Illustration of Energy Cost Savings – Cooling and Water Heating

Wisconsin’s short cooling season abbreviates a significant contributor to overall energy cost savings – cooling. Increasing demand for superior indoor environments, the addition of heat producing appliances in the home and office and simple comfort has resulted in energy consumption for cooling to continue to rise.

Wisconsin electricity generators are characterized as summer peaking, further testimony to the increasing use of space cooling. Speculation is electricity rates and pricing scenarios will begin to reflect the much higher summer cost of electrical capacity, due to increasing demand and stagnant supply.

A GeoExchange system’s ability to remove tremendous amount of heat from the space and move it to the cool earth provides for incredible efficiency gains over conventional cooling equipment. The chart below provides a rough estimate of cooling savings for a home or a small commercial facility.

Connecting the building square footage, on the left column, to the electricity cost, on the right, provides a line intersecting the green column. Where the line intersects, like the red line above, is an approximation of energy cost savings.

Bear in mind many variables will impact actual cooling cost savings and this bulletin is no substitute for a cooling gain calculation. Larger commercial facilities, with more internal heat producing devices, will have significantly higher savings per square foot.

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Domestic water heating (DWH) can be a significant contributor to the energy bill, rivaling space heating costs in some applications.

GeoExchange systems can provide for DWH in three ways and all provide additional energy cost reductions. Coupled with space heating savings and cooling savings, DWH savings completes the total economic benefit for a GeoExchange system.

A device called a Desuperheater is a refrigerant-to-water heat exchanger that is installed between the compressor and the condenser.

The Desuperheater removes heat from the refrigerant vapor as it leaves the compressor, but it does not condense. Water heating is only available when the system is operating to fulfill its primary function, such as space heating and cooling. Desuperheaters can provide for about 60% of the domestic hot water needs at no cost.

Multi-function heat pumps allow the GeoExchange system to provide all of the domestic water heating needs. These units have an additional condenser for water heating. The average family can save $150 per or more per year.

Heat pump water heaters primary function is to heat water and produce “waste cooling”. The best applications are where both water heating and cooling are needed; for example, commercial kitchens.

If you have further questions on this GeoTech Bulletin please contact us toll-free