ONTARIO POWER AUTHORITY

Complementary Roles of Voluntary Programs and Minimum Energy Performance Standards

by Peter Love, Chief Energy Conservation Officer
Ontario Power Authority
EUEC Conference, February 4, 2009

Role of the Chief Energy Conservation Officer

- **Champion for culture of Conservation**
  - Public events, recognize leadership, OPA conservation spokesperson
- **Leadership in planning and coordination of conservation activities**
  - Coordinate conservation activities across Ontario
  - Including non-OPA funded activities
- **Promote regulations (codes and standards) and policy**
  - Includes follow-up on annual report recommendations
- **Reporting**
  - Annual report with recommendations to remove barriers

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Ontario Electricity Sector - Quick Overview

- One of the most energy-intensive jurisdictions in the world
- Population approaching 13 million people
- Total annual consumption 156 terawatt hours (billion kWh) – valued at $12 billion/year
  - Residential: 30 percent
  - Commercial: 40 percent
  - Industrial: 30 percent
- Average homeowner uses ~ 900 to 1,000 kWh/month
- Current supply mix: nuclear 52%, hydro 21%, coal 18%, gas/oil 8%, other 2%
- Summer peaking since 2001* (other provinces remain winter peaking)
- Bottom line: retail electricity price of 11.4 ¢/kWh

*Ontario was winter peaking in 2004

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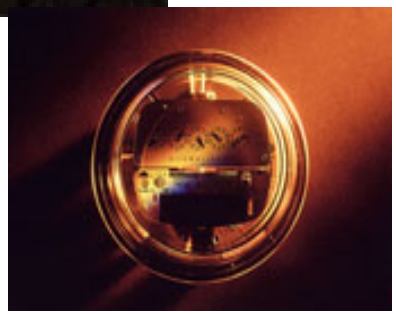
The Ontario Power Authority Mandate



- Created as an independent authority by the provincial government in 2005
- Mandate is to ensure reliable, long-term electricity supply for Ontario
- Peak demand outlook determines supply needs
- 80 percent of current generation capacity to be replaced within 20 years

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Leveling Lakeview Coal-Fired Electricity Generation Plant

Going, going, … gone!

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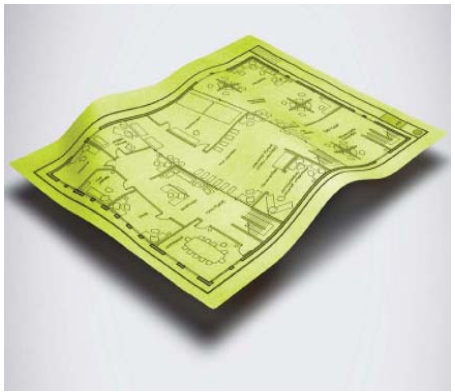
Integrated Power System Plan

- A road map for Ontario's electricity future
- Has a 20-year outlook, updated every three years
- Four key results:
  1. Growth in demand is reduced by 75 percent through conservation.
  2. Coal is replaced in the supply mix with renewable energy and natural gas.
  3. Nuclear power is restored through refurbishments and new builds.
  4. Transmission is reinforced for reliable service and to connect renewable energy to population centres.

- **$10 billion to be invested in conservation**



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Conservation Targets/Progress

- 6,300 MW reduction in peak demand by 2025 (75 percent growth in peak demand)
- Interim target of 1,350 MW achieved in 2007
- Another 1,350 MW by 2010
- Ontario received an "A" on recent report card from Canadian Energy Efficiency Alliance, up from a "D+" in 2001

