

# Nova Scotia's Energy (*Efficiency*)

## Resource





# What is Energy Efficiency?

“Refers to products or systems using less energy to do the same or better job than conventional products or systems.”

(US Environmental Protection Agency)



# What is Energy Efficiency?

- Energy Use is Widespread and Varied
  - Buildings
  - Water
  - Farms
  - Businesses
  - Manufacturing

# What is Energy Efficiency?

Efficiency programs are delivered through a concerted, sustained campaign

- Expert advice and analysis
- Incentives and Financing
- Standard Setting
- Market Transformation (e.g. working with retailers)
- Community Based Social Marketing



## Residential Programs

- National Program launched in 1998 by Natural Resources Canada
- Focus on Thermal Efficiency
- Cancelled by Federal Government in 2006
  - continued by utility funding from Hydro Quebec





## Residential Programs

- 1) Receive Expert Audit
- 2) Recommends: Insulation upgrades, draft proofing, heating system upgrades
- 3) Homeowner invests in upgrade
- 4) Follow-up Audit to show improvement
- 5) Performance-based grant





# Residential Programs

<b>Average Homeowner</b>	
\$5,000	Investment
\$680	Incentive
30%	Annual Energy Savings
\$750	Annual \$\$ Savings
\$18,750	Lifetime Savings (25 yrs)



# Small Business

## *Connecticut Small Business Energy Advantage Program*

### Case

## Compare Foods

## An Independent Grocery Store



# Small Business

## *Connecticut Small Business Energy Advantage Program*

Starts with a  
Walkthrough and  
Evaluation by an  
Energy Expert



# Small Business

## *Areas for Improvement*

### 1) Lighting

- Switch to T8 fluorescent
- Electronic ballasts and metalized reflectors to make store brighter

# Small Business

## *Areas for Improvement*

### 2) Refrigeration

- Computerized controls systems for
  - Evaporator fans for dairy
  - Produce and meat walk-in coolers
  - Door heaters on the in-store freezer cases

# Small Business

## Financing

\$31,950 Project Cost

\$12,210 Cash Incentive

28-month loan



# Small Business

## Results

17% cut in energy use  
per month

101,750 kwh per year

\$10,886 a year savings





# Manufacturing

*Efficiency Vermont*

## Case

### National Hanger

Company uses plastics  
injection molding  
technology





## Manufacturing

### *Efficiency Vermont*

#### All Electric Technologies

- 1) Reduce energy consumption and maintenance costs
- 2) Improve control and increase productivity

**BUT!** – Higher Price





## Manufacturing

### *Efficiency Vermont*

#### Financing

- \$47,800 upgrade cost
- \$19,000 incentive
- \$28,800 net investment
  
- Saves \$20,100 per year
- 70% return on investment
- 202,500 annual kwh savings





# Manufacturing

## *Efficiency Vermont*

- Payback time less than two years with lower energy costs and incentive
- Company will replace 6 machines over 5-6 years





Ecology Action Centre

# Industrial

*Connecticut Energy Blueprint*

Case

Waste Conversion  
Technologies Inc.

Waste Wood Recycling



Source: 2006 Report of the Connecticut Energy  
Conservation and Management Board



## Industrial

### *Connecticut Energy Blueprint*

- Two Large Grinders for Wood
- Installed custom-built demand control systems to conveyer belts
- Not running at full capacity simultaneously



# Industrial

## *Connecticut Energy Blueprint*

- Program gave \$26,000 incentive
- Limit monthly power demand to 250 kw
- Expansion of business





## Agriculture

### *ReBuild Colorado*

#### Case

- Colorado Pork (5,400 sows)
  - o Facility built in 1999 with energy efficiency in mind
- Compare to a typical facility



# Agriculture

## *ReBuild Colorado*

### Measures

- On-site generation
- Compact Fluorescent lighting
- High-efficiency motors
- Computer controlled natural ventilation
- High-efficiency heating furnaces and water heaters



