EB-2010-0279

GEC CROSS MATERIALS

Ministry of Energy

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Ontario

FEB 17 2011

MC-2011-625

Mr. Colin Andersen
Chief Executive Officer
Ontario Power Authority
1600–120 Adelaide Street West
Toronto ON M5H 1T1

Dear Mr. Andersen:

In my capacity as the Minister of Energy and pursuant to the authority granted to me under subsection 25.30(2) of the *Electricity Act, 1998*, I am providing the Ontario Power Authority (OPA) with direction for the preparation of an integrated power system plan (the "Plan"). This Supply Mix Directive replaces the Supply Mix Directive issued on June 13, 2006 and the Supply Mix Directive issued on September 17, 2008.

Pursuant to this Authority, I hereby direct the OPA to prepare a Plan to meet the government's goals as set out in this Supply Mix Directive as follows:

Demand

In developing the Plan, the OPA shall use a medium electricity demand growth scenario. This scenario balances the expected growth in residential and commercial sectors with modest, post-recession growth in the industrial sector. Under this scenario, Ontario's demand would grow moderately (approximately 15 per cent) between 2010 and 2030, based on the projected increase in population and conservation as well as shifts in industrial and commercial needs.

It is feasible that technological changes could drive higher electricity demand growth through, for example, greater adoption of electric vehicles and the potential electrification of public transit. The Plan needs, therefore, to have the flexibility to accommodate the potential for a higher growth outcome.

Conservation

The OPA shall plan to achieve through Conservation and Demand Management (CDM) a peak demand reduction target of 7,100 megawatts (MW) and an energy savings target of 28 terawatt-hours (TWh) by the end of 2030. Further, the OPA shall plan to achieve interim CDM targets as follows: 4,550 MW and 13 TWh by the end of 2015; 5,840 MW and 21 TWh by the end of 2020; and 6,700 MW and 25 TWh by the end of 2025. These interim CDM targets are to serve as milestones to measure progress towards the overall 2030 CDM target.

The Plan shall seek to exceed and accelerate the achievement of these CDM targets if this can be done in a manner that is feasible and cost-effective. The targets are to be measured from a base year of 2005.

.../cont'd

The above-noted targets shall also include electricity savings forecasted through the implementation of codes, standards, regulations and other initiatives that are progressive and reasonable based on OPA analysis.

Consistent with my directive to the Ontario Energy Board (OEB) dated March 31, 2010, the definition of CDM should be inclusive of load reduction from initiatives such as geothermal heating and cooling, solar heating and fuel switching and customer-based generation for the purpose of load displacement. The definition should be exclusive of generation that is contracted-for under the OPA's Feed-in Tariff (FIT) and microFIT Programs and other generation that is separately metered for the purpose of injecting electricity into the transmission system or a distribution system.

Nuclear

The OPA shall continue to plan for nuclear generation to account for approximately 50 per cent of total Ontario electricity generation. To this end, the Plan shall provide for the refurbishment of 10,000 MW of existing nuclear capacity at the Bruce Nuclear Generating Station and the Darlington Nuclear Generating Station as well as the procurement of two new nuclear generating units (about 2,000 MW) at the Darlington site. The Government will pursue this procurement where it can be achieved in a cost-effective manner.

Nuclear refurbishment is a complex task and Ontario will need a coordinated plan for refurbishment that takes into account various considerations. To this end, the OPA shall continue to work with Ontario Power Generation (OPG), Bruce Power, and the Ministry of Energy to ensure that the Plan includes an updated coordinated refurbishment schedule.

Coal Phase-out and Potential Conversion

Since 2003, Ontario has shut down eight coal-fired generating units, including the recent closures of two units each at OPG's Nanticoke and Lambton Generating Stations. The shutdown of two additional units at the Nanticoke Generating Station will take place before the end of 2011.

The Government's commitment to replace all coal-fired generation by the end of 2014 will be met. The OPA shall work with the Independent Electricity System Operator (IESO) and OPG to determine opportunities for advancing the closure of additional units.

The Government has directed the OPA to negotiate with OPG for a contract for biomass fuelled generation from the 215 MW Atikokan Generating Station in Northwestern Ontario. It is expected that this plant could be operating on biomass by 2013.

Two units at OPG's Thunder Bay Generating Station are to be converted to run on natural gas over the period leading up to 2014. Opportunities to co-fire with biomass will continue to be examined.

In developing the Plan, the OPA shall assess the conversion of some or all of the remaining units at Lambton and Nanticoke to natural gas under a range of different scenarios for nuclear generation and system peaking requirements. The government will make a decision on conversion of some or all of these units in 2012. This decision will be made once planning work on continued operation of the operating units at the Pickering Nuclear Generating Station

.../cont'd

Exhibit K-2-1

Before the Ontario Energy Board

EB-2010-0279

Issues Pertaining to CDM-Related Spending in Ontario Power Authority's 2011 Revenue Requirements Submission

Prepared by:

Chris Neme
Energy Futures Group

For:
The Green Energy Coalition
David Suzuki Foundation
Greenpeace Canada
Sierra Club of Canada
WWF-Canada

March 10, 2011

Table 1: OPA-Estimated Incremental Annual GWh Savings (2011-2014)[3]

Initiative		2011	2012	2013	2014
LDC Obligations					
OPA Province-Wide Programs	91%	519	649	708	729
Supplemental LDC programs	9%	51	64	70	72
Total	100%	570	713	778	801
Other Programs					
Transmission-Connected Industrial Accelerator Program		12	163	407	698
OPA-Delivered Demand Response Programs		4	5	5	5
Total		16	168	412	703
Grand Total		586	881	1,190	1,504

As Table 2 shows, OPA is forecasting that the amount of energy savings from these and other past programs that will be persisting in 2014 is about 5.6 TWh. Roughly half of that amount will come from new LDC obligations, roughly 20% will come from the Transmission-Connected Industrial Accelerator Program and roughly 30% will come from savings persisting from 2006-2010 OPA programs.

