that all agreements that they may enter into with third parties in connection with Developed Intellectual Property shall be first approved by the

Executive Oversight Committee and shall contain the requirements that such third parties:

- (a) waive their moral right in and to such Developed Intellectual Property, and
- (b) assign their entire right, title and interest in and to any such Developed Intellectual Property to such contracting Party.

- 9.4 Notwithstanding the provisions of Section 9.3, the Parties acknowledge and agree that in the event that a UNB graduate student is a third party as contemplated therein, such graduate student will retain ownership of the copyright to any thesis report that he may develop, and shall be entitled, subject to the Confidentiality provisions contained in Section 17, to write, present, defend, and publish such thesis to meet the usual academic requirements for graduation. UNB shall be responsible for ensuring that the graduate student executes both:
 - (a) a confidentiality agreement containing provisions similar to those contained in Section 17 of this Agreement, and
 - (b) a waiver and assignment of any and all remaining Intellectual Property rights in accordance with the requirements of Section 9.3 of this Agreement.
 Provided however, that UNB shall be responsible for any breach of the confidentiality provisions of this Agreement by any of its graduate students.
- 9.5 Subject to any restrictions on use imposed by third parties with respect to Pre-Existing Intellectual Property, the Parties to this Agreement may use another Party's Pre-Existing Intellectual Property to the extent that it is part of the Developed Intellectual Property and may use such Pre-Existing Intellectual Property for research, educational and other non-commercial internal use and development for the purposes of the Project without additional consideration, including, but not limited to financial consideration.
- 9.6 In order to ensure compliance with the requirements of the Federal Contribution Agreement, all Developed Intellectual Property that arises in the course of the Project shall be licensed to or vested in NB Power.
- 9.7 Any trademarks, brands, logos or other branding or trade or business marks used in a Party's business ("Party's Brands") shall remain the sole and exclusive property of that Party ("Brand Party") and shall not be used by any of the other Parties for any purpose without the prior consent of the Brand Party.
- 9.8 NB Power (and any other Party owning Developed Intellectual Property that arises in the course of the Project) shall grant, without cost, to each Party and its Affiliates a free, perpetual, non-assignable and non-transferable internal use license to any Developed Intellectual Property vested in it.
- 9.9 Subject to the requirements of Section 6.1 of this Agreement, Profits arising from the licensing of any Developed Intellectual Property, shall be shared amongst the Parties on a *pro-rata* basis, less any payments owing by NB Power to the Minister

under Article 7.1 of the Federal Contribution Agreement. NB Power will not hold the Intellectual Property as an agent for any of the Parties.

- 9.10 Any licenses granted under this Section 9 shall include a term stipulating that the license may be terminated by the licensor if the licensee has caused a Primary Event of Default as hereinafter defined.

10. LIABILITY & INDEMNITIES

- 10.1 In no event shall any Party be liable to any other Party for any indirect, incidental or consequential, special, punitive or exemplary damages or for any economic losses, regardless of its having been advised of the possibility of such damages.
- 10.2 Each Party will undertake, however, to use all reasonable endeavours to ensure the accuracy of any information supplied and in the event of an error therein promptly on being notified to correct the same; but the supplying Party shall be under no further obligation or liability in respect of the same and no warranty condition or representation of any kind is made, given or to be implied in any case as to the sufficient accuracy or fitness for purpose of such information or materials, or the absence of any infringement of statutory monopoly or industrial property rights of third parties by the use of such information and materials and the recipient Party shall in any case be entirely responsible for the use to which it puts such information and materials.
- 10.3 Subject to Sections 10.1 and 10.2, each Party shall be liable for and indemnify each of the other Parties in respect of the acts and omissions of itself and of its employees and agents that result in a breach of this Agreement. The cumulative total liability of each Party on all claims of any kind arising from or relating to this Agreement shall not exceed the aggregate amount of that Party's contribution to the Project as calculated hereunder.
- 10.4 If the Minister in accordance with the provisions of the Federal Contribution Agreement claims any reimbursement, indemnity or payment of damages from NB Power:
- (a) each Party whose default has caused or contributed to the claim being made shall indemnify each of the other Parties against such claims provided always that the total limit of liability of that Party to all of the other Parties collectively in respect of any and all such claims shall not exceed the aggregate amount of that Party's contribution to the Project; and
 - (b) In the event that it is not possible to attribute default to any Party, the amount claimed by Minister shall be apportioned among all the Parties on a *pro rata* basis.

11. MONITORING

- 11.1 The Parties acknowledge and agree that each will, at its own expense, preserve and make available for audit and examination by the Minister or the Minister's

representatives the books, accounts and records of their contribution to the Project.

- 11.2 Each Party shall for a period of five (5) years following completion of the Project retain records of its contributions to the Project and shall during this period of time allow NB Power reasonable access to such records at reasonable times for audit purposes.

12 CONDITIONS – NSPI & MARITIME ELECTRIC

- 12.1 The obligations of NSPI under this Agreement are subject to and conditional upon NSPI receiving approval, satisfactory to NSPI in its sole discretion, of this Agreement, the Project and NSPI's financial contributions hereunder, from the Nova Scotia Utility and Review Board ("NSUARB") on or before November 30, 2010. NSPI shall notify the Executive Oversight Committee within 30 days of obtaining a decision from the NSUARB on its application. If NSPI notifies the Executive Oversight Committee that such approval has not been obtained or that the terms of such approvals are not satisfactory to NSPI, then this Agreement shall not be binding upon or any have any legal effect whatsoever on NSPI and NSPI shall be deemed to have been released from all obligations and liabilities under the Agreement. This condition may be waived by NSPI, in whole or in part, at any time.
- 12.2 The obligations of Maritime Electric under this Agreement are subject to and conditional upon Maritime Electric receiving all required regulatory approvals, satisfactory to Maritime Electric in its sole discretion, of this Agreement, the Project and Maritime Electric's financial contributions hereunder, on or before November 30, 2010. Maritime Electric shall notify the Executive Oversight Committee within 30 days of obtaining a decision from the applicable regulatory authority(s) on its application(s) for approvals. If Maritime Electric notifies the Executive Oversight Committee that such approvals have not been obtained or that the terms of such approvals are not satisfactory to Maritime Electric then this Agreement shall not be binding upon or any have any legal effect whatsoever on Maritime Electric and Maritime Electric shall be deemed to have been released from any and all obligations and liabilities under the Agreement. This condition may be waived by Maritime Electric, in whole or in part, at any time.

13. DEFAULT

- 13.1 An event of default shall be deemed to have occurred if:
 - a) a Party becomes insolvent or is adjudged or declared bankrupt or if it goes into receivership or takes the benefit of any statute from time to time in force relating to bankrupt or insolvent debtors;

- b) an order is made which is not being contested or appealed by a Party or a resolution is passed for the winding up of a Party or it is dissolved;
- c) in the opinion of the Executive Oversight Committee acting reasonably, there has been a misrepresentation or breach of warranty under Section 2.1 (Representations and Warranties);
- d) in the opinion of the Executive Oversight Committee, acting reasonably, a material adverse change in risk affecting the fulfilment of the terms and conditions of this Agreement has occurred;
- e) in the opinion of the Executive Oversight Committee acting reasonably any term, condition or undertaking in this Agreement is not complied with by a Party in any material respect and any such defect has not been cured by or remedied by that Party within thirty (30) days of written notice of such defect having been provided to that Party;
- f) a Party neglects or fails to pay to NB Power any amount due in accordance with this Agreement;
- g) the Minister terminates the Federal Contribution Agreement.

For the purposes of this Section 13, each of the foregoing is a “Primary Event of Default” and the party responsible for such an event is a “Defaulting Party”.

13.2 If a Primary Event of Default has occurred, in addition to all other remedies provided under contract law, the Executive Oversight Committee may direct NB Power to exercise one or more of the following remedies:

- a) suspend payment to a Defaulting Party, including payment for any Eligible Costs that were incurred by the Defaulting Party prior to the date of such suspension;
- b) require the Defaulting Party to repay all or part of the Contribution which has been paid to such Defaulting Party, together with interest from the date of demand at the Interest Rate; or
- c) terminate any obligation to contribute or continue to contribute to the Eligible Costs of the Project, under the Federal Contribution Agreement and this Agreement, including any obligation to pay any amount owing prior to the date of such termination.

For greater clarity, all above remedies are cumulative.

- 13.3 If an Event of Default is declared under the Federal Contribution Agreement, NB Power shall promptly notify each of the Parties and the Executive Oversight Committee. Each Party whose default or actions has caused or contributed to the declaration of an Event of Default by the Minister shall, within thirty (30) days of receipt of notice that an Event of Default has occurred by reason of Article 11 of the Federal Contribution Agreement, either correct the condition or event complained of or demonstrate to the satisfaction of the Executive Oversight Committee that it has taken such steps as are necessary to correct the condition and has notified NB Power and the Executive Oversight Committee of the rectification.
- 13.4 The Parties individually acknowledge and agree that if the Minister has exercised the repayment remedy under Article 11.2(b) of the Federal Contribution Agreement, then each Party shall be required to repay NB Power the portion of the Contribution paid by NB Power to the Party, together with interest from the date of demand by the Minister, at the Interest Rate.
- 13.5 In the event that there is a dispute as to the amount to be repaid by a Party, then the Executive Oversight Committee shall determine the amount to be repaid.

14. ACCESS

- 14.1 Each Party shall provide the Minister or the Minister's representatives, for the duration of the Federal Contribution Agreement and for a period of 5 years after the Project Completion Date, reasonable access to any premises within its control where the Project takes place to assess the Project's progress or any element thereof.

15. REPORTS AND DOCUMENTATION

- 15.1 The Parties shall, to the extent possible, facilitate the submission by NB Power to the Minister of Project reports in accordance with the provisions of the Federal Contribution Agreement or as otherwise requested from NB Power by the Minister.
- 15.2 Each Party will submit to NB Power sufficient documentation of confirmation of its Project cash and non-cash contributions so NB Power may comply with Article 6 of the Federal Contribution Agreement.
- 15.3 Upon completion of the Project, NB Power shall provide each Party with a declaration as to the total amount of contributions or payments NB Power received in respect of the Project.

16. SUBCONTRACTS

- 16.1 The Parties acknowledge that NB Power is compelled to abide by the subcontracting provisions in the Federal Contribution Agreement and that it shall be responsible for obtaining any ministerial consent that is required pursuant to the terms of that Agreement. Except as otherwise identified in the Proposal, the Parties agree that they will not subcontract all or any part of the Project where the estimated cost of the work is estimated to exceed \$1,000,000, without obtaining the Minister's consent. NB Power shall assist a Party in obtaining any such ministerial consent required.

17. CONFIDENTIALITY

- 17.1 The Receiving Party shall keep the Confidential Information in the same manner that the Receiving Party keeps its own Confidential Information or to a standard of no less than reasonable care, whatever standard is higher. The Confidential Information may be disclosed to the Receiving Party's Representatives but only if such Representatives require the Confidential Information in connection with the Project. The Confidential Information shall not be used by the Receiving Party or its Representatives for any purpose other than in connection with the Project. It is understood as follows:
- (a) Representatives will be informed by the Receiving Party of the confidential nature of the Confidential Information. The Receiving Party shall require the Representatives to adhere to the confidentiality provisions of this Agreement. In any event, the Receiving Party shall be responsible for any breach of the confidentiality provisions of this Agreement by any of its Representatives.
 - (b) The Receiving Party shall not use, reveal, release, disclose or divulge the Confidential Information in any form whatsoever to any person other than as permitted hereby unless the Receiving Party has received the prior written consent of the Disclosing Party. The Receiving Party shall safeguard the Confidential Information from unauthorized disclosure. The term "person" will be interpreted broadly to include any corporation, partnership, individual or governmental authority.
 - (c) Any information furnished to the Receiving Party by Representatives of the Disclosing Party will be deemed furnished by the Disclosing Party.
- 17.2 The obligations set forth in Section 17.1 above shall not in any way restrict or impair the right of the Receiving Party to disclose and use the following information:

- (a) information that is publicly available at the time of disclosure or becomes publicly available other than as a result of the violation of this Agreement;
 - (b) information that is or becomes available on a non-confidential basis from a third party that is not prohibited from being disclosed pursuant to a legal, contractual or fiduciary obligation;
 - (c) information that the Receiving Party can demonstrate was legally in its possession prior to disclosure by Disclosing Party and is not subject to a confidentiality obligation;
 - (d) information developed by the Receiving Party independently of any Confidential Information received under this Agreement without reference to, or consideration of the Confidential Information, or breach of this Agreement, as demonstrable by the Receiving Party; or
 - (e) information required by any law, order of a court of competent jurisdiction, or regulatory body with regulatory responsibilities over the Receiving Party.
- 17.3 Subject to Sections 17.2 and 17.4, the Parties shall keep confidential and not disclose the contents of this Agreement without the prior written consent of all Parties, which consent shall not be unreasonably withheld.
- 17.4 The Parties hereby acknowledge and agree that NB Power may be required to disclose Confidential Information:
- (a) to the Minister under the terms of the Federal Contribution Agreement and acknowledge that the Minister is subject to the provisions of the *Access to Information Act* (Canada); and
 - (b) under the provisions of the *Right to Information Act* (New Brunswick), as amended or replaced from time to time.
- 17.5 The Parties acknowledge and agree that money damages would not be a sufficient remedy for any breach of the confidentiality provisions of this Agreement by the Receiving Party or its Representatives and the Disclosing Party (or any other Parties) will be entitled to specific performance and injunctive relief as remedies for any such breach. Such remedies will not be deemed to be the exclusive remedies for a breach of this Agreement by Receiving Party or any of its Representatives but will be in addition to all other remedies available at law or in equity to Disclosing Party or other Parties.

18. FORCE MAJEURE

- 18.1 The Parties shall not be in default or in breach of this Agreement due to any delay or failure to meet any of their obligations caused by or arising from any event

beyond their reasonable control and without their fault or negligence, which could not reasonably have provided against and which, having arisen, could not reasonably have avoided or overcome, including any act of God or other cause which delays or frustrates the performance of this Agreement (a “force majeure event”).

- 18.2 Should any Party claim the existence of a “force majeure event” as set out in Section 18.1 above, prompt notice thereof shall be given to the other Parties and to the Executive Oversight Committee and the Party claiming the existence of a “force majeure event” shall have the obligation to provide proof of such event and use its best efforts to mitigate any damages to the other Parties.
- 18.3 If, by reason of an event of force majeure event, a Party is rendered unable, in whole or in part, to perform its obligations under this Agreement, such Party shall be excused from such performance to the extent it is prevented by, and during the continuance of the impact of, such force majeure event.

19. NOTICES

- 19.1 All notices under this Agreement may be sent by facsimile, a nationally recognized overnight courier service, first class mail or hand delivered. Notice shall be given when received by the addressee on a Business Day. In the absence of proof of the actual receipt date, the following presumptions will apply:
- (a) Notices sent by facsimile shall be presumed to have been received upon the sending Party’s receipt of its facsimile machine’s confirmation of successful transmission. If the day on which such facsimile is received is not a Business Day or is after five p.m. (local time for the recipient) on a Business Day, then such facsimile shall be deemed to have been received on the next following Business Day.
 - (b) Notice by overnight courier shall be presumed to have been received on the next Business Day after it was sent.
 - (c) Notice by first class mail shall be presumed delivered five (5) Business Days after mailing.
- 19.2 All notices to be given to any Party under this Agreement shall be written and addressed to Party at the contact information provided below unless notice to the contrary is given, :

To NB Power:

New Brunswick Power Holding Corporation
P.O. Box 2000
Fredericton, NB
E3B 4X1
Attention: Corporate Secretary and General Counsel

Telephone: (506) 458-3372
Facsimile: (506) 458-4319

To NSPI:

Nova Scotia Power Incorporated
PO Box 910
Halifax, NS B3J 2W5
Attn: Corporate Secretary
Facsimile: (902) 428-6171

With a copy to:

Nova Scotia Power Incorporated
PO Box 910
Halifax, NS B3J 2W5
Attn: Stephen Pothier
Director, Revenue Operations
Facsimile: (902) 428-6102

To Maritime Electric:

Maritime Electric Company Limited
P.O. Box 1328
Charlottetown, PE C1A 7N2
Attention: Vice-President, Corporate Planning and Energy Supply

Telephone: 902-629-3799
Facsimile: 902-629-3665

To UNB:

For administrative matters:
University of New Brunswick,
Office of Research Services
PO Box 4400
Fredericton, NB
E3B 5A3

Attention: Dwight Ball – Executive Director
 Telephone: (506) 453-4674
 Facsimile: (506) 453-3522

For financial matters
University of New Brunswick,
Office of Research Services
 PO Box 4400
Fredericton, NB
 E3B 5A3
 Attention: Accountant/Financial Analyst – Research Contracts
 Telephone: (506) 453-4674
 Facsimile: (506) 458-7600

To Commission:

Saint John Energy
 PO Box 850
 Saint John, NB
 Canada
 E2L 4C7
 Attention: Eric Marr, President and Chief Executive Officer
 Telephone: (506) 658-5252
 Facsimile: (506) 658-0868

20. PUBLICATIONS

- 20.1 Procedures for and content of publications relating to the Project shall be agreed among the Parties through the Executive Oversight Committee.
- 20.2 The Parties agree to acknowledge the financial support of the federal government of Canada in all public information produced as part of the Project.

21. DISPUTE RESOLUTION

21.1 Dispute Resolution

- (a) In this Agreement, “dispute” or “disputes” means differences between two or more of the Parties as to the interpretation, application, or administration of the Agreement or any failure to agree where agreement between the Parties is called for, or any claim whatsoever arising out of any alleged breach of obligations under this Agreement.

- (b) Subject to the rights of the Parties under Section 17.5 herein to deal with a breach of the confidentiality provisions of this Agreement, in the event of a dispute, the Parties shall endeavour to settle it amicably. In the event that they are unable to resolve the dispute within fifteen (15) days, the dispute shall be referred to the Working Group (as defined and described in Schedule D) for resolution.
- (c) In the event that the Working Group is unable to resolve the dispute within fifteen (15) days, the Program Director will escalate the dispute to the Executive Oversight Committee for attention at the next monthly conference call or more immediately if required
- (d) If the Executive Oversight Committee is unable to resolve a dispute within thirty (30) days, a Party may then seek to proceed to binding arbitration in accordance with the *Arbitration Act* (New Brunswick).

The cost of the arbitration, excluding a Party's legal fees and disbursements, shall, unless otherwise ordered by the arbitrator, be borne equally by the Parties involved. If the dispute involves all of the Parties then the costs, excluding a Party's legal fees and disbursements, shall, unless otherwise ordered by the arbitrator, be borne on a *pro rata* basis.

22. AMENDMENT

- 22.1 No amendment of this Agreement or waiver of any of its terms and conditions shall be deemed valid unless effected by a written amendment signed by all of the Parties.

23. TIME OF ESSENCE

- 23.1 Time is of the essence with respect to all provisions of this Agreement that specify a time for performance.

24. GOVERNING LAW

- 24.1 This Agreement shall be interpreted in accordance with the laws in force in the Province of New Brunswick and the laws of Canada in force in the Province of New Brunswick.

25. ASSIGNMENT

- 25.1 A Party shall not assign this Agreement or any part thereof, without the prior written consent of all of the other Parties, which consent is not to be unreasonably withheld.
- 25.2 NB Power shall not assign the Federal Contribution Agreement or any part thereof, without the prior written consent of all the other Parties.

26. BINDING AGREEMENT

- 26.1 This Agreement is binding on the Parties and their successors and permitted assigns.

27. SEVERABILITY

- 27.1 Any provision of this Agreement prohibited by law or otherwise ineffective will be ineffective only to the extent of such prohibition or ineffectiveness and will be severable without invalidating or otherwise affecting the remaining provisions of this Agreement.

28. WAIVER

- 28.1 The failure of any party to exercise any right, power or option or to enforce any remedy or to insist upon the strict compliance with the terms, conditions and covenants under this Agreement shall not constitute a waiver of the terms, conditions and covenants herein with respect to that or any other or subsequent breach thereof nor a waiver by the party at any time thereafter to require strict compliance with all terms, conditions and covenants hereof, including the terms, conditions and covenants with respect to which the party has failed to exercise such right, power or option. Nothing shall be construed or have the effect of a waiver except an instrument in writing signed by the party which expressly waives a right, power or option under this Agreement.

29. NO PARTNERSHIP

- 29.1 Nothing in this Agreement shall be construed to create a partnership or agency between any of the Parties.

30. ENTIRE AGREEMENT

30.1 This Agreement constitutes the entire agreement among the Parties and supersedes all previous documents, negotiations, arrangements, undertakings and understandings related to its subject matter.

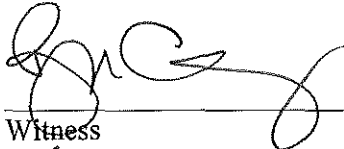
31. COUNTERPARTS EXECUTION

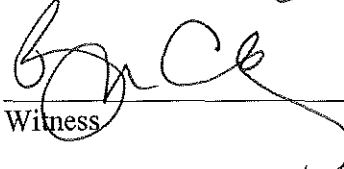
31.1 This Agreement may be executed in counterparts, each of which when taken together, will constitute an original of this Agreement. This Agreement may be executed by facsimile or reproductive signature and the parties shall recognize such execution as the valid and binding signature hereof.

IN WITNESS WHEREOF the Parties have caused this Agreement to be executed on the day and year first written above.

Witness

Witness


Witness


Witness

) **NEW BRUNSWICK POWER**
) **HOLDING CORPORATION**
)

) Per: _____
)

) Per: _____
)

) **NOVA SCOTIA POWER**
) **INCORPORATED**
)

) Per: 
)

) **Robert R. Bennett**
) **President and Chief Executive Officer**
)

) Per: 
)

) **Alan Richardson**
) **VP Integrated Customer Services**
)
)
)
)

	)	MARITIME ELECTRIC COMPANY,
	)	LIMITED
	)	
	)	
_____	)	Per: _____
Witness	)	
	)	
	)	
_____	)	Per: _____
Witness	)	
	)	
	)	
	)	POWER COMMISSION OF THE
	)	CITY OF SAINT JOHN
	)	
_____	)	Per: _____
Witness	)	
	)	
	)	
_____	)	Per: _____
Witness	)	
	)	
	)	
	)	UNIVERSITY OF NEW
	)	BRUNSWICK
	)	
_____	)	Per: _____
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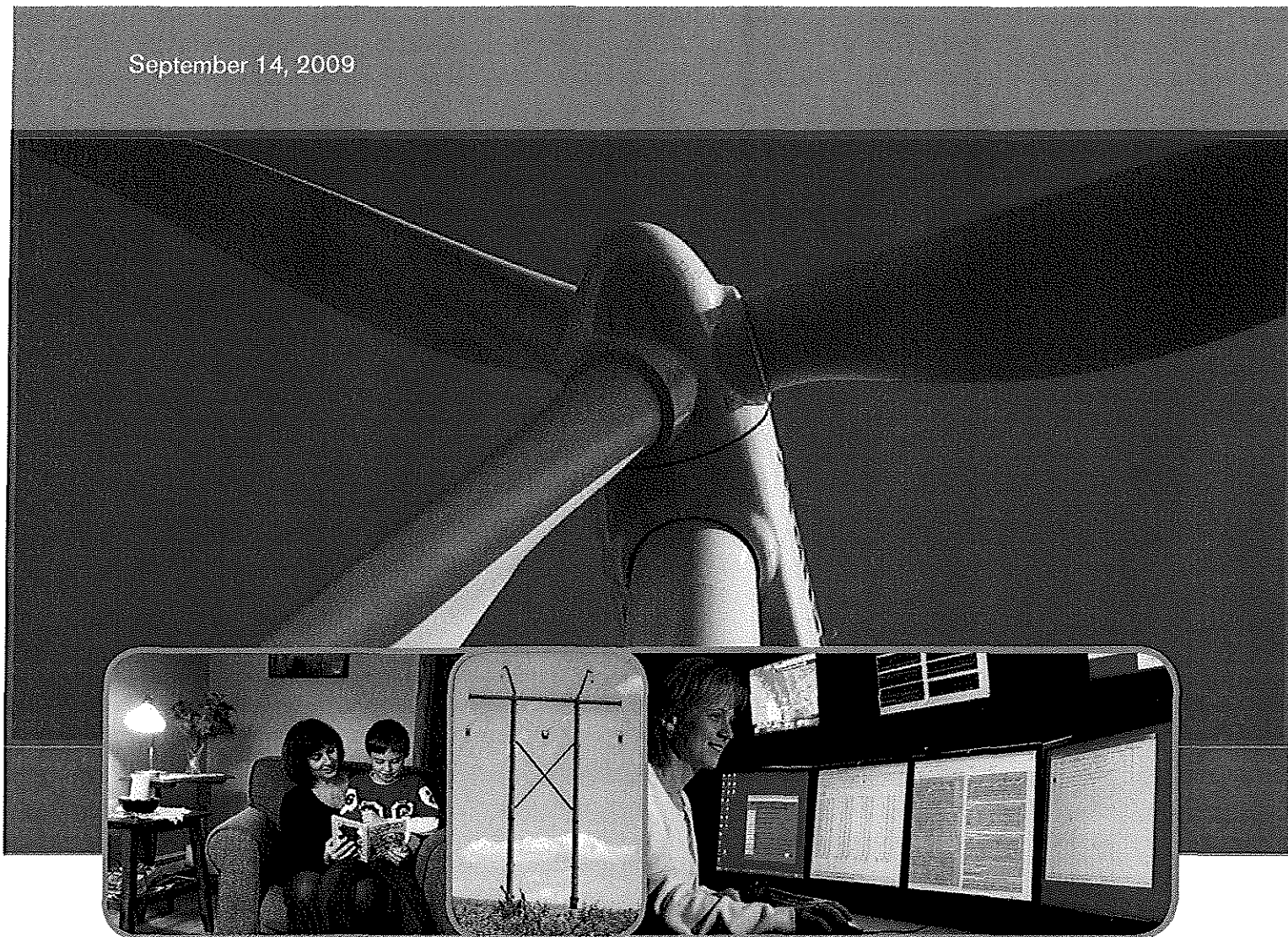
Schedule "A"

**Clean Energy Fund – Renewable and Clean Energy
Demonstration Projects**

**The Maritime Provinces Customer Load Control Demonstration
to Supply Ancillary Services for Wind Integration
Project Proposal**



September 14, 2009



**NATURAL RESOURCES CANADA
CLEAN ENERGY FUND –
RENEWABLE AND CLEAN ENERGY
DEMONSTRATION PROJECTS**

**THE MARITIME PROVINCES CUSTOMER LOAD
CONTROL DEMONSTRATION FOR
WIND INTEGRATION PROJECT PROPOSAL**

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THE MARITIME PROVINCES CUSTOMER LOAD CONTROL DEMONSTRATION FOR WIND INTEGRATION

EXECUTIVE SUMMARY

In February 2009, the United States and Canada enacted the US-Canada Clean Energy Dialogue process. The two nations agreed to expand collaboration in the development and deployment of clean energy technology and the creation of a more efficient electricity grid based on clean and renewable energy generation.