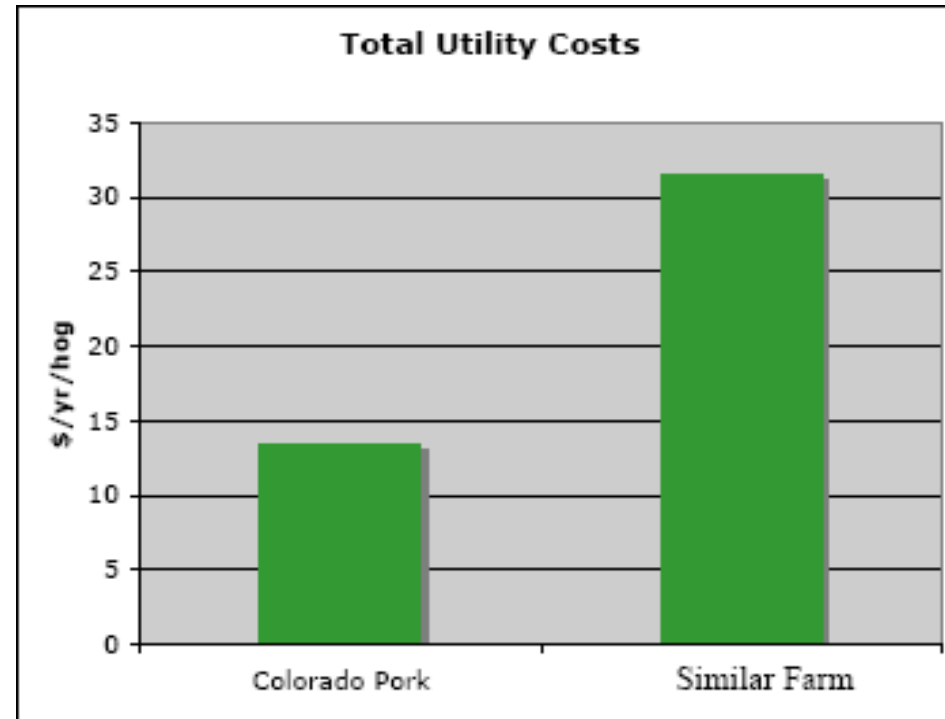


## Agriculture

### *ReBuild Colorado*

#### Result

- 45% lower energy usage
- \$19 saved per hog
- \$90,000 per year to bottom line



# Low-Income

## *Energy Poverty*

- The poorest 20% of Nova Scotians spend 14.2% of their income on energy
- Spending over 6-8% is energy poverty!



**Affordable  
Energy  
Coalition**

# Low-Income

## *Energy Poverty*

- Canada's (short-lived) low-income program showed potential energy savings of 40% per household.
  - \$870 a year
- Energy burden from 14.2% to 8.5% of income.





# Schools

## *Efficiency Vermont*

### Case

Enosburg Falls School

Architects called *Efficiency Vermont*  
for Renovation Project

Heating, Ventilating, Cooling,  
Lighting



# Schools

## *Efficiency Vermont*

### Financing

\$119,600 – Upgrade Costs

\$62,000 - Incentive

\$57,600 - Net Investment

\$32,600 - Annual Energy Savings

56% - Return on Investment





# Schools

## *Efficiency Vermont*

### Black River Design

Award for *Excellence in Energy Efficiency* at the Better Buildings by Design Conference

Efficiency Vermont partnership in majority of projects



# **Efficiency is a *Resource!***

*Add all of these energy savings up*

- Energy Efficiency is Abundant
- Energy Efficiency is Cheap
- Energy Efficiency Reduces Pollution
- Energy Efficiency Creates Jobs

# **Efficiency is a *Resource!***

*How Much Efficiency is Out There?*

## **Achievable Economic Potential:**

All feasible, cost-effective efficiency achievable through a concerted, sustained campaign involving proven program and market interventions – not bound by budget constraints

# Efficiency is a *Resource!*

*How Much Efficiency is Out There?*

## What if Nova Scotia Spent Proportional to California & Vermont?

- In the Year 2020 we would save:
  - 3100 GWh ( 25% of current generation)
  - 600 MW ( Lingan Power Plant)



