

TORONTO STAFF REPORT

July 10, 2001

To: Board of Health

From: Dr. Sheela V. Basrur, Medical Officer of Health

Subject: Response to the Proposed Provincial Regulation Regarding Lakeview Generating Station

Purpose:

To respond to the proposed provincial Regulation regarding electricity production at the Lakeview Generating Station.

Financial Implications:

There are no direct financial implications for the City of Toronto arising from this report.

Recommendations:

It is recommended that:

- (1) the Board of Health and City Council convey their opposition to a proposed provincial Regulation which would allow the Lakeview Generating Station to continue using inefficient technology instead of high efficiency, combined cycle natural gas turbines in order to reduce the adverse health impacts arising from environmental pollution; and
- (2) the appropriate City officials be authorized and directed to take the necessary action to give effect thereto.

Background:

On April 6, 1999, the Board of Health considered a report submitted by the Medical Officer of Health entitled "Changes in Ontario's Electrical Sector and Air Quality" which recommended that the provincial government establish a regulatory framework for the electrical sector that

would encourage a shift from coal to high efficiency natural gas technologies and renewable energies.

At its meeting of July 24, 2000, the Board of Health considered two reports prepared by the Medical Officer of Health entitled, “Lakeview Generating Station – Health and Environmental Impacts” and “Significance of the Nanticoke Coal-Fired Plant for Toronto’s Air Quality”. These reports recommended, among other things, that the Premier of Ontario and the Ontario Minister of the Environment require that all coal-fired generating stations in Ontario be converted to natural gas. This recommendation was adopted by City Council at its meeting of August 1-3, 2000.

At its meeting of September 25, 2000, the Board of Health considered a report entitled “Air Quality and Ontario Power Generation’s Announcement”. At that meeting, the Board of Health reaffirmed its earlier recommendations with respect to the need for a provincial regulatory framework that would ensure conversion of coal-fired power plants to natural gas.

On March 26, 2001, the Ontario Minister of the Environment announced a proposal to require the Lakeview Generating Station to cease burning coal by April 30, 2005. At its meeting of May 22, 2001, the Board of Health endorsed a report entitled, “Air Quality and Lakeview Generating Station: Response to Provincial Proposal”, which recommended that the proposed provincial Regulation require the use of high efficiency combined cycle natural gas turbines (CCGT) at the Lakeview Generating Station by April 2005.

Comments:

Located slightly west of Toronto in southern Mississauga, Lakeview Generating Station is ideally located to provide electricity to consumers in Toronto and Mississauga. In fact, the Ontario Ministry of the Environment acknowledges that “production from Lakeview cannot be replaced by a station from outside the area such as the Nanticoke station”. However, the Ministry has also acknowledged that Lakeview is a large source of the air pollutants that contribute to smog, acid rain, global climate change and the accumulation of mercury in the food chain. By requiring the conversion of the plant to natural gas by 2005, the Province has the potential to reduce sulphur dioxide emissions in the Greater Toronto Area by 18,000 tonnes and mercury emissions by 83 kilograms relative to 1999.

However, if the province allows Lakeview to be converted to natural gas using inefficient technology, it will lose an important opportunity to reduce smog and global climate change while perpetuating the waste of a valuable non-renewable resource in the form of natural gas.

High Efficiency Combined Cycle Natural Gas Turbines:

In March 2001, a proposal posted on the Environmental Registry by the Ontario Ministry of the Environment indicated that, “after April 2005 any future electricity generation at the Lakeview Site would be required to meet the emissions performance of efficient natural gas technology”. This language implied the use of combined cycle natural gas turbines (CCGT) that emit about

0.15 kilogram (kg) of nitrogen oxides (NO_x) and 340 kg of carbon dioxide (CO₂) per megawatt-hour (MWh) of electricity generated and which operate at a heat efficiency of about 52%.

The following table compares the different technologies according to heat efficiency and air emissions.

Table 1: Comparison between Technologies: Heat Efficiency and Air Emissions

Electrical Generating Technology & Fuel	Heat Efficiency (%)	NO _x (kg/MWh)	CO ₂ (kg/MWh)
Boilers & Coal	34%	3.00 – 4.00	970
Boilers & Natural Gas	30%	0.84	600
Combined Cycle & Natural Gas	52%	0.15	340
Combined Cycle & Natural Gas & Co-generation	80%	0.15	250

Proposed Regulation:

On July 3, 2001, the Ontario Ministry of the Environment posted a proposed Regulation for the Lakeview Generating Station and requested public comments on the proposal by August 2, 2001. Under the proposed Regulation, the following requirements would apply after April 2005:

- (a) coal will not be used to generate electricity; and
- (b) emissions from the facility will meet or exceed the emission performance of a gas fired electricity generating unit that has an annual average heat rate of no greater than 12,000 kilojoules per kilowatt hour (KJ/KWh).

According to technical experts at Environment Canada, a gas-fired electrical generating unit with the heat rate specified by the Ministry's proposed Regulation would emit approximately 0.84 kg of NO_x and 600 kg of CO₂ per MWh of electricity generated, and would operate at a heat efficiency of about 30%. These figures correspond to those expected if Lakeview's existing boilers were used to burn natural gas.

In other words, Lakeview will be allowed to use inefficient technology that will emit five times as much NO_x and almost twice as much CO₂ as it would if the plant were upgraded with high efficiency combined cycle natural gas fired turbines. It will also burn almost twice as much natural gas to generate the same amount of electricity.

Conclusions:

The draft provincial Regulation proposed by the Ontario Government would require Lakeview Generating Station to convert from coal to natural gas from April 2005. However, their proposal to continue reliance on inefficient technology rather than high efficiency combined cycle natural gas turbines (CCGT) will result in five times as much NO_x and almost twice as much CO₂ as it would if the plant were upgraded with high-efficiency combined cycle natural gas fired turbines. This would be a lost opportunity to reduce adverse health impacts arising from air pollution. Natural gas, a valuable non-renewable natural resource, would also be wasted under their proposal. It is recommended that the Board of Health and City Council oppose the draft Regulation and urge the Province to take all steps to ensure better protection of human health and the environment.

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