The Maritime Provinces, located in the International Northeast, are strategically positioned to advance the goals set out in the US-Canada Clean Energy dialogue. With one of the best wind resources in Canada and more than 40 years of energy trade with the United States, the Maritime region can be a significant contributor to a cornerstone of the US-Canada Clean Energy dialogue, to accelerate new renewable energy generation.

A consortium of Maritime utilities, including NB Power Company, Nova Scotia Power Incorporated, Maritime Electric Limited and the Power Commission of the City of Saint John, as well as the University of New Brunswick, GE Multilin, the Provinces of Nova Scotia, Prince Edward Island and New Brunswick, the New Brunswick System Operator (NBSO), WEICan, Efficiency, NB CanWEA and TransAlta are proposing an innovative technology cluster to provide fast acting ancillary services for wind integration, by controlling commercial and residential loads.

Over the next 15 years, the Maritime region could potentially have the highest penetration of installed wind capacity in the country. However, to accommodate this goal, the Maritime utilities must ensure sufficient resources in ancillary services. This can be achieved through a coordinated effort within the Maritimes as well as in surrounding jurisdictions.

As applicants of the Government of Canada's *Clean Energy Fund*, the \$38 million *Maritime Provinces Customer Load Control for Wind Integration* demonstration project will evaluate if smart grid technology can enable the utilities to control the customer's load by altering the duty cycle of each connected load without affecting the customer's overall process. Using real time demand from advance metering infrastructure, the effect of Demand Response (DR) could be monitored for all customers participating in the program. The purpose of the project is to determine if load control can provide a more economical integration of wind, rather than expensive supply-side alternatives. The intended goal of load control assisted ancillary services is to increase wind supply penetration in the Maritimes and to reduce Green House Gas (GHG).

In addition to the US-Canada Clean Energy Dialogue, and the Clean Energy Fund, this demonstration project is also strategically aligned with the goals of the Federal Government's Atlantic Energy Gateway. Announced in April 2009, the Atlantic Energy Gateway initiative focuses on encouraging research and the development of clean and renewable energy sources in Atlantic Canada. The Maritime Provinces Customer Load Control project is structured to meaningfully advance the goals of the Atlantic Energy Gateway by promoting regional cooperation; smart grid technology deployment; and, the penetration of renewable energy.

Canada's GHG Plan requires that Canada reduce its total GHG emissions by 20 percent from 2006 levels by 2020. Additionally, it is estimated that the electricity sector will be required to reduce its emissions by 25% from 2006 levels by 2020. Once the innovative technologies are demonstrated through this Clean Energy Fund project, this technology could be commercialized in the Maritimes and in other Canadian jurisdictions, including northern and remote communities. This load control capability may facilitate a reliable and cost effective ancillary service necessary to support the increase of wind penetration from the current level of 1% in the Canadian electricity market to 20%, or equivalent to the integration of 55,000MW of wind capacity in Canadian power systems.

The *Maritime Provinces Customer Load Control for Wind Integration* demonstration project respectfully meets all the Clean Energy evaluation criteria including:

- a. Makes greater use of technologies that reduce GHG.
- b. Assists in Canada's total GHG emission reduction.
- c. Promotes the goal to achieve 90% of Canada's electricity coming from non-emitting sources.
- d. Encompasses broad stakeholder expertise, minimizing tax payer risk and leveraging past demonstration learning and experience.
- e. Has broad receptor interest throughout the project supply chain in the Maritimes, nationally and in the United States.
- f. Promotes technology deployment which could spur renewable energy integration for remote and northern communities.
- g. Is able to quickly move from development to commercialization and application nation wide.
- h. And lastly, the project is strategically aligned with the Federal Government's goals in the US-Canada Clean Energy Dialogue and the Atlantic Energy Gateway.

SECTION 1 - GENERAL INFORMATION AND APPLICANT'S ATTESTATIONS

1. Project Title	The Maritime Provinces Customer Load Control Demonstration for Wind Integration
2. Project applicant(s) -legal names of company(ies)	New Brunswick Power Corporation Maritime Electric Company, Limited Nova Scotia Power Incorporated The Power Commission of the City of Saint John
3. Project partners (legal names of companies, utilities, provincial agencies)	University of New Brunswick GE Multilin New Brunswick System Operator Governments of New Brunswick, Nova Scotia, Prince Edward Island Efficiency New Brunswick CanWEA TransAlta WEICan
4. Project Start Date: (year/month/day) May 19, 2009	5. Project Completion Date: (year/month/day) March 31, 2014
6. Project Location and Province /Territory Four demonstration sites in the Maritime Provinces will be selected. Potential sites include: Moncton, Charlottetown, Halifax and Saint John.	
7. Project Technology The technical objective of the demonstration is to determine if smart grid technology can enable the utility to control the customer's load by altering the duty cycle of each connected device without affecting the customer's overall process. Using real time demand from the AML, the effect of DR could be monitored for all customers participating in the program. Our objective is to determine if the Maritime utilities can increase its wind supply penetration, thereby reducing GHG, by load control assisted ancillary services. The technology solution presented in this proposal has 3 key elements: 1) Demand Management and Demand Response System technology 2) Advanced Communications Network as an enabler for Demand Response system 3) Automatic Optimization System technology to match loads with wind generation	
8. Project Summary Attached page 7	
9. Expected Benefits (non-confidential) - Integration of more wind in the Maritime Provinces and the technological deployment nation-wide to allow for more wind across the country. - The economic and efficient dispatch of net requirements. - Enhanced regional collaboration and improved system efficiency, reliability and minimizing redundancy. - Potential deferral of new infrastructure to accommodate contingencies. - Canadian leadership in wind integration technologies. - The flexibility arising from demand response programs can also assist in addressing the characteristics of other non-dispatchable forms of renewable generation such as in-stream tidal, solar and wave power.	
10. Total Project Cost \$38 million	
11. Funding amount Requested from the CEF Fund \$19 million	
12. Has this proposal been submitted to other funding organizations? (Y/N); if Y, please list their names and contact information) New Brunswick Climate Action Funding Atlantic Opportunities Agency Governments of New Brunswick, Nova Scotia and Prince Edward Island	

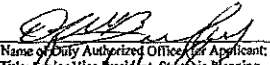
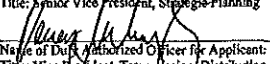
ATTESTATIONS

By submitting this proposal, the project applicant attests that:

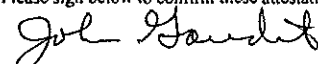
- It is acting on behalf of all partners and collaborators and has received written permission from them to do so.
- It is legally registered or incorporated in Canada.
- Barring unforeseen events that could reduce their capacity, the applicant and participating partners and collaborators have, and will retain over the lifetime of the CEF project, the technical and personnel capacity to undertake and complete the project, and that they have contingency plans in place to minimize, as far as possible, the impact of any such unforeseen events.
- All funding (cash and in-kind) identified by the applicant and its partners and collaborators in the proposal is expected to be available for commitment at the time of the signing of the Contribution Agreement by duly authorized representatives of the project applicant and its partners and collaborators.
- It agrees with the terms and conditions of the CEF program as well as the process described in the Applicants' Guide provided to Applicants.
- Any proprietary or confidential information provided as part of the submission, by any party, is provided with the approval of that party. Federal reviewers are bound by the requirements of the Access to Information Act and the Privacy Act regarding the treatment of confidential information.
- It understands and acknowledges that should the project be accepted for co-funding from the Clean Energy Fund, no liability and no commitment or obligation exists on the part of NRCan to make a financial contribution to the project until a written contribution agreement is signed by both parties, and, furthermore, that any costs or expenses incurred or paid by the applicant prior to the execution of a written contribution agreement by both parties are the sole responsibility of the applicant, and no liability exists on the part of NRCan.
- It understands and acknowledges that NRCan officials will not entertain any request by project proponents to review or revisit NRCan's project approval decisions.
- It understands and acknowledges that NRCan reserves the right to alter or cancel the currently envisaged process at its sole discretion.

The individual signing below attests that he / she has the authority to sign a legally binding contribution agreement between NRCan and the project proponent.

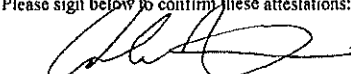
New Brunswick Power Corporation

Please sign below to confirm these attestations:	
	<u>Sept 11/09</u>
Name of Duty Authorized Officer for Applicant:	Date
Title: Senior Vice President, Strategic Planning	
	
Name of Duty Authorized Officer for Applicant:	
Title: Vice President, Transmission Distribution and Customer Service	

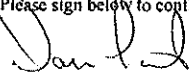
Maritime Electric Company Limited

Please sign below to confirm these attestations:	
	<u>Sept 11/09</u>
Name of Duty Authorized Officer for Applicant:	Date
Title: John GAUDET	
VP Corporate Planning + Energy Supply	

Nova Scotia Power Incorporated

Please sign below to confirm these attestations:	
	<u>Sept 19, 2009</u>
Name of Duty Authorized Officer for Applicant: Alan Richardson	Date
Title: Vice President, Commercial Operations	
Nova Scotia Power Inc.	

The Power Commission of the City of Saint John

Please sign below to confirm these attestations:	
	<u>Sept 16, 2009</u>
Name of Duty Authorized Officer for Applicant:	Date
Title: Vice President of Engineering & Operations	

THE MARITIME PROVINCES CUSTOMER LOAD CONTROL DEMONSTRATION FOR WIND INTEGRATION PROJECT PROPOSAL

PROJECT SUMMARY:

Wind power has been identified and demonstrated as a technology that will provide a significant contribution to GHG reduction. The Maritime Provinces have world-class wind power potential. Wind power production is intermittent by nature. In power systems, the production of electricity by power generators must instantaneously equal the consumption by load. To accommodate the intermittent nature of wind power, other generation sources must be available to follow the net effect of variation in load and wind power production. This load following service is termed an ancillary service. **Please see Appendix A for an illustration of the intermittent nature of wind. Illustrated is the output at the North Cape wind farm for the month of March 2003.**

Resources in the Maritime Provinces to provide ancillary services are limited, unlike some jurisdictions with vast hydro and storage resources. The lack of ancillary services will be a limiting factor in the amount of wind that can be added to the Maritime power system. Ancillary services today are provided by on-line generators that have the capability to vary their output to follow wind and load, as well as by off-line generators that can be brought on-line quickly as required. The New Brunswick System Operator (NBSO) currently spends approximately \$5 million per year to provide ancillary services to follow load in New Brunswick. The most expensive source of ancillary services can cost as much as \$10,000 per hour, in addition to carbon costs.

DEMAND RESPONSE AS AN ANCILLARY SERVICE:

A consortium of Maritime utilities, including NB Power Corporation, Nova Scotia Power Incorporated, Maritime Electric Limited and the Power Commission of the City of Saint John, as well as the University of New Brunswick, GE Multilin, NBSO, the Provinces of Nova Scotia, Prince Edward Island and New Brunswick, Efficiency NB, CanWEA, WEICan and TransAlta are proposing an innovative technology cluster to provide fast acting ancillary services for wind integration, by controlling commercial and residential loads. ***The purpose of this project is to determine if load control can provide for more economical integration of wind rather than expensive supply side options to be built in the future. To our knowledge – this has never been done before.*** With the proposed technologies, customer loads will be directly controlled by the utility in an aggregated manner that minimizes the effect on individual customers. This capability is enabled by the emerging communication and advanced control technologies of the Smart Grid.

The intended outcomes of this project are to demonstrate the proposed innovation by (1) integrating the aggregated control of a selected group of commercial and residential loads with the advanced communication and smart grid technologies, (2) implementing with power system operation to provide ancillary services for wind integration, and (3) developing appropriate business practices to encourage customers' participation in demand response programs for the benefits of wind integration, greenhouse gas reduction, cost saving and power system efficiency. The technologies have the potential to provide a new class of power system resources for higher penetration of wind power. The success of this project will bring tremendous benefits to Canadian power industry and wind sector, in facilitating the integration of targeted 55,000MW wind power in Canada.

2.1 PROJECT DESCRIPTION AND RELEVANCE:

A. EXPLAIN THE REASONS FOR UNDERTAKING THE PROPOSED PROJECT, INCLUDING WHY THE VARIOUS PARTIES ARE INVOLVED IN ITS IMPLEMENTATION.

The Maritime Provinces have among the best wind resources in Canada. Over the next 15 years, the region could potentially have the highest penetration of installed wind capacity in the country. However, to accommodate this goal, the Maritime utilities must ensure sufficient resources in ancillary services. This can be achieved through a coordinated effort within the Maritimes as well as in surrounding jurisdictions.

In this section, a description of the project is provided and the five primary reasons for undertaking this initiative are discussed. Throughout this document, the five reasons are referenced repeatedly.

PROJECT OVERVIEW:

The project consortium is proposing a demonstration of using customer load control to supply ancillary services for wind integration. The proposed innovative technologies have not been demonstrated and trialled in Canada and the world, according to our extensive review of technical publications.

The technologies developed and demonstrated under this CEF project include: wind production forecast for wind power plants pertinent to the Maritime climate and geography; aggregated control methodology for residential and commercial loads; balancing intermittent wind power through aggregated load control based on short-term wind forecast; as well as integration of wind forecast, demand response, communication and control into a synergistic system. Additionally, the demonstration will permit the evaluation of optimum load characteristics and customer program parameters, including enrollment, incentive and communication protocol.

The parameters of the demonstration project include the following:

Size	750 customers, combination commercial, industrial, and residential in New Brunswick, Nova Scotia and Prince Edward Island.
Customer Load Profile	The Maritime Consortium will select both a residential and commercial customer load to complete this demonstration project. The make-up of the commercial customer load might include refrigeration companies, grocery warehouse, small manufacturers, packaging company, and call centres, among others. The residential load profile primarily will include hot water heaters, electric thermal storage, some electric space heating and plug-in hybrid electric vehicles.
Smart Grid Technology Solution	The technology solution presented in this proposal has 3 key elements: 1) Demand Management and Demand Response System technology 2) Advanced Communications Network as an enabler for Demand Response system 3) Automatic Optimization System technology to match loads with Wind generation Customers will be chosen in a specific area based on their type of load. Loads such as AC units, heaters, compressors, and chillers at a customer's premise would then each be connected to a module capable of determining and altering the duty cycle of the connected device. These modules would be configured in a mesh network and communicate with each other using Zigbee wireless technology. Communication links would exist from individual customers to a data concentrator (located in a terminal or substation) over an unlicensed 900 MHz band. The concept described above would enable the utility to control the customer's load by altering the duty cycle of each connected device without affecting the customer's overall process. Using real time demand from the AMI, the effect of DR could be monitored for all customers participating in the program. GE Multilin will also be working on an optimization algorithm for matching loads with renewable generation to provide a more automated solution. See Appendix B for illustration of technology solution.
Partners	• Maritime Electric, utility • NB Power, utility • NS Power, utility • The Power Commission of the city of St. John • NB System Operator • Efficiency NB • GE Multilin, technology provider • DR and Installation service provider • University of New Brunswick • Commercial and residential customers • TransAlta • Canadian Wind Energy Association • The Provinces of Prince Edward Island, New Brunswick, and Nova Scotia • WEICan } (herein noted as the Maritime Consortium or Maritime Utilities) See Appendix C for some of the letters of support received.

Objectives	Primary Objectives • Evaluation of load control performance in response to measured and forecasted wind power. • Evaluation of load control as a tool to maintain and improve power system efficiency and reliability. • Evaluation of the customers' role and their acceptance of utility load control for the purposes of renewable energy integration. The project's secondary objectives are: • Development of Smart Grid technologies that include demand response concepts and wind energy forecasting tools that will result in cost savings and operational efficiencies for Maritime power utilities. • An articulation of the costs to install the new technologies and a refinement of a business case and technological capability for scalability and a broader application of load control. • A determination of customer load potential and best load characteristics for Demand Response. • Determination of additional benefits from 2-way communications such as innovative rate design. • Determination of additional benefits/applications of the smart grid configuration for Maritime utilities.
Benefits	• Striving for the economic and efficient dispatch of net requirements. • Capacity to integrate more wind energy within existing power system and achieve GHG reduction. • Enhanced regional collaboration and improved system reliability and minimizing redundancy. • Potential deferral of new infrastructure to accommodate contingencies • Canadian leadership in wind integration technologies. • The flexibility arising from demand response programs can also assist in addressing the characteristics of other non-dispatchable forms of renewable generation such as in-stream tidal, solar and wave power.
Key Project Deliverables by Phase	Phase One: Project Design and Technology Development Demonstrate Technical Knowledge • Assessment of the Smart Grid technologies available for an effective Demand Response program which will result in provision of fast acting ancillary services for wind integration, thus achieving cost savings and operational efficiencies for Maritime utilities. Phase Two: Technical Integration Deploy New Technology • Demonstration of the proposed control, communication and smart grid systems to provide ancillary services for wind integration, including procurement and installation. • Creation of an algorithm for aggregated control of commercial and residential loads and associate technologies for wind integration. Phase Three: Technical Evaluation Evaluate Scalability • Completion of business case and cost framework for ancillary services supplied by load control. • Implementation of the proposed load control and communication systems as an integral part of the System Operator's operation for balancing load and generation including wind power generation. • Reduction of GHG emissions through the demonstration project in terms in enabling integration of wind power, and avoiding addition of thermal power for ancillary services. • Creation of a load control and customer program for the purposes of wind energy integration, where both customers and utilities will receive environmental and economic benefits from higher level of wind penetration.

See Appendix D for a completed CEEA checklist.

THE 5 REASONS FOR UNDERTAKING THE PROJECT

There are five strategic drivers for undertaking the Maritime Provinces Customer Load Control Demonstration for Wind Integration these include:

1. To expand our ancillary service options to facilitate wind integration on our system.
2. To reduce GHG emissions – and to respond to impending environmental regulation.
3. To prepare for the convergence of customer interaction and smart grid technologies.
4. To respond to strategic national and regional priorities for research and collaboration.
5. To build a business case for smart grid technologies.

An overview of each strategic driver for the Maritime consortium is provided below. These environmental, economic and social reasons for undertaking this demonstration project are referenced throughout this CEF application.

ONE: TO EXPAND ANCILLARY SERVICE OPTIONS FOR WIND INTEGRATION

In 2008, the NBSO completed the study: **Large Scale Wind Power in New Brunswick**. The study indicated significant benefits to the Maritime region from a deployment of 5,500-7,500 MW of wind power in the Maritime Area towards 2025.

In order to maximize the value of wind power in the electricity market and to provide balancing power at a reasonable cost, a high level of cooperation between the markets in the Maritime area is essential. This applies to the day to day operation of systems and markets as well as to the long-term planning for new wind power capacity and new infrastructure. According to the System Operator, further studies of load flows and the dynamic behavior of the power system will be required as full deployment of the process unfolds.

Integrating intermittent wind power into the power systems requires provision of ancillary services from other system resources to balance the variable wind power production and load consumption. This balancing requirement is about 7% of the installed wind capacity according to an international study [Parsons, 2008]¹ and up to 10% for New Brunswick according to NBSO.

TWO: TO REDUCE GHG EMISSIONS

Canada's GHG Plan requires that Canada reduce its total GHG emissions by 20 percent from 2006 levels by 2020. Additionally, it is estimated that the electricity sector will be required to reduce its emissions by 25% from 2006 levels by 2020. Once the innovative technologies are demonstrated through this Clean Energy Fund project, this technology could be commercialized in the Maritimes and in other Canadian jurisdictions, including northern and remote communities. This load control capability may facilitate a reliable and cost effective ancillary service necessary to support the increase of wind penetration from the current level of 1% in the Canadian electricity market to 20%, or equivalent to the integration of 55,000MW of wind capacity in Canadian power systems.

An overview of the Maritime Provinces' utility carbon emissions is found on the following page.

¹B. Parsons and E. Ela, *Impact of Large Amounts of Wind Power on Design and Operation of Power Systems; Results of IEA Collaboration*, National Renewable Energy Laboratory, USA, June 2008.

New Brunswick Provincial Carbon Emissions:

New Brunswick contributes approximately 2.5% of Canada's GHG emissions. NB Power contributes approximately 35% of those provincial carbon emissions. By leveraging our world class wind regime, NB Power can continue to advance Canada's GHG Emission reduction plan. If NB Power could install 1000MW of wind, NB Power emissions would be reduced by potentially 1.5 Mtons annually; this is equivalent to 25% reduction in NB Power emissions from 2008.

In addition to the federal framework, the Government of New Brunswick requires NB Power to secure 10% of its load from renewable resources by 2016 as part of the provincial Renewable Portfolio Standard. This represents 1500 GWh of energy. Recognizing that wind generation will supply a large portion of this requirement, evaluating this technology is of strategic importance to NB Power.

Nova Scotia Provincial Carbon Emissions:

Electricity generation accounts for 46 percent of Nova Scotia's greenhouse gas emissions. More than 85% of electricity in Nova Scotia is produced from fossil fuels; 72% of the total is coal and pet coke. The Province recently revised its 2015 target so that 25 % of Nova Scotia's electricity will be supplied by renewable energy.

A 2008 Halifax Chamber of Commerce study indicated that 89% of all energy used by Nova Scotians comes from oil and coal.

Nova Scotia does not have large hydro resources, and currently has limited grid connections to regions supplying renewable alternatives. Energy efficiency and development of local renewable energy sources are critically important. The opportunity to build renewable energy resources incrementally and transform the Nova Scotia Power generation portfolio from a carbon intensive one to one that is more balanced is in Nova Scotia's best interests.

Prince Edward Island Carbon Emissions:

Approximately 85% of the electricity used in PEI is generated outside of the Province. When emissions associated with these electricity imports into PEI are included, PEI's current greenhouse gas emissions are estimated to be approximately 2 MT annually. Approximately 70% of these emissions are from the direct use of fossil fuels and 30 % is associated with the production of electricity. Maritime Electric expects that integrating additional wind generation into the electricity supply will be an important component in enabling PEI to do its part in Canada meeting the targets set out in Canada's Greenhouse Gas Plan.

Approximately 15 % of electricity used in PEI is currently supplied by wind farms located in PEI. This means that PEI's Renewable Portfolio Standard requiring 15 % of electricity usage to come from renewable sources by 2010 has been met. This is a high penetration level, and has been made possible in part by ancillary services such as load following that have been available in New Brunswick. However, the generating capacity available to supply these ancillary services is limited. Thus it is important to investigate possible new sources for these ancillary services, so that higher Renewable Portfolio Standard levels for renewable can realistically be considered for PEI.

THREE: THE CONVERGENCE OF SMART GRID TECHNOLOGIES AND CUSTOMER INTERACTION

The Maritime Utilities recognize that significant transformation is occurring in the utility industry and important customer care processes will be impacted by the evolution and convergence of both information and operational technologies. The Maritime Load Control Demonstration Project for Wind Integration will provide enabling technology that will facilitate more customer participation in all aspects of energy use and reduction. The scope of the project will also contribute to new learning about customer program design and benefits, and determine a framework for rate design in various customer classes in the Maritimes. In 2009, NB Power completed a Customer Services Delivery project to determine new ways of delivering customer interaction with technology, spanning:

- Rates
- Customer self serve options
- Customer service process enhancement
- Billing enhancement
- Advanced metering
- Demand management and consumption awareness
- Customer analytic

FOUR: TO RESPOND TO NATIONAL AND REGIONAL PRIORITIES FOR RESEARCH AND COLLABORATION.

US-Canada Clean Energy Dialogue

In February 2009, the United States and Canada enacted the US-Canada Clean Energy Dialogue process. The two nations agreed to expand collaboration in the development and deployment of clean energy technology and to the creation of a more efficient electricity grid based on clean and renewable generation.

The Maritime Provinces are strategically located in the International Northeast. For more than 40 years, the region has had strong energy trade and partnerships with the United States. In fact, the New Brunswick System Operator serves as the balancing authority for the area comprised of Northern Maine.

This Maritime Consortium is advancing a key area of interest covered by the US-Canada Clean Energy Dialogue - smarter and more reliable grid based on renewable generation. Also, our technical partner GE Multilin will leverage research and development expertise in both countries at its facilities in Markham, Ontario and at Albany, New York.

The Atlantic Energy Gateway

In addition to the US-Canada Clean Energy Dialogue, and the Clean Energy Fund, this demonstration project is also strategically aligned with the goals of the Federal Government's Atlantic Energy Gateway. Announced in April 2009, the Atlantic Energy Gateway initiative focuses on encouraging research and the development of clean and renewable energy sources in Atlantic Canada. The Maritime Provinces Customer Load Control project is structured to meaningfully advance the goals of the Atlantic Energy Gateway by promoting regional cooperation; smart grid technology deployment; and, the penetration of renewable energy.

FIVE: TO BUILD A BUSINESS CASE FOR SMART GRID TECHNOLOGY

Without federal funding to help offset the technical and monetary risk, there is no business case or regulatory framework to pursue the demonstration project factoring ratepayer interests today. The demonstration project will assist the Maritime Consortium to evaluate the technology to ensure the maximum benefit for Maritime ratepayers, considering renewable energy integration, system reliability and cost effectiveness. Additionally, the demonstration will allow the Maritime utilities to work with the regulator and policy makers on the necessary framework for new expenditures in smart-grid technologies.

