# Shining Lights

## Energy Literacy and Language in the NWT
## Understanding your Energy Story

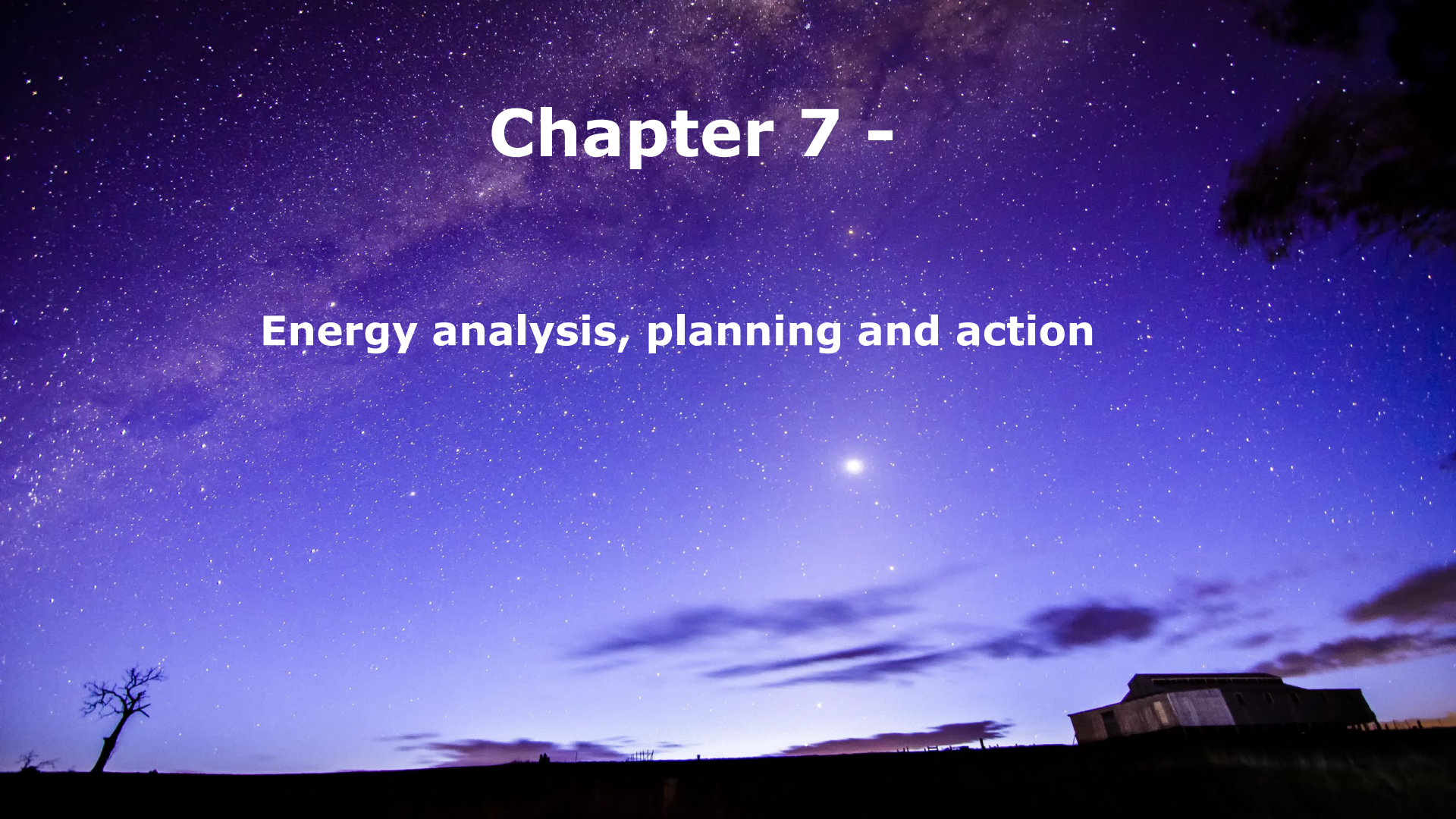
CIER

PEMBINA institute

ARCTIC ENERGY ALLIANCE

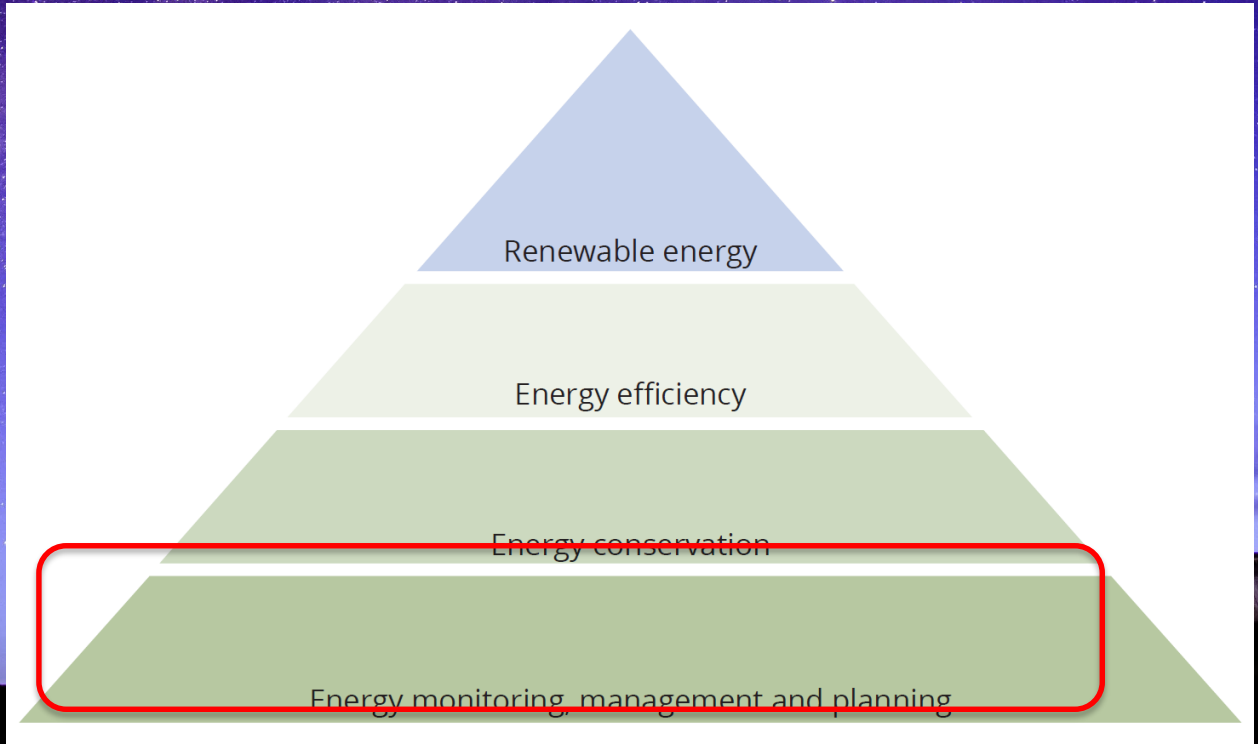
# Chapter 7 -

## Energy analysis, planning and action



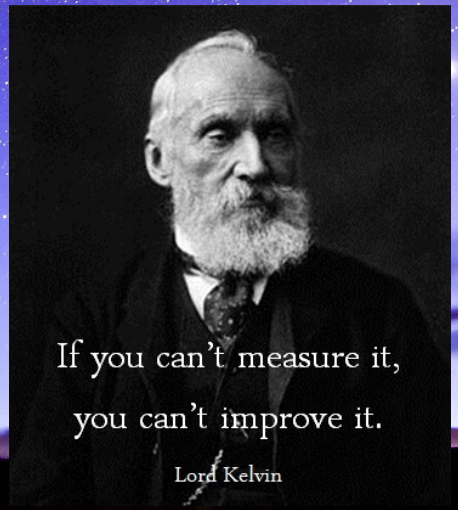
# Back … again … to the energy pyramid

Starting with an understanding of your energy use, how energy is used in your home is the first step towards rational direction to the most energy and cost effective way to go about reducing energy use in your home



