

POWER SHIFT ATLANTIC ATLANTIQUE

An energy research project • Un projet de recherche sur l'énergie

October 14, 2010

Natural Resources Canada - Clean Energy Fund Project

Canada 


Énergie NB Power

New Brunswick
Nouveau Brunswick
Be...in this place • Être...ici on le peut

Prince
Edward
Island
CANADA

MARITIME
ELECTRIC
A FORTIS COMPANY


NBSO
ERNB

Saint John
Energy


NOVA SCOTIA
POWER
An Emera Company


UNB

Project Overview

- Customer Load Control for Wind Integration

- Further enabling wind power to be part of Canada's GHG Reduction Plan (20% by 2020)
- One of 19 projects supported by NRCan's Clean Energy Fund
- Four Year, \$32M joint energy demonstration project
- Collaboration between government, utilities, and academia



Énergie NB Power

MARITIME ELECTRIC
A FORTIS COMPANY

NOVA SCOTIA POWER
An Enbridge Company

Saint John Energy

September 14, 2009



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GE Digital Energy
Multilin

NATURAL RESOURCES CANADA
CLEAN ENERGY FUND -
RENEWABLE AND CLEAN ENERGY
DEMONSTRATION PROJECTS

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

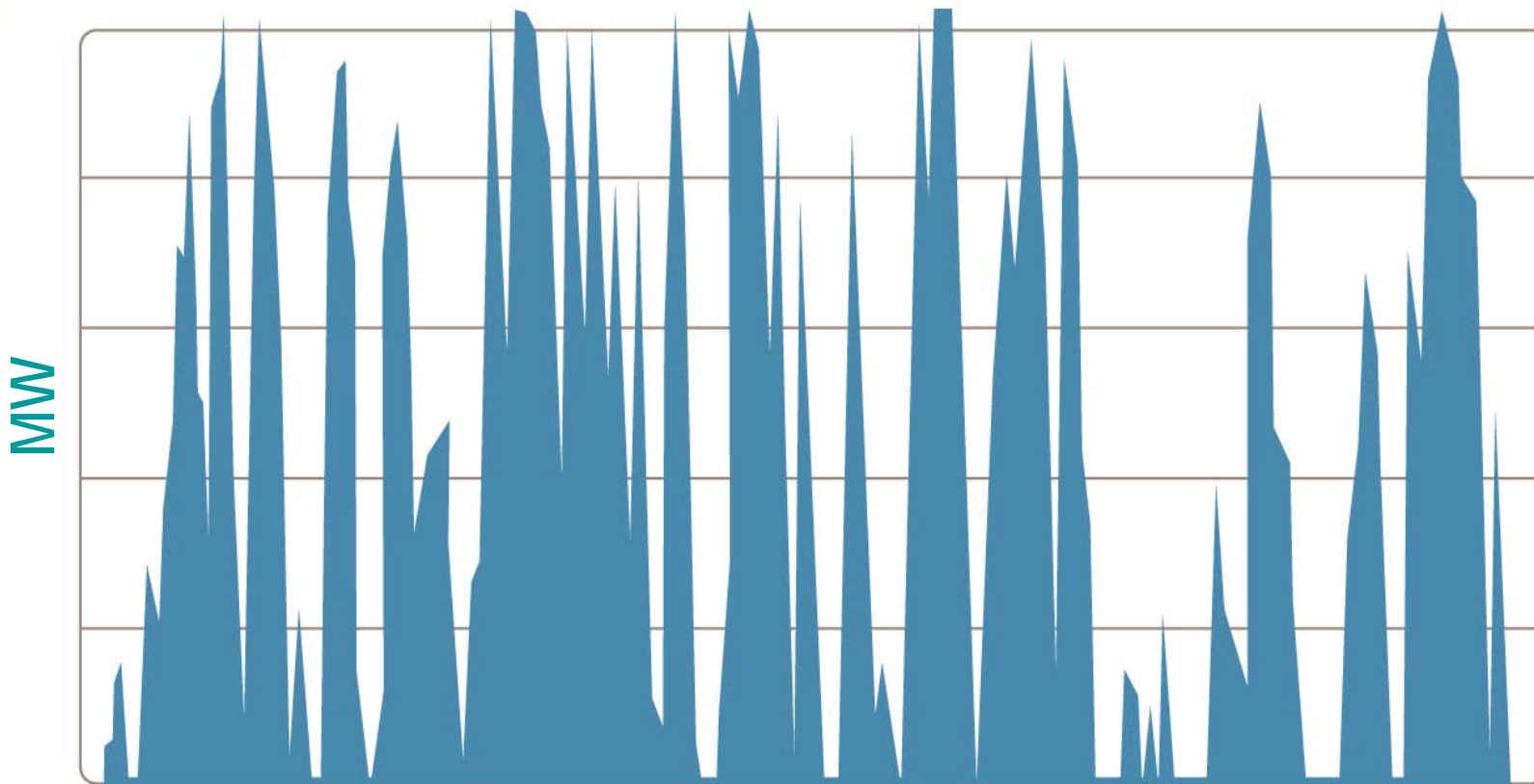
World-Class Wind Regime



North Cape wind farm, PEI Energy Corporation

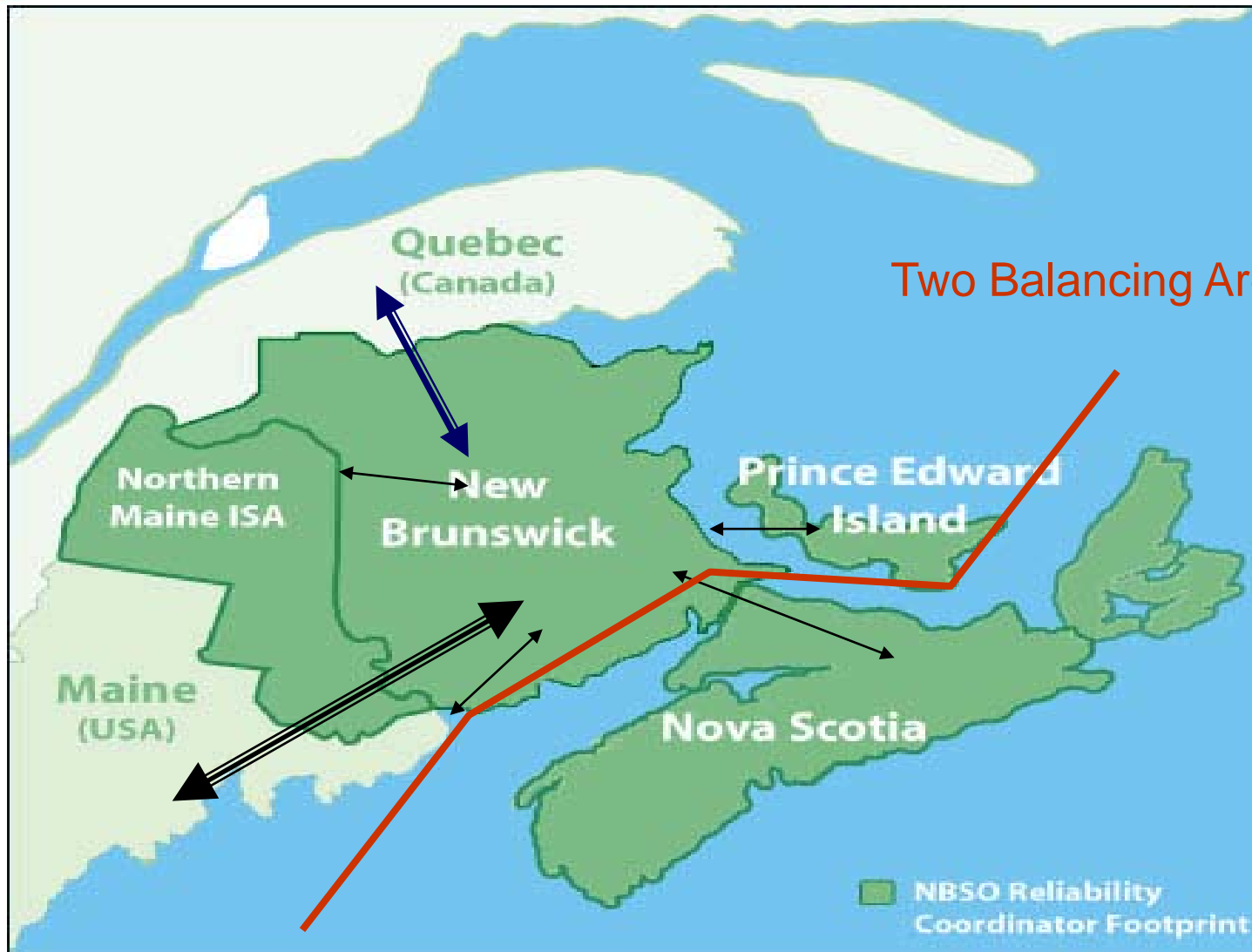
Typical Wind Power Production

“Limited ancillary service”