Table 2: OPA-Estimated Cumulative Persisting Annual GWh Savings (2011-2014)[4]

Initiative		2011	2012	2013	2014
2011-2014 LDC Obligations					
OPA Province-Wide Programs	91%	519	1,136	1,766	2,419
Supplemental LDC programs	9%	51	112	175	239
Total	100%	570	1,248	1,941	2,658
2011-2014 Other Programs					
Transmission-Connected Industrial Accelerator Program		12	174	581	1,279
OPA-Delivered Demand Response Programs		4	5	5	5
Total		16	179	586	1,284
Savings Persisting from 2006-2010 OPA Programs		2108	1,775	1,762	1,647
Grand Total		2,694	3,202	4,289	5,589

[3] Savings for OPA Province-wide programs from OPA response to GEC Interrogatories 11 (for 2011) and 14 (for 2012 through 2014). Savings from Supplemental LDC programs estimated based on OPA assumption that LDCs will achieve approximately 91% of their targets through participation in OPA-Contracted Province Wide programs (response to GEC Interrogatory 15). 2011 savings from other programs from Ex I, Tab 4, Attachment 1. 2012-2014 savings from other programs from OPA response to GEC Interrogatory 15.

[4] Ibid. Savings persisting from 2006-2010 OPA programs based on OPA responses to GEC Interrogatories 11 and 14. Analysis assumes the rate of persistence of the Supplemental LDC programs will be the same as for the OPA Province-Wide programs.

It is worth noting that OPA is not interpreting the Minister's Directive to mean that system sales in 2014 will be 6000 GWh lower as a result of the LDC efforts. Indeed, as noted in Table 2 above, OPA is expecting LDC initiatives, including their participation in OPA's province-wide programs, to reduce system sales in 2014 by only about 2700 GWh. Rather, OPA appears to be interpreting the Minister's Directive to acquire 6000 GWh over the 2011-2014 period to mean 6000 GWh of lifetime savings through 2014. Put another way, savings from measures installed in 2011 would be counted four times (once each for 2011, 2012, 2013 and 2014); savings from measures installed in 2012 would be counted three times (once each for 2012, 2013 and 2014); and so on.[5] Under this interpretation, OPA appears to be expecting the LDCs to slightly exceed the province-wide target by producing approximately 6400 GWh (i.e. the sum of 570, 1248, 1941 and 2658 GWh savings persisting in 2011, 2012, 2013 and 2014, respectively).

OPA has not conducted any analysis or done any planning to determine whether it could cost-effectively acquire more than the minimum level of savings required by the Minister's Directives.

3. Critique of OPA's Plan

As discussed above, OPA has three planning obligations related to energy (GWh) savings:

1. To put the province on the path to achieve 13 TWh of persisting annual savings in 2015;
2. To assess whether the 2015 target can be cost-effectively exceeded and/or accelerated and put in place plans to do so if possible; and
3. To assist the province in achieving 6 TWh of new savings delivered by LDCs over the 2011-2014 period.

My review of the evidence suggests that the Company has failed on at least the first two of these obligations and arguably has failed with respect to the third as well.

A. Achieving 13 TWh of Persisting Savings in 2015

As the discussion above shows, OPA data suggests that it will achieve approximately 5.6 TWh of persisting cumulative annual savings in 2014 (2.7 TWh from 2011-2014 LDC obligations, 1.3 TWh from the Transmission-Connected Industrial Accelerator Program and 1.6 TWh still persisting from 2006-2010 programs). Based on the rate of growth of its persisting savings, it would be reasonable to assume that value would grow to roughly 7 TWh in 2015. That would represent only a little more than half of the 2015 target of 13 TWh.

[5] This is a simplified explanation that works for measures that have a life of 4 years or more. Measures installed in 2011 that have a life of only three years, two years or one year would be counted only three times, two times or one time, not four times.

As noted above, government policy allows OPA to count savings from new codes and standards as well as savings from CDM programs towards the 13 TWh target. Ontario adopted new building codes in 2007 and another round of updates is expected next year. The province is also currently in the process of considering adoption of new appliance and equipment efficiency standards for 30 different products, roughly half of which are electricity consuming devices. However, there are at least two important reasons to doubt whether these new standards will be enough to achieve the additional 6 TWh of persisting annual savings needed by 2015.

To begin with, though codes and standards can sometimes produce substantial savings, those savings are not instantaneous. They occur only as new buildings are constructed or new equipment is purchased, the latter being largely a function of the rate of turnover of existing equipment. In most cases, the proposed compliance dates for the new Ontario product efficiency standards would be in 2012. That would leave only three to four years of impacts to contribute to meeting the 2015 LTEP energy savings target. Thus, for long-lived equipment like refrigerators (e.g. with lives of 15 years or more), only a small portion of the existing stock will have turned over and been affected by the new standards by 2015. Second, some of the products that would be governed by the proposed new Ontario standards – e.g., those affecting the efficiency of incandescent light bulbs – are already or soon to be covered by standards promulgated in the United States and/or at the Canadian federal level. In such cases, even without an Ontario standard no inefficient products could be imported into or exported out of Ontario. Thus, for such products, the only situation in which savings would not occur anyway would be when manufacturers determine that it is worth it to produce a product in Ontario that is different from the product it produces and sells in the rest of North America (and often much of the rest of the world) and sell it only to Ontario consumers. In a global market place in which manufacturers are increasingly consolidating their product lines and often reticent to produce several different variations on the same product for different regions, that may mean that the incremental impact of many of *Ontario's* efforts would be modest.

Needless to say, it is critical that analysis be conducted and carefully reviewed before any definitive determination is made that new efficiency codes, standards and/or other regulatory initiatives are sufficient to bridge the large gap to the 2015 LTEP energy savings targets. OPA bears the responsibility for doing this analysis. However, OPA has provided no estimates of the magnitude of savings expected from codes and standards in its revenue requirements submission. Moreover, in concurrent proceedings before the Board, OPA has declined a request to produce such estimates.[6] As a result, it is impossible to assess whether OPA's proposed CDM strategy – including its associated 2011 staffing and budget – is adequate to achieve perhaps its most basic conservation obligation. That represents a fundamental accountability failure.

B. Planning to Exceed and/or Accelerate 13 TWh Target

In response to GEC Interrogatory 6, OPA has bluntly stated that it has not conducted any research or planning to determine whether additional CDM was cost-effective and

[6] EB-2010-0332 TCJ1.7.

feasible. That represents a fundamental planning failure. It is also of concern because it means that the Province's electric rate-payers may end up paying higher than necessary electric bills.

