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Pembina Institute Submission to Ontario Power Authority on the 2008-2010 CDM Program Portfolio

the PEMBINA institute
Sustainable Energy Solutions

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The Pembina Institute is pleased to provide the following comments on the *OPA 2008–2010 CDM Program Portfolio* and *Chief Energy Conservation Officer 2008–2010 Fiscal and Regulatory Plan* presented to the Conservation Business Stakeholder Advisory Group for review.

Contents

Summary

The Ontario Power Authority (OPA) has developed a portfolio of conservation and demand management (CDM)[1] programs for the period 2008–2010 based on an analysis of conservation potential, application of program evaluation criteria, and a recent gap analysis based on recommendations by the ICF Consulting Group, Inc. At the same time the OPA's Conservation Bureau plans to continue to promote adoption of more stringent energy efficiency standards and energy codes.

The proposed program portfolio fills many of the gaps identified by ICF, and has resulted in a number of lauded and successful initiatives, such as updated and widely promoted home energy efficiency programs.

However, a number of shortcomings impede OPA from reaching its objective to reduce energy demand and generate "new supply" via conservation and efficiency. These include the following:

1. The 2008–2010 portfolio focuses more on acquiring peak MW to meet short term targets rather than on energy efficiency measures that would reduce base load over the longer term.

2. The portfolio is not linked in any way to the Conservation Bureau regulatory plan (standards and codes), thereby not taking advantage of the opportunity to leverage faster upgrading of these regulations.

3. There is no indication as to how the CDM portfolio would either contribute to long term transformation in each sector and in end uses or maximize the acquisition of cost effective CDM. There is no overall sector or end use planning showing how the current 2008–2010 CDM portfolio provides the first step in a comprehensive market transformation process that would acquire as much cost effective CDM as possible.

4. There is no reason why a 10,000 MW long-range CDM strategy focusing on both permanent base load and peak load reduction could not be put in place by 2010, modeled after experience in California, Vermont, New York or Texas. The current program looks only at what can be achieved easily in the next couple of years, rather than what needs to be both initiated and implemented in this time to achieve a long term goal via a long term strategy.

5. While great strides have been made to ensure that energy efficiency and CDM once again become priorities in Ontario, the provincial government could provide more leadership that would allow OPA to achieve the full cost effective CDM

[1] In Ontario, Conservation and Demand Management or CDM includes utility management or support of customer energy efficiency, conservation, fuel switching, demand response (shifting), and self generation by customers. In most other jurisdictions this is called Demand Side Management or DSM.

potential. This could be done by improving the coordination of energy efficiency initiatives in the province.

Recommendations to OPA

The Pembina Institutes recommends the following actions be taken:

1. Raise the targets for the 2008–2010 CDM portfolio to at least the cost effective potential identified by ICF — particularly for those programs that include energy efficiency and fuel switching and that reduce base load demand. The current pilot program approach is unnecessary and should be abandoned.

2. Develop a long-range plan (based on ICF's recommendations) that sets out a strategy, timelines, targets and key programs over the next 20 years for achieving permanent base load reduction. This plan should iteratively inform the 2008–2010 program. We further recommend that the CDM 2025 target be raised to 10,000 MW — the effective long-range potential identified by ICF.

3. Make explicit linkages between lighting CDM programs and the new National Lighting Initiative and standards aimed at phasing out inefficient lighting. Further, implement similar coordination between programs and regulations for other key end uses such as new building and home construction, air conditioning and industrial drive-power.

4. Resolve the confusion over support for self generation as soon as possible.

5. In the interest of facilitating a bolder portfolio that serves to transform all electricity using markets and maximizes cost effective CDM,
   - immediately establish a process to develop implementation plans or "road maps" for market transformation in each sector and end use so that CDM programs and regulatory actions can be designed with a specified role and target within this road map
   - retain experienced staff from jurisdictions that have implemented comprehensive CDM programming.

6. Expand the terms of reference of the OPA CDM Business Advisory Group to include
   - ongoing guidance to the OPA on the design of the overall CDM strategy, including CDM programs to be delivered by all third parties
   - review and approval of priority sector and end-use implementation plans
   - working with the OPA on CDM implementation plans or "road maps" for each sector and end use so that a complementary suite of programs is designed for each market segment
   - working with the OPA on a long-range base load reduction plan and strategy.

   The advisory group should participate regularly in the government/utility forum on regulation and other policy tools proposed by the Conservation Bureau.

7. Put in place the government/utility forum on regulations and other policy tools as proposed by the Conservation Bureau. The forum should be backed up by a memorandum of understanding between the relevant provincial agencies and the OPA to regularly update codes and standards based on Conservation Bureau recommendations.

8. Support a training, certification and oversight initiative through a partnership among the Conservation Bureau, community colleges and contractor organizations across the province. Further, take immediate action to assess gaps in capacity to deliver CDM programs, and ensure that efficient manufacturing, product distribution, service and consulting capacity is available in all regions of Ontario. Plans to fill these gaps via regional training centres or other capacity building programs should be based on this gap analysis and incorporated into all program designs.

9. Set up a CDM Coordination and Service Unit to help local distribution companies (LDCs) with the delivery of OPA CDM programs. Operated by the Conservation Bureau and experienced LDCs, the service unit would coordinate CDM programming across Ontario so that all customers benefit to a similar extent from common programs.

