New Construction Program (NCP) Technical Roundtable
Summary of Proceedings

Event Date:	April 5, 2007
Location:	Ontario Power Authority (OPA) boardroom
Purpose:	To draw on the specific expertise of representatives from different sectors associated with new construction and major renovation projects towards enhancing the effectiveness of a new OPA program promoting the integration of sustainable and energy-efficient building features. Event was a planned follow-up activity to a webcast held on March 8, 2007 to introduce the New Construction Program (NCP) concept to broad audiences. The webcast is archived on the OPA website at: www.powerauthority.on.ca.
Program:	One-day technical roundtable featuring: formal presentations; structured dialogue among the participants on relevant themes; discussion of participant responses to an advance survey on energy efficiency (EE) options; debate over various models of support drawn from other jurisdictions; a case study creative problem solving exercise focused on program design.
Participants:	13 + 1 observer (Names and affiliations at end of summary)
Participating OPA Staff:	Kirk Johnson, Manager, Program Design, Business Markets Luke Bond, Manager, Program Delivery, Business Markets Jennifer Tidmarsh, Analyst, Program Delivery, Business Markets Tamar Eterman, Student Intern, Corporate Communications Heidi Parish, Events Co-ordinator, Corporate Communications Mark Dodick, Communications Consultant, Corporate Communications Other senior OPA staff associated with CDM efforts also briefly attended the session as observers
Note:	The following is a summary of proceedings and is not a transcript of the event. Comments recorded are not attributed so that participants could express their opinions without reservation. Summary prepared by Mark Dodick, April 18, 2007.

Event	Introduction and Welcome – Mark Dodick

Participants were welcomed and introduced to purpose of the program and the activities for the day. The NCP was identified as one of many Conservation and Demand Management (CDM) initiatives being undertaken by the OPA. The contents of the information kit provided to participants to support discussions was described. The kit included an agenda, biographies on the participants, a hard copy of the initial presentation, and various information sheets. It was supplemented during the session with additional content to support the dialogue as required. The session began with each participant being asked to briefly describe his/her background and to share what he/she hoped to contribute to the dialogue and to gain from being present.

Event	Introductory Presentation and Q&A – Kirk Johnson • Review of initial program concepts shared during webcast of March 8th • Applying best practices • Q&A / Open Dialogue

Key concepts underlying the NCP were shared. Under the OPA's Integrated Power System Plan (IPSP), CDM is expected to help limit peak demand growth and the NCP is one of many CDM initiatives being undertaken to develop a "Culture of Conservation" in Ontario. The value of an integrated design at the initial stage of development was underscored: "The greatest chance for creating a high performance building at the least cost occurs early in the design process."

Participants were also exposed to key barriers to developing high-performance buildings, including split incentives, constrained budgets, late integration of CDM, outdated cost perceptions and conventional design approaches. They were shown a range of potential best practices in energy efficiency that could be incorporated into new construction and major renovation projects.

A wide-ranging, back-and-forth dialogue on various measures and topics ensued with a variety of observations and recommendations being made:

- Good training is essential to ensure that staff responsible for EE program involvement understand the context of their industry and are able to process program applications.
- Program forms downloadable from the Internet must be understood by the parties using them so that the relevant information can be provided.
- The OPA should engage in program tracking as much as possible on an automated (metered) basis to confirm that actual energy savings performance matches theoretical calculations to validate the program's results.
- The OPA should allow for flexibility on a building-by-building basis or allow applicants to move from a prescriptive slate of options to a custom track.

- If possible, the OPA should allow for splitting between custom and prescriptive tracks. However, the OPA responded that this becomes difficult to manage.
- Additional clarity is needed regarding the difference between custom and prescriptive tracks; the NCP is not the same as the BOMA (Building Owners and Managers Association) program, so there must be more clarification on the definition of "prescriptive."
- An advanced "first pass" screening tool (before doing full-scale analysis) that helps the building owner see the potential value of energy efficiency measures would be useful as they may balk at paying the full cost of modeling.
- The OPA was also advised to avoid a scenario in which the NCP is launched but funding is curtailed before there is full uptake by the marketplace (which tends to lag) so that the program stalls just it gets to the point of generating real value.