# Efficiency is a *Resource!*

*How Much Efficiency is Out There?*

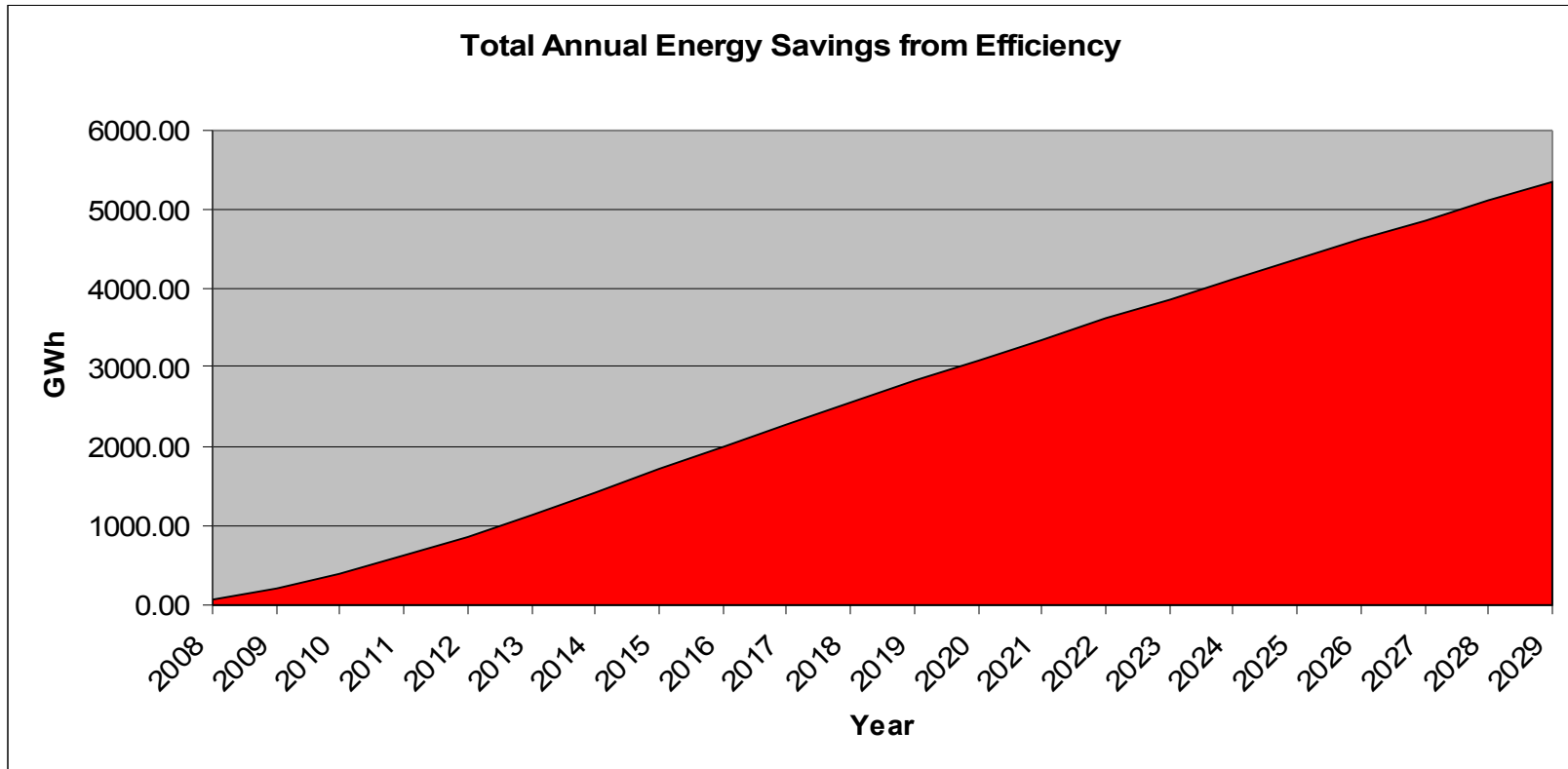
**What if Nova Scotia Spent Proportional  
to California & Vermont?**

