



SUSTAINABLE LIVING

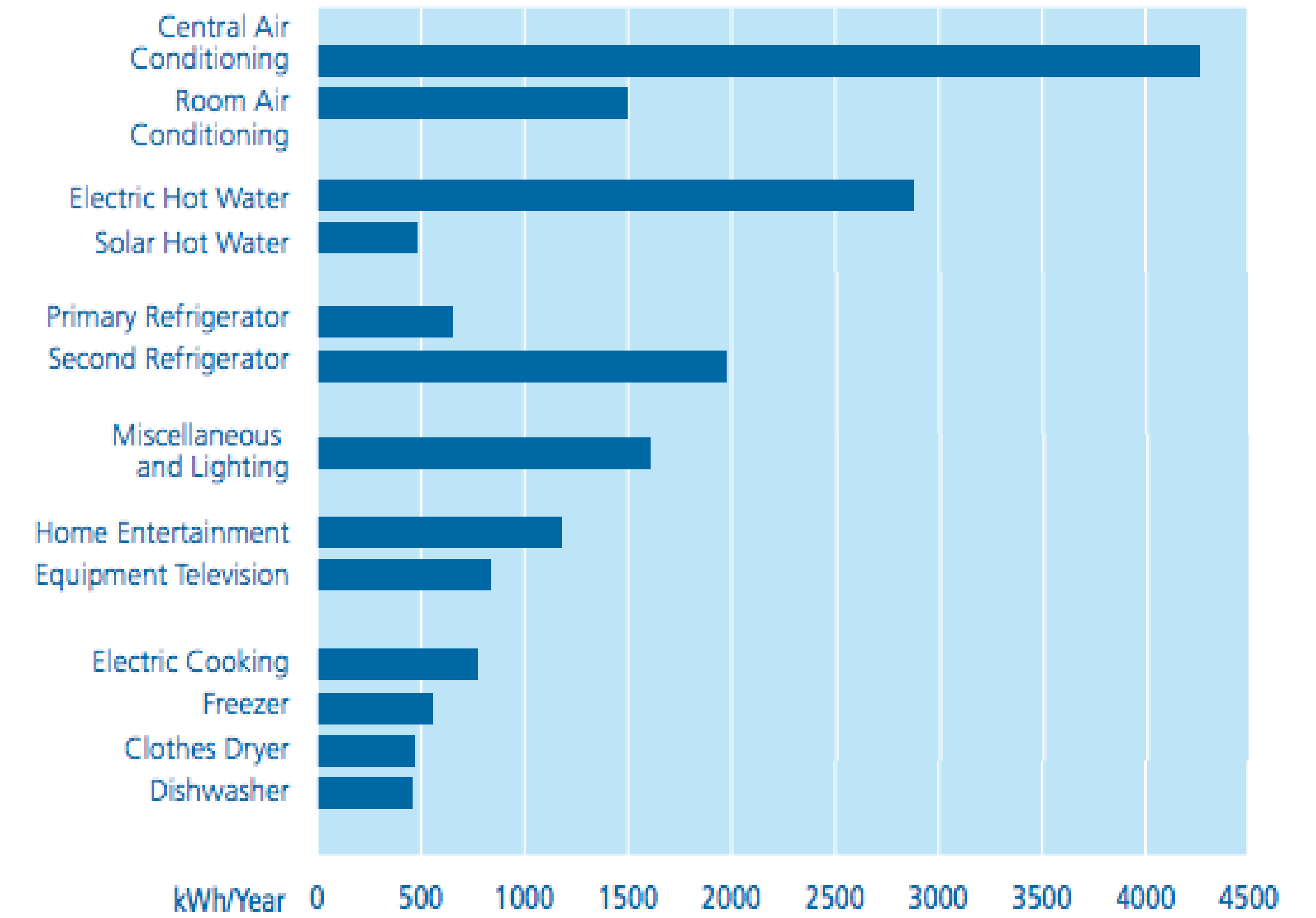
Team Members: Harrison Burack (CS), Jason Strauss (CE), Samantha Vogel (ENE)
Advisors: Geoff Pfeifer (HUA) and Brian Savilonis (ME)



