

EB-2007-0707
Integrated Power System Plan
Clean Affordable Energy Alliance
Response to Board Staff Interrogatories

1. Ref: Exhibit L-22-1, page 4 Issue: A19

On page 4 the Clean Affordable Energy Alliance states that “the IPSP places an unhealthy and imprudent reliance on natural gas in a variety of circumstances.”

If the CAEA believes excessive gas fired generation is put forward in the plan and other resources should be substituted, what resources is CAEA suggesting should be dispatched in lieu of gas fired facilities?

The CAE Alliance totally supports the basic premises of the 20 year power plan - capturing maximum cost effective conservation/demand management; inclusion of available renewable resources, with sufficient flexibility to encourage and include developing technologies; and nuclear for baseload requirements.

We believe however, that government directives have prescribed a resource mix for the Plan that is uncertain, unrealistic and unaffordable. Seeking to fulfill the directive's untimely and over-ambitious requirements has become first priority for the OPA. The result is that the IPSP places an unhealthy and imprudent reliance on natural gas in a variety of circumstances, as explained in our submission to the Board.

The CAE Alliance would like to offer the following suggestions for resources in lieu of gas-fired facilities.

(i) We do not believe that the OPA has fully investigated the development of a national east-west power grid with the full co-operation of the federal and provincial governments to harness the available hydroelectric resources from other provinces. If proven feasible and cost effective, this could enhance national energy security, increase renewable power, and provide federal assistance for power dam development and transmission as a component of a cleaner energy future.

(ii) The Plan does not capture the full potential of biomass resources. In considering costs, the social benefit costs of resource acquisition should be considered. Developing bioenergy sources such as wood biomass and agricultural crop waste would enhance economic viability to these 2 vital sectors in Ontario. Growing crops such as switchgrass should be encouraged. The use of biodigesters for energy production from livestock waste and the conversion of garbage to power would help solve issues of methane emissions, landfill overflow and provide economic payback. These benefits should be factored into the price of power. (Financial and environmental costs of trucking Toronto garbage to Michigan could be eliminated.)

We understand that large application fees (non-refundable) and long wait times for approvals are deterrents to potential projects. Farmers considering alternate crops for use in power production are not receiving financial backing.

(iii) Some options, such as development of Ontario's large volume of peat resources, are overlooked because they are not conducive to private enterprise. (Developing private market participation appears to be a priority issue in the Plan.) Again, if this spawns an industry within the province, the job creation and offset of emissions must be considered as cost offsets.

(iv) Due to the large resources of coal in Canada and the increasing feasibility of coal to syngas, we believe that the OPA should have considered this resource as a cleaner option. “North America is to coal what Saudi Arabia is to oil.. ... in the context of growing concern about geopolitical tensions and security of energy supply, indigenous sources of supply will become increasingly attractive.” (Jan Carr, Ontario Power Authority)

(v) Our primary suggestion is the retention of Ontario's coal-fired power plants - with the implementation of best available emissions reduction technology on all remaining units and in conjunction with biomass co-firing to reduce greenhouse gas emissions.

Advantages of this option include:

- system security - to manage uncertainties caused by the unavailability and/or reduced capacity of other generating plants;
- flexible, dispatchable and quick response supply resource - immediate availability, as the public utility, to the directions of the IESO;
- continued maintenance of local area supply reliability;
- optimum load following and balancing - which will become increasingly more important;
- stability of power prices - will help mitigate costs of the newer and more expensive supply resources;
- negates the need for some of the planned transmission upgrades;
- continued voltage regulation and black start capability;
- ensures 24/7 available, reliable, dispatchable power while we assess the success of CDM, system contribution of renewable sources such as wind and solar.

Consider:

1. Viewed within the context of replacement by natural gas-fired generation, there would be marginal, if any environmental benefit of closing the coal units.

■ An increase in renewable generation and a return to 14,000 MW of installed nuclear capacity (currently 11,500 MW) will reduce the reliance on coal fired generation, reducing greenhouse gas emissions to pre-1990 levels. (See response to Xylene Power, question 3).

