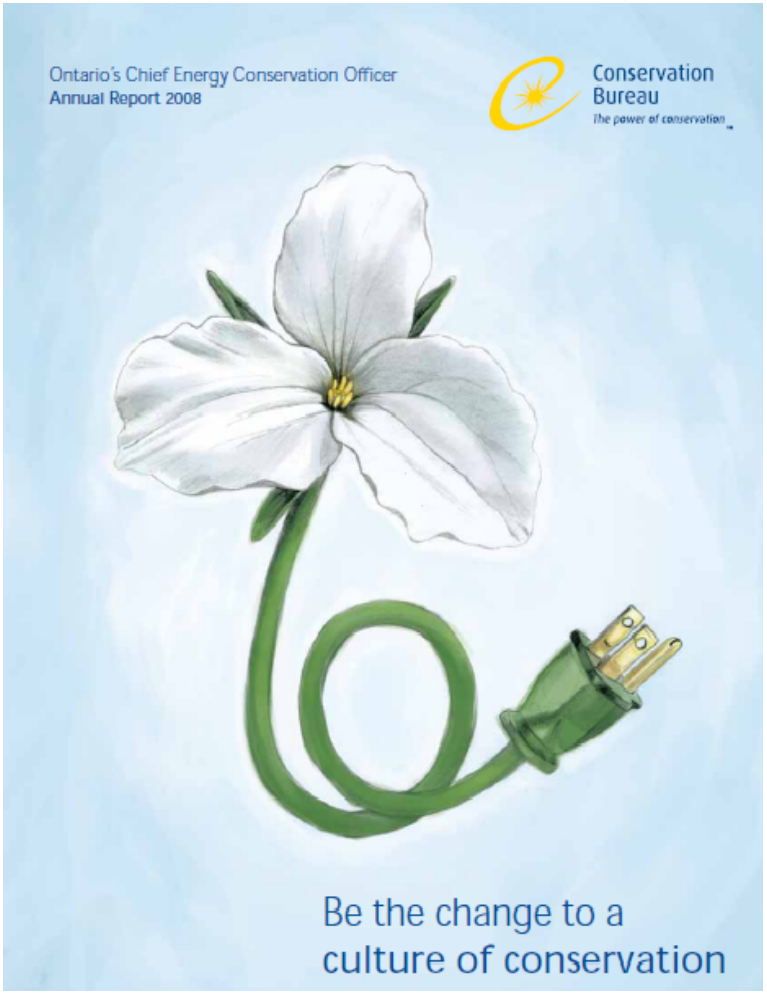


A Canadian perspective on Energy Conservation and Efficiency

4th Southern Africa Energy Efficiency Convention

Southern Africa Association for Energy Efficiency
Gauteng, South Africa
November 12/13, 2009

Canada and Ontario – Quick Facts

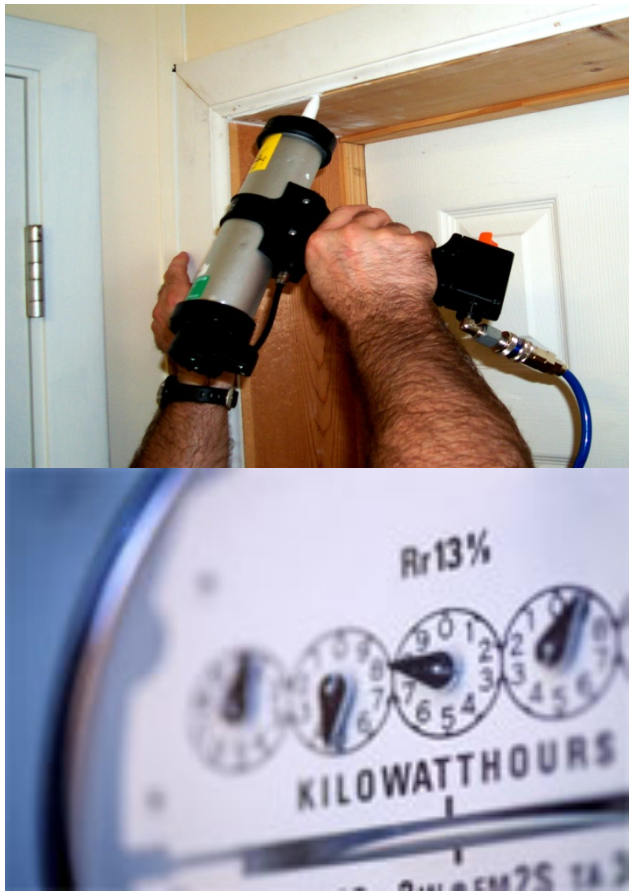
- Canadian population – 33 million
- Canadian constitution gives provinces main authority over natural resources
- Ontario has 39% of population, generates 40 percent of Canadian GDP and 52 percent of manufacturing shipments
- Electricity use in Ontario
  - peak demand 26,000 MW
  - consumption 150 TWhr/year
  - 50% nuclear, 25% hydro, 25% coal
  - 35% commercial/institutional
  - 900 kWh/month in average home
  - avg residential price $0.11/kWh
  - smart meters by 2010
  - summer peaking