B. WHY ARE THE VARIOUS PARTIES INVOLVED IN THE PROJECT IMPLEMENTATION

Participant	Role
Utilities	- To oversee project execution. - To develop business case for broader deployment of technology. - To determine optimum load /customer parameters for a DR program to follow wind and to evaluate the customers' response to load control for the purpose of variable generation integration. - To evaluate the demand management technology configuration for performance and assist in the development of the optimization technology matching load and supply. - To liaise with Government, System Operator, Industry Stakeholders and Lead Research team. - To manage the Oversight Committee and the Contribution Agreement/Legal framework with all parties.
GE Multilin and Residential Technology Service Provider	- To develop unique technology to optimize and manage multiple generation sources with an objective to maximize the penetration of renewable energy and minimizing the dependence on conventional generation. - To assist in data interfaces. - To assist in the selection of load. - To structure a five-building pilot in Phase one.
DR Service Provider, Installation Expert and Rate Design Expert	- To assist in the enrolment of customers. - Identification of optimum customer load and installation of technology. - Audit of customer facilities in collaboration with Utilities. - Working with the utility and System Operator on the communication / data interface. - Assist in the pilot of rate design options for load control.
Residential and Commercial Customers	- To respond to DR signals and provide inputs on performance opportunities. - To provide feedback on customer program design.
University of New Brunswick	- To develop a short term wind forecasting system for integration with aggregated load control. - To develop innovative technologies for controlling aggregated loads for integration with high-penetration wind power.
System Operator	To determine if load control can be used for the purposes of ancillary services.
Efficiency NB	To provide industry best practices and advisory services.
Provincial Government	To participate in oversight steering committee and provide funding.
CanWEA	To participate in steering committee and provide input on industry trends and ongoing research.
WEICan	To provide advisory services and information sharing on wind intergration issues in the Maritimes.
TransAlta	To participate in steering committee and provide input on industry trends and ongoing research.

C. WHAT ARE THE SPECIFIC OBJECTIVES THAT ARE TO BE ACHIEVED FROM THE WORK THAT WOULD BE CARRIED OUT UNDER THIS CEF PROJECT PROPOSAL?

The intended outcome of the demonstration is to evaluate the effectiveness of a demand response system to provide a fast reacting and timely response to measured changes in wind energy generation and forecasts of wind energy generation. It is expected that the technologies developed for the demonstration will be scalable to the entire utility customer base.

Based on the above description, the project's primary objectives are:

- Evaluation of load control performance in response to measured and forecasted wind power.
- Evaluation of load control as a tool to maintain and improve power system reliability and efficiency.
- Evaluation of the customers' role and their acceptance of utility load control for the purposes of renewable energy integration.

The project's secondary objectives are:

- Development of Smart Grid technologies that include demand response concepts and wind energy forecasting tools that will result in cost savings and operational efficiencies for Maritime power utilities.
- An articulation of the costs to install the new technologies and a refinement of a business case and technological capability for scalability and a broader application of load control.
- A determination of customer load potential and best load characteristics for Demand Response.
- Determination of additional benefits from 2-way communications such as innovative rate design.
- Determination of additional benefits/applications of the smart grid configuration for Maritime utilities.

D. HOW DO THE PROJECT'S OBJECTIVES ALIGN WITH THOSE OF CEF?

Clean Energy Fund Program Objectives	The Maritime Demand Response Project for Wind Integration Proposal Alignment with CEF Demonstration Objectives
Make greater use of technologies that reduce GHG from energy production	Through the demonstration project, a unique technology to optimize and manage multiple generation sources with an objective function to maximize the penetration of renewable energy and minimizing the dependence on conventional generation will be evaluated. Peak plants are expensive to operate running at low load with poor heat rates and emitting CO ₂ . In the case of the Maritime Consortium, if we are able to demonstrate the capability of load control, we can significantly avert emissions by minimizing our reliance on the marginal unit for ancillary services.
Reduce Canada's total GHG emissions by 20 percent from 2006 levels by 2020	Once the innovative technologies are demonstrated through this Clean Energy Fund project, this technology could be commercialized in the Maritimes and in other Canadian jurisdictions, including northern and remote communities. This load control capability may facilitate a reliable and cost effective ancillary service necessary to support the increase of wind penetration from the current level of 1% in the Canadian electricity market to 20%, or equivalent to the integration of 55,000MW of wind capacity in Canadian power systems. Please note Section 2.1 (A) for a description of potential GHG reduction benefits by Maritime province.
90% of Canada's electricity needs to be provided by non-emitting sources such as wind by 2020.	Please see above. It is anticipated over the next 15 years, the Maritime region could have the highest penetration of installed wind capacity in Canada, if we are able to overcome the barrier of ancillary services. In the case of New Brunswick, this degree of renewable energy penetration is unique given New Brunswick's high percentage of electric heat and its minimal storage capability from its run of the river hydro system. The Province of Nova Scotia recently revised its 2015 target so that 25 % of Nova Scotia's electricity will be supplied by renewable energy. Nova Scotia does not have large hydro resources, and currently has limited grid connections to regions supplying renewable alternatives. Energy efficiency and development of local renewable energy sources are critically important. Currently less than half of PEI's electricity comes from non-emitting sources. The ability to integrate additional wind power would enable PEI to significantly increase this proportion.
Requires the engagement of multiple stakeholders	See Page 15
Represent integrated demonstrations dealing with issues of code, permit, and regulatory and institutional issues	Through the pilot, the Maritime utilities would like to determine if load control is a cost effective and reliable ancillary service. If the pilot proves successful, it will require the utilities to demonstrate scalability – and get approval from the system operator(s) that load control DR is an accepted ancillary service in their respective control areas.
Renewable energy integration for remote and northern communities	The GE Multilin Optimization algorithm technology proposed to enable the optimization of demand and generation is also being deployed in a Microgrid Controller in a northern community in province of BC.

The Clean Energy Fund Applicant's Guide stipulates that the project outcomes must also include; technical knowledge; demonstration of operational performance of the technology deployed; and determination if the technology is scalable or replicable.

Below is an overview of the key milestones and deliverables at each phases of the Maritime Consortium proposal, which are indicative of alignment to CEF project outcome requirements.

CEF Intent of the Demonstration Scope, Appendix 1	Maritime Load Control Demonstration for Wind Integration Project Milestones	
The Project Must Demonstrate Technical Knowledge	PHASE ONE MILESTONES	Assessment of the Smart Grid technologies available for an effective Demand Response program which will result in provision of fast acting ancillary services for wind integration, thus achieving cost savings and operational efficiencies for Maritime utilities.
Demonstration of Operational Performance of the Technology Deployed	PHASE TWO MILESTONES	- Demonstration of the proposed control, communication and smart grid systems to provide ancillary services for wind integration, including procurement and installation. - Creation of an algorithm for aggregated control of commercial and residential loads and associate technologies for wind integration.
Scalability of Project	PHASE THREE MILESTONES	- Completion of business case and cost framework for ancillary services supplied by load control. - Implementation of the proposed load control and communication systems as an integral part of the System Operator's operation for balancing load and generation including wind power generation. - Reduction of GHG emissions through the demonstration project in terms in enabling integration of wind power, and avoiding addition of thermal power for ancillary services. - Creation of a load control and customer program for the purposes of wind energy integration, where both customers and utilities will receive environmental and economic benefits from higher level of wind penetration.

E. WHY IS IT IMPORTANT THE PROJECT BE DONE IN THE NEXT FIVE YEARS?

It is important the project be completed in next five years to have a significant positive impact on the environment, to avoid costly supply-side ancillary service options and to improve the overall system reliability and coordination necessary for further renewable energy integration. As noted by the US-Canada Clean Energy Dialogue: "A cleaner, more secure energy future for both nations will depend on significant investments in energy research and development today." By doing this project in the next five years, it will allow sufficient time to demonstrate and subsequently implement the technologies on a scale that will make a significant difference in meeting the 2020 target in Canada's Greenhouse Gas Emissions Plan.

Below is further explanation of the important environmental, economic and system reliability benefits of undertaking the project today versus deferring the benefits to the future.

Environmental – to maximize the potential of renewable energy into the grid and reduce GHG emissions.

With the successful demonstration through this project, the new technologies can be deployed into other Canadian jurisdictions to facilitate the integration of 55,000MW of wind capacity in Canadian power systems. This has a potential of reducing the Canadian greenhouse emissions by 46Mton of equivalent CO₂ (according to the 2004 national GHG intensity data).

Economic – avoid unneeded expenditure on new supply-side options, and new environmental foot print by balancing renewables with load.

The proposed technology provides a unique differentiation from what is currently available in terms of addressing a very important issue to maximize the penetration of renewable generation into the utility grid. Without funding support from the federal government, this configuration of technology and approach to customer engagement would not occur.

Improved Maritime System Reliability and Regional Coordination.

As noted in the NBSO's 2009 State of the Market Report, "... the efficient integration of wind power will require geographic diversity of wind, regional cooperation, increased flexibility of generation and load, and accurate wind power forecasting". Demand response can provide an additional tool with which to address the variability of wind power production. The flexibility arising from demand response programs can also assist in addressing the characteristics of other non-dispatchable forms of renewable generation such as in-stream tidal, solar and wave power. The regional aspect of the proposed demand response program can provide the benefits of economies of scale, greater total dispatchable capacity, and more opportunities to address local constraints. The proposed demand response project will provide live demonstration of the costs and benefits of using demand response in various programs subject to the characteristics of the individual customer type.

F. WHY SHOULD THIS PROJECT TAKE PRIORITY OVER OTHER PROJECTS, AND WHAT OPPORTUNITIES MIGHT BE LOST IF THE PROJECT IS NOT FUNDED?

This project has many technical, environmental and economic benefits, which make it a competitive and nationally-significant technology demonstration. Given the utility regulatory environment and the pressure to minimize rates, it is unlikely that this project would proceed if funding were to rest solely on the utilities. If not funded, the opportunity lost includes:

- 1) The ability to evaluate and further develop optimization technology. Without funding, the practice and configuration of the technology by utilities will be deferred for a number of years. Utilities will not have the benefit of using smart grid to manage multiple generation sources and loads with an objective to maximize the penetration of renewable energy and minimize the dependence on fossil fuel based conventional generation.
- 2) The potential to accelerate wind integration in Canada, thereby missing the federal target of 90% of Canada's electricity to be provided by non-emitting sources such as wind by 2020.
- 3) The chance for a coordinated and collaborative program managed by a steering committee of the Maritime Provinces utilities. By submitting a joint project, the Maritime Utilities along with UNB, and the technology and DR Service providers are minimizing duplication and promoting information sharing, and maximizing value and risk-management for tax-funded project.
- 4) The project meets all the evaluation criteria including:
 - a. Makes greater use of technologies that reduce GHG.
 - b. Assist in Canada's total GHG emission reduction.
 - c. Promotes the goal achievement of 90% of Canada's electricity coming from non-emitting sources.
 - d. Encompasses broad stakeholder expertise, minimizing risk and leveraging past demonstration and experience.
 - e. Has broad receptor interest in the Maritime, nationally and in the US.
 - f. Demonstrates intent to resolve a regulatory issue by way of the System Operator involvement.
 - g. Promotes technology evaluation which could spur renewable energy integration for remote and northern communities.
 - i. Can quickly move from development to commercialization and application nation wide.
 - j. And lastly, the project is strategically aligned with the Federal Government's goals in the US-Canada Clean Energy Dialogue and the Atlantic Energy Gateway.

G. DESCRIBE PAST WORK THAT THE PROPOSED PROJECT BUILDS UPON.

Examples of past work this project builds upon are as follows:

Prince Edward Island: Energy Research Group, Department of Electrical and Computer Engineering, Dalhousie University study of “The use of wind energy for space and hot water heating on Prince Edward Island”.

This study analyzed the potential for different storage strategies to enable increased use of wind power for residential space and domestic hot water heating. The study did not examine the communication and controls systems that would be needed to implement the study results. The demonstration of such communication and control systems is a main objective of the proposed project.

New Brunswick: NSERC Strategic Project on “Aggregated Load Control Using Electric Domestic Water Heaters and Smart Meters”

In collaboration with New Brunswick System Operator (NBSO) and the Power Commission of the City of Saint John, the UNB research team led by Dr. Liuchen Chang has been conducting a project on “Aggregated Load Control Using Electric Domestic Water Heaters and Smart Meters”. The project is funded by the NSERC Strategic Projects Program. The long term objective of the project is to facilitate efficient and reliable operation of power systems through optimal control of aggregated customer loads. These loads will be fully utilized as one of the power system resources to provide ancillary services and demand side management. The short term objective of this project is to develop innovative and integrated control strategies for aggregated loads based on domestic water heaters (DWH) and the utilization of smart meters to provide ancillary services of power systems and manage the power demands of consumers.

While still in the development stage, the progress of the project has demonstrated the significant benefit of aggregated DWH control in providing ancillary services to power systems to facilitate the integration of renewable energy systems

H. IF THE PROJECT FOCUSES ON SMART GRID AND/OR INTEGRATION TECHNOLOGIES EXPLAIN HOW THE PROJECT WILL ADVANCE THE GHG REDUCTION OBJECTIVES OF THE CLEAN ENERGY FUND.

Also See Section 2.1.(A and E) for an explanation of how the project will advance GHG reduction objectives

The proposed smart grid technology will result in GHG reduction by:

- ◆ Providing a new class of power system resources for higher penetration of wind power.
- ◆ Transforming to a lower carbon dioxide emitting utility while ensuring cost containment.
- ◆ Adding more clean and renewable power sources in our generation mix.
- ◆ The flexibility arising from demand response programs can also assist in addressing the characteristics of other non-dispatchable forms of renewable generation such as in-stream tidal, solar and wave power.
- ◆ Improving power efficiency while optimizing environmental benefits by increasing monitoring and control mechanisms.

A detailed overview of how the technology will advance GHG reduction is noted in the table below:

Technology Description:

The technical objective of the demonstration is to determine if smart grid technology can enable the utility to control the customer's load by altering the duty cycle of each connected load without affecting the customer's overall process. Using real time demand from the AMI, the effect of DR could be monitored for all customers participating in the program. Our objective is to determine if the Maritime utilities can increase its wind supply penetration, thereby reducing GHG, by load control assisted ancillary services.

Benefits

Increasing the penetration of wind on our system thereby ensuring CO₂ Reduction

Economic Dispatch of Ancillary services

Notes

Once the innovative technologies are demonstrated through this project, they will be commercialized in the Maritimes and in other Canada jurisdictions, facilitating the increase of wind penetration from the current level of 1% in the Canadian electricity market to 20%; this is the equivalent of integrating 55,000MW of wind capacity in Canadian power systems or a reduction of 46MTons. Please note Section 2.1 (A) for a description of potential GHG reduction benefits by Maritime province.

Peak plants are expensive to operate running at low load with poor heat rates and emitting CO₂. In the case of the Maritime Consortium, if we are able to demonstrate the capability of load control, we can significantly avert emissions by minimizing our reliance of the marginal unit for ancillary services.

2.1.1 PARTNERS AND COLLABORATORS

Please list here all partners and collaborators, including the applicant, and explain the nature of their role in, and contribution to, the project. Why are these other stakeholders and collaborators involved, what values do they bring to the project; how might they be involved in further deployment of the project concept. How will they interact with each other, what legal understandings are expected?

An Oversight Steering Committee will be formed with executive representatives from each of the Maritime utilities. The key responsibility of the Oversight Committee will be to monitor performance indicators including: schedule, budget, quality issues and deliverables. Further, the Oversight Committee will provide direction on the project communications. From a legal perspective, there will be a legal framework for participants stipulating:

- Performance requirements
- Allocation of funding and deliverables
- Confidentiality
- Intellectual Property Agreements

See page 24 for a listing of partners and roles.

Participant	Role
Utilities	- To oversee project execution. - To develop business case for broader deployment of technology - To determine optimum load /customer parameters for a DR program to follow wind and to evaluate the customers' response to load control for the purpose of variable generation integration. - To evaluate the demand management technology configuration for performance and assist in the development of the optimization technology matching load and supply. - To liaise with Government, System Operator, Industry Stakeholder and Lead Research team, UNB. - To manage the Oversight Committee and the Contribution Agreement/Legal framework with all parties.
GE Multilin and Residential Technology Service Provider	- To develop unique technology to optimize and manage multiple generation sources with an objective to maximize the penetration of renewable energy and minimizing the dependence on conventional generation. - To assist in data interfaces - To assist in the selection of load - To structure a 5-building pilot in Phase one.
DR Service Provider, Installation Expert and Rate Design Expert	- To assist in the enrolment of customers. - Identification of optimum customer load and installation of technology. - Audit of customer facilities in collaboration with Utilities. - Working with the utility and System Operator on the communication / data interface - Assist in the pilot of rate design options for load control
Residential and Commercial Customers	- To respond to DR signals and provide inputs on performance opportunities. - To provide feedback on customer program design
University of New Brunswick	- To develop a short term wind forecasting system for integration with aggregated load control. - To develop innovative technologies for controlling aggregated loads for integration with high-penetration wind power.
System Operator	To determine if load control can be used for the purposes of ancillary services.
Efficiency NB	To provide industry best practices and advisory services.
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CanWEA	To participate in steering committee and provide input on industry trends and ongoing research.
WEICan	To provide advisory services and information sharing on wind intergration issues in the Maritimes.
TransAlta	To participate in steering committee and provide input on industry trends and ongoing research.

2.2 PROJECT METHODOLOGY AND RISK MITIGATION:

2.2.1 PROJECT TEAM:

Team Member: Mike Waugh P.Eng

Organization: NB Power

Role in project: Project Manager

Expertise and experience: Electrical engineer with 27 years in electric power utility industry. Held various positions including Director of Corporate Supply Chain; Regional Manager for Distribution; with expertise in variety of Transmission and Distribution engineering roles.

Team Member: Colleen Sweet, MBA

Organization: NB Power

Role In Project: Manage the Oversight Steering Committee Process, Communications and Liaison between the Maritime Utilities and partners of the Consortium. More than 15 years natural resource project management experience spanning business development, land access, permitting and regulatory affairs.

Team Member: Robert Younker

Organization: Maritime Electric

Role In project: Project development and implementation

Expertise and experience:

Robert O. Younker, P. Eng. is Director, Corporate Planning with Maritime Electric Company, Limited. Mr. Younker graduated from Queen's University in 1974 with a Bachelor of Applied Science in Electrical Engineering. After graduation he spent 4 years with Dominion Foundries and Steel Company, Limited in Hamilton, Ontario. Since joining Maritime Electric in 1978 Mr. Younker has worked mainly in the areas of system operations, rates and regulatory affairs, and system planning. In his current role with the Company Mr. Younker's primary focus is on planning for Prince Edward Island's future electricity supplies.

Team Member: Stephen Pothier

Organization: Nova Scotia Power Inc.

Role In project: Project development and implementation

Expertise and experience:

Stephen Pothier, P. Eng. is Director, Revenue Operations with Nova Scotia Power Inc. Mr Pothier graduated from the Technical University of Nova Scotia in 1991 with a Bachelor of electrical engineering and has 18 years of utility experience. Since joining Nova Scotia Power, he has held roles in System Operations, Information Technology, and Customer Service. In his current role, he is responsible for all meter to cash operations and strategy.

Team Member: Dr. Liuchen Chang

Organization: University of New Brunswick

Role in project: Coordination of wind forecast and demand response algorithm for wind integration

Expertise and experience: Dr. Liuchen Chang is a leading researcher in distributed resources and renewable energy conversion. He held the NSERC Environmental Design Engineering Chair for the Atlantic Canada Region from 2001 to 2006, and is the principal investigator of Wind Energy Strategic Network. He has published over 170 refereed papers and two books. He has led numerous multi-partner, multi-disciplinary and multi-institutional research grants from NSERC, SDTC, CFI, NRCan, and the Atlantic Innovation Fund (AIF).

Team Member: Dr. Chris Diduch

Organization: University of New Brunswick

Role in project: Dr. Chris Diduch is a full time professor and Chair of the Dept. of Elec. and Comp. Eng. at UNB. His expertise includes advanced controls including computer control systems, and embedded systems, with applications in distributed generation systems. He has held contracts with the Canadian Space Agency and Agriculture Agri Food Canada that involve a variety of control systems applications. His research has also been supported by a number of NSERC research grants.

Team Member: Dr. Howard Li

Organization: University of New Brunswick

Role in project: Development of demand response algorithms to supply ancillary services for wind integration

Expertise and experience: Dr. Howard Li is an emerging scholar. He has published over 40 journal and conference papers, and has developed strong expertise in advanced control. Before he joined UNB, he was employed by Atlantis Systems International in the development of an Integrated Maintenance Training System (IMTS) for the F/A-18 Hornet fighter aircraft for Boeing. He also worked for ALT Software Inc. (Waterloo, ON), Christie Digital Systems Inc. (Kitchener, ON), Agriculture and Agri-Food Canada (Guelph, ON), Applied AI Systems Inc. (Ottawa, ON).

Team Member: Dr. Julian Meng

Organization: University of New Brunswick

Role in project: Development of wind forecast technologies

Expertise and experience: Dr. Julian Meng is an expert in communications. He currently holds research grants from NSERC, CFI, AIF and NBIF and has published over 40 journal, conference and industrial technical publications. His leadership in communications research in the Atlantic Sustainable Power R&D Initiatives has led to the development of dispatchable distributed generation networks. Previous to his academic position beginning in 2002, Dr. Meng held numerous positions in industrial companies and scientific labs, including MacDonald Dettwiler and Associates (Vancouver), Alcatel Canada (Ottawa), Communications Research Centre (Ottawa) and IPUnwired Inc.

Team Member: Dr. Tariqu Hasan

Organization: University of New Brunswick

Role in project: Development of wind forecast technologies

Expertise and experience: Dr. Tariqu Hasan is an assistant professor at the Dept. of Mathematics of UNB. Statistics and wind forecast. He is actively engaged in research into wind forecasting technologies based on statistics principles, supervising Ph.D. and M.Sc. students.

Team Member: Dr. Walid Morsi Ibrahim

Organization: University of New Brunswick

Role in project: Development of wind integration technologies

Expertise and experience: Dr. Walid Morsi is an assistant professor at the Dept. of Elec. and Comp. Eng. Of UNB. He has published over 20 journal and conference papers. His expertise is in power systems and renewable energy applications.

Team Member: Dale Finney

Organization: GE Multilin

Role in project: Application Design Engineer

Expertise and experience: Dale will be the technical lead from GE Multilin side, working with other project consortium partners in developing Wind integration strategies and designs. Dale is primarily involved in the design and development of power system protection and control systems. His experience in Power systems, renewable energy and Microgrids will be a great asset to this project. He has been involved in the design and construction of over twenty high voltage substations and generating stations in North America, Central America, the Caribbean, and the Middle East. He has been awarded 9 patents in the area of power system protection.

Team Member: Bobby Sagoo

Organization: GE Multilin

Role in project: Strategic Account Manager

Expertise and experience: Bobby brings extensive program management and engineering experience to the table for the Demand Response project with NB Power and other project consortium members. Bobby will act as a support resource to provide any co-ordination that may be required with GE Multilin corporate leadership team. He will facilitate a smooth transition and co-ordination of roles and responsibilities between GE teams.

Team Member: Ron Rambuski

Organization: GE MDS

Role in the project: Lead System Engineer, Communications

Expertise and experience: With extensive experience in designing and deploying large wireless networks, Ron will be responsible for site assessment, RF propagation studies, system design and integration, engineering supervision, tower installation, site preparation, CAD drawings and as-built documentation.

Team Member: Steve Nichols

Organization: GE MDS

Role in the project: Project Engineer

Expertise and experience:

Focused on performing site assessment, propagation analysis using specialty software, providing technical guidance to technicians and field personnel during deployment and offering on-site technical support and field training.

Team Member: Japheth Otiso

Organization: GE MDS

Role in project: Communications Project Manager

Expertise and experience:

His experience in network design and wireless field deployment will be essential for the success of the project. Responsible for conducting regular project meetings with stakeholders during various stages of the project.

Team Member: Hany Fouda

Organization: GE MDS

Role in the project: Communications Commercial Leader

Expertise and experience: As a telecommunication engineer, Hany will develop conceptual architecture of the communication network and identify equipment/solutions that meet the project requirements. He will conduct commercial review and discussion related to the project and coordinate between the project team, internal and external stakeholders and various groups with GE company.