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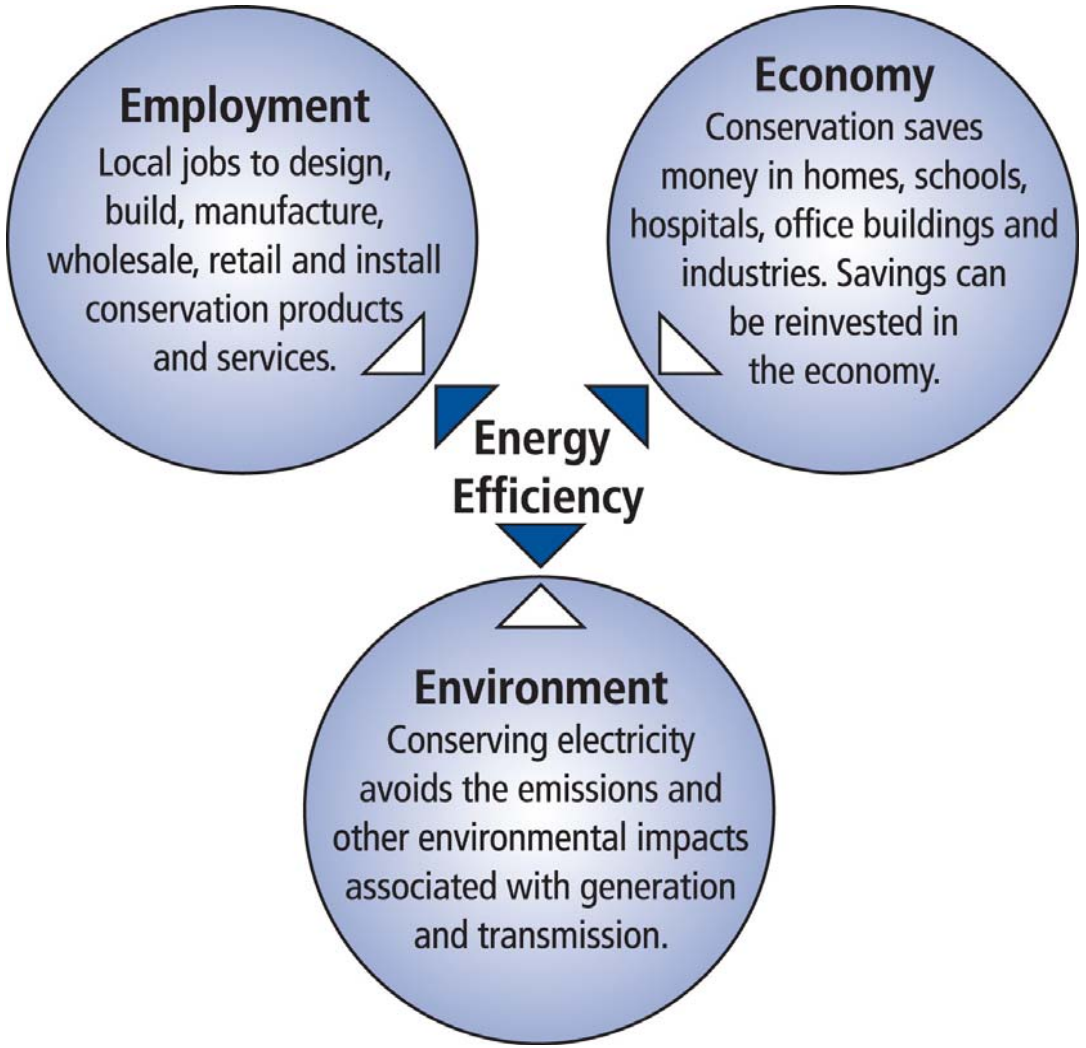
Benefits of Conservation

The Three Es:

- **Employment** benefits: labour-intensive, local jobs
- **Economic** benefits: efficiency is cost-effective for households and makes private sector more competitive
- **Environmental**/health benefits: reduced GHGs, acid rain, smog



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Conservation Challenges

1. Hard to see
2. Hard to measure
3. Requires buy-in by every citizen and organization

Overcome challenges by:

1. Bringing conservation leadership/successes to public attention
2. Emphasizing importance of conservation
3. Reporting regularly on progress being made