Recommendations to the Government of Ontario

1. Create an energy efficiency secretariat reporting to the Ontario Provincial Cabinet. This body would be tasked with coordinating energy efficiency activities among all implementing agencies in the province and developing a provincial action plan for transforming energy use in key sectors and end uses. The plan should be implemented as Ontario's commitments to the Council of Energy Ministers National Energy Efficiency Action expected to be signed by all Provinces in the fall of 2007.

2. Reactivate a Conservation Action Team to work with the secretariat to provide horizontal high-level coordination among all government ministries.

3. Establish a memorandum of understanding (MOU) on codes/standards between the provincial government and the OPA. Such an MOU would allow the coordination of CDM programming with standards and code changes to achieve full market transformation in each market segment, as is done in many U.S. jurisdictions.

4. Prepare a second MOU to clarify the government's plans regarding the implementation of the provisions of Bill 21 regarding energy conservation planning, procurement, and capital investment by public agencies so that these factors can be incorporated into the OPA's overall CDM strategy.

5. Harmonize OPA and Ontario Energy Board (OEB) LDC CDM programming procedures. All CDM programs delivered by LDCs under the OPA CDM mandate should be eligible to receive incentives under the OEB incentive mechanism process.

6. Develop a Provincial Energy Efficiency Procurement plan. The Ministries of Energy and Government Services should develop an energy efficient procurement protocol for all government purchasing or leasing of equipment and facilities.

7. Employ Bill 100 Funding Mechanisms for Energy Efficiency and Conservation Programming. Rather than responding to directives, the OPA should employ the financing mechanisms provided to it under Bill 100 to fund conservation programs.

The Provincial Record on CDM to Date

From a starting point in 2002 of no targets, no programming, and virtually no institutional capacity on CDM, the provincial government has made considerable progress in establishing a CDM framework for the province. The province's major achievements have included the following:

- The establishment of overall electricity-related CDM targets via the June 2006 Supply Mix Directive to the OPA.
- The establishment of the OPA Conservation Bureau and appointment of a Chief Conservation Officer.
- The enactment of new energy conservation legislation (The Energy Conservation Leadership Act, 2006).
- The establishment of an initial portfolio of CDM programs by the OPA.
- The provision of rate-based funding to LDCs for CDM programming and the establishment of shared savings mechanisms (SSMs) and lost revenue adjustment mechanism (LRAMs) for distribution utilities.
- The adoption of revisions to the energy efficiency provisions of the building code, and the adoption of new standards for energy consuming appliances and equipment under the Energy Efficiency Act.
- Standard offer contracts for small-scale renewable power sources and cogeneration.

At the same time, a number of significant weaknesses and gaps in the province's overall approach to conservation and demand management are evident. These are described below.

Standards and Codes

Despite experience in other jurisdictions indicating that the regular updating of energy efficiency standards and codes for buildings and equipment is essential to successful energy efficiency strategies, there is no clear plan for the regular upgrading of standards and codes to complement and back stop CDM programming. The Conservation Bureau has done as good a job as can be expected with such an approach. However, it is no substitute for a clear policy and commitment on the part of the provincial government to update standards and codes on a regular basis, keeping pace with the leading jurisdictions in North America in this regard.

Capacity Building

The capacity of the OPA, LDCs and other potential actors to actually deliver CDM programming and services remains a serious gap. The need for capacity building is particularly acute in the context of an effort to launch a series of major CDM initiatives after a decade-long gap in significant electricity-related CDM activity. CDM program

managers, skilled tradespeople, energy service managers[2] and others are needed for program delivery.

SSMs and LRAMs for LDC CDM programming, along with the $163 million "third tranche" funding provided in 2005 and $400 million "bridge funding" provided in 2006, served as the basis for an initial suite of LDC CDM programming. However, LDCs appear to be seeking longer-term funding and policy commitments before making major investments in CDM capacity. The existing OEB total resource cost (TRC) test for CDM initiatives does not consider the environmental and health benefits of avoided generation, with the result that economic benefits of CDM programs are undervalued. Coordination of electricity CDM programming with gas utility CDM initiatives remains weak.

The response to capacity building needs to date has been limited to some pilot initiatives by the Conservation Bureau via its Conservation Fund. There is no evidence of an overall capacity building strategy, and no indication of significant engagement from provincial agencies, such as the Ministry of Colleges and Universities, to address training and education needs.

Provincial Energy Conservation Planning

There seems to be very little linkage at the provincial level among energy efficiency initiatives. These include

- the CDM Directives to OPA
- participation in the development of a national energy efficiency action plan under the auspices of the Council of Energy Ministers
- efficiency initiatives announced under the recent Ontario Climate Change plan
- CDM programming carried out by gas utilities
- standard offer contracts for small-scale renewable power and cogeneration
- federal energy efficiency programs offered in Ontario
- efficiency initiatives included in federal transfers under the Eco Trust program
- participation in federal–provincial collaboratives on energy efficiency improvements in the Building Code, equipment efficiency standards and building labeling.

The lack of coordination of all these separate initiatives and the absence of a provincial plan on energy efficiency and conservation has left OPA to work on its own. The lack of cooperation among OPA, gas utilities and provincial ministries has meant that programs on fuel switching, home energy and building retrofit, new homes and buildings, and industrial efficiency have not been given the attention they need.

