



Geothermal

The Foundation of Sustainable Economic Success for All

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OGA CONFERENCE 2017

SPOTLIGHTING GEOTHERMAL ENERGY

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Sustainability

SUSTAINABILITY

RESOURCES FOR THE NEXT GENERATION,

AND THE NEXT, AND THE NEXT . . .

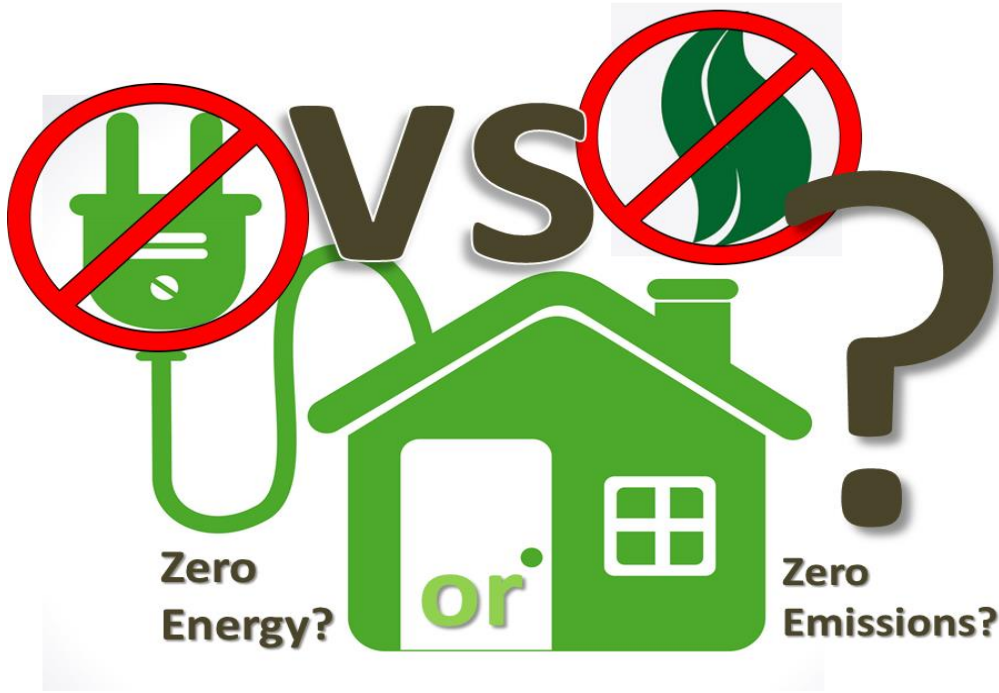


Renewables

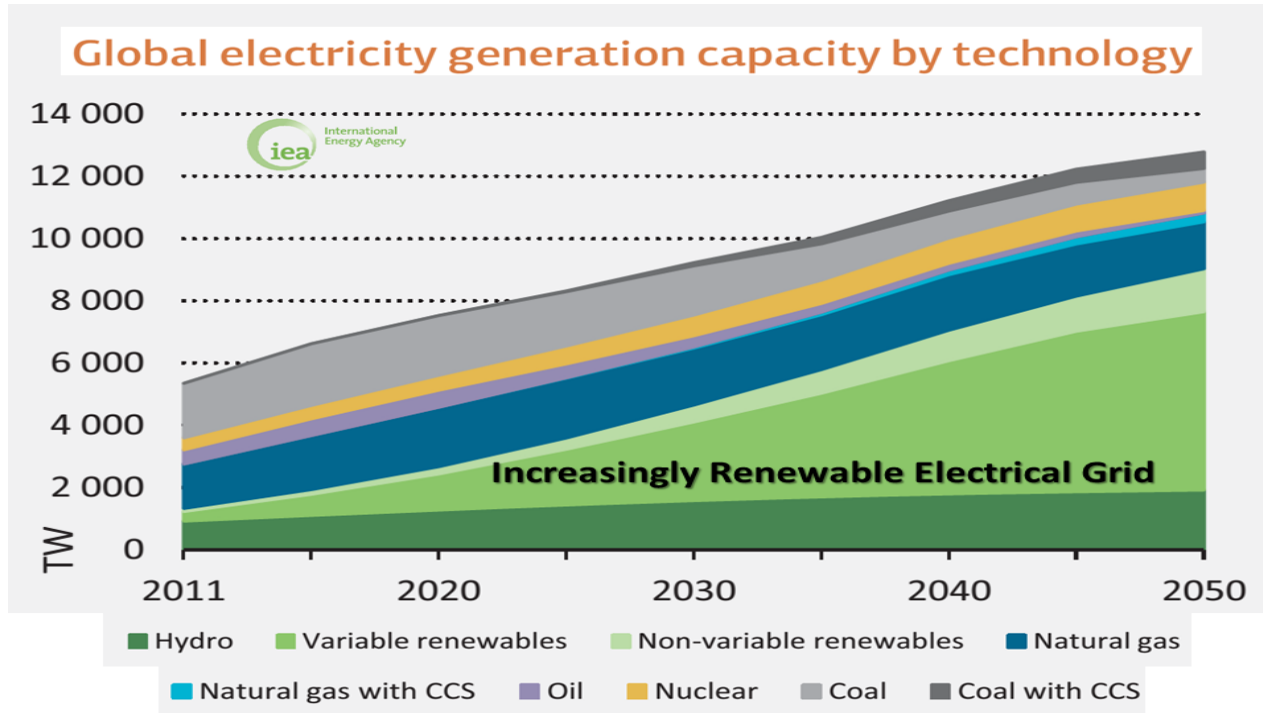
These are called "Renewable Resources"
because they are unlimited.