Team Member: Darin Lamont, PEng

Organization: The Power Commission of the City of Saint John

Role in project:

Expertise and experience: Darin Lamont is the Vice President of Engineering & Operations at Saint John Energy with 20 years experience in the electrical utility business. His background is engineering and has been involved with the implementation of various projects including an AMI Pilot project the Power Commission of the City of Saint John. He holds an electrical engineering degree for the University of New Brunswick

2.2.2 PROJECT STATEMENT OF WORK

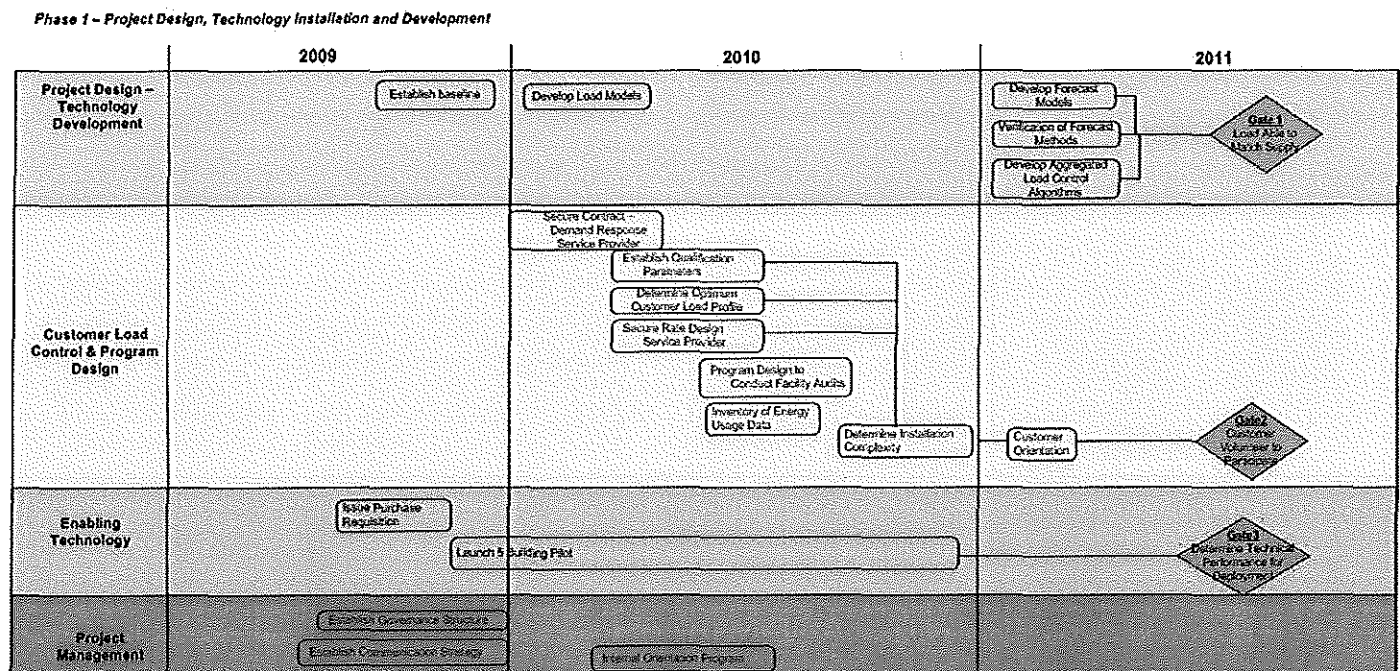
2.2.3 PROJECT MILESTONES, OUTPUTS

Project Phase	Statement of Work: Overview of What work will be completed and how it will be done	Year	Principal Milestone	Completion Date	Outputs Interim (I) or Final (F)
Phase One: Project Design, Technology Installation and Development	During this phase of the Project, the utilities will attempt to design a program framework which will allow us to evaluate if through load control, we can facilitate efficient and reliable operation of power systems and increase penetration of wind power. Activities will be undertaken in technology integration, customer engagement, technology configuration project management oversight. The utilities will work with technology service provider and DR Service provider to develop the technology configuration suitable for load requirements and communication infrastructure. Further, the utilities will begin the development of a program offer, customer interface, and to build capability in the Maritime DR Service Provider sector. Important work to be completed includes the development of wind forecast methods and verification of the developed forecast methods: The developed wind forecast and wind power production forecast methods will be verified by the operation data of Maritime wind power plants. Test runs at the System Operator's energy control center for balancing region of NB, NS and PEI will be conducted using the developed wind and production forecast technologies. This task will demonstrate the viability of the developed wind forecast technologies in actual power system operations. To advance the development of a demand response program, the mathematic models of various commercial and residential loads will be identified based on differential equations governing the physical environments. The loads with thermal energy or potential energy storage capacity will be selected for demand response. In order to provide ancillary services according to status of loads and wind production forecast, numerous individual commercial and residential loads must be controlled together to add up to the required power capacity. New control algorithms will be developed for the duty cycle regulation of individual loads via GE Multilin's control systems. The control algorithms will dispatch DR control commands to certain individual loads, according to artificial intelligent central control approaches and based on physical states and environmental settings of the loads. A key activity during this phase of the technology solution development will be to conduct a pilot test at UNB, followed by a 5 building test. During this phase, the technology service provider must work with the utility to match the load requirements with the demand management system. Further, evaluation of communications infrastructure will be undertaken. And lastly, work will begin between the Technology Service Provider and UNB on the Optimization System Technology, matching loads with wind generation.	Present 2009- March 2011	Establish baseline of ancillary services and spinning reserve cost at escalating levels of wind generation. Steering Committee Terms of Reference and Sign Contribution Agreement.	December 2009	Project framework (F)
			Development of wind forecast and wind production forecast methods appropriate for Maritime climate.	June 30, 2011	Developed wind forecast and wind power production forecast technologies (I)
			Verification of the developed forecast through test runs at the System Operator's control	March 31, 2011	Verified wind forecast and wind power production forecast technologies (F)
			Development of models of various commercial loads used for demand response; verification of the load models using field monitoring data from commercial and residential users.	September 30, 2011	Final load models (F)
			Development of aggregated load algorithms to provide ancillary services according to status of loads and wind production forecast.	March 31, 2011	Dr control methodologies (I)
			Secure contract with Demand Response Service provider	March 31, 2010	Contract completed (F)
			Develop customer program design	September 2010	Program for customer enrollment prepared to pilot (I)
			Pilot in five commercial buildings in NB	September - December 2010	Report to Oversight Committee on success of 5 building pilot (F)
			Finalize customer selection working with the GE Multilin and DR Service provider based on complexity of load	January 2011	Road map for phase 2 (F)
			Develop customer orientation material	September-December 2010	Program for customer enrollment prepared to pilot (I)
			Customer enrolled in load control demonstration	February 2010	Load control demonstration initiated (F)

Project Phase	Statement of Work: Overview of What work will be completed and how it will be done	Year	Principal Milestone	Completion Date	Outputs Interim (I) or Final (F)
Phase Two: Program and Technology Integration with Maritime Power System	Building on the success and learning of Phase One, the utilities and their partners will begin to determine how well load control will achieve desired goals and at what cost. Further, during Phase Two, activities will be done to determine how customers respond to the new technology offer; and what software/hardware solution requirements exist to interface between the System Operator, the utility and the customer load. Some activities include the Implementation of software and hardware for forecast technologies. The developed wind forecast and wind production forecast technologies for wind integration will be implemented with hardware and software in System Operators' energy control center for balancing region of NB, NS and PEI. The wind forecast technologies will provide short-term forecast of wind production which will determine the demand for ancillary services from demand response. Similarly efforts to implement software and hardware for aggregated load control will be undertaken. The developed aggregated load control algorithms will be implemented with hardware and software for commercial and residential loads to participate in the program. The load control system will send commands for demand response to GE wireless communication and control system to actuate load controls. Lastly, integration short-term wind power production forecast, ancillary service requirements for balancing wind power, demand response requirements and load control will be completed.	March 2011-2013	Implementation of software and hardware for wind forecast technologies in Maritime balancing region.	March 31, 2012	Accurately forecasted wind production for power system control (F)
			Implementation of software and hardware for aggregated load control to commercial and residential loads used for DR. Send signal through wireless communications system to actuate loads	September 30, 2012	Operational load control systems (F)
			Track cost curve of ancillary services. Track load / capacity curve requirement	September 30, 2012	Benchmark performance (I)
			Integration of short term wind power production forecast, ancillary service requirements for balancing wind power, demand response requirements and load controls	March 31, 2013	Complete DR control systems for wind integration (F)
			Finalize communication / data interface protocol between System Operators and utilities	December 31, 2013	Completed interface / business practice communications operating system between utility and system operator (F)
			Commissioning of facility	March 31, 2013	System commissioning reports (F)
			Develop a customer satisfaction system	March 31, 2012	Monitoring system of customer participation (F)
			Track customer participation and adjust technology configuration	March 2012-2013	Reports on customer affect (I)
			Scale the proposed DR model to up to 750 customers	Staggered between 2011-2013	Report on customer affect/load following capability (F)

Project Phase	Statement of Work: Overview of What work will be completed and how it will be done	Year	Principal Milestone	Completion Date	Outputs Interim (I) or Final (F)
Phase Three Project Evaluation and Reporting	During Phase Three, the work to be undertaken will be to conduct an evaluation of the DR system. Some of the activities in this phase include: Collection of operation data of the pilot system; evaluation of technical performance; improvement for large scale application of the developed technologies. A key deliverable will be the determination of the System Operator if load control is a reliable ancillary service.	2013-March 2014	Collection of operation data of the pilot system; evaluation of technical performance; improvement on large scale application of the technologies	December 31, 2013	Interim report (I) Final design and specification of the completed DR control system (F)
			Edited report	February 15, 2014	Draft report (I)
			Distributed report	March 31, 2014	Final report (I)
			10 papers delivered to disseminate and transfer knowledge	March 31, 2014	10 technical papers (F)
			System operator to make determination on DR as a suitable ancillary services	June 2014	Ancillary Service decision (F)
			Business case of economic and reliable dispatch		

Below is a high level diagram of key stage gating "go / no go" decision points.



Phase 2 – Program and Technology Integration with Maritime Power System

	2011	2012	2013	2014
Technology Integration		Implement Forecast hardware & software Implement Load Control hardware & software	Completed DR control System for Wind Integration Benchmark measurements / performance Communication Protocol – NB SO & NBP	
Commissioning			System Commissioning	
Customer Load Control	Monitoring & Adjustments			
Enabling Technology	Scale DR Model, Complete Wireless Network, Install Remote Demand Response Capability, Invert DR Site, Expand Analysis Capability, DR Data Storage			

Phase 3 – Project Evaluation & Reporting

Technical Evaluation			Interim Reports Design & Specs – DR Control System	
Final Reports				Final Reports
Technical Papers				Technical Papers NB SO Determination on DR as suitable ancillary service Finalize Business Case for Broad Load Control Application
Ancillary Service				

DESCRIBE HOW THE PROJECT'S PROGRESS WILL BE MONITORED, INCLUDING IDENTIFYING PERFORMANCE INDICATORS, AND THE DATA THAT WILL BE USED TO MEASURE THEM.

An Oversight Steering committee will be formed with executive representatives from each of the Maritime utilities.

The key responsibility of the Oversight Committee will be to monitor performance indicators including: schedule, budget, quality issues and deliverables. Further, the Oversight Committee will provide direction on the project communications.

Some of the performance indicators might include:

- Number of installed smart meters.
- Number of installed radios.
- Number of installed wireless access points.
- Integration and testing of wireless access points with IT services.
- Results of customer survey and feedback regarding utility load control.
- Accuracy of wind forecasting models.
- Simulation analysis of aggregated control algorithms, including best load characteristics for Demand Response.
- Actual measured cost to install the new technologies.
- Verification of demand response with measured and forecasted data.
- On time, on budget and all reports filed with Natural Resources Canada.

Project Milestones by phase are:

Maritime Load Control Demonstration for Wind Integration Project Milestones	
PHASE ONE MILESTONES	• Assessment of the Smart Grid technologies available for an effective Demand Response program which will result in provision of fast acting ancillary services for wind integration, thus achieving cost savings and operational efficiencies for Maritime utilities.
PHASE TWO MILESTONES	• Demonstration of the proposed control, communication and smart grid systems to provide ancillary services for wind integration, including procurement and installation. • Creation of an algorithm for aggregated control of commercial and residential loads and associate technologies for wind integration.
PHASE THREE MILESTONES	• Completion of business case and cost framework for ancillary services supplied by load control. • Implementation of the proposed load control and communication systems as an integral part of the System Operator's operation for balancing load and generation including wind power generation. • Reduction of greenhouse gas emissions through the demonstration project in terms in enabling integration of wind power, and avoiding addition of thermal power for ancillary services. • Creation of a load control and customer program for the purposes of wind energy integration, where both customers and utilities will receive environmental and economic benefits from higher level of wind penetration.

Table A2 from the Clean Energy Fund applicant guide. Costs for each activity and the types of cost apportioned to each activity by year.

Year / Phase / Activity	Expenditure Type (from Eligible Costs)	Total Cost	CEF Contribution
2009-10			
Phase I – Project Design			
Project Management	Establish governance structure Establish communication strategy Establish baseline of ancillary service cost at escalating level of wind generation Internal orientation program	\$200,000	\$100,000
Project design for 5 buildings pilot	Site Survey, Design Engineering – Demand Management and Demand Response design for 5 buildings RF Propagation Studies Salaries and benefits (project engineer) Overhead expenses Site visits, T&L	\$100,000	\$50,000
Equipment procurement	Issue Purchase Requisition Smart Controllers, Remote and Access Point Radios, Radio antennas and accessories, PTP Microwave link radios, Data repository server for containing 5 building data	\$400,000	\$200,000
5 Building Pilot Installation	Installation support for Smart Controllers, Remote and Access Point Radios. Installation Support for Intrepid PTP Microwave links including Site visits, T&L	\$100,000	\$50,000
Technology Development Work	Preliminary Development of forecasting software Preliminary Development of DR Client software	\$490,000	\$245,000
Phase 1 Project Management (incl. planning meetings & reporting)	Salaries and benefits Site Visits, T&L	\$180,000	\$90,000
2010-12			
Phase 2 - Project Implementation			
Detailed Design	Finalizing the sites for broader deployment, Detailed Design – DR System, Establish customer qualification parameters Communications Network and PTP Back-haul links Program design to conduct facility audits	\$4,000,000	\$2,000,000
Site preparation and site studies	Wireless Line of Site Surveys at all deployment sites, RF Propagation studies, Customer orientation Design review meetings incl. T&L	\$3,000,000	\$1,500,000

Technology development	DR Client software and development/testing of Optimization techniques for Wind integration Develop forecast models Develop aggregated load control algorithms Develop forecast software ~~Develop load control software~~	\$3,400,000	\$1,700,000
Equipment Procurement	Smart Controllers, Remote and Access Point Radios, PTP Microwave links, communication accessories, antennas, Optimization algorithm platform	\$8,840,000	\$4,420,000
Phase 2 Project Management (Incl. review meetings)	Secure contract with DR service provider Salaries and benefits Site Visits, Customer site design T&L	\$3,000,000	\$1,500,000
Site Integration	Radio Communications Site Integration Salaries and benefits, Site visits, T&L	\$2,000,000	\$1,000,000
2013-14			
Broader Deployment up to 750 Buildings - Equipment	Smart Controllers, Remote and Access Point Radios, PTP Microwave links, communication accessories, antennas Implement forecast hardware & software Implement load control hardware & software Benchmark measurements/performance Communication protocol – NBSO & NBP	\$7,000,000	\$3,500,000
Phase 2 Project Management (Incl. review meetings & reporting)	Salaries and benefits (applicant) Professional, scientific and contracting services	\$500,000	\$250,000
Phase 3 – Analysis and Reporting			
Technical Evaluation	Collection of operational data of the pilot system Evaluation of technical performance Improvement for large scale application NBSO determination on DR as a suitable ancillary service	\$4,000,000	\$2,000,000
Personnel Training	Site Trainings to Train Personnel, Project closeout meetings, Salaries and Benefits, site visits T&L	\$500,000	\$250,000
Report preparation	Site visits, meetings, support to prepare final report Delivery of technical papers	\$200,000	\$100,000
Business Case	Finalize business case for broad load control application	\$90,000	\$45,000
SUMMARY			
Total Phase 1		\$1,470,000	\$735,000
Total Phase 2		\$31,740,000	\$15,870,000
Total Phase 3		\$4,790,000	\$2,385,000
Project Total		\$38,000,000	\$19,000,000

2.2.4 SUMMARY OF PROJECT FUNDING SOURCES AND CONTRIBUTORS

TABLE 1: TOTAL FROM APPLICANT				
New Brunswick Power Corporation	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
	2009-10 *		100	100
	2010-11		820	820
	2011-12		1070	1070
	2012-13		890	890
	2013-14		720	720
TOTAL APPLICANT (CASH + IN-KIND)			\$3,600	\$3,600

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 1: TOTAL FROM APPLICANT				
Nova Scotia Power Incorporated	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
	2009-10 *		100	100
	2010-11		820	820
	2011-12		1070	1070
	2012-13		890	890
	2013-14		720	720
TOTAL APPLICANT (CASH + IN-KIND)			\$3,600	\$3,600

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 1: TOTAL FROM APPLICANT				
Maritime Electric Company Limited	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
	2009-10 *		10	10
	2010-11		110	110
	2011-12		160	160
	2012-13		110	110
	2013-14		110	110
TOTAL APPLICANT (CASH + IN-KIND)			\$500	\$500

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 1: TOTAL FROM APPLICANT				
The Power Commission of the City of Saint John	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
	2009-10 *		10	10
	2010-11		110	110
	2011-12		160	160
	2012-13		110	110
	2013-14		110	110
TOTAL APPLICANT (CASH + IN-KIND)			\$500	\$500

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 2: TOTAL FROM PRIVATE SECTOR¹ AND ACADEMIC SECTOR				
Names of Contributors	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
University of New Brunswick	2009-10 *	18.0	50.4	68.4
	2010-11	36.0	100.8	136.8
	2011-12	36.0	100.8	136.8
	2012-13	36.0	100.8	136.8
	2013-14	36.0	100.8	136.8
GE Multilin	2009-10 *		100	100
	2010-11		150	150
	2011-12		150	150
	2012-13		100	100
	2013-14		-	-
New Brunswick System Operator	2009-10 *		20	20
	2010-11		20	20
	2011-12		20	20
	2012-13		20	20
	2013-14		20	20
TOTAL PRIVATE AND ACADEMIC (CASH + IN-KIND)		\$162	\$1053.6	\$1215.6

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 3: TOTAL FROM FEDERAL² GOVERNMENT (If applicable NOT CEF funding)				
Names of Contributing Departments or Agencies	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
Contributor 1 (specify)	2009-10 *	100	-	100
	2010-11	1250		1250
	2011-12	2500		2500
	2012-13	500		500
	2013-14	400		400
Contributor 2(specify)	2009-10 *			
	2010-11			
	2011-12			
	2012-13			
	2013-14			
(add rows as necessary)				
TOTAL FEDERAL GOVERNMENT² (CASH + IN-KIND)		\$4,750		\$4,750

TABLE 4: TOTAL FROM PROVINCIAL / TERRITORIAL / MUNICIPAL GOVERNMENTS				
Names of Contributing Governments	Fiscal Year (April 1-March 31)	Cash (1000\$)	In-kind (1000\$)	Total (1000\$)
Contributor 1 (specify)	2009-10 *	100	-	100
	2010-11	1250		1250
	2011-12	2500		2500
	2012-13	500		500
	2013-14	400		400
Contributor 2 (specify)	2009-10 *			
	2010-11			
	2011-12			
	2012-13			
	2013-14			
(add rows as necessary)				
TOTAL PROVINCIAL / TERRITORIAL / MUNICIPAL GOVERNMENT (CASH + IN-KIND)		\$4,750		\$4,750

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 5: TOTAL REQUESTED FROM CLEAN ENERGY FUND

Fiscal Year (April 1 - March 31)	Amount (1000\$)
2009-10 *	400
2010-11	5,000
2011-12	10,000
2012-13	2,000
2013-14	1,500
TOTAL CLEAN ENERGY FUND	\$18,900

* Please note that for the Fiscal Year 2009-10, only eligible costs from May 19, 2009 to March 31, 2010 can be claimed for reimbursement from Clean Energy Fund, and this only if a contribution agreement is signed before March 31, 2010.

TABLE 6: SUMMARY OF PROJECT FUNDING

Funding Source	Total Cash (1000\$)	Total In-Kind (1000\$)	Total Cash + In-Kind (1000\$)	Percentage of project total
Applicant		8,200	8,200	22%
Private Sector and Academic		1,215.6	1,215.6	3%
Federal Government (other than Clean Energy Fund)	4,750		4,750	12.5%
Provincial / Territorial / Municipal Governments	4,750		4,750	12.5%
Clean Energy Fund	18,900		18,900	50%
TOTAL PROJECT			\$38 million approx.	100%

2.2.5 FINANCIAL STRUCTURE AND BUSINESS CASE FOR FUNDING ASSISTANCE

Given the utility regulatory environment and the pressure to minimize rates, it is unlikely that this project would proceed if funding were to rest solely on the utilities. Without funding, the technology configuration and approach to customers would not occur at this time because there is no regulatory framework in place to address the costs.

The business case for load control is associated with the potential revenue from four key areas:

Sector-wide

- 1) deployment and commercialization of technology North American-wide benefiting utilities and the wind sector.
- 2) the increased penetration of wind or other intermittent renewables and the associated value of carbon reduction.

Utility specific

- 3) potential for lower cost ancillary services.
- 4) avoided cost of carbon emissions and more expensive supply-side ancillary service options.

To manage the financial risk of the project, an Oversight Committee reporting to utility executive will be responsible for legal, budget and performance.

2.2.6 RISKS AND RISK MITIGATION STRATEGY:

Please provide a review of the project risks in terms of technical risk, business risk and other risks (environmental review, permitting etc).

PHASE ONE RISK

Project Design, Technology Installation and Development

Risk

Aggregated load control technology for ancillary services: The proposed technology is innovative and significant, and yet has not been demonstrated in power systems. How to control numerous commercial and residential loads aggregately without impacting on the normal usage of the customers represent a challenging technical risk.

In order to realize the load control for wind integration, an appropriate wind production forecast technology specific to the Maritime region needs to be integrated with the power system operator (NBSO), although many forecast technologies are commercially available.

Financial and performance risk associated with multi-party project delivery.

Mitigation

*The project consortium has organized a strong project team of research institution, power production, power system operation, electricity users and industry control solution. The team has strong and diverse technical expertise in advanced control, communications, power systems, industry applications to ensure that the technical issues are solved through collected endeavours.

* The proposal includes a 5 building test pilot in 2010 to evaluate the technology and its integration.

*The project team has been working on a small scaled R&D project in technology development through a thoroughly considered scientific methodology to pave the solid foundation for this demonstration project.

*UNB is the lead for the NSERC Canadian Wind Energy Strategic Network (WESNet) which has 39 top Canadian researchers of 16 universities in collaboration with 14 industry and government partners, and has the access to world class expertise in wind forecast technologies. The project team will focus on developing a reliable and effective forecast technology by drawing the expertise and experience from WESNet, reviewing the advanced forecast technologies and fully utilizing the available weather/wind data and computing facilities.

*UNB has a team of expertise working with NBSO and Wind Energy Institute of Canada on wind forecast for balancing the Maritime power system. The project team will tap into and expand the R&D results to form an integrated wind production forecast system for DR control at the power system operation level.

* An Oversight Steering committee will be formed with executive representatives from each of the Maritime utilities.

The key responsibility of the Oversight Committee will be to monitor performance indicators including: schedule, budget, quality issues and deliverables. Further, the Oversight Committee will provide direction on the project communications.

PHASE TWO RISK**Program and Technology Integration with utility system****Risk**

The complex and innovative technologies, and the multi-partner involvement present a technical risk for seamless integration of the technologies with the existing power systems.

Mitigation

*The project consortium has organized a highly-qualified technical team with diverse expertise and experience to carry out the technical execution of the project.

*The project consortium has established an appropriate management structure with representation of partners, to coordinate and manage the execution of various tasks of the project, to integrate the technologies developed by various partners into the common demonstration platforms, and ensure the tasks are completed on time and on budget.

*All the key technologies of the project will be verified through field operation before integration with the utility system. Among them, the aggregated load control and wind forecast technologies will be verified by UNB and NBSO; the smart grid infrastructure will be verified by NB Power; and the control/communication solutions will be verified by GE Canada.

2.3 IMPACT AND EXPECTED OUTCOMES

2.3.1 INNOVATION:

Explain why the concept is new in the Canadian context and why the concept is significant from an innovation perspective.

The Maritime Consortium has proposed the demonstration of using customer load control to supply ancillary services for wind integration. The proposed innovative technologies have not been demonstrated and trialled in Canada and the world, according to our extensive review of technical publications. The technologies proposed in this demonstration project will have a significant impact to enable higher penetration of wind energy in power systems in the Maritimes, Canada and in the world, to reduce greenhouse gas emission through displacement of conventional fossil fuel based power generation.

Once the innovative technologies are demonstrated through this project, they could be commercialized in the Maritimes and in other Canadian jurisdictions, facilitating the increase of wind penetration from the current level of 1% in the Canadian electricity market to 20%.

A detailed explanation of the innovativeness of the Smart Grid Technology is noted below:

THE TECHNOLOGY INNOVATION:

The technology solution offered in the proposal is truly a unique solution to address the overall challenge of achieving ability to increase renewable energy penetration to the Maritimes power grid. This challenge is proposed to addresses by an innovative Smart Grid technology solution.

- The proposed solution for Demand Management and Demand Response capability makes use of a wireless Zigbee MESH network and hence eliminates the need for hardwiring the control Input Output points to individual loads. "Plug and Play" nature of proposed Demand Management and Demand Response solution provides cost effective and easy to install system.
- The wireless backhaul communications network for proposed Demand Response system provides a unique advantage to Maritime Utilities to enable integration of their existing AMI infrastructure into the same backhaul network and hence providing significant value in leveraging the Demand Response system infrastructure.
- The optimization philosophy proposed in our solution is based on a unique technology developed to optimize and manage multiple generation sources with an objective function to maximize the penetration of renewable energy and minimizing the dependence on conventional generation. The unique application proposed for this project enables Maritime Utilities to manage and control the loads to match up with generation profile and also permit some time to allow alternate generation sources to come online to meet the load demand.

The existing solutions in the market place may address one component by utilizing some of the legacy technologies such as hardwired Demand Response system based on questionable Internet broadband communication network, which often are cumbersome and expensive to deploy in a scalable system. The solution offered in this proposal is extensively innovative utilizing the state-of-the-art secure and efficient wireless technologies including advanced controls providing a true flexibility to the utilities to manage and control the demand on the Maritime Power grid as a function of availability of renewable energy (Wind) in the Maritime generation network.

2.3.2 IMPACT OF FUTURE DEPLOYMENT:

Describe the potential impact in terms of technical development, economic impact to Canada, and also identify environmental impact of full scale deployment.

ECONOMIC POTENTIAL:

- Deferral of new infrastructure costs to accommodate contingencies.
- Additional ancillary service options to economically dispatch net requirements.
- Further extension of the benefits of the smart grid technologies for cost savings and power system efficiency, such as peak shaving and optimal dispatch.
- The ability to deploy technology without need of hard wiring at the buildings and back to utility control room.
- Positions Canada as a world-leader in renewable energy integration and load control technology.
- Avoided cost for new supply-side options.