The lack of cooperation has also resulted in confusion among customers and within the OPA itself about the role of CDM programming in encouraging small-scale renewable

[2] Sometimes called "circuit riders" these program staff provide one-on-one assistance to businesses and institutions that do not have their own energy managers.

energy and cogeneration. Standard offer contracts exist for these power sources, yet they are also both included in CDM programming.

In addition, no use has been made of the authorities provided through the Energy Conservation Leadership Act to remove barriers to the use of energy efficient goods and services, or to establish energy conservation planning or procurement requirements for public agencies.

Taken as a whole, the Province and OPA have undertaken a wide range of initiatives on CDM. However, the current approach is characterized by a series of discrete initiatives, rather than any overall integrated strategy. The results reported by the Chief Conservation Officer for 2006 indicate that even this fragmented approach is already delivering some reductions in electricity consumption. However, he notes that a more integrated approach will be needed to achieve even the modest CDM targets that have been set through the supply mix directive, or, more broadly, the levels of savings identified as being achievable at less cost than building new sources of electricity supply.[3]

[3] *Ontario – a New Era on Electricity Conservation.* Chief Energy Conservation Officer Annual Report 2006, p68

Assessment of OPA CDM Planning and the 2008–2010 Program Portfolio

Program Planning

The OPA laid out its plans for CDM in *IPSP Discussion Paper No. 3* in 2006. The stated objective was to acquire the maximum cost effective CDM resources through programs that focused on market transformation, building CDM capacity and direct resource acquisition. OPA identified cost effective CDM resource potential in all sectors to be worth $5–9 billion in avoided generation and transmission infrastructure costs given an investment of $4–5 billion.[4] However, OPA proposed to acquire only 60% of these resources, effectively costing consumers billions of dollars as investments are redirected to more expensive energy generation options. OPA also proposed to focus mostly on CDM programs that reduce peak demand rather than those aimed at base load reductions that would allow the closing of coal power plants and the need for new capacity.

The overall institutional framework for CDM planning and program delivery at OPA remains weak, particularly in comparison to other jurisdictions that have pursued successful long term energy efficiency strategies.[5] The August 2006 reorganization of CDM functions within the OPA dissipated responsibility throughout the authority, significantly weakening the coordination and leadership role of the Chief Conservation Officer and Conservation Bureau.

OPA implemented an initial set of CDM programs in 2006/7 based on directives from the Minister of Energy. To assist with the development of a more complete CDM portfolio for the period 2008–2010, the OPA commissioned the ICF Consulting Group in early 2007 to conduct a CDM program gap analysis and to offer recommendations for improvement. The ICF study identified several gaps in the current OPA CDM portfolio, confirmed the existence of significant cost effective CDM resources, and made several recommendations regarding the current portfolio and CDM program planning and development.

OPA established a temporary Conservation Business Advisory Group in 2007 made up of a variety of stakeholders to help finalize the 2008–2010 program portfolio and review the ICF report. However, the mandate of this group does not include longer term CDM planning or advice on how programs should be coordinated with other efficiency-related activities in the Province. The OPA's reason is that, notwithstanding over 20 years of successful CDM experience in other jurisdictions, it cannot make any long term decisions on CDM until is has experience with the current modest portfolio. Implementing

[4] Ontario Power Authority, *Revised OPA Discussion Paper 3: Conservation and Demand Management* (Toronto: OPA, 2007), 12.

[5] US States such as New York State, California, Texas, Wisconsin and Vermont have independent institutions with a clear mandates to manage and implement energy efficiency and DSM/CDM programs. For more information see A.Bailie, R.Peters, M.Horne, K.Zarowny, *Successful Strategies for Energy Efficiency* (Drayton Valley: Pembina Institute, 2006). http://www.pembina.org/pub/1274

programs in the absence of a long-range plan and strategy puts at risk the potential of achieving and exceeding long-range goals. It is advisable to begin deploying elements of a fulsome strategy now, rather than initiating random high-return initiatives in the immediate term.

Moreover, short term initiatives result in "cherry-picking," which may not result in sustainability of reductions over the long term. There is still no overall sector or end use planning process that shows how the current 2008–2010 CDM portfolio is the first step in a comprehensive market transformation process that would acquire as much cost effective CDM as possible.

The OPA also continues to interpret the CDM component of the Supply Mix Directive as establishing a target (1,750 MW by 2010 and 6,300 MW by 2025) to be met from all types of CDM, rather than mandating the pursuit of the full range of cost effective savings that could be achieved through market transformation of key sectors. A recent study by the Pembina Institute and World Wildlife Fund (WWF) showed that acquiring all of the conservatively achievable cost effective potential identified by OPA's own consultants would produce 6,000 MW by 2025 from efficiency and fuel switching alone, along with another 3,000 MW from demand response and self generation. More aggressive policies would increase this potential to 8,000 MW and 3,500 MW respectively.[6]

Despite these limitations, there is evidence that the existing preliminary program and education and awareness initiatives are having an impact on electricity consumption. Ontario's Independent Electricity System Operator reported in January 2007 that total annual demand for electricity in Ontario declined to 151 TWh in 2006, compared to 157 TWh in 2005.[7] The Chief Conservation Officer's May 2007 Supplement to his 2006 Annual Report claims a weather-adjusted reduction in peak demand of 1,080 MW relative to 2003 by the end of 2006, with the sources of the reductions attributed as outlined in Table 1 below.[8]

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[6] *Renewable is Doable: Analysis of Resource Potential and Scenario Assumptions*, Pembina Institute and WWF Canada, August 2007

[7] *IESO Releases 2006 Generation and Consumption Figures.* News Release, Independent Electricity System Operator, January 16, 2007, http://www.ieso.ca/imoweb/media/md_newsitem.asp?newsID=3232.

