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CC:PSI:B06
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Date:
September 02, 2014

Legend

Taxpayer =
Developer =
State =
A =
B =

Dear :

This letter is in response to your ruling request, submitted by your authorized representative, concerning the application of section 48 of the Internal Revenue Code (Code) to the facts described below.

FACTS

The facts are represented by Taxpayer to be as follows: Taxpayer is a privately-held limited liability company headquartered in State. Taxpayer uses a calendar taxable year accounting period and the accrual method of accounting for maintaining its accounting books and records and filing its federal income tax return. In order to control its electricity costs, Taxpayer is considering the purchase of an A kilowatt (kW) solar photovoltaic generation system manufactured by Developer. The system consists of B panels of photovoltaic cells, electrical wiring, associated inverters and control equipment, and mounting hardware to allow the panels to be positioned above the surface of the roof of Taxpayer's building in State (the System).

The System relies upon highly efficient silicon cells that convert to energy the light that strikes both the front and the back of the bifacial panels. As a result of the System's bifacial panels, the System is able to generate electrical energy using not only

sunlight that directly strikes the panels, but also sunlight that is reflected from the surface on which the panels are installed and other scattered light from ground and ambient sources. Developer's solar panels are roughly equally efficient on the front and back side, meaning that up to 50 percent of the energy produced by the photovoltaic generation system is attributable to light that is absorbed by the back side of each solar panel. Moreover, Developer's solar panels can produce approximately 40 percent more energy than traditional monofacial panels when installed in an optimal configuration over a highly-reflective surface. Unlike any other solar module currently on the market, Developer warrants that the power generated from the back side of each module will equal at least 90 percent of the power generated from the front side.

Currently, the most effective reflective surfaces available for rooftop installations of the Developer's photovoltaic generation systems are special-purpose impermeable membranes that are affixed to the roof of a building. These reflective membranes are manufactured by a number of suppliers, but not by Developer. The reflectivity of these special-purpose membranes is generally established through certifications by industry-rating institutions, such as the Cool Roof Rating Council (CRRC) or the ENERGY STAR rating program administered by the Department of Energy and the Environmental Protection Agency. CRRC, in particular, publishes radiative data on roof surfaces. The reflectivity of a surface to sunlight is measured as the "albedo" of the surface, with a perfectly reflective surface having an albedo of 100 percent and a perfectly non-reflective surface having an albedo of 0 percent. Developer recommends that its panels be installed over CRRC- or ENERGY STAR-compliant (i.e., high-albedo) roof membranes in order to capture energy efficiencies provided by the bifacial design of its panels.

Thus, in connection with the installation of the System, Taxpayer anticipates installing a highly reflective impermeable membrane of thermoplastic polyolefin (TPO), a .050 Kynar standard color coping and counter flashing, insulation adhesive, a fiberglass mat gypsum board, the fasteners and agents used to affix the membrane, and two layers of polyisocyanurate supporting material (together, the Reflective Roof). The newly-installed Reflective Roof is estimated to have a reflectivity factor, or albedo, of between 70 percent and 91 percent. The components of the Reflective Roof other than the TPO membrane improve the long-term reflectivity of the Reflective Roof Surface by preventing the TPO membrane from being wrinkled, torn, or otherwise damaged and limiting the accumulation of water, dirt, and organic matter on the roof. Taxpayer has received estimates from Developer indicating that, if the Reflective Roof is installed, a significant amount of electrical energy will be generated using sunlight reflected from the roof of Taxpayer's manufacturing facilities.

Taxpayer anticipates the System covering approximately 96 percent of the available space on the portion of the roof that will be replaced, taking into account local building code restrictions and the existing features of the roof. The entire roof will not be replaced with the Reflective Roof; rather, Taxpayer anticipates installing the Reflective

Roof only beneath the System. Thus, the Reflective Roof does not include the existing roof surface that will not be replaced, the roof deck, any structural support for the roof deck, or any features of the roof not directly related to improving and maintaining the reflectivity of the membrane.

RULING REQUESTED

The Reflective Roof, when installed in connection with the System, constitutes energy property under section 48 of the Code to the extent that the cost of the Reflective Roof Surface exceeds the cost of reroofing Taxpayer's building with a non-reflective roof that is allowed by local law.