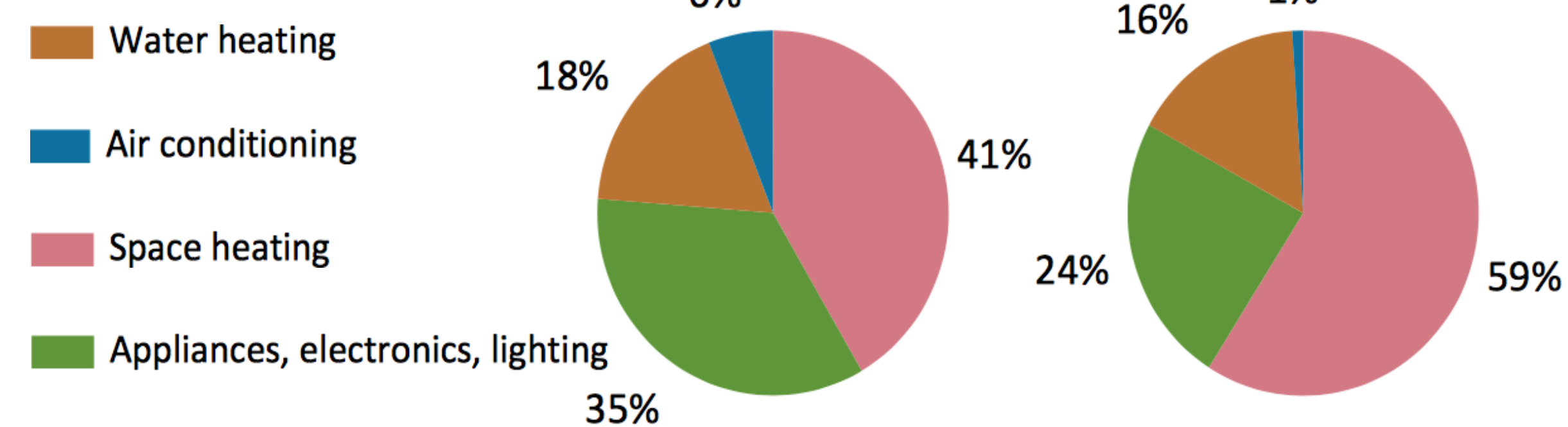
Cross Section House Test Render
August 7, 2010 with Post-Render Work - Oliver A.

Goals:
The average homeowner in Massachusetts spends \$2,500 a year for energy needs, whether is be in heating, lighting, or electrical appliances^[3]. There are common technologies that can reduce the home's total energy output and cost. Our goal is to inform homeowners of these technologies that will save money and reduce output, as well as finding new technologies to reduce a home's individual carbon emission.

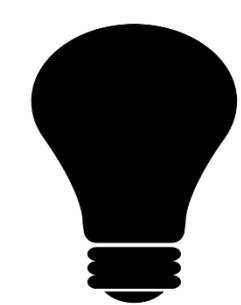
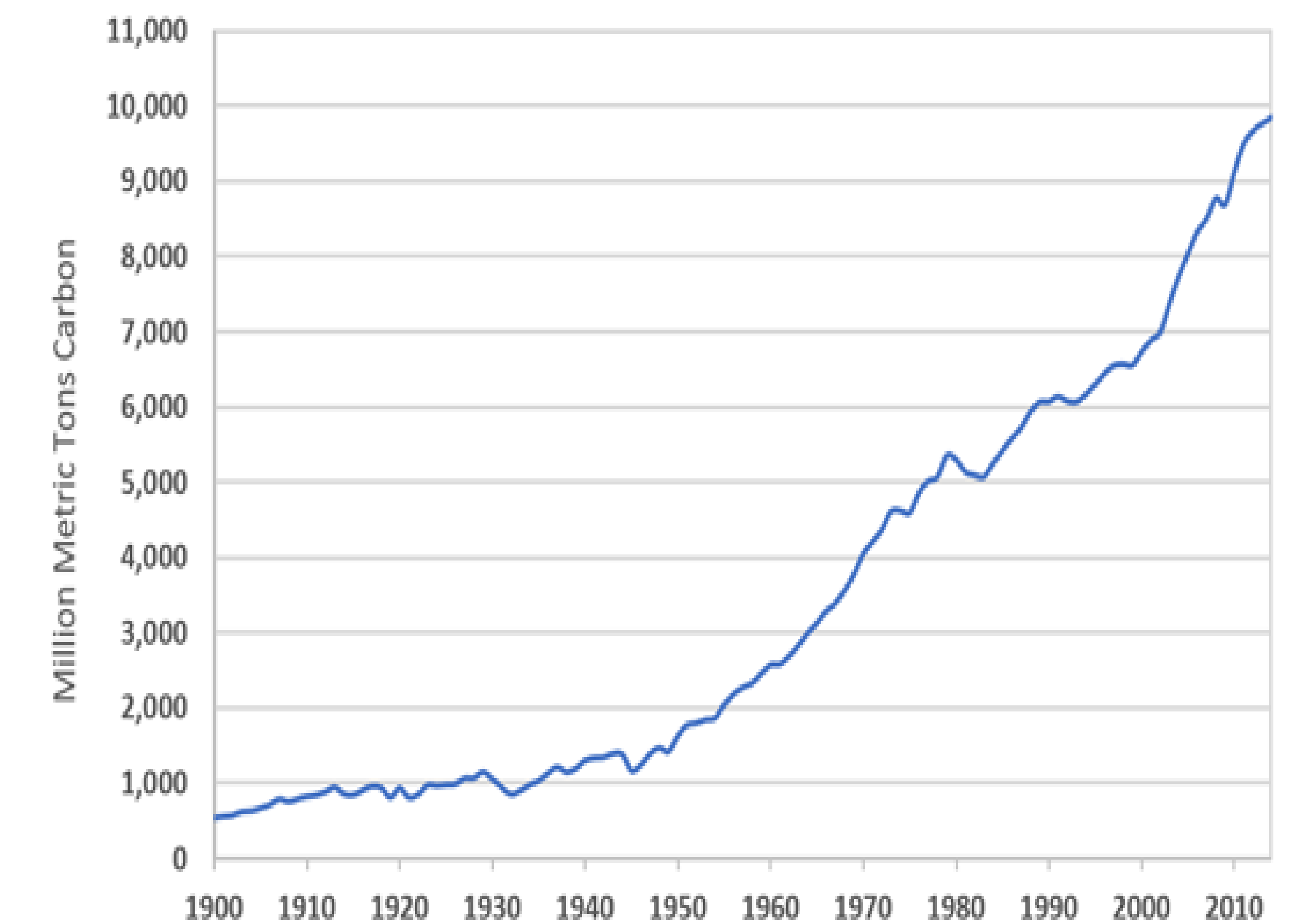
Annual Energy Use for Family of Four