ENVIRONMENTAL POTENTIAL:

- Integration of more wind power, with displacement of greenhouse gas emissions.
- Avoidance of the use of thermal power plants to provide ancillary services, thus reducing greenhouse gas emissions of these plants.
- Avoid cost for new supply-side options / and avoided cost of new environmental footprint / land base impact to build new supply side options.

STRATEGIC NATIONAL POTENTIAL:

- To achieve the target "90% of Canada's electricity needs to be provided by non-emitting sources such as wind by 2020" resolving the issue of wind integration will be critical.
- The technologies can be exported to USA and other countries to facilitate higher level of wind penetration.
- The demonstration project contains the Microgrid control technologies, which allows utilities to deploy and dispatch multiple generation sources including renewable and conventional source with an objective of maximizing the renewable energy penetration into the power grid. This is especially beneficial for on-grid community energy project and off-grid remote communities. This demonstration project will provide a technical solution for integration of renewable energy resources in Canadian remote communities and community wind projects.
- This Maritime Consortium is advancing a key area of interest covered by the US-Canada Clean Energy Dialogue. Smarter more reliable grid based renewable generation. Also, our technical partner GE Multilin will leverage research and development expertise in both countries at its facilities in Markham, Ontario and at Albany, New York. In addition to the US-Canada Clean Energy Dialogue, this project strategically aligns with the goals of the Federal Government's Atlantic Energy Gateway.
- This demonstration project involves a strong partnership representing all stakeholders of power industry and wind industry sectors. The success of this project will present a model of strategic alliance of all stakeholders, working towards the goals of integrating high-penetration wind into power systems, and achieving social, environmental and economic benefits.

2.3.3 EVIDENCE OF RECEPTOR INTEREST

Provide evidence that this receptor interest exists, is there evidence of market pull? Are receptor interests involved on the project team? Are they passive interests or do they have financial commitments to the project.

Receptor	Interest
Utilities	Peak plants are expensive to operate, with fossil fuel bought on the volatile spot market, running with poor heat rates and emitting CO ₂ . The success of this demonstration may provide for an economic dispatch of ancillary services. Utilities across Canada have an interest in reliability and renewable energy integration.
Technology Companies	The demonstration will allow for the deployment of a configured solution. Much of the "smart grid" technology to date has been positioned in the market place without consideration of how individual components can provide an overall solution. A secondary interest is in building new information technology and communications capacity in the Maritime region, evaluating opportunities in the supply chain.
DR Service Provider	DR service providers have successfully provided load control services throughout North America over the last decade. The opportunity through this demonstration is to learn how to deliver load control with an objective of maximizing the renewable energy penetration into the power grid.
University of New Brunswick	The renewable energy industry will benefit as well system operators and utilities for system reliability through the work and completion of the demand response algorithm for wind integration. The study is also pertinent to the work being undertaken by CanWEA and the NSERC Wind Energy Strategic Network. The lead research on this project is also the Chair of the Wind Energy Strategic Network, Dr. Liuchen Chang.
Customers	The learning as a result of this project, may spur customer to purchase additional equipment and technology to optimize energy.
New Brunswick and Nova Scotia System Operator	The success of this demonstration may provide for an economic dispatch of ancillary services. The System Operators have an interest in the collaboration of the Maritime utilities promoting a larger balancing area and potential another ancillary supply option.
Renewable Energy Industry Proponents	By removing the barrier of limited ancillary service options, the renewable energy industry will be more competitive.
Regulator and Government	The demonstration will allow the Maritime utilities to work with the regulator and policy makers on the necessary framework for new expenditures in smart-grid technologies.

2.3.4 INFORMATION DISSEMINATION:

This section should deal with any information concepts outside the minimum requirements. Participation by project proponent members on Canadian and international code committees is an eligible project cost as part of information dissemination.

The strategic communications goals for the Maritime Provinces Customer Load Control for Wind Integration are as follows:

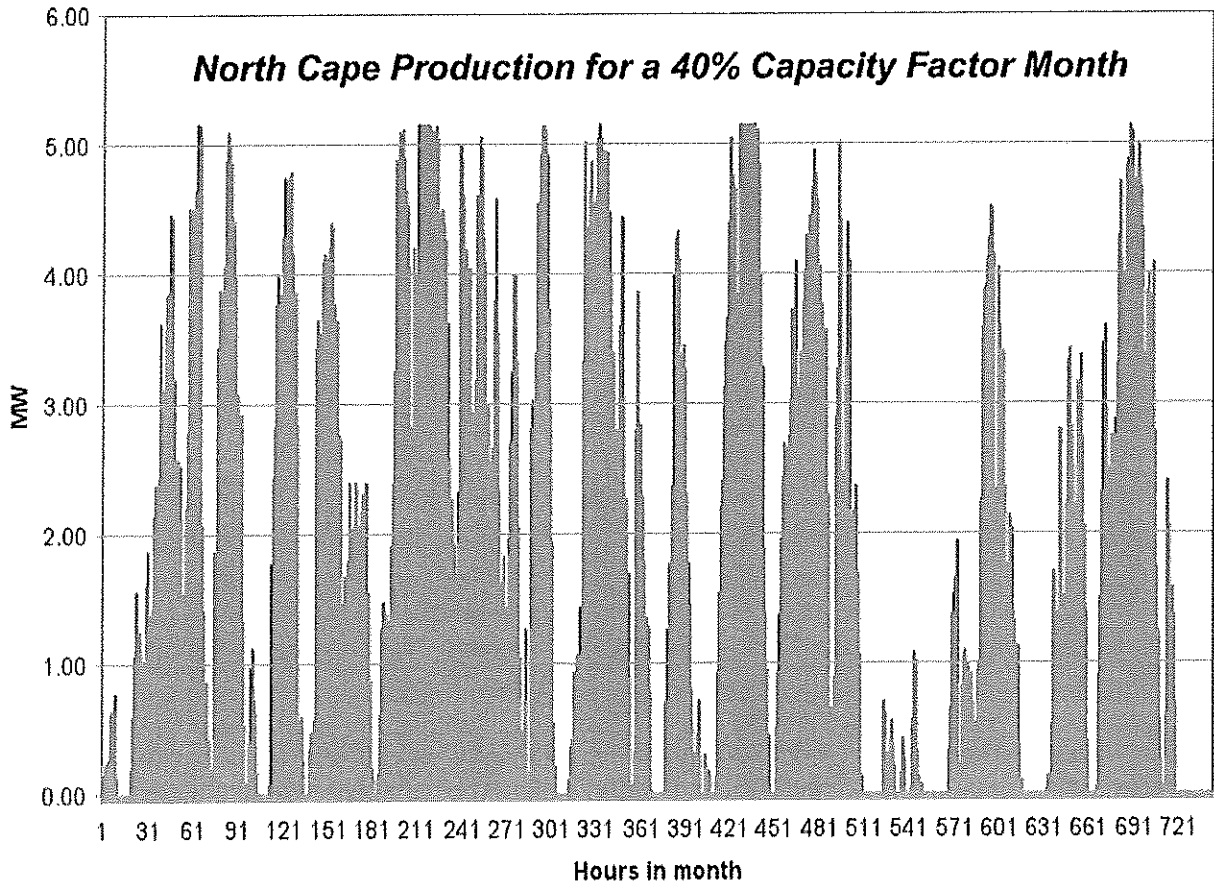
- 1) To ensure customers know how they can fully participate.
- 2) To regularly report to the Oversight Committee on the performance, improvements and costs of the pilot.
- 3) To provide regular feedback to the utility business units and System Operators on learning and operational impact.
- 4) To communicate and engage with experts in Natural Resource Canada and the Provincial Governments on the technical and strategic aspects of the project.
- 5) To promote information sharing between utilities.

Key audiences and communication tactics might be as follows:

Key Audience	Tactics
Oversight Committee	• Meet quarterly. • Production of annual report and fulfillment of contribution agreement requirements.
Customers enrolled in Pilot	• Conduct orientation session and one on one meetings. • Develop an electronic Quarterly bulletin for customers.
Ratepayer	• Provide updates in Utility publications.
Education, Government and Industry	• In years 2011-2012, speak at conferences and publish first set of papers. • Promote the benefits of renewable energy and GHG reduction.

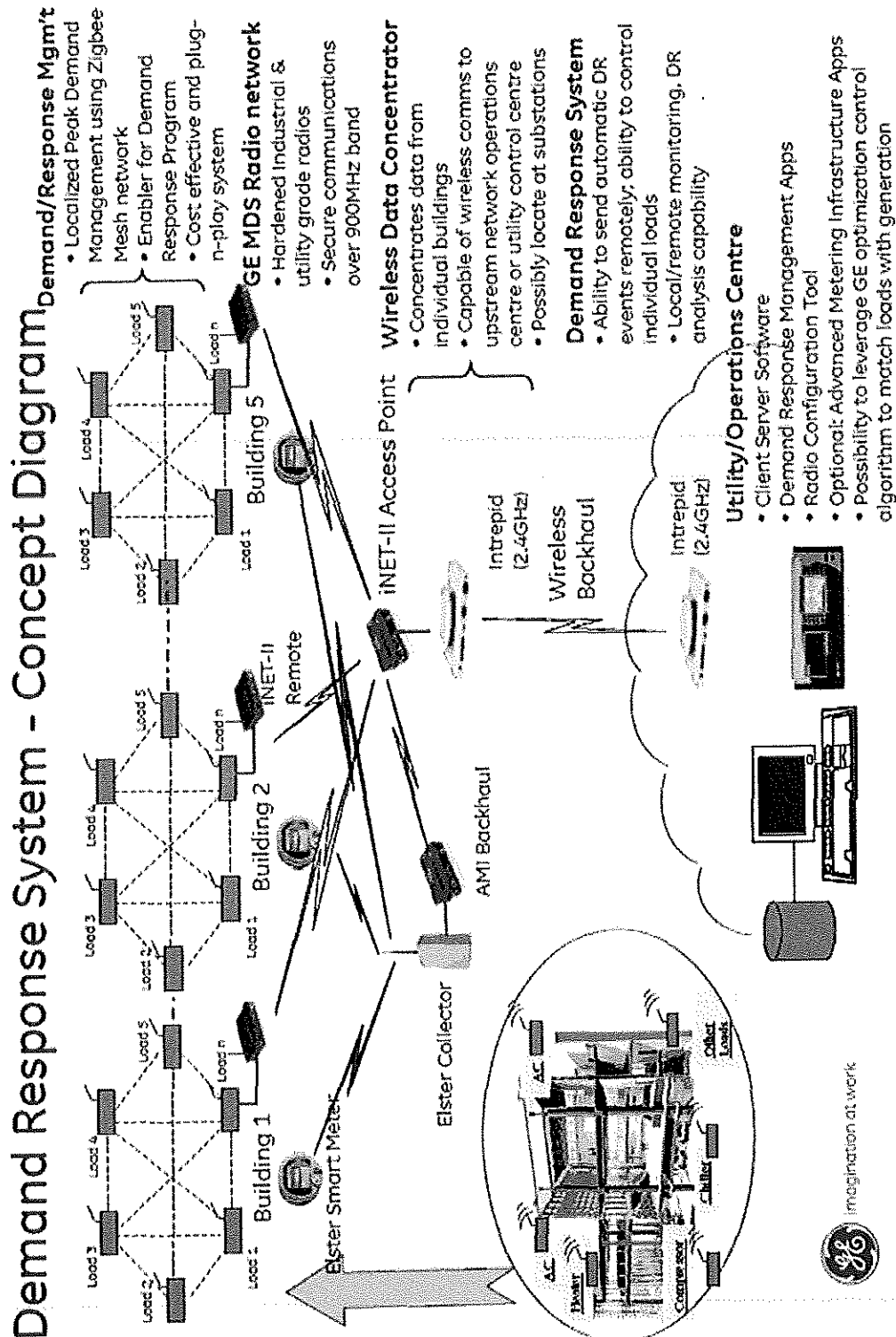
APPENDIX A

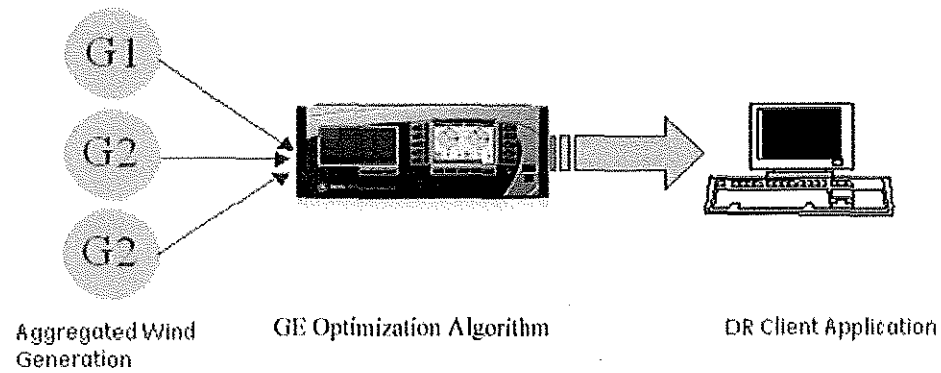
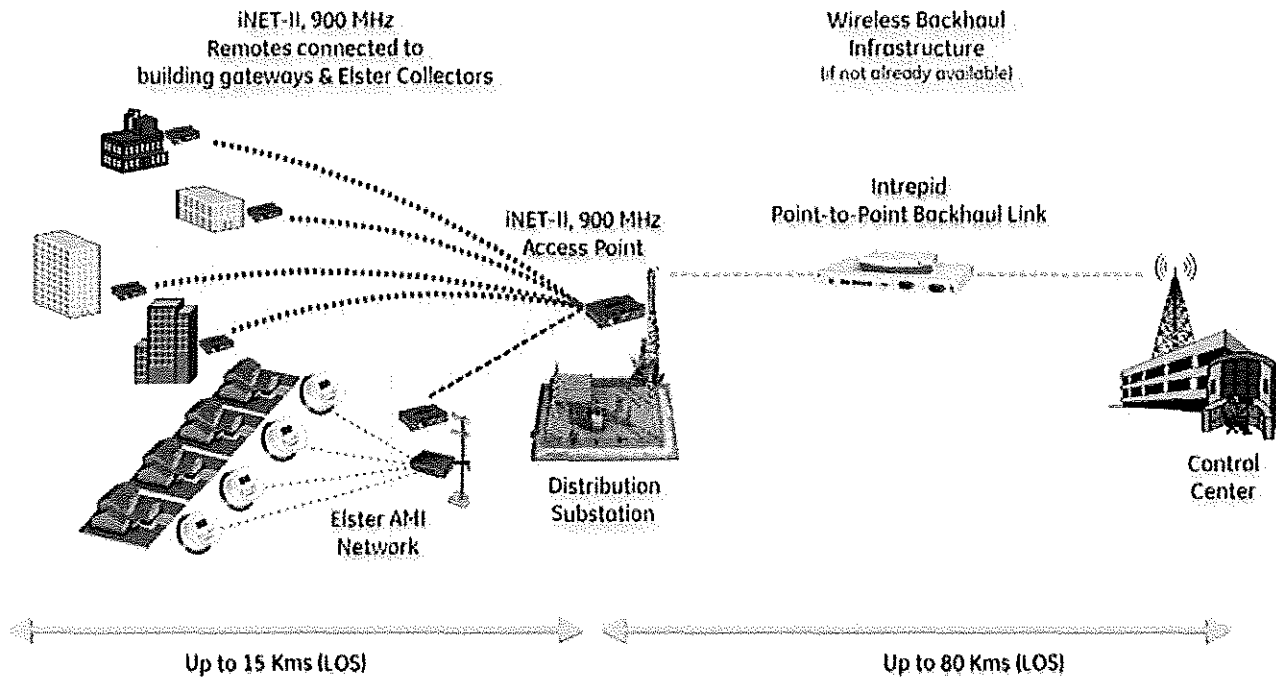
illustration of the intermittent nature of wind. Illustrated is the output at the North cape wind farm for the month of March 2003.



APPENDIX B

Illustration of technology solution.





APPENDIX C

Letter of References.



TransAlta Corporation Calgary, Alberta
 Box 1900, Station "M" T2P 2M1
 110-12th Avenue S.W. T (403) 267-2070

September 11, 2009

Energie NB Power Holding Corporation / Corporation de portefeuille
 PO Box 2010 / C.P. 2010
 515, rue King Street
 Fredericton, NB
 E3B 5G4

Attention: Colleen Sweet
 Director, Corporate Development and Business Relations

**RE: TransAlta's support for the Maritime Provinces Customer Load Control
 Demonstration to Supply Ancillary Services for Wind Integration
 Project Proposal**

TransAlta understand that NB Power is applying to the federal Clean Energy Fund to support a demonstration project for ways to allow more renewable generation to be added to the bulk transmission system. As one of Canada's leading developers of wind energy projects, TransAlta is always looking at new and innovative ways of harnessing technology to optimise generation. NB Power's proposal to evaluate and potentially develop a further tool for the efficient integration of wind power into the electricity system adds a great resource to the knowledge base for wind generation in Canada.

TransAlta has been in business since 1909, and is now one of Canada's leading developers of wind energy projects. We own and operate 288 MW of wind facilities, with an additional 201 MW under construction. Our wind team has more than 12 years experience operating wind energy facilities.

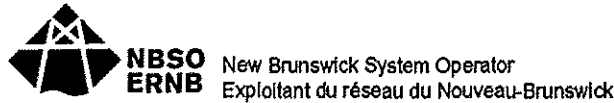
Given the synergies between TransAlta's goal to expand our wind generation fleet in Canada, and NB Power's initiative to develop an understanding and potentially evaluate a new tool for the implementation of additional wind generation in the Atlantic provinces, TransAlta supports NB Power's proposal and we are interested in being part of the Steering Committee to oversee the detailed development of NB Power's strategy through the project's phases.

As always, we stand ready to work with NB Power to discuss any aspects of this proposal and to help NB Power in any aspect of its decision making in this important matter.

Yours truly,

Liz Cussans
 Director, Wind Development

www.transalta.com



September 10, 2009

Ms. Colleen Sweet
 New Brunswick Power Holding Corporation
 P.O. Box 2010
 515 King Street
 Fredericton, NB
 E3B 5G4

Dear Colleen:

As noted in the NBSO's 2009 State of the Market Report, "... the efficient integration of wind power will require geographic diversity of wind, regional cooperation, increased flexibility of generation and load, and accurate wind power forecasting". Demand response can provide an additional tool with which to address the variability of wind power production. The flexibility arising from demand response programs can also assist in addressing the characteristics of other non-dispatchable forms of renewable generation such as in-stream tidal, solar and wave power.

NBSO sees NB Power's proposed demand response project as contributing to the increase in the flexibility of load that is required to efficiently integrate non-dispatchable wind power. In addition, the New Brunswick System Operator has an interest in seeing demand response proceed regionally as the reliability coordinator for the Maritimes area and the balancing authority for the area comprised of New Brunswick, Northern Maine and Prince Edward Island. This regional aspect of the proposed demand response program can provide the benefits of economies of scale, greater total dispatchable capacity, and more opportunities to address local constraints.

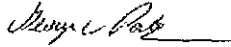
NBSO has a suite of programs that are applicable to demand response programs. These include bid-based demand response, capacity-based ancillary services, and interruptible load programs. Demand response participation in these programs can improve the efficiency of the integration of wind power. The proposed demand response project will provide live demonstration of the costs and benefits of using demand response in various programs subject to the characteristics of the individual customer type. Analysis of these costs and benefits will aid in the analysis of the most cost effective integration of wind power thereby increasing the amount of wind power production that can be integrated at a given cost, thereby reducing GHG emissions.

77 Canada Street, Fredericton, NB E3A 3Z3
 www.nbso.ca tel. 606-458-4620

77, rue Canada, Fredericton, (N.-B.) E3A 3Z3
 fax 606-458-4626 www.ernb.ca

NBSO looks forward to participating in this project by being represented on the project steering committee, setting up the demand response with the market systems, and in performing cost-benefit analysis. I will be the NBSO representative on that committee. Other resources including power system engineers, economic advisors, and policy experts will contribute as required. NBSO estimates the value of this total NBSO contribution in-kind at \$20,000 per year over the duration of the project.

Yours truly,



George Porter, P. Eng.
Director of Market Development
New Brunswick System Operator (www.nbso.ca)
E-mail George.Porter@nbso.ca
Ph 506-458-4704
Fax 506-458-4626



Energy
Corporation

Société de
l'énergie



Office of the Chief Executive Officer
PO Box 2000, Charlottetown
Prince Edward Island
Canada C1A 7N8

Bureau du président-directeur général
C.P. 2000, Charlottetown
Île-du-Prince-Édouard
Canada C1A 7N8

September 11, 2009

CEF Review Committee

Dear Committee members:

Re: Project Proposal for Maritime Provinces Customer Load Control Demonstration to Provide Ancillary Services for Wind Integration

The purpose of this letter is to express the Government of Prince Edward Island's support for NB Power in its application to Natural Resources Canada with respect to renewable and clean energy demonstrations to be funded under the Clean Energy Fund Program.

Prince Edward Island is currently the leader in Canada in terms of percentage of the electricity supply that is provided by wind power. For 2009 wind generation will provide an estimated 18 % of PEI's electricity requirements on an energy basis.

However, in order to integrate significant additional amounts of wind power into PEI's electricity supply we expect that the use of enabling technologies such as storage and direct control of customers' loads will be needed. These technologies are considered to be key components of what is being referred to as the "Smart Grid".

The PEI Government supports NB Power's Customer Load Control Demonstration proposal because it is expected to provide essential information needed to assess the potential impact and role that customer load control technologies could play in increasing the amount of wind power used in PEI.

Further to the PEI Government's expression of support, Maritime Electric, the principal electric utility in PEI, will have an active involvement in the proposed project as a member of the project team. Maritime Electric serves 90 % of the PEI load.

Yours truly,

Wayne MacQuarrie
CEO, PEI Energy Corporation

— Tel/Tél. : 902 894 0211 (0288) www.gov.pe.ca Email/Courriel : dwmacquarrie@gov.pe.ca Fax/Téléc. : 902 894 0290 —

From: Scott Harper [mailto:scott.harper@weican.ca]
Sent: Friday, September 11, 2009 1:54 PM
To: Sweet, Colleen
Subject: Support to NB Power & the Maritime Consortium

Hi Colleen,

In support of your efforts towards seeking assistance through NRCan's Clean Energy Demonstration Fund, WEICan has been working on small wind energy turbines and hybrid systems for some time and we have an interest in smart grid technologies and demand side management. WEICan has an interest in collaborating with your project team on this effort and we feel that we can assist both in terms of technical support as well as knowledge transfer and dissemination moving forward. WEICan are well known to many of your Project Team members and we have worked with Maritime Electric in PEI on grid integration issues and they have also arranged a wind integration workshop which included system operators and utilities to discuss integration issues surrounding wind energy. It is our opinion that the team at WEICan can be a valuable contributor to your project.

Thanks for thinking of us and our possible role in this very interesting and worthwhile project and best of luck with your submission.

Yours truly,

Scott

Scott Harper
Chief Executive Officer
Wind Energy Institute of Canada
21741 Route 12
North Cape
Prince Edward Island C0B 2B0

From: Breckenridge, Bill (DOE/MDE) [mailto:Bill.Breckenridge@gnb.ca]
Sent: Friday, September 11, 2009 11:15 AM
To: Sweet, Colleen
Cc: Jacobsen, Neil (DOE/MDE)
Subject: Re: letter of support

Colleen;

This note is to inform you that the Minister will be sending a letter directly to NRCAN indicating DOE's supports for NB based projects that are submitted for CEF support (of which NB Power's two submissions are included).

Regards,

B

From: Tom Levy [mailto:tomlevy@canwea.ca]
Sent: Tuesday, September 08, 2009 9:06 AM
To: Sweet, Colleen
Cc: Robert Hornung
Subject: RE: follow up to your questions:

Dear Colleen –

Further to your email below, you can list CanWEA as a supportive observer on the steering committee.

Cheers –
Tom

Tom Levy, P.Eng.
Manager of Technical & Utility Affairs
Canadian Wind Energy Association
T: 613-234-8716 x 238
M: 613-698-7172
tomlevy@canwea.ca

APPENDIX D
CEAA Checklist.

APPENDIX D

CEAA Checklist.

Y	N	U	
Determination of Physical Work under the CEA Act			
	X		Does any phase of the proposal involve the construction, operation, modification, decommissioning, abandonment or other activity in relation to a built structure that has a fixed location and is not intended to be moved frequently?
	X		Is this operation the same as the operation of an existing physical work for which an environmental assessment has already been completed?
	X		Will the physical work be located within 30 m of a body of water?
	X		Will the physical work be located on a serviced lot?
	X		Will the physical work be located on a Federal Real Property?
	X		Does the physical work involve the construction, decommissioning or abandonment of a hydroelectric generating station with a production capacity of 200 MW or more?
	X		Does the physical work involve the expansion of a hydroelectric generating station that would result in the increase in production capacity of 50% or more and 200MW or more?
	X		Does the physical work involve the construction, decommissioning or abandonment of a tidal power electrical generating station with a production capacity of 5MW or more, or an expansion of such a station that would result in an increase in production capacity of more than 35%?
	X		Does the physical work involve the proposed construction, decommissioning or abandonment of a structure for the diversion of 10 000 000 m ³ /a or more of water from a natural water body or an expansion of such a structure that would result in an increase in diversion capacity of more than 35%?
Determination of Assessable Activities under the CEA Act			
	X		Activity takes place in a National Park or National Nature Reserve in Canada
	X		Activity takes place on First Nation lands
	X		Activity takes place in the North (Yukon, Nunavut, or the Northwest Territories)
	X		Activity takes place on a Federal Real Property
	X		Activity takes place in or within 30 metres of the right-of-way of a power line, a natural gas line, or a railway line
	X		Activity will discharge potentially polluting substances into a body of water.
	X		Destruction of fish other than by fishing
	X		Sampling or prospecting for ores or minerals
	X		Disposal of a prescribed nuclear substance other than in a laboratory equipped for such disposal
	X		Deposit of a deleterious or other substance into the environment (in the earth, air, or water)
	X		Any kind of remediation of contaminated land
	X		Deposit of oil, oil wastes or any other substances harmful to migratory birds in waters or in areas frequented by migratory birds
	X		Killing or removal of migratory birds, their nests, eggs, or carcasses or other physical activities that may require a permit or other authorisation under the Migratory Birds Regulations or Migratory Bird Sanctuary Regulations
	X		The removal or damaging of vegetation and/or the carrying on of agricultural activities or the disturbance or removal of soil in a wildlife area that requires a permit under section 4 of the Wildlife Area Regulations under the Canada Wildlife Act
	X		Physical activities that are carried on in Canada and that are intended to threaten the continued existence of a biological population in an ecodistrict, either directly or through the alteration of its habitat
	X		Establishment or operation of a field camp in a single location that will be used for 200 person-days or more within a calendar year
	X		Seismic surveying involving more than 50 kg of chemical explosive in a single blast; or marine or freshwater seismic surveying, if during the survey the air pressure measured at a distance of one metre from the source would be greater than 275.79 kPa (40 lbs/sq in)
Infrastructure Programs			
X			Has the proponent applied to receive funding from other programs (federal or other jurisdictions) for this project? If so, please specify the program and department. New Brunswick Climate Action Fund Atlantic Opportunities Agency The Governments of New Brunswick, Nova Scotia and Prince Edward Island
	X		Is the purpose of the project to improve energy efficiency in a municipal or community building/facility?
	X		Will the project be carried out within 250 m of an environmentally sensitive area?