Ontario ¹																
Sources	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005
Greenhouse Gas Emissions^a <i>kt CO₂ eq</i>																
Coal	24 720	26 161	25 374	16 496	13 520	14 248	16 419	20 585	27 154	28 233	36 159	33 301	33 107	32 869	24 463	27 601

Source: Environment Canada - National Inventory Report: Information on Greenhouse Gas Sources and Sinks in Canada, 1990-2005

2006 emissions from Ontario Coal Fired Power stations - 24,650 kt CO₂ eq

■ According to government information, air quality improvements in Ontario would be "small" as a result of coal plant closures. (Ontario's Cost-Benefit Analysis - Replacing Ontario's Coal-Fired Electricity Generation, prepared for the Ministry of Energy, April, 2005)

■ "... if currently existing remediation technology were used, the air quality effects from coal fired power plants are comparable to those from natural gas plants and neither could be distinguished from the regional background at distances more than a few km from the source." ("A Regional Modeling Study of the Effects on Air Quality of Electric Power Generation by Fossil Fuels" Waterloo Centre for Atmospheric Sciences, May 26, 2006) This study, funded in part by the Ontario Ministry of the Environment, reports that "currently existing remediation technology on the coal plant reduces both the SO₂ and NO_x contributions to about 0.3% when averaged across southern Ontario and about 1% within 20 km of the largest plant".

■ One of our members has investigated first hand the effectiveness of new state of the art emission controls on a coal plant in Ohio. Controls that effectively make burning coal nearly as clean as natural gas, almost eliminating particulate and metals.

■ Ontario Ministry of the Environment assessments for new power plants do not require an assessment of air quality impacts in combination with ambient air emissions. The OPA has not considered the air quality impact for the GTA/Golden Horseshoe areas, and downwind, with the inclusion of thousands of MWs of new installed gas-fired generation in conjunction with preexisting ozone precursors. This will likely have a worse impact Toronto air quality than the current <1% impact from Nanticoke Generating Station. (Cost Benefit Analysis: Replacing Ontario's Coal-Fired Electricity Generation prepared for the Ontario Ministry of Energy, April 2005)

■ Pollution Probe notes that "Canadians ... spend 90 per cent of our time indoors and indoor environments have been shown to be many times more polluted than the outdoor environment.... The US Environmental Protection Agency has rated poor indoor air quality among the top environmental risks to human health." (November, 2000) The Lung Association indicates that indoor air pollution is 2-5 times higher, occasionally 100 times higher, than outdoor levels. This has not been taken into consideration when assessing the impacts of air pollution related instances reported in the media.

■ "Scientists point to the smaller particulates — those that measure less than 10 microns - and the smallest particulates - those that measure less than 2.5 microns - as being particularly of concern. These particulates can reach deep within the lung or can enter the bloodstream and cause damage throughout the body." (Ontario Clean Air Alliance)

"The scientific evidence demonstrating that the PM_{2.5} fraction accounts for many health damages has increased substantially over the last five years. Accordingly, health damages were forecast largely based on PM_{2.5} concentrations." "All particulate from gas turbines is on the order of 1 micron, hence all PM is assumed to be PM_{2.5}." (Cost Benefit Analysis: Replacing Ontario's Coal-Fired Electricity Generation, prepared for the Ministry of Energy, April 2005)

We concur with the David Suzuki Foundation that "Although natural gas may be a cleaner fuel than coal, its use still impacts air quality and human health, and its production has significant environmental consequences in the form of wilderness and habitat destruction. Furthermore, the contribution of natural gas generation to climate change is only slightly less than coal (on an energy basis). ... Contrary to its clean image, natural gas contributes to climate change. Although burning natural gas produces fewer greenhouse gas emissions than coal or oil (25–40% lower, per unit of generated electricity), natural gas still creates emissions when it is produced, processed, and transported. Further, there are two significant unresolved issues related to the economic costs of increasing reliance on electricity

generation from natural gas: price increases and price fluctuations. ... Instead of committing to such problematic transition, Ontario can emulate the development path of world leaders such as Germany, Spain, and Japan and actively develop the best available renewable technologies. " Also, "Possibly more troubling are the emissions of fine particulates from gas-fired power plants. Though particulate emissions are about one-tenth what they are for coal power, the U.S. Environmental Protection Agency estimates that 77% of particulates from natural gas plant are of a dangerously small size." (Submission to the OPA, Supply Mix Advice and Recommendations, December 2005)

