



# ONTARIO CLEAN AIR ALLIANCE

**Memo to:** Board of Directors, Ontario Power Authority  
**From:** Jack Gibbons, Ontario Clean Air Alliance  
**Re:** **Need for a CHP Standard Offer Program**  
**Date:** November 11, 2009

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## Introduction

The Ontario Clean Air Alliance (OCAA) has received funding from the Toronto Atmospheric Fund, an agency of the City of Toronto, to promote and facilitate the installation of natural gas-fired combined heat and power (CHP) systems in the healthcare sector.

In June 2005 the Minister of Energy directed the Ontario Power Authority (OPA) to procure up to 1,000 MW of combined heat and power (CHP). To-date the OPA has procured 429 MW.

In June 2007 the Minister of Energy directed the OPA to establish a CHP standard offer program. According to the directive the program should be in place by December 2007.

The OCAA urges the OPA to implement a CHP standard offer program as soon as possible to:

- Achieve compliance with the above noted directives;
- Facilitate electricity security of supply for Ontario's hospitals and extended care facilities in the event of a blackout;
- Avoid the need for the proposed Third Line to downtown and central Toronto; and
- Help meet Ontario's base-load electricity needs.

## Facilitate Electricity Security of Supply for Ontario's Hospitals and Extended Care Facilities in the Event of a Blackout

The vast majority of Ontario's hospitals and extended care facilities cannot operate at full capacity during a blackout for two reasons. First, the capacity of their emergency diesel generators is significantly lower than their peak electricity demand. Second, in the event of a prolonged blackout they may not be able to obtain a continuous supply of diesel fuel.

For example, the peak day demand (22 MW) of the University Health Network (Toronto General, Toronto Western and Princess Margaret) is 8 MW greater than its on-site diesel generation capacity (14 MW). Similarly, the peak demand of Sunnybrook (12.8 MW) is 8.2 MW greater than its on-site diesel generation capacity (4.6 MW).

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While these hospitals would like to install natural gas-fired CHP systems, in order to increase their electricity security, the payback period for such investments is currently considered too long as a result of Ontario's artificially low electricity commodity price.

A number of Toronto hospitals have told us that they would be willing and able to install CHP systems if they could obtain a CHP electricity supply contract from the OPA. For example:

- The MARS Discovery District has developed a 20 MW CHP and district energy system proposal to meet its needs and those of Hospital for Sick Children, Toronto General Hospital, Princess Margaret, Mt. Sinai, Toronto Rehabilitation Hospital and the University of Toronto Medical School.
- Sunnybrook would like to install a 5.7 MW CHP unit.
- The Humber River Regional Hospital would like to install a 6 MW CHP unit at their new 665 bed hospital at Keele and Wilson which is scheduled for completion in 2015.
- St. Michael's would like to install a 6 MW CHP unit in their proposed new 18 storey tower.

Hospitals are particularly well suited to using CHP due to their high heat loads (space heating, hot water and steam), growing power demands (increasing use of electronic equipment) and security of supply needs. Extended care and other in-patient facilities have much the same profile. Because the natural gas distribution system does not rely on grid-supplied electricity, CHP systems can operate continuously to provide both power and heat during an extended blackout.

## **Avoid the Need for the Proposed Third Line to Downtown Toronto**

According to a recent report by Navigant Consulting for the OPA and Toronto Hydro, "Central and Downtown Toronto faces a number of potential electricity system reliability challenges in the 2015 – 2017 timeframe including the need for additional area supply capacity, infrastructure renewal, and supply diversity to mitigate against low probability but high impact events."<sup>1</sup>

One option to increase Toronto's security of supply would be to build a new third transmission line to serve downtown and central Toronto. On the other hand, as Navigant notes, installing 300 MW of well distributed generation in central and downtown Toronto "could defer the need for a major transmission upgrade and other upgrades that would otherwise be necessary to meet peak demand."<sup>2</sup> According to the Navigant report, the CHP potential in central and downtown Toronto is 1,060 MW.<sup>3</sup>

This would also serve interests beyond the health care sector. Toronto Community Housing Corporation, for example, would like to enter into electricity supply contracts with the OPA to facilitate the installation of CHP at Regents Park, Lower St. James Town, Moss Park and numerous other locations.

## **Help Ontario Meet its Base-Load Electricity Needs**

High efficiency CHP is our lowest cost source of incremental base-load supply to replace our aging nuclear fleet.<sup>4</sup> As a consequence, a well designed CHP standard offer program can simultaneously increase the electricity security of supply of our healthcare facilities; help avoid the need for the proposed Third Line; and provide good value to Ontario's electricity consumers.

Finally, it is important to note that there has never been NIMBY opposition to the installation of low-profile CHP units in Ontario.

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## Recommendation

In September 2008, the OPA released a proposal for a CHP standard offer program.<sup>5</sup> It is the OCAA's recommendation that the OPA should implement this CHP standard offer program as soon as possible with the following modifications:

- Raise the base capacity value to reflect the fact that the capital cost of combined-cycle generation (the benchmark alternative to CHP) has risen from \$1,174<sup>6</sup> to \$1,333 per kW.<sup>7</sup>
- Raise the credit for avoided or postponed transmission investment for CHP projects in Toronto from \$5.46/kW-year<sup>8</sup> to \$83.87/kW-year to reflect the value to electricity consumers of avoiding the proposed Third Line.<sup>9</sup>
- Raise the maximum project size to at least 20 MW to permit the participation of the MARs Discovery District CHP proposal and other district energy projects and to facilitate the achievement of economies of scale.

## Endnotes

- 1 Navigant Consulting, *Executive Summary: Distributed Generation in Central and Downtown Toronto*, Presented to Toronto Hydro Electric System and Ontario Power Authority, (July 28, 2009), page 2.
- 2 *Distributed Generation in Central and Downtown Toronto*, pages 2 & 4.
- 3 *Distributed Generation in Central and Downtown Toronto*, page 4, Table 1.
- 4 Ontario Clean Air Alliance, *Powerful Options: A review of Ontario's options for replacing aging nuclear plants*, (May 19, 2009).
- 5 OPA, *Updated Report on the Ontario Power Authority's Revisions to the Clean Energy Standard Offer Program for Small Electricity Generators Connected to a Distribution System*, (September 2008).
- 6 *Updated Report*, page 7.
- 7 The new 900 MW TransCanada combined-cycle power plant has a forecast capital cost of \$1.2 billion. OPA, *News Release*, "Clean Air Strategy and Replacement Power for Southwest GTA", (September 30, 2009).
- 8 *Updated Report*, page 26.
- 9 According to Navigant, the cost of the third line would be approximately \$1 million per MW. Assuming a 40 year amortization period and an 8% cost of capital, the annual cost is \$83.87 per kW. Navigant Consulting, *Central and Downtown Toronto Distributed Generation Final Report*, Prepared for Toronto Hydro Electric System and Ontario Power Authority, page 119.

## Contact

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