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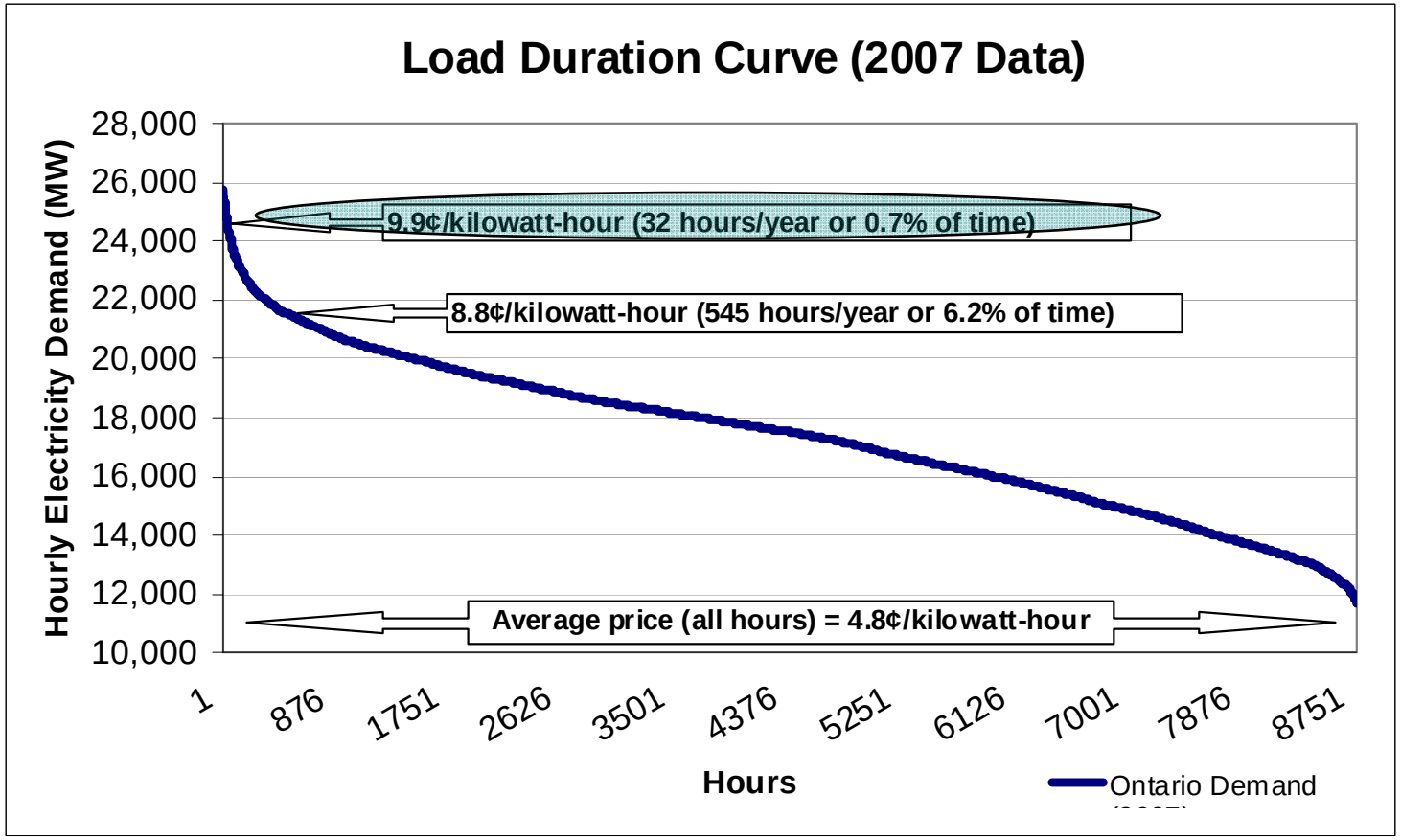
Four Types of Conservation

1. **Conservation/Demand Management**
   - Using less/using less during peak hours
   - Deferring usage to off-peak hours
2. **Energy Efficiency**
   - Using energy more efficiently
3. **Fuel Switching**
   - Switching from electricity to another fuel
4. **Self-generation/Co-generation**
   - Displacing load off the power grid

