Workforce Education for an Energy-efficient Ontario

Bryan Young
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Ontario’s Electricity Sector

- Demand for electricity

Adam Beck I
- Decew Falls II
- Adam Beck II
- Adam Beck PGS
- Nanticoke
- Pickering A
- Pickering B
- Lambton
- Lennox
- Darlington
- Bruce B

Complete transformation

Growing Electricity Demand
Green Energy and Green Economy Act

Billions invested in Ontario’s electricity sector

50,000 green-collar jobs in first three years
Rebuilding our Sector

Reducing our sector’s carbon footprint by 75%
Ontario First to Eliminate Coal

Lakeview coal generating station
June 12, 2006
Electricity in Ontario

- Expanded Transmission
- More Renewable Energy
- Conservation Programs
- Smart Grid
Sourcing New Generation

26,000 MW of supply under contract

$45 billion Invested
Feed-in Tariff Program

Wind  Solar  Water  Bioenergy
Conservation:
Taking one in five houses off the grid
...and how will we do that?

- Multi-pronged approach consisting of
  1. consumer incentives for all sectors,
  2. training and segment support, and
  3. aggressive codes and standards changes

- OPA accountable for 1 & 2, with $1.4B for 2011-14

- Benefits to Ontario of
  - $1.4B in avoided electricity system costs
  - $2.4 in participant benefits
  - 7,100 MW in peak demand reduction by 2030

- Capability Building will
  - Leverage existing initiatives where possible
  - Move towards certification as a condition of access to equipment/services incentives
  - Work with regulators to codify training
Comprehensive Programs for Consumer, Low-income, Business, and Industrial Markets

**Consumer**
- Fridge and Freezer Pickup
- Heating and Cooling Incentive
- Peaksaver Load Control

**Business**
- Small Business Lighting
- Small Business A/C
- Audit Funding
- Retrofit
- Existing Building Commissioning
- High Performance New Construction

**Industrial**
- Demand Response – Voluntary and Contractual
- Process and Systems
But we can’t do it if the market doesn’t have the capability

- Capability built in the 80s dissipated resulting in the current EE/CDM skills gap
- OPA London Economics Report: gap of 6,500 conservation related professionals
- 2030 targets require ambitious efforts

- 13 new capability building initiatives will form part of 2011-14 province-wide LDC-delivered program targeting 6,500 successful trainings/certifications
Here are some of the challenges we face...

- 80 local electric distribution companies, and two gas utilities
- 2 asymmetrical demand side management regimes controlled by the regulator – one for gas, one for electric
- In spite of new time of use pricing, price signals challenging especially for commercial markets
- Attribution of MW/MWh savings to training challenging but critical in order to defend long-term deployments of ratepayer funding
Building Capability for the Consumer Markets
Targeting 3,000 Trainings in Consumer Markets

**Builder Training:**
- Training incentive to qualifying builders to undertake training in energy efficient building techniques.
- Includes builder executives, sales staff, and trades.
- Examining potential for mandatory training requirements.

**HVAC Installation Optimization:**
- Training and installation incentives to qualifying contractors and trades people aimed at increasing the quality of HVAC installations and maintenance.
- Installing high efficiency of HVAC equipment will not necessarily lead to manufacturer claimed savings if the units are not sized, installed, commissioned, and serviced appropriately.
Building Capability in Ontario’s Industrial Market
Targeting 2,000 Trainings in Industrial Market

• **Basic EM Training**
  • 6-10 days comprehensive training and incentive targeting OPA-funded energy managers
  • will also be rolled out for business market

• **End Use Training**
  • available on priority basis to OPA-subsidized energy managers
  • based on US DOE and intended for those specialists at the top of the industrial ‘food chain’

• **Certified Energy Manager**
  • available on priority basis to OPA-subsidized energy managers
  • also available for C & I markets

• **University Co-op**
  • limited number of co-op placements cost-shared by industry, OPA – perhaps gas companies?
  • intended to build younger end of labour supply, or those changing careers
Capability Building Initiatives for Business Markets
Targeting 2,500 Trainings in Business Markets

- **Building Operator Training**
  - 6-10 days comprehensive training and incentive targeting building operators on a priority basis by square footage

- **Energy Manager Training (Basic and Certified Energy Manager)**
  - available on priority basis to OPA-subsidized energy managers
  - based on US DOE and intended for those specialists at the top of the industrial

- **Integrated EE Design Facilitator**
  - no currently industry-recognized standard for integrated design
  - certified facilitators would be provided thru incentives for new construction

- **Certified Commissioning Services Providers**
  - commissioning incentives featured prominently in new programs
  - as in IDEEF, there is a need for QA, hence a new certification incentive

- **Energy Efficiency Services Provider**
  - targeting mainly broader public service/MUSH
  - these shared resources act as conservation facilitators

- **Contractor Association Support**
  - mechanical trades/contractors could be leveraged to be conservation allied
  - clearing house to help train/inform contractors on how to sell customers on EE
• Responsible for day-to-day maintenance and operation of larger buildings that have complex heating, mechanical and electrical systems. Long term goal would be to have training link to recognized standard such as BOC

Rationale:
• Training can be used to raise
  – awareness of the impact of these duties on energy performance
  – priority applied to those aspects that can improve that performance
• Utility grade evaluations undertaken on the Building Operator Certification program developed by Northeast Energy Efficiency Alliance (NEEA) have shown significant savings delivered by those operators in the period following participation in the training.
• American Council for an EE Economy has reviewed those evaluations, and recommends a benchmark savings of 0.50 ekWh/sq ft/yr/trained operator.