C. Achieving 6 TWh of New LDC Savings over 2011-2014

The determination of whether OPA has put forward a plan that can be reasonably expected to achieve the 6 TWh of savings from LDC efforts hinges on how one interprets the Minister's Directive. Specifically, was the Minister expecting 6 TWh of lifetime savings through 2014 (e.g. counting savings from measures installed in 2011 four times, savings from measures installed in 2012 three times, etc.), or was it expecting the LDCs to collectively reduce system load by 6 TWh in 2014? As noted above, if the first interpretation is accurate, then OPA's plan appears consistent with the Directive; if the second interpretation is more appropriate, then OPA's plan falls well short – i.e. not even reaching 50% – of the requirements.

The language in the Minister's Directive is admittedly not as clear as would be ideal. However, several factors suggest that interpreting the directive as 6 TWh in cumulative persisting savings in 2014 would be most appropriate.

1. **Consistency with industry terminology**. In the North American energy efficiency industry, energy savings goals are almost always expressed as either incremental new annual savings (i.e. the new annual savings that will be produced from one year of CDM efforts) or cumulative persisting annual savings (i.e. the cumulative effects of several years of CDM efforts on demand in a particular year). Though much less common, savings goals are occasionally expressed as the total lifetime savings from one or more years of CDM efforts (i.e. the annual savings multiplied by the expected average measure life, summed over as many years of program implementation as desired). However, I am unaware of a jurisdiction in which goals have been articulated as lifetime savings up to a particular cut-off date (i.e. OPA's interpretation of the Minister's Directive).
2. **Value of the metric**. Both incremental annual savings and cumulative persisting annual savings are useful in comparing what demand-side initiatives are producing relative to supply. Total lifetime savings are useful as measures of the lifetime benefits of CDM. However, lifetime savings up to a particular cut-off date has little value as a planning metric.
3. **Consistency with the *form* of the LTEP goals**. The Minister's Directive is designed to support achievement of LTEP savings targets. The LTEP energy savings targets are clearly expressed as cumulative persisting annual energy savings targets. Thus, it would make most sense for the LDC goals to be expressed in the same terms.
4. **Consistency with the *substance* of the LTEP goals.** If the LDC delivered programs were indeed being designed to achieve 6000 GWh of cumulative persisting annual energy savings in 2014, the likelihood of the LTEP 2015 target being achieved (after consideration of the impact of codes and standards) would be enhanced, again suggesting that such an interpretation is more consistent with government policy.

5. **Consistency with goal of being a North American leader**. The Ontario government has made clear that it sees the province as a North American leader in energy efficiency. If the Minister's Directive is interpreted as OPA has interpreted it – to be lifetime savings up to 2014 – then the province would be producing incremental average annual savings equal to about 0.7% of annual energy sales over the 2011-2014 period.[7] That is well below what North American leaders are currently planning and in some cases already producing. Indeed, as a recent ACEEE review provided as Attachment A to this evidence shows, half a dozen states are planning to achieve average annual incremental electric energy savings equal to roughly 2% or more of sales between now and 2015. Many others are planning to achieve between 1% and 1.5% per year. Put simply, the OPA's interpretation of the Minister's Directive is inconsistent with the notion that Ontario is a North American leader. If the Minister's Directive was instead interpreted to mean 6 TWh of cumulative persisting annual savings in 2014 from LDCs, then the province's CDM efforts would be producing average annual incremental savings of about 1.3% per year over the 2011 to 2014 period.[8] While well below the levels of the six most aggressive states, that amount of incremental annual savings would be much more consistent with a broader definition of "a North American leader".

4. Implications of OPA's Inadequate Plan

In the context of this proceeding, OPA's planning failures make it impossible for the Board or any other party to assess the adequacy and appropriateness of OPA's proposed 2011 revenue requirement.

It is possible, for example, that OPA is under-investing in staff, consultants and/or other resource costs relative to what would be necessary to meet the LTEP goals and the Minister's Directives. Indeed, the very fact that OPA has neither done the analysis necessary to determine whether it is on track to meet those goals nor assessed whether additional cost-effective savings could be pursued (as required by the Minister's Directive) raises questions about whether its conservation division is adequately staffed.

Beyond these critical procedural needs, OPA's inadequate planning leaves open the possibility that the Province's electric rate-payers will end up paying higher than necessary electric bills.

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[7] As shown in Table 1 above, the OPA plan will produce incremental annual savings of about 0.6 TWh in 2011, 0.9 TWh in 2012, 1.2 TWh in 2013 and 1.5 TWh in 2014 – an average of about 1.05 TWh over the four years. That represents about 0.7% of forecasted provincial sales of just under 150 TWh per year over the same period (LTEP p. 15).

[8] Achieving 6 TWh of cumulative persisting savings from LDCs in 2014 would mean averaging roughly 1.6 TWh of incremental annual savings each year. It would be a little more than 1.5 TWh because some of the savings in 2011, 2012 and 2013 would be from measures with short enough lives that the savings would not persist in 2014 (in response to GEC Interrogatory 11, OPA indicated that 4% of incremental annual savings generated in 2011 would have a life of only 1 year and 14% would have a life of only 2 years). In addition, as the data in Table 1 above suggest, savings from the transmission connected industrial accelerator program would provide an additional 0.3 TWh of savings per year.

UNDERTAKING

Undertaking

Ask OPA whether it will consent to put on the record in this proceeding information on expected savings from codes and standards and other OPA initiatives, other provincial initiatives; to provide aggregated information by year.

Response

OPA's response to Hydro One Networks Inc. (received February 9, 2011):

> "In response to Hydro One's request regarding Undertaking No. TCJ1.7, the OPA advises Hydro One that updated estimates of conservation savings expected to be met through programs and/or policy instruments, rather than OPA funded programs, are anticipated to be made available as part of the Integrated Power System Plan process."

GEC INTERROGATORY 6

QUESTION

Strategic Objective 2 (CDM)

6. Achieving the conservation potential:

   a. Please provide all Ontario conservation potential studies that OPA has and any summary of the overall potential.

   b. In determining cost-effectiveness of CDM opportunities does OPA assume that avoided costs include nuclear capacity? If so please provide OPA's assumption for the cost of that capacity and energy. Please provide a comparison of the values used in avoided costs with the results of the RFP for nuclear power.

   c. The draft Supply Mix Directive calls for acceleration of cost effective CDM where possible. Is OPA conducting research and planning to achieve CDM where cost-effective beyond the specific targets in the directives in anticipation of the supply mix directive?

   d. Please indicate OPA's plan and specific budgetary estimates for items that are anticipated to address the opportunity for added CDM (i.e. beyond the minimum targets) given OPA's assumption for the extent to which the LDCs will target beyond their pro-rata apportionment of the minimum.

