

Realizing the Promise of Distributed Generation

Presentation by the Industry Task
Force on Distributed Generation

May 14, 2004



Recognizing DG's Potential

“Distributed generation, which is also attractive from a security perspective, holds significant promise for the environment, as it suggests an electricity system that minimizes massive transmission networks, and focuses resources only where they are absolutely necessary. Our desire is to help Ontarians unlock the potential for efficient electricity generation that is around them, and we will remove barriers, free up resources and bring new thinking and new ideas to the challenges that lie before us.”

Energy Minister Dwight Duncan, April 15, 2004

Outline

- ◆ What is the DG Task Force?
- ◆ The Benefits of DG
- ◆ Barriers to the Development of DG
- ◆ What Should Be Done?
- ◆ The Role of the DG Task Force

Industry Task Force on Distributed Generation

- ◆ Volunteer *Ad Hoc* group formed March 2003 - approximately 70 industry participants with an interest in furthering the development of policies toward distributed generation in Ontario.
- ◆ Broad membership - generators, transmitters, distributors and retailers/marketers in the electricity and gas sectors
- ◆ Since its formation, the task force has met extensively with industry and public officials to find clear, simple and practical solutions.

What is DG?

- ◆ Small -- typically less than 10 MW
- ◆ Local -- close to load
- ◆ Decentralized -- connected to distribution, but not centrally planned
- ◆ Smart -- complements power stations and transmission grids
- ◆ Versatile -- represents supply and DSM solution
- ◆ Less capital-intensive to develop
- ◆ Fast -- shorter development times

How can DG Benefit Ontario?

- ◆ Adds to Ontario's electricity supply in shorter time than large central plants
- ◆ Delays or avoids transmission upgrades
- ◆ Greener projects reduce Ontario's reliance on coal
- ◆ Reduces peak electricity prices, losses and transmission charges
- ◆ Enhances system security and reliability
- ◆ Efficient fuel use
- ◆ Encourages alternative fuel use

Barriers to DG

- ◆ Serious financial barriers in Ontario – DG benefits the system, but the financial rewards flow to others.
- ◆ DG is valued less than other forms of load reduction
- ◆ Connection issues – the OEB has amended the Distribution System Code – processes and timelines for connection of generation to distribution systems, and a standard contract for micro projects – work must continue for larger projects
- ◆ Silo thinking – is DG a DSM solution? A supply solution?
- ◆ RFQ for Renewables silent on DG

Credit for Reductions of energy withdrawn under current regulatory regime

	Distributed Generation (Self Generation Only)	Distributed Generation (Exporting power)	Other Forms of Load Reduction
HOEP	√	√	√
Transmission Rates			
-Network	√	X	√
-Connection	X	X	√
Distribution Rates			
-Fixed	X	X	X
-Variable	X (Mixed)	X	√
Wholesale Market Charges	√	X	√
Debt Retirement Charge	X	X	√

Example: Ontario Hospital

- ◆ 3000 kW load
- ◆ 65% load factor
- ◆ LDC rates
- ◆ Average HOEP = \$59
- ◆ On-Peak \$75
- ◆ Off-Peak \$34



Conclusion: DG Not valued anywhere near the same as delivered energy

ELECTRICITY CHARGES - Sample Month	<u>No DG</u>
Net Energy purchase	\$ 82,040
Retail Transmission Network Services	\$ 7,929
Line and Transformation Connection Service	\$ 5,494
Monthly Service Charge	\$ 184
Distribution Charge	\$ 10,679
Wholesale Market Service Charges	\$ 7,280
Debt Retirement Charge	\$ 9,800
Total Cost=	\$ 123,406
Average Cost of Purchased Power \$/MWh =	\$ 88.15
Weighted on-peak cost (by kWh's)	\$ 87,820
Average on-peak cost of purchased power	\$ 104.55