Roundtable participants also intensively discussed the potential merit of focusing exclusively on a performance-based program versus emphasizing the installation of specific measures and/or other forms of support as a means of achieving EE goals. This philosophical difference (pay for achieving specified performance or incent specific technologies that lead to desired performance) served as the major point of divergence during the discussions that followed.

Other key points raised in the context of this dialogue included the following:

- Where does modeling fit within the program and is there a need to model each type of building? Modeling could be reserved for truly advanced projects, while benchmarks could be established for individual building systems. Once proven performance data is available, it could shift the burden from individual modeling (it was reported that performance indicators would be available in a year-and-a-half).
- A lack of well-established standards for energy efficiency explains why they are not being implemented. If the OPA sets energy efficiency performance and design standards, developments that fail to meet them would not be eligible for the NCP.
- Should the OPA inform the marketplace about optimal measures for each type of technology or the outcomes necessary to achieve overall performance standards?
- Benchmark quality buildings should be acknowledged and awareness of their positive qualities should be promoted.
- Incentives could be used to motivate developers that over-perform against EE standards. These payments could be provided upfront against confirmation through post-construction evaluations that savings were realized.
- The OPA should also consider an owner's incentive and a bonus for the design team against specific goals and achievements verified at six-month and 12-month intervals. If a project constructed under the NCP comes in under budget, split the funds three ways, so that all parties are rewarded.

Periodically, the participants refocused on certain key goals of the OPA in introducing the NCP, i.e., kilowatt savings in general and reducing summer peak demand. The following comments were made in this context:

- The OPA should not focus exclusively on the summer peak; energy savings at any time are important. It should also consider integrated building performance rather than merely KW savings.
- Certain technologies (e.g., variable speed drives) do not have a demand impact, so why should the OPA incent them to be more efficient?
- As a general proposition, if the KW goal is to be realized, the OPA should concentrate on achieving many small improvements from many developments rather than extremely significant improvements from just a few.
- Owners and developers will find time delays associated with program logistics to be challenging; additionally, if the need to fine-tune technology to achieve results is not covered by the program, it will be an obstacle.
- The OPA should consider lifecycle energy impact of various technologies (participants were advised that the OPA is developing another program to address this need). The OPA should strive to offer the NCP as part of a "one-stop shop," i.e., it should strive to integrate it with other EE programs and offer them as a consistent menu of options for developers.

On specific measures to enhance energy efficiency, the following observations were shared:

- Lighting: Efficient when done properly because it reduces capital costs; however, lighting planners are typically not involved in the construction design process.
- Refrigeration: Some measures are considered "exotic" and their value is to be determined in Ontario although they have proven themselves in other states and provinces.
- HVAC: Standard in some cases but not in others as cost outweighs value. Right sizing is key. Other options exist (ultrasonic humidification, natural ventilation and chilled slab cooling) that could be explored. Metering is needed to support management of energy use.
- Envelope & Architecture: Ensuring optimal window to wall ratio is essential for EE. This becomes more challenging in the condo market where smaller spaces can only be sold with larger windows, so high-efficiency windows are needed.

Event	"Money Lunch" • NYSERDA Financing Presentation

During the lunch period, participants were informed about the New York State Energy Research and Development Authority financing program for buildings. They were asked to comment on this model in relation to potential financing support that could be offered through the NCP.