North Cape Wind Production for 1 Month

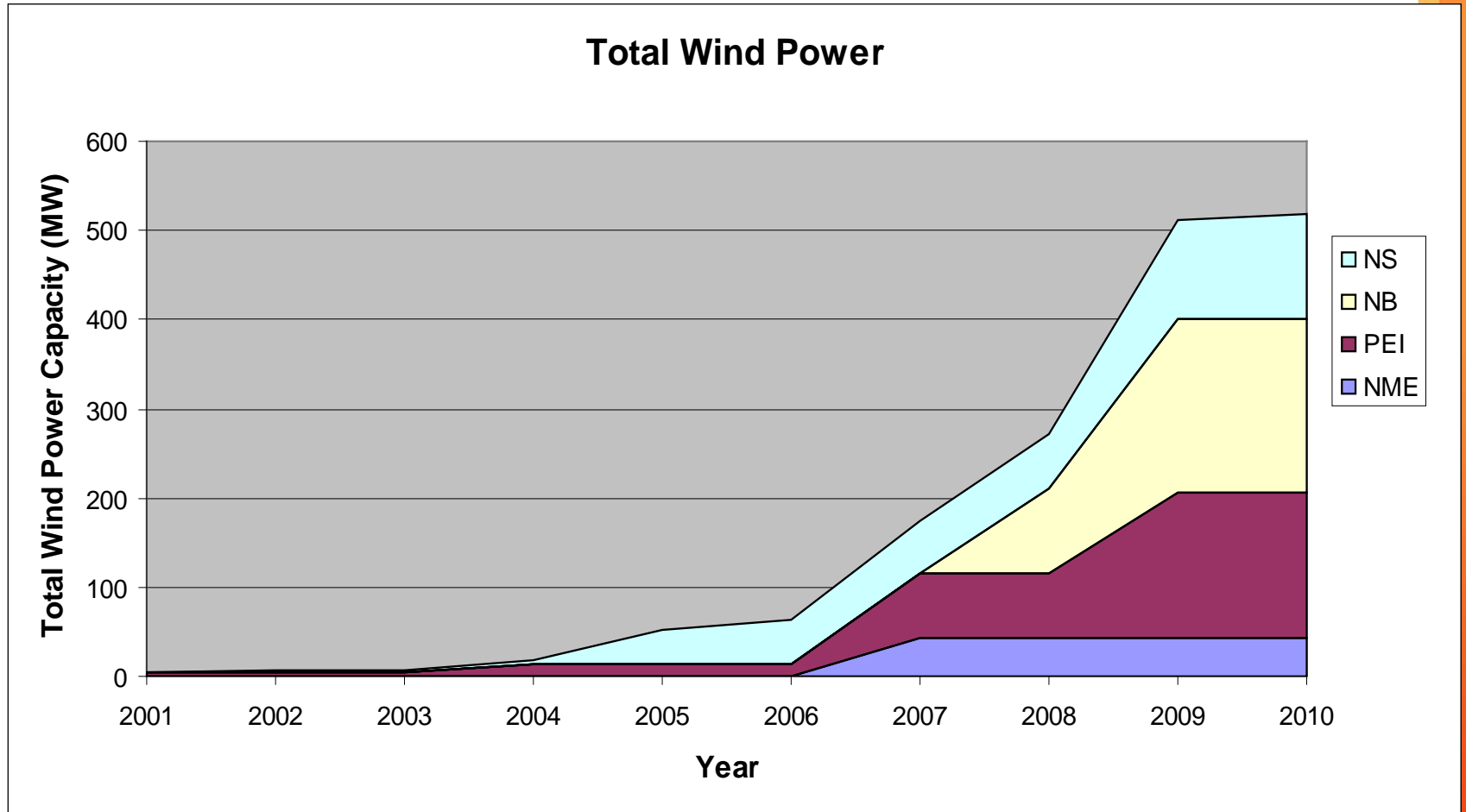
Maritimes Area Power System



Regional Wind Farm In-Service Dates

Date	Wind Farm / Province	Size	Total
New Brunswick (approximately 3000 MW peak load)			
Dec. 2008	Kent Hills	96 MW	
Nov. 2009	Caribou Wind Park	99 MW	195 MW
Prince Edward Island (approximately 200 MW peak load)			
Nov. 2001	North Cape Wind Farm	10.56 MW	
Jan. 2007	Eastern Kings Wind Farm	30 MW	
May 2007	West Cape Wind Farm	99 MW	
Dec. 2009	Summerside Wind Project	12 MW	
	Miscellaneous (3 sites)	12 MW	163.56 MW
Nova Scotia (approximately 2000 MW peak load)			
Jan. 2004	Pubnico Point	30.6 MW	
Dec. 2005	Lingan	15.6 MW	
Dec. 2009	Dalhousie Mountain Project	51 MW	
	Miscellaneous (15 sites)	20.66 MW	117.86 MW
Northern Maine (approximately 150 MW peak load)			
Mar. 2007	Mars Hill	42 MW	42 MW
		TOTAL	518.42 MW

Pace of Development



PowerShift Atlantic Goal

To expand our ancillary service options to integrate more wind into our production mix

