

**FORM EIA-63B  
ANNUAL PHOTOVOLTAIC MODULE/CELL MANUFACTURERS SURVEY**

**GENERAL INFORMATION AND INSTRUCTIONS**

**I. Purpose**

Form EIA-63B is designed to provide the data necessary for the Energy Information Administration (EIA), U.S. Department of Energy (DOE), to carry out its responsibilities for tracking photovoltaic shipments in the photovoltaic module/cell manufacturing industry and for providing information concerning the size and status of the industry. The data collected will be published in the Renewable Energy Annual and also be available through EIA's Internet site at <http://www.eia.doe.gov/fuelrenewable.html>.

**II. Who Should Respond to This Survey**

This report is mandatory and required pursuant to the authority granted to the Department of Energy (DOE) by the Federal Energy Information Administration Act of 1974 (Public Law 93-275). Form EIA-63B is to be submitted by companies in the U.S. (including U.S. territories and possessions) (1) that manufactured and shipped (including exporting) photovoltaic cells and modules and/or (2) that imported and shipped photovoltaic cells and modules during the survey year. If you are completing this survey form for the first time but were active in the industry during the previous survey year, please photocopy the entire form and provide us with data for the previous year also.

**III. Where to Submit Completed Forms**

Submit your data electronically using EIA's Internet Data Collection (IDC) system. All respondents for whom EIA has an e-mail address will be notified of the procedure for submitting using the IDC system.

If you need an alternate means of filing your response or have questions about the data requested on Form EIA-63B, please contact the Survey Manager, Peter Wong at [peter.wong@eia.doe.gov](mailto:peter.wong@eia.doe.gov) or (202) 586-7574.

Please retain a completed copy of this form for your files.

**IV. When to Submit Completed Forms**

The survey year is from January 1 through December 31 each year. Completed EIA-63B forms are due by March 1 the following year.

**V. Sanctions**

The timely submission of Form EIA-63B by those required to report is mandatory under Section 13(b) of the Federal Energy Administration Act of 1974 (FEAA) (Public Law 93-275), as amended. Failure to respond may result in a penalty of not more than \$2,750 per day for each

civil violation, or a fine of not more than \$5,000 per day for each criminal violation. The government may bring a civil action to prohibit reporting violations, which may result in a temporary restraining order or a preliminary or permanent injunction without bond. In such civil action, the court may also issue mandatory injunctions commanding any person to comply with these reporting requirements. **Title 18 U.S.C. 1001 makes it a criminal offense for any person knowingly and willingly to make to any Agency or Department of the United States any false, fictitious, or fraudulent statements as to any matter within its jurisdiction.**

## **VI. Provisions Regarding Confidentiality of Information**

The information reported on this form will be protected and not disclosed to the public to the extent that it satisfies the criteria for exemption under the Freedom of Information Act (FOIA), 5 U.S.C. §552, the Department of Energy regulations, 10 C.F.R. §1004.11, implementing the FOIA, and the Trade Secrets Act, 18 U.S.C. §1905.

The Federal Energy Administration Act requires the EIA to provide company-specific data to other Federal agencies when requested for official use. The information reported on this form may also be made available, upon request, to another component of the Department of Energy (DOE); to any Committee of Congress, the Government Accountability Office, or other Federal agencies authorized by law to receive such information. A court of competent jurisdiction may obtain this information in response to an order. The information may be used for any nonstatistical purposes such as administrative, regulatory, law enforcement, or adjudicatory purposes.

Disclosure limitation procedures are applied to the statistical data published from Form EIA-63B survey information on the dollar value of shipments and complete systems to ensure that the risk of disclosure of identifiable information is very small.

For all other data published from the Form EIA-63B, disclosure limitation procedures are not applied. Thus, there may be some statistics that are based on data from fewer than three respondents, or that are dominated by data from one or two large respondents. In these cases, it may be possible for a knowledgeable person to estimate the information reported by a specific respondent.