The following observations and comments about financing new construction and major renovation projects were offered:

- The OPA does not need to engage in an interest rate buy-down; a pool of capital exists to support EE measures as long as certain key criteria are met. However, the opposite view was also heard: that an interest rate buy-down could offset the split incentive issue.
- Banks may be reluctant to provide funding without an understanding that EE measures are not a liability; savings to be realized should therefore be validated through a third-party.
- Should developers / builders commit to a specified level of reduction to receive funding?
- As a necessary financial control against funding for specific EE measures, there may be a need to conduct spot checks all along and should also be done entirely at project's completion to ensure that installations occurred as claimed.
- The OPA was advised to try to find a "cookie cutter" approach to financing for the sake of simplifying the process: If specific criteria are met, the loan should be provided.
- The Toronto Atmospheric Fund (TAF) is available to assist with measures that lead to greenhouse gas (GHG) reduction and was cited for the simplicity of its application process (two pages). It was also noted that a new "Green Loan" program is now in development based on the Model National Energy Code for Buildings (MNECB).
- When multimillion dollar decisions are being made and the impact of discounting cash flows is included, the tax element must be considered in any financing.
- Measures undertaken should reduce the operating cost of the building – the value of the building is not in its materials but in its efficiency.

Event	Refocus Presentation: Other Jurisdictions and Programs • Measure Lists, Worksheets, Calculators, Eligibility Criteria

Following the NYSERDA presentation and related dialogue, participants were refocused on the broader array of program elements the OPA should consider through a presentation that described programs in other jurisdictions (i.e., Vermont, Oregon, California and Massachusetts). A high-level comparison of program objectives, features and experience / outcome was shared with the group to stimulate further dialogue.

The following observations and comments were offered in response to details shared about programs in other jurisdictions:

- Several participants recommended that the OPA look to other jurisdictions within Canada (notably, Quebec, British Columbia and Manitoba) for useful input on construction-oriented CDM programs.
- Renewing a theme raised earlier, the U.S. programs were criticized for lacking verification of their performance. The OPA must not assume that activity

necessarily leads to better outcomes and must ensure that it has evidence of a performance gain.
- The OPA was told that it must work to align the interests of the developer and the designer where energy efficiency is concerned by having a framework of identified standards to work within.
- By researching and promoting the features of optimal structures, the OPA should transform energy efficiency "stars" into standards.
- How many watts per square foot could possibly be saved even if incremental costs were bumped up, assuming a payback period of five (5) years or less and based on current summer peak conditions? Efficiency savings were estimated by the roundtable to be upwards of 0.6 or 0.7 watts per square foot. On a "whole building basis" it was therefore estimated that MW savings could be achieved at a level 60 per cent below the federal government's Model National Energy Code for Buildings (MNECB).
- Specific building components were identified as offering the greatest potential for achieving MW savings: improved HVAC design (from fans and pumps) was named as the major energy savings contributor.

Event	Program Design Group Exercise • Develop a Program / Project Within Given Parameters Utilizing Appropriate Tools • Group Presentations

Participants were then assigned to three separate working groups which were then asked to develop a theoretical program for: 1) a commercial building program, 2) an institutional building program, and 3) for an ineffective program. A synopsis of each group's key recommendations is captured below.:

- **Group 1 – Commercial Building Program**
  - Incentives should be at the commercial purchase level and should focus on achieving the best possible performance rather than gaining incremental improvements.
  - A formalized application process should be used to ensure that a competent model is developed.
  - Marketing and ongoing communications are key components, so that there is proper and ongoing buy-in from the client in undertaking the EE measures; an aggressively moving target needs stronger communication.
  - It's key to the program's success to identify means for sustaining the program over the long term.
  - Support should be provided for commissioning and there should be a second tranche of funding for supporting EE in operations.

- **Group 2 – Institutional Building Program**
  - Establish an EE champion on the owner's side.
  - Identify means for implementing peak shifting to stimulate off-peak energy use.
  - Create a vested interest to ensure the building operates efficiently.
  - Create opportunities for joint collaboration and integrated effort between engineers and other building professionals to address EE requirements.
  - Pre-determine if the program is to be based on objective standards or tool-based assessments; if significant financial resources are to be deployed and modeling is undertaken to assess EE, it must be done by a party who is truly qualified to do so (however, there is no method for establishing modeling qualifications at this time).
  - Do not cap funding per se but make it tie in to the accuracy of the design.
  - Support should be integrated with revolving funds offered by municipalities.
  - Develop an OPA Green Award to acknowledge EE stars.