Confusion



Clarity



Confirmation

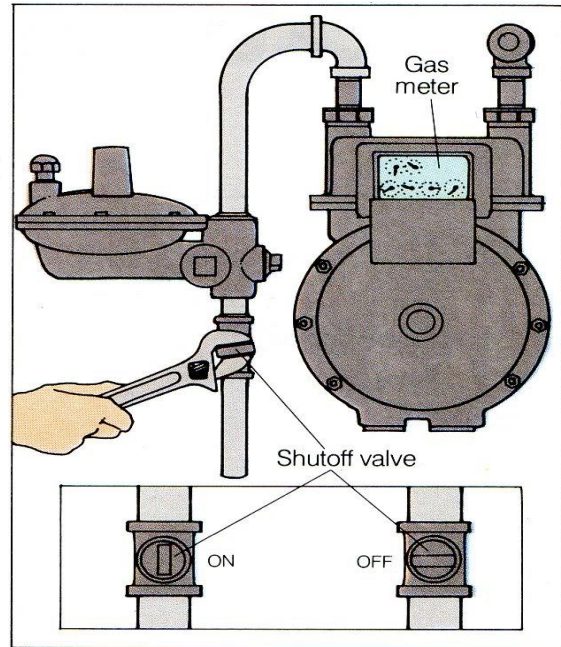


Transition to Reduce GHG Emissions

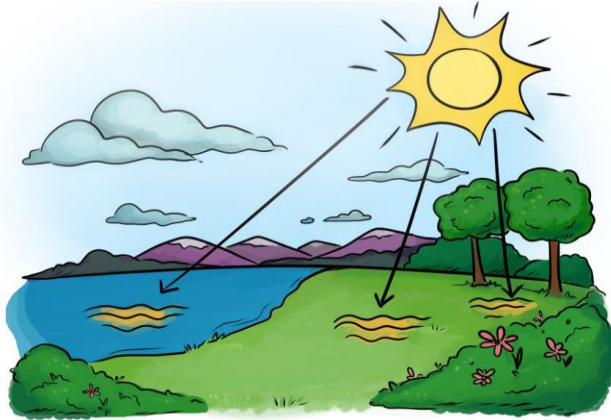


Reducing GHG = Reducing Gas Usage

GAS SHUTOFF VALVE

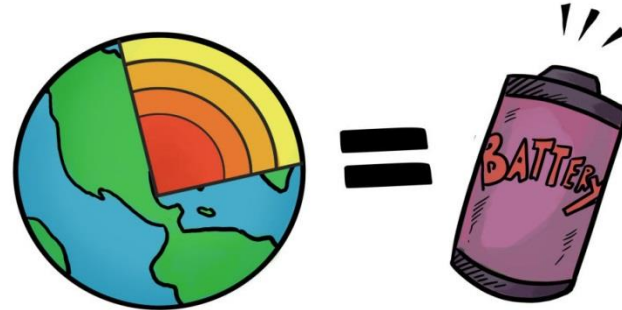


Other Energy Sources?