RESPONSE

a. In developing the IPSP, the Ontario Power Authority will update the estimated conservation potential. Work in this regard will continue throughout 2011.

   The CDM potentials that the OPA has for the first IPSP are included in the first IPSP (EB-2007-0707) evidence at Exhibit D-4-1 and its Attachments.

b. The avoided costs do not include the capital cost of nuclear power plants.

   The avoided costs include nuclear generation fuel costs, used fuel disposal costs, and variable operating and maintenance costs to the extent that nuclear energy production is saved by implementing any CDM measure.

   OPA has no information on the comparison of avoided nuclear fuel or operating costs in relation to the results of an RFP for nuclear power because the OPA has no information on these results.

c. No, the OPA is not specifically conducting such activities in anticipation of the Supply Mix Directive. Please see the response to part a, above. Work to update the conservation potential will be ongoing throughout 2011.

d. These items will be developed as part of the second IPSP, subsequent to the OPA receiving a new Supply Mix Directive from the Minister of Energy.

MINISTER'S DIRECTIVE

TO: THE ONTARIO ENERGY BOARD

I, Brad Duguid, Minister of Energy and Infrastructure, hereby direct the Ontario Energy Board pursuant to sections 27.1 and 27.2 of the *Ontario Energy Board Act, 1998*, as described below.

The Board shall take the following steps in order to establish electricity conservation and demand management ("CDM") targets to be met by licensed electricity distributors ("distributors") within the timeframe specified herein:

1. Subject to paragraph 5, the Board shall, without a hearing and in accordance with the requirements of this Directive, which relate to the conservation and demand-management targets to be met by distributors and other licensees including the OPA, amend each distributor's licence to add a condition requiring the distributor to achieve reductions in electricity consumption and reductions in peak provincial electricity demand through the delivery of CDM programs ("CDM Programs") by the amounts specified by the Board (the "CDM Targets"), over a four-year period beginning January 1, 2011.

2. In establishing CDM Targets for each distributor, the Board shall:

   (a) ensure that the total of the CDM Targets established for all distributors is equal to 1330 megawatts (MW) of provincial peak demand persisting at the end of the four-year period and 6000 gigawatt hours (GWh) of reduced electricity consumption accumulated over the four-year period;

   (b) specify for each distributor, a CDM Target for the reduction of provincial peak electricity demand and a CDM Target for the reduction of electricity consumption, each of which must be greater than zero; and,

   (c) have regard to information obtained from the Ontario Power Authority ("OPA"), developed in consultation with distributors, regarding the reductions in provincial peak electricity demand and electricity consumption that could be achieved by individual distributors through the delivery of CDM Programs.

3. The Board shall amend the licence of each distributor as follows:

   (a) by adding a condition that specifies each distributor must meet its CDM Targets through:

      (i) the delivery of Board approved CDM Programs delivered in the distributor's service area ("Board-Approved CDM Programs");

Ministry of Energy and Infrastructure

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APR 23 2010

Ontario

APR 23 2010

MC-2010-892

Mr. Colin Andersen
Chief Executive Officer
Ontario Power Authority
1600–120 Adelaide Street West
Toronto ON M5H 1T1

Dear Mr. Andersen:

Re: Conservation and Demand Management Initiatives Under the GEA Conservation Framework

I write pursuant to my authority as the Minister of Energy and Infrastructure in order to exercise the statutory power of ministerial direction I have in respect of the Ontario Power Authority ("**OPA**") under subsection 25.32(4.1) of the *Electricity Act, 1998*, as amended.

Conservation is one of the most cost-effective means of dealing with electricity supply issues. This direction focuses on three opportunities to advance conservation:

1. strategic co-ordination of conservation and demand management ("**CDM**") programs with distributors ("**LDCs**") and the Ontario Energy Board ("**OEB**");
2. energy efficiency and demand response programs involving First Nation and Métis communities;
3. support and funding of CDM research and innovation.

1. STRATEGIC CO-ORDINATION

The *Green Energy and Green Economy Act, 2009* received Royal Assent on May 14, 2009, and provides LDCs with new opportunities to participate in the design and delivery of CDM programs.

I have issued a directive to the OEB (the "**CDM Directive**"), instructing it to establish mandatory CDM targets for LDCs to achieve reductions in electricity consumption and reductions in peak provincial electricity demand by the end of 2014 (the "**CDM Targets**") in support of the government's commitment to eliminate coal-fired generation by the end of 2014; and to ensure the total of the CDM Targets established for all LDCs are equal to 1330 megawatts (MW) of provincial peak electricity demand and 6000 gigawatt hours (GWh) of electricity consumption over a four-year period beginning January 1, 2011.

.../cont'd

LDCs will be permitted to meet their CDM Targets by delivering three types of conservation programs to distribution-connected consumers: (1) province-wide CDM programs developed by the OPA, in consultation with distributors ("**OPA-Contracted Province-Wide CDM Programs**"); (2) collective LDC programs designed by groups of synergistic LDCs ("**Board-Approved CDM Programs**"); and (3) individual LDC programs ("**Board-Approved CDM Programs**").

The OPA will play a key role in coordinating and facilitating the successful implementation of the new CDM opportunities provided to LDCs through the *Green Energy and Green Economy Act, 2009.*

Therefore, I hereby direct the OPA to undertake, as of the date of this letter, the following initiative:

- Provide advice to the OEB, following consultation with LDCs, on the appropriate allocation of CDM Targets amongst LDCs;

- Provide advice to the OEB on the administration of LDC CDM activities, including but not limited to the use of OPA cost-effectiveness tests and the OPA protocol process and third-party vendor of record list in order to assess the cost-effectiveness of Board-Approved CDM Programs and to conduct Evaluation Measurement and Verification (EM&V) of Board-Approved CDM Programs, as requested by the OEB; and

- Design, deliver and fund OPA-Contracted Province-Wide CDM Programs according to the following criteria:

<u>CRITERIA</u>

<u>Principles</u>

1. The OPA will design OPA-Contracted Province-Wide CDM Programs, taking all reasonable steps to collaborate with LDCs.
2. LDCs will deliver OPA-Contracted Province-Wide CDM Programs to distribution system-connected consumers to achieve all or a portion of their CDM Targets.
3. The OPA will provide certainty of funding to LDCs for the four-year term of the OPA-Contracted Province-Wide CDM Programs.
4. The OPA will be responsible for the evaluation, measurement and verification of the OPA-Contracted Province-Wide CDM Program results.
5. The OPA will ensure OPA-Contracted Province-Wide CDM Programs are marketed with consistent messaging under a common Provincial brand, once created, and co-branded with LDC marks. It is expected that there will be a common Provincial brand which includes any mark or logo that the Province has used or is using, has created or will be created by or on behalf of the Province, and will also be made available to natural gas utilities for marketing of natural gas conservation programs.