- **Group 3 – Ineffective Program**
  - Program is administered by people with no (real world) exposure to program design or any aspects related to it.
  - Program "lag time" (i.e., between application processing, approval, and payout) is so extended that potential participants are deterred because the benefits don't justify the effort; if a program is new, then it is likely that approval time will be significantly longer.
  - To be effective, a program must run for about 10 years; significantly less than that and it is likely to be ineffective.
  - If program funds are not dispersed before three years have lapsed, it will be ineffective.
  - If no contract is signed, so that participants are confident of receiving payment (despite changes in government), the program will be ineffective.

Event	Closing Advice / Recommendations • Individual poll of all roundtable participants to gain final insights

The session closed with each participant contributing a key learning, piece of advice or observation that was not previously brought forward. Here are their comments:

- The OPA should be commended for organizing this stakeholder engagement and should continue with the effort as it is difficult to establish and maintain a program of this nature.
- MW are available and can be acquired — with the right structure, a high target for energy savings is achievable. The potential for conservation is much larger than we think, but it hasn't been properly tapped into yet.

- There is a danger from looking at EE programs in isolation. They should be integrated across markets and flow into each other; otherwise, it's a barrier for potential participants who must figure out how things flow. Optimally, OPA programs should be integrated with other programs from other levels of government as well as other government ministries.
- Any program run by the OPA should be based on meeting performance targets rather than on installing EE equipment, but if it is the latter and there is still a focus on meeting specific targets, that will generate real savings.
- The OPA needs to determine how to negotiate performance-based fees and yet enable participants to work within their own budget constraints.
- The incentives should be clearly directed, i.e., the beneficiary should be clear and should be supportive of the OPA's specific goal of saving MW, rather than just promoting energy conservation generically.
- The design community perceives itself to be driving the process and accepting much of the risk associated with incorporating more EE measures, so it should receive specific performance-based incentives.
- In looking at other jurisdictions, the OPA should carefully examine the impact programs have had and not just their features.
- Avoid incentives for new and as yet-unproven EE technologies. However, allow for "wiggle room" that would permit new technologies whose merits are confirmed to be covered by the program.
- Use LEED (Leadership in Energy and Environmental Design) terminology for marketing purposes and ensure that owners are clear on what constitutes a high-performance building.
- Be certain to develop a highly effective fund tracking system that enables the OPA to properly follow all expenditures and results and to determine the value received.
- Anything that saves KW is positive; avoid restrictive measures.
- Do not distort the market as it moves towards incorporating more EE on its own through incentives introduced by OPA programs.
- Engage program participants and not just program managers (e.g., utilities) to truly understand the impact and value of EE measures.
- To be successful, the NCP must consider that Ontario is not Toronto; the program must respond to the needs of small communities and differing regions. The parallel smart metering data repository will offer a unique and very useful source of EE and CDM information and its data should be shared with building developers and owners as a means of encouraging continuing effective energy conservation measures.

Event	Concluding Remarks • Thanks & Final Comments

Participants were thanked for their time and contributions and were reminded that any element of the NCP shared with them was to be considered draft and conceptual in nature. They were encouraged to continue their dialogue with the OPA as the NCP is refined and introduced to the marketplace.

NCP Technical Roundtable Participants	
Name	**Organization**
Kim Allen	Professional Engineers Ontario
Doug Cane	Caneta Research Inc.
Ivor da Cunha	LeapFrog Energy Technologies Inc.
Mike Godowa	Stantec
Ian Jarvis	Enerlife Consulting Inc.
Jason Manikel	Cobalt Engineering
Dave Mather	Enermodal Engineering Ltd.
Eleanor McAteer	BBNCP, City of Toronto
Mike McGee	Energy Profiles Limited
Joe Passa	Passa Associates Inc.
Stephen Pope	Natural Resources Canada / CANMET Energy Technology Centre
Tim Stoate	Toronto Atmospheric Fund
Ruth Urban	Marbek Resource Consultants Ltd.
Mario Chiarelli	OPA