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Solar Pool Heating – Deserving Credit

The US Energy Bill of 2005 rightly recognized the environmental benefits of switching to solar energy (and other renewable energy sources) in place of widely used non-renewable sources of electricity and heat, such as coal and natural gas. After all, the sun is a zero emission, free source of energy. The biggest hurdle, though, in developing the infrastructure for an increasingly solar powered society is the current cost of the technology and materials required to convert that energy into usable power.

In order to offset the sometimes inhibitory cost and encourage a greater reliance on solar energy Congress supported a 30% tax credit for the purchase of solar energy property for residential and commercial usage. However, the bill explicitly excludes solar water heaters used for swimming pools from its definition of credit-eligible solar energy property. This single exclusion from the tax credit system effectively discourages the widespread use of the most economically and environmentally efficient solar technology available. When heating a pool, not only are solar pool heating systems able to provide the same environmental benefits to society as photovoltaic (PV) electric systems in terms of green house gas (GHG) emission reductions but they can do so at nearly one tenth the cost.

Solar pool heating systems have space and location requirements similar to those of PV systems in order to achieve optimal efficiency: an area of open space, the size being determined by the volume of water to be heated, that is unobstructed by the sun. Rather than converting solar energy to electricity, and then converting a second time back to heat (as would be the case when using PV systems), solar pool heating systems heat water directly, thereby eliminating conversion losses. Solar pool heating systems simply pump the water through the solar panels where it is heated by the sun and then returned to the source. Since this process does not require expensive PV panels, heat is transferred to the water at a fraction of the cost. Not only is the overall cost of the technology 90% less than a PV system with equivalent heating capacity but the same amount of GHG emitting fuels is offset, thereby reducing the carbon footprint. Due to the smaller overhead cost and practically no operating costs, the total cost of solar pool heating systems will be recovered much quicker through the displacement of fuel and/or electricity purchases that were originally needed to heat the pool.

For example, a massive indoor municipal pool would require 12,000 square feet of solar heating panels. Assuming natural gas had been used previously to heat the pool, the conversion to a solar heating system would offset approximately 31,000 therms of GHG emitting natural gas each year. At $1.00 per therm, $31,000 would be saved each year ($2,583 per month), with the system paying for itself in approximately 8-10 years. From an environmental perspective, the displacement of 31,000 therms of natural gas each year would lead to a GHG emission reduction of approximately 3,296 tons of CO_2 over a twenty year horizon, the expected lifetime of the system. In comparison, a small

residential pool could have a payback period of only 3-4 years. The cost difference between the two technologies allows pool operators using solar heating systems to avoid the release of a greater amount of GHGs into the atmosphere for the same price.

Given that there are upwards of 4.2 million residential pools and 270,000 commercial pools in the US, the denial of the 30% solar energy property tax credit for a more affordable technology that is available to any pool operator inhibits an opportunity for immediate additional GHG mitigation. Also, in this time of high fuel costs and tight economics, the encouragement and support provided by a Federal tax credit for this type of technology can ease the financial burden of high utility bills.

State governments are also beginning to recognize the economic and environmental benefits of using solar pool heating technologies. Some have already introduced legislation that would require pool owners to install solar pool heating systems. Both California and New Jersey are set to make mandatory solar pool heating installations that meet a minimum 25% of heating demands in order to help reduce their use of and dependence on natural gas.

To exclude from the tax crediting system one of the technologies that can reduce GHG emissions generated through pool heating in a more cost effective manner than PV solar makes little sense if the goal of the US Energy bill is truly to improve the environment through mechanisms that reduce GHG emissions. Congress is hindering a widespread opportunity for pool owners to cost effectively reduce their carbon footprint. Additionally, by not incentivizing solar pool heating technology in the same manner as other solar technologies, US Energy policy is sending mixed signals and is doing a disservice to the growing number of citizens who value the development of solar energy. A recent poll found 94% of Americans say that it is important for the US to develop and use solar energy. Furthermore, 77% of Americans feel that "the Federal government should make solar power development a national priority"[1].

Understanding that current energy policy, which may be extended for up to eight years, effectively discourages the use of solar pool heating systems, legislators should be urged to reconsider the inclusion of this technology in the solar energy property tax credit benefit. In light of current predictions about atmospheric concentrations of GHGs and their impacts on climate change our political leaders should not dismiss this opportunity to further encourage the use of solar energy and decrease our dependence on GHG emitting fossil fuels.

[1] SEIA, June 10, 2008, Poll Reports 94% of Americans Say It's Important for the U.S. to Develop and Use Solar Energy, http://www.seia.org/cs/news_detail?pressrelease.id=113 accessed on July 7, 2008.