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Table 1

OPA Efficiency Metrics

	2009 Actual	2010 Forecast	2011 Budget	% change 2011 vs. 2010
Net Revenue Requirement	$64.9	$64.8	$62.1	-4.1%
OPA Budget, % Total Program Spending	3.8%	3.3%	2.9%	-12.3%
OPA Budget, $M	$64.1	$65.5	$64.1	-2.1%
Total Program Spending, $M	$1,626	$1,914	$2,146	12.1%
Number of FTE	197	235	235	0.0%
CONSERVATION:				
Conservation - net annual peak demand reduction (MW, 2005 base)†*	1,872	2,285	2,390	4.6%
per FTE (MW / FTE)	10	10	10	4.6%
per OPA budget (MW / $M)	29	35	37	6.9%
Conservation - net annual energy reduction* (GWh)	1,476	2,146	2,479	15.5%
per FTE (GWh / FTE)	7	9	11	15.5%
per OPA budget (GWh / $M)	23	33	39	18.0%
GENERATION:				
Renewable supply contracted under FIT, and microFIT programs (MW)		2,509	3,359	33.9%
per FTE (MW / FTE)		11	14	33.9%
per OPA budget (MW / $M)		38	52	36.8%
In-Service capacity under contract (MW)	6,363	11,865	14,583	22.9%
per FTE (MW / FTE)	32	50	62	22.9%
per OPA budget (MW / $M)	99	181	228	25.6%
All other Generation contracted by the OPA	12,390	16,123	17,180	6.6%
per FTE (MW / FTE)	63	69	73	6.6%
per OPA budget (MW / $M)	193	246	268	8.9%

† 2010 forecast does not consider 2009 verified results

** Annual savings are total savings that occur in a given year. Annual savings equal incremental savings plus savings that are still persisting from previous years*

ARTICLE 4
FUNDING AND PAYMENT TERMS

4.1 General Principles Applicable to LDC's Use of OPA-Provided Funding

(a) The LDC represents, warrants and covenants that it has, and will at all times during the Term maintain, internal by-laws, policies or other binding rules designed to ensure prudent use by the LDC of ratepayer funds, including rules relating to: (A) the LDC's procurement of products and services from third party service providers; and (B) expenses that, if incurred by or on behalf of the LDC, its employees or representatives, are properly incurred and therefore eligible for reimbursement by the LDC (collectively, the "**LDC Expenditure Policies**") that:

(i) are consistent with Laws and Regulations; and

(ii) have been approved by the LDC's board of directors (or equivalent) or an individual or committee authorized by such board.

(b) The LDC will use the funds provided to it by the OPA hereunder in good faith and in a reasonable and prudent manner in accordance with the LDC Expenditure Policies and only for purposes solely related to the OPA-Contracted Province-Wide CDM Programs. Without limiting the generality of the preceding sentence, the LDC will:

(i) use the Program Administration Budget only for LDC Eligible Program Administration Expenses;

(ii) not exceed the permitted amounts for an LDC Eligible Program Administration Expense provided for in the LDC Expenditure Policies; and

(iii) follow competitive procurement processes unless a competitive procurement process is not required for a specific transaction pursuant to the LDC Expenditure Policies.

4.2 Program Administration Budget Amounts

(a) The OPA will provide pre-funding in accordance with Table 1 of Schedule A-5 to the LDC for LDC Eligible Program Administration Expenses incurred by the LDC during the Term in the performance of its obligations in respect of each Registered CDM Program. The total of such pre-funding in respect of a Registered CDM Program will not exceed such CDM Program's Program Administration Budget, as set forth in Section 1 of Schedule A-5, as such amount may be adjusted in accordance with the terms hereof.

(b) Except as provided in this Section 4.2 for the C&I Program, the OPA will advance to the LDC semi-annually, but not earlier than the first Business Day of each January and July of the Term, an amount calculated as the percentage of the Program Administration Budget for each applicable Registered CDM Program for the applicable six-month period as set forth in Table 1 of Schedule A-5; provided, however, that the OPA will only be required to advance funds pursuant to this Section 4.2(b) in respect of a CDM Program from the time that such CDM Program is Registered as provided in Section 3.2 or Section 3.3, as applicable. If the LDC has Registered to deliver the C&I Program when it comprises only the Initial C&I Initiatives, the OPA will advance on or before the 20th day following the C&I Program becoming a Registered CDM Program and receipt by the OPA of the invoice required by Section 4.6 half of the Program Administration Budget pre-funding amount payable for the first six-month period of the Term as set forth in Table 1 of Schedule A-5. On or before the 20th day following the Remaining C&I Initiatives becoming Registered Initiatives pursuant to Section 3.2(a) and receipt by the OPA of the invoice required by Section 4.6, the OPA will advance the remaining half of such first Program Administration Budget pre-funding amount. The LDC may only use the funds advanced pursuant to this Section 4.2(b) to pay LDC Eligible Program Administration Expenses as they become due. The LDC will not use any part of the Program Administration Budget for a Registered CDM Program to pay LDC Eligible Program Administration Expenses incurred in connection with another Registered CDM Program or any other matter.

4.3 Participant Based Funding and Participant Incentives Payments

The OPA will pay to the LDC monthly in accordance with the applicable Initiative Schedule the Participant Based Funding Amount and Participant Incentives, if any, for each Registered Initiative. For certainty, not all Initiatives provide for Participant Based Funding Amounts or Participant Incentives.