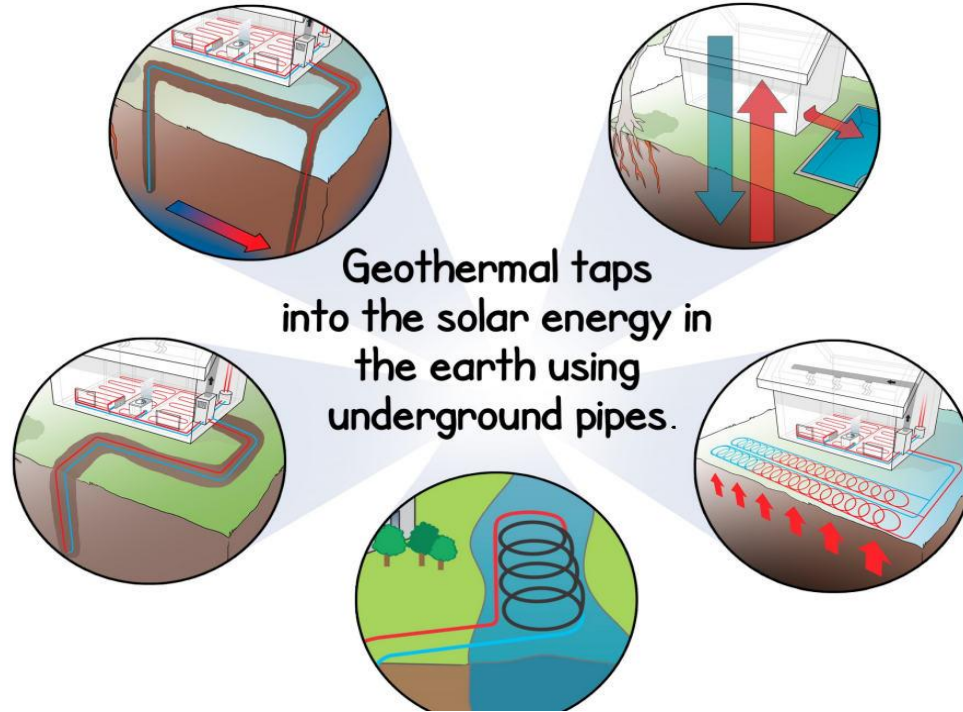


Half of the sun's energy goes into the Earth.

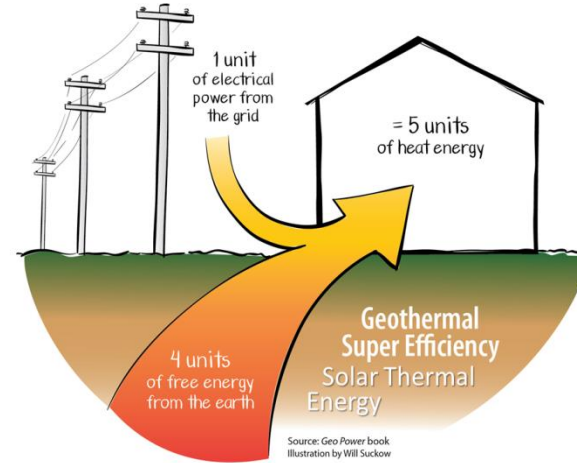
Earth stores solar energy, like a battery stores electric energy



Solar Energy from the Earth



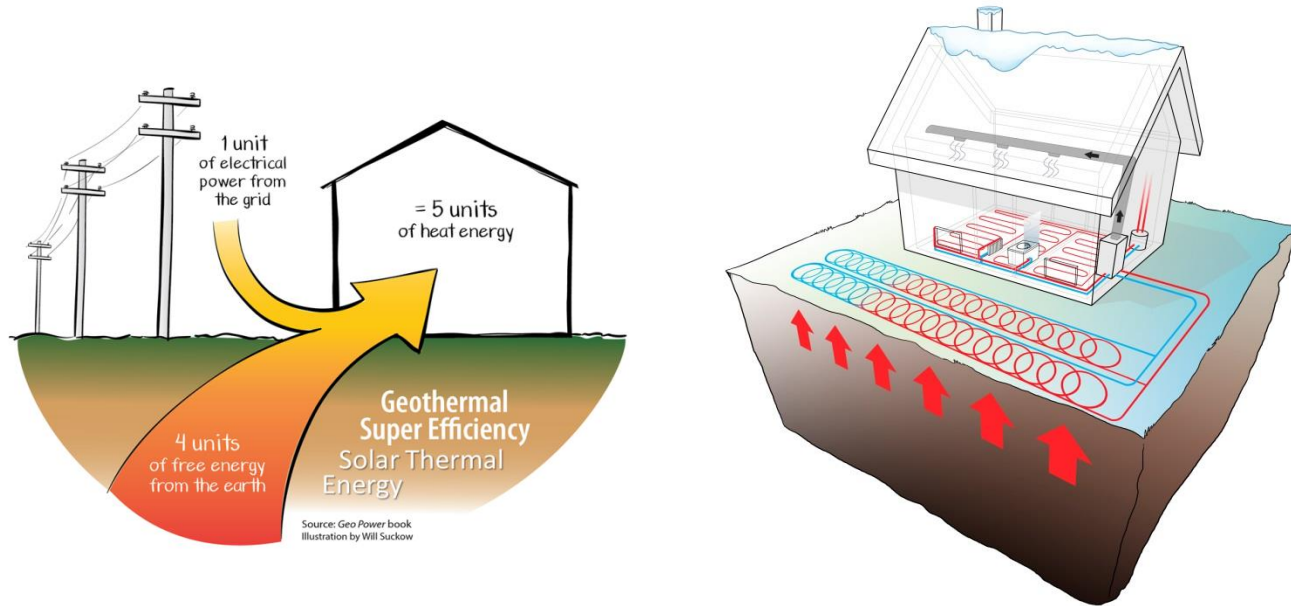
Without Any “Source” Pipeline



A Little ‘Magic’...

