



PowerLogic ION Users Conference 2009

Assessment of Ontario's Green Energy Act and Its Implications for Ontario

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John Dalton

jdalton@poweradvisoryllc.com

Tel: 978 369-2465

Presentation Outline

- How did we get here?
 - ✓ RESOP failings
 - ✓ Economic Development
- What's in the Green Energy Act?
 - ✓ Feed-in Tariff to provide certainty
 - ✓ Removing barriers to renewable energy projects
 - ✓ Domestic content requirements to promote job development
 - ✓ Increased transmission and distribution investment
- Assessment of Ontario's Feed-in Tariff
 - ✓ Risks for Ontario
- Assessment of Future Market Conditions
 - ✓ Prospects for Surplus Baseload Generation
 - ✓ Wholesale market prices and impact of the Global Adjustment
- Conclusions

How did we get here? RESOP program issues

- RESOP resulted in 1,400 MW of capacity under contract
 - ✓ 56% of capacity was wind; 34% solar
- Connection requests in areas with most favourable wind overwhelmed distribution capacity
 - ✓ Transmission capacity also became constrained
 - ✓ Larger projects broken into 10-MW blocks
- Considerable portion of capacity wasn't being developed
 - ✓ Transmission capacity reserved until contract terminates
 - Valuable connection capacity held by proponents that were unlikely to develop projects
 - Some queue positions sold
- Without security deposit, proponents had a free option

How did we get here? RESOP program issues

- Objectives of policymakers not clearly articulated and not reflected in program design
- Diversity of technology and project types became more important
 - ✓ Community group-based projects unable to compete for connection capacity (queue position)
 - ✓ Smaller farm-based bio-energy projects not able to be developed given transmission constraints
- Importance increased with new political leadership

How did we get here? The economic objectives.

- New Ontario Energy Minister impressed with German and Spanish Feed-in Tariffs
 - ✓ Seeking new industries to replace 2008 job losses
- *Green Energy and Green Economy Act (GEGEA)* filed and passed in 3 months
 - ✓ Job creation a major focus
- Had to compete with US Renewable Portfolio Standards (RPS) and federal tax incentives
 - ✓ State RPS represent a market of 60,000 MW
 - ✓ Federal tax incentives of 2 cents/kWh; or
 - ✓ Investment tax credit or grants of 30%

So what's in the GEGEA?

- Feed-in Tariff (FIT) to provide stability to attract industry
 - ✓ Promoting investor confidence which is key to investment decisions by manufacturers
- Cost-based price
 - ✓ Differentiated based on size and technology
 - ✓ Distinguishes between community and aboriginal projects

Setting the Feed-in Tariff

- Prices set to provide a reasonable return
 - ✓ 11% after tax ROE
- FIT prices updated every two years, based on changes in costs and considering market uptake
- Aboriginal project prices \$6 to \$15/MWh higher depending on technology
 - ✓ Community projects \$4 to \$10/MWh higher

Proposed FIT Prices		
Technology	Size	Price (\$/MWh)
Solar PV		
Rooftop or ground	≤ 10 kW	\$802
Rooftop	>10kW ≤250 kW	\$713
	>250kW ≤500 kW	\$635
	>500 kW	\$539
Ground mounted*	>10kW ≤10 MW	\$443
Wind*		
Onshore	any	\$135
Offshore	any	\$190
Waterpower*		
	≤ 10 MW	\$131
	≤ 50 MW	\$122
Biomass*		
	≤ 10 MW	\$138
	>10 MW	\$130
Biogas*		
On-farm	≤ 100 kW	\$195
On-farm	>100kW ≤250 kW	\$185
	≤ 500 kW	\$160
	>500kW ≤10 MW	\$147
	>10 MW	\$104
Landfill gas*		
	≤ 10 MW	\$111
	>10 MW	\$103

*Eligible for Aboriginal or Community Adder

GEGEA removes barriers that delayed renewable energy projects

- Approvals processes streamlined
 - ✓ One Renewable Energy Approval, not a variety of requirements
 - ✓ Appeals only if project causes serious harm to human health or serious and irreversible harm
 - ✓ Municipalities cannot restrict renewable projects through municipal by-laws or zoning approvals
 - Setbacks for wind turbines set by regulation

