Sustainable Energy:

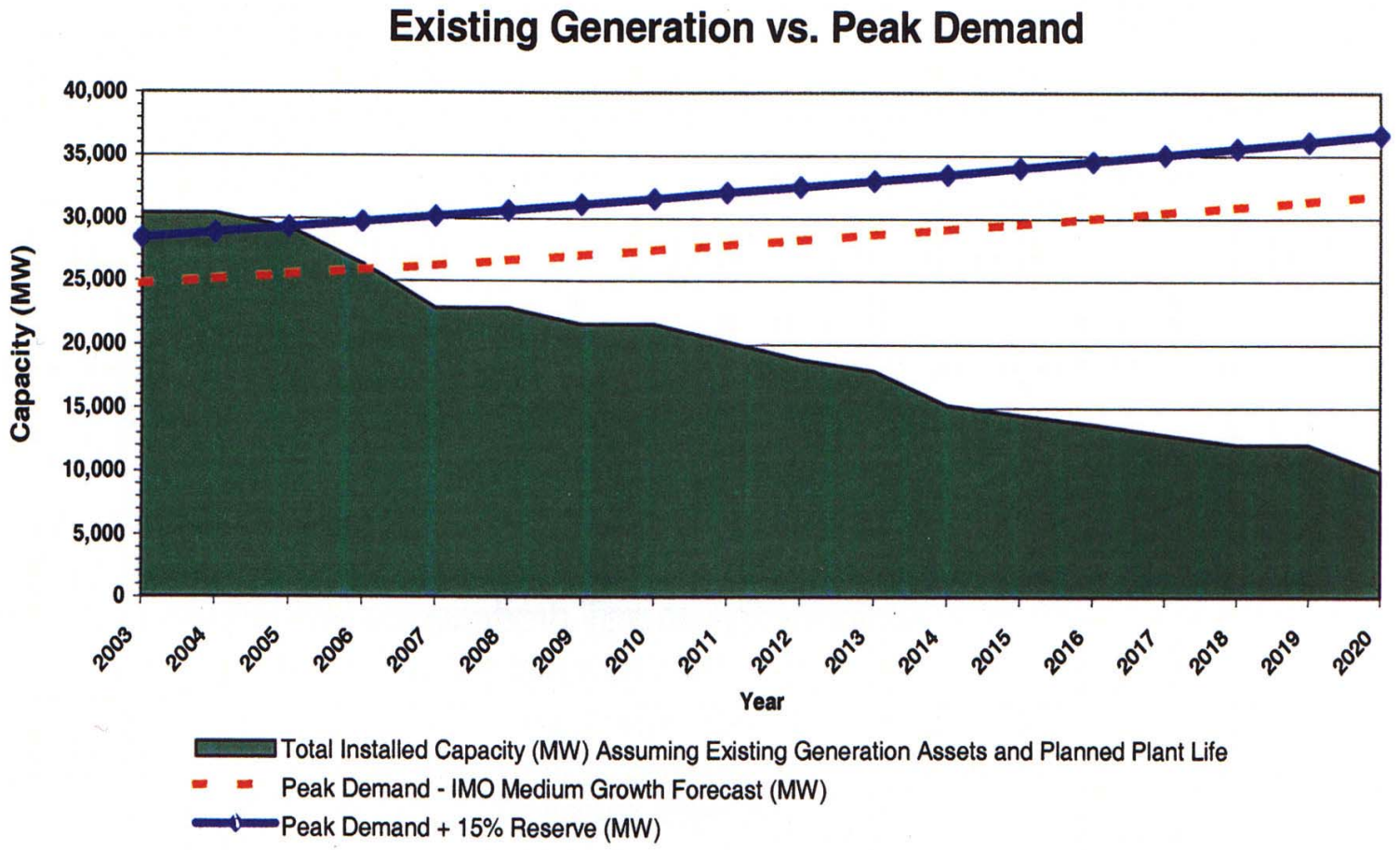
Renewable Energy Systems for the Homeowner

Canada needs a new energy strategy…

One that focuses on demand reduction, distributed generation and renewable energy sources,

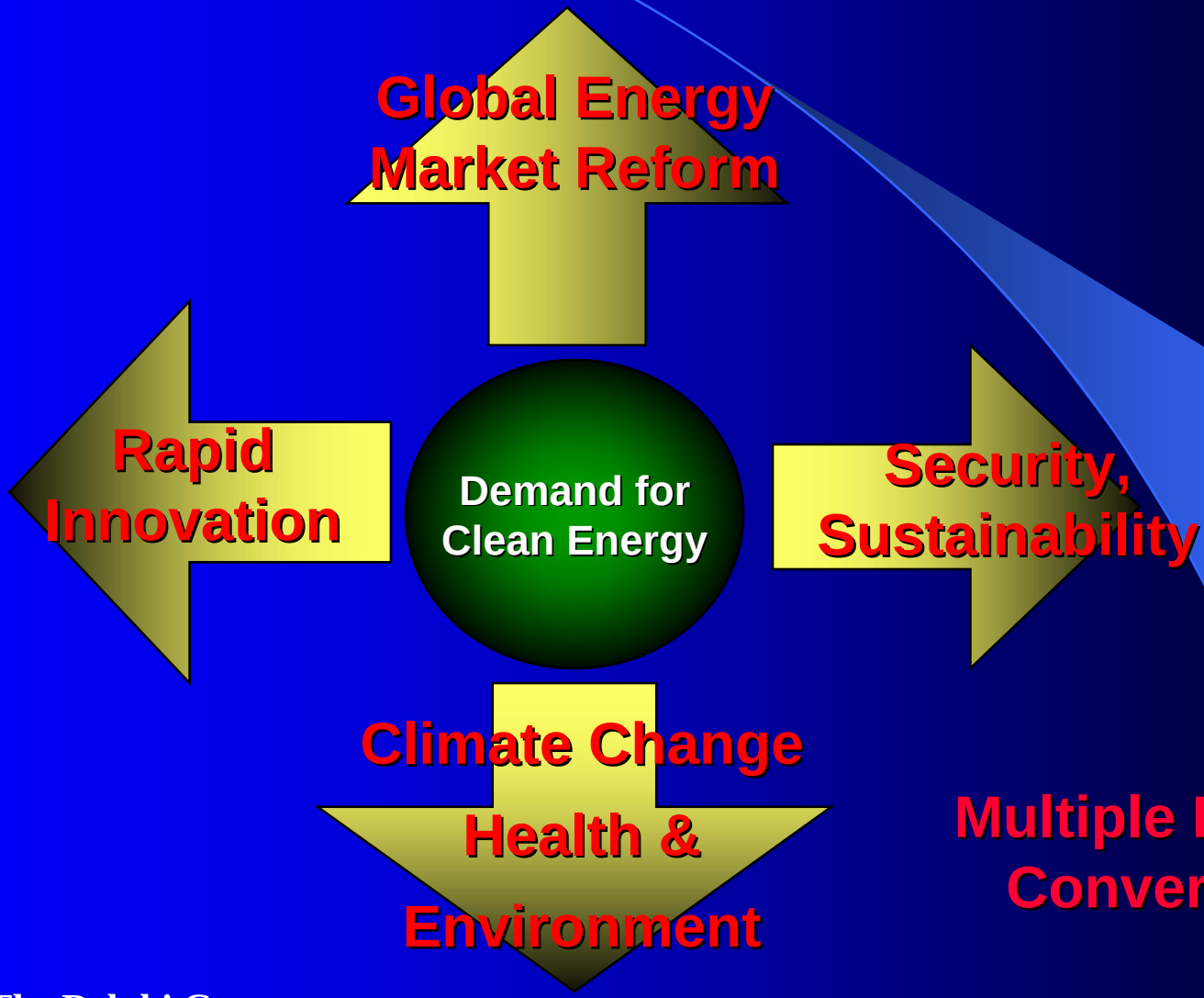
rather than simply boosting energy and electricity supplies.