LAW AND ANALYSIS

Section 48(a)(3)(A)(i) of the Code provides that energy property includes any equipment which uses solar energy to generate electricity, to heat or cool (or provide hot water for use in) a structure, or to provide solar process heat, excepting property used to generate energy for the purposes of heating a swimming pool.

Treas. Reg. § 1.48-9(a)(2) provides that in order to qualify as "energy property" under section 48 of the Code, property must be depreciable property with an estimated useful life when placed in service of at least three years and constructed after certain dates.

Treas. Reg. § 1.48-9(d)(1) provides as follows:

> **(d) Solar energy property—(1) In general.** Energy property includes solar energy property. The term 'solar energy property' includes equipment and materials (and parts related to the functioning of such equipment) that use solar energy directly to (i) generate electricity, (ii) heat or cool a building or structure, or (iii) provide hot water for use within a building or structure. Generally, those functions are accomplished through the use of equipment such as collectors (to absorb sunlight and create hot liquids or air), storage tanks (to store hot liquids), rockbeds (to store hot air), thermostats (to activate pumps or fans which circulate the hot liquids or air), and heat exchangers (to utilize hot liquids or air to create hot air or water). Property that uses, as an energy source, fuel or energy derived indirectly from solar energy, such as ocean thermal energy, fossil fuel, or wood, is not considered solar energy property.

Treas. Reg. § 1.48-9(d)(2) specifically excludes "passive solar systems" from

qualification as energy property. A passive solar system is defined as a "system [that] is based on the use of conductive, convective, or radiant energy transfer."

Treas. Reg. § 1.48-9(d)(3) provides, in part, that solar energy property includes equipment that uses solar energy to generate electricity, and includes storage devices, power conditioning equipment, transfer equipment, and parts related to the functioning of those items. Such property, however, does not include any equipment that transmits or uses the electricity generated.

Treas. Reg. § 1.48-9(k) provides, in part, that the term "incremental cost" means the excess of the total cost of equipment over the amount that would have been expended for the equipment if the equipment were not used for qualifying purposes. Only the incremental cost of the types of property described in Treas. Reg. § 1.48-9(c)(6)(i) (alternative energy property that constitutes modification equipment), Treas. Reg. § 1.48-9(c)(8) (pollution control property),Treas. Reg. § 1.48-9(f) (specially defined energy property), and Treas. Reg. § 1.48-9(g)(7)(recycling property that replaces and increases existing recycling capacity) constitutes energy property.

The System generates electricity from sunlight. Because of the bifacial design of the photovoltaic cells, half of the aggregate generating surface of the panels is oriented toward the underside of each panel. The design of the panels allows sunlight to shine through the clear spaces of the module and reflect back upon the underside of the panels from the surface on which the panels are installed. Thus, the panels generate electricity using sunlight reflected from the surface on which the panels rest.

When installed upon a highly reflective surface such as the Reflective Roof, the System generates significant amounts of electricity from reflected sunlight. Because the Reflective Roof enables the generation of significant amounts of electricity from reflected sunlight, the Reflective Roof constitutes equipment that uses solar energy to generate electricity when installed in connection with the System. The Reflective Roof also satisfies, when installed in connection with the System, the definition of energy property under Treas. Reg. §§ 1.48-9(d)(1) and 1.48-9(d)(3) because the Reflective Roof is part of the equipment and materials that use solar energy to directly generate electricity.

Accordingly, we conclude that the Reflective Roof, when installed in connection with the System, constitutes energy property under section 48 of the Code only to the extent that the cost of the Reflective Roof exceeds the cost of reroofing Taxpayer's building with a non-reflective roof that is allowed by local law.

Except as expressly provided herein, no opinion is expressed or implied concerning the tax consequences of any aspect of any transaction or item discussed or referenced in this letter. Specifically, no opinion is expressed whether Taxpayer

qualifies for the investment credit under section 46 of the Code or whether the energy property otherwise qualifies under section 48 of the Code.

In accordance with the Power of Attorney on file with this office, a copy of this letter is being sent to your authorized representative.

This ruling is directed only to the Taxpayer who requested it. Section 6110(k)(3) of the Code provides it may not be used or cited as precedent. We are sending a copy of this letter ruling to the Industry Director.

Sincerely,

Peter C. Friedman
Senior Technician Reviewer, Branch 6
Office of Associate Chief Counsel (Passthroughs & Special Industries)