- In the Year 2020
  - Net Lifetime Energy Savings of \$4 Billion



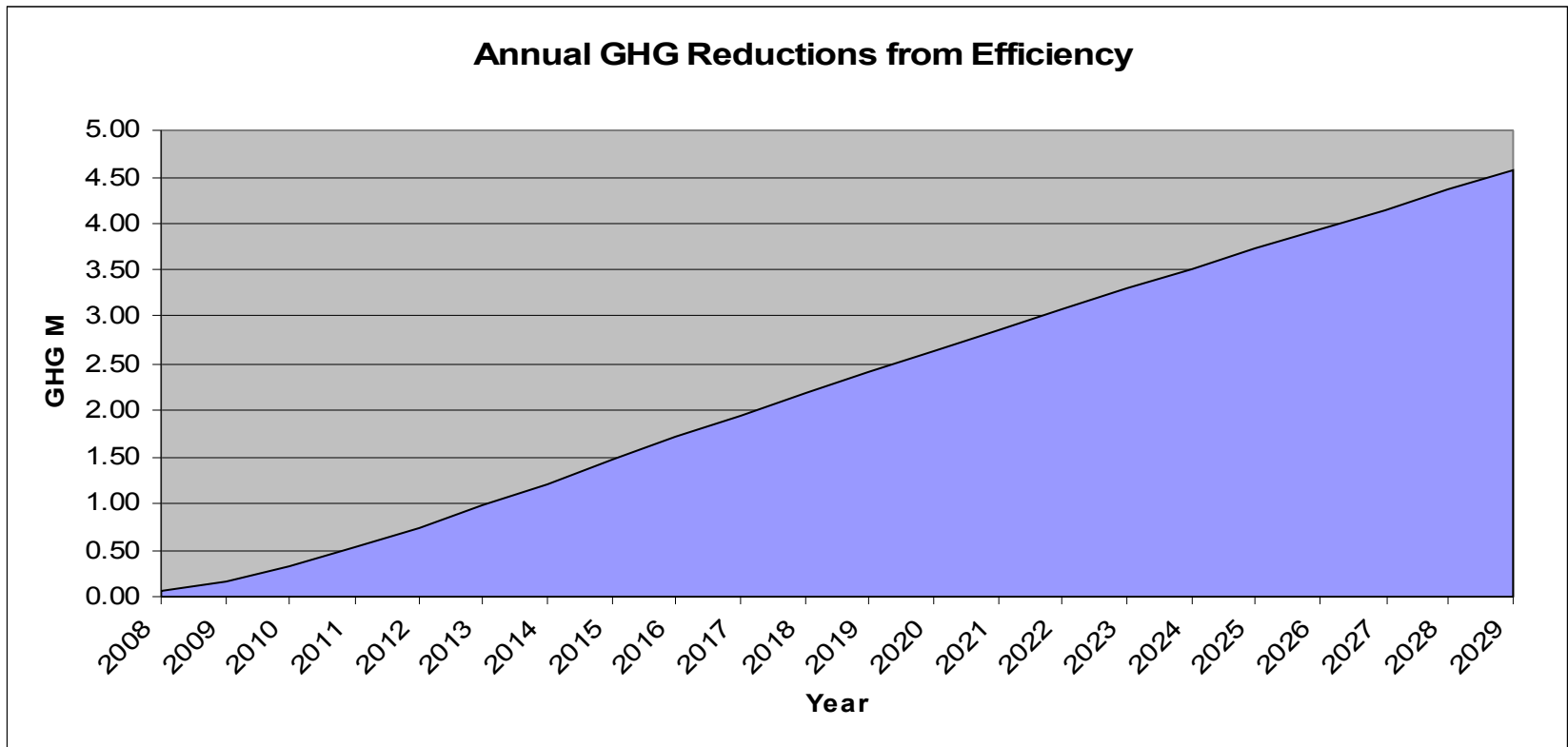
# Efficiency is a *Resource!*

*The Savings Get Bigger Every Year*