Even the Ontario I.M.O. couldn't agree more:



When a liter of water costs more than a liter of oil, is it any wonder Canadians are the largest per capita consumers of energy?

Ready or not, Canada is Changing.



Slide Courtesy: The Delphi Group

Aggressive energy efficiency programs including R.E. technologies can:

- Reduce Ontario's energy consumption and peak demand by fostering a "conservation culture".
- Phase out coal-fired power plants.
- Increase community based power generation. (Distribute the Wealth).
- Avoid importing of electrical energy, keeping Ontarian's money in Ontario.

Rule # 1:

Reducing Consumption is More Economic than Increasing the Energy Supply.

John Manley Should do the Math!

- 10 Million California Households
- 2 x 100 W = 200 W Bulbs
- 2 x 25 W = 50 W CF
- 150 W Savings x 10 Million
- = 1,500 MW or 3 Pickering Reactors!

Mississauga Hydro Trade In Program

Last winter, Mississauga Hydro traded in thousands of incandescent Christmas lights and replaced them with high-efficiency LED units.

It’s the simple things that often work best!

Homeowners (and renters) have numerous, options to meet these goals:

- Basic Energy Demand Management
- Advanced Energy Demand Management
- Water Resource Management
- Solar Thermal/Home Heating Systems
- Community Power
- Bio-Fuel Consumption
- Personal Transportation
- Renewable Energy, Electrical Generation

Rule # 2:

Living an energy efficient lifestyle does not mean doing without.

What counts is purchasing the most energy efficient appliances and managing power demand.

(This slide is rated PG-13)

Consider This:

- Our off-grid efficient home has most of the same appliances as a “normal” house.
- We operate our home on a maximum of 6 kWh per day (including air conditioning)
- That equates to an electrical utility bill of under $20.00 per month.
- The energy savings equate to a huge reduction in green house gas emissions and other air pollutants.
- You do not have to live off-grid to enjoy energy efficiency and the resulting cost savings.

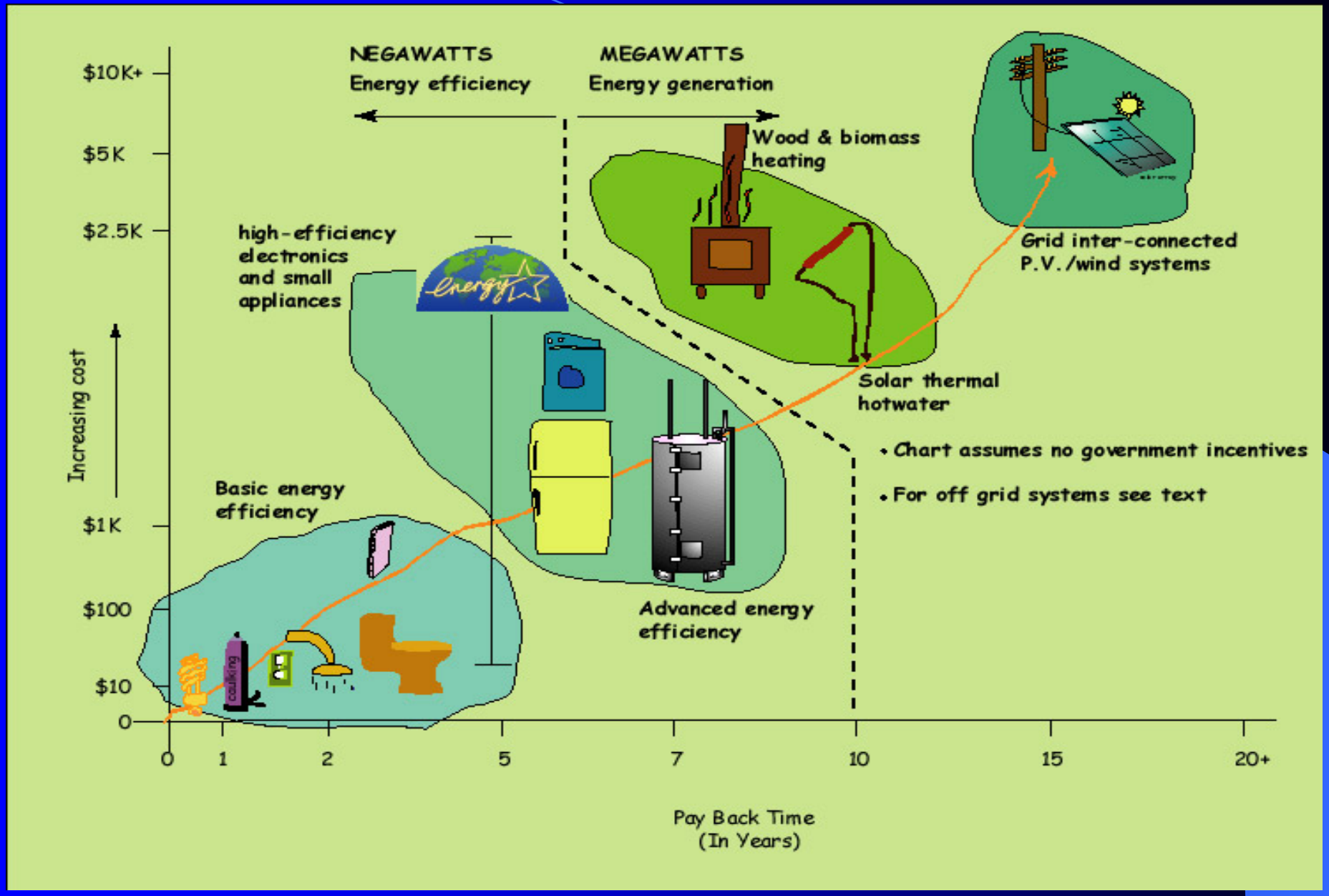
What Defines a Renewable Energy Home?