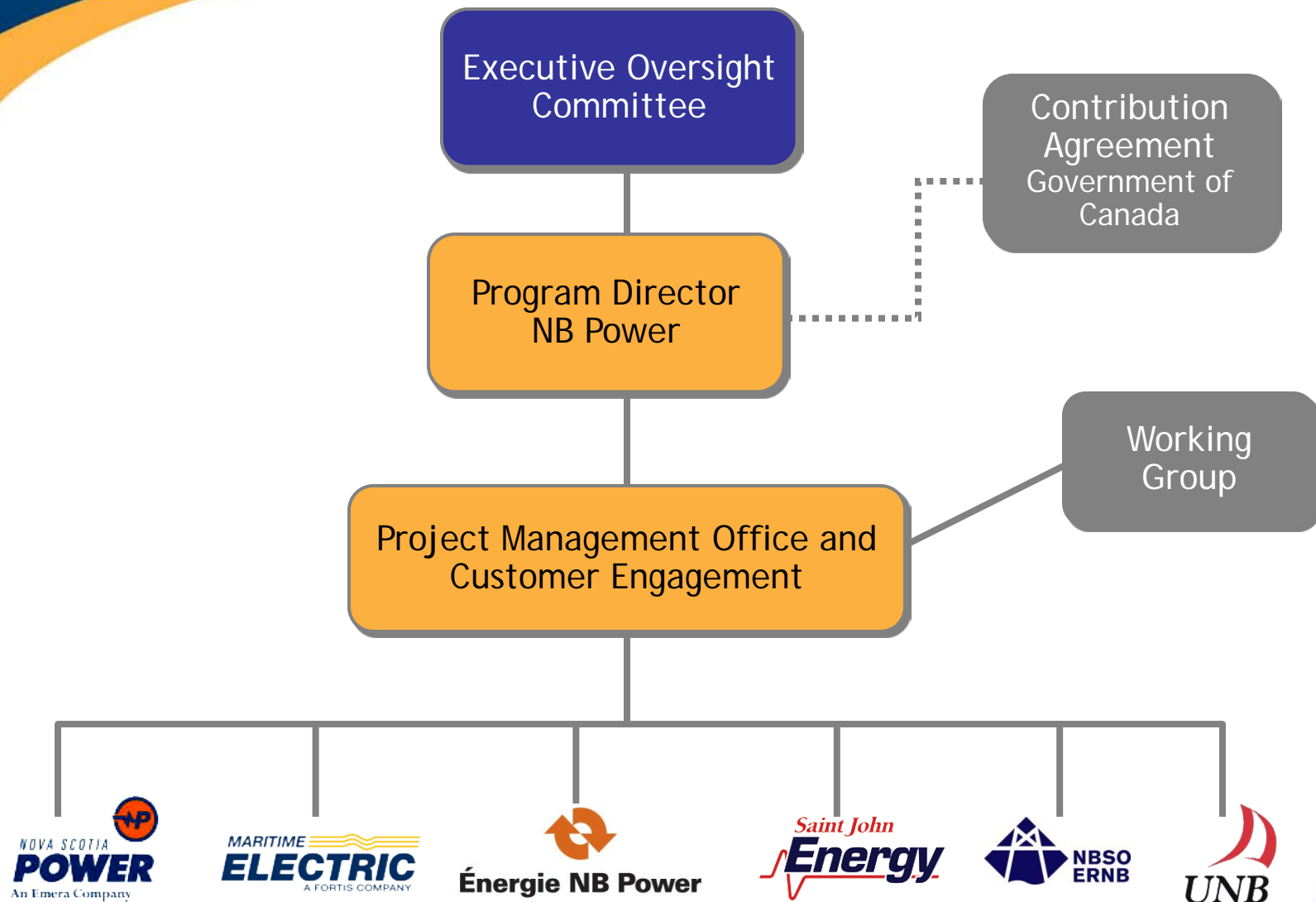
Project Objectives:

- Evaluate if load control is a cost effective / reliable ancillary alternative
- Better understand the customer's role using smart grid technology
- Engage customers to participate in load shifting
- Evaluate how load control performs in sync with system balancing & forecasted wind power

Working Together - Common Issues

	NB	NS	PEI
Environmental			
• CO2 regulation	✓	✓	✓
• Increase reliance on indigenous energy sources	✓	✓	✓
Economic			
• Managing costs	✓	✓	✓
• Upward pressure on rates	✓	✓	✓
Customer			
• More aware customers	✓	✓	✓
• Active and engaged customer	✓	✓	✓
Industry			
• Need for common standards	✓	✓	✓
• Regulatory alignment	✓	✓	✓
• Challenge of integration of renewables	✓	✓	✓

Process of Collaboration



Four-Year Plan

1) Planning - Discovery and Design March 2011

Governance, PMO established, discovery completed
Customers identified and pilot completed
Wind forecast and load algorithm in progress