Schedule "B"

PROTECTED A

DEPARTMENT OF NATURAL RESOURCES
CLEAN ENERGY FUND – SMALLER SCALE DEMONSTRATION
CONTRIBUTION AGREEMENT

THIS AGREEMENT is made in duplicate

BETWEEN:

HER MAJESTY THE QUEEN IN RIGHT OF CANADA
("Canada"), represented by the Minister of Natural Resources,

AND:

NB Power Holding Corporation is a corporation incorporated under the laws in force in the Province of New Brunswick, (the "Proponent").

WHEREAS Canada wishes to support, through the Clean Energy Fund (CEF), the development of transformative energy technologies that are essential in reducing greenhouse gas emissions (GHGs) and other air emissions in energy production, transmission, distribution and use;

WHEREAS the Proponent has submitted to the Minister a Proposal for the funding of a Project called The Maritime Provinces Customer Load Control Demonstration for Wind Integration which qualifies for support under the Program;

WHEREAS Canada and the Proponent agree that in order for the Proponent to develop and implement the Project as described in Schedule A, the Proponent will require financial assistance from Canada;

AND WHEREAS Canada is willing to provide financial assistance toward the Eligible Costs of the Project in the manner and upon the terms and conditions hereinafter set forth;

NOW, THEREFORE, Canada and the Proponent agree as follows:

1. INTERPRETATION

1.1 In this Agreement:

"Agreement" means this Agreement and the attached Schedules A, B, C, D and E;

"Completion Date" means the date that the Proponent shall complete the Project as specified in Paragraph 4.2;

"Contribution" means the funding provided by the Minister under this Agreement.

"Eligible Costs" means any costs Incurred by the Proponent in accordance with the terms and conditions of this Agreement and which are listed in Schedule B;

"Fiscal Year" means the period beginning on April 1st of any year and ending on March 31st in the next year;

"Incurred" means an Eligible Cost or a portion thereof that is owing and is due in the period set out in Schedule B.

"Incurred and Paid" means an Eligible Cost for goods and/or services that have been paid for by the Proponent;

"Intellectual Property" means any Intellectual Property right recognized by the law, including any intellectual property right protected through legislation (such as that governing patents, copyright, trade-marks, and industrial designs);

"Interest Rate" means the Bank Rate, as defined in the *Interest and Administrative Charges Regulations*, in effect on the due date, plus 300 basis points, compounded monthly. The Interest Rate for any given month can be found at: <http://www.tpsgc-pwsc.gc.ca/recgen/txt/71-eng.html>

"Minister" means the Minister of Natural Resources and includes any duly authorized officers or representatives;

"Project" means the Project described in Schedule A and submitted by the Proponent in the Proposal;

"Project Start Date" means the date specified in Schedule A, which is the latest date by which the Project must be commenced;

"Proposal" means a written Proposal including at least a background, purpose, work description, results expected, and a budget submitted by the Proponent, which is accepted by the Minister for a specific Project;

"Total Project Costs" means the aggregate of Canada's Contribution and other cash or in-kind contributions received by or contributed by the Proponent toward the Project, the value of which is set out in Schedule B.

- 1.2 This Agreement must be signed by the Proponent and received by the Minister, and the implementation of the Project must have begun by the Project Start Date, failing which the Minister may terminate this Agreement.
- 1.3 In case of conflict between provisions of this Agreement, the order of precedence shall be the following:
 - a) these articles of agreement;
 - b) Schedule A;
 - c) Schedule B;
 - d) Schedule C;
 - e) Schedule D;
 - f) Schedule E.
- 1.4 Grammatical variations of the above terms have similar meanings. Words importing the singular number only shall include the plural and vice versa.

2. REPRESENTATIONS AND WARRANTIES

- 2.1 The Proponent represents and warrants that all factual matters contained in the Proposal and all supporting material submitted are true and accurate, and that all estimates, forecasts and other related matters involving judgement were prepared in good faith and to the best of its ability, skill and judgement.
- 2.2 The Proponent represents and warrants that it is duly incorporated or registered and validly existing in good standing under the laws of Canada, and has the power and authority to carry on its business, to hold property, and to enter into this Agreement and undertakes to take all necessary action to maintain itself in good standing and preserve its legal capacity during the term of this Agreement.
- 2.3 The Proponent represents and warrants that the signatories to this Agreement have been duly authorized to execute and deliver this Agreement on its behalf.
- 2.4 The Proponent represents and warrants that the execution, delivery, and performance of this Agreement have been duly authorized and when executed and delivered will constitute a legal, valid, and binding obligation of the Proponent enforceable in accordance with its terms.
- 2.5 The Proponent represents and warrants that it is under no obligation or prohibition, nor is it subject to or threatened by any actions, suits or proceedings, including those arising out of the *Canadian Environmental Assessment Act*, which could or would prevent compliance with this Agreement and undertakes to advise the Minister forthwith of any such occurrence during the term of this Agreement.

- 2.6. The Proponent represents and warrants that it has not, nor has any person offered or promised to any official or employee of Her Majesty the Queen in Right of Canada, for or with a view to obtaining this Agreement any bribe, gift or other inducement, and it has not nor has any person on its behalf employed any person to solicit this Agreement for a commission, fee or any other consideration dependent upon the execution of this Agreement.

3. COMING INTO FORCE

- 3.1 This Agreement comes into force when signed by the Parties.
- 3.2 Except as otherwise stated in section 3.3 below, this Agreement will terminate 12 months after the latest of:
- a) the completion of the Project to the satisfaction of the Minister;
 - b) the Completion Date; or
 - c) the date on which all amounts due by the Proponent to the Minister under this Agreement have been paid in full.
- 3.3 The following clauses shall survive the termination of this Agreement for an additional five (5) years:
- a) Article 7, Repayment of Contribution
 - b) Article 8, Accounts and Audits;
 - c) Article 9, Intellectual Property;
 - d) Article 10, Indemnity;
 - e) Article 11, Default;
 - f) Article 12, Access;
 - g) Article 13, Reports;
 - h) Article 14, Disposition of Property; and
 - i) Article 26, Dispute Resolutions.

4. CONDUCT OF PROJECT

- 4.1 The Proponent shall carry out the Project promptly, diligently and in a professional manner and in accordance with the terms and conditions of this Agreement.
- 4.2 The Proponent shall complete the Project by March 31, 2014, unless terminated earlier pursuant to the provisions of this Agreement.
- 4.3 The Proponent shall comply with all applicable federal, provincial and municipal laws in relation to the Project.
- 4.4 The Proponent shall provide any information requested by Canada to satisfy its obligations under the *Canadian Environmental Assessment Act* as a result of the Project.
- 4.5 The Proponent shall comply with all conditions arising out of an environmental assessment in respect of the Project in accordance with the provisions of the *Canadian Environmental Assessment Act*, including the implementation of mitigation measures and any follow up program.
- 4.6 Notwithstanding any other provision of this Agreement, if a change that would trigger a reassessment of the Project under the *Canadian Environmental Assessment Act* is proposed for, or made to the Project, the Parties agree that Canada's obligation under this Agreement will be suspended until an environmental assessment is completed and Canada determines that the Project as modified is unlikely to result in any significant adverse environmental effects.

5. CONTRIBUTIONS

- 5.1 Notwithstanding any other provision of this Agreement, the Contribution under this Agreement shall not in any circumstances exceed the lesser of:
- a) Fifty (50) per cent of Eligible Costs Incurred;
 - b) \$15,900,000 Fifteen million, nine hundred thousand dollars
- 5.2 The annual Contribution to the Project shall not exceed:
- a) \$3,071,000 for Fiscal Year 2010/11
 - b) \$8,633,000 for Fiscal Year 2011/12
 - c) \$3,249,000 for Fiscal Year 2012/13

d) \$949,000 for Fiscal Year 2013/14

- 5.3. The Proponent represents that no other federal, provincial, territorial or local government assistance (collectively: the "Government Assistance"), than those listed in Schedule B, has been or will be provided in respect of the Eligible Costs of the Project other than that described below:

Federal: \$0
 Provincial: \$2,400,000
 Territorial: \$0
 Local: \$0
 Total: \$0

The Proponent shall advise the Minister promptly of any further assistance provided during the term of this Agreement that would cause the Government Assistance to exceed seventy-five per cent (75%) of the Total Project Costs and result in a corresponding adjustment of the maximum amount of the Contribution.

- 5.4 The Minister will not contribute to any Eligible Costs Incurred by the Proponent prior to May 19, 2009 or after March 31, 2014.

6. METHOD OF PAYMENT

- 6.1 Subject to the terms and conditions of this Agreement, following receipt of a claim, acceptable to the Minister, for payment of Eligible Costs Incurred by the Proponent, accompanied by copies of documents in accordance with the Schedule C or as otherwise requested by the Minister, Canada shall pay its contribution towards the Eligible Costs of the Project.
- 6.2 Canada shall withhold 10% (ten percent) from any payment under this Agreement until:
- a) the Project has been completed to the satisfaction of the Minister;
 - b) a final report documenting the completion of the Project and all other final reports as set out in Schedule C, Section C, have been received and approved by the Minister;
 - c) the Proponent has certified, in the manner set out in Schedule D, that all claims for the payment of Eligible Costs of the Project have been Incurred and Paid by the Proponent; and
 - d) the Minister has approved a final statement of Eligible Costs Incurred and Paid in respect of the Project.
- 6.3 The Proponent agrees that Canada may offset any unused funds from an advance payment against further payments and that at the completion of the Project or the termination of this Agreement any unused funds shall be promptly returned to Canada.
- 6.4 Where for any reason the Minister determines that the amount of the Contribution disbursed exceeds the amount to which the Proponent is entitled or the Proponent is not entitled to the Contribution, the Proponent must repay the Minister promptly and in any case no later than 30 days from the date of the Minister's notice, the amount of the Contribution disbursed or the amount of the overpayment, as the case may be, together with interest at the Interest Rate from the date of the notice to the day of repayment to the Minister in full. Any such amount is a debt due to Her Majesty in Right of Canada and is recoverable as such.
- 6.5 Without limiting the scope of the set-off rights provided for under the *Financial Administration Act*, it is understood that the Minister may set off against any amount that may be payable to the Proponent pursuant to this Agreement, any amounts owed and past due by the Proponent to Her Majesty the Queen in Right of Canada under any legislation or contribution agreements and the Proponent shall declare to the Minister all amounts outstanding in that regard when making any claim under this Agreement.
- #### 7. REPAYMENT OF CONTRIBUTION
- 7.1 For the period commencing on March 31, 2014 and ending on March 31, 2019, the Proponent shall pay to Canada 50% of annual profits (as defined by the Generally Accepted Accounting Principles (the "GAAP")) derived from equipment, know-how, or other forms of intellectual property arising from the Project.
- 7.2 The Proponent shall submit sales reports and payments to Canada as described in Schedule C for the period set out in Article 7.1.

7.3 The Proponent agrees that all considerations to be received by the Proponent in respect of the licensing, selling, marketing or commercialization of the Intellectual Property shall be established in a bona fide arm's length transaction between parties.

7.4 The Proponent shall pay to Canada Interest Rate on any payment that is overdue from the date such amount becomes overdue until the date of payment, inclusive.

8. ACCOUNTS AND AUDIT

8.1 Prior to the Completion Date of the Project and for five (5) years thereafter the Proponent shall, at its own expense:

- a) keep proper books, accounts, and records of its revenue received and expenses incurred and paid in connection with the Project and shall keep its invoices, receipts, and vouchers relating thereto;
- b) keep proper and accurate records relating to the environmental impact (if any) of the Project;
- c) keep proper and accurate records of all data, analyses, and other scientific or technical assessments and reports, and any and all information relating to the outputs and outcomes of the Project;
- d) on demand, make available to Canada such books, accounts, records, invoices, receipts, and vouchers referred to above and permit Canada to examine and audit and take copies and extracts from such documents; and
- e) allow Canada, at Canada's own expense and discretion, to conduct a technical audit to verify that the proposed measures outlined in Schedule A were implemented in accordance with this Agreement.

9. INTELLECTUAL PROPERTY

9.1 All Intellectual Property that arises in the course of the Project shall vest in or be licensed to the Proponent.

9.2 The Proponent shall supply to Canada the reports and documents described in Schedule C or as otherwise required by the Minister under Article 13 (Reports), and the Proponent hereby grants to Canada a non-exclusive, irrevocable, world-wide, free and royalty-free licence in perpetuity to use and modify such reports and documents for non-commercial governmental purposes.

10. INDEMNITY

10.1 Neither Canada, nor its employees, officers and agents, will have any liability in respect of claims of any nature, including claims for injury or damages, made by any person involved in the activities of the Project or as a result of or arising out of the Agreement, and the Proponent will indemnify and save harmless Canada, its employees, officers and agents, in respect of such claims.

11. DEFAULT

11.1 The Minister may declare that an event of default has occurred if:

- a) the Proponent becomes insolvent or is adjudged or declared bankrupt or if it goes into receivership or takes the benefit of any statute from time to time in force relating to bankrupt or insolvent debtors;
- b) an order is made which is not being contested or appealed by the Proponent or a resolution is passed for the winding up of the Proponent or it is dissolved;
- c) in the opinion of the Minister, there has been a misrepresentation or breach of warranty under Article 2 (Representations and Warranties);
- d) in the opinion of the Minister, acting reasonably, a material adverse change in risk affecting the fulfilment of the terms and conditions of this Agreement has occurred;

- e) any term, condition or undertaking in this Agreement is not complied with in any material respect and any such defect has not been cured by or remedied by the Proponent within thirty (30) days of written notice of such defect having been provided to the Proponent; or
- f) The Proponent neglects or fails to pay to the Minister any amount due in accordance with this Agreement.

11.2 If the Minister declares that an event of default has occurred, in addition to all other remedies provided under contract law, the Minister may exercise one or more of the following remedies:

- a) suspend any obligation to contribute or continue to contribute to the Eligible Costs of the Project or a part of the Project, including any obligation to pay any amount owing prior to the date of such suspension;
- b) require the Proponent to repay all or part of the Contribution which has been paid to the Proponent, together with interest from the date of demand at the Interest Rate; or
- c) terminate any obligation to contribute or continue to contribute to the Eligible Costs of the Project, including any obligation to pay any amount owing prior to the date of such termination.

For greater clarity, all above remedies are cumulative.

11.3 The fact that the Minister refrains from exercising a remedy that the Minister is entitled to exercise under this Agreement will not constitute a waiver of such right and any partial exercise of a right will not prevent the Minister in any way from later exercising any other right or remedy under this Agreement or other applicable law.

12. ACCESS

12.1 The Proponent shall provide the Minister or the Minister's representatives, during the duration of this Agreement and for a period of 5 years after the Project Completion Date, reasonable access to any premises where the Project takes place to assess the Project's progress or any element thereof.

13. REPORTS

13.1 The Proponent shall submit Project reports satisfactory to the Minister in accordance with the provisions of Schedule C or as otherwise requested by the Minister.

13.2 Upon completion of the Project, the Proponent shall provide the Minister with a declaration as to the total amount of contributions or payments the Proponent received in respect of the Project.

14. DISPOSITION OF PROPERTY

14.1 If, prior to the Completion Date of the Project and for five (5) years thereafter, the Proponent sells, leases or otherwise disposes of any property other than Intellectual Property, where the cost of the property is part of the Eligible Costs under the Project to which Canada has contributed under this Agreement, the Proponent shall immediately notify the Minister in writing of such sale, lease or disposition and, if the Minister so requires, the Proponent shall share with Canada the proceeds of the disposition in the same ratio as that of Canada's contribution to the purchase of the property, except that Canada's share shall not exceed its contribution under this Agreement.

15. SUBCONTRACTS

15.1 The Proponent shall not subcontract all or any part of the Project funded by Canada except as provided in the Proposal. The Proponent shall notify the Minister of any contract the Proponent enters into with a third party to undertake work on the Project where the estimate of the cost of the work to be performed exceeds \$1 million, and the notice shall include a description of the extent and nature of the contracted work, the identity of the contractor, and the estimated cost of the contracted work. For greater certainty, for the purposes of this Article, there is no privity of contract between Canada and any of the Proponent's subcontractors; as such, the selection and amendment of any of Proponent's subcontractors as may be listed in the Proposal is the sole responsibility of the Proponent and is not subject to the Minister's consent.

16. **LEGAL RELATIONSHIP**

- 16.1 Nothing contained in this Agreement shall create the relationship of principal and agent, employer and employee, partnership or joint venture between the Parties.
- 16.2 The Proponent shall not make any representation that:
- a) the Proponent is an agent of Canada; or
 - b) could reasonably lead any member of the public to believe that the Proponent or its contractors are agents of Canada.

17. **ACKNOWLEDGEMENT**

- 17.1 The Proponent will acknowledge the financial support of Canada in all public information produced as part of the Project.

18. **TIME OF ESSENCE**

- 18.1 Time is of the essence with respect to all provisions of this Agreement that specify a time for performance.

19. **MEMBERS OF PARLIAMENT**

- 19.1 No Member of the House of Commons or Senate shall be admitted to any share or part of this Agreement or to any benefit arising therefrom.

20. **CONFLICT OF INTEREST**

- 20.1 It is a term of this Agreement that no public servant or public office holder, either currently or formerly employed by a federal entity, and to whom the *Conflict of Interest Act*, the *Conflict of Interest and Post-Employment Code for Public Office Holders* or the *Values and Ethics Code for the Public Service* applies, shall derive any direct or indirect benefit from the Agreement unless the provision or receipt of such benefits is in compliance with such legislation and codes.
- 20.2 If any individual working for the Proponent formerly provided consultancy services to the Minister that are related to this Agreement, particularly any services associated with developing the Agreement or developing the Project which is the subject of this Agreement, the Proponent is considered to be in a real, perceived, or potential conflict of interest situation.
- 20.3 If a conflict of interest situation arises during the Agreement the Proponent shall notify the Minister, in the manner prescribed in Article 24. Upon request, the Proponent shall notify the Minister of all reasonable steps taken to identify, avoid, prevent, and where it exists, resolve any conflict of interest situation.
- 20.4 The Minister may investigate a real, perceived, or potential conflict of Interest and take such steps and measures as the Minister considers appropriate, including without limitation: informing the Proponent that it is in a conflict of interest situation; requesting specific actions be taken to correct the situation; requiring the Proponent to withdraw any individual from participation in the Project for reasons of conflict of interest; suspending payments under the Agreement; or terminating the Agreement.

21. **FORCE MAJEURE**

- 21.1 The Parties shall not be in default or in breach of this Agreement due to any delay or failure to meet any of their obligations caused by or arising from any event beyond their reasonable control and without their fault or negligence, including any act of God or other cause which delays or frustrates the performance of this Agreement (a "force majeure event"). If a force majeure event frustrates the performance of this Agreement, Canada will only be liable for its proportionate

share of the Eligible Costs Incurred and Paid to the date of the occurrence of the event.

- 21.2 The performance of the obligation affected by a "force majeure event" as set out in Paragraph 21.1, shall be delayed by the length of time over which the event lasted. However, should the interruption continue for more than thirty (30) days, this Agreement may be terminated by Canada.
- 21.3 Should either party claim the existence of a "force majeure event" as set out in Paragraph 21.1, prompt notice thereof shall be given to the other party and the party claiming the existence of a "force majeure event" shall have the obligation to provide proof of such event and use its best efforts to mitigate any damages to the other party.

22. GOVERNING LAW

- 22.1 This Agreement shall be interpreted in accordance with the applicable federal laws and the laws in force in the Province of New Brunswick.

23. ASSIGNMENT

- 23.1 This Agreement shall not be assigned in whole or in part by the Proponent without the prior written consent of the Minister and any assignment made without that consent is void and of no effect.

24. NOTICES

- 24.1 The claims for payment, requests, notices, and information referred to in this Agreement shall be sent in writing or by any method of telecommunication and, unless notice to the contrary is given, shall be addressed to the Party concerned at the following address:

To Canada:

CEF Program
Attention: John Gorjup
Natural Resources Canada
580 Booth Street, 14th Floor
Ottawa, Ontario K1A 0E4

Telephone: (613) 947-4245
Facsimile: (613) 995-6146
E-mail: john.gorjup@nrcan.gc.ca

To the Proponent:

Colleen Sweet
Director, Corporate Development
cc. Wanda Harrison
Corporate Secretary and General Counsel
NB Power Holding Corporation
515 King Street
P.O. Box 2000
Fredericton, New Brunswick E3B 4X1
Telephone: (506) 458-4205
E-mail: csweet@nbpower.com

Cheques are to be mailed in the same address as above.

- 24.2 Notices, requests and documents are deemed to have been received, if sent by registered mail, when the postal receipt is acknowledged by the other Party; by facsimile or electronic mail, when transmitted and receipt is confirmed; and by messenger or specialized courier agency, when delivered.

25. AMENDMENTS

- 25.1 No amendment of this Agreement or waiver of any of its terms and conditions shall be deemed valid unless effected by a written amendment signed by the Parties.

26. DISPUTE RESOLUTION

- 26.1 The Parties may attempt to resolve any dispute arising out of or pursuant to this Agreement by recourse to the dispute resolution methods identified in the following sequence, although steps may be by-passed by mutual consent.
- 1) negotiations;
 - 2) non-binding mediation or conciliation; or
 - 3) binding arbitration.
- 26.2 If the Parties cannot agree on any of the foregoing dispute resolution mechanisms, either Party may, at any time, elect to have such dispute resolved by litigation in the proper judicial forum in Canada.
- 26.3 Any Party may within fifteen (15) days take the dispute to the next step if the parties fail to agree on the appointment or procedure referred to in this Article.
- 26.4 When mediation or conciliation is selected by the parties, they shall jointly appoint one impartial expert mediator or conciliator to undertake the process according to mutually agreed upon procedures.
- 26.5 If the Parties decide to submit a dispute to arbitration, it shall be carried out pursuant to the *Commercial Arbitration Act* of Canada. The arbitral award shall be in terms of money only, and shall not include punitive damages, costs or interim measures. The Parties shall attempt to appoint jointly one impartial expert arbitrator. If the Parties cannot agree within thirty (30) days on the choice of an arbitrator, each Party shall appoint, at its own cost, one impartial expert arbitrator and those two arbitrators shall appoint an expert third arbitrator as chairperson of an arbitral tribunal.
- 26.6 When one of the above steps 26.1(2) or (3) is selected to resolve a dispute, the Parties shall jointly enter into a contract with the required mediator or conciliator, third party, arbitrator or arbitrators, as the case may be, to pay the costs for the desired services and to bear their own costs of participating in the process involved. The contracts referred to and contemplated by this Article shall be in the form and content as proposed by Canada.

27. APPROPRIATION

- 27.1 The payment of monies by Canada under this Agreement is subject to there being an appropriation by Parliament for the Fiscal Year in which the payment of monies is to be made.
- 27.2 Notwithstanding any other provision of this Agreement, Canada may reduce or cancel its financial contribution to the Project upon written notice to the Proponent in the event that the funding levels for the Department of Natural Resources are changed by Parliament during the term of this Agreement. In the event that Canada reduces or cancels its financial contribution, the Parties agree to amend the Project and the Eligible Costs of the Project, namely this Agreement, to take into account the reduction or cancellation of Canada's financial contribution.

28. LOBBYING ACT

- 28.1 The Proponent shall ensure that any person lobbying on behalf of the Proponent is registered pursuant to the *Lobbying Act* and that the fees paid to the lobbyist are not to be related to the value of the financial contribution pursuant to the terms of this Agreement.

29. SUCCESSORS AND ASSIGNS

- 29.1 This Agreement shall inure to the benefit of and be binding on the Parties and their respective representatives, successors and assigns.

30. OFFICIAL LANGUAGES/LANGUES OFFICIELLES

- 30.1 This Agreement is drawn in English at the request of the Parties. Les Parties ont convenu que le présent Accord soit rédigé en anglais.
- 30.2 All public information documents related to the Project prepared or paid in whole or in part by Canada must be made available in both official languages, when the Department of Natural Resources judges that this is required under the *Official Languages Act*. Tout document d'information publique préparé ou payé en tout ou en partie par le Canada ayant trait au Projet doit être offert dans les deux langues officielles, lorsque le Ministère des Ressources Naturelles le juge pertinent, conformément à la *Loi sur les langues officielles*.

31. SEVERABILITY

- 31.1 Any provision of this Agreement prohibited by law or otherwise ineffective will be ineffective only to the extent of such prohibition or ineffectiveness and will be severable without invalidating or otherwise affecting the remaining provisions of the Agreement.

32. ENTIRE AGREEMENT

- 32.1 This Agreement constitutes the complete and exclusive agreement between the Parties with respect to the subject matter hereof, superseding and replacing any and all prior agreements, communications and understandings, both written and oral, regarding such matter. There are no other warranties, agreements or representations between the Parties except as expressly set forth herein.