- Energy efficiency is THE key consideration.

  (R.E. = Energy Efficiency).
- R.E. Homes may be connected to the electrical grid or standalone (off-grid).
- An R.E. Home uses renewable resources such as wind, water and the sun to generate heat and electrical power.
- Managed wood lots and waste wood products (pellets) provide a carbon neutral heating fuel source.
- Community Power Projects may provide energy for the home.

Still not convinced? See for yourself:

Rule #3 Understanding economics is key.

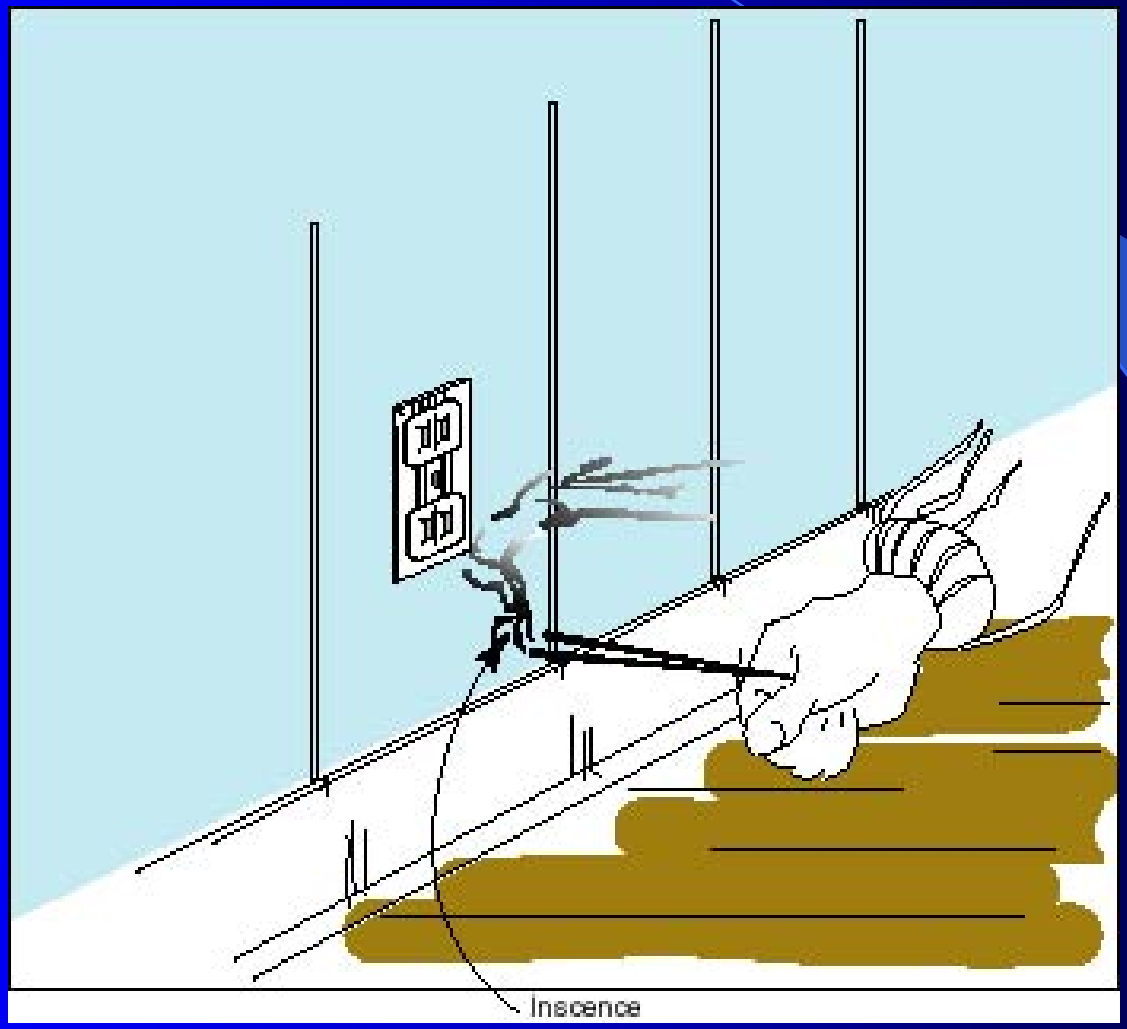


Basic Energy Efficiency

(electricity) switch to high-efficiency lighting

Basic Energy Efficiency

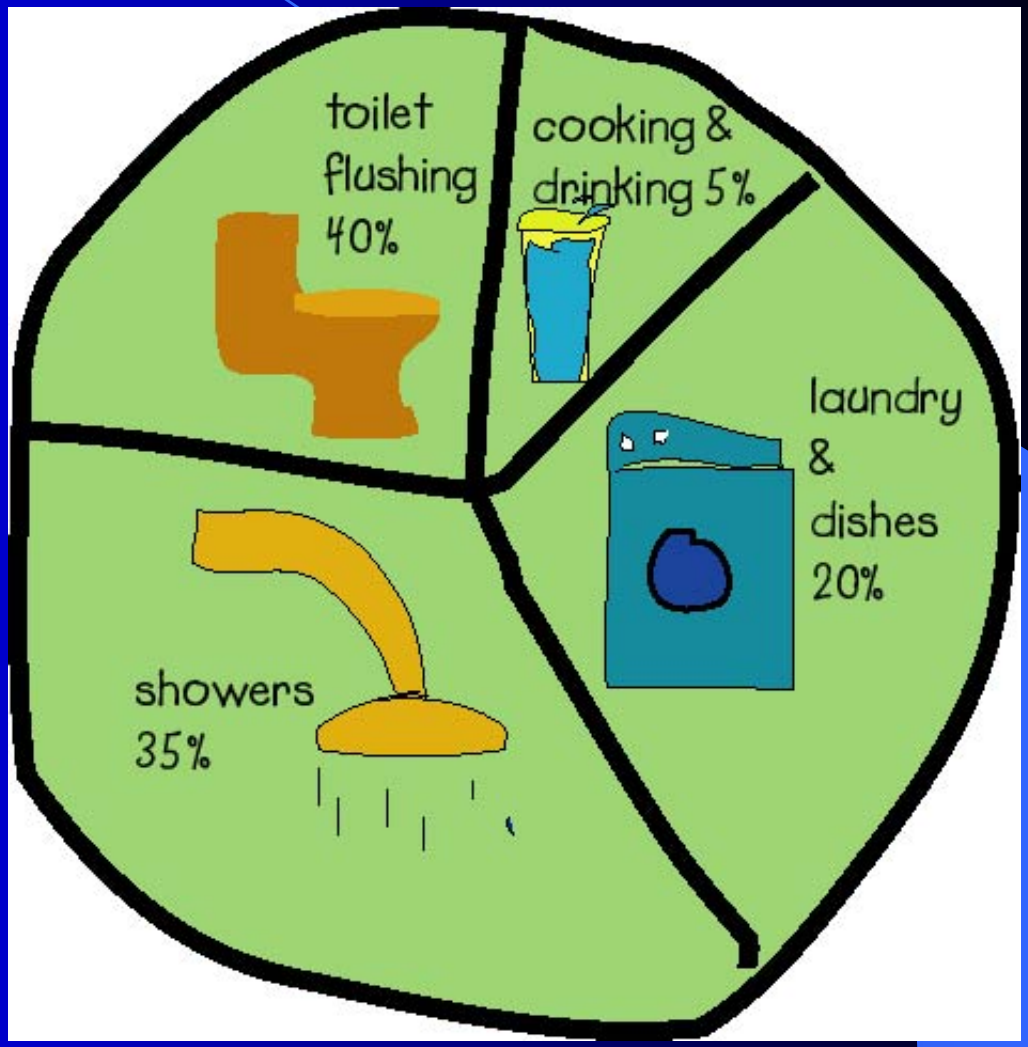
(home heating) stop air leakage in the home



Basic Energy Efficiency

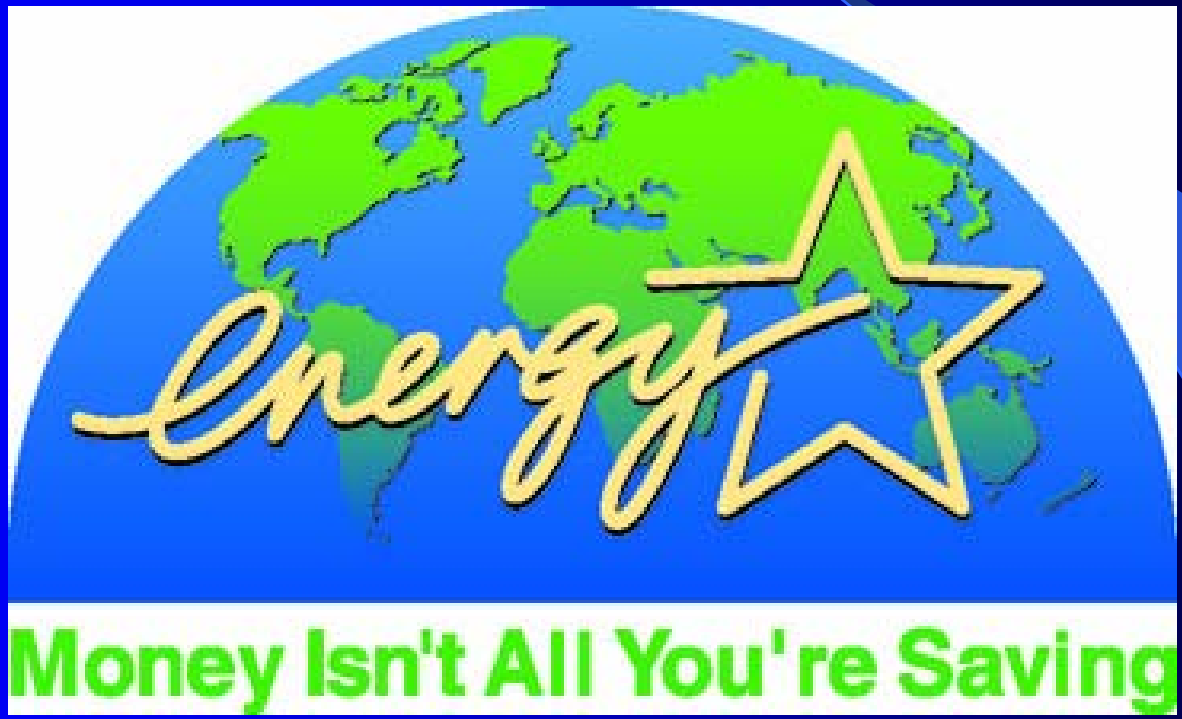
(water conservation) switch to low-flow toilets and showerheads

The Average Canadian Uses 343 litres of water per day – Enough to fill 2 big rain barrels!