source: http://www.nationalgeographic.com/geographyaction/habitats/popup_state-international.html

Benefits of Conservation

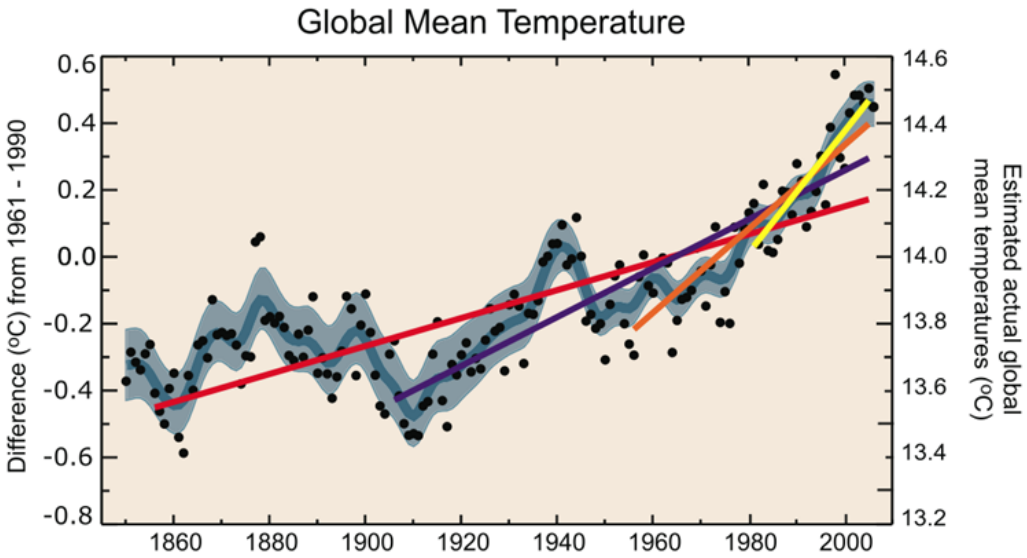
The Three Es:

- **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



Ontario's Electricity System, CO_2e and Climate Change

- In Canada, 82 percent of man-made greenhouse gas emissions come from the production and use of energy.
- In Ontario, 13 percent of CO_2e came from the production of electricity mainly from coal-fired plants in 2006.
- Closure of coal plants with more conservation and renewables will reduce emissions from electricity sector from 25 Mt CO_2e in 2006 to 7 Mt in 2014.



Source: IPCC Fourth Assessment Report, Climate Change 2007 (AR4)

- Ontario targets are to reduce CO_2e to
  - 6 percent below 1990 levels by 2014,
  - 15 percent below these levels by 2020,
  - 80 percent below by 2050..

- Canada's targets are to reduce CO_2e by 20 percent from 2006 levels by 2020 and by 60-70 percent below 2006 levels by 2050.

