From: Helen Avila
Sent: Tuesday, October 25, 2011 8:22 AM
To: Mike Nugent
Subject: Energy plan

I am a little concerned with the limited use of geothermal energy and misunderstanding as to how it is used. It is NOT just pumping hot water to the surface and using it. There are several methods below being one of them. The web site **http://www.ucsusa.org/clean_energy/technology_and_impacts/energy_technologies/how-geothermal-energy-works.html** is a good source for more information on different forms of geothermal energy.

Ground-source heat pumps. A much more conventional way to tap geothermal energy is by using geothermal heat pumps to provide heat and cooling to buildings. Also called ground-source heat pumps, they take advantage of the constant year-round temperature of about 50°F that is just a few feet below the ground's surface. Either air or antifreeze liquid is pumped through pipes that are buried underground, and re-circulated into the building. In the summer, the liquid moves heat from the building into the ground. In the winter, it does the opposite, providing pre-warmed air and water to the heating system of the building.

Ground-source heat pump (Source: NREL)

In the simplest use of ground-source heating and cooling, a tube runs from the outside air, under the ground, and into a house's ventilation system. More complicated, but more effective systems use compressors and pumps—as in electric air conditioning systems—to maximize the heat transfer.

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