

REFLECTIONS ON THE PAST, PRESENT & FUTURE OF ENERGY CONSERVATION

Peter Love

Energy Services Association of Canada

Advancing Energy Efficiency in Alberta

Alberta Energy Efficiency Alliance

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PERFORMANCE
BASED SOLUTIONS

THE PAST

Before use of fossil fuels

- First Nations/early settlers relied on human/animal power so were very careful

1867 Constitution Act

- Provinces have jurisdiction over energy and thus energy conservation (except interprovincial/international trade)



THE PAST (2)

World Wars

- Appeals to conserve & gasoline rationing in 1942

1973

- Science Council of Canada calls for transition to “Conservation Society” (precursor to Sustainable Development & Inconvenient Truth)



THE PAST (3)

Minimum Energy Performance Standards

- Ontario 1990, Canada 1992
- 1975 Ontario Code includes minimum energy performance for new buildings & major renos

Voluntary Utility Programs

- Electricity programs start 82, PowerSmart 89
- Natural gas DSM programs in Ontario in 1993



THE PRESENT

- Most provinces have conservation targets
- Most utilities have programs to achieve provincial targets
- About 80 products have MEPS and CAFE standards for vehicles
- Most provinces have minimum energy standards in their building codes
- Most provinces promoting public transit



THE PRESENT (2)

Best Practices

- ACEEE 2015 Report Card (Mass, Ca & Vt top 3)
- 15 states with savings targets $>0.7\%/year$
- Many states spend $>2\%$ rev on EC (Vt 4.7%)
- Last Cdn report card 09 (Man, Ont & Que A+)



THE FUTURE

Need to recognize unique barriers:



**HARD
TO SEE**



**HARD
TO MEASURE**



**REQUIRES
ALL-IN**



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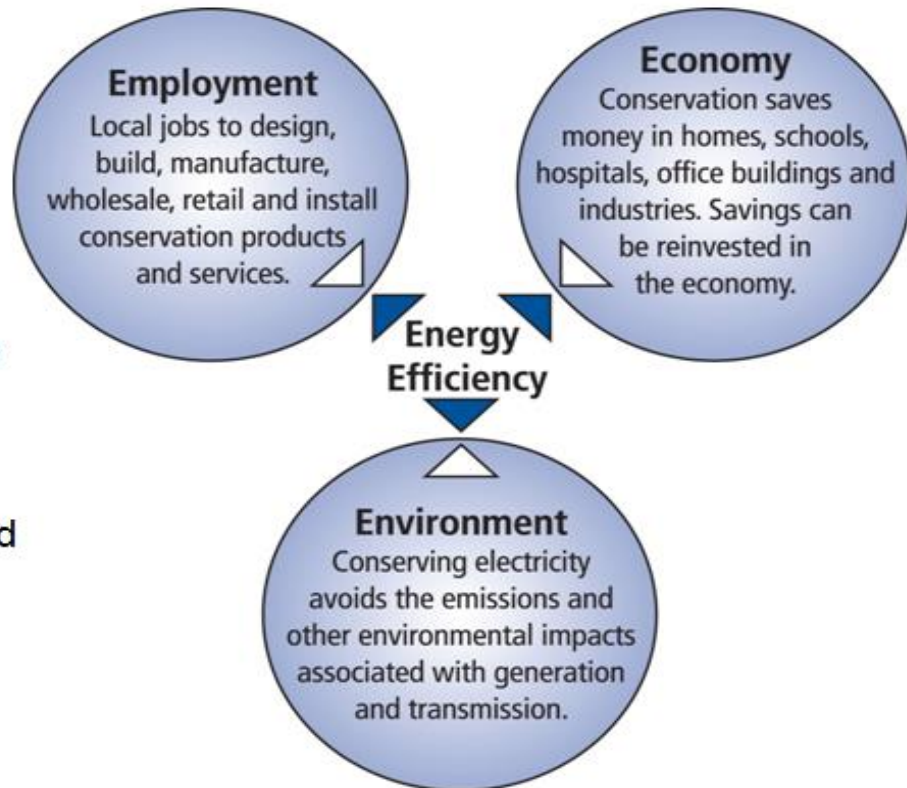
THE FUTURE (2)