4.4 Capability Building Funding Payments

The OPA will pay to the LDC monthly in accordance with the applicable Initiative Schedule the Capability Building Funding Amount, if any, for each Registered Initiative. For certainty, not all Initiatives provide for Capability Building Funding Amounts.

4.5 Cost Efficiency Incentive

For each Registered CDM Program, the LDC is entitled to receive and retain from the funds of such Registered CDM Program's Program Administration Budget that remain unspent and not payable as incurred but unpaid LDC Eligible Program Administration Expenses at the end of the Term, an incentive (the "**Cost Efficiency Incentive**") as calculated pursuant to Schedule A-5, provided that:

(a) no LDC Event of Default has occurred and is continuing;

(b) LDC Eligible Program Administration Expenses are less than the Program Administration Budget for such Registered CDM Program;

(c) the LDC has used Commercially Reasonable Efforts to achieve the Electricity Savings Target and the Peak Demand Savings Target for such Registered CDM Program; and

(d) such Registered CDM Program has not been terminated pursuant to Article 10 or otherwise.

4.6 Payment Procedure and Invoicing

(a) The OPA will not be obligated to pay any amount pursuant to Sections 4.2 to 4.5, inclusive, unless it has received from the LDC invoices issued in accordance with this Section 4.6 with respect to Program Administration Budget pre-funding, Participant Based Funding Amounts, Capability Building Funding Amounts and Participant Incentives (in each case, plus Applicable Taxes) payable to the LDC by the OPA, as applicable.

(b) The OPA will use Commercially Reasonable Efforts to provide functionality in the Program Management System to enable the creation and administration of billing reports for each Registered CDM Program ("**Billing Reports**"). Following notice from the OPA of the implementation of this functionality, the LDC will use the functions relating to the creation and administration of Billing Reports pursuant to the reasonable instructions received from the OPA, as such instructions may be reasonably amended or modified from time to time.

(c) The LDC will invoice the OPA with respect to all Program Administration Budget pre-funding, Participant Based Funding Amounts, Capability Building Funding Amounts and Participant Incentives, and each invoice (other than for Program Administration Budget amounts) must attach the Billing Report that is generated by the Program Management System pertaining to such invoiced amounts. For certainty, invoices for Program Administration Budget pre-funding are for administration purposes and supporting information is not required to be submitted therewith by the LDC.

(d) Prior to the implementation of the Billing Report functionality of the Program Management System, or if the OPA notifies the LDC that the Program Management System is not in service, the LDC will prepare invoices for submission to the OPA and will attach all supporting documentation and information to the invoice, all in form and substance acceptable to the OPA, acting reasonably, pursuant to this Section 4.6 and as may be further provided in the respective Initiative Schedules.

(e) The LDC is entitled to invoice the OPA at any time for the period of time set forth in the invoice (the "**Billing Period**") for:

2. Cost Efficiency Incentive

The Cost Efficiency Incentive will be calculated for each Registered CDM Program as a percentage of the cost savings represented by the difference between the PAB Budget and the Actual Spend, where:

"**PAB Budget**" is the Program Administration Budget for the applicable Registered CDM Program, as such amount may be adjusted pursuant to Section 3.2, Section 3.3, Section 7.3 or Article 10; and

"**Actual Spend**" is the aggregate, without duplication of: (i) LDC Eligible Program Administration Expenses for the applicable Registered CDM Program spent or incurred by the LDC during the Term (and in the case of incurred expenses, paid within ninety (90) days following the Term); and (ii) the estimated or actual, as the case may be, Post Termination Administration Costs for the applicable Registered CDM Program spent or incurred, or expected to be spent or incurred, by the LDC after the Term.

The Cost Efficiency Incentive will be the sum of two tiers of incentives:

(a) in the first tier, if Actual Spend is greater than or equal to 95% and less than 100% of PAB Budget, the LDC will be eligible to retain 60% of the difference of PAB Budget less Actual Spend and the remaining 40% will be returned to the OPA; and

(b) in the second tier, if Actual Spend is greater than or equal to 80% and less than 95% of PAB Budget (i.e. saving between 20% and 5%), the LDC may retain 80% of the difference of 95% of PAB Budget less Actual Spend and the remaining 20% will be returned to the OPA.

No amounts may be retained by the LDC for amounts above the positive difference of PAB Budget less Actual Spend that exceeds 20% of PAB Budget.

Actual Spend (as % of PAB Budget)	**Cost Efficiency Incentive Share for LDC**
≥ 95% - 100%	60%
≥ 80% - <95%	80%
< 80%	0%

Exhibit A-5-1 to Schedule A-5

Table 1 to Exhibit A-5-1: 2011 – 2014 LDC Program Administration Budget

CDM Program	Residential	C & I	Industrial
	Program Administration Budget ($)	Program Administration Budget ($)	Program Administration Budget ($)
2011 - 2014			

[Note to Finalization: The amounts to be recorded in the cells of Table 1 above in respect of the Registered CDM Programs have been agreed to and accepted by the LDC as at the Effective Date.]

GEC INTERROGATORY 7

QUESTION

Strategic Objective 2 (CDM)

7. Regarding OPA's measure savings estimates:

a. For which measures and programs does OPA expect to estimate savings using "deemed" assumptions? For which does it expect to estimate savings on a custom basis?

b. Please describe the process by which deemed assumptions have been developed?

c. Does OPA use any deemed free ridership or deemed net-to-gross ratio assumptions? If so, are such assumptions updated whenever program designs (e.g. incentive levels, aggressiveness of marketing campaigns, etc.) change? How frequently are they updated?

d. What process does OPA have in place to ensure that actual savings are consistent with both deemed assumptions and custom project savings estimates?

e. Does the process include an independent annual audit?

    i. If so, how is the auditor selected?

    ii. Who has input into its selection?

    iii. Does the selection and oversight or management of the auditor involve external stakeholders as is the case with gas DSM (e.g. akin to the gas utilities' Evaluation and Audit Committees)? If so, please explain which stakeholders are involved and how OPA decided which to involve?

    iv. Does it involve external stakeholders in any other way? If so, please explain.

f. Does OPA involve external stakeholders in the evaluation planning, including prioritization of evaluation studies (e.g. akin to the Evaluation and Audit Committees in place for gas DSM)?