IN WITNESS WHEREOF this Agreement has been executed on behalf of Her Majesty the Queen in right of Canada by an officer duly authorized by the Minister of Natural Resources and on behalf of the Proponent, by an officer duly authorized on its behalf.

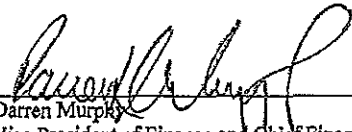
HER MAJESTY THE QUEEN IN RIGHT OF CANADA

MAY 04 2010
Date

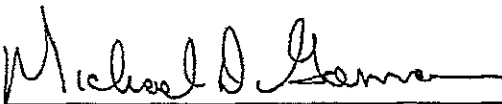

Christine Donoghue, Assistant Deputy Minister
Energy Sector, Natural Resources Canada

NB POWER HOLDING CORPORATION

April 22, 2010
Date


Darren Murphy
Vice President of Finance and Chief Financial Officer

April 22, 2010
Date


Mike Gorman
Vice President of Corporate Services
Legal and Shared Services

SCHEDULE A

To the Agreement between

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

And

NB Power Holding Corporation**STATEMENT OF WORK****1. PROJECT TITLE:****The Maritime Provinces Customer Load Control Demonstration for Wind Integration****2. BACKGROUND:**

Wind power has been identified and demonstrated as a technology that will provide a significant contribution to greenhouse gas reduction. The Maritime Provinces have world-class wind power potential. Wind power production is intermittent by nature. In power systems, the production of electricity by power generators must instantaneously equal the consumption by load. To accommodate the intermittent nature of wind power, other generation sources must be available to follow the net effect of variation in load and wind power production. This load following service is termed an ancillary service.

A consortium of Maritime utilities, including NB Power Holding Corporation, Nova Scotia Power Incorporated, Maritime Electric Limited and Saint John Energy, as well as the University of New Brunswick are proposing an innovative technology cluster to provide ancillary services for wind integration, by controlling commercial and residential loads. The primary demonstration objective is to determine if load control can provide for more economical integration of wind rather than expensive supply side options to be built in the future. To the proponent's knowledge, this has never been done before. With the proposed technologies, customer loads will be directly controlled by the utility in an aggregated manner that minimizes the effect on individual customers. This capability is enabled by the emerging communication and advanced control technologies of the Smart Grid.

Currently wind installed on the Maritime system is as follows:

164 MW in PEI
195 MW in NB
115 MW in NS

Over the next 15 years, the Maritime region could potentially have the highest penetration of installed wind capacity in the country. However resources in the Maritime Provinces to provide ancillary services are limited, unlike some jurisdictions with vast hydro and storage resources. The lack of ancillary services will be a limiting factor in the amount of wind that can be added to the Maritime power system. Ancillary services today are provided by on-line generators that have the capability to vary their output to follow wind and load, as well as by off-line generators that can be brought on-line quickly as required.

The intended outcomes of this project are to demonstrate emerging communications and advance control technologies by (1) integrating the aggregated control of a selected group of commercial and residential loads, (2) implementing with power system operation to provide ancillary services for wind integration, and (3) developing appropriate business practices to encourage customers' participation in demand response programs for the benefits of wind integration, greenhouse gas reduction, cost saving and power system efficiency.

Finally, the Maritime Consortium members agree the key drivers for the project include some of the following considerations:

- 1) To expand our ancillary service options to facilitate wind integration on our system.
- 2) To reduce greenhouse gas emissions – and to respond to impending environmental regulation.
- 3) To prepare for convergence of customer interaction and smart grid technologies.
- 4) To respond to strategic national and regional priorities for research and collaboration.
- 5) To build a business case for smart grid technologies.

3. OBJECTIVE/PURPOSE:

The primary objectives of the project are:

- Evaluate if load control is a cost effective and reliable ancillary service to dispatch net requirements.
- Evaluate load control performance in response to measured and forecasted wind power.
- Evaluate the customers' role and their acceptance of utility control for the purposes of renewable energy integration.

The project's secondary objectives are:

- Develop Smart Grid technologies that include demand response concepts and wind energy forecasting tools that will result in cost savings and operational efficiencies for Maritime power utilities.
- Articulate the costs to install the new technologies and refine the business case and technological capability for scalability and a broader application of load control.
- Determine customer load potential and best load characteristics for Demand Response.
- Evaluate the role and acceptance of customers utility load control.
- Determine additional benefits from 2-way communications such as innovative rate design.
- Determine additional benefits/applications of the smart grid configuration for Maritime utilities.

4. DESCRIPTION/SCOPE (STATEMENT OF WORK):

The work to be undertaken for this project is summarized in the following table:

PHASE ONE: PROJECT DESIGN AND CUSTOMER ENROLLMENT April 2010-March 2011			
	Project Activity	Description	Outputs
1			
1.a	Project Management and Business Case Development	Establish a Project Management Office to manage risk and provide single contact point. Develop business case for the System Operator (SO) and the regulator to evaluate the economics and reliability of load control as an ancillary service.	• Business Case Baseline Report - outlining cost drivers for ancillary service and wind/renewable energy integration.
1.b	Customer Engagement and Customer Program Design	Evaluate customer reaction to load control. Determine optimum customer load opportunity and incentives to affect customer behavior. Design customer programs for each utility. Enroll customers and perform preliminary audits.	
1.c	Communications backhaul and AMI	Evaluate design and technology options for backhaul and AMI considering the integration of existing AMI infrastructure.	
1.d	Software development and System Integration	Develop the following key software platforms: • Wind and wind production forecast appropriate for Maritime climate • Optimization algorithm providing the ability to integrate and optimize demand management and demand response system with generation. • Test load algorithms • Complete preliminary IT architecture design.	
1.e	Load Control Equipment and Installation Process	Select technical partner(s) Purchase equipment and infrastructure. Train installation team Install proposed technology solution in the	

1.f	Testing, Production and Reporting	demonstration buildings	
		Run pilot at commercial and residential demonstration sites. Collect data, and optimize technological process improvement.	Phase 1 Demonstration Report - providing an overview of project design/architecture, customer enrollment program and response, system integration issues, technology development, installation planning and next steps for Phase 2.

PHASE TWO: TECHNOLOGY INTEGRATION			
April 2011- March 2013			
	Project Activity	Description	Outputs
2			
2.a	Project Management and Business Case Development	Evaluate how well load control will achieve desired goals and at what cost using learnings from phase 1. Benchmark pilot performance against load/capacity curve. Update SO and regulatory agencies.	
2.b	Customer Engagement and Customer Program Design	Finalize customer satisfaction and feedback mechanism. Evaluate customer response to new technology	
2.c	Communications backhaul and AMI	Site surveys and propagations studies will be completed. Work will be underway to allow for broader deployment of load control and data exchange between customer and utility. Microwave equipment purchase, installation and commissioning.	
2.d	Software development and System Integration	Implement software and hardware for aggregated load control of commercial and residential and commercial loads. Determine what software and hardware is required to integrate with System Operator. Testing to complete system including times to utility systems/ testing smart meters, loading of meter readings in databases and interface with utility billing system	Final Technology Selection Report
2.e	Load Control Equipment and Installation Process	Scale the load control installation across Maritime pilot. Deploy all residential and commercial smart controllers through Maritime demonstration.	
2.f	Testing, Production and Reporting	Completed business practice / and system integration between utility and system operator. Ongoing data collection and technological process improvement to support the end-of-project business case.	- Complete two annual reports spanning Phase 2: - Report One: 2011/2012: An overview of project design/architecture, customer response, system integration issues, technology development, installation, adjustments made/process improvement and next steps for Phase 2.

		• Report Two: 2012/2013: A summary of production strengths and weaknesses, describe integration of solution, report on optimum customer loads, and next steps for Phase 3.
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PHASE THREE: PRODUCTION AND EVALUATION April 2013-March 2014			
	Project Activity	Description	Outputs
3			
3.a	Project Management and Business Case Development	Ongoing activities including Executive Oversight meetings, and risk assessments. Present findings to various stakeholders. Confirmation from SO that load control is an acceptable economic and reliable ancillary service. Report to regulatory agencies.	
3.b	Customer Engagement and Customer Program Design	Evaluate load control as a broader customer program.	
3.c	Communications backhaul and AMI	Consider ongoing broader deployment implication as it relates to communication infrastructure and data management requirements.	
3.d	Software development and System Integration	Refinement and enhancement of software tools as required. Evaluate technical performance and determine improvement opportunities for large scale deployment.	
3.e	Load Control Equipment and Installation Process	Final Data Collection and Analysis	
3.f	Testing, Production and Reporting	Review one year of production to make conclusions on refinement opportunities and ability for broader deployment.	• Business Case for scalability of load control for wind integration. • Phase 3 Report • Final Report

[illegible]

6. BENEFITS TO STAKEHOLDERS: UTILITY, CUSTOMERS AND ENVIRONMENT:

Economic Potential:

- Defer new transmission infrastructure costs to accommodate contingencies
- Provide additional ancillary service options to economically dispatch net requirements.
- Further extend the benefits of the smart grid technologies for cost savings and power system efficiency, such as peak shaving and optimal dispatch.
- Improve the ability to deploy technology without need of hard wiring at the buildings and back to utility control room.
- Position Canadian businesses as world-leaders in renewable energy integration and load control technology.
- Avoid cost for new supply-side options.

Environmental Potential:

- Potential to integrate more wind power, with displacement of greenhouse gas emissions
- Avoid the use of thermal power plants to provide ancillary services, thus reducing greenhouse gas emissions of these plants.
- Avoid cost for new supply-side options / and avoided cost of new environmental footprint / land base impact to build new supply side options.

BENEFITS TO CANADA:

Strategic National Potential:

- Expand similar technologies into other Canadian jurisdictions to facilitate the integration of wind capacity in Canadian power systems.
- Export the demonstrated technologies to USA and other countries to facilitate higher level of wind penetration.
 - on-grid community energy projects,
 - off-grid remote and Northern communities.
- Advance smarter more reliable grid based renewable generation, a key area of interest covered by the US-Canada Clean Energy Dialogue
- Strategically aligns with the goals of the Federal Government's Atlantic Energy Gateway.
- Demonstrate a strong partnership representing all stakeholders of power industry and wind industry sectors.
- Present a model of strategic alliance of all stakeholders, working towards the goals of integrating high-penetration wind into power systems, and achieving social, environmental and economic benefits.

SCHEDULE B

To the Agreement between

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

And

NB Power Holding Corporation**BUDGET AND ELIGIBLE COSTS**

1. Subject to the terms and conditions of this Agreement, the Proponent shall be reimbursed for Eligible Costs Incurred following successful completion of Project requirements. Eligible Costs shall be approved in accordance with Treasury Board Guidelines associated with the execution of the various tasks as described in Schedule A.
2. Subject to the terms and conditions of this Agreement, Canada shall make a contribution to the Proponent toward the Eligible Costs of the Project Incurred between May 19, 2009 and March 31, 2014, unless terminated earlier pursuant to the provisions of this Agreement.
3. **CANADA'S TOTAL OBLIGATION AND CONTRIBUTION**
The lesser of \$15,900,000.00 (Fifteen million nine hundred thousand dollars) or 50% of eligible project costs.
4. Subject to the terms and conditions of this Agreement, Canada's contribution shall be allocated to the Proponent in the following amounts by Fiscal Year:

BUDGET (1,000\$)	09/10	10/11	11/12	12/13	13/14	Total
CONTRIBUTORS						
NATURAL RESOURCES CANADA	-	3,071	8,633	3,249	947	15,900

Notwithstanding Article 25, provided Canada's total contribution of Fifteen Million Nine Hundred Thousand Dollars (\$15,900,000) is not exceeded, the funds allocated for each Fiscal Year may be adjusted by the Proponent as long as the Proponent submits a written request which must be approved in writing by the representative for Canada identified in Article 24. Please note that this request may not be granted if re-profiling of Government funding cannot be accommodated. In this case funds not used may be lost.

5. All contributors:

BUDGET (1,000\$)						
	09/10	10/11	11/12	12/13	13/14	Total
CONTRIBUTORS						
PROPONENT	930	546	1,164	1,806	1,132	5,578
NATURAL RESOURCES CANADA	-	3,071	8,633	3,249	947	15,900
PROVINCIAL GOVERNMENT	-	109	782	1,207	301	2,400
NOVA SCOTIA POWER	-	597	1,777	2,491	1,169	6,033
MARITIME ELECTRIC	-	39	106	140	69	354
SAINT JOHN ENERGY	-	92	59	104	130	384
UNIVERSITY OF NEW BRUNSWICK	-	126	353	133	39	651
TECHNOLOGY PROVIDER	-	145	408	153	45	751
TOTAL CONTRIBUTIONS	930	4,725	13,282	9,283	3,833	32,053

** Final contribution will be confirmed by September 30, 210 upon regulatory and corporate approval. If a lesser amount is allocated by the Proponent and other contributors, NB Power Holding Corporation will provide written notice to Canada. Canada will reduce its financial contribution commensurate with the contribution withdrawal of the Proponent and other contributors.

5. Budget Description by nature of the costs

BUDGET (1,000\$)						
	09/10	10/11	11/12	12/13	13/14	Total
Nature of Costs						
SALARIES AND BENEFITS	-	956	1,858	1,604	995	6,313
PROFESSIONAL, SCIENTIFIC AND CONTRACTING SERVICES	-	3,229	7,612	5,127	2,260	18,228
TRAVEL, MEALS & ACCOMMODATION	-	-	-	-	-	-
PRINTING SERVICES	-	13	16	16	24	69
DATA COLLECTION SERVICES, INCLUDING PROCESSING, ANALYSIS AND MANAGEMENT	-	-	-	-	-	-
LICENCE FEES AND PERMITS	-	-	-	-	-	-
FIELD TESTING SERVICES	-	-	-	-	-	-
EQUIPMENT AND PRODUCTS, INCLUDING DIAGNOSTIC AND TESTING TOOLS AND INSTRUMENTS	-	527	3,796	2,636	584	7,513
LABORATORY AND FIELD SUPPLIES AND MATERIALS	-	-	-	-	-	-
SUB-TOTAL OF ELIGIBLE COSTS	-	4,725	13,282	9,283	3,833	31,123
CEF's share @50%)	-	3,071	8,633	3,249	947	15,900
same as Legal template 5.1 a						
SALARIES AND BENEFITS	790	-	-	-	-	790
PROFESSIONAL, SCIENTIFIC AND CONTRACTING SERVICES	140	-	-	-	-	140
SUB-TOTAL OF INELIGIBLE COSTS	930	-	-	-	-	930
PROJECT TOTAL	930	4,725	13,282	9,283	3,833	32,053
CONTRIBUTORS						
PROPONENT	930	546	1,164	1,806	1,134	5,580
NATURAL RESOURCES CANADA	-	3,071	8,633	3,249	947	15,900
PROVINCIAL GOVERNMENT	-	109	782	1,207	301	2,400
OTHER GOVT (SPECIFY)	-	-	-	-	-	-
NOVA SCOTIA POWER	-	597	1,777	2,491	1,169	6,033
MARITIME ELECTRIC	-	39	106	140	69	354
SAINT JOHN ENERGY	-	92	59	104	130	384
UNIVERSITY OF NEW BRUNSWICK	-	126	353	133	39	651
TECHNOLOGY PROVIDER	-	145	408	153	45	751
TOTAL CONTRIBUTIONS	930	4,725	13,282	9,283	3,833	32,053

7. Notwithstanding Article 25, provided Canada's total contribution of \$15,900,000 (Fifteen Million Nine Hundred Thousand Dollars) is not exceeded, the funds allocated for any budget item described under nature of the costs may be adjusted by the Proponent up to and including a maximum of twenty percent (20%) without notice having to be provided to Canada. At the time of submitting a claim for payment, the Proponent must provide Canada with a revised budget. Any adjustment greater than twenty percent (20%) shall require the submission of a revised budget to Canada and written approval of the Minister in accordance with the methods described in Article 25 of this Agreement.

SCHEDULE C

To the Agreement between

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

And

NB Power Holding Corporation

REPORTS

A. Payment of Claims:

The Proponent shall provide the following documentation when submitting each claim for payment, which should be quarterly in a fiscal year.

- i) a financial report signed by the Chief Financial Officer or Duly Authorized Officer of the organization which outlines Eligible Costs Incurred by Nature of Costs;
- ii) an updated Project annual cash flow statement and budget;
- iii) a report of activities in sufficient detail including an updated Gantt chart to allow progress to be evaluated. This report will be headed by an executive summary that contains answers to the following questions:
 - 1) Is the Project on schedule?
 - 2) What is the percentage of total tasks completed? Is the Project on budget?
 - 3) What is the percentage of budget spent to date?
 - 4) Are there any concerns that Canada, as your funding collaborator, should be made aware of? If so, elaborate and explain.

Subject to the terms and conditions of this Agreement, if the Proponent cannot submit a claim for payment on or before March 31 of a Fiscal Year, the Proponent shall, no later than April 7th, provide the Minister with a signed statement of anticipated Eligible Costs Incurred up to March 31, in order for the Minister to establish a Payable at Year-End.

B. Annual reports

With each of the annual financial reports, the following information will be provided by NB Power Company:

- i) An additional report depicting how the activities outputs of the Project have been contributing to the overall objectives of the Clean Energy Fund program. NRCAN will supply a template with the required format of the report.
- ii) Load profile data as described in the annual report template, and formatted as per the data reporting format template to be supplied by NRCAN.

C. Final Reports (Financial and Progress/Technical):

- i) The Proponent shall submit a financial report that shall demonstrate how the contribution was spent. As specified in the Paragraph 12.2 of this Agreement, the Proponent shall provide the Minister with a declaration as to the total amount of contributions or payments received in respect of the Project.
- ii) The Proponent shall provide a final narrative report to describe how its activities have contributed to the achievement of the benefits of the Project as described in Schedule A.

The final report will contain enough descriptive, technical and energy, environmental and cost benefits information that it will be suitable for publication as a Technology Transfer item on its own and/or could be used as the basis for a fact sheet that would be prepared by others. A draft copy of the Final Report will be due on or before April 30, 2014. The final version of the report will be due on or before May 31, 2014. It will contain but not be limited to:

- Executive Summary
- Introduction
- Background
- Objectives
- Schematics
- Descriptions of the system and its applications
- A review of the results of the Project with comparisons of the achievements with the deliverables and of the work completed with the major work elements, with explanations of any deviations.
- A description of the benefits that have or will accrue as a result of the Project including energy efficiency, environmental impact, costs and paybacks, and any other appropriate measures such as productivity and quality improvements.
- A final Project cost table

In addition, the Proponent will write a fact sheet about the study, including graphics, photos, and schematics from material included in the final report. The fact sheet will be posted on the NRCan website.

D. Follow-on reports (Outcome reports)

As part of the evaluation of this project, the following information will be required in the format of a report or presentation during the five years following the project completion:

- i) Once a year, for the five years following the completion of the Project, the Proponent shall submit an updated Outcome report. The same template as the annual report should be used to help generate the required information.
- ii) Once a year, for the five years following the completion of the Project, the Proponent shall submit updated load profile data as described in the annual report template, and provided in the format described in the Data Report format template supplied by NRCan.
- iii) Once a year, for the five years following the completion of the Project, the Proponent shall submit the economic benefits of the operation of load control as ancillary services.
- iv) Once a year, for the five years following the completion of the Project, the Proponent shall submit a survey of building and residential participants' satisfaction.
- v) Measurement and Verification of the benefits of load control for load following, due no later than May 31, 2015.

Notwithstanding Section 6.3 of the Agreement, a component of the final holdback claim of \$100,000 will be held until receipt of all Follow-on reports.

E. Presentation of Results

The Proponent will make a best effort to present the findings of this demonstration project to the Industry either by a presentation in an appropriately related conference or by other means of information dissemination. Please include the presentation of results in the relevant section of the annual and outcome reports.

SCHEDULE D

To the Agreement between

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

And

NB POWER HOLDING CORPORATION

CERTIFICATION OF COSTS INCURRED AND PAID

1. Pursuant to Article 6 of this Agreement, the Proponent must submit, no later than April 30, 2014, the following certification in writing on company letterhead and signed by the duly authorized officer as follows.

"All claims for payment submitted to Canada for the reimbursement of Eligible Costs of the Project have been Incurred and Paid by NB Power Holding Corporation, ("Proponent") as of the date of this certification by the undersigned and all supporting documents to this effect have been kept in our records and will be made available to the Minister (NRCan) upon request."

"I _____ an officer, of NB Power Holding Corporation, duly authorized on behalf of the Proponent hereby represent and warrant that the above noted declaration is true and accurate. I understand that if, in the opinion of the Minister, there has been a misrepresentation or a breach of this warranty, the Minister could place the Proponent in default of the terms, conditions or obligations of the Agreement, and may exercise the Minister's right to terminate this Agreement, and direct the Proponent to repay forthwith all or any part of the monies paid by Canada pursuant to this Agreement."

SCHEDULE E

To the Agreement between

HER MAJESTY THE QUEEN IN RIGHT OF CANADA

And

NB POWER HOLDING CORPORATION

NB Power Holding Corporation Clean Energy Fund Proposal dated March 15, 2010

Schedule "C"

Deliverables

The Federal Contribution Agreement stipulates the following deliverables and schedule for the Project:

Phase One

Fiscal Years 2010 and 2011

- Business case baseline report specifying cost drivers for ancillary service and wind/renewable energy integration.
- Phase 1 implementation Demonstration report providing an overview of Project design/architecture, customer enrollment program and response, system integration issues, technology development, installation planning and next steps for Phase 2.

Phase Two

Fiscal Years 2011, 2012, and 2013

- Complete two annual reports spanning Phase 2:
- Report One: 2012/2013:
Provide an overview of Project design/architecture, customer response, system integration issues, technology development, installation, adjustments made/process improvement and next steps for Phase 2.
- Report Two: 2013/2014
Provide a summary of production strengths and weaknesses, describe integration of solution, and report on optimum customer loads.

Phase Three

Fiscal Years 2013 and 2014

- Completion of final report outlining customer, New Brunswick System Operator (the "NBSO") and regulator response, including a business case for scalability of load control for wind integration.

Each of the Parties deliverables under this Agreement (as further described below) will roll up into and be accredited toward the fulfillment of NB Power's deliverables as required under the provisions of the Federal Contribution Agreement.

Each of the Parties' project scope, schedule and final deliverables must be reviewed by the Working Group (the "Working Group" is further defined in the attached Schedule "D") by no later than December 31, 2010 to ensure their alignment with the requirements of the Project and the Federal Contribution Agreement. In addition, each of the Parties' project scope, schedule and deliverables must be approved by NB Power and reviewed by the Executive Oversight Committee prior to funding flow-through as contemplated in

Section 5 of the Agreement. The Parties' project scope, schedule and deliverables must be approved by NB Power by December 31, 2010¹.

Deliverables relating to common services such as project design and information technology integration will be the responsibility of the Project Management Office (the "Project Management Office" is further defined in the attached Schedule "D"). The Project Management Office will work with each of the Parties to deliver the common services required to enable each of the Parties to fulfill their respective project scope, schedule and deliverables. The majority of common costs will be negotiated by the Project Management Office, for the benefit of the Parties, with professional service providers in fixed cost contracts, whenever possible. "Common costs" include those cost associated with project management, and corporate services related to fulfillment of Federal Contribution Agreement. UNB, as primary researcher, is deemed by the Parties to be a common cost. Any and all non-fixed cost professional service contracts must first be approved by the Working Group and the Executive Oversight Committee, prior to being entered into. In the event that cost overruns are anticipated in relation to delivery of common services, they must first be approved by the Executive Oversight Committee prior to being incurred by the Project Management Office.

The Parties respective project scope, schedule and deliverables under the Agreement are as follows:

- NSPI will complete load control installation of up to 1500 residential and 150 commercial sites, or a lesser or greater volume of site installations based on its budget actuals. Except as otherwise provided herein, regardless of NSPI's project scope or deliverables, the maximum amount of the federal Contribution that may become due and payable to NSPI is \$3,234,989 based on the Fairness Formula (the "Fairness Formula" is further defined in the attached Schedule "E").
- Maritime Electric will complete load control installation up to 50 residential sites or a lesser or greater volume of site installations based on its budget actuals. Except as otherwise provided herein, regardless of Maritime Electric's project scope or deliverables, the maximum amount of the federal Contribution that may become due and payable to Maritime Electric is \$183,113 based on the Fairness Formula.
- The Commission will complete load control installation up to 100 residential sites or a lesser or greater volume of site installation based on its budget actuals. Except as otherwise provided herein, regardless of the Commission's project scope or deliverables, the maximum federal Contribution which may become due and payable to the Commission is \$200,552 based on the Fairness Formula.

¹ Project deliverables is defined as finalization of number of customer installations and selection of backhaul technology in the utility-specific project.

- NB Power will complete load control installation up to 600 commercial sites or a lesser or greater volume of site installations based on its budget actuals. Except as otherwise provided herein, regardless of NB Power's project scope and deliverables, the maximum amount of the federal Contribution that may become due and payable to NB Power is \$4,281,347 based on the Fairness Formula.
- UNB will be allocated up to \$1.2 million as primary researcher and will complete the following deliverables: complete wind forecast and wind power production forecast by April 2011; conduct, as a major party, technology assessment and selection at the Project Design phase; finalize load models for residential and support load models for commercial by September 2011; develop an aggregated load algorithm in collaboration with technology partner by September 2011; work, as a major party, with consortium members, technology partners, and system integrator on technology integration, implementation and operation at the Project Integration phase; and conduct final technical assessment and project evaluation as well as the final project report, in collaboration with other consortium members, at the Production and Evaluation phase. UNB will also prepare and submit a summary report to NB Power at Phase One, Phase Two (years one and two) and Phase Three.

Each Party shall also:

- be responsible for the full cost of overruns attributable to their respective utility projects; and
- provide NB Power with quarterly and annual reports detailing the progress and the outputs of its project scope, schedule and deliverables beginning in September 2010 and ending in September 2019

If a Party (other than UNB) adjusts its project scope and deliverables to be other than that as anticipated on the Effective Date, the Federal Contribution that may become due and payable to such Party will be adjusted to be commensurate with the adjusted project scope and deliverables (subject always to the foregoing maximum applicable to such Party), all to be calculated in accordance with the Fairness Formula.