# Energy Analysis and Understanding

- Now that we know what a kWh means for electricity consumption, and how much energy is in GJ of diesel fuel.
- We know what energy costs ($ per litres, $ per kWh).
- *Understanding Our Energy Bills* is very important to all of this.
- To track your progress and to realize you are making a difference, a continued monitoring of energy bills will be key.



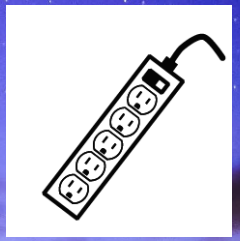
# So, where do we go from here

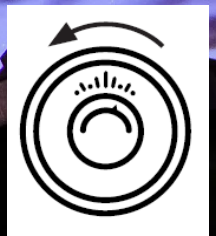
**Simple energy conservation measures**

- Always pay back – you will see savings by simply using less energy

- The hard part is being consistent and on top of energy conservation measures you set out for you and your family

- Start up challenges in your home and guidelines on what you want to do as a household.  For example:
  - Everyone committing to shorter showers
  - Everyone turning off lights that don't need to be on
  - Turning down the heat
  - Discuss patterns and what you are noticing as a family to keep going



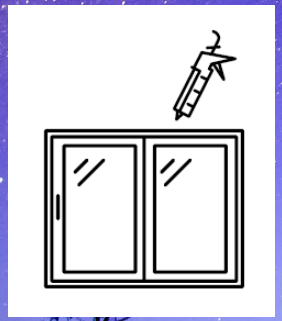


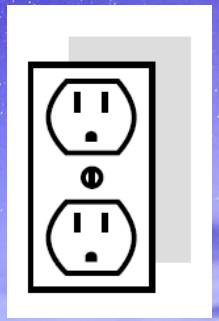
# So, where do we go from here?

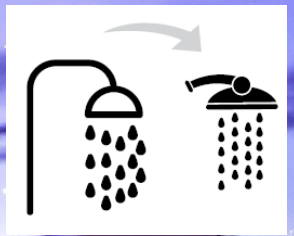
**Simple energy efficiency measures**

- Caulking, weather stripping, pipe and insulative wrap should be done
- Low-flow showerheads
- Change over to LED light bulbs

This takes some knowledge, tools and materials that are relatively easy to get.