The Importance of Demand Management



Source: IESO

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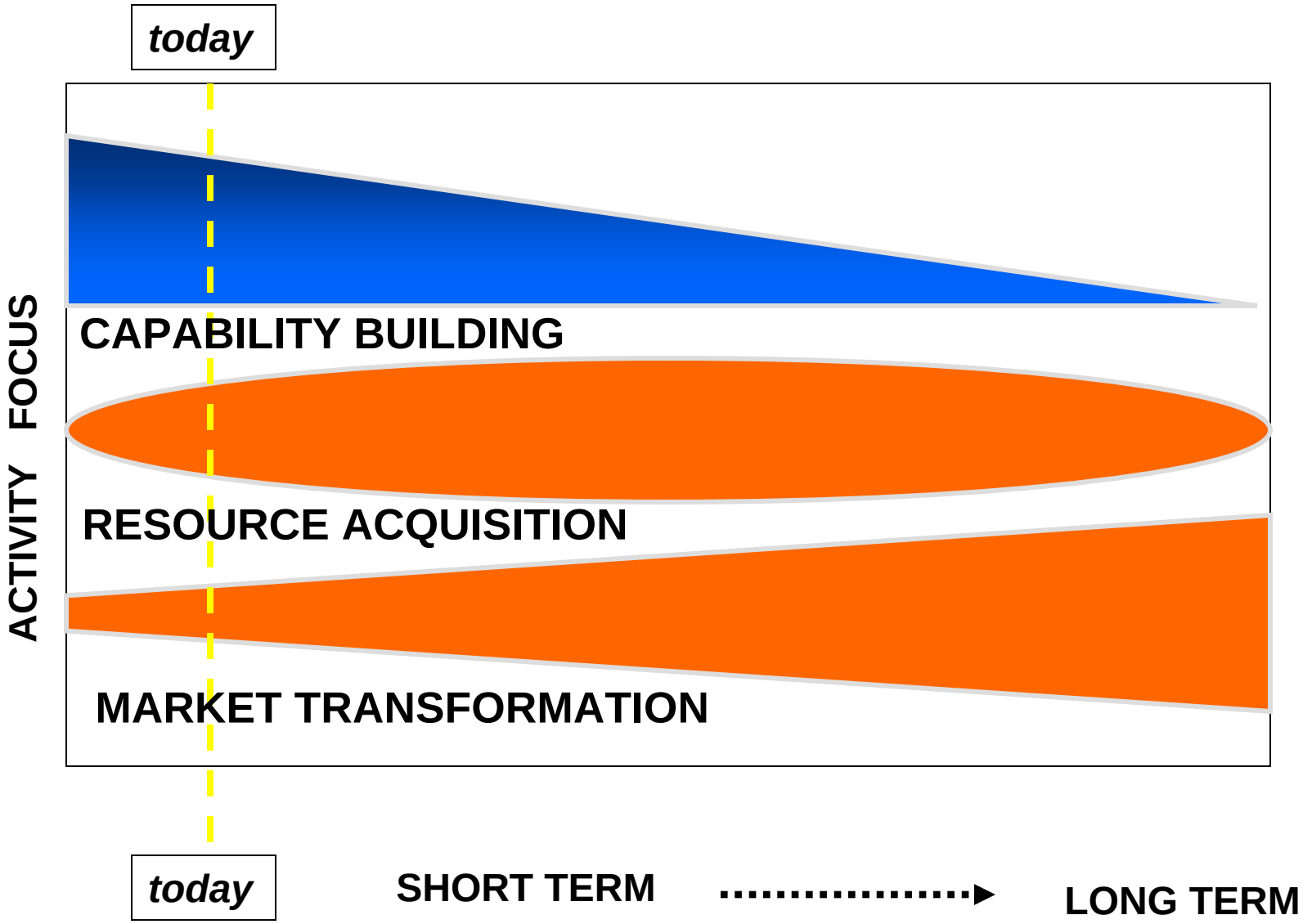
Conceptual Approach to Delivering Conservation



OPA 2008 Conservation Initiatives

Residential

The Great Refrigerator Roundup* (Appliance Retirement)
peaksaver® (Residential Demand Response)*
Cool Savings Rebate
Every Kilowatt Counts Power Savings Event

Commercial and Institutional

New Commercial Buildings Construction
Electricity Retrofit Incentive*
Power Savings Blitz*
Toronto Comprehensive Program (BOMA, City of Toronto and Toronto Hydro)
Multi-Family Buildings