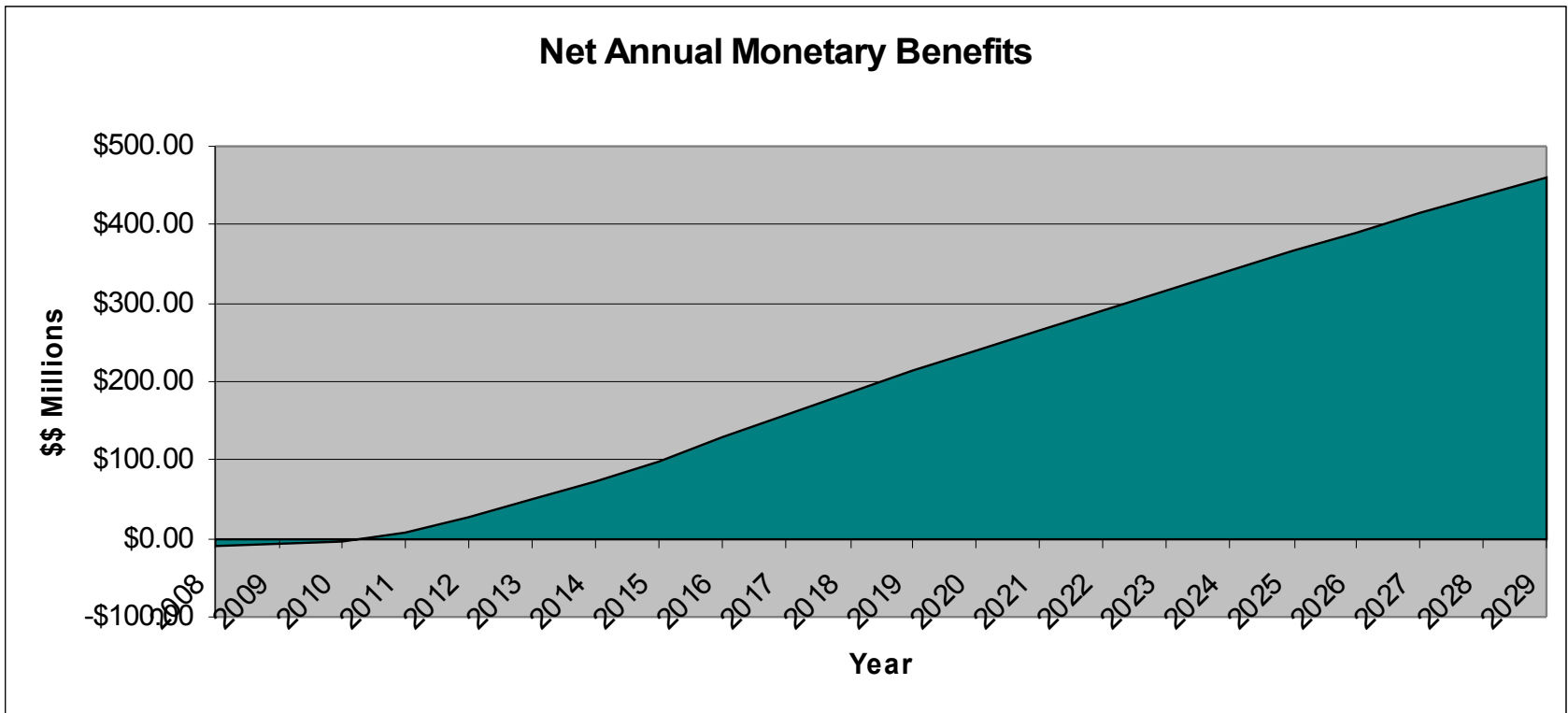
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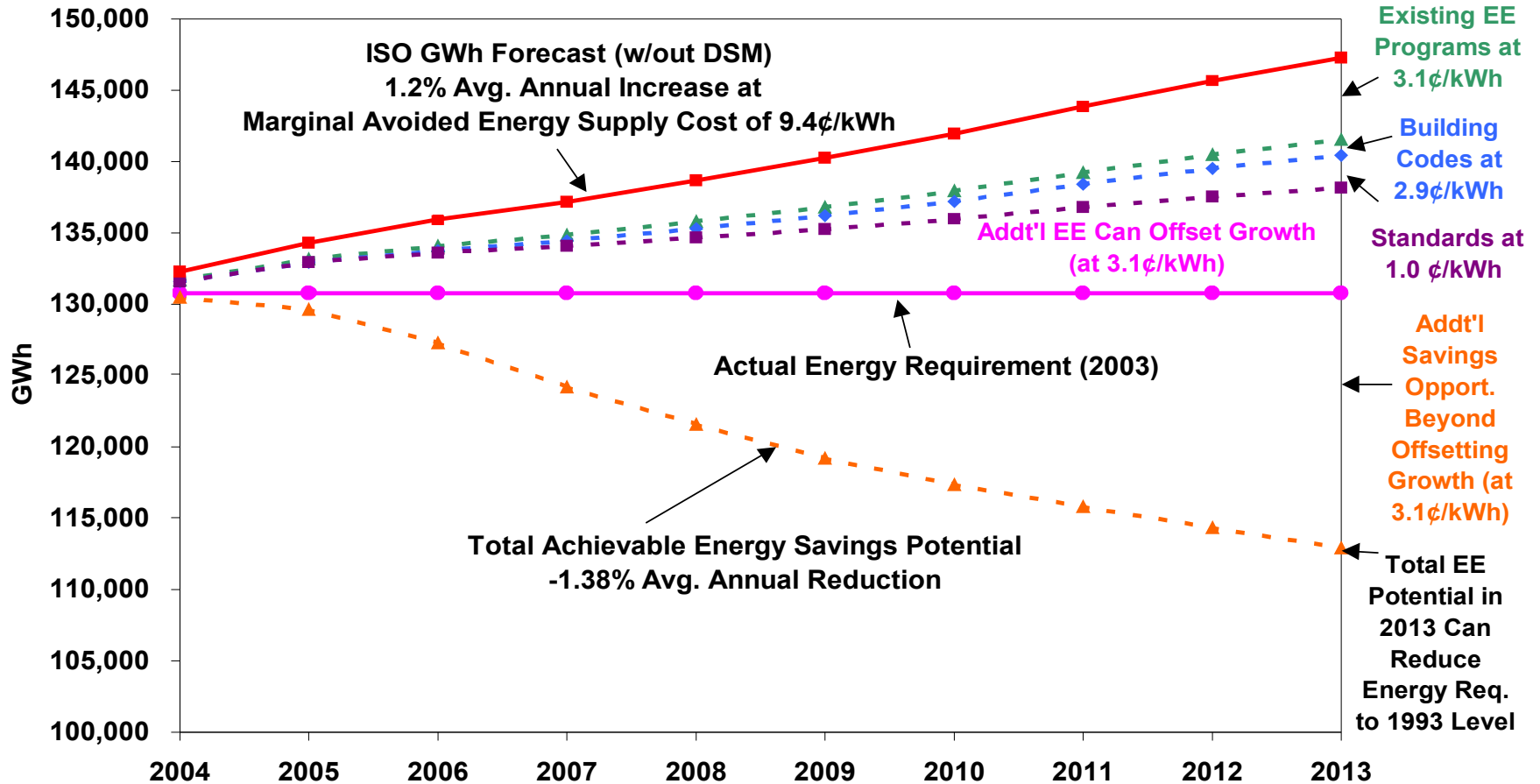