2) Detailed Design and Installation 2011-2013

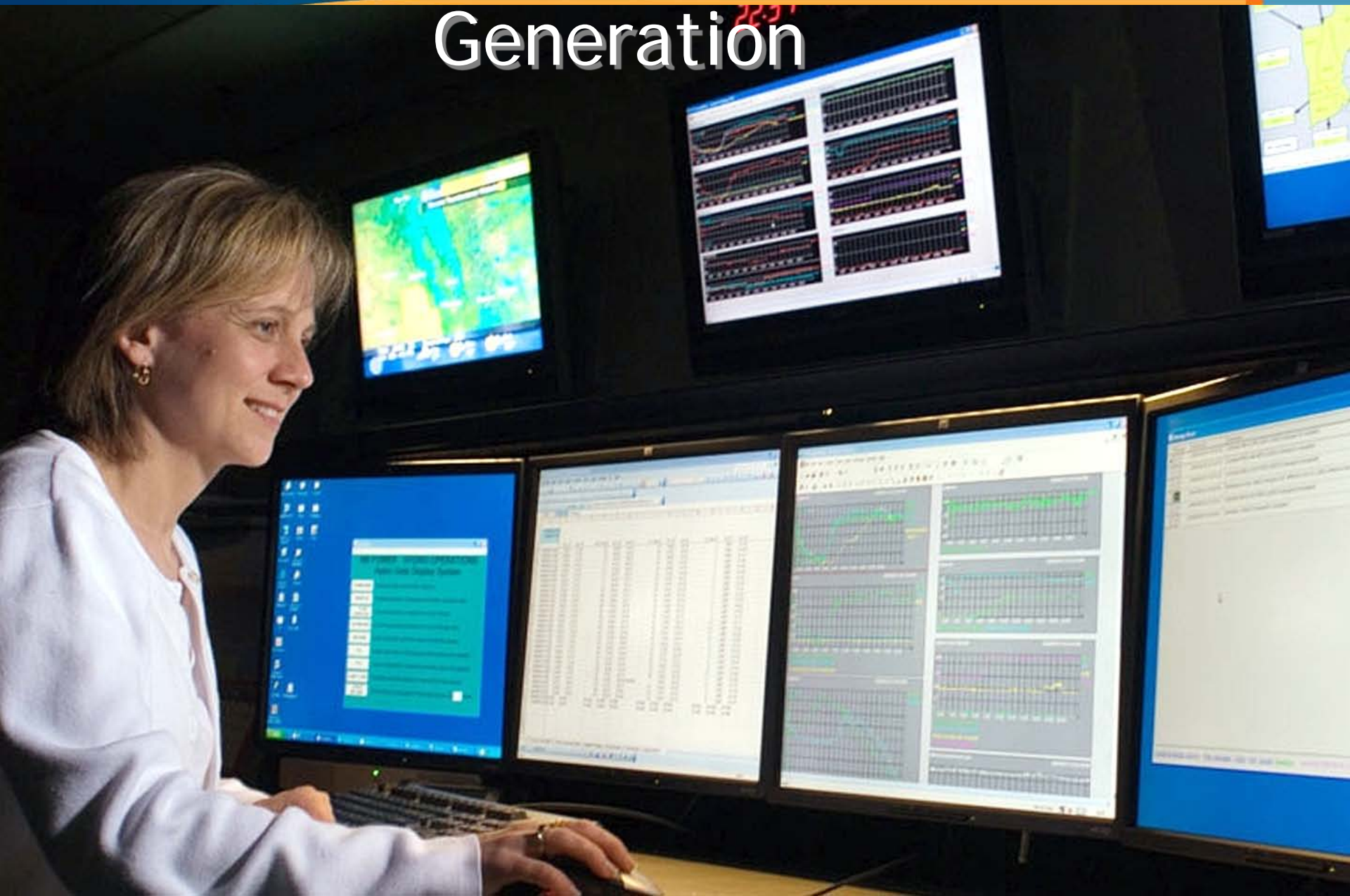
Detailed design
Customers engaged and enrolled
Wind forecast and load algorithm developed
Installation and business process modeling