Industrial

Demand Response

**LDC involvement*

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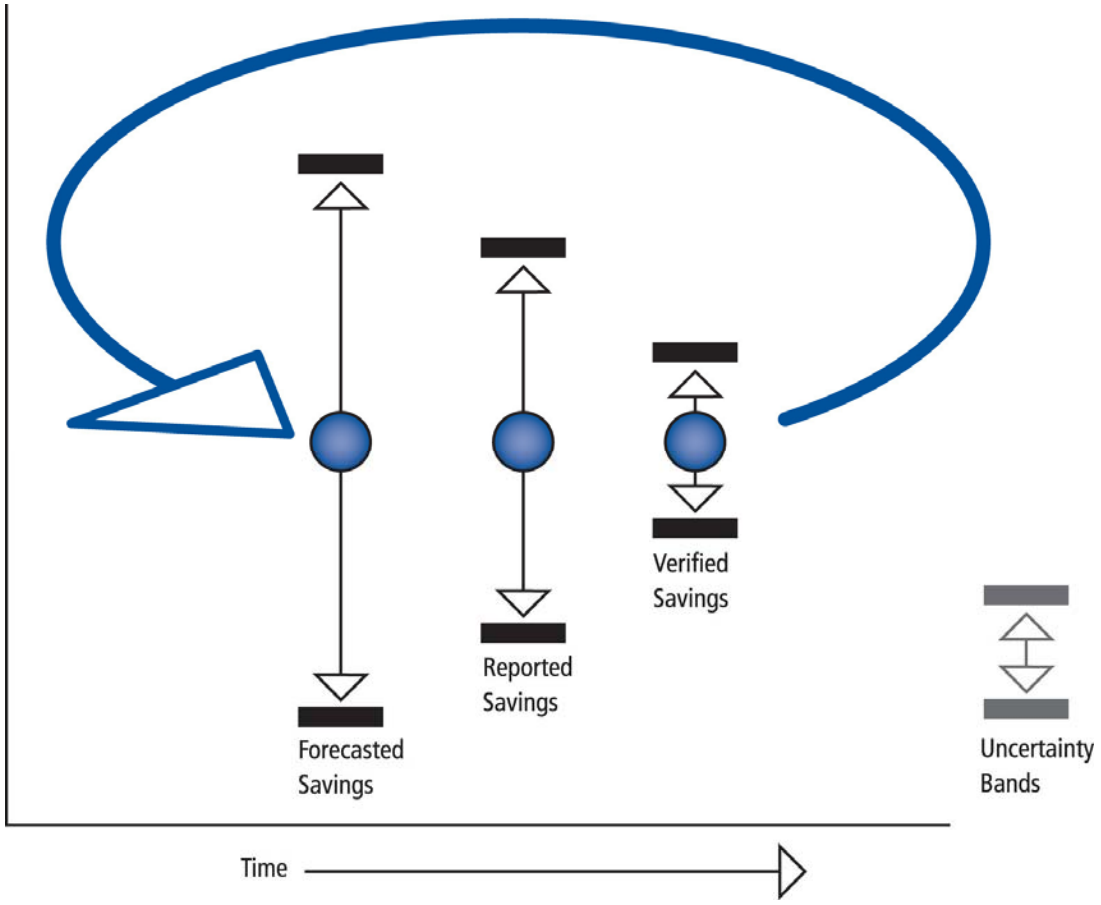
Evaluation, Measurement and Verification



Goals are to:

- Verify and ensure reliability of savings achieved
- Assess program design performance
- Validate input assumptions
- Provide information for continuous improvement
- OPA's EM&V framework uses an internationally recognized standard
- Recently recommended provincial/federal governments and others also implement EM&V plans