# Efficiency is a *Resource!*

*The Savings Get Bigger Every Year*



## Existing and New EE Strategies Can Offset ISO Forecasted Energy Requirements (GWh) and Beyond





## Efficiency is a *Resource!*

### How Many Jobs?

<u>Energy Resource</u>	<u>Job Creation Benefits (FTE) Per \$1 M</u>
<b>Energy Efficiency</b>	<b>37 FTE</b>
Solar hot water	28 FTE
Solar electric	8 FTE
Wind energy	6 FTE
Biomass Generators	22 FTE
Diesel Generators	4 FTE
Small Hydro	8 FTE
Central Hydro	4 FTE

# Efficiency is a *Resource!*

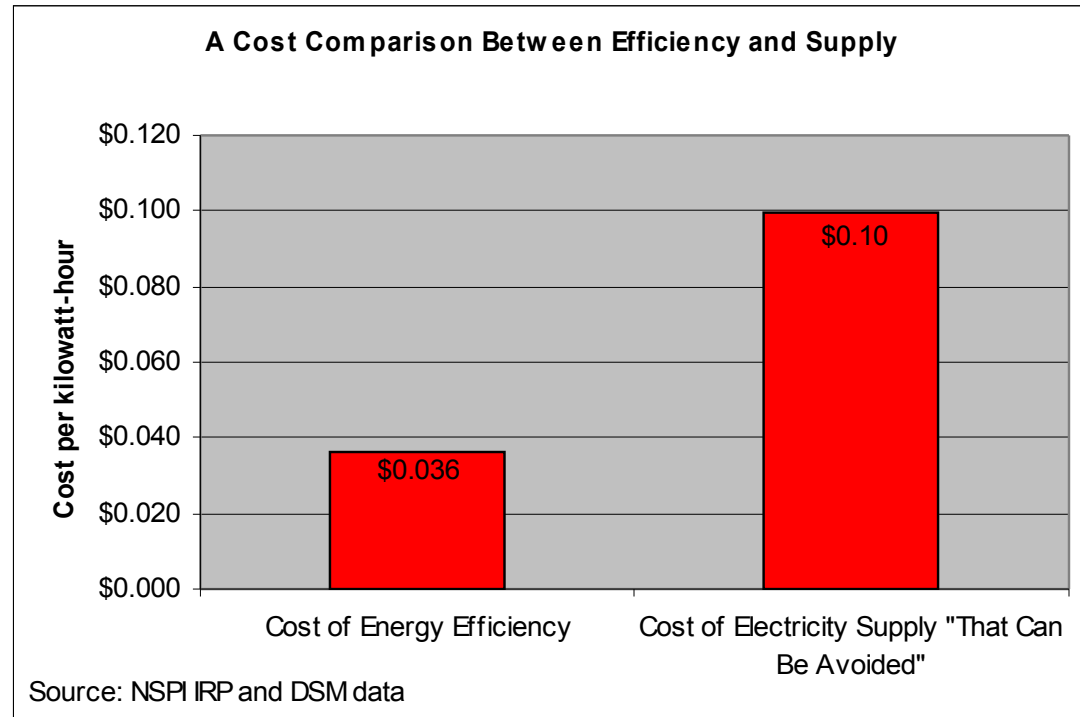
## *How Much Does it Cost?*

- Costs about 10 cents to produce each kwh in NS
- When we use less electricity
  - Reduce need to generate energy and build plants