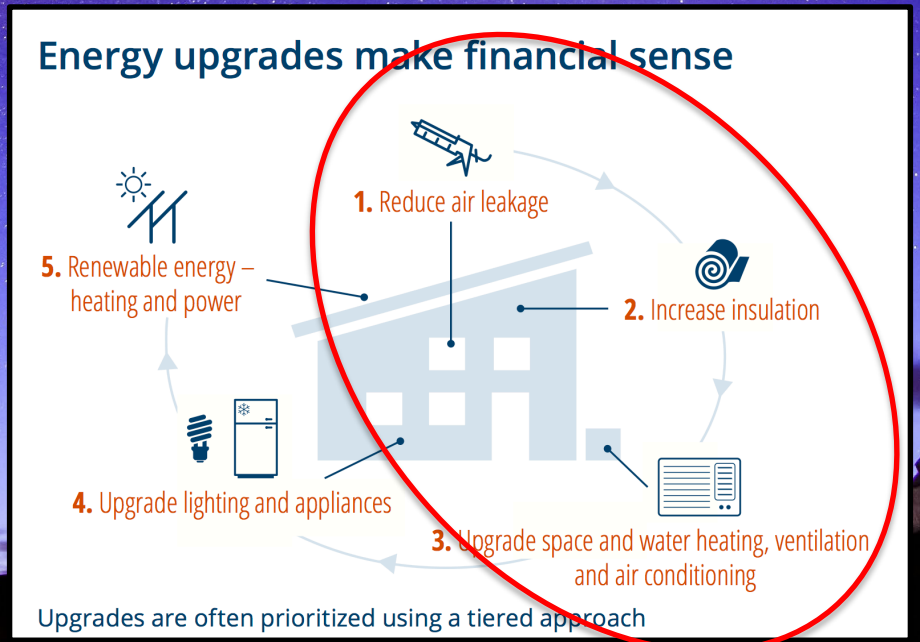




# What to prioritize?

**You can't go wrong with:**

1. *Reduce air leakage through caulking and weather stripping*
2. *Increase insulation that is relatively easy to do*
3. *Use programmable thermostats, timers, power bars and motion lights*
4. *Upgrade to LED lighting*

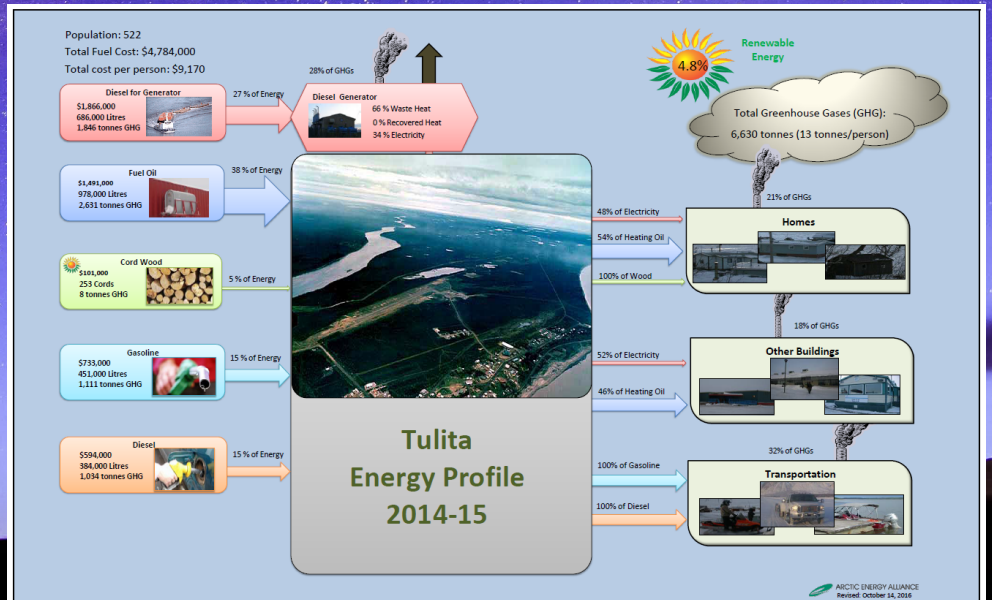


# What to prioritize – harder things that cost money

- Insulation in walls, crawlspaces and other sealed areas is more challenging
- Furnace upgrades, stove upgrades, hot water tank upgrades – all take money
- Fuel switching (from furnace to wood stoves) – also takes money and can require certification
- Buying ENERGUIDE or Energy Star appliances cost money

# Community Energy Planning

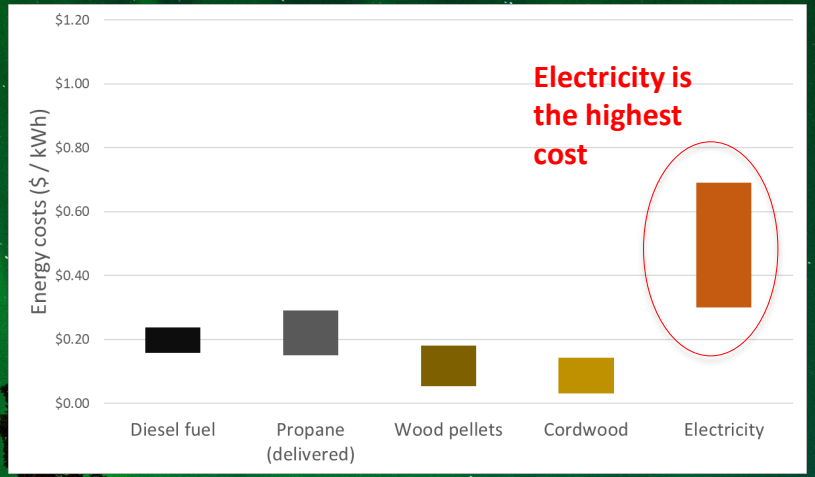
- Community energy profiles by AEA are a great place to start.
- AEA also offers energy planning services for your community.
- Use AEA as a resource – they are a wealth of knowledge, material, rebates and some free products.