Notwithstanding anything else contained herein, in the event that a Party (other than UNB) contributes a lesser project scope and deliverables than what is anticipated on the Effective Date, there may be an opportunity for the remaining Parties to increase their respective project scope and deliverables, thereby entitling such remaining Parties to obtain a portion of the Federal Contribution that exceeds the maximum payment otherwise payable to such Party.

The Parties acknowledge and agree that the Fairness Formula (as defined in Schedule "E") was developed to allocate the payments that may become due and payable to the Parties from the federal Contribution. Payments to the Parties will be based on actual expenses incurred by such Parties in accordance with the Fairness Formula.

Schedule "D"

GOVERNANCE

Considering the involvement of multiple jurisdictions and companies, as well as the technical and the financial risk involved, the development of an oversight committee was determined by the Parties to be the appropriate means of addressing such complexities and risks. Therefore, as part of the Proposal to the Minister, NB Power committed to establish an Executive Oversight Committee (the "Executive Oversight Committee"). This Schedule provides for the regulation of the affairs of the Executive Oversight Committee. A description of Mandate for the Program Director, Working Group and the Project Management Office is also provided.

Executive Oversight Committee:

Members

The Executive Oversight Committee shall comprise five (5) voting members: NB Power, NSPI, Maritime Electric, the Commission and UNB shall each appoint one voting member and one alternate voting member to the Executive Oversight Committee.

The New Brunswick System Operator shall be a non-voting member.

From time to time, each of NB Power, NSPI, Maritime Electric and the Commission may replace their respective members on the Executive Oversight Committee at their discretion.

It is proposed that the Executive Oversight Committee be chaired on a rotating basis between the utilities over the 5 year duration of the Project. The members shall appoint a chairperson (the "Chairman"), and the first Chairman of the Executive Oversight Committee shall be a representative of NSPI. Thereafter, the members shall appoint each successive Chairman on an annual basis.

Mandate

The Executive Oversight Committee will be responsible for monitoring Project status, addressing escalated issues, and carrying out the responsibilities assigned to it under the Agreement.

The Executive Oversight Committee members will also monitor their respective utility's project ensuring no misalignment to the overall Project.

Duties

The Executive Oversight Committee shall also perform the following duties:

- Develop a strategic vision for the Project and regional collaboration.
- Monitor Program Director performance relative to the Agreement.
- Review, recommend and monitor budget, implementation plan timelines and milestones as needed. Approve decisions related to common costs exceeding \$200,000. Any and all non-fixed cost professional service contracts must be approved by the Working Group and the Executive Oversight Committee prior to be entered into. In the event that cost overruns are anticipated in relation to delivery of common services, they must be approved by the Executive Oversight Committee prior to being incurred by the Project Management Office.
- Maintain and enhance a set of planning and implementation principles to help define the scope and charter of the Project.
- Approve the final total Project design ensuring overall synergies, optimization, while recognizing the unique business drivers of each utility-specific project.
- Review, approve and monitor communications needs and facilitate communication as needed.
- Assist in maintaining momentum and cooperative spirit.
- Act as spokespersons.
- Review and approve requests of significant modifications to the scope the Project objectives.
- Review, recommend and monitor budget, implementation plan timelines and milestones as needed.
- Monitor risk assessment
- Help identify and solicit Project resources.
- Resolve escalated issues in accordance with Section 21 of the Agreement.
- Approve the selection process for common vendors that will be administered through the Project Management Office.
- Ensure full leverage of federal funding. If a Party elects to proceed with a smaller project, or terminate participation, the Executive Oversight Committee will reassign the dollars to remaining Parties. NB Power must approve for contract fulfillment.

Voting and Quorum

The Executive Oversight Committee shall comprise five (5) voting members: NB Power, NSPI, Maritime Electric, Saint John Energy and UNB shall each appoint one voting member to the Executive Oversight Committee.

The New Brunswick System Operator shall be a non-voting member.

A quorum for the transaction/decision of business at any meeting must contain NSPI, NB Power and one (1) other member. A meeting may not be held in the absence of a representative from either NSPI or NB Power. Questions arising at any meeting of the members shall be decided by a majority of votes cast. In case of an equality of votes, the dispute resolution process as set out in the Agreement shall govern.

Meeting of Members

Place of Meeting: Meetings of members may be held at any place within the New Brunswick, Nova Scotia or Prince Edward Island as the members may from time to time determine or as the person convening the meeting may give notice. A meeting of the members may be convened by the Chairperson or the Program Director at any time.

Frequency of Meetings: The Executive Oversight Committee will meet quarterly in person and monthly by telephone. A schedule of meetings will be developed annually.

Notice: Notice of the time and place for the holding of any such meeting shall be delivered, mailed, or emailed no less than three (3) working days before the date of the meeting; unless notice is waived by the Chairperson.

Resolution in lieu of meeting: A resolution in writing signed by all members or signed counterparts of such resolution by all members entitled to vote on that resolution at a meeting of Executive Oversight Committee, is as valid as if it had been passed at a meeting of Executive Oversight Committee duly called, constituted and held. A copy of every such resolution shall be kept within the minutes of the proceedings of the Executive Oversight Committee.

Chair of Meetings : The Chairperson shall, if present, preside at all meetings of the Executive Oversight Committee. In the absence of the Chairperson, a meeting of members shall be Chaired by a member elected by the members present at said meeting.

Remuneration of Members

Members of the Executive Oversight Committee shall be remunerated by their respective organization. Costs incurred for travel, expenses and time will offset Agreement cost commitments.

Annual Report

An annual report will be tabled by the Chairperson of the Executive Oversight Committee. The report will be in partial fulfillment of the Federal Contribution Agreement.

Program Director:

NB Power will appoint a Program Director to oversee the Project. The Program Director will be accountable to the Executive Oversight Committee for fulfillment of the Project scope, deliverables, performance milestones and funding-flow through arrangements with each of the Parties to 2014. The Program Director will be responsible for ensuring that the Project is designed reflective of each Party's specific project, yet ensuring that key opportunities are leveraged to maximize cost effectiveness, learning / performance improvement throughout the demonstration and that public and stakeholder relations are strategically advanced.

Major responsibilities of the Program Director include:

- 1) To liaise with the Minister and manage contract requirements, and with other Government departments as required, as it relates to the Project.
- 2) To provide secretariat services for the Executive Oversight Committee providing status reporting, risk assessment and to lead external communications.
- 3) To complete the annual report.
- 4) To ensure the work achieves the outcomes specified in the Federal Contribution Agreement and manage integration of business, research and demonstration activities.
- 5) To ensure the Project is delivered on time, on budget, and consistent with objectives and ensuring regional collaboration is promoted.
- 6) To identify channels to share regional learning and to advance networks or existing knowledge in the marketplace that assists Project.
- 7) At Project commencement, to lead discussions for common technology/telecommunications partners, supported by procurement processes established in the Project Management Office.
- 8) To liaise daily or as required with the PMO.
- 9) To sit on the Working Group and participate in quarterly meetings or as required.
- 10) Complete the business case based on results of the demonstration project.
- 11) Collaboration with the NBSO and UNB to ensure Project objectives are met.
- 12) Interface with regulatory agencies.
- 13) Identify and provide common training needs as requested by the Utility Project Managers.
- 14) Engage auditors to perform periodic audits addressing Project risks and process improvement.
- 15) To identify and solicit project resources as required.
- 16) Responsibility for bringing forward to the Executive Oversight Committee for information purposes, other budget items, including an update on individual project status by each Party.

Working Group

A Working Group will be established representing senior-level positions from each of the Parties. The Working Group will be mandated to finalize overall Project design and monitor budget and deliverables. The Working Group will be chaired by the Program Director.

Other duties of the Working Group include:

1. Finalization of common cost service providers and approval of selection.
2. Leveraging where cost savings and efficiencies are possible for other Project common costs.
3. Ensuring the Parties project scope, schedule and deliverables remain on-time and on-budget as set out in the Agreement and in the Federal Contribution Agreement.

4. To develop and maintain a strategic vision for the Project.
5. To develop a communications plan and protocol for the Project.
6. To report deliverables in an annual report to the Program Director.

Project Management Office

NB Power will establish a Project Management Office to provide common administration services for all Parties. This Office will be accountable to the Program Director to facilitate the Project at an operational level to ensure successful Project completion.

Major responsibilities of the Project Management Office are:

1. To provide administrative services such as:
 - Reporting as required to Program Director to fulfill the Federal Contribution Agreement and Executive Oversight Committee requirements.
 - Creation and updating of Project dashboards.
 - Financial analysis and budget tracking
 - Disburse funding to the Parties based on the Agreements and milestone completion.
 - Provide record keeping for the Project.
2. Establish common standards and processes for the Project to be used by all Parties.
3. To lead and provide secretariat services for the Working Group and ensure regular engagement of the Working Group.
4. Ongoing support of the utility Project Managers with operational issues and the removal of barriers.
5. Accountable for acquiring the services of consulting expertise related Smart Grid Project Management to assist in the design of the Project to ensure that opportunities are leveraged to maximize cost effectiveness, learning / performance improvement through demonstration and public and stakeholder relations.
6. Accountable for acquiring the services of experienced Demand Response provider to support customer engagement.
7. Accountable for acquiring the services of experienced Integrator to ensure that information technology provided by all of the Parties works effectively as a whole and achieves the goals of the Project.
8. Accountable for establishing a baseline of ancillary service and spinning reserves at escalating levels of wind generation.
9. To manage the procurement process for the technology and telecommunication partners or other common services.
10. The Parties may require a third party project consultant to assist in the overall program delivery of the Project. Technical expertise, operational insights and systems integration experience in helping the Utility Project Managers implement the new technologies, optimize critical resources and manage risk, ensuring the Project objectives are met and evaluation of scalability is completed. The third party would liaise on overall project delivery with the Program Director and Project Management Office and would provide technical integration support for the Project Directors.

Utility Project Managers:

Save and excepting UNB, the project managers representing each Party, (the “Utility Project Managers”) will manage the Project objectives on behalf of their respective utilities. In particular, the Utility Project Managers will:

- plan, organize, direct and control all of their respective utility resources to achieve the agreed Project objectives.
- liaise regularly with the Project Management Office/ on technical system integration issues and performance as stipulated in the Agreement.
- form a Working Group, as well as sub-committees, as required to advance technical issues related to delivering on the scope of the Project.
- be responsible to monitor utility financial contributions and fulfill reporting requirements as outlined in the Agreement.

The Utility Project Managers may choose to utilize common resources provided through the Project Management Office to achieve the agreed Project objectives.

Other major responsibilities of the Utility Project Managers include:

- 1) Negotiate on behalf of their respective utility, any required changes to scope or activities material to Project.
- 2) Develop customer interface and program
- 3) Budget administration and procurement for their respective utility specific project.
- 4) Contract administration with technical service provider
- 5) Issues management.
- 6) Cyber security planning, assessment, implementation, and operations
- 7) Provide update to the Executive Oversight Committee member which represents their utility, as required.

Project Manager UNB

The UNB Project Manager will:

- plan, organize, direct and control all of UNB resources to achieve the agreed Project objectives.
- liaise regularly with the Project Management Office/ on technical system integration issues and performance as stipulated in the Agreement.
- form a Working Group, as well as sub-committees, as required to advance technical issues related to delivering on the scope of the Project.
- be responsible to monitor UNB financial contributions and fulfill reporting requirements as outlined in the Agreement.

The UNB Project Manager may choose to utilize common resources provided through the Project Management Office to achieve the agreed Project objectives.

Other major responsibilities of the UNB Project Manager include:

- 1) Issues management.

- 2) Lead the tasks as the primary research of the project for UNB deliverables in wind forecast and aggregated load control technologies, technology selection and project design, technology integration and implementation, project evaluation and final reporting.
- 3) Provide update to the Executive Oversight Committee member which represents UNB, as required.

SCHEDULE “E” CONTRIBUTIONS

The Federal Contribution Agreement stipulates that the maximum Contribution per project can not exceed 50% of total Project costs.

If the Project costs are less than \$32,053,000, the funding eligibility for each Party will decrease from the maximum awarded amount of \$15,900,000. Please see Section D below for a detailed explanation of the funding scenarios.

A. Funding Contributors

Table 1 below provides a summary of all funding contributors to the Project.

All funding contributed to the Project from Natural Resources Canada (“NRCAN”), University of New Brunswick (“UNB”) and technology partner is considered to be shared funding for the benefit of all Parties (collectively, “Shared Funding”). The maximum total of Shared Funding will be \$17,300,000 (comprising \$15,900,000 from NRCAN, \$650,000 from UNB and \$750,000 from technology partner. Shared Funding may be increased if additional federal funding becomes available to the Utilities.

Contributions from each Party are subject to confirmation if NSPI and/or Maritime Electric do not receive their required regulatory approvals on or before November 30, 2010. In the event the amount of any contribution from any contributor is less than the amount set out in Table 1, NB Power will notify the Minister. The Minister will reduce its Contribution under the Federal Contribution Agreement by an amount equal to the reduction in contribution from the Party(s).

Table 1 Funding Contribution

BUDGET (1,000\$) / YEAR OF CONTRIBUTION						
	2009/10	2010/11	2011/12	2012/13	2013/14	Total
CONTRIBUTORS						
NEW BRUNSWICK POWER	930	546	1,164	1,806	1,132	5,578
NATURAL RESOURCES CANADA	-	3,071	8,633	3,249	949	15,902
PROVINCIAL GOVERNMENT OF NB	-	109	782	1,207	301	2,400
OTHER GOVT (SPECIFY)	-	-	-	-	-	-
NOVA SCOTIA POWER ("NSPI")	-	597	1,777	2,491	1,169	6,033
MARITIME ELECTRIC ("MECL")	-	39	106	140	69	354
COMMISSION	-	92	59	104	130	384
UNIVERSITY OF NEW BRUNSWICK	-	126	353	133	39	651
TECHNOLOGY PARTNER	-	145	408	153	45	751
TOTAL CONTRIBUTIONS	930	4,725	13,282	9,283	3,833	32,053

B. Common Costs and Other Utility Costs

For the purposes of funding allocation among the Parties, project costs are categorized as either “Common Costs” or “Other Utility Costs”.

“Common Costs” are costs for “common services” provided by a Party in connection with the Project for the benefit of all Parties. For example, costs associated with the provision of the Project Management Office, Customer Engagement, Technology development, Integration Services and Production and reporting are considered “Common Costs”.

“Other Utility Costs” are all other Project costs that are not associated with the common services and which are not for the benefit of all Parties.

A summary of Common and Other Utility Costs is provide in Table 2

Table 2 “Common Costs” and “Other Utility Costs”

Project Component	Common Service Costs (\$Millions)	Other Service Costs (\$Millions)	Total (\$Millions)
Project Management	3.25	-	3.25
Legacy Project Management Contribution	0.424	-	0.424
Business Case/Stakeholder engagement	0.4	-	0.4
Customer Engagement	0.7	4.0	4.7
Technology development	2.324	-	2.324
System Integration	0.9	3.7	4.6
Pilot	.831	-	.831
Reporting (UNB/Consortium)	.574	-	.574
Telecommunications	-	5.25	5.25
Load Control installation	-	0.7	0.7
Residential Load Control	-	3.0	3.0
Commercial Load Control	-	6.0	6.0
Total (\$Millions)	9.403	22.65	32.053

Table 3 provides a breakdown of the Other Utility Costs for each of NB Power, NSPI, MECL and the Commission (collectively the “Utilities”) based upon the Project scope defined for each Party.

Table 3 Breakdown of Project Costs

	Other Costs	% of Total Other Costs
NB Power	\$12,275,000	54.2%
NSPI	\$9,275,000	40.9%
Maritime Electric	\$525,000	2.3%
Commission	\$575,000	2.5%

C. Funding allocation among Utilities– Fairness Formula

Funding contributions are to be allocated among the Utilities based upon the following principles:

- All Common Costs are to be paid from Shared Funding.
- After the payment of all Common Costs, the balance of the Shared Funding remaining (“Balance of Shared Funding”) will be allocated among the Utilities in proportion to the relative Project scope of each in accordance with the following formula (“Fairness Formula”):

Fairness Formula:

Shared Funding available to each of the Utilities = (Utility’s portion of Project scope) x (Balance of Shared Funding)

Where:

Utility’s portion of project scope = Utility’s Other Costs (see Table #3) / Total Other Costs for Project (e.g. \$22.65M)

Balance of Shared Funding = Total Shared Funding - Common Costs (i.e. \$17.3M - \$9.4M)

Example of Fairness Formula for Illustrative Purposes:

Shared Funding available to NSPI = (NSPI’s portion of Project Scope) x (Balance of Shared Funding)
 = (NSPI’s Other Costs/Total Other Costs of Project) x (Total Shared Funding – Common Costs)
 = (\$9.275M/\$22.65M) x (\$17.3M-\$9.4M)
 = (40.9%) x (\$7.9M)
 = \$3.23M

D. FUNDING SHORTFALLS

I. Optimal Funding Allocation

In the event of a shortfall in the amount to be contributed by one or more of the Utilities ("Shortfall"), there will be a corresponding reduction in the portion of the Shared Funding received from NRCAN and the Balance of the Shared Funding will be reallocated among the Utilities according to the revised Project scope, unless another Utility assumes responsibility for the Shortfall and increases its scope of the Project. In the event of a shortfall by a Utility, the other Utilities may apply to the Executive Oversight Committee to increase their respective share of the Project scope, thereby entitling them to obtain a portion of the Balance of Shared Funding that exceeds the maximum amount otherwise payable.

Table 4 attached hereto as Schedule "E-1" shows the optimal intended funding allocation scenario among the Utilities and the amount each Utility is required to contribute based upon total Shared Funding of \$17,300,000 and total Project costs of \$32,053,000.

II. Reallocation in Event of a Shortfall in Funding by a Utility

Table 5, attached hereto as Schedule "E-2", provides an example of the reallocation of the Balance of Shared Funding and Project scope among the Utilities where there is a \$1,000,000 shortfall in funding contribution by NSPI and a corresponding \$1,000,000 reduction in the contribution by NRCAN to Shared Funding.

Table 6, attached hereto as Schedule "E-3", provides an example of the reallocation of the Balance of Shared Funding and Project scope among the Utilities where there is a \$1,000,000 shortfall in funding contribution by NSPI which is made up by another Utility (in this case NB Power).

In the event additional federal funding becomes available to the Utilities, the Balance of the Shared Funding will increase and be allocated among the Utilities according to their respective Project scope. **Table 7, attached hereto as Schedule "E-4",** provides an example where there is an additional \$2,000,000 in Shared Funding made available to the Utilities.

SCHEDULE "E-1"

Table 4

The Maritime Provinces Customer Load Control Demonstration For Wind Integration
CEF Funding Allocation: Default Scenario

Total Shared Funding	
CEF Funding	\$15,900,000
Other (GE/UNB)	\$1,400,000
Other Future Federal funds	\$0
	<u>\$17,300,000</u>
Common Costs	
Other Costs	\$9,400,000
Total Project Costs	\$22,650,000

	Utility Other Costs	% Total Other Costs	Remaining Shared Funding	Net Cost	Existing	Utility Contribution	Utility Partner Contribution	Utility Contribution Shortfall
NB Power	\$12,275,000	54.2%	\$4,281,347	\$7,993,653	\$930,000	\$3,600,000	\$2,400,000	\$1,063,653
NS Power	\$9,275,000	40.9%	\$3,234,989	\$6,040,011		\$3,600,000	\$0	\$2,440,011
MECL	\$525,000	2.3%	\$183,113	\$341,887		\$500,000		-\$158,113
SJ Energy	\$575,000	2.5%	\$200,552	\$374,448		\$500,000		-\$125,552
Sub-Total	\$22,650,000	100.0%	\$7,900,000	\$14,750,000		\$8,200,000		

SCHEDULE "E-2"

TABLE 5

The Maritime Provinces Customer Load Control Demonstration For Wind Integration
 CEF Funding Allocation: Utility short funded by \$1M

Total Shared Funding	
CEF Funding	\$15,025,000
Other (GE/UNB)	\$1,400,000
Other Future Federal funds	\$0
	<u>\$16,425,000</u>
Common Costs	
Other Costs	\$9,400,000
Total Project Costs	<u>\$20,650,000</u>
	\$30,050,000

	Utility Other Costs	% Total Other Costs	Remaining Shared Funding	Net Cost	Existing	Utility Contribution	Utility Partner Contribution	Utility Contribution Shortfall
NB Power	\$12,275,000	59.4%	\$4,175,878	\$8,099,122		\$3,600,000	\$2,400,000	\$2,099,122
NS Power	\$7,275,000	35.2%	\$2,474,909	\$4,800,091		\$3,600,000	\$0	\$1,200,091
MECL	\$525,000	2.5%	\$178,602	\$346,398		\$500,000		-\$153,602
SJ Energy	\$575,000	2.8%	\$195,611	\$379,389		\$500,000		-\$120,611
Sub-Total	<u>\$20,650,000</u>	100.0%	<u>\$7,025,000</u>	<u>\$13,625,000</u>		<u>\$8,200,000</u>		

TABLE 6

Total Shared Funding	
CEF Funding	\$15,900,000
Other (GE/UNB)	\$1,400,000
Other Future Federal funds	\$0
	\$17,300,000
Common Costs	
Other Costs	\$9,400,000
Total Project Costs	\$22,650,000
	\$32,050,000

	Utility/Other Costs	% Total Other Costs	Remaining Shared Funding	Net Cost	Existing	Utility Contribution	Utility Partner Contribution	Utility Contribution Shortfall
NB Power	\$14,275,000	63.0%	\$4,978,918	\$9,296,082		\$3,600,000	\$2,400,000	\$3,296,082
NS Power	\$7,275,000	32.1%	\$2,537,417	\$4,737,583		\$3,600,000	\$0	\$1,137,583
MECL	\$525,000	2.3%	\$183,113	\$341,887		\$500,000		-\$158,113
SJ Energy	\$575,000	2.5%	\$200,552	\$374,448		\$500,000		-\$125,552
Sub-Total	\$22,650,000	100.0%	\$7,900,000	\$14,750,000		\$8,200,000		

SCHEDULE "E-4"

TABLE 7

The Maritime Provinces Customer Load Control Demonstration For Wind Integration
 CEF Funding Allocation: Additional Federal funds

Total Shared Funding	
CEF Funding	\$15,900,000
Other (GE/UNB)	\$1,400,000
Other Future Federal funds	\$2,000,000
	<u>\$19,300,000</u>
Common Costs	
Other Costs	\$9,400,000
Total Project Costs	<u>\$22,650,000</u>

	Utility Other Costs	% Total Other Costs	Remaining Shared Funding	Net Cost	Existing	Utility Contribution	Utility Partner Contribution	Utility Contribution Shortfall
NB Power	\$12,275,000	54.2%	\$5,365,232	\$6,909,768		\$3,600,000	\$2,400,000	\$909,768
NS Power	\$9,275,000	40.9%	\$4,053,974	\$5,221,026		\$3,600,000	\$0	\$1,621,026
MECL	\$525,000	2.3%	\$229,470	\$295,530		\$500,000		-\$204,470
SJ Energy	\$575,000	2.5%	\$251,325	\$323,675		\$500,000		-\$176,325
Sub-Total	\$22,650,000	100.0%	\$9,900,000	\$12,750,000		\$8,200,000		

Appendix 2 NRCAN Support Letter



Natural Resources
Canada

Ressources naturelles
Canada

Assistant Deputy Minister
Energy Sector

Sous-ministre adjointe
Secteur de l'énergie

Ottawa, Canada
K1A 0E4

December 5, 2010

Ms. Colleen Sweet
New Brunswick Power Corporation
515 King Street
PO Box 2000
Fredericton, NB E3B 4X1

Dear Ms. Colleen Sweet:

Subject: 062 SG - Customer Load Control Demonstration for Wind Integration

Thank you for your Project Proposal entitled "Customer Load Control Demonstration for Wind Integration" which was submitted to the Renewable Energy and Clean Energy Systems Demonstration component of the Clean Energy Fund (CEF) Program.

We have now completed the revision of the 178 proposals submitted to the CEF. I am pleased to inform you that your project has been recommended for funding by an Assistant Deputy Minister Panel and will proceed to the next stage of project review. We will be sending you some questions on the proposal and a revised level of effort may be required. We have assessed that the funding level for your proposal under the CEF Program would not exceed \$15,900,000.

It is very important that this information be kept **confidential** until further notice from Natural Resources Canada (NRCAN) before any public announcements are made.

Further discussions to confirm co-funding partners and to clearly define the project scope and the costs eligible for CEF funding will be required. This would subsequently be outlined in a Letter of Intent. During this time, you are to follow the requirements outlined in the *Canadian Environmental Assessment Act* in order to proceed further with the project. Following the signing of the Letter of Intent, a contribution agreement negotiation process would begin where amendments to the proposal may be required.

This funding consideration under the CEF Program is subject to a successful negotiation and signing of a written contribution agreement, and to the availability of federal appropriated funds.

Please note that **until a written contribution agreement is signed by both parties, no commitment or obligation exists on the part of NRCAN to make a financial contribution to your organization's project.** This includes any costs incurred or paid prior to the signing of the contribution agreement.

Canada 

Appendix 2 NRCAN Support Letter



Natural Resources
Canada

Ressources naturelles
Canada

Assistant Deputy Minister
Energy Sector

Sous-ministre adjointe
Secteur de l'énergie

Ottawa, Canada
K1A 0E4

If you are in agreement to proceed with the discussions, please contact Mr. Rob Brandon, Assistant Program Director, Office of Energy Research and Development by noon, Thursday, January 7, 2010. Mr. Brandon can be contacted via e-mail at Rob.Brandon@nrcan-rncan.gc.ca.

Again, thank you for submitting your proposal to the CEF Program.

Yours sincerely,

Christine Donoghue
Assistant Deputy Minister
Energy Sector
Natural Resources Canada