U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Energy Summit 2011: Ground Source Heat Pumps

U.S. Department of Energy

Heat Pumps

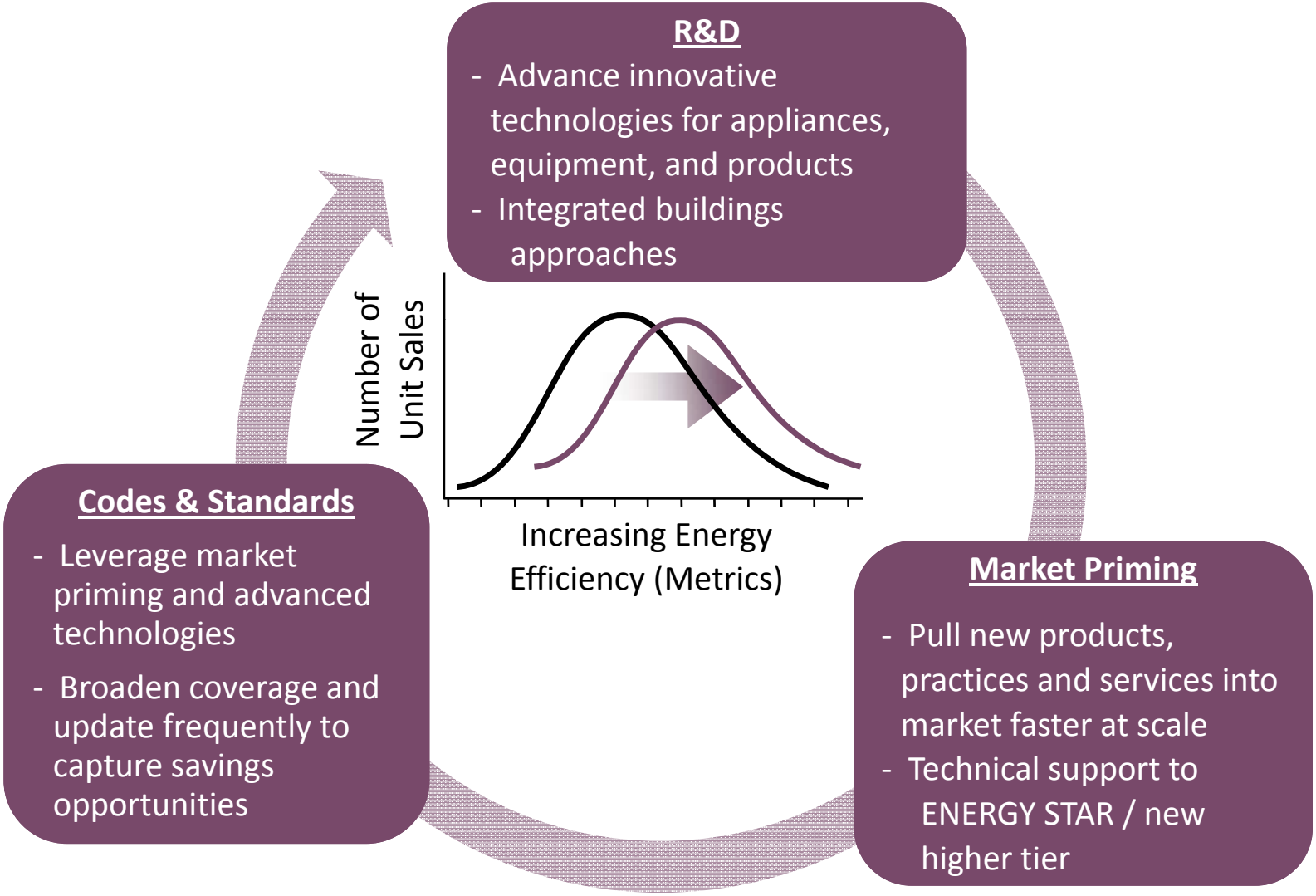
What is a Heat Pump?

A heat pump is a machine or device that diverts heat from one location (the 'source') at a lower temperature to another location (the 'sink' or 'heat sink') at a higher temperature using mechanical work or a high-temperature heat source. ***ASHRAE***

Heat pumps can be used to provide heating or cooling.

- **Heating mode** the outdoor coil/ground loop becomes the evaporator, while the indoor becomes the condenser which absorbs the heat from the refrigerant and dissipates to the air flowing through it.
- **Cooling mode** the outdoor coil/ground loop is now the condenser, indoor coil now the evaporator.

BTP deploys energy efficiency using three strategies that build a self-reinforcing efficiency ecosystem



Challenges for this technology

Challenges	Pros
• High equipment costs • Site specific Installations • Space requirements	• Energy savings • Better economics with variable-electric rate structures • Peak electric demand reduction • Noise reduction (no outdoor fan) • Long life