# Some review, basic tips and guidance

**Electricity usage**

- Even though subsidized, electricity is the most expensive form of 'fuel' in your community
- Average electricity consumption is about 15 – 20% of total energy use but can be up to 30% or more of your bill
- Turning off lights, TVs, wireless devices when not in use, minimizing electric heat, switching to LED lighting, and making sure your furnace filter is clean will save money
- If you have an old electric hot water tank, wrapping in insulative jacket, as well as hot water pipes will save money




**Avoid electric heat as much as you can. It will cost you dearly.**

# Two different types of hot water tanks

Electric hot water tank

- Simple infrastructure, no exhaust needed


Diesel hot water tank

- Notice the exhaust piping and combustion system

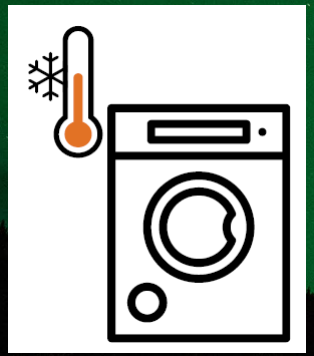
# Some review, basic tips and guidance

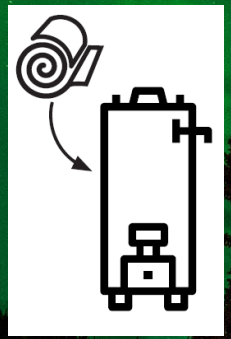
**Electricity usage**

- Installing programmable thermostats (if you have electric heat)
- Using power bars and timers to turn off devices all at once at night

A quick calculation estimates that the electricity required to heat water to fill a medium size bathtub cost $3.50 (@ $0.30 per kWh)

**If you have an electric hot water heater, work to reduce your hot water consumption and insulate your pipes. Heating with electricity is expensive!!**





# Switching to wood heating

- If you have access to a sustainable supply of wood and there are incentives or rebates to switch to wood heating appliance (from electric heat or diesel furnace), or upgrade your inefficient wood stove, this will save you money!

- AEA provides a lot of support on wood heating

# Some review, basic tips and guidance

**Space heating**

- Before you upgrade any heating system, do the little things to keep the heat in
  - Caulking, weather stripping, thermostat control
  - Insulation
  - ENERGY STAR windows and doors

- Always consider switching to wood heating if you can

- Upgrading diesel furnace, boilers and hot water tanks are a positive step, but you will still be reliant on diesel fuel

# How much money can I save?

**Remember, how much your can save depends on how your house is heated, what fuels are used, and what it costs to implement your solution**

- Energy conservation – No to low $
- Energy efficiency - $ to $$
- Deeper retrofits - $$ - $$$