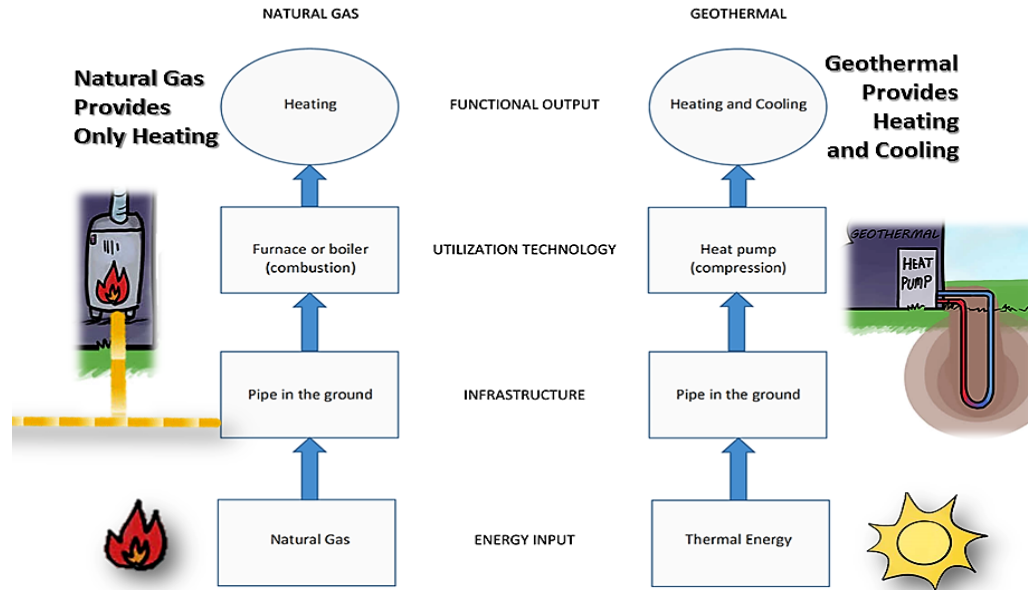
©EggGeothermal Consulting 2021 from a “Solar Energy Pump”

...Or, a “Geothermal Heat Pump”



The Logic Behind It:

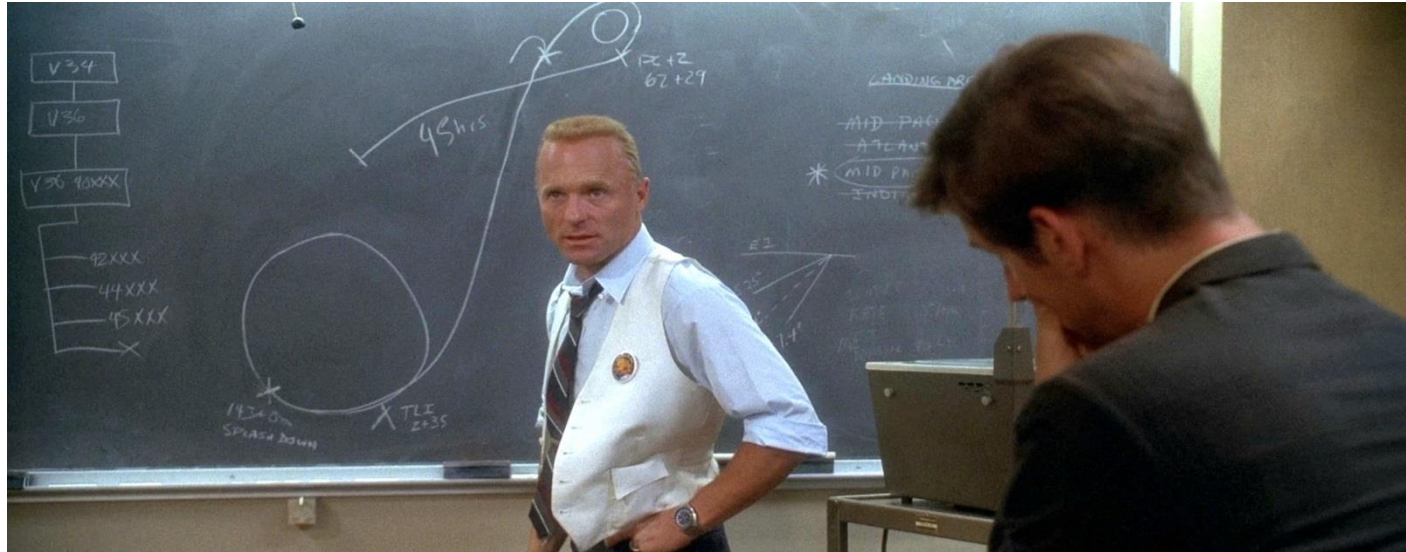
Simplified Schematic View of Geothermal vs. Natural Gas for Heating and Cooling Systems



But, “...we have a problem...”