[8] Chief Conservation Officer, *2006 Results: Supplement to Annual Report 2006* (Toronto: Conservation Bureau, May 2007), 10-11. http://www.conservationbureau.on.ca/Storage/17/2219_CECO_Report_May_2007.pdf.

Table 1: Reported peak demand reductions to year end 2006

Category	Reduction in Peak Demand (MW)
Energy Efficiency	
OPA Conservation Programs	18
LDC Conservation Programs	145
Federal and Provincial House in Order	68
Energy Management Companies	40
Natural gas utilities	8
EnerGuide for Houses	10
Energy Efficiency Total	**289**
Demand Management	
OPA Demand Response 1	164
Loblaw Properties DR	10
York Region DR	3
LDC DR	4
IESO transitional DR and Dispatchable Loads	134
Demand Management Total	**315**
Self-Generation/Cogeneration	
LDC Distributed Generation	1
Enwave Deep Lake Water Cooling	26
Self-Generation/Cogeneration Total	**27**
Natural Conservation	**350**
Grand Total	**1,081**

The ICF Gap Analysis

The ICF gap analysis provided a good indication of where programs are needed to address the end uses with the largest potential such as lighting and air conditioning, and offered its own portfolio of new programs to fill these gaps with the total resource cost estimated for many of them. The ICF gap analysis only addressed efficiency programs; fuel switching, demand management and self generation programs were not proposed.

ICF recommended programs that go deeper into priority sub-sectors, segment the market more precisely, treat buildings as a system, increase focus on the industrial sector and provide financing and training. ICF suggest the following programs to fill the gaps:

- Commercial/Industrial sector programming — targeted high energy using end use/market segment programs (e.g., health care and hospitality, training/technical support programs, benchmarking and re-commissioning programs for buildings, direct install for small and medium businesses).
- Residential sector programming — new construction programs, whole house audit/retrofit programs, contractor/renovator training, targeted lighting and appliance programs.

ICF also compared current programs with “best practice” demand side management (DSM) programs in other successful jurisdictions, suggesting that this experience could be applied effectively in Ontario to quickly recreate a CDM capability.

ICF estimated that the current portfolio would acquire only a portion of the 2010 achievable cost effective energy efficiency (72%), conservation (30%) and fuel switching (63%) potential identified by consultants through modeling. On other hand the portfolio proposed to achieve 160% of the identified demand management potential and 110% of the self generation potential. ICF could find no rationale for these choices, although it does reflect OPA's short term focus on peak reduction. The average for 2010 is 87% of identified potential.

ICF also noted that none of the proposed OPA CDM programming was linked to any of the OPA work on codes and standards proposed by the Conservation Bureau. ICF indicated that this is particularly significant in the residential sector where 40% of savings could be achieved through standards and codes, and therefore the OPA has the opportunity to use CDM programs to accelerate (leverage) more rapid market transformation.

The OPA CDM 2008–2010 Portfolio

The final draft CDM portfolio for 2008–2010 was presented to the Conservation Business Advisory Group on August 9, 2007.

The 2008–2010 portfolio does appear to include many of the recommendations made by ICF to fill gaps and includes programs that would be delivered in cooperation with gas utilities, thus allowing more comprehensive housing and building retrofit programs to be included. The proposed 2008 CDM "incremental" portfolio will include

- more LDC programs (custom and standard)
- community engagement in awareness building
- a new residential construction program
- a new appliance program leveraged on the existing "appliance be gone" program
- an expanded residential summer savings program
- a whole house retrofit/efficiency program with gas utilities
- a fuel switching program with gas utilities
- an education and awareness component, including multiple conservation awareness, education awareness, business leadership, and CB support.

Explicit plans to rely on third party delivery – including gas utilities and affinity groups,[9] with OPA playing a coordinating role, but only BOMA Toronto, LDC, City of Toronto. However, little information is provided on the proposed delivery agents for many programs or on how the OPA will ensure coverage of the whole province if LDCs of local delivery agents choose not to deliver OPA programs. A more comprehensive plan for capacity building and market transformation with active involvement of all delivery agents is essential.

[9] These include business improvement associations, industry associations, NGOs and community groups.

Notwithstanding the ICF recommendations for a strategic approach, there are no identified criteria for programs in the current portfolio other than "casting the net far and wide" with the objective of measuring returns for various initiatives. This approach is absent of strategic long term planning. Moreover, measuring, evaluating and planning based on these short term initiatives also potentially results in the advancement and high-grading of a particularly nimble sector that shows high returns, at the expense of developing more challenging areas and developing a robust CDM strategy that meets and exceeds targets

OPA uses the following criteria to evaluate each CDM program:

- Relative cost 25%
- Relative risk 40%
- Social factors 25%
- Environmental factors 10%

These illustrate again that OPA is focused mainly on the certainty of resource acquisition, with little consideration of environmental benefits or the scope of a program to address base load as well as peak reduction.