## **VII. Filing Forms with Federal Government and Estimated Reporting Burden**

Respondents are not required to file or reply to any Federal collection of information unless it has a valid OMB control number. Public reporting burden for this collection of information is estimated to average 4.5 hours per response including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden to the Energy Information Administration, Statistics and Methods Group, EI-70, 1000 Independence Ave., S.W., Washington, D.C. 20585-0670, and the Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, D.C. 20503.

## SPECIFIC INSTRUCTIONS

### **Item    Instruction**

**1.1** Enter the responding company's principal business office address and preparer's office address.

**1.2** Provide the name, title, and contact information for the principal people in your company to whom questions should be addressed regarding this submission.

**2.1** (a-d) Mark as appropriate the manufacturing activity conducted by your company during the current reporting period. If you answer "**Yes**" to any one of item 2.1 (a) through (d) and the volume of the total shipments are 500 peak watts or above, please begin with Item 3.0 and complete the remainder of this form. If you answer "**No**" to all of item 2.1 (a) through (d) or the volume of the total shipments are less than 500 peak watts, please complete only items 2.2 and 7.0.

**2.2** If you answer "**No**" to all of items 2.1 (a) through (d), please report whether your company plans to manufacture, import, or ship photovoltaic module/cell in the future and, if yes, in what year.

**3.1** (a-i) Report only on activities that are photovoltaic-related.

**3.2** (a-h) Mark as appropriate if you are planning to introduce a new photovoltaic-related product. A new photovoltaic-related product is differentiated from a modified existing product if the "new" product is different enough to warrant a new model number and requires retesting or recertification under existing industry standards.

**3.3** Enter the total number of person-years expended on photovoltaic-related activities during the survey year. (See glossary of "Person Year" on page 8.)

**3.4** "Photovoltaic-related activities" includes all activities listed in Item 3.1.

**4.1** Enter the quantity (in peak kilowatts) of photovoltaic module/cell shipments for terrestrial use only. Photovoltaic modules/cells intended for applications in space programs (satellites, military projects, etc.) are to be excluded.

4.1 (1) *Total net module shipments* - Enter the quantity in peak kilowatts (not the number of modules) of net photovoltaic modules shipped for final consumption or to another organization for resale (including exports and imports) in the appropriate module/cell type column. (Net photovoltaic module is defined on page 8.) When exported, incomplete modules and un-encapsulated cells are also included. Total (column h) should be the total peak kilowatts of all module types in that row.

4.1 (2) *Total net cell shipments* - Enter the quantity in peak kilowatts (not the number of cells) of net photovoltaic cells shipped to end-users or non-photovoltaic original equipment manufacturers (including exports and imports) in the appropriate module/cell type column. (Net photovoltaic cell is defined on page 8.) Photovoltaic cells which are shipped to U.S. based photovoltaic module manufacturers should not be reported. Incomplete cells, such as wafers, should not be reported. Total (column h) should be the total peak kilowatts of all module types in that row.

4.1 (3) *Total quantity of shipments* - Sum under 4.1 (3) the quantities of 4.1 (1) and 4.1 (2) for all types (columns a through g) and Totals, (column h).

**4.2** Value (in dollars) of photovoltaic module/cell shipments in Item 4.1. The value reported should be total value received for modules/cells only at your company's net billing price, freight-on-board factory, including charges for cooperative advertising and warranties. Do not include excise taxes, freight, or transportation. Report values to the nearest dollar.

4.2 (1) *Value of net module shipments* - Enter under 4.2 (1) the total value of net photovoltaic modules in Item 4.1 (1). Total (column h) should be the total value of all module types in that row.

4.2 (2) *Value of net cell shipments* - Enter under 4.2 (2) the total value of net photovoltaic cells in Item 4.1 (2). Total (column h) should be the total value of all cell types in that row.

4.2 (3) *Total value of shipments* - Sum under 4.2 (3) the values of 4.2 (1) and 4.2 (2) for all types (columns a through g) and Totals, (column h).