**Let's look at a few examples**

# Scenario examples

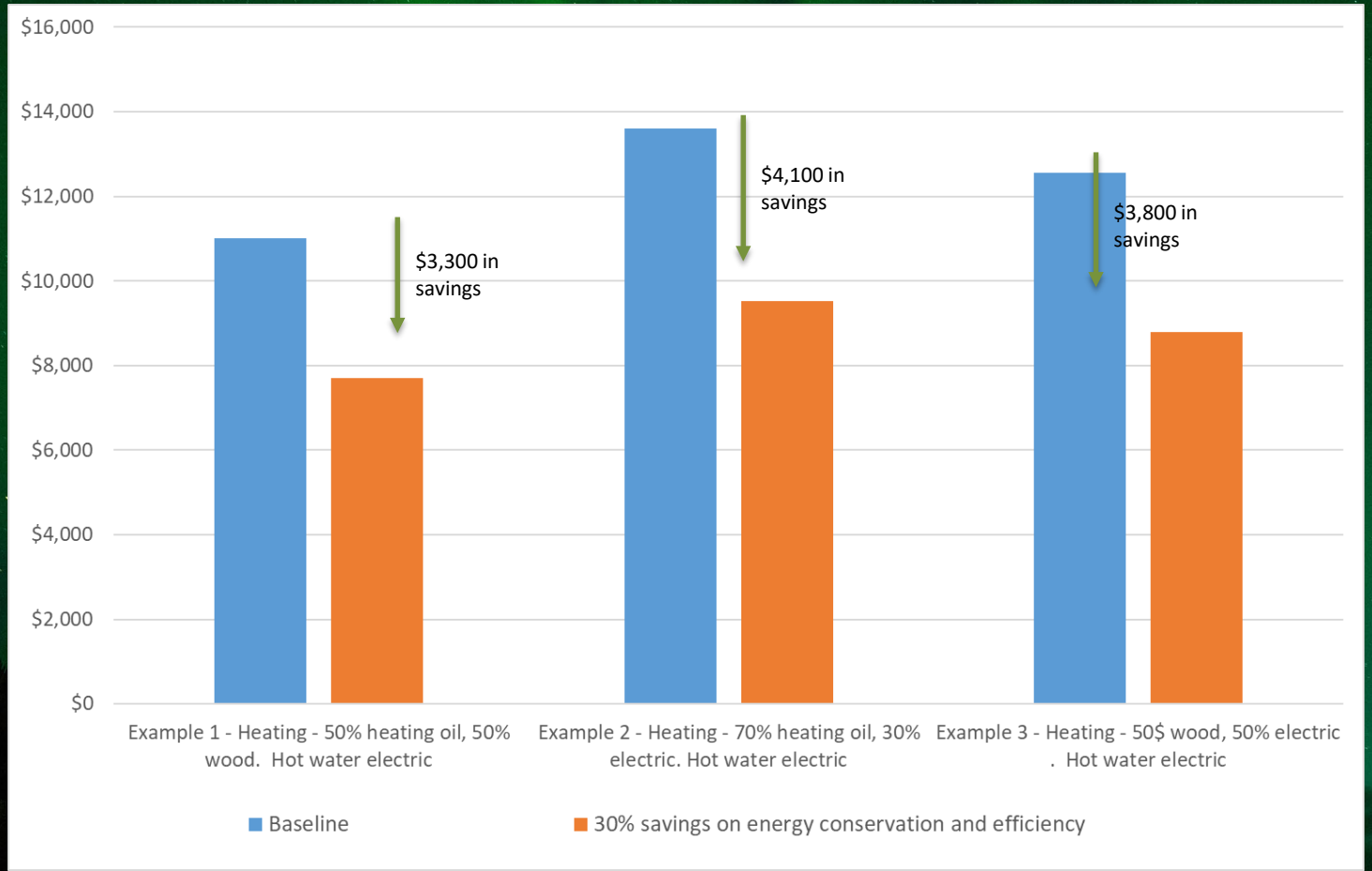
**Let's look at 3 house examples using average energy costs - baseline**

- **Example 1** - Heating – two sources 50% heating oil (furnace), 50% wood stove. Hot water electric
- **Example 2** - Heating – two sources 70% heating oil, 30% electric. Hot water electric
- **Example 3** - Heating – two sources 50% wood, 50% electric. Hot water electric

Let's look at the following scenario and how much can be saved

- 30% savings on energy conservation and efficiency (applies to both electricity and