3) Evaluation 2013 -2014

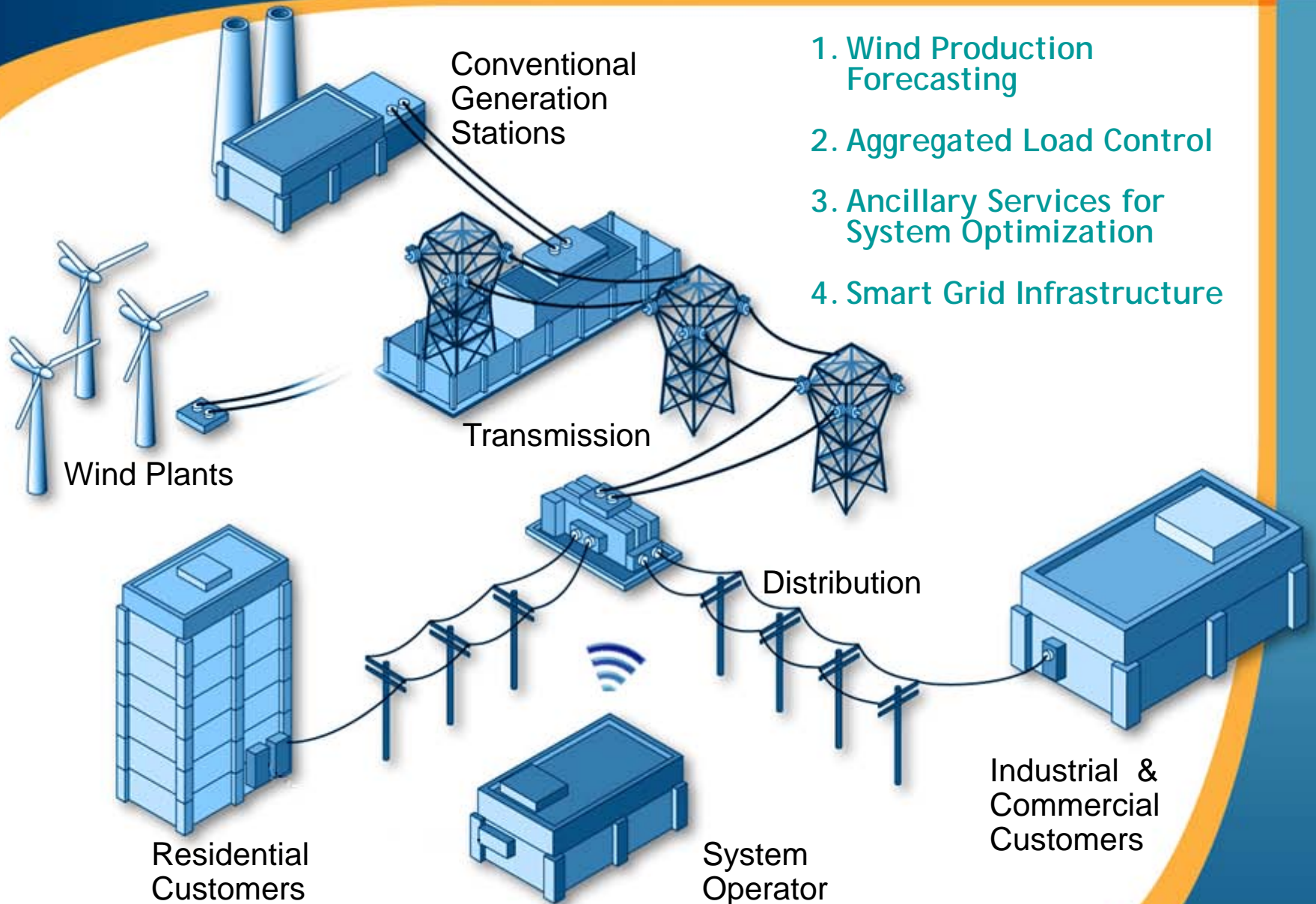
Data collection and evaluation
Broader deployment

Cost: \$32M

Load Control to balance variable Generation



Load Control to Balance Variable Generation



Benefits

- Environment:
 - Less GHG emissions
 - Less reliance on fossil fuels
- Customer:
 - Better awareness of energy usage
 - Shift load and reduce peak use
- Utility:
 - Synergies of regional collaboration
 - Provide more options for ancillary service
 - Better understand our customers
 - Create more viable wind penetration
 - Business case for wider deployment

Conclusion

*The future of
energy is about all
of us.*

Thank You!



Kent Hills
One of the Largest Wind Farms in
Atlantic Canada

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