# Efficiency is a *Resource!*

## How Much Does it Cost?

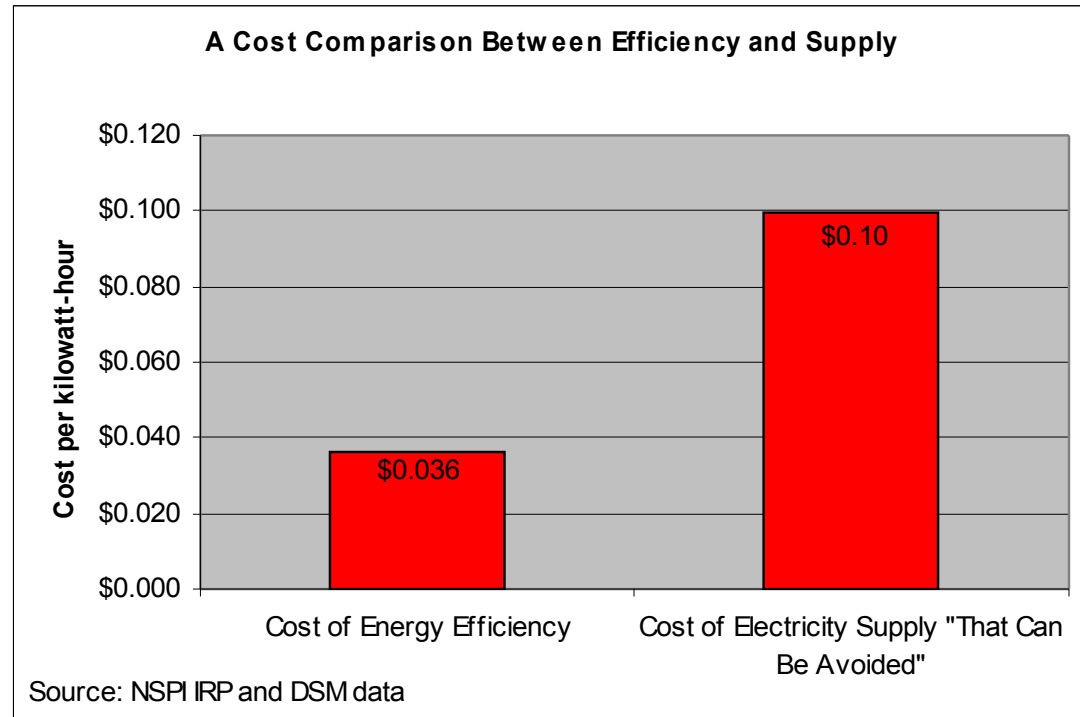
It costs an agency about 3 cents to *save* a kilowatt-hour



# Efficiency is a *Resource!*

## How Much Does it Cost?

Saving energy costs 64% *less* than producing it



# Efficiency is a *Resource!*

## *Efficiency Saves Money in Two Ways*

- 1) Lowers bills by directly cutting energy use  
(audits, incentives, standards)
- 2) Reduces need to generate energy and build power plants
  - *reduces costs on electricity system (lowers rates)*

# Efficiency is a *Resource!*

## *How Do You Fund the Investment?*

Typically through a small energy efficiency  
charge on utility bills  
(e.g. \$0.0024 per kwh)

Average household makes money back by  
changing 2-3 light-bulbs



# Efficiency is a *Resource!*

*How Much Should Nova Scotia Invest?*

*Invest in Energy Efficiency if it is cheaper than building power plants and burning fossil-fuels*

*BUT – few places are doing this? Why?*

*1) Legislation and Regulations are all wrong*

*2) Caps on funding*

*2) Lack of Accountability Measures to achieve savings*

# Efficiency is a *Resource!*

## *How is it Delivered?*

Has been delivered by utilities, agencies, and third-party

- Utility Delivery (e.g. Connecticut)
- Government Agency (e.g. Efficiency New Brunswick)
- Independent Energy Efficiency Utility (e.g. Efficiency Vermont)

# Efficiency is a *Resource!*

## *How is it Delivered?*

Has been delivered by utilities, agencies, and third-party

- Conflict of interest problems with utilities
- Agencies
  - Can be unaccountable
  - Under-funded or raided

# Efficiency is a *Resource!*

## *How is it Delivered?*

EAC Supports an *independent* energy efficiency agency

- (e.g. Efficiency New Brunswick, Efficiency Vermont, Efficiency Maine, New Jersey Clean Energy Programs, Wisconsin Focus on Energy)

Conserve Nova Scotia created in Fall 2006

# Efficiency Best-Practice

- 1) Legislate – so electricity system planning considers energy efficiency as the resource of first-choice
  
- 3) Hold an independent agency accountable to meeting specific targets
  - *Performance-based contracts*
  - *Public oversight and Accountability*
  
- 3) Create dedicated funding mechanism with no artificial budget caps



## *What's Happening in Nova Scotia?*

- Conserve Nova Scotia created
  - Budget of \$10 M (*others spending \$30M or more*)
  - No new investments in 06-07 budget
- NSPI/UARB conducting *Integrated Resource Plan*
  - Compares efficiency with generation options
  - *Demand Side Management* process in fall 07?

## *What's Happening in Nova Scotia?*

- New Residential Housing Standards
  - *EnerGuide 80 by 2011*
  - *Display EnerGuide rating by 2008*
- Province continued EnerGuide program
  - Now joined federal Eco-Energy

## *What is the EAC doing?*

- Asking Government to secure *all cost-effective* efficiency resources
- Conserve NS Advisory Council
- Participating in Utility Review Board processes

## *What Can You Do?*

### 1) Show Your Support

Sign the *energy efficiency resolution*

*(organizations, businesses, municipalities)*

[http://www.ecologyaction.ca/energy\\_issues/resolution.htm](http://www.ecologyaction.ca/energy_issues/resolution.htm)

### 2) Write to your Premier, MLA, Opposition Leaders

## *What Can You Do?*

3) Participate in Public Forums

4) Get an Energy Audit

4) Join the EAC

# Vast Reservoir of Energy WASTE

Let's Tap It!



