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Geothermal Heating and Cooling - More Than A Hole In the Ground!

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Geothermal systems use the earth as an energy source/sink to significantly improve the efficiency of heating and cooling systems. Properly designed and constructed systems can reduce energy costs and carbon emissions by 40 to 70 percent. While geothermal systems have been around for almost 100 years, the science of how the subsurface thermal transfer works is poorly understood leading to poor performance in many major commercial systems installed to date. Commercial buildings have unique heating and cooling demands that require the well field to be designed by qualified professionals who understand how the geochemistry, bedrock geology, hydrogeology and subsurface heat transfer mechanisms will impact system performance. By understanding site specific parameters, site constraints, building loads and permitting regulations, a qualified design professional can evaluate the appropriate type of well field and design an efficient system. Based on the current lack of understanding of subsurface heat transfer mechanisms, a pilot test program to evaluate key design parameters, including thermal conductive testing, should be performed as part of the design of commercial geothermal heating and cooling systems.

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