**4.3** Enter the energy conversion efficiency of photovoltaic (PV) devices, which convert sunlight directly to electricity by means of PV cells/modules (under standard conditions) in percent of the energy in light converted to electricity.

**4.4** For each appropriate sector, enter the peak kilowatt quantity of module/cell domestic shipments (total shipments minus exports) by type as precisely as possible.

The market-sector categories in Item 4.4 are:

4.4 (1) *Residential* - Photovoltaic modules/cells that are used in distributed, grid connected photovoltaic systems to provide power for residential applications.

4.4 (2) *Commercial* - Photovoltaic modules/cells employed to produce power for commercial establishments, such as office buildings, hospitals, schools, retail establishments, Federal, State, and local governments; and other private and public organizations.

4.4 (3) *Industrial* - Photovoltaic modules employed to produce power for industrial applications. Includes both grid and non-grid connected systems.

4.4 (4) *Electric Power* - Photovoltaic modules/cells used to produce power at an utility-owned system including central stations, decentralized systems or experimental applications.

4.4 (5) *Transportation* - Photovoltaic modules/cells used to produce power on boats, cars, and recreational vehicles; and those used to power transportation support systems such as signs, illumination, warning signals, etc.

4.4 (6) *Total domestic shipments by sector* - Sum sector quantities and enter a total for each row [4.4 (1) - (6)] in column h. Next, sum columns a through h and enter a total in row 4.4 (6) for each column. These column totals should equal shipment totals entered under Item 4.1 (3) by column. The total domestic shipments entered for 4.4 (6) in column h should equal the total entered for Item 4.1 (3) in column h minus exports.

**4.5** For each end use, enter the peak kilowatt quantity of module/cell domestic shipments (total shipments minus exports) by type as precisely as possible.

The end-use categories in Item 4.5 are:

4.5 (1) *Health* - Photovoltaic modules/cells used in health/medical applications such as those used for powering medical refrigerators, medical equipment and for water purifications.

4.5 (2) *Water Pumping* - Photovoltaic modules/cells used for pumping water for agricultural, land reclamation, commercial and other similar applications where water pumping is the main use.

4.5 (3) *Transportation* - Photovoltaic modules/cells used on boats, cars, and recreational vehicles; and those used for transportation support systems such as signs, illumination, warning signals, etc.

4.5 (4) *Communication* - Photovoltaic modules/cells employed to power fixed base telecommunications equipment, such as mountain-top repeater stations. Modules/cells issued for space applications are not to be included in this survey.

4.5 (5) *Consumer goods* - Photovoltaic modules/cells used to power products such as portable radios, toys, watches, calculators, small battery chargers, etc. (Please specify on the bases of stabilized full sun rating.)

4.5 (6) *Electric Generation* - Grid interactive and remote or stand alone power generation for general uses, including those for grid distribution and general remote uses like: residential power and power for mobile homes.

4.5 (7) *To original equipment manufacturers (non-PV)* - Photovoltaic cells or modules shipped to non-photovoltaic original equipment manufacturers (OEM) that combines the cells into existing or newly developed product lines such as boats, cars, etc.

4.5 (8) *Total domestic shipments by end use* - Sum end-use quantities and enter a total for each row [4.5 (1) - (7)] in column h. Next, sum columns a through h and enter a total in row 4.5 (8) for each column. These column totals should equal shipment totals entered under item 4.1 (3) by column minus total exports under item 4.7 (3) by column. The total entered for 4.5 (8) in column h should equal the total entered for Item 4.1(3) in column h minus item 4.7 (3) column h total exports.

**4.6** Enter the quantity (in peak kilowatts) of imported photovoltaic modules/cells that represents the portion of photovoltaic shipments entered in item 4.1 (1) and (2) by module/cell type that were imported and shipped by your company.

4.6 (1) *Modules* - Enter the peak kilowatts of imported photovoltaic modules by type. This amount represents the portion of total shipments in Item 4.1 (1). Total (column h) should be the total peak kilowatts of all imported module types in that row.