Domestic content requirements used to promote economic development

- RESOP: over 500 MW of solar PV under contract
 - ✓ 42 cents/kWh over 20 years
 - ✓ Representing \$230 million per year cost impact
 - 2% rate impact
 - ✓ With limited economic development benefits
- FIT addressed the limited economic development benefits by specifying domestic content requirements
 - ✓ Domestic content requirements escalate overtime
 - 25% for wind before 1/1/2012; 50% after
 - 50% for solar before 1/1/2011; 60% after
 - microFIT (≤ 10 kW) 40% for solar initially

GEGEA cornerstone of broader framework to promote renewables

- Accelerated the development of the transmission network to accommodate more renewable energy
 - ✓ FIT program evaluates connection capacity upfront prior to contract award
 - ✓ Economic test developed to evaluate where wires expansion economic. Expansion costs socialized.
- System already constrained by RESOP
 - ✓ Minister directed Hydro One to start development of 20 transmission projects with cost of \$2.3 billion
 - Investment about 1/3 of Hydro One rate base

Assessment of FITs

- FITs can be an effective strategy for promoting development of renewable energy resources where:
 - ✓ Costs and operating performance of renewable resources are well understood and subject to limited variation
 - ✓ Project size is such that the costs of participating in a formal competitive procurement process cannot be justified

Assessment of FITs

- Significant risk associated with FIT pricing
 - ✓ Cornerstone of the program is stability
 - Essential if economic development benefits from siting of major renewable energy production facilities to be realized
 - ✓ If price too high significant market response can leave consumers exposed to higher costs
 - ✓ Risk most significant for PV given its pricing
- Directive powers of Minister affect the levelness of playing field?

Assessment of Ontario FIT

- Ontario program could be a victim of its own success and be “oversubscribed”
 - ✓ Renewable survey indicated 15,000 MW under development (88% wind and 8% solar)
- Ability of Ontario to integrate the baseload generation provided by FIT
 - ✓ 6 week period this spring when wholesale prices were negative for 1/3 of hours
 - ✓ Ability to put enough transmission/distribution wires in place in time to integrate FIT projects
- Need to incent production during times when most valuable

What are the prospects for future market conditions?