Advanced Energy Efficiency

learn about energy efficient appliances



Advanced Energy Efficiency

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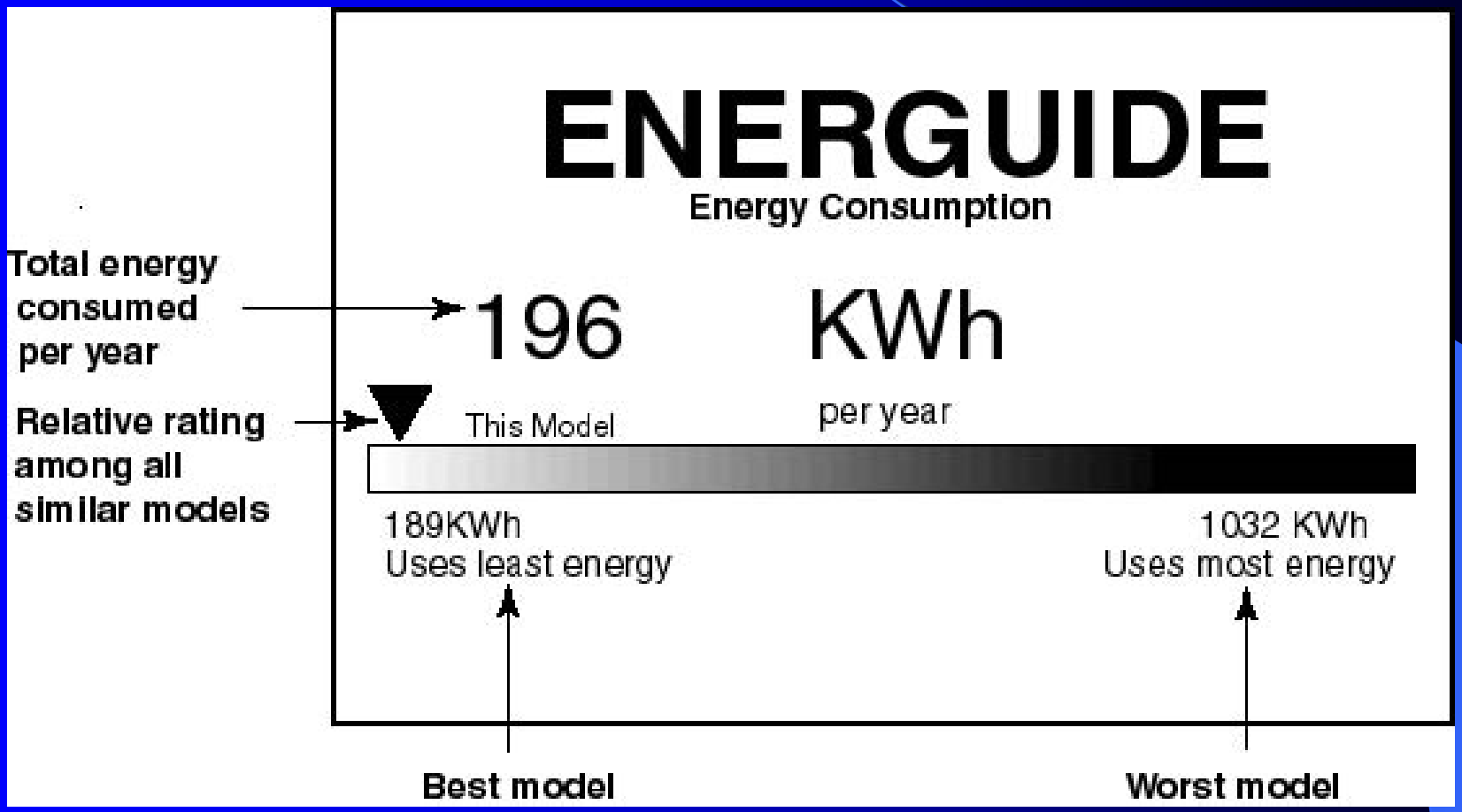