Explicit focus appears to be on peak reduction, rather than how this prepares the way for long term market transformation or capacity building and permanent reduction in base load.

As outlined in the portfolio, the OPA's objective is to acquire 1,935 MW of CDM resources broken down as follows:

- Efficiency — 625 MW
- Fuel Switching — 70 MW
- Demand Response and Smart Meters — 565 MW
- Self Generation — 148 MW
- Natural Conservation / Free Riders — 526 MW

This is lower even than the draft targets set by OPA before the ICF analysis and still places significant emphasis on demand response/peak demand reduction and self generation at the expense of efficiency and fuel switching that would result in permanent reductions in base load demand. The targets for efficiency and fuel switching are also still well short of the achievable cost effective potential identified by consultants — lower even than the 72% and 62% found by ICF.

The OPA states that it is taking a tentative approach because it needs time to test the programming and see whether it is effective before committing to other programs. Given the decades of successful experience by other jurisdictions and the availability of experienced practitioners from these jurisdictions, this is not an adequate response. If the OPA does not have experienced DSM program design and planning staff on hand it should acquire them rather than leaving cost effective CDM resources untapped and creating considerable expense for the people of Ontario. OPA could then also develop

long range CDM programming plans to transform each sector and end use, and implement a bolder initial portfolio than that proposed. This long range planning would also allow the acquisition of the almost 12,000 MW of achievable CDM potential identified in the recent Pembina Institute/WWF study.[10]

The free rider percentage of 30% applied to all programs is ultra-conservative and is another illustration of the lack of CDM program analysis being undertaken at OPA compared with other successful jurisdictions. Effective program design would first of all estimate the free ridership for each program separately and also take into account "free drivers" — customers who undertake additional CDM measures outside the program. These can often be as large as free riders.

The issue of linking the portfolio with action on standards and codes raised by ICF has also not been addressed. For example there is no apparent linkage between the OPA CDM programs that address lighting and the ongoing National Lighting Initiative. OPA was present at the July 2007 National Lighting Summit in Toronto to discuss a national performance standard for lamps that would eliminate all inefficient lamps. OPA CDM lighting programs could be used to kick-start this market transformation and leverage far greater savings than from the program alone.

No programs are included in the portfolio to encourage customer self generation, even though a target of over 200 MW has been set for this. This adds to the confusion as to how small scale renewable power and cogeneration resources are to be acquired — through the already announced standard offer contracts or through a CDM program? For example, does the Commercial/Industrial Market Electricity Retrofit Standard Offer program include micro-turbines, or is that covered by the already announced cogeneration standard offer? Is the 200 MW target in addition to the existing standard offer targets?

CECO/CB Fiscal Policy and Regulatory Plan

The focus of the OPA's Conservation Officer and Conservation Bureau is on raising awareness, taking a leadership role in policy, promoting energy efficiency regulations (standards and codes) and reporting annually on CDM progress.

Standards engagement policy will include providing credible analysis and assessments, creating government/utility forum on regulations and other policy tools, working with other governments and CSA to bring new standards in being, and funding CSA and others to support the process.

A full range of appliances, industrial motors, lighting, electronics and so on are to be covered by regulations. The list matches federal OEE plans well and provides dates for residential and commercial standards enforcement. Energy efficiency in building codes is only mentioned with respect to buildings (National Model Code Upgrade), but not with

respect to homes, presumably because these were covered in last years' code upgrade. Only lighting regulations look beyond 2012.

Overall, the Conservation Bureau is taking a strong role on standards and codes, and the recommendation for a forum for the provincial coordination of standards and codes is sound. However, as noted above, the Conservation Bureau recommendations still lack explicit links between codes and standards work and the evolving CDM portfolio, as well as an indication of how standards and codes play a long range transformational role in specific sectors. This is another result of the dissipated responsibility for CDM throughout the authority, significantly weakening the coordination and leadership role of the Chief Conservation Officer.

Recommendations

Recommendations to the OPA

1. Expand the 2008–2010 Portfolio

Targets for the proposed programs should be raised to at least the identified cost effective potential — particularly for programs that include energy efficiency and fuel switching and reduce base load demand. This will contribute to the phasing out of coal plants and protect consumers against continuing nuclear plant shut downs in a much more cost effective way than committing to new gas power capacity.

To facilitate a bolder portfolio that begins the transformation of all electricity using markets and maximizes cost effective CDM,

- long range CDM strategies should be developed for each sector and end use (see below)
- experienced staff should be retained from jurisdictions that have implemented comprehensive CDM programming (see below).

2. Institute a Long Range CDM Planning Process

A long range plan needs to be developed (based on consultant recommendations) that sets out a strategy, timelines, targets and key programs over the next 20 years for achieving permanent base load reduction. This plan should be used to modify the 2008–2010 program portfolio so that it forms the fist step in a long range market transformation. The CDM target by 2025 should be raised to 10,000 MW — the effective long range potential identified by ICF.