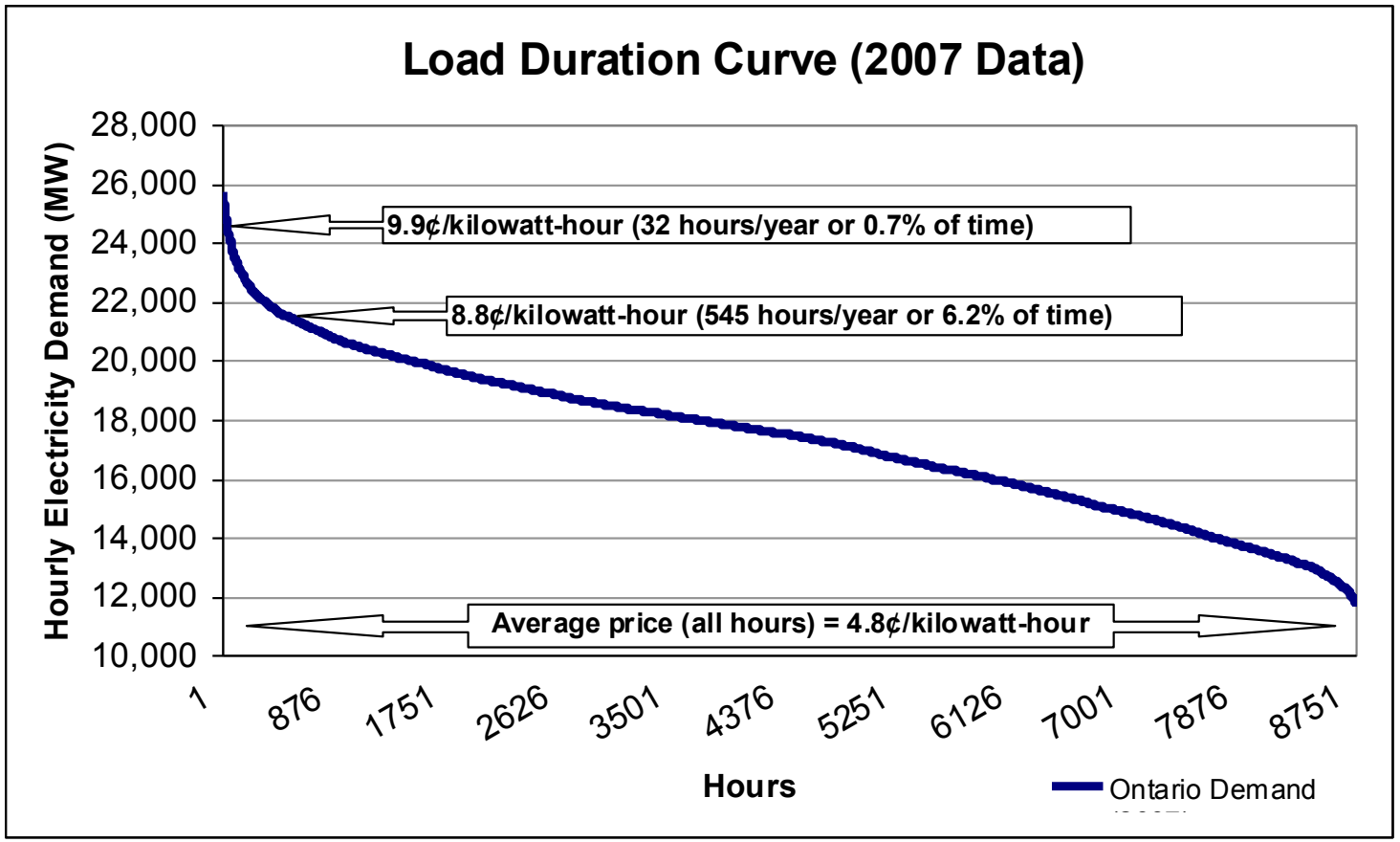
Four Types of Conservation

1. **Conservation/Demand Management**
   - Using less
   - Deferring usage to off-peak hours
2. **Energy Efficiency**
   - Using energy more efficiently
3. **Fuel Switching**
   - Switching to another energy source
4. **Self-generation/Co-generation**
   - Renewables < 500kW
   - Clean energy < 10MW

Role of Conservation Behaviour

- Usage in homes with similar equipment and hardware may vary by factor of 2
- Large mining company saved over $9 million on no-cost, low-costs suggestions made by employees (3 times what was estimated!)

