

The Portlands Energy Centre - Unnecessary and Unsustainable

16 November 2004

by Greg Allen, P.Eng



Ontario Power Generation and TransCanada Energy Ltd. are intending to build a new member of Ontario's fleet of white elephant power generators at a prominent location for the Toronto Waterfront Revitalization initiative. Having some years ago, been an advocate for such a combined-cycle natural gas plant, I have become an opponent of this project.

In summary, my critique is as follows:

1. North American natural gas supply is in decline while demands for thermal, electrical, chemical, transportation, fertilizer and sands extraction are expanding. Shortages in the winter of 2004 were evident. Prices are rising and market inelasticity will drive prices much higher. LNG shipping and port infrastructure, with their vulnerability to attack and long lead time will not likely save the day.
2. Cogeneration for district heating and cooling are essential for efficient user and project economics. The cost of high pressure steam delivery to the Enwave district heating system is evidently not competitive leaving no current host. The quantity of waste heat generated exceeds any local demands by an order of magnitude. The scale and location of the plant and lack of integrated trigeneration commitments will result in poor economic performance, inefficient use of a declining resource; thermal pollution and increased greenhouse gas emissions.
3. The interconnect to the Provincial grid involves a cable under Lake Ontario to Niagara's transmission and US connection. The interdependency of PEC and transmission investments would suggest possible cross subsidies from Ontario Hydro One.
4. The economic operation of the plant at anticipated value of the gas supply would require higher-than-average electrical supply revenues which suggests operation only for peak periods. The societal economic case would therefore need to be compared with other means of achieving capacity requirements including demand management.
5. The sustainability objectives of the waterfront redevelopment embodied in policies and frameworks of the City and the Toronto Waterfront Revitalization Corporation are in no way served by a natural gas generation plant. Much better options, as identified in the Environmental Scan report to the City, would be undermined by the competition for electricity and thermal supply in the City core.

To illustrate the capacity to displace any need for the PEC plant, the following opportunities were identified.

1. The Bigger Chill

Enwave deep lakewater cooling will be fully subscribed in 2 years. A 4-fold expansion using the existing system as baseload and peaking capacity with ice storage rejecting to DLWC at night would reduce peak load by 150 Mw and enhance system economics.

2. Enwave Trigeneration Plant

Under consideration for sometime, the combined Mw generator capacity and absorption cooling into the district cooling system contributes 150 Mw of peak load.

The Portlands Energy Centre - Unnecessary and Unsustainable

16 November 2004

by Greg Allen, P.Eng



3. Ashbridges Bay Energy Centre

With about 50 Mw of electric demand and large thermal demand, it is the City's most energy consuming facility by far. With opportunity to increase biogas production fed to a trigeneration plant, all its own loads can be met. The required roofing for odour control of outdoor tanks could employ linear solar concentrators (Duke Solar Roof) to produce at least 10 Mw electrical and 20 Mw thermal. Wind turbines are already approved by Council for the site. Total contribution to peak is estimated at 75 Mw.

4. Green Bin Power

Several studies to the City establish the economic viability of a Portlands municipal organic waste biogas plant capable of saving the City large costs of composting current green bin collection and generate 50 Mw of peak power.

5. Harbourfront Windfarm

Wind resource along the waterfront can be captured with offshore siting as part of breakwater replacement along the western beaches, Toronto Island (with the airport nixed), Leslie Street spit, and in the Harbour for an estimated capacity of 25 Mw.

6. Toronto Community Housing

Regent Park Revitalization is planning on reducing load with an estimated peak reduction of 10 Mw when fully built. Other retrofit and reconstruction could achieve in excess of 100 Mw reduction.

The above undertakings all involve City control operations and are significantly more economic than the PEC proposal. These alone contribute the equivalent capacity of 550 Mw but only scratch the surface of sustainable energy opportunities in the City.

The City Council needs to implement its Environmental Plan sustainable energy commitments starting with the creation of a sustainable energy agency. The Province needs to assist in overcoming municipal barriers and redirect resources to DSM and renewable energy investments. Efficiency and distributed generation can save the day.

There are several opportunities for the City to accelerate a conservation/renewables solutions to electricity supply shortfall. The Province is enabling Toronto Hydro to recover DSM investments through distribution charges. The Federation of Canadian Municipalities provides green infrastructure funding. The Energy Efficiency Office, the Better Buildings Partnership, and the Toronto Atmospheric Fund can be better financed and more extensively mandated. Community initiatives such as GreenSaver, Toronto Renewable Energy Cooperative, and Cool Shops provides effective instruments for City energy policy.

If City Council wishes to prevent the construction of the Portlands Energy Centre, it needs to bring forward a plan of action to eliminate any claim for need. Benefits include smog reduction, greenhouse gas reduction, employment generation, and economic savings to the City and its citizens.