PRIVATE TAXPAYER RULING LR14-002

May 20, 2014

The Department issues this private taxpayer ruling in response to your letter ("Request") requesting a ruling on behalf of … ("Taxpayer"). Specifically, you request a ruling regarding whether a … Pool Cover qualifies as a passive solar energy device within the meaning of Arizona Revised Statutes ("A.R.S.") §§ 42-5001 and 44-1761, thus making the purchase and installation of such cover eligible for the residential solar energy credit under A.R.S. § 43-1083.

ISSUE:

Whether a … Pool Cover qualifies as a passive solar energy device within the meaning of Arizona Revised Statutes (A.R.S.) §§ 42-5001 and 44-1761.

RULING:

Based on the facts and documentation provided, the Department rules as follows:

A … Pool Cover does not qualify as a passive solar energy device within the meaning of A.R.S. §§ 42-5001 and 44-1761.

FACTS ASSERTED BY TAXPAYER:

The following are facts excerpted from the January 7, 2014 letter:

Arizona law provides a solar energy credit for an individual taxpayer who installs a "solar energy device" in his or her Arizona residence. Solar swimming pool and spa heating systems (collectors, heat exchangers' piping valves, wiring etc.) directly related to the solar system qualify for the solar energy credit. Similarly, … Pool Covers are designed primarily to provide solar heating to pools by means of collecting and transferring solar energy into such uses by passive means, and as such, should be defined as a "solar energy device."

There are many types of vinyl swimming pool covers: however; the "… Pool Cover", designed and manufactured by …, is specifically designed to capture solar energy to naturally increase the pool's water temperature. Not only does this pool cover transfer solar energy to heat a pool during the day, but also retains and stores the solar energy for the night when the air is cooler than the swimming pool. Therefore, the temperature of the pool is increased without adding additional heat from another heat source such as a gas heater or heat pump.

Clearly, the main feature of the … Pool Cover is to directly convert solar radiation into usable heat. While other pool cover products on the market have incidental heating capabilities, and have been demonstrated to increase the water temperature by five degrees for each twelve hours of coverage, the … Pool Cover stands alone in its capabilities, having been designed specifically for this purpose. An independent testing company, … (also referred to as …, which stands for …), is one of a select few laboratories in the United States that has tested solar thermal collectors. … performed tests on the … Pool Covers, which resulted in findings that … Pool Covers have significantly greater heating quotient. According to the study, the … Pool Cover increases water temperature by 6.8 degrees for each hour of coverage. These findings clearly demonstrate that these covers are specifically designed to heat a swimming pool using solar energy.

LEGAL ANALYSIS:

A.R.S. § 42-5001(15) defines the term "solar energy device" to mean a system or series of mechanisms designed primarily to provide heating, to provide cooling, to produce electrical power, to produce mechanical power, to provide solar daylighting or to provide any combination of the foregoing by means of collecting and transferring solar generated energy into such uses either by active or passive means. Such systems may also have the capability of storing such energy for future utilization. Passive systems shall clearly be designed as a solar energy device such as a trombe wall and not merely a part of a normal structure such as a window.

A.R.S. § 43-1083(A) provides, in part, a credit for individuals who are not a dependent of another taxpayer for installing a solar energy device, as defined in section 42-5001, during the taxable year in the taxpayer's residence located in this state.

A.R.S. § 43-1083(F) provides that to qualify for the credit under this section the solar energy device and its installation shall meet the requirements of title 44, chapter 11, article 11.

A.R.S. § 44-1761(1) defines the term "collector" to mean a component of a solar energy device that is used to absorb solar radiation, convert it to heat or electricity and transfer the heat to a heat transfer fluid or to storage.

A.R.S. § 44-1761(2) defines the term "heat exchanger" to mean a component of a solar energy device that is used to transfer heat from one fluid to another.

A.R.S. § 44-1761(4) defines the term "solar energy device" to mean a system or series of mechanisms designed primarily to provide heating, to provide cooling, to produce electrical power, to produce mechanical power, to provide solar daylighting or to provide any combination of the foregoing by means of collecting and transferring solar generated

energy into such uses either by active or passive means. Such systems may also have the capability of storing such energy for future utilization. Passive systems shall clearly be designed as a solar energy device such as a trombe wall and not merely a part of a normal structure such as a window.