“How do we get from here to there?”



With the help of a lot of dedicated folks; From Canada to the US and beyond



Countless Others

- OGA, HRAI, Enbridge, GEO, IGSHPA





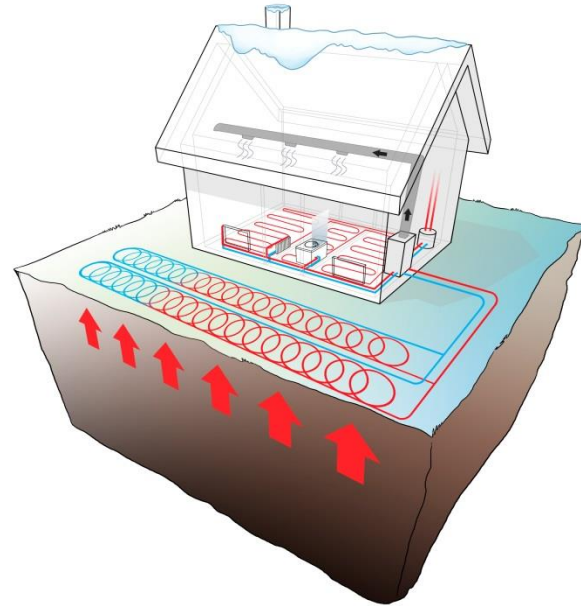
The background features a chalkboard with several technical diagrams and handwritten notes. On the left, there is a vertical flowchart with three boxes labeled 'V34', 'V36', and 'V36 10XXX'. To the right, a circular diagram is drawn with a curved line and the text '45hrs' next to it. Further right, there is a calculation '67+29'. Below the circular diagram, there are three horizontal lines with labels '42XXX', '44XXX', and '45XXX'. The man in the foreground is wearing a white button-down shirt, a dark tie, and a white vest with a circular logo on the left chest. He has a watch on his left wrist.

Let's Work the Problem

A Bridge to Success in Geothermal
Heating and Cooling

The Problem: Acceptance of the Geothermal Concept

- Geothermal is not shiny
- Try to explain geothermal, and most will not have the patience to comprehend it
- “What we have now works just fine”
- We are creatures of habit, and won’t act on it...
- ...no matter how much it saves



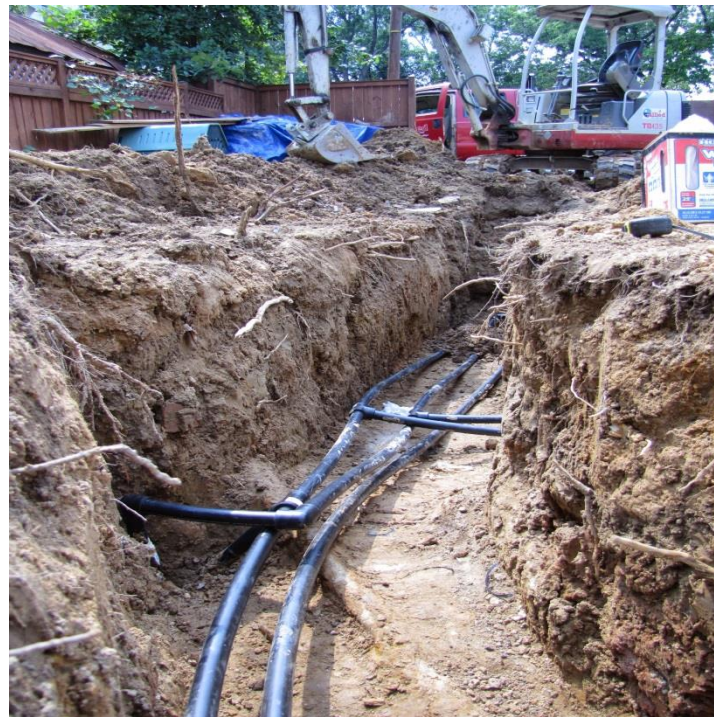
Geothermal is not “Shiny” to Folks

Solar is Shiny...



What did you say about the geo...what; where?

Geothermal; It's either this...