4.6 (2) *Cells* - Enter the peak kilowatts of imported photovoltaic cells by type. This amount represents the portion of total shipments in Item 4.1 (2). Total (column h) should be the total peak kilowatts of all imported cell types in that row.

4.6 (3) *Total Imports* - Sum under 4.6 (3) the quantities of 4.6 (1) and 4.6 (2) for all types (columns a through g) and Total, (column h).

**4.7** Enter the quantity (in peak kilowatts) of exported photovoltaic modules/cells that represents the portion of photovoltaic shipments entered in item 4.1 (1) and (2) by module/cell type that were exported by your company.

4.7 (1) *Modules* - Enter the peak kilowatts of exported photovoltaic modules by type. This amount represents the portion of total shipments in Item 4.1 (1). Total (column h) should be the total peak kilowatts of all exported module types in that row.

4.7 (2) *Cells* - Enter the peak kilowatts of exported photovoltaic cells by type, including those cells that were shipped to foreign photovoltaic module manufacturers. This amount represents the portion of total shipments in item 4.1 (2). Total (column h) should be the total peak kilowatts of all exported cell types in that row.

4.7 (3) *Total Exports* - Sum under 4.7 (3) the quantities of 4.7 (1) and 4.7 (2) for all types (columns a through g) and Total, (column h).

**4.8** List the country(ies) from which photovoltaic modules/cells reported in Item 4.6 were imported, and provide the quantity (in peak kilowatts) of imports in Item 4.6 for each country listed.

**4.9** List the country(ies) to which photovoltaic modules/cells reported in Item 4.7 were exported, and provide the quantity (in peak kilowatts) of exports in Item 4.7 for each country listed.

**4.10** For each customer type, enter the domestic shipments of the modules/cells in peak kilowatts, the recipients of modules/cells immediately following manufacturing or warehousing. If recipients overlap (for example, the recipient is both a wholesaler distributor and an installer), report the recipients in the higher category (i.e., a is higher than b, b is higher than c, etc.).

**5.1** Enter the number of complete systems shipped from the total modules in Item 4.1 (1) (column h).

**5.2** Of the modules reported in Item 4.1 (1) (column h), enter the peak kilowatts that were sold as complete systems. (Complete system is defined as a unit with all the necessary functional components, except for installation materials.)

**5.3** The value reported should be the total value received for the complete systems at your company's net billing price, freight-onboard factory, including charges for cooperative advertising and warranties. (It should include the value of the associated modules.) Do not include excise taxes, freight or transportation charges, or installation charges. Report values to the nearest dollar.

**6.1** Please check the box for each State/U.S. territory or possession in which you manufactured. If you imported photovoltaic modules/cells also mark the "Imported" (Code 00) box. Then report the quantity (in peak kilowatts) of your company's photovoltaic modules/cells manufactured/imported. Report the quantity (in peak kilowatts) of your company's photovoltaic modules/cells manufactured in the State/U.S. territories listed below under Code 01-78. If some

photovoltaic modules/cells were imported from another country, please indicate under Code 00 the quantity (in peak kilowatts) and report details about the country of import in question 4.8.

**6.2** Please check the box for each State/U.S. territory or possession to which you shipped. If you exported photovoltaic modules/cells also mark the "Exported" (Code 00) box. Then report the quantity (in peak kilowatts) of your company's photovoltaic modules/cells shipped/exported. Report the quantity (in peak kilowatts) of your company's photovoltaic modules/cells shipped in the State/U.S. territories listed below under Code 01-78. If some photovoltaic modules/cells were exported to another country, please indicate under Code 00 the quantity (in peak kilowatts) and report details about the country of export in question 4.9.

**7.0** This item provides additional space for comments. For clarification purposes, identify item, line number and column (if applicable) for each comment.