Advanced Energy Efficiency

learn about energy efficient appliances

Solar Thermal Systems

wood and biomass heating

Solar Thermal Systems

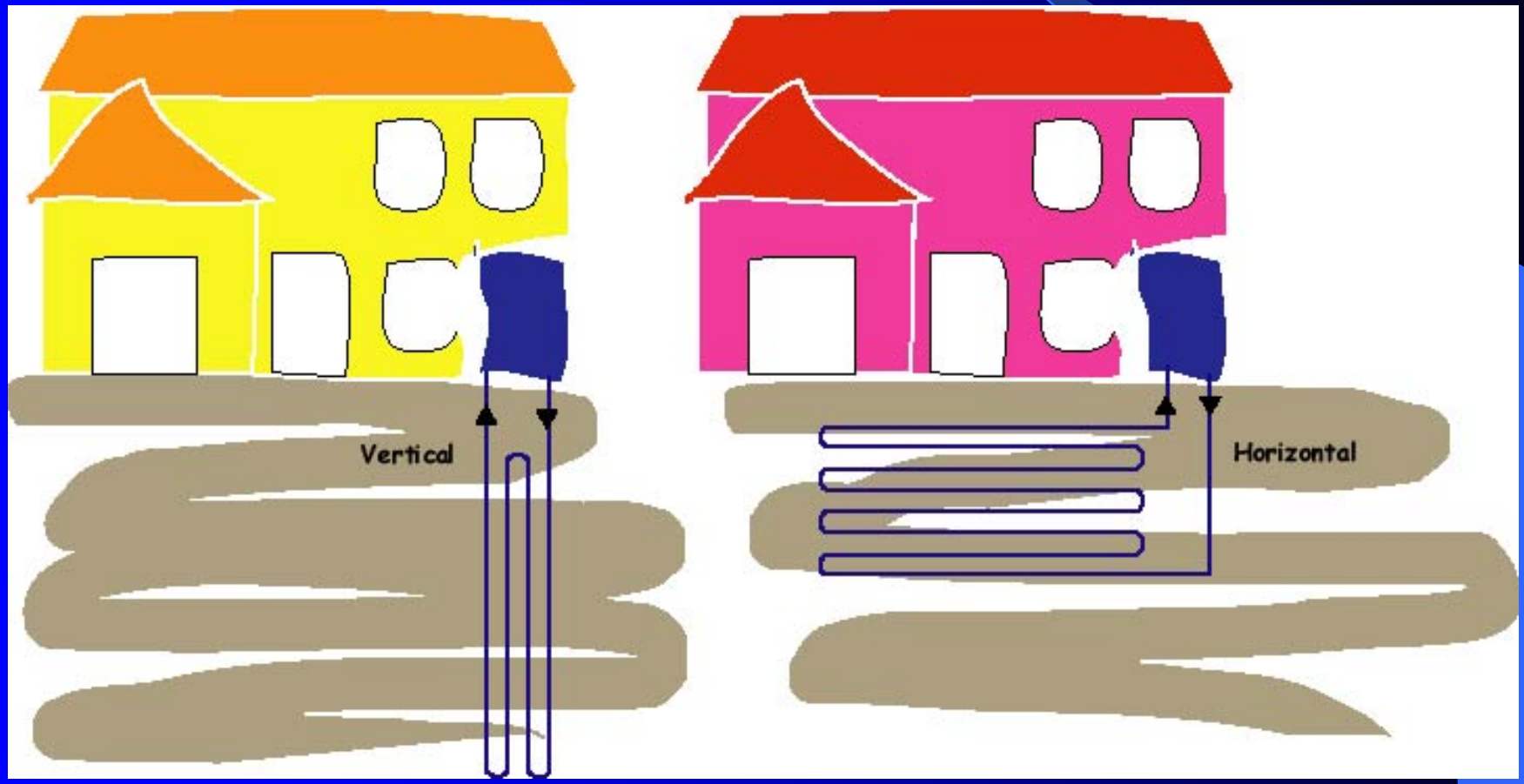
air solar thermal heating

Solar Thermal Systems

active solar thermal heating

Solar Thermal Systems

ground source heat pumps capture solar energy stored in the earth



Community Power includes:

- Government mandating a minimum renewable energy portfolio on the grid.
- Allowing homeowners to purchase retail “green” electricity.
- Smart metering to educate consumers on supply and consumption real costs.
- Citizens purchasing a share in a green energy generator or power purchasing co-op…

Denmark has thousands of privately owned wind turbines;

owned by people like you and me.

Canada has One.

Don’t want to invest the family fortune, then consider buying “Green Energy Credits”

Source Guelph Hydro

Biofuels provide many benefits:

- Ethanol gasoline and biodiesel reduce greenhouse gas emissions.
- Feedstock may be grown and processed locally, improving the agricultural communities strength.
- Fossil fuel supplies are extended.
- Biodiesel may be used for home heating. The U.S. currently uses 20 million gallons per year for this purpose.

Personal Transportation

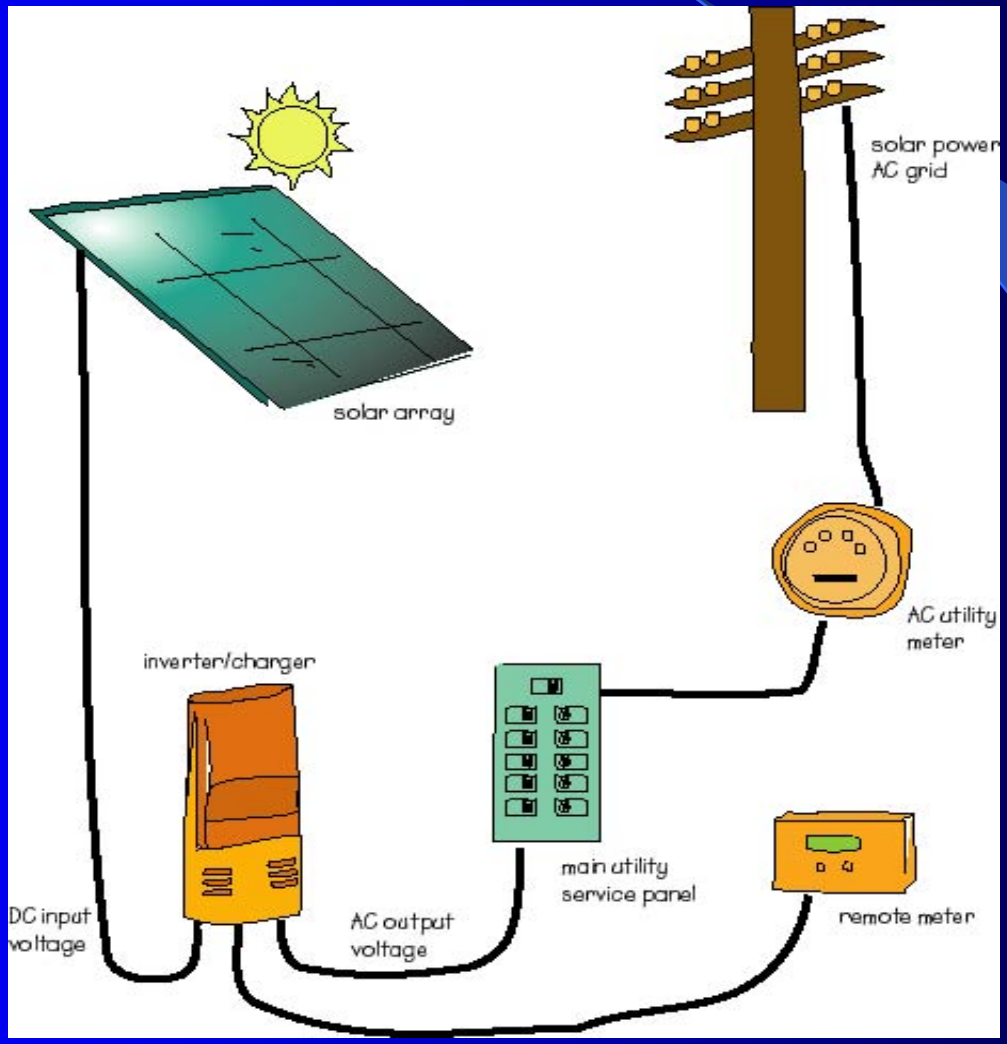
- Riding a bicycle or walking is not only healthy, it is the first renewable energy source!
- Although North Americans love their cars, mass transit is the most economic and environmentally friendly means of moving people.
- Commercial fuel cell based cars are still years away. Hybrid automobiles are here now…

Personal Transportation

hybrid cars utilize advanced technologies and capture waste energy to achieve their energy efficiency and low emission status.