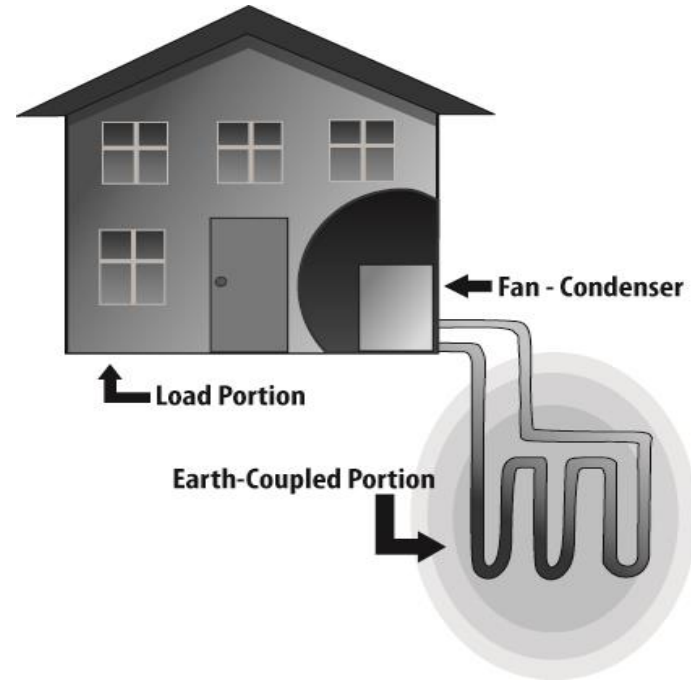


...or this

...so, the Earth is



...you lost me.



You say, “Flames are Bad?”



...greenhouse gases? reduce? how?

What I have Works Just Fine.



Geo is “Mysterious and Technical”

- For millennia, society has been telling “fire-side” stories
- Society does not think “fire” is bad; they don’t even know their furnace uses a flame to make heat.
- Out of sight, out of mind



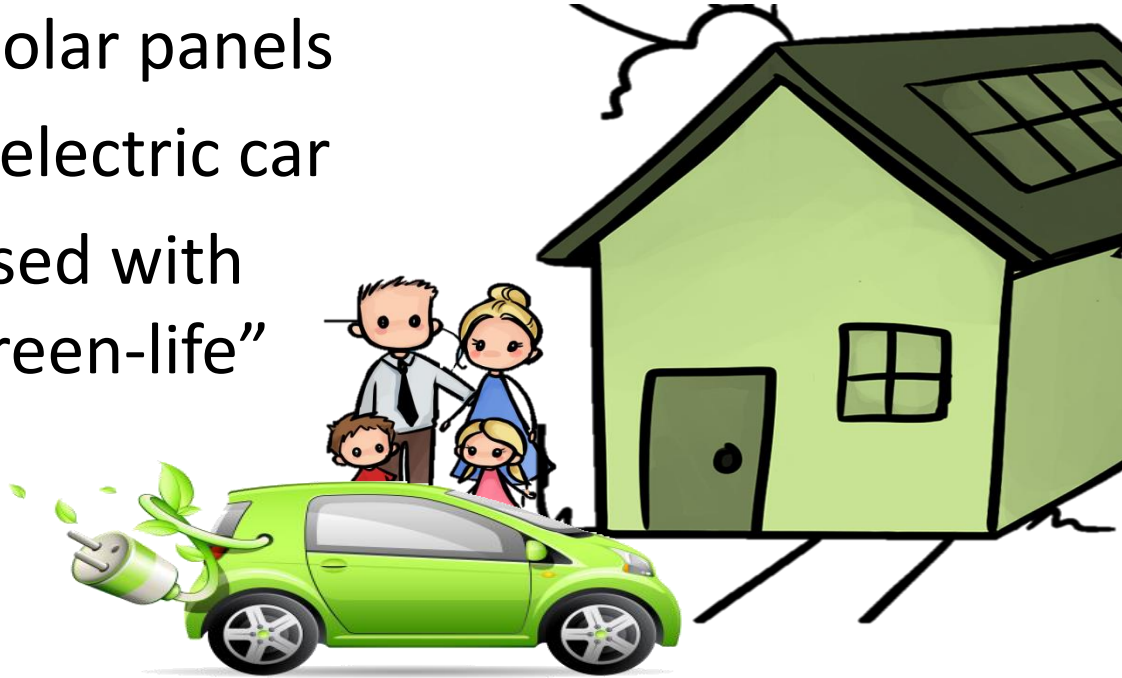
We Need a New Story

- This is Greg and Jill
- They have a home and kids
- They like shiny and trendy things
- They like shiny green things like solar panels, windmills, and electric cars



Greg and Jill Go “Green”

- They install solar panels
- They buy an electric car
- They’re pleased with their new “green-life”



Greg and Jill find out Natural Gas is “bad”; it creates GHG emissions

- They attend a town meeting
- They learn about the Climate Action Plan
- They hear that their NG bill will go up
- They realize NG is not the best choice anymore



Greg and Jill realize that most homes and businesses use “fire” to heat

- They become concerned about combustion in their home
- They don't want to make more greenhouse gasses
- All their neighbors are talking about GHG emissions
- What can they do?