NEED TO FOCUS ON THE BENEFITS

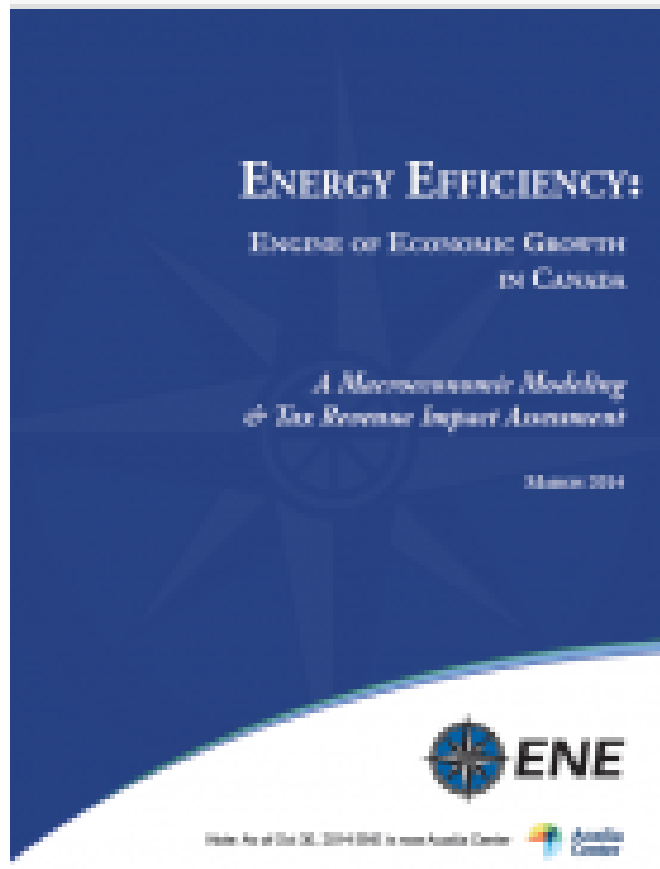
Benefits of Conservation

The Three “Es”:

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



ECONOMIC BENEFITS FOR CANADA



Over 15 years

- Inc GDP by \$582 billion
- 305,000 to workforce
- Prov tax rev \$2.7 billion
- Cut 92 MT/yr CO₂



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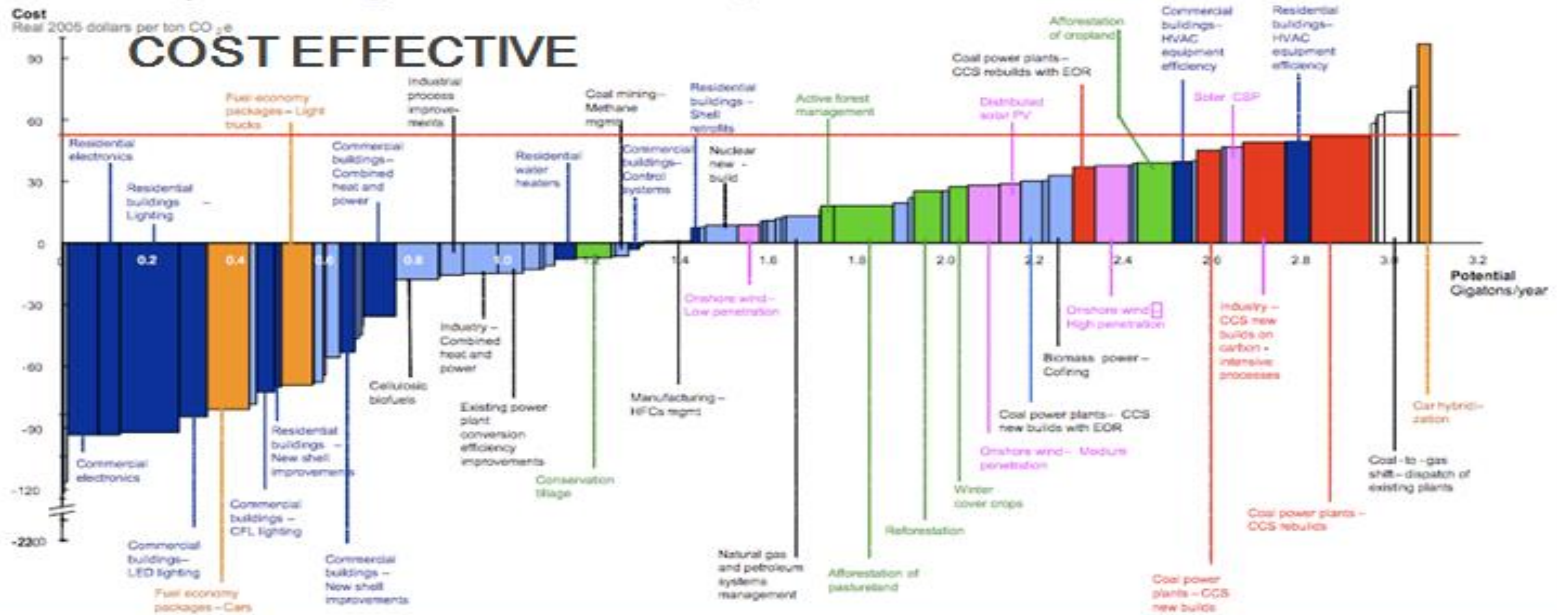
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CARBON COST ABATEMENT CURVE