# Save Money!

# Vast Reservoir of Energy WASTE

Let's Tap It!



## Reduce Pollution!

# Vast Reservoir of Energy WASTE

Let's Tap It!



# Create Jobs!

# Vast Reservoir of Energy WASTE

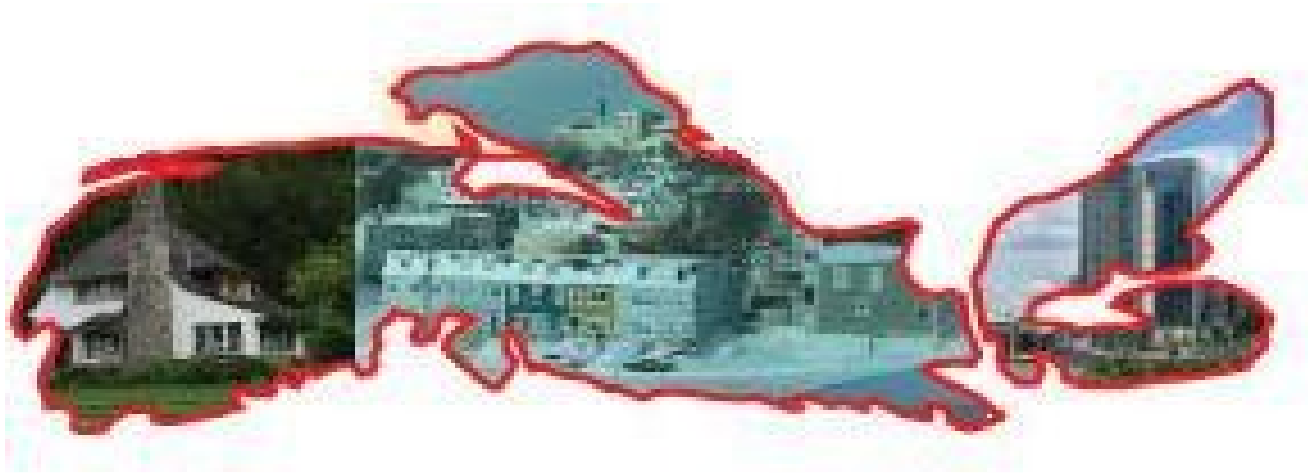
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# Compete in Global Economy!

# Vast Reservoir of Energy WASTE

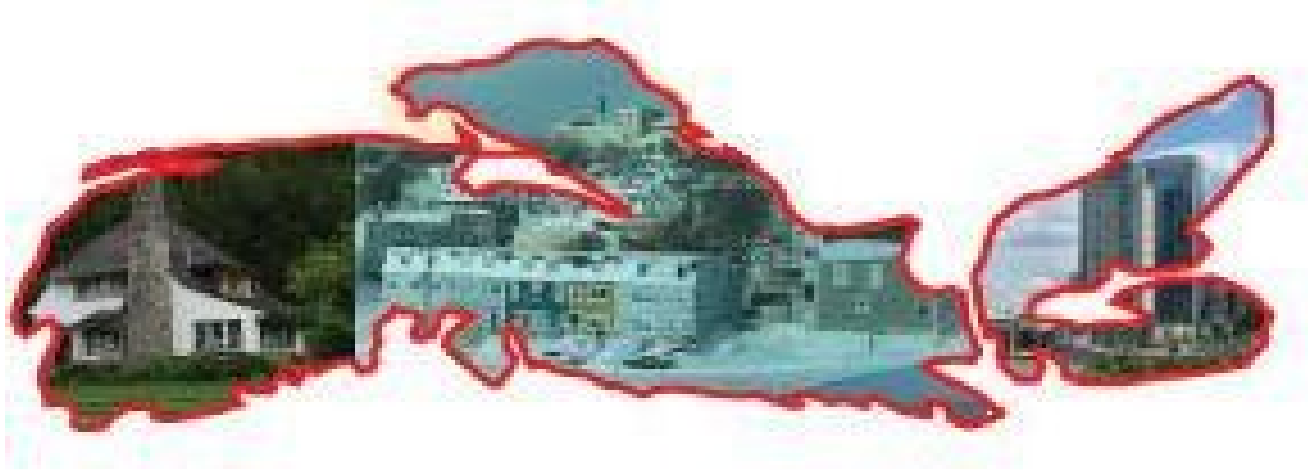
Let's Tap It!



# Fight Energy Poverty!

# Vast Reservoir of Energy WASTE

Let's Tap It!



## Invest in Energy Efficiency

Thank-you

