Crystalline Silicon Photovoltaic Cells and Modules from China

Investigation Nos. 701-TA-481 and 731-TA-1190 (Preliminary)

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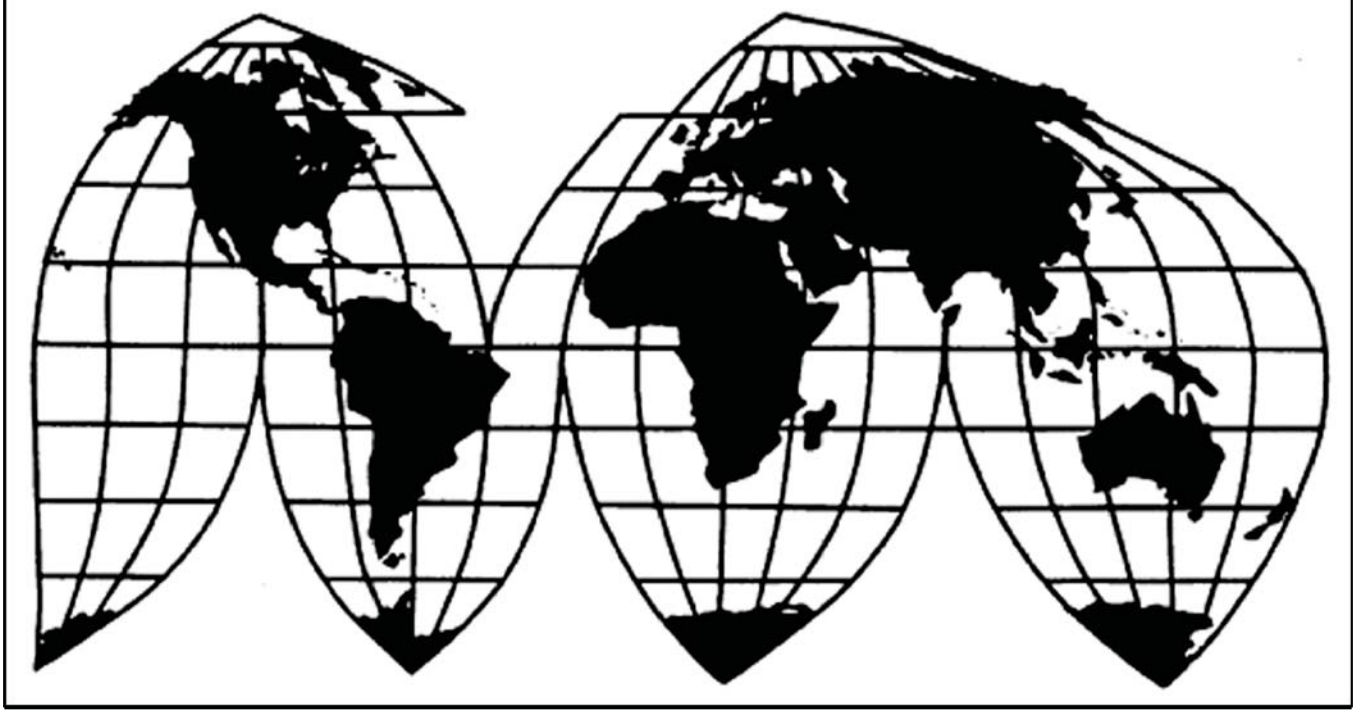
U.S. International Trade Commission



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CONTENTS

C O N T E N T S

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Note.--Information that would reveal confidential operations of individual concerns may not be published and therefore has been deleted from this report. Such deletions are indicated by asterisks.

UNITED STATES INTERNATIONAL TRADE COMMISSION

Investigation Nos. 701 TA-481 and 731-TA-1190 (Preliminary)

CRYSTALLINE SILICON PHOTOVOLTAIC CELLS AND MODULES FROM CHINA

DETERMINATIONS

On the basis of the record[1] developed in the subject investigations, the United States International Trade Commission (Commission) determines, pursuant to sections 703(a) and 733(a) of the Tariff Act of 1930 (19 U.S.C. §§ 1671b(a) and 1673b(a)) (the Act), that there is a reasonable indication that an industry in the United States is materially injured by reason of imports from China of crystalline silicon photovoltaic cells and modules, provided for in subheading 8541.40.60 (statistical reporting numbers 8541.40.6020 and 8541.40.6030) of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value (LTFV) and subsidized by the Government of China.

