



## ***Solar Water Heating***

*Daniel Adirim, Board Member  
Toronto Green Community*

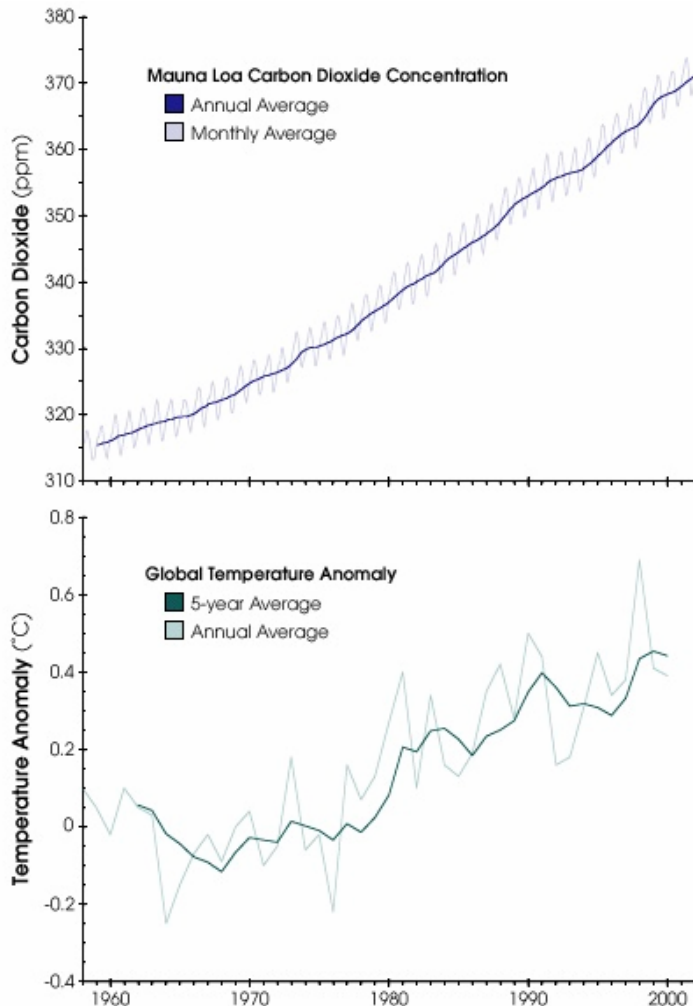
*May 15, 2007*



# Global Warming



***Our emissions are causing the world to warm. Our decisions have consequences.***



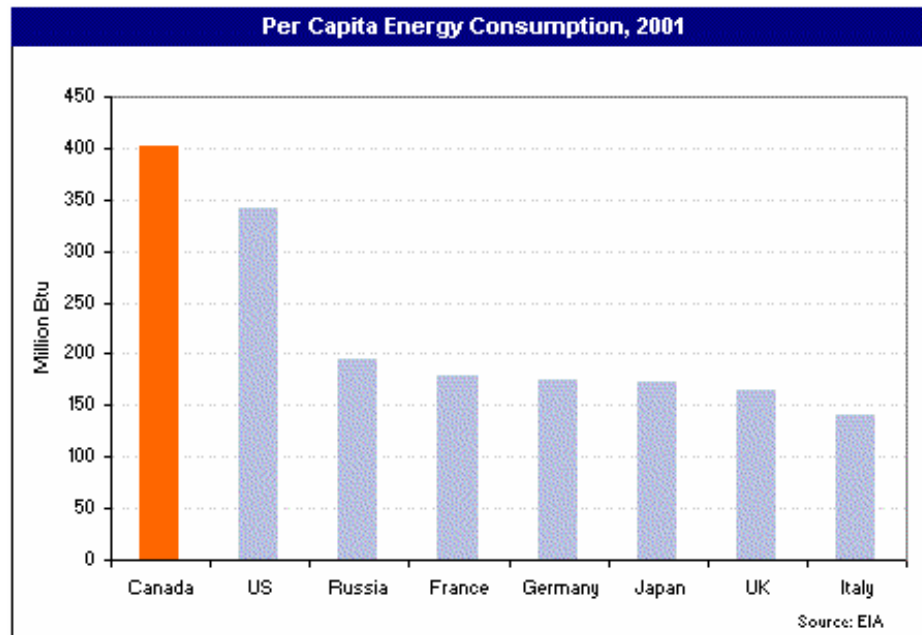
- In February 2007 the Intergovernmental Panel on Climate Change (IPCC) announced that:  
“Most of the observed increase in globally averaged temperatures since the mid-20<sup>th</sup> century is very likely due to the observed increase in [human-made] greenhouse gas concentrations.”
- To the right is a graph from NASA showing the observed CO<sub>2</sub> concentrations mapped against the global average temperature.
- The increase in average temperature directly corresponds with the increase in CO<sub>2</sub> concentrations - what Al Gore calls “An Inconvenient Truth”
- Gore suggests that our response to this situation is a deeply moral one as it impacts not just ourselves but future generations as well