RESPONSE

a) During program planning, the OPA develops resource savings projections for each program based on program-specific input assumptions, including: program participation levels, measure/project-level resource savings and net-to-gross ("NTG") adjustment factors, such as free-ridership. These input assumptions are informed by a number of sources, including: market research, previous program evaluations, jurisdictional review and the OPA Prescriptive and Quasi-Prescriptive Measure and Assumptions Lists.

During program evaluation, actual results are assessed in accordance with the OPA Evaluation Measurement & Verification ("EM&V") Framework and Protocols and compared to program design estimates. Actual evaluated results, rather than program design input assumptions, are used for the purposes of determining NTG ratios (including free ridership) and savings impacts.

b) The OPA's Measures and Assumptions Lists are managed internally by OPA staff. The lists are continuously updated and informed by: independent third-party measure-specific research, results of third-party evaluation on OPA-funded conservation programs and external stakeholder submissions for new and/or revised measures. More information on the OPA's submissions process for new measures and revisions to existing measures is available on the OPA website at: http://www.powerauthority.on.ca/measures-assumptions-lists/submission-process-for-measures

c) During program planning, assumptions regarding NTG adjustments, including free ridership, are used as one of the inputs to develop resource savings projections. The NTG adjustment assumptions used in program planning are typically informed by a number of sources, including: market research, previous program evaluations, and jurisdictional reviews. The OPA's Measures and Assumptions Lists do not contain default free ridership levels or other NTG adjustments, as these adjustment factors are a function of program design and delivery.

During program evaluation, an assessment of the actual NTG adjustments for the program is done in accordance with the OPA EM&V Framework and Protocols. Actual evaluated results, rather than program design input assumptions, are used for the purposes of determining net-to-gross adjustments (including free ridership) and savings impacts.

d) The OPA verifies the actual savings through EM&V processes that comply with the OPA EM&V Framework and Protocols. The verified savings help to inform the input assumptions used in the design of subsequent programs.

e) No, the annual audits that support Natural Gas Demand Side Management activities are not a characteristic of the EM&V process that supports electricity Conservation and Demand Management activities. This is because EM&V for electricity CDM activities is performed by independent third-party contracted evaluation managers selected by a competitive Request for Proposal process. EM&V conclusions are inherently independent.

f) In 2007 the OPA developed, after a comprehensive stakeholder consultation, the EM&V Framework and Protocols. External stakeholders have not been involved in evaluation planning for specific CDM Programs, which are subject to the EM&V Framework and Protocols.

David I. Poch Barrister tel. (613) 264-0055 fax (613) 264-2878

07 April 2011

Mr. Gord Miller
Environmental Commissioner of Ontario
1075 Bay Street, Suite 605
Toronto, ON, M5S 2B1

Dear Sir:

Re: ECO Mandate on OPA CDM EM&V

I represent the Green Energy Coalition (David Suzuki Foundation, Greenpeace, Sierra Club of Canada and WWF-Canada) in current proceedings before the Ontario Energy Board concerning OPA's annual revenue requirement (OEB Docket EB-2010-0279). GEC has filed the evidence of Mr. Chris Neme addressing various CDM-related matters. A copy of Mr. Neme's report is attached for your information. Among Mr. Neme's recommendations is a suggestion for enhanced transparency and accountability of OPA's evaluation, monitoring and verification process. Specifically, Mr. Neme has suggested a mechanism akin to the DSM Evaluation and Audit Committees (EAC's) in place for Enbridge and Union Gas to ensure the impartiality and rigour of the evaluations and a proposed audit.

We anticipate that this issue will trigger a discussion of the role of the ECO and whether Mr. Neme's proposal would result in overlap with your role. To assist the Board we would ask you to confirm our understanding that your role in this regard is to report to Parliament on CDM progress and to identify barriers but does not currently include oversight of the OPA's selection, retention and supervision of evaluators.

Sincerely,

David Poch

1649 Old Brooke Road, Maberly, Ontario K0H 2B0 e-mail: dpoch@eelaw.ca

Environmental
Commissioner
of Ontario

Commissaire à
l'environnement
de l'Ontario

AUDI ALTERAM PARTEM

Gord Miller, B.Sc., M.Sc.
Commissioner

Gord Miller, B.Sc., M.Sc.
Commissaire

April 12, 2011

Mr. David Poch
Barrister
1649 Old Brooke Road
Maberly, ON K0H 2B0

Dear Mr. Poch:

RE: ECO Mandate and the Ontario Power Authority's Evaluation of CDM

Thank you for your letter on behalf of the Green Energy Coalition concerning the Ontario Energy Board's proceedings on the Ontario Power Authority's annual revenue requirement.

You asked for clarification of the Environmental Commissioner of Ontario's (ECO) role with respect to reporting on energy conservation, particularly my role in relation to the OPA's evaluation, measurement and verification (EM&V) of Conservation and Demand Management (CDM) results.

Please be advised that the ECO has no responsibility and does not participate in any manner in the OPA's selection, retention and supervision of third parties that conduct EM&V studies. The ECO provides no oversight of evaluators and does not receive or comment on draft EM&V reports. I believe there is no overlap or duplication between my role and the proposal contained in Mr. Neme's evidence that you provided with your letter.

In the past, to produce my annual energy conservation progress report, as mandated under the *Environmental Bill of Rights, 1993*, the extent of my interaction in the EM&V process has been to request and receive final evaluator reports, which were not publicly available, once these were approved by the OPA. My understanding is that the OPA recently decided to make these reports available to the public on its website.

As you may know, a recommendation of my 2009 report was the need for greater transparency and public input in electricity's regulatory framework to ensure consumers' support for conservation. My report noted the importance of rigorous evaluation to ensure accountability in the provision of

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incentives to distributors for claimed energy savings, and to improve program design. Part of my function is to inform members of the Legislative Assembly on conservation developments, and I noted the unique contribution that the evaluation and audit committee has made in natural gas demand-side management.

I trust this information is helpful.

Sincerely,

Gord Miller
Environmental Commissioner of Ontario

- The division will continue to build community and municipal involvement through LDCs to engage all Ontarians in conservation. In 2010, community and municipal involvement reached 82% of Ontarians versus only 59% in 2009.
- The division will continue to augment the Power Pledge with a youth campaign to reach elementary, secondary and college youth. Research shows this demographic spends on average 53 hours a week using electronic devices and hence they are huge consumers of electricity.