Electrical Power Production

using renewable sources to generate electricity for the urban, grid-connected home…

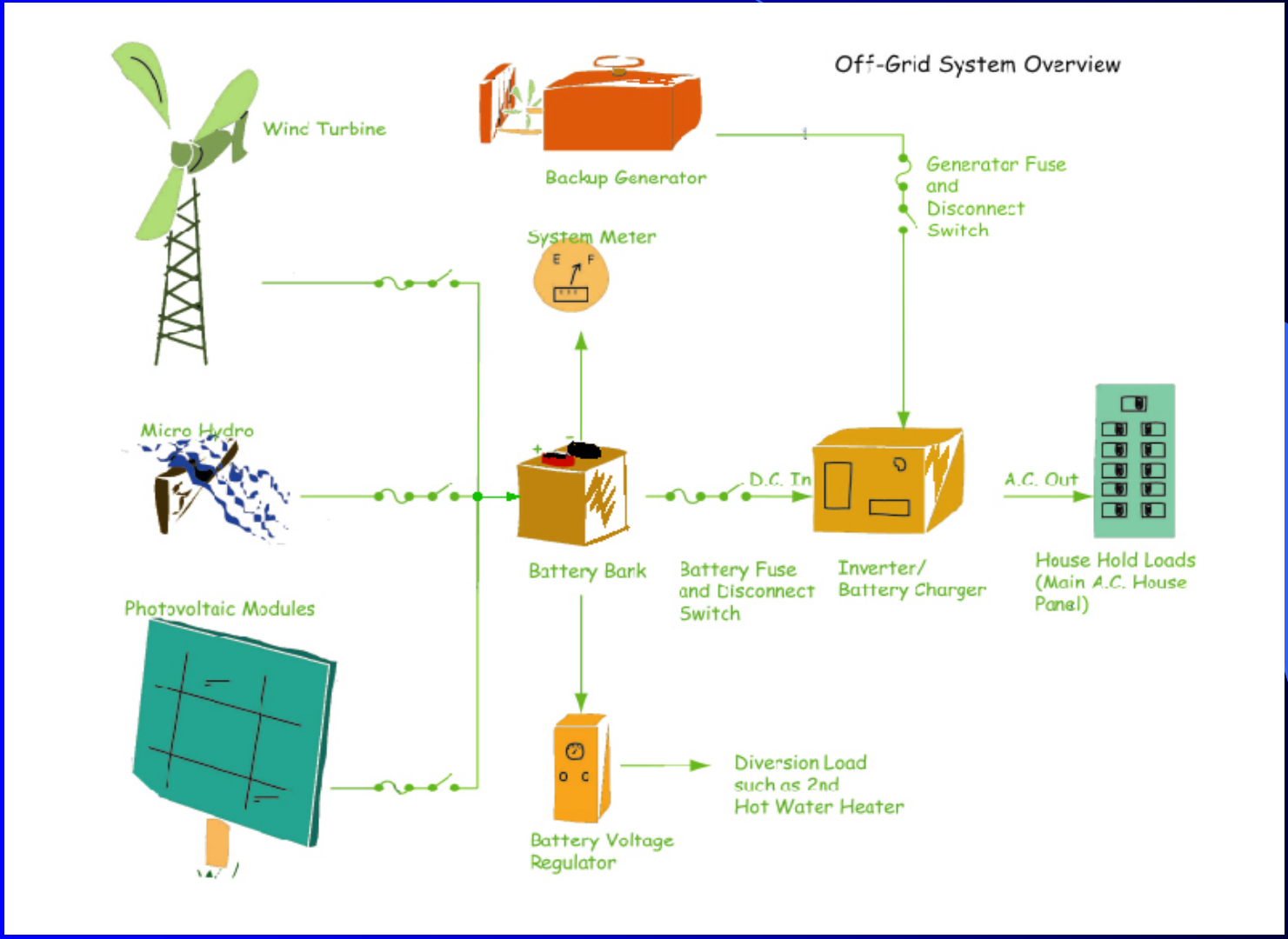


Such as Canada’s first ‘solar neighbourhood’.

photo Arise Technologies Corp.

Electrical Power Production

can also be accomplished in standalone or off-grid rural based settings



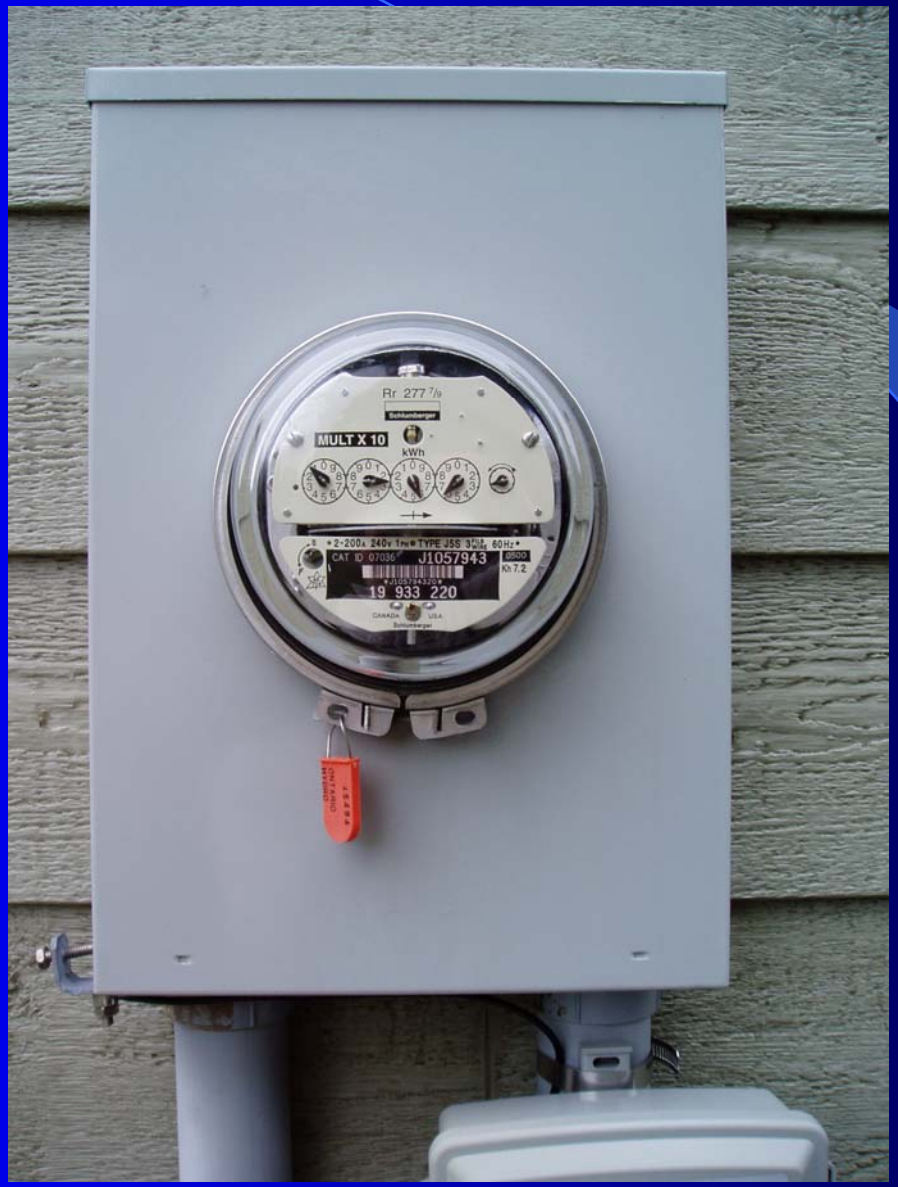
Common to all R.E. electrical systems are the energy collectors such as photovoltaic panels,