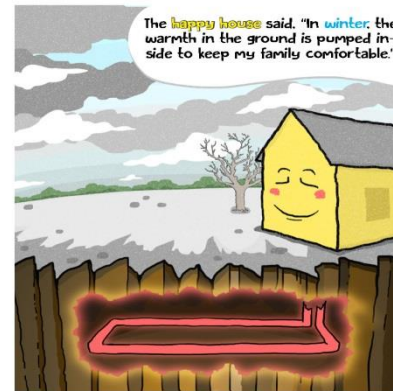
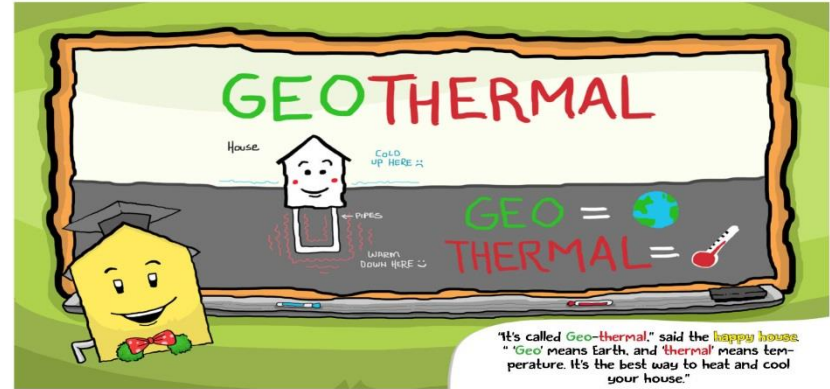
Greg and Jill discover that an “all-electric” home is greenest

- After hearing the experts, they learn that an all electric home wins the contest
- All electric is safe, dependable and green
- They want to be safe and green like their neighbors



Greg and Jill learn about geothermal heat pumps

- Just like a water-pump is used to “pump” water up into a building...
- A geothermal system “pumps” solar heat stored in the ground “up” into their home
- It “pumps heat” in or out of the home, depending on summer or winter weather conditions



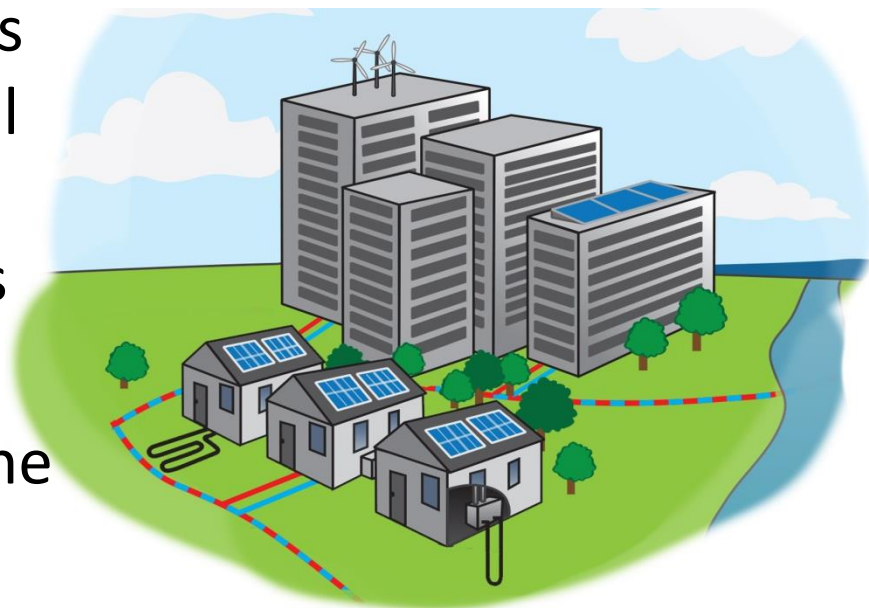
Greg and Jill learn that a geothermal ground loop is “pricey”

- Like other permanent home features, a ground-loop is expensive
- Too expensive for them
- They would have to cut costs somewhere
- They’re not happy that it costs so much to “go-green”