COMMENCEMENT OF FINAL PHASE INVESTIGATIONS

Pursuant to section 207.18 of the Commission's rules, the Commission also gives notice of the commencement of the final phase of its investigations. The Commission will issue a final phase notice of scheduling, which will be published in the *Federal Register* as provided in section 207.21 of the Commission's rules, upon notice from the Department of Commerce (Commerce) of affirmative preliminary determinations in the investigations under sections 703(b) or 733(b) of the Act, or, if the preliminary determinations are negative, upon notice of affirmative final determinations in those investigations under sections 705(a) or 735(a) of the Act. Parties that filed entries of appearance in the preliminary phase of the investigations need not enter a separate appearance for the final phase of the investigations. Industrial users, and, if the merchandise under investigation is sold at the retail level, representative consumer organizations have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to the investigations.

BACKGROUND

On October 19, 2011, a petition was filed with the Commission and Commerce by Solar World Industries America, Hillsboro, OR, alleging that an industry in the United States is materially injured or threatened with material injury by reason of LTFV and subsidized imports of crystalline silicon photovoltaic cells and modules from China. Accordingly, effective October 19, 2011, the Commission instituted countervailing duty investigation No. 701-TA-481 and antidumping duty investigation No. 731-TA-1190 (Preliminary).

Notice of the institution of the Commission's investigations and of a public conference to be held in connection therewith was given by posting copies of the notice in the Office of the Secretary, U.S. International Trade Commission, Washington, DC, and by publishing the notice in the *Federal Register* of October 27, 2011 (76 FR 66748). The conference was held in Washington, DC, on November 8, 2011, and all persons who requested the opportunity were permitted to appear in person or by counsel.

[1] The record is defined in sec. 207.2(f) of the Commission's Rules of Practice and Procedure (19 CFR § 207.2(f)).

VIEWS OF THE COMMISSION

Based on the record in the preliminary phase of these investigations, we find that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of crystalline silicon photovoltaic ("CSPV") cells and modules from China that are allegedly subsidized and sold in the United States at less than fair value ("LTFV").[1]

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATIONS

The legal standard for preliminary antidumping duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.[2] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[3]

II. BACKGROUND

The petition in these investigations was filed by SolarWorld Industries America, Inc. ("Petitioner"). Petitioner appeared at the staff conference and submitted a postconference brief. Parties opposing the petition at the conference included The Chinese Chamber of Commerce for Import and Export of Machinery and Electronic Products ("CCCME"), an affiliation of producers and exporters of the subject merchandise; Sun Edison, LLC ("Sun Edison"), a U.S. purchaser of CSPV cells and modules; SunTech Power Holdings, Ltd. a Chinese producer of CSPV cells; Trina Solar, Inc., a U.S. distributor of photovoltaic ("PV") products; and Solar Solutions, Inc., a U.S. distributor of PV products. Both CCCME and Sun Edison (collectively "Respondents") submitted postconference briefs.

U.S. industry data are based on the questionnaire responses of four U.S. producers of CSPV cells and fourteen U.S. producers of CSPV modules that accounted for the majority of U.S. production of CSPV cells and modules during the period of investigation. U.S. import data for subject and nonsubject imports are based on official Commerce statistics. The Commission received responses from twenty-four U.S. importers accounting for 53.0 percent of CSPV cells and 17.6 percent of CSPV modules imported from China in 2010.[4] Foreign industry data are based on responses to the Commission's foreign producer questionnaire.[5] The Commission received questionnaire responses from seven firms accounting for approximately *** percent of Chinese CSPV cell production in 2010 and *** percent of 2010 Chinese CSPV module production in 2010.[6]

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[1] See Separate Views of Commissioner Charlotte R. Lane.

[2] 19 U.S.C. § 1673b(a) (2000); see also American Lamb Co. v. United States, 785 F.2d 994, 1001-04 (Fed. Cir. 1986); Aristech Chem. Corp. v. United States, 20 CIT 353, 354-55 (1996). No party argued that the establishment of an industry is materially retarded by reason of the allegedly unfairly traded imports.

[3] American Lamb Co., 785 F.2d at 1001; see also Texas Crushed Stone Co. v. United States, 35 F.3d 1535, 1543 (Fed. Cir. 1994).

[4] CR/PR at IV-1.

[5] Confidential Report ("CR") at I-4 and Public Report ("PR") at I-3.

[6] CR/PR at VII-2.

III. DOMESTIC LIKE PRODUCT

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the "domestic like product" and the "industry."[7] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[8] In turn, the Tariff Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation . . . ."[9]

The decision regarding the appropriate domestic like product in an investigation is a factual determination, and the Commission has applied the statutory standard of "like" or "most similar in characteristics and uses" on a case-by-case basis.[10] No single factor is dispositive, and the Commission may consider other factors it deems relevant based on the facts of a particular investigation.[11] The Commission looks for clear dividing lines among possible like products and disregards minor variations.[12] Although the Commission must accept Commerce's determination as to the scope of the imported merchandise that is subsidized or sold at less than fair value,[13] the Commission determines what domestic product is like the imported articles Commerce has identified.[14]

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[7] 19 U.S.C. § 1677(4)(A).