- **Developed a comprehensive communication and outreach plan in conjunction with the Electricity Distributors Association and the Association of Municipalities of Ontario.**
  - For both organizations, the OPA will identify the key issues of importance to each organization and relate these to the activities to be undertaken by the OPA over the coming year. This information will form the base for the development of the communications and outreach plan.
  - A dedicated communications liaison will be established with each organization to explore the different methods that can be used to communicate and solicit feedback from their memberships. The plan will be revised as required based on these interactions.

- **Proactively and consistently delivered high-quality stakeholder outreach and engagement activities.**
  - At each of the in-person consultation sessions, the OPA provides a feedback form where attendees can provide their feedback on such items as: meeting content, materials, format, location, meeting facilities and so forth. Input received from the forms is reviewed at the end of each session and changes identified for future sessions. A challenge to date has been soliciting this feedback from participants of web events and large-scale in-person events such as Public Information Centres and open houses. In 2011, an on-line feedback form will be developed and participants will be encouraged to visit the OPA website and provide us with their feedback on virtual and large-scale events as well.
  - The OPA already utilizes a number of different formats for engaging stake-holders such as: web events, in-person sessions (sometimes with simultaneous web broadcasting), and teleconferences. New formats for stakeholder engagement sessions will continue to be explored and the OPA will conduct a best practices review of other energy sector organizations to solicit ideas and input for this review.

2.0 2010 BUDGET

The 2010 Budget for Strategic Objective 6 by major cost category, as well as a summary of the variance between the 2009 and 2010 Budgets can be found in the following Table 1.

Summary of OPA Micro-FIT Monthly Activity

	Sept 13, 2010	**Oct 12**	**Nov 9**	**Dec 6**	**Jan 5, 2011**	**Feb 4**	**Mar 4**	**Apr 1**	**Apr 29**
Total applications	19891	21084	22108	23154	24217	25245	26569	27494	28411
Applications terminated				**1978**	**2089**	**2155**	**2246**	**2416**	**2605**
Conditional offers	10967	14011	15716	17002	18176	19651	20292	20391	20705
Contracts executed	894	1416	1825	2181	2619	3408	3955	4269	4634
New applications		1193	1024	**1046**	**1063**	**1028**	**1324**	**925**	**917**
New offers		3044	1705	1286	1174	1475	**641**	**99**	**314**
New contracts		522	409	356	438	789	547	314	365

Note: 99 percent of microFIT Program applications are for solar PV projects

Source: http://microfit.powerauthority.on.ca/bi-weekly-microfit-program-reports

Rule change for new microFIT applications:The OPA has made a rule change that applies to all microFIT applications submitted on or after December 8, 2010. Applicants will need to obtain an offer to connect from their local distribution company before the OPA issues a microFIT conditional offer of contract. (http://microfit.powerauthority.on.ca/)

>>> ------------Original Message------------
>>> From: <DXGenerationConnecti@HydroOne.com>
>>> To: escheuneman@xplornet.com
>>> Date: Thu, Feb-10-2011 5:28 PM
>>> Subject: Re: Status of the Request to Connect Your Proposed
>>> microFIT FIT-MFIM7KW
>>> IMPORTANT INFORMATION
>>>
>>>
>>> Re: Status of the Request to Connect Your Proposed microFIT
>>> Project # FIT-MFIM7KW
>>>
>>> The tremendous success of the Ontario Power Authority's (OPA)
>>> microFIT program signals that Ontarians clearly want to play an
>>> important role in feeding clean and renewable sources of power into
>>> the electricity grid. Hydro One is pleased to have already connected
>>
>>> over 2,600 microFIT projects across the province. To date, a total
>>> of more than 3,700 microFIT projects have been connected by Hydro
>>> One and other local distribution companies.
>>>
>>> However, some applicants are facing system constraints and will not
>>> be able to connect until system upgrades are made.
>>>
>>> Based on our analysis, we have determined that your project is
>>> impacted by system constraints. We regret to inform you that we are
>>> unable to provide you with an offer to connect your microFIT project
>>> at this time.
>>>
>>> As noted in the government's Long Term Energy Plan, Ontario will
>>> continue to invest in upgrades to the transmission and distribution
>>> systems to accommodate renewable energy supply in an efficient,
>>> safe, and cost-effective way.
>>>
>>> Hydro One will be working to identify and prioritize the necessary
>>> investments to enable further connections. Planning and
>>> implementing viable system upgrades will require time and
>>> coordination with other sector agencies, including the Ontario
>>> Energy Board who is the body responsible for approving system
>>> investments of this nature.
>>>
>>> Hydro One continues to encourage applicants to not make any
>>> purchases related to their projects unless they have received and
>>> accepted an Offer to Connect.
>>>
>>> If you would like to continue to participate in the microFIT
>>> program, the OPA can extend your conditional offer for up to one
>>> year to help to preserve the option for you to go ahead with your

>>> project in the future. In order to qualify for a microFIT
>>> conditional offer extension, please send an e-mail to
>> microFIT@powerauthority.on.ca
>>> (please put “CONDITIONAL OFFER EXTENSION” in the subject line) and
>>> include your microFIT Reference Number.
>>>
>>> For information about participating in the microFIT program, or if
>>> you would like to withdraw your program application, please send an
>>> e-mail tomicroFIT@powerauthority.on.ca, or you can call
>>> 1-888-387-3403.
>>>
>>> Thank you for your interest in this program.
>>>
>>> Sincerely,
>>>
>>> Business Customer Centre
>>> Hydro One Networks Inc.
>>> <attc563.jpg>
>>>

GEC INTERROGATORY 2

QUESTION

Strategic Objective 1 (Power System Plan)

2. (B-2-1, p. 6 & 7) Please provide details of the economic metric OPA will utilize in the ECT. How is OPA determining such a metric and proceeding to apply the ECT “in the second quarter of 2011” prior to the development of a current IPSP and in particular in the absence of a current cost estimate for nuclear?

RESPONSE

As part of the Economic Connection Test ("ECT"), the OPA will use a $/kW metric as a screening tool to initiate development work for transmission expansion projects. The metric measures the estimated cost of the project (offset by credits that represent additional benefits provided by the project) against the amount of Feed-in-Tariff ("FIT") renewable generation enabled by the expansion. The metric is compared against a threshold value of $500/kW, a level consistent with historical transmission investment in Ontario. The use of this metric is unique to the FIT standard offer program, for the purpose of implementing renewable energy development policy.