A.R.S. § 44-1761(5) defines the term "storage unit" to mean a component of a solar energy device that is used to store solar generated electricity or heat for later use.

Solar Energy Devices

Arizona law provides a solar energy credit for an individual taxpayer who installs a “solar energy device” in his or her Arizona residence.

For the purpose of the individual solar credit under A.R.S. § 43-1083, a solar energy device is a system or series of mechanisms designed primarily to provide heating, to provide cooling, to produce electrical power, to produce mechanical power, to provide solar daylighting or to provide any combination of the foregoing by means of collecting and transferring solar generated energy into such uses either by active or passive means. In order for a device to be considered a system or series of mechanisms, the device must have a collector, and a heat exchanger or a storage unit.

The terms “collector” ‘heat exchanger” and “storage unit” are defined in A.R.S. § 44-1761. Therefore, for the purpose of a solar energy device, a “collector” is a component of the solar energy device that is used to absorb solar radiation, convert it to heat or electricity and transfer the heat to a heat transfer fluid or to storage. A “heat exchanger” is a component of a solar energy device that is used to transfer heat from one fluid to another and a "storage unit" is a component of a solar energy device that is used to store solar generated electricity or heat for later use.

Passive Solar Energy Devices

In the case of a passive solar energy device, the solar energy device must still have a collector and either a heat exchanger or a storage unit. For example, in the case of a trombe wall, there is a collector (the glass which generally should have a solar heat gain coefficient (SHGC) of 0.7 or more) and a storage unit (the trombe wall mass).[1]

Swimming Pool Covers and the Heating of Swimming Pools

Outdoor pools can gain a significant amount of heat from the sun, absorbing 75 to 85 percent of the solar energy striking the pool surface. Almost all of a pool’s heat loss, about 95 percent, occurs at the surface, mostly through evaporation to the air and radiation to the sky. A pool cover is an effective means to keep heat (and water) in a pool by

[1] Trombe Wall Design http://www.level.org.nz/fileadmin/downloads/Other_Resources/Trombe_Walls.pdf

reducing evaporation of water from the pool when it is not in use, and reduces radiant heat losses. A pool cover can reduce water loss by 30 to 50 percent. Each gallon of 80-degree water that evaporates removes around 8,000 Btu from the pool.[2]

Based on the U.S. Department of Energy, swimming pool covers reduce solar energy absorption. Even though a pool cover can reduce evaporation and thus, the loss of heat, the pool cover will actually reduce solar energy absorption. A transparent bubble cover may reduce solar energy absorption by 5 to 15 percent, and an opaque cover may reduce it by 20 to 40 percent. However, the decrease in solar gain is generally offset by the cover's retention of the pool's heat. [3]

Based on the U.S. Department of Energy, swimming pool covers reduce solar energy absorption. Additionally, in the case of a swimming pool cover, there is no collector, heat exchanger or storage unit as defined under A.R.S. § 44-1761. A swimming pool cover is not a passive solar energy device, nor is it an active solar energy device. Therefore, a swimming pool cover does not qualify as a solar energy device for the purpose of the residential solar energy credit allowed under A.R.S. § 43-1083.

This response is a private taxpayer ruling and the determinations herein are based solely on the facts provided in the Request. Therefore, the conclusions in this private taxpayer ruling do not extend beyond the facts presented in your correspondence dated January 7, 2014. The determinations are subject to change should the facts prove to be different on audit. If it is determined that undisclosed facts were substantial or material to the department's making of an accurate determination, this private taxpayer ruling shall be null and void. Further, the determination is subject to future change depending on changes in statutes, administrative rules, case law or notification of a different department position.

The determinations in this private taxpayer ruling are only applicable to the taxpayer requesting the ruling and may not be relied upon, cited nor introduced into evidence in any proceeding by a taxpayer other than the taxpayer who has received the private taxpayer ruling. In addition, this private taxpayer ruling only applies to transactions that occur or tax liabilities that accrue from and after the date the taxpayer receives the ruling.

Lrulings/14-002-D

[2] Conserving Energy and Heating Your Swimming Pool with Solar Energy http://www.nrel.gov/docs/fy00osti/28038.pdf
[3] Swimming Pool Covers http://energy.gov/energysaver/articles/swimming-pool-covers