Monthly CHARGES	<u>No DG</u>	<u>DG</u>	<u>DG - not 7-7</u>
Energy	\$ 82,040	\$ 46,040	\$ 46,040
Network	\$ 7,929	\$ 3,965	\$ 7,929
Connection	\$ 5,494	\$ 5,494	\$ 5,494
Service Charge	\$ 184	\$ 184	\$ 184
Distribution Charge	\$ 10,679	\$ 10,679	\$ 10,679
WMSC	\$ 7,280	\$ 4,784	\$ 4,784
DRC	\$ 9,800	\$ 9,800	\$ 9,800
Total Cost=	\$ 123,406	\$ 80,946	\$ 84,910
Average \$/MWh =	\$ 88.15	\$ 87.98	\$ 92.29
Weighted on-peak	\$ 87,820	\$ 47,943	\$ 50,322
Average \$/MWh PEAK	\$ 104.55	\$ 133.1763	\$ 139.7841
Savings from On-site DG		\$ 42,461	\$ 38,496
Equivalent value of DG - \$/MWh		\$ 88.46	\$ 80.20

	<u>Example #3</u>		Base Case	<u>Example #4</u>
			<u>Price Cap</u>	<u>Price Cap & DG</u>
	3600			1500
Monthly CHARGES	<u>DG with Export</u>		<u>No DG</u>	<u>DG</u>
Energy	\$ 19,040		\$ 60,200	\$ 39,560
Network	\$ 7,929		\$ 7,929	\$ 7,929
Connection	\$ 5,494		\$ 5,494	\$ 5,494
Service Charge	\$ 184		\$ 184	\$ 184
Distribution Charge	\$ 10,679		\$ 10,679	\$ 10,679
WMSC	\$ 2,912		\$ 7,280	\$ 4,784
DRC	\$ 9,800		\$ 9,800	\$ 9,800
Total Cost=	\$ 56,038		\$ 101,566	\$ 78,430
Average \$/MWh =	\$ 100.07		\$ 72.55	\$ 85.25
Weighted on-peak	\$ 22,199		\$ 60,940	\$ 38,802
Average \$/MWh PEAK	n/a		\$ 72.55	\$ 107.78
Savings from On-site DG	\$ 90,768			\$ 23,136
Equivalent value of DG - \$/MWh	\$ 78.79			\$ 48.20

Review of Billing Example

- ◆ Total cost to Hospital for on-peak power purchased: \$104.55 / MWh
- ◆ 28% is non-commodity charges
- ◆ \$88.15/MWh is average cost

With Generation:

- ◆ Assume 1500 kW on-site generation
- ◆ Always importing power
- ◆ Operation peak hours avoiding full network (7am-7pm) kW-based charge
- ◆ Avoided cost for this delivered power by on-site generation = \$88.46 / MWh

With Generation – Actual Operation

- ◆ Given current market, on-site generation will not avoid all on-peak hours.
- ◆ Operating Strategy (dispatch) a problem
- ◆ Avoided cost for power generated on site = \$80.46 / MWh
- ◆ 23% less value for this "delivered power" than if purchased from Utility

Example: District Energy

- ◆ Power sales to LDC paid at HOEP
- ◆ It costs LDC more for this power – commodity plus transmission charges
- ◆ Plus transformation losses, extra capital in plant, & power factor correction
- ◆ Difference in cost is dispersed via variance account to all customers
- ◆ Why should customers benefit?

Delivering the DG promise...

- ◆ If “A megawatt saved is every bit as good as a megawatt built” then give each similar treatment – each reduces withdrawals from transmission system
- ◆ End the “grossing up” of connection charges for self-generated power.
- ◆ Allow the developer of a DG project to capture upstream savings
- ◆ Include a standard offer with uniform terms and conditions for any generation < 25 MW, in RFP.

Delivering the DG promise...

- ◆ Remove the current stipulation in the RFQ that proponents be IMO market participants. It is important to maintain the flexibility that current rules permit in this regard.
- ◆ Scale down bid bond and credit requirements significantly for small projects.
- ◆ OEB should complete work on standard contracts for connection of generators to distribution

How the DG Task Force can help

- ◆ As a multi-sector group, the Task Force can act as a link between government and industry.
- ◆ The Task Force can assist in the development of a standing long term offer contract.
- ◆ The Task Force can work with the OPA and the OEB in developing DSM programs that recognize DG's potential
- ◆ The Task Force can help the government meet its conservation target (10% by 2010)

Questions and Next Steps