small wind turbines,

or, micro hydro units which capture nature’s energy.

Renewable energy is intermittent, necessitating a storage medium such as deep cycle batteries for off-grid applications…

…or the grid itself.

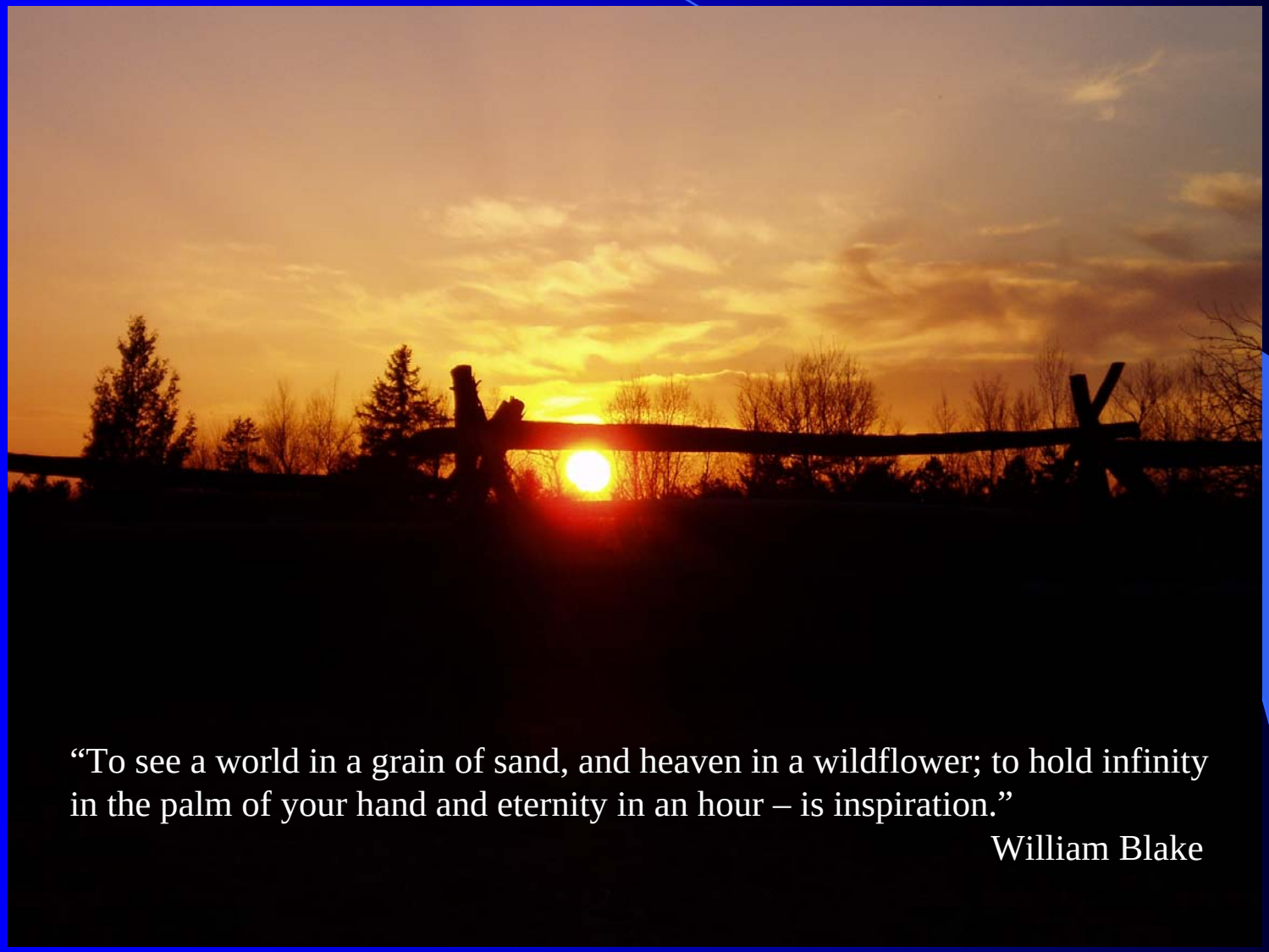


A system of fuses, inverters and voltage regulation equipment completes the mix and provides the home with utility grade electricity.

To summarize:

- There are hundreds of ways individuals like you and I can make a difference.
- Saving energy saves you money, if done properly and in the correct order.
- You do not have to go broke adopting energy saving and renewable energy technologies.
- By adopting better standards for efficiency and shifting to renewable energy supplies and a decentralized power system, Canada will be rewarded with a cleaner, more reliable and sustainable future.

We only have one planet. Let's work together to save it for the sake of future generations.



"To see a world in a grain of sand, and heaven in a wildflower; to hold infinity in the palm of your hand and eternity in an hour – is inspiration."

William Blake