# Canada's Energy Consumption



***Canada's per capita energy consumption is the highest in the world.***

- Canadians emit an average of 19.05 tonnes of CO<sub>2</sub> per year - just one tonne less than the Americans - and emissions have been rising for over 10 years.



- Today in New York, Mayor Miller is announcing a GoZero! Campaign to help Torontonians reduce their carbon footprint.
- You have a role to play. You can start today by working to reduce the amount of carbon-based energy you use.

# Saving Energy Saves You Money



## ***Global demand for energy - the cost of energy will increase.***

- The price of natural gas has risen 103% over the past 5 years (Enbridge)
- Canada's natural gas reserves have been in decline for the past 37 years
- High prices have made liquified natural gas (LNG) a cost-effective way of transporting gas from the Middle East and Russia
- A conservative estimate of the rise in the cost of natural gas is 5-10%/year.

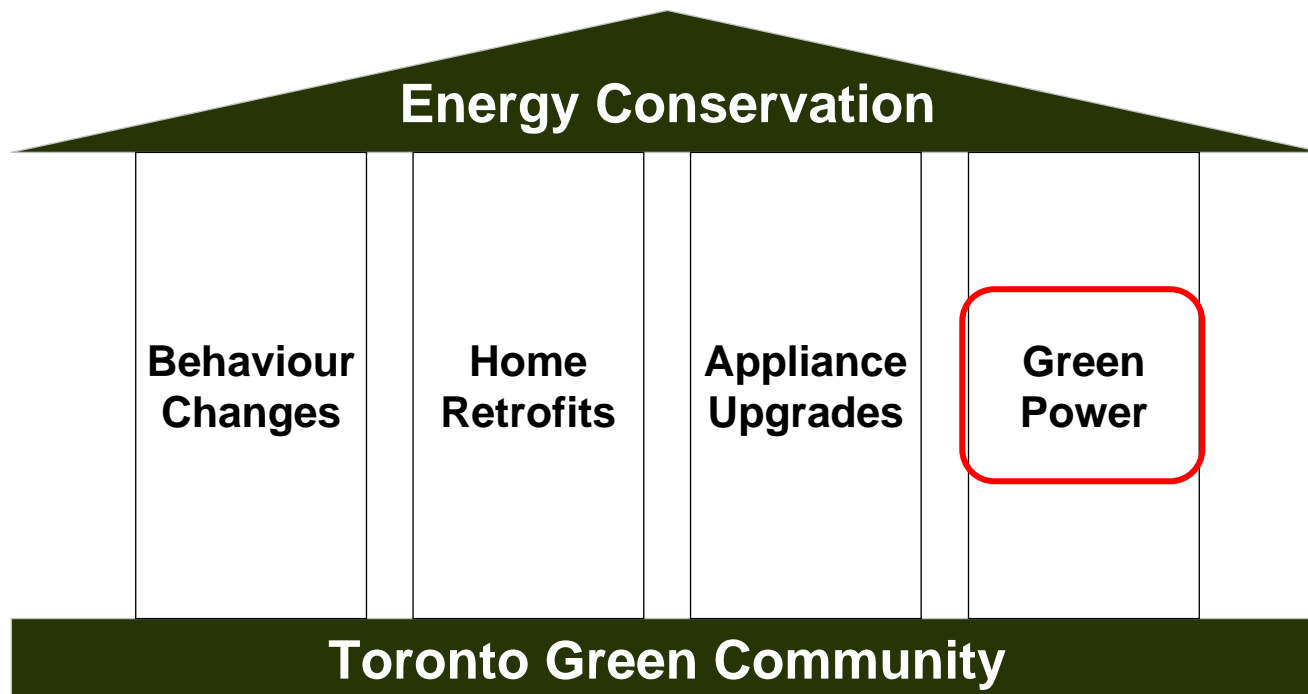


- More than half the electricity produced in Ontario is from our aging nuclear plants. In June 2006, the Ontario government announced that there would be a further investment in nuclear energy to refurbish existing plants and to support a shift away from coal
- The world may not be about to run out of energy but higher prices will certainly force big changes in lifestyles
- The average Ontario household consumes about 10,000 kW per year. As the cost of energy rises, what actions can you take to reduce your consumption?

# Four Pillars of Conservation



*There are four areas we can each focus on to reduce the amount of energy our homes consume:*



- These areas are not mutually exclusive - steady progress in all four areas will make a material difference in your home energy costs and in a greener world
- Today we'll focus on Green Power - specifically solar water heating