## GLOSSARY

**Amorphous silicon:** An alloy of silica and hydrogen, with a disordered, noncrystalline internal atomic arrangement, that can be deposited in thin-film layers (a few micrometers in thickness) by a number of deposition methods to produce thin-film photovoltaic cells on glass, metal, or plastic substrates.

**Cast silicon:** Crystalline silicon obtained by pouring pure molten silicon into a vertical mold and adjusting the temperature gradient along the mold volume during cooling to obtain slow, vertically advancing crystallization of the silicon. The polycrystalline ingot thus formed is composed of large, relatively parallel, interlocking crystals. The cast ingots are sawed into wafers for further fabrication into photovoltaic cells. Cast silicon wafers and ribbon silicon sheets fabricated into cells are usually referred to as polycrystalline photovoltaic cells.

**Concentrator:** A reflective or refractive device that focuses incident insolation onto an area smaller than the reflective or refractive surface, resulting in increased insolation at the point of focus.

**Exports:** Shipments of goods from within the 50 States and the District of Columbia to U.S. possessions and territories or to foreign countries. Note: For the purpose of analyzing activity of the U.S. solar equipment manufacturers in the EIA-63A/B surveys, shipments to foreign countries only are considered exports. In addition to the 50 States and DC, shipments from U.S. possessions and territories to foreign countries are included as exports.

**Imports:** Receipts of goods into the 50 States and the District of Columbia from U.S. possessions and territories or from foreign countries. NOTE: For the purpose of analyzing activity of the U.S. solar equipment manufacturers in the EIA-63A/B surveys, receipts from foreign countries only are considered imports. In addition to the 50 States and DC, receipts into U.S. possessions and territories are included as imports.

**Net photovoltaic cell shipments:** Represents the difference between photovoltaic cell shipments and photovoltaic cell purchases.

**Net photovoltaic module shipment:** The difference between photovoltaic module shipments and photovoltaic module purchases.

**Peak kilowatt:** One thousand peak watts.

**Peak watt:** A manufacturer's unit indicating the amount of power a photovoltaic cell or module will produce at standard test conditions (normally 1,000 watts per square meter and 25 degrees Celsius).

**Person-year:** One whole year, or fraction thereof, worked by an employee, including contracted manpower. Expressed as a quotient (to two decimal places) of the time units worked during a year (hours, weeks, or months) divided by the like total time units in a year. For example: 80 hours worked is 0.04 (rounded) of a person-year; 8 weeks worked is 0.15 (rounded) of a person-year; 12 months worked is 1.0 person-year. Contracted manpower includes survey crews, drilling crews, consultants, and other persons who worked under contract to support a firm's ongoing operations.



**Photovoltaic cell (PVC):** An electronic device consisting of layers of semiconductor materials fabricated to form a junction (adjacent layers of materials with different electronic characteristics) and electrical contacts and being capable of converting incident light directly into electricity (direct current).

**Photovoltaic (PV) conversion efficiency:** The ratio of the electric power produced by a photovoltaic device to the power of the sunlight incident on the device.

**Photovoltaic module:** An integrated assembly of interconnected photovoltaic cells designed to deliver a selected level of working voltage and current at its output terminals, packaged for protection against environmental degradation, and suited for incorporation in photovoltaic power systems.

**Photovoltaic (PV) system:** A complete set of component for converting sunlight into electricity by the photovoltaic process, including the array and balance of system components.

**Ribbon silicon:** Crystalline silicon that is used in photovoltaic cells. Ribbon silicon is fabricated by a variety of solidification (crystallization) methods that withdraw thin silicon sheets from pools of relatively pure molten silicon.

**Silicon:** A semiconductor material made from silica, purified for photovoltaic applications.

**Single crystal silicon:** An extremely pure form of crystalline silicon produced by dipping a single crystal seed into a pool of molten silicon under high vacuum conditions and slowly withdrawing a solidifying single crystal boule (rod) of silicon. The boule is sawed into thin silicon wafers and fabricated into single-crystal photovoltaic cells.