2. In spite of Regulations mandating coal closure deadlines, and carbon caps, the OPA and IESO have been legislatively tasked with advising when coal closure can occur without impacting system reliability. The CAE Alliance maintains, as cited in the Board's question, that implementing the Plan to force coal closure by 2014 places an unhealthy and imprudent reliance on natural gas in a variety of circumstances. We suggest that the Board and the OPA advise the government that coal-closure as prescribed is not in the public interest at this time and amend the Regulation accordingly.

■ The government has directed the OPA to "plan for coal-fired generation in Ontario to be replaced by cleaner sources in the earliest practical time frames that ensures adequate generating capacity and electricity system reliability in Ontario" and to "work closely with the IESO (Independent Electricity System Operator) to propose a schedule for the replacement of coal-fired generation, taking into account feasible in-service dates for replacement generation and necessary transmission infrastructure". (June 13, 2006 Ministerial Directive) The energy experts in the OPA, the IESO, (and by assessment, the OEB) were tasked with the coal closure timetable, bound by the legislated mandates of electricity reliability, and adequacy.

We believe that the Coal Closure Regulation 496/07, and amendment, have usurped the power and responsibility of the OPA and the IESO to properly assess when coal-closure could effectively occur.

■ The Coal Closure Regulation 496/07, and subsequent amendment regarding carbon caps, were posted to the Environmental Bill of Rights (EBR) registry for public comment prior to being enacted. The public, who have the legislated right to participate in government decisions regarding environmental policy, were given insufficient and misleading information which impaired opinions. (See the CAE Alliance submissions to the EBR, posted on our website.)

■ Proposals loaded to the EBR Registry are to include a regulatory impact statement which includes "... assessment of the environmental, social and economic consequences of implementing the proposal", and "an explanation of why the environmental objectives, if any, of the proposal would be appropriately achieved by making, amending or revoking a regulation".

This would necessitate a comparison of the environmental, social and economic impacts of coal-fired generation with natural gas-fired power. This has never been done.

■ Ontario Regulation 424/04 specifies that, when developing an IPSP, the OPA shall ensure that for each electricity project which requires an assessment under the Environmental Assessment Act, that the Plan "contains a sound rationale including ... an analysis of both the impact on the environment of the project, and an analysis of the impact of a reasonable range of alternatives to the electricity project." According to the Environmental Assessment Act, this includes impacts to both the natural environment, and "the social, economic and cultural conditions that influence the life of humans or a community".

Again, there has never been a full environmental assessment of the use of natural gas-fired generation and analysis of the impact of a reasonable alternative, such as retention of coal plants with full environmental upgrades.

■ Energy planning in Ontario - which encompasses both the inclusion and exclusion of power resources - must be done in conformity to the Ministry of Energy Statement of Environmental Values, under the Environmental Bill of Rights. The mandate is "to ensure that Ontarians have access to safe, reliable and environmentally sustainable energy supplies at competitive prices".

3. Natural gas-fired generation will have a significant negative impact on electricity prices in Ontario. (Note "Impacts of Natural Gas Generation on Electricity Prices", pages 37-39 of our submission to the Board.)

The CAE Alliance concludes that there is insufficient warrant - from an economic, a health or environmental perspective - for switching to natural gas-fired generation. Most of the information provided to the public includes missing, misleading or misinterpreted information from the Ministry of Energy, from natural gas lobbyists, and those attempting to ensure market participation of private power generators.

The CAE Alliance is not suggesting a radical departure from what is provided in the IPSP, rather a more common-sense & practical approach - retaining the most flexible, reliable and affordable resource - in order to ensure system security and electricity affordability while the Plan unfolds and resource acquisition is secured.