# What is Solar Water Heating?



***Solar domestic water heating uses the sun's energy to heat up your water BEFORE it goes into your existing hot water (or tankless) heating system.***

## **10 Quick Facts about Solar Water Heating:**

1. In 20 minutes, the amount of solar energy falling on the planet could power the Earth for a year.
2. Solar water heating is the oldest application of solar energy and first appeared during the 1900s!
3. Canada was a world leader in solar in the 1980s.
4. Today, the village of Gleusdorf, Austria (pop. 35,000) has a greater solar capacity than all of Canada.
5. Domestic hot water accounts for about 25-30% of your home energy use and solar systems save 40-60% of that energy.
6. Solar hot water heaters work all year round - yes, that does include the winter!
7. Solar water heating systems have few moving parts and can last for 25+ years.
8. Solar water heating applies to both pool water and domestic (tap) hot water.
9. Solar water heaters save about 1 tonne of CO<sub>2</sub> per year.
10. Solar energy is free!

# What Are the Components of a Solar Water Heater?



There are three main components of a Solar Water Heating system:

## A. The solar collector.

The collector - designed to absorb 94% of the sun's energy - is mounted on sloped or flat roofs.

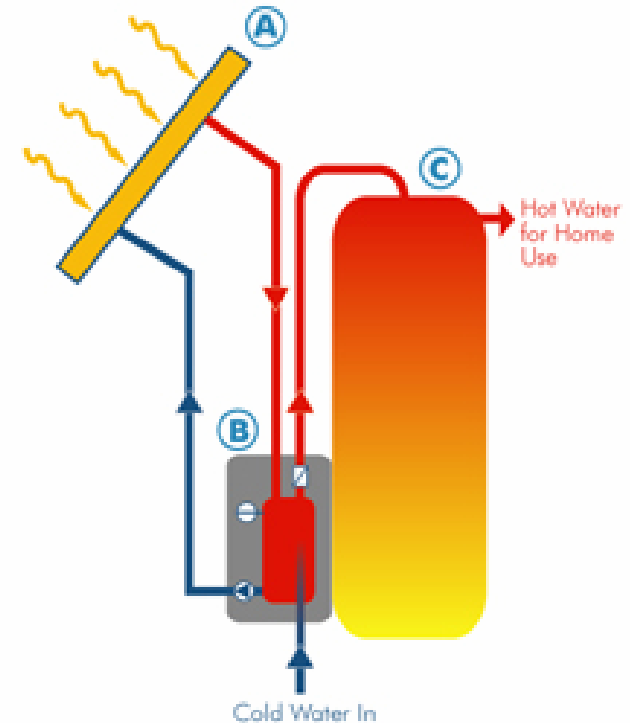
## B. The energy pack.

Includes a heat exchanger and is mounted on a standard water tank.

## C. The solar storage tank.

Store solar heated water for household use.

Your existing hot water tank (gas, electric, propane or even oil) is used as an auxiliary heating source so *you always have hot water.*



Master Contract # 23.2023



Collector Certification: SRCC 100-2005-014A  
Various appliance configurations are certified  
under SRCC OG-300; please refer to SRCC listings.