The Importance of Demand Management

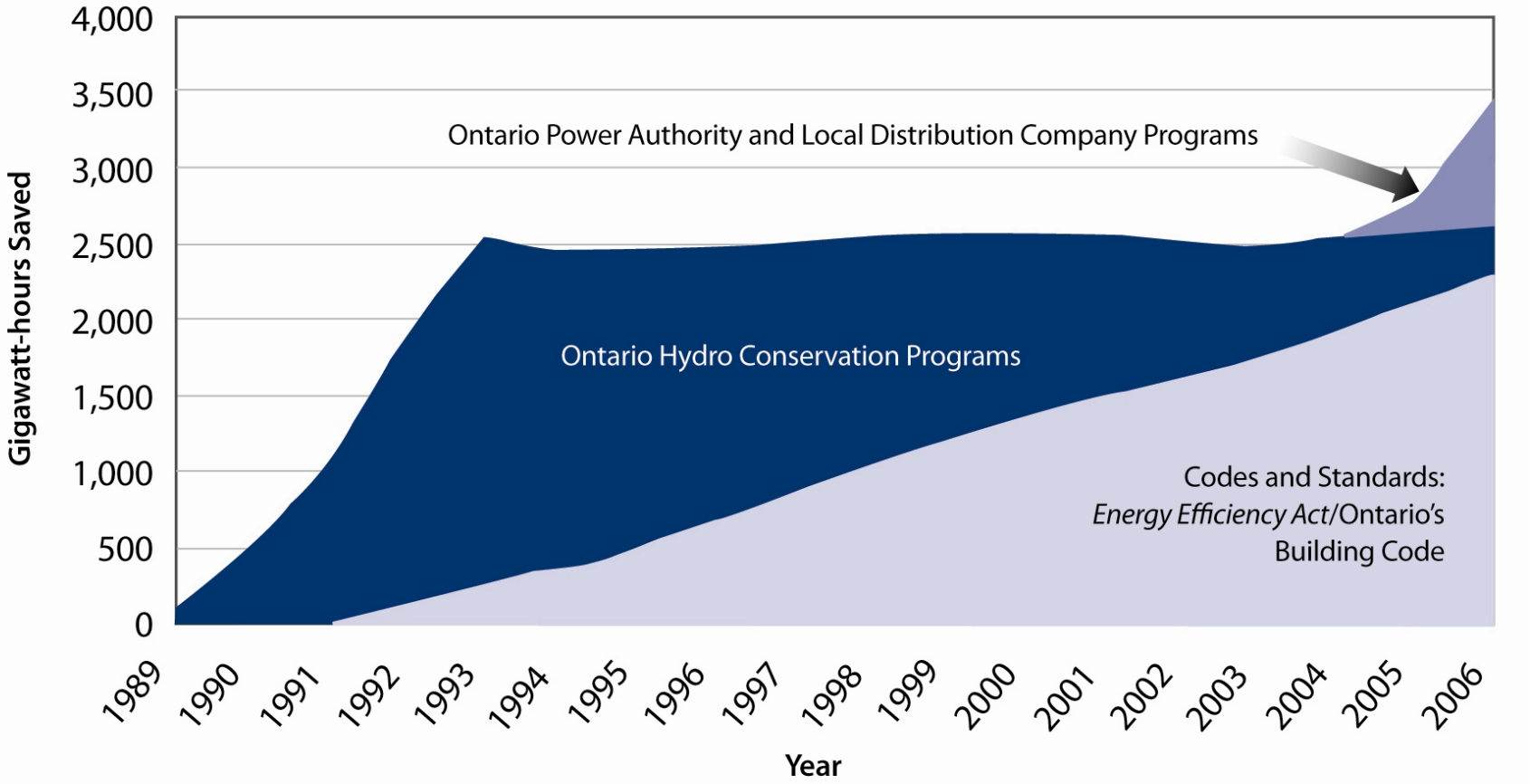


Source: IESO

Conservation Programs

- Range of ecoEnergy programs by federal government funded by taxpayers
- Larger provincial programs funded by ratepayers and approved by provincial energy regulators
- In Ontario, about $300 million/yr for electricity programs and $25 million for natural gas programs

Impact of Codes and Standards in Ontario



Source: Ontario Power Authority, 2007

Complementary Role of Voluntary Programs and Minimum Performance Standards

- **Equipment and appliances** – As Energy Star appliances gain market share, mandatory energy performance requirements and Energy Star requirements are increased
- **Lighting** – Success of marketing and incentive programs contributed to Ontario and Canadian decision to set minimum performance standards for lighting by 2012
- **Building Codes** – Success of voluntary programs a key factor in increasing minimum energy efficiency of homes and buildings by 25 to 30 percent
- In all cases, adoption of higher standards facilitated by successful marketing, as costs are reduced and quality improved.

Important Roles for Private Sector

- Energy Users – Do It and celebrate successes
- Auditors – Homes and buildings/facilities
- Contractors/Manufacturers
- Design/delivery of programs
- 3rd party Evaluation, Measurement & Verification
- Energy Performance Contracts

The Challenges of Electricity Conservation

- Electricity/Conservation is invisible
- Requires a Culture of Conservation as well as voluntary programs and minimum standards
- Requires all sectors to participate.
- Important role of pricing/elasticity of demand.

In Closing – 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"

Margret Mead, Anthropolgist

Questions?

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