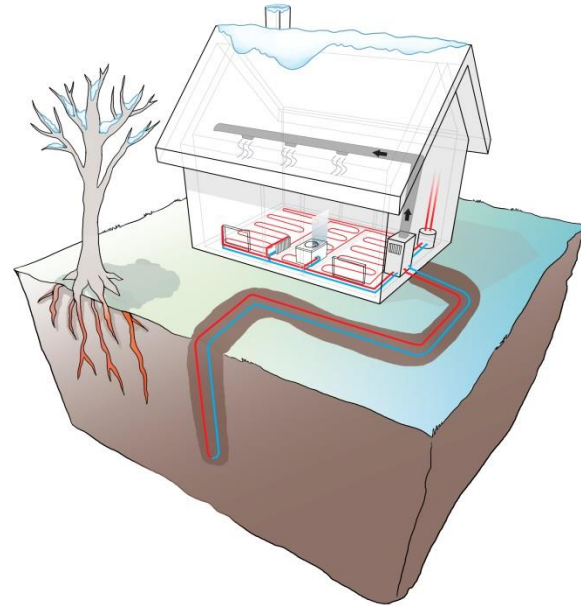
Greg and Jill get good news from their energy utility

- The local energy utility is offering free geothermal loop hook-ups, with a monthly service charges
- The government is offering incentives for the geothermal heat pump inside the home



Greg and Jill now have choices

- They pick the best choice to meet their needs and their bank account
- They save money each month
- Their geothermal heat pump heats and cools their home better than ever
- It heats the hot water tank, too

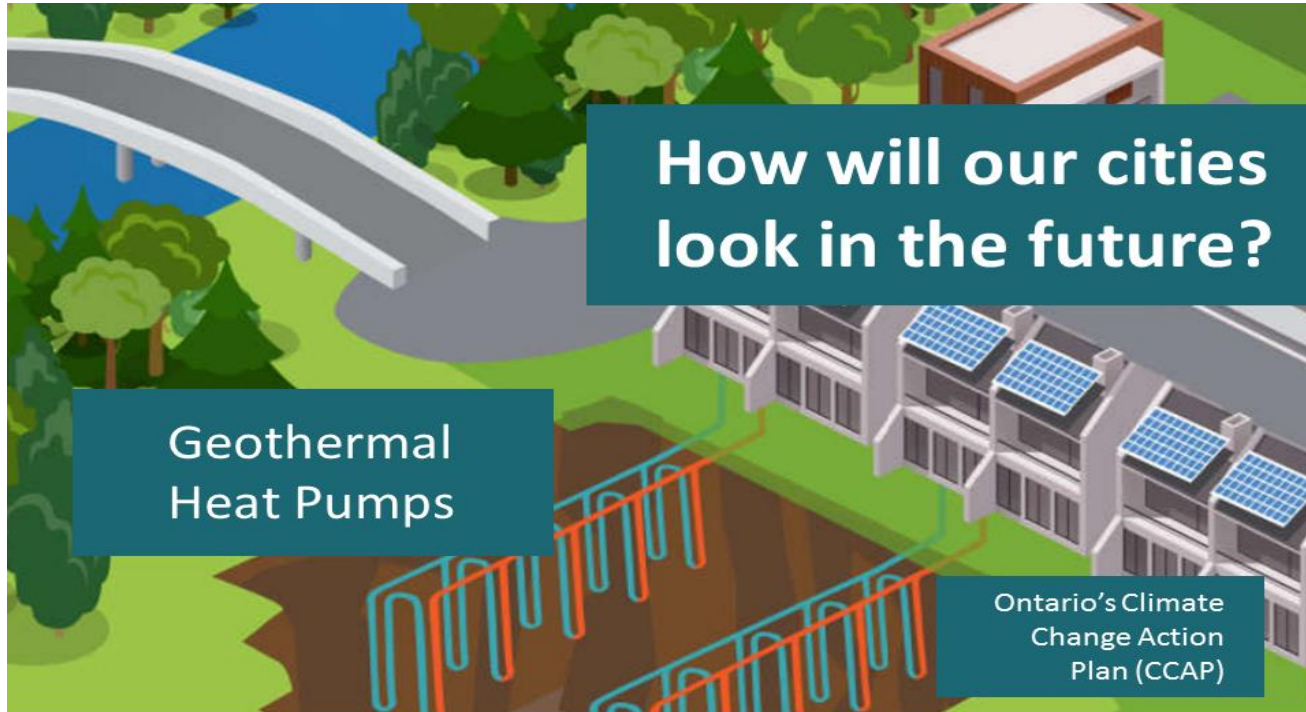


Greg and Jill have no GHG emissions from their home anymore

- Well, almost none; they still like to barbeque outside on the propane grill sometimes...
- ...and that's probably OK!



Thank You



**How will our cities
look in the future?**

**Geothermal
Heat Pumps**

**Ontario's Climate
Change Action
Plan (CCAP)**