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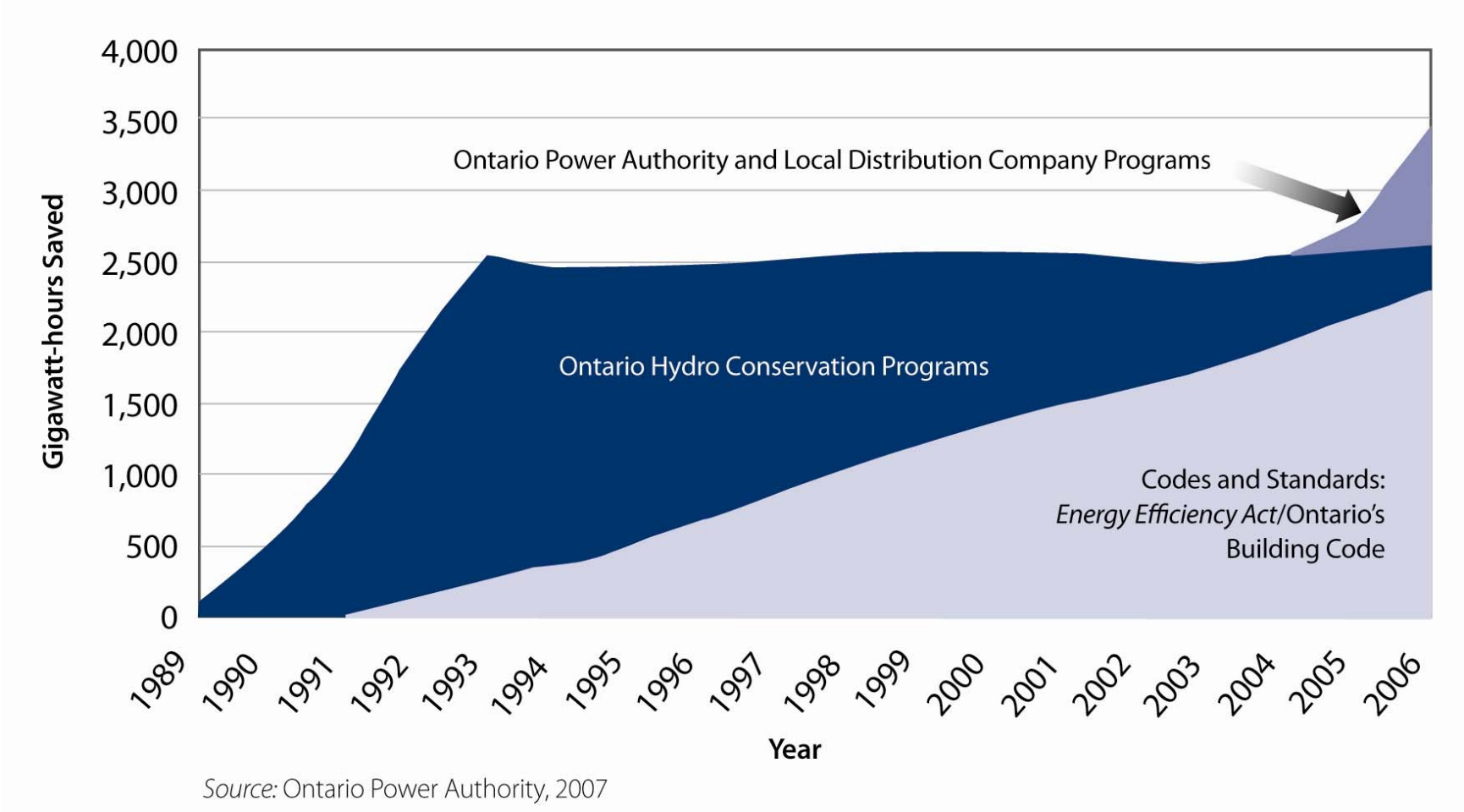
Impact of Codes and Standards in Ontario



Source: Ontario Power Authority, 2007

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Voluntary Programs and Mandatory Requirements

- **Equipment and appliances:** As ENERGY STAR® appliances gain market share, minimum energy performance standards and ENERGY STAR® requirements are increased.

- **Lighting:** Success of marketing and incentive programs contributed to Ontario's and Canada's decisions to set minimum performance standards for lighting by 2012.

- **Building Codes:** Success of voluntary programs (R-2000, Energy Star® for New Homes and Commercial Buildings Incentive program) is a key factor in increasing minimum energy efficiency of homes and buildings by 25 to 30 percent.

- **In all cases,** adoption of higher standards was facilitated by successful voluntary programs that increased their uptake. This in turn reduced manufacturing costs and improved the quality of goods.

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Codes and Standards

- Codes, standards and pricing may account for up to 75 percent of conservation in the long term.
- Results are slow in coming as they rely on the turnover of capital stock in housing, machinery and appliances, but the effects are sustained.
- The most successful conservation programs use a combination of programs (pull) and changes to codes and standards (push).

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Conservation Opportunities: CECO AR 2008

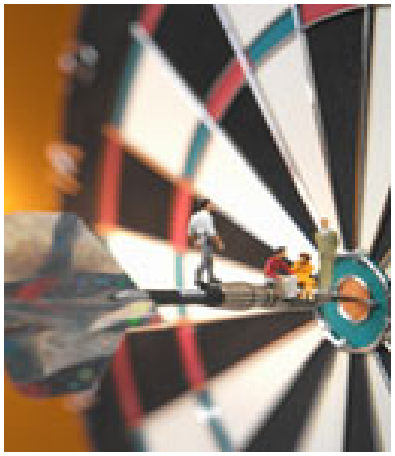
- **All** Ontarians have role to meet some of the most aggressive conservation targets in North America