\*Patented Passive Anti-Fouling Protection.

US Patent # 6,827,091

\*Patented Collector Stagnation Temperature Control. US Patent # 7,143,762 B2

# What is the TGC Program?



***The Toronto Green Community is trying to help you make a comfortable step towards reducing your energy consumption and your carbon footprint.***

- We are a grassroots environmental group that have been around since 1995 working on a range of initiatives from organic gardening to paint recycling.
- Last September we had a community meeting about energy conservation, green energy and green buildings and followed that up with another session in October on solar hot water heating.
- This is the outcome of that session - a community-based initiative to pursue solar water heating for domestic and pool heating.
  - An entirely volunteer energy committee has been working on this concept for the past few months.
  - We've reviewed the technologies in detail, interviewed installers and have selected a manufacturer and experienced installers.
  - We've also lined up a source of financing to reduce the up-front cost of a solar water heater for those who are interested.

# Who is the Manufacturer?



***EnerWorks is the manufacturer that TGC selected to provide domestic solar water heating technology.***

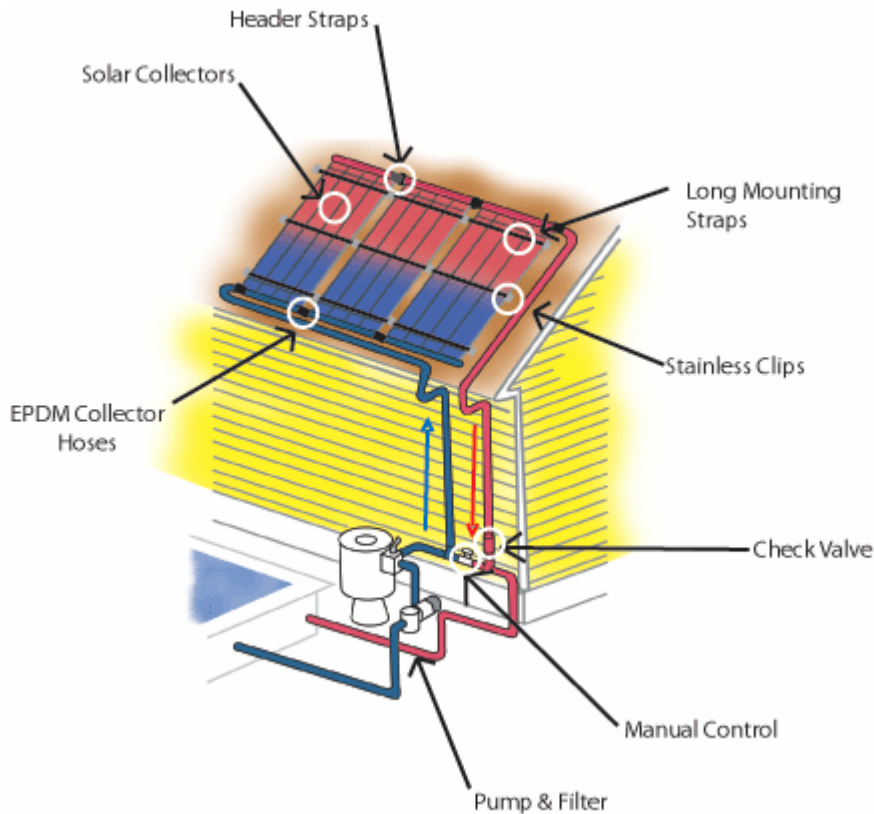
## **Why Did We Choose EnerWorks?**

- EnerWorks is a Canadian company with products manufactured in Canada.
- EnerWorks has a long track record of reliable performance and has experienced Dealers/Installers throughout Canada.
- EnerWorks' residential heating system is NRCan approved and is currently the only CSA-approved solar water heating system in Canada - a distinction that is important for your insurance company and also means it qualifies for an ecoEnergy grant.
- Uses very simple flat plate technology - which captures 94% of the sun's energy, works in winter and has high durability.
- EnerWorks has a patented Stagnation Protection system which eliminates the risk of overheating so maintenance will be low.
- The two vendors that are here today - Solsmart and Suncapture - each have over 30 solar water heater installations to their credit.