3. Link CDM Programming with Regulatory Process

Explicit linkages should be made between lighting CDM programs and the National Lighting Initiative and standards aimed at phasing out inefficient lighting. The OPA programs can leverage rapid market transformation of the lighting sector that could bring forward the application of new standards. Similar coordination between programs and regulations should be implemented for other key end uses such as new building and home construction, air conditioning and industrial drive-power.

4. Eliminate Confusion Over Self Generation

The confusion over support for self generation should be resolved as soon as possible. The role of CDM program measures versus standard offer contracts for each type of renewable power and cogeneration system should be explicit with defined targets for each.

5. Develop CDM Implementation Plans for Key End Uses and Retain Experienced Staff

OPA should immediately establish a process to develop implementation plans or "road maps" for market transformation in each sector and end use so that CDM programs and regulatory actions can be designed with a specified role and target within this road map. The plan would also set out the actions required of government agencies and, where necessary, other utilities to maximize the acquisition of cost effective CDM resources.

Each plan should be developed jointly with energy and other ministries so that enabling regulations and fiscal measures are developed to support OPA activities. In the case of building retrofit, new buildings and fuel switching, gas utilities should be involved as well. OPA should proactively prepare draft plans for review by the CDM Business Advisory Group. The process should include discussions with potential third party delivery agencies, gas utilities, consumer interests and LDCs.

A typical implementation plan would contain the following elements:

- Current state of the market in Ontario. Current penetration of energy efficient technology including geographic variations, suppliers, and so on, and the capacity of LDCs and other delivery agents to deliver programming for this end use.
- Maximum savings from market transformation. Current electricity use and a range of estimates of savings and peak demand reduction that could be achieved by complete transformation of the market — i.e., maximizing energy efficiency penetration.
- Aggressive targets and milestones for efficiency transformation including cycles of energy efficiency improvement over the next 18 years
- Market Transformation Plan. The cycles of interventions necessary to achieve market transformation:
    - Code and standard updates with dates (for inclusion in an MOU — see below)
    - The role of incentives to accelerate uptake of energy efficiency technologies
    - Capacity building needed for delivery agents and OPA
    - The role of government procurement (for inclusion in an MOU — see below)
    - Role of tax and other enabling measures
- CDM Programming Plan to achieve targets and milestones:
    - Roles of existing OPA programs in the transformation
    - Proposed new OPA programs of each type to complete (at least) the first cycle of transformation — OPA designed and delivered, LDC standard program, delivered by other agents
    - Partnerships/joint programming with other Ontario utilities (e.g., gas utilities for fuel switching and joint programming) and national initiatives (e.g., OEE programs, national lighting initiative) directed at this sector or end-use

- Integration and coordination measures to prevent overlap, and so on
- Summary of Provincial enabling measures including tax incentives, code upgrades, procurement and other specific measures that complement OPA and gas utility CDM programming and can the subject of an MOU
- Capacity building plan for sector — gaps, needs, proposed means to address.

A model implementation plan for commercial lighting is provided in Appendix 1.

OPA should immediately retain experienced CDM program design and implementation staff that have managed long term CDM programming in other jurisdictions. These staff should be used to develop long range CDM market transformation plans for each sector so that bold aggressive long range programs can be put in place over the 2008–2010 period instead of the pilot and learn-by-doing approach adopted to date.

There is no reason why a 10,000 MW long range CDM strategy focusing on both permanent base load and peak load reduction could not be put in place by 2010, modeled after experience in California, Vermont, New York and/or Texas..

6. Expand the Role of the CDM Program Advisory Group

The terms of reference of the OPA CDM Business Advisory Group should be expanded to include

- ongoing guidance to the OPA on the design of the overall CDM strategy, including CDM programs to be delivered by all third parties
- the review and approval of priority sector and end use implementation plans
- working with the OPA on CDM implementation plans or "road maps" for each sector and end use so that a complementary suite of programs is designed for each market segment (see below).

The Advisory Group should participate regularly in the government/utility forum on regulation and other policy tools proposed by the Conservation Bureau.

7. Establish a Memorandum of Understanding on Codes/Standards

The government/utility forum on regulations and other policy tools proposed by the Conservation Bureau should be put in place and backed up by a memorandum of understanding between the relevant provincial agencies and the OPA to regularly update codes and standards based on Conservation Bureau recommendations. Such an memorandum would allow the coordination of CDM programming with standards and code changes to achieve full market transformation in each market segment, as is done in many U.S. jurisdictions. (See also the recommendations to the Province, below.)

8. Accelerate Capacity Building and Capability

Ontario needs to support a training, certification and oversight initiative through a partnership among the Conservation Bureau, community colleges and contractor

organizations across the province. Through the network of community colleges the following energy efficiency professionals and trades would be trained and certified:

- Residential energy efficiency retrofit contractors and renovators
- CDM program managers
- Interns and circuit riders for commercial and institutional retrofit projects.

Contractors such as home renovators should be encouraged to set up dedicated associations of certified members. These members would appear on a central list of certified contractors maintained by the Conservation Bureau. Participants in CDM programs offered by the bureau would be required to use certified contractors. Programs that offer interns and circuit riders should take advantage of employment programs such as On Site.

The concept of certifying contractors that provide retrofit services has been well tested.[11]

The Conservation Bureau would be responsible for overseeing a complete delivery infrastructure for energy efficiency across Ontario, ensuring that trained, knowledgeable and qualified contractors, suppliers, professional support and CDM programs are available to all Ontarians and their businesses.