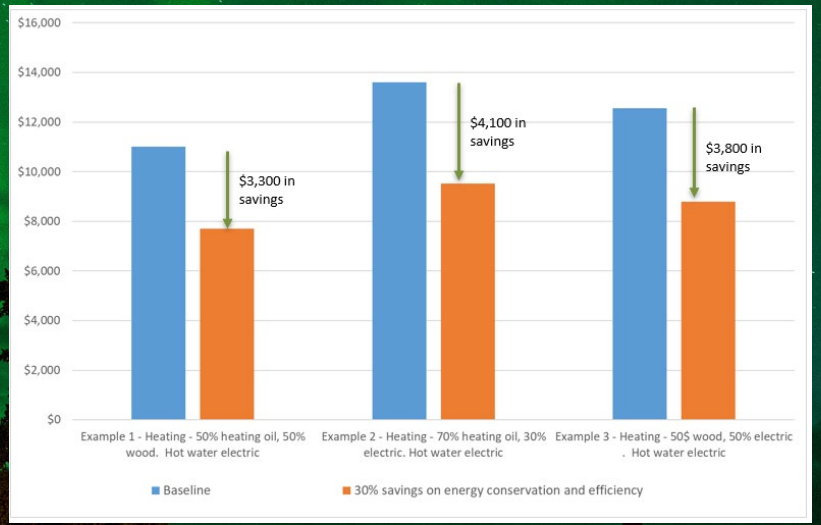
# Scenario examples



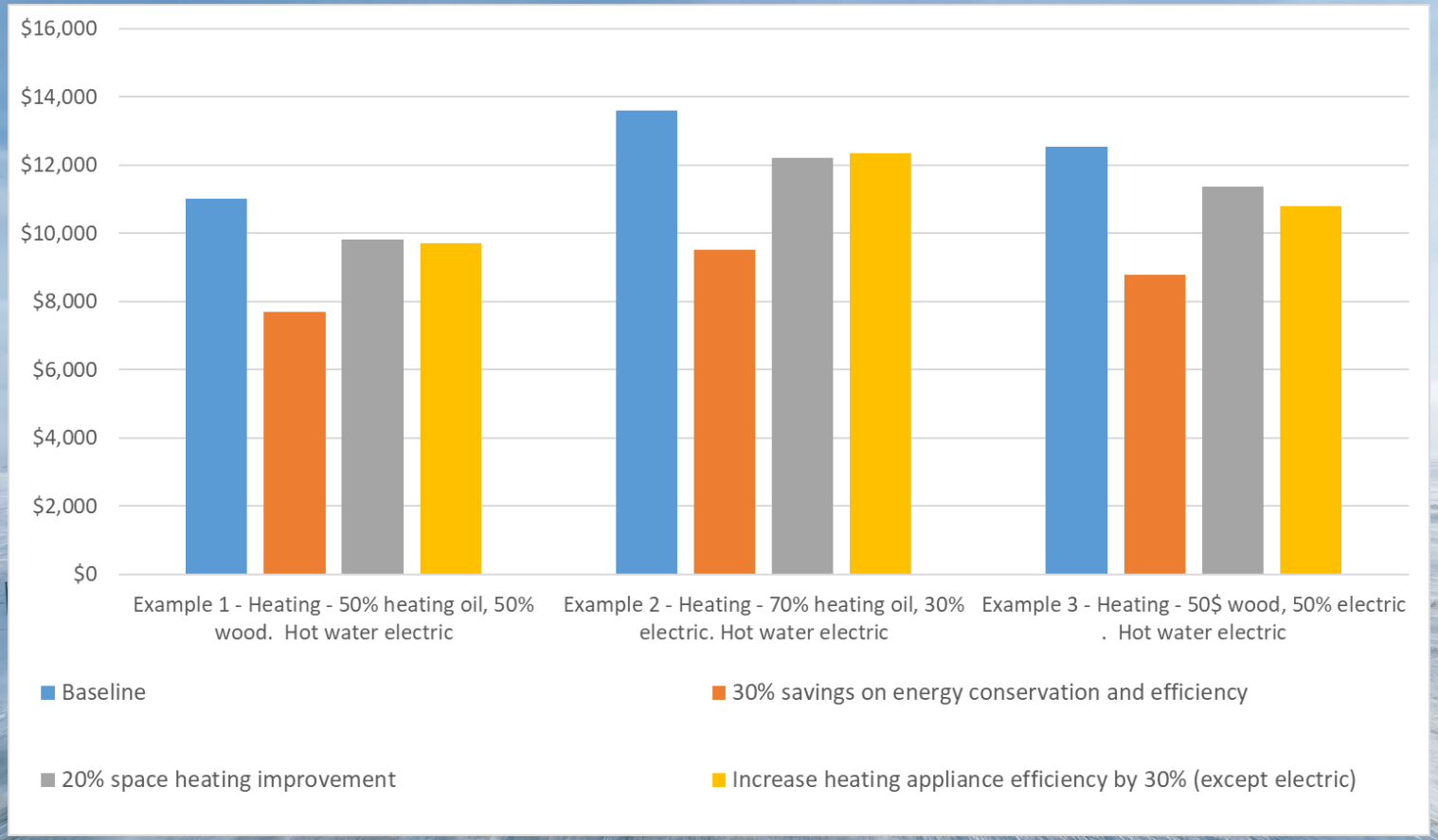
# Scenario examples

- Not difficult to achieve cost savings ranging from $3,000 to $4,100 per year
- Energy savings from conservation / efficiency of 30% quite doable with the right support
- Energy savings could increase to 40% or even 50% with the right financial rebates and support

**With the right knowledge, support, tools and targeted rebates, it's possible to save $5,000 - $7,000 per year.**



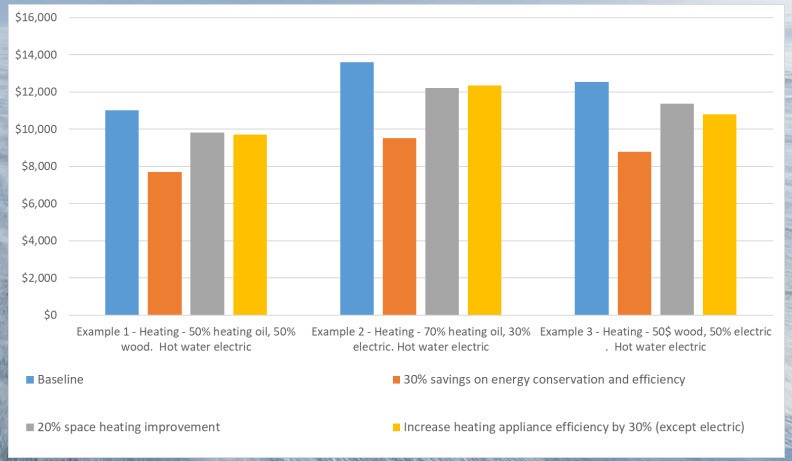
# Scenario examples



# Scenario examples

- Not difficult to achieve cost savings ranging from $1,500 to $4,000 per year for just one measure
- Savings can be cumulative – for example, savings from energy conservation / efficient PLUS savings from heating system upgrades
- Energy savings from conservation / efficiency of 30% quite doable with the right support
- Energy savings could increase to 40% or even 50% with the right rebates and support

**With the right knowledge, support, tools and targeted rebates, it's possible to save $5,000 - $7,000 per year.**



# The hummingbird story

# ACTION PLAN

- What do you want to commit to?
- What is one action you are going to do in your home?
- How do you want to work together as community members?


KEY TERMS TO REMEMBER

# Energy planning

Community energy planning is a process that accounts for the impact of energy supply and demand on the community, including the cost of the energy and the greenhouse gas (GHG) emissions resulting from its use.

# Energy monitoring

The process of tracking energy use so there is an understanding of what results are achieved with what actions