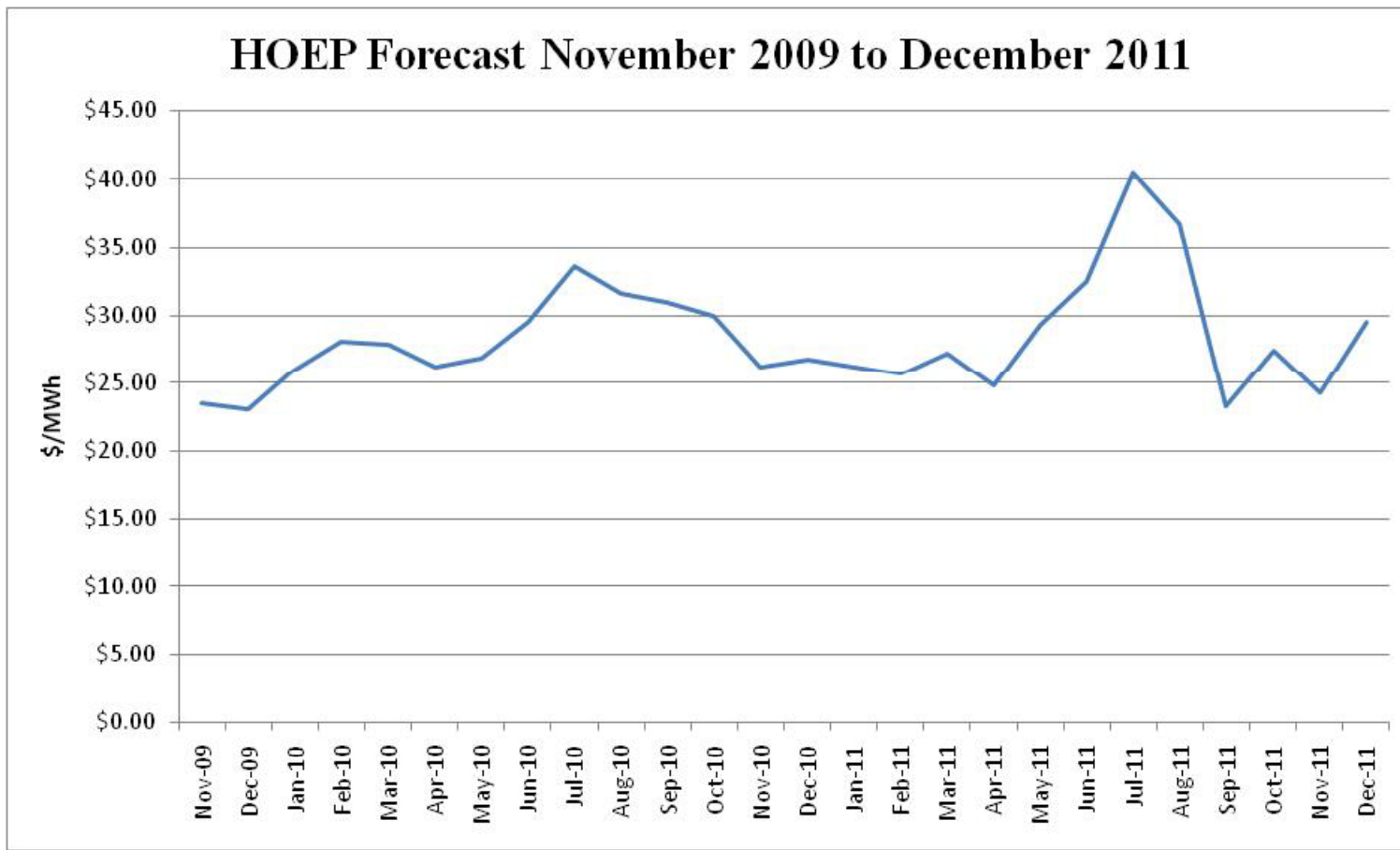
- Surplus baseload generation likely to persist for a considerable period of time
 - ✓ 1,800 MW of baseload demand lost
 - ✓ About 1,300 MW returns with recovery
 - ✓ Additional baseload capacity of 1,500 MW (Bruce Units 1 and 2) return to service in 2010
 - ✓ About 160 MW of effective baseload capacity from renewables anticipated in 2009 and 2010
- Increase in renewables, especially wind, exacerbate the problem
 - ✓ Wind generation higher at night, when SBG most common

Significant amounts of surplus baseload generation likely for the next several years

- Large industrial consumers will benefit from increasing their capability to shift loads to off-peak periods when SBG most likely to occur
- OPA could invest in storage technologies to move supply from off-peak to peak
- Demand management and smart meters move load from peak to off-peak

Power Advisory forecasts wholesale power prices to remain low, with increases forecast in summer 2011

- Global adjustment expected to offset much of the benefit offered by lower prices



Green Energy Act presents new opportunities and challenges for industrial customers

- Winners will be able to participate in expansion of green economy
 - ✓ Existing industry to be exposed to higher electricity prices
 - Increasing portion represented by Global Adjustment
- Those with load shifting capability should benefit from low off-peak prices as a result of greater amounts of baseload generation
 - ✓ Longer term load growth and investments in storage technologies should reduce surplus baseload generation

I look forward to your questions

John Dalton

Power Advisory LLC

jdalton@poweradvisoryllc.com

(978) 369-2465

www.poweradvisoryllc.com

Introducing Power Advisory

- Power Advisory specializes in electricity market analysis and strategy, power procurement, policy development, regulatory and litigation support, resource planning and project feasibility assessment.
 - ✓ We offer clients insightful analyses based on detailed understanding of market fundamentals and sources of competitive advantage.
 - ✓ We have strong electricity market price forecasting capabilities.
 - ✓ We offer valuable insights regarding the opportunities offered by participating in the Feed-in Tariff program.

For additional information regarding our services, please contact:

John Dalton

jdalton@poweradvisoryllc.com

978-369-2465

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