Immediate action should also be taken to assess gaps in the capacity to deliver CDM programs and make efficient manufacturing, product distribution, service and consulting capacity available in all regions of Ontario. Plans to fill these gaps with regional training centres or other capacity building programs should be based on this gap analysis and incorporated into all program designs.

9. Build CDM Capacity in LDCs

To help LDCs with delivery of OPA CDM programs (and those already approved under the one-time $163 million funding through OEB), the Conservation Bureau and experienced LDCs should set up a CDM Coordination and Service Unit. The Service Unit would also coordinate CDM programming across Ontario so that all customers benefit to a similar extent from common programs.

[11] In New York State, Home Performance Contractors certified by the Building Performance Institute provide home audits and carry out retrofit work; www.getenergysmart.org/WhereYouLive/HomePerformance/overview.asp

Recommendations to the Government of Ontario

1. *Strengthen the Coordination of All Provincial Energy Efficiency / CDM Initiatives and Develop a Strategic Plan*

Create a secretariat reporting to the Provincial Cabinet to develop energy efficiency transformation strategies for each sector. This body would be tasked with coordinating energy efficiency activities among all implementing agencies in the province and developing a provincial action plan for transforming energy use in key sectors and end uses. This plan would contain individual sector strategies and be coordinated with climate change strategies. It would identify the role of codes and standards, incentives, capacity building, financing options, government procurement, utility CDM programs and other policy tools in each sector. It would also contain a timetable for specific actions over the next five years that would provide a stable policy and investment environment for implementing agencies, stakeholders and energy users.

The plan should be implemented as Ontario's commitments to the Council of Energy Ministers National Energy Efficiency Action expected to be signed by all Provinces in the fall of 2007.

This Secretariat should be set up as soon as possible and include representatives from

- all relevant provincial ministries
- OPA and gas utilities
- the OEB
- LDCs representing different regions of the province
- the energy efficiency industry represented by the Canadian Energy Efficiency Alliance, lighting and insulation manufacturers and the Ontario Green Building Council
- major delivery agents including Green Communities, the Building Owners and Managers Association (BOMA), the Better Building Partnership and lighting and HVAC contractors associations
- NGOs represented by the Canadian Renewable Energy Alliance.

2. *Reactivate the Conservation Action Team*

A reactivated Conservation Action Team should work with the new Secretariat to provide horizontal high-level coordination among all government ministries.

3. *Establish a Memorandum of Understanding on Codes/Standards Between the Provincial Government and the OPA.*

A memorandum of understanding should be developed between the relevant provincial agencies and the OPA to regularly update codes and standards based on Conservation Bureau recommendations. Such a memorandum would allow the coordination of CDM

programming with standards and code changes to achieve full market transformation in each market segment, as is done in many U.S. jurisdictions.

4. *Establish a Memorandum of Understanding on Procurement Between Provincial Ministries.*

A second memorandum of understanding should clarify the government's plans regarding the implementation of the provisions of Bill 21 regarding energy conservation planning, procurement, and capital investment by public agencies, so that these factors can be incorporated into the OPA's overall CDM strategy.

5. *Harmonize OPA and OEB LDC CDM Programming Procedures*

All CDM programs delivered by LDCs under the OPA CDM mandate should be eligible to receive incentives under the OEB incentive mechanism process. Coordination between the two programming processes is beginning and will prevent the possibility of overlap and competition among different program approval processes.

In the future, the OEB incentive should only support CDM programs that deliver verifiable permanent reductions in consumption and demand or verified transformation of the market for energy efficient equipment, and that meet specified targets. Program approval should continue to use the Total Resource Cost test to show that these objectives can be met at below avoided cost.

At the same time we recommend that the Total Resource Cost be adjusted to include avoided environmental and health costs.

6. *Develop a Provincial Energy Efficiency Procurement Plan*

The Ministries of Energy and Government Services should develop a procurement protocol for all government purchasing or leasing of equipment and facilities. This protocol should also apply to all education and health facilities that receive provincial funding. The protocol should state that all purchasing and leasing will be carried out on a life cycle cost basis and all modifications, renovations and re-commissioning should follow best energy efficient or green buildings practices.

7. *Employ Bill 100 Funding Mechanisms for Energy Efficiency and Conservation Programming*

Rather than responding to directives, the OPA should employ the financing mechanisms provided to it under Bill 100[12] to fund conservation programs, with the proceeds being managed by the Conservation Bureau to provide funding for existing and new

[12] As authorized under s.25.20 Fees of the Electricity Act.

programs.[13] The OPA may choose to deliver some programs itself, deliver programs in partnership with the private sector, professional groups or NGOs, or contract delivery to these same groups or to gas or electric LDCs.

In the longer term, Ontario should consider a legislated energy efficiency portfolio standard for LDCs with an energy efficiency certificates program that would allow LDCs to purchase reductions from other LDCs or energy users. This would be especially worthwhile if a regional U.S./Canada market develops for these certificates.

[13] In the short term the Conservation Bureau might operate under contract to the OPA. In the longer term the Electricity Act should be amended to establish the Conservation Bureau as a separate agency with access to funding mechanisms similar to those provided to the OPA.