Example of GHG Abatement Cost Curve

U.S. curve indicates opportunity set in the U.S. is widely distributed (U.S. mid-range abatement curve – 2030)



SOURCE: McKinsey & Co. analysis



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ENVIRONMENTAL BENEFITS

82%

of Canada's man-made
greenhouse gas emissions are
from the production and
use of energy

2/3

of primary energy
consumed in Canada
is wasted (U Calgary)



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THE FUTURE (3)

Keep focus on developing
Culture of Conservation

We have changed our attitudes on...



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THE FUTURE (4)

House in Order

- Government's need to have some progress and aggressive plans for own facilities/fleets
- Guaranteed Energy Service Performance Contracts transfer tech/fin risk to private companies
 - Been used since 80s; Feds have used for 1/3 of their buildings



THE FUTURE (4)

Voluntary Programs

- Funded by rate payers, not tax payers
- Allocate about 2% revenue to conservation
- Private companies can design, implement and evaluate
- Allocate up to 5% program budget for independent EM&V



THE FUTURE (5)

Existing Buildings

- Will continue to be majority of stock (1-1.5% new stock/year)
- Mandatory reporting and labelling
- Direct engagement of owners and tenants



THE FUTURE (6)

Minimum Standards

- More products, higher min requirements
- Net zero new homes/buildings by 2030
- Higher CAFE standards



THE FUTURE (7)

Smart Energy Networks & Integrated Programs

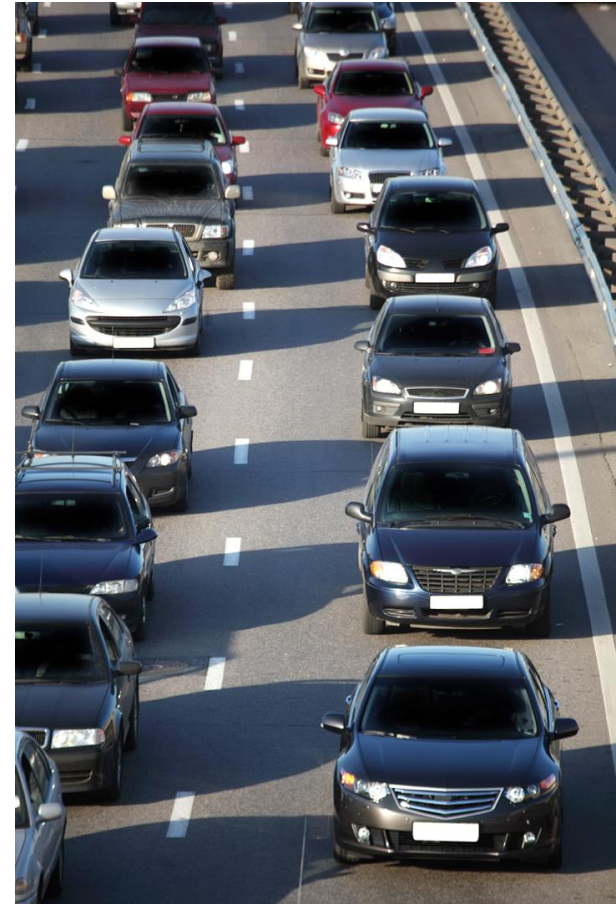
- Smart appliances
- Automatic response to peak pricing
- One approach to end users for multiple fuels



THE FUTURE (8)

Transportation

- 23% Canada's GHG emissions (43% Ont)
- Need national energy conservation advocates



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ENERGY SERVICES ASSOCIATION OF CANADA

- Incorporated August 2010
- 6 founding independent energy service companies



- Represent >90% \$300 million/year market for guaranteed Energy Service Performance Contracts (ESPC)



DISCUSSION

Peter Love

President

Energy Services Association of Canada

416-644-1788

peter@energyservicesassociation.ca

www.energyservicesassociation.ca



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