# And for Pool Heating?



***Techno-Solis, in the solar pool heating business for almost 30 years, is the manufacturer that we selected for pool heating.***



## Why Did We Choose Techno-Solis?

- Uses reliable, unglazed flat plate technology that has high durability
- Techno-Solis offers a 10 year warranty (limited lifetime warranty)
- The system is maintenance free and includes a patented design to support expansion and contraction if the temperature drops below freezing
- Solar Ontario, the Dealer/Installer we selected, has completed over 500 installations over the past 20+ years.

# What Does it Cost?



***The costs are site-specific and depend on the number of people that participate in the program.***

	<b>Enerworks (Domestic Hot Water)</b>				<b>Techno-Solis (Pool Heating)</b>	
<b>Size</b>	1 Module (2-3 People)		2 Modules (4-5 People)		Typical Pool (18 ft X 36 ft)	
<b>Volume/Price</b>	1-9	\$5,630	1-9	\$6,950	1-9	\$3,900
	10-19	\$5,502	10-19	\$6,775	10+	\$3,627
	20+	\$5,121	20+	\$6,259		

- All prices do not include GST and, in the case of the domestic solar hot water system, are for a 2-storey house (1-storey houses are \$100 less)
- No two pools or houses are identical and these costs may vary based on the specifics of your home

# The Process



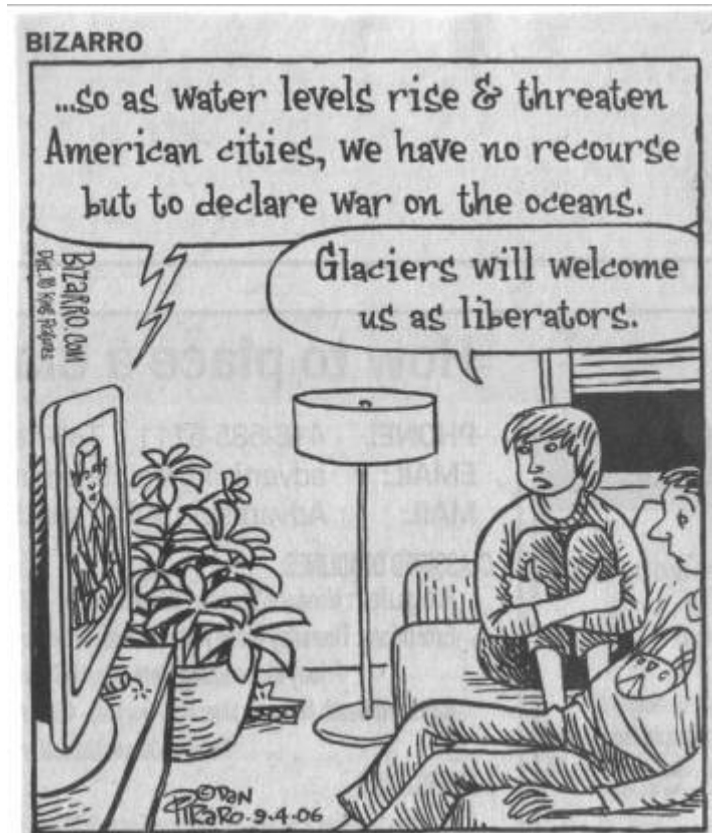
***These costs are based on bulk purchases - which are available only if we all participate.***

1. Sign up today! We are asking for a \$25 commitment which will be deducted from your purchase price or will go to a TGC membership/renewal.
2. An installer will be assigned by TGC
3. The installer will contact you to arrange a site visit
4. The installer will give you an estimate based on your home's characteristics and reflecting the TGC discounts
5. Arrange financing (if required) - Alterna for DHW, Solar Ontario for Pool Heating
6. Arrange for a home energy audit (optional - but required for federal rebate)
7. Make an appointment for installation (1-2 days to complete install)
8. Start saving money and CO2! Total time is 60-90 days...

# Conclusion



***This isn't just about energy conservation - it's also about reducing our impact on the environment.***



## Special Thanks to the All Volunteer Energy Committee!

- Whitney Crooks
- Cheryl Shour
- Stephen Cockle
- Rob Newman
- Kevin Line
- Tom Cullen