Appendix 1: Model OPA CDM Implementation Plan for Commercial Lighting

Current state of the market in Ontario

Commercial lighting savings has been identified as one the largest potential savings opportunity — both base load and peak load.

Provide details of the current state of the commercial lighting efficiency market in Ontario – the current penetration of T8 lamps, CFL pot lamps, etc geographic variations, suppliers, capacity to deliver EE etc.

Maximum savings from market transformation

- MJKA — 6,910 GWh/yr savings achievable, 7,140 GWh/yr economic (2025) – interior lighting only – lamp technology and design only.
- Power for the Future — 9,970 GWh/yr achievable potential (2020) = 81 % penetration – interior lighting only – lamp technology and design only
- ICF — 7,340 GWh/yr achievable potential (2025) – interior and exterior lighting - lamp technology, lighting design, occupancy and day lighting controls

These estimates show that there is at least 10,000 GWh/yr technical potential using toady's EE lighting technologies and control systems when all commercial lighting is transformed to EE. At least 7000 GWh/yr of this potential is both economic and achievable through policies and program intervention. Assuming a peaking coincidence factor of 1.23 (ICF), this is equivalent to almost 1000 MW reduction in peak supply. If all incandescent and T12 lamps were phased out, more of the remaining 30% of technical potential would be achieved, providing a total of say 1200 MW.

Because EE lighting technology and controls has a relative rapid stock replacement ratio and can be added easily to existing facilities, the EE potential could be achieved within a few years. This is confirmed by the above studies. Commercial lighting should therefore be the focus of large scale CDM programming as soon as possible.

Lighting efficiencies have a major impact on other end uses. Because most commercial buildings have some cooling loads all year round, lighting savings are expected to produce net reductions in HVAC (reduced cooling > increased heating loads). Increasing ambient temperatures would increase the additional net savings.

Aggressive targets and milestones

Long Range Target:
- 10,000 GWh/yr savings by 2025. All commercial lighting in Ontario uses high efficiency lighting, optimum design, occupancy controls and maximum use of day lighting.

Milestones:
- Incandescent and T8 phase out by 2012 as per new federal intent to regulate (also impacts residential sector)
- EE lighting retrofit of 50% of all Ontario floor space by 2013, 75% of all floor space by 2018
- EE lighting, occupancy sensor, and day lighting mandatory in all new buildings by 2012 and all retrofits by 2020

Transformation Plan - cycles of interventions

New Buildings

Use cycle approach to accelerate lighting efficiency
1) identify and promote current lighting EE best practice
2) provide incentives/reward best practice,
3) build capacity within lighting industry and users to deliver best practice
4) use government procurement to lead market
5) make this practice mandatory in code within 4 years

- Work with green buildings industry and other progressive builders to document best practices – OPA, Ministry of Energy
- Identify delivery agents and develop province wide programs that a) build capacity and b) provide incentives for all builders to upgrade to these best practices with objective of 50% all new buildings within two years – OPA incentive program, tax measures (e.g. green building tax credit), training programs/charrettes, etc
- Increase lighting efficiency stringency in the Ontario Building code every four years

Existing Buildings

Use incremental approach that has objective of 100% of all floor space retrofitted with high efficiency lighting in 10 years.

- Benchmark lighting efficiency in best buildings identifying improvements
- Use government procurement to demonstrate best practice

- Identify delivery agents and develop province wide programs that a) build capacity and b) provide incentives for upgrade 25% all new buildings every four years – OPA incentive program, training programs
- Require building code lighting requirements on resale, re-lease of all buildings by 2015

CDM Program Plan

New Buildings

- New OPA programs to complete (at least) first cycle of transformation - OPA designed and delivered, LDC standard programs, programs delivered by other agents

Existing Buildings

- Establish roles and goals (MW/GWh) of existing OPA programs within transformation of the lighting market
    - Small business direct install (LDC)
    - Commercial sector standing offer – focus on lighting technology and controls (LDC)
    - BOMA Toronto
- New OPA programs to complete (at least) first cycle of transformation - OPA designed and delivered, LDC standard programs, programs delivered by other agents
    - Example: Three comprehensive targeted lighting efficiency program for offices, retail, and accommodation – target 25% all floor space by 2012 – 250 MW

Partnerships

- Establish partnerships/lighting task force with appropriate industries and agencies – lighting industry, code agencies, Ministry of Energy.

- Prepare work plan with Ontario lighting industry on lamp phase out and fixture development to meet regulations under federal EE Act 2012

Integration and coordination measures to prevent overlap, etc

Integrate OPA CDM programming with other Ontario and national initiatives directed at lighting (e.g. CEM National EE Action Plan and National Lighting Initiative). Use Conservation Action Team and OPA CDM program advisory group to coordinate lighting initiatives.

Summary of Enabling Measures

Standards and Codes

Include lighting regulation in MOU with code and other agencies on long term regulatory requirements for lighting in code and standards. Harmonize with federal 2012 phase out of low efficiency lamps.

Procurement

Include lighting efficiency (lamps, controls, fixtures, density) in government procurement protocols and include in an MOU on procurement

Capacity Building Plan

A five year capacity building plan for LDCs, other OPA program delivery agents and building operators/purchasers of lighting products, controls, and design.