Status:
• RFP for curriculum and training Q4

Opportunities for Collaboration:
• Excellent opportunities for collaboration from gas and NRCan
• Budgets as they stand currently limited
Commissioning Services Provider Training

Incentive:

- Commissioning is a quality-oriented process for achieving, verifying, and documenting performance of facilities, systems, and assemblies
- Not traditionally part of construction process or retrofits

Rationale:

- Importance of incorporating commissioning process has become more evident as buildings have become more complex and energy and environmental performance objectives have been raised
- Existing building commissioning results in payback of 12 months, increased system reliability, increased persistence of savings, improved indoor environment and reduced liability risk.*
- Provide incentive to cover the costs of certification to build the pool of commissioning agents

Status: Will offer incentive to commissioners who undertake training from BCA, ASHRAE or ACEEE; in first year proxy criteria permitted

Opportunities for Collaboration:

- Excellent opportunities for collaboration from gas and NRCan as discussed
- NRCan has a planned commissioning training course that could be very helpful for customers and would support OPA Cx incentives

Facilitator Training

- Provide training along a specific standard to develop a pool of qualified building commissioners for customers who can then access their services as a part of the province-wide program

Rationale:
- Use of the integrated design process (IDP) began ‘92 with C-2000 (NRCan).
- Consisted of new construction projects targeting deep energy savings: 50% of ASHRAE 90.1-1989 for Office, and 55% for MUR.
- Achievement of targets relied much less on technologies, and much more IDP.
- Overall project cost ± 5% even with the much higher environmental performance; strong potential for highly cost effective savings.
- In Design Advisory Program, Enbridge has noted lack of modelling and facilitation skills necessary to achieve program objectives.

Status:
- No currently accepted North American specification for IDP facilitators; opportunity to shape standard for North America
- RFP for curriculum and training delivery Q4

Opportunities for Collaboration:
- Excellent opportunities for collaboration from gas and NRCan
- Build on Enbridge-managed HPNC incentives and LEED market traction
- Potential for NRCan sponsored integrated design training for consumers
EE Solutions Provider for the Broader Public Service* (BPS)

Description:
• Provide BPS consumers with shared services relating to CDM and EE
• Duties include best practices specs for new buildings, equipment, RFP guidance/content, forms broker for all EE incentive programs, bridge between CFO, executives and facility managers, high level guidance on Energy Plans.
• Provide 10 EESP’s for 2011, targeting municipalities, schools, hospitals and low-income housing

Rationale:
• Provide one-window highly-skilled EE expertise to BPS consumers, particularly small and medium-sized who may not have FTE resources with EE expertise
• Similar to Energy Manager proposed for Industrial Group, but would be a shared resource amongst groups of BPS participants

Status:
• RFP(s) Q4 or Q1
• Discussion with stakeholder/sectoral associations underway

Opportunities for Collaboration:
• Excellent opportunities for co-funding from gas
• Opportunities to leverage NRCan tools, training and funding for sub-initiatives within BPS
Contractor Association Support

**Overview:**

- Energy Efficiency Contractors Network’s (EECN) to deliver energy efficiency-centred training to contractors in the mechanical and electrical trades. Objective is to build contractor ability to ‘sell’ EE to consumers, thereby supporting LDC achievement of targets, and transforming market.

**Rationale:**

- Contractors not consistently trained or encouraged to target EE opportunities. Contractors can support the work of clients by identifying energy savings opportunities through retrofits or altered processes. The need for this kind of training is common to all electrical and mechanical trades. Basic training in selling EE is currently available through the EECN, but more advanced training could be developed to build on existing workshop.

**Next Steps:** Procurement strategy TBD

**Opportunities for Collaboration:**

- Excellent opportunities for co-funding/collaboration from gas and NRCan
- Opportunities to leverage NRCan tools, training
Key Account Manager Training for LDCs

Rationale:

- Amongst the ~85 personnel being hired, experience will likely be variable, and recruitment will likely result in hirees with excellent sales skills, and less on the CDM side.
- This training is intended to ensure that all KAMs has a common base of skills with which to approach customers.
- The training will consist of a three-part NRCan-delivered Spot the Savings/Dollars to Cents course, with the last session focussing on field experience in a facilitated peer setting.

Next Steps:

- First training cohort in January; dates announced shortly.
Initiatives will reach out to all sectors with a budget of $4m in 2011

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Next steps towards an EE Ontario

1. Design collaborative framework with gas companies
2. Design evaluation, measurement and verification framework to quantify impacts at various levels, including direct and indirect contributions to electricity savings
3. Procure third party service providers to make it all happen
4. Once the post-professional ‘suite’ is up and running, work with Ontario’s post-secondary sector to build the pre-professional end of the pipeline
5. Live and learn!

Bryan Young – Building Capability for an Energy Efficient Ontario - March 2011
Long-Term Plan

Demand for electricity

2010-2014
FIT/coal phase-out

2015-2022
Operability / nuclear refurbishments

2023-2030
Post-carbon
Thank you!

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