Energy Consumption



Global Carbon Emissions from Fossil Fuels, 1900-2014



\$90 to \$180 a year for **lighting**
Incandescent – common, not energy efficient
LEDs – 50x lifespan, 1/7 amount of energy^[7]



Fiberglass – classic pink **insulation**, made of silica
Mineral wool – made of recycled industrial waste, 60% more recycled content^[8]



\$1,400 a year to **heat** house
Natural gas – common
Geothermal – 100% greater efficiency^[3], \$10,000 more to install^[4]



Thermal energy storage (TES) – freeze water during off peak hours and ice melts when needed, **cooling** the building^[5]



300 loads of **laundry** a year
Average washer – 350 kWh per year
ENERGY STAR washers – 25% less energy^[10]

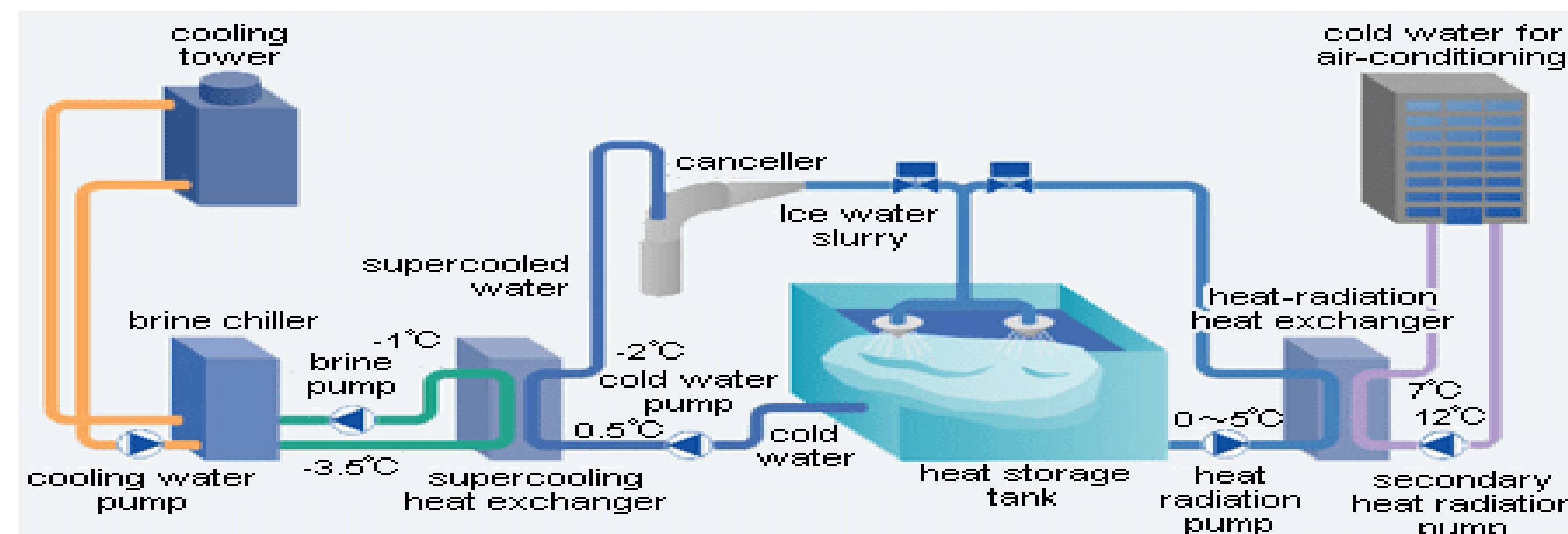