- Ontario needs "distributed leadership" to achieve its energy conservation targets and goals

  - 18 municipal energy conservation officers appointed to date

  - recommended leaders in other key sectors should appoint in-house energy conservation champions

  - continuous improvement in minimum standards and buildings and equipment



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Conservation Opportunities (cont'd)

- Ministry of Energy and Infrastructure and Ministry of Municipal Affairs and Housing: collaborate to ensure fair implementation of in-suite metering in multi-unit residential buildings

- Leading commercial tenants, landlords: plan to install sub-meters in rented space to transfer responsibility for electricity costs under direct control to tenants

- Governments: develop, implement Evaluation, Measurement and Verification (EM&V) plan for in-house energy-efficiency program (Ontario, federal, local/regional)

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Creating a "Culture of Conservation"

- We have changed our attitudes on recycling, seat belts, non-smokers rights and designated drivers

- We can do it with energy conservation, too

every kilowatt counts OM

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Conclusions – Food for Thought

You must be the change you wish to see in the world. – *Mahatma Gandhi, Political and spiritual leader of India*

Never doubt that a small group of thoughtful, committed citizens can change the world; indeed, it is the only thing that ever has. – *Margaret Mead, Anthropologist*

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Questions? Comments?

- Be the change
- Encourage distributed leadership that leads to a "culture of conservation"
- Contact Us:

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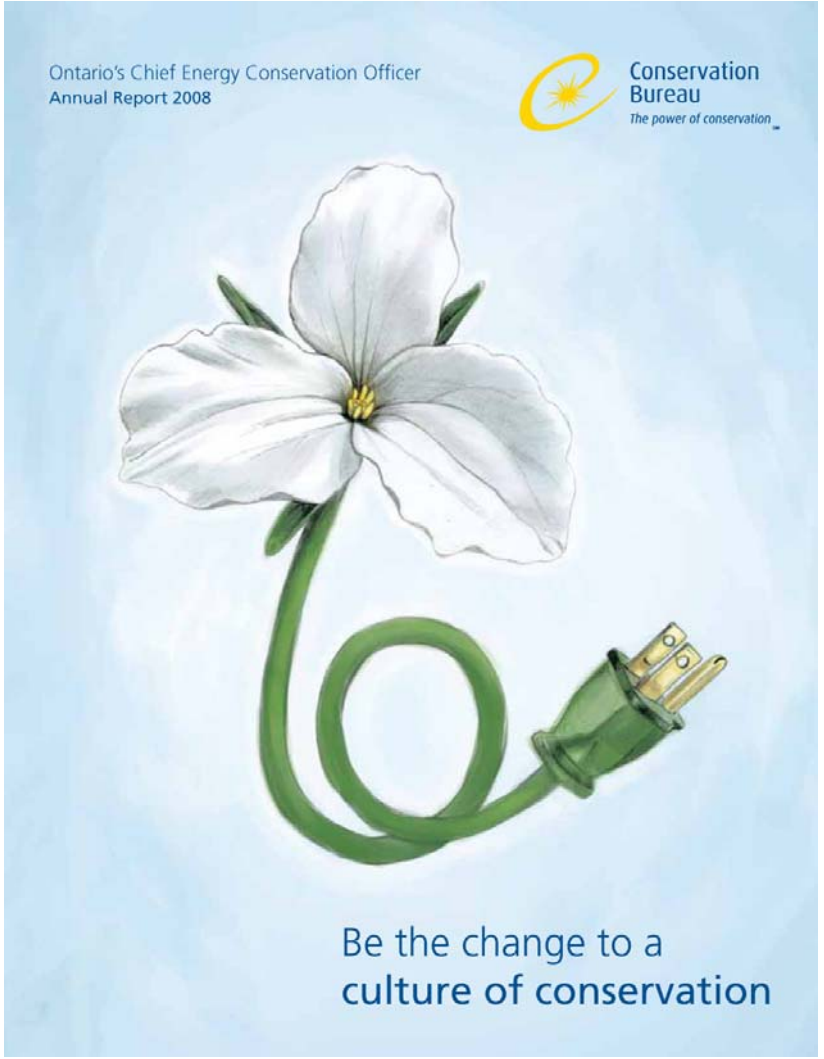

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