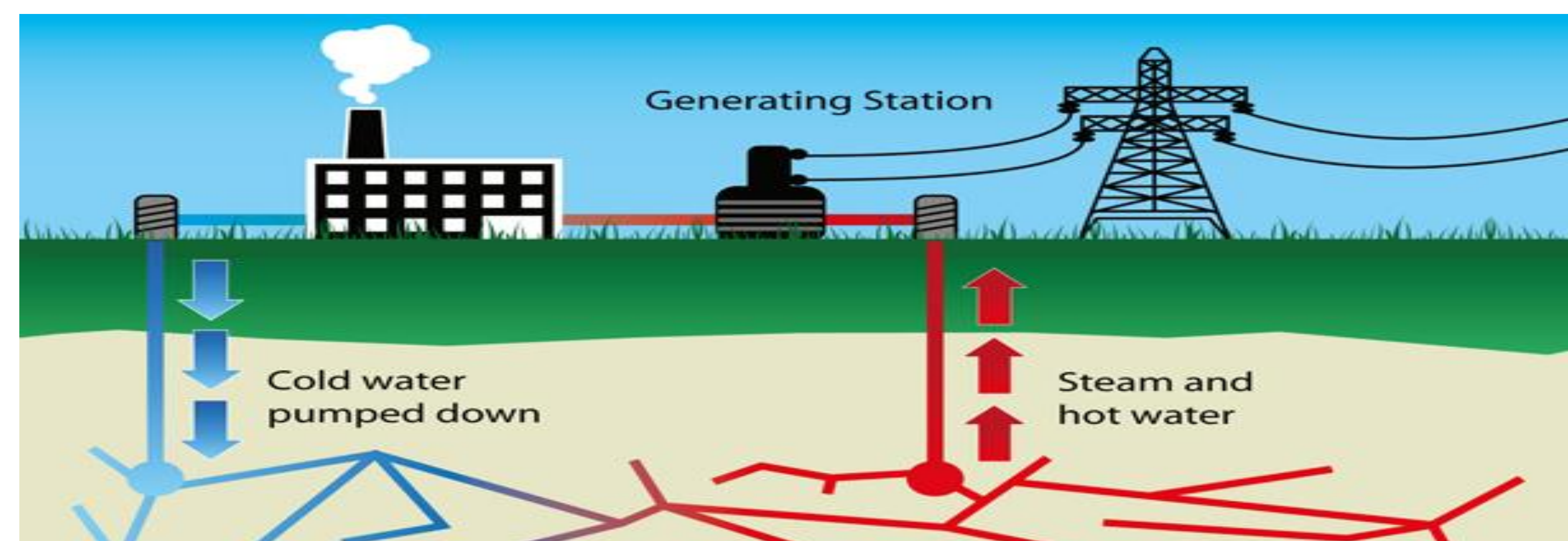


1980 **refrigerator** – 1400 kWh per year
ENERGY STAR refrigerators – 75% less energy^[9]



ENERGY STAR:

- Approved by the Environmental Protection Agency (EPA)
- Must pass a strict criteria^[1]
 - Washing machine > 280 kWh per year^[12]
 - Refrigerator > 508 kWh per year^[13]
- More expensive
- Can earn you tax credit 10% of the initial cost^[2]



A **carbon footprint** is the theoretical amount of greenhouse gasses emitted due to the energy use of a particular person, group, or object. A carbon footprint is a good measure of environmental stability and has increased by 90% in the past 40 years posing an environmental risk^[11].

Resources:

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