[8] 19 U.S.C. § 1677(4)(A).

[9] 19 U.S.C. § 1677(10).

[10] See, e.g., Cleo, Inc. v. United States, 501 F.3d 1291, 1299 (Fed. Cir. 2007); NEC Corp. v. Department of Commerce, 36 F. Supp. 2d 380, 383 (Ct. Int'l Trade 1998); Nippon Steel Corp. v. United States, 19 CIT 450, 455 (1995); Torrington Co. v. United States, 747 F. Supp. 744, 749 n.3 (Ct. Int'l Trade 1990), aff'd, 938 F.2d 1278 (Fed. Cir. 1991) ("every like product determination 'must be made on the particular record at issue' and the 'unique facts of each case'"). The Commission generally considers a number of factors, including the following: (1) physical characteristics and uses; (2) interchangeability; (3) channels of distribution; (4) customer and producer perceptions of the products; (5) common manufacturing facilities, production processes, and production employees; and, where appropriate, (6) price. See Nippon, 19 CIT at 455 n.4; Timken Co. v. United States, 913 F. Supp. 580, 584 (Ct. Int'l Trade 1996).

[11] See, e.g., S. Rep. No. 96-249 at 90-91 (1979).

[12] Nippon, 19 CIT at 455; Torrington, 747 F. Supp. at 748-49; see also S. Rep. No. 96-249 at 90-91 (1979) (Congress has indicated that the like product standard should not be interpreted in "such a narrow fashion as to permit minor differences in physical characteristics or uses to lead to the conclusion that the product and article are not 'like' each other, nor should the definition of 'like product' be interpreted in such a fashion as to prevent consideration of an industry adversely affected by the imports under consideration.").

[13] See, e.g., USEC, Inc. v. United States, 34 Fed. Appx. 725, 730 (Fed. Cir. 2002) ("The ITC may not modify the class or kind of imported merchandise examined by Commerce."); Algoma Steel Corp. v. United States, 688 F. Supp. 639, 644 (Ct. Int'l Trade 1988), aff'd, 865 F.3d 240 (Fed. Cir.), cert. denied, 492 U.S. 919 (1989).

[14] Hosiden Corp. v. Advanced Display Mfrs., 85 F.3d 1561, 1568 (Fed. Cir. 1996) (the Commission may find a single like product corresponding to several different classes or kinds defined by Commerce); Cleo, 501 F.3d at 1298 n.1 ("Commerce's {scope} finding does not control the Commission's {like product} determination."); Torrington, 747 F. Supp. at 748-52 (affirming the Commission's determination defining six like products in investigations in which Commerce found five classes or kinds).

A. Scope Definition

In its notice of initiation, the U.S. Department of Commerce ("Commerce") defined the imported merchandise within the scope of these investigations as follows:

> Crystalline silicon photovoltaic cells, and modules, laminates, and panels, consisting of crystalline silicon photovoltaic cells, whether or not partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials. These investigations cover crystalline silicon photovoltaic cells of thickness equal to or greater than 20 micrometers, having a p/n junction formed by any means, whether or not the cell has undergone other processing, including, but not limited to, cleaning, etching, coating, and/or addition of materials (including, but not limited to, metallization and conductor patterns) to collect and forward the electricity that is generated by the cell.
>
> Subject merchandise may be described at the time of importation as parts for final finished products that are assembled after importation, including, but not limited to, modules, laminates, panels, building-integrated modules, building-integrated panels, or other finished goods kits. Such parts that otherwise meet the definition of subject merchandise are included in the scope of these investigations. Excluded from the scope of these investigations are thin film photovoltaic products produced from amorphous silicon (a-Si), cadmium telluride (CdTe), or copper indium gallium selenide (CIGS).
>
> Also excluded from the scope of these investigations are crystalline silicon photovoltaic cells, not exceeding 10,000mm^2 in surface area, that are permanently integrated into a consumer good whose function is other than power generation and that consumes the electricity generated by the integrated crystalline silicon photovoltaic cell. Where more than one cell is permanently integrated into a consumer good, the surface area for purposes of this exclusion shall be the total combined surface area of all cells that are integrated into the consumer good.[15] [16]

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[15] 76 Fed. Reg. 70966. Merchandise covered by these investigations is currently classified in the Harmonized Tariff System of the United States (HTS) under subheadings 8501.61.0000, 8507.20.80, 8541.40.6020 and 8541.40.6030. CR at I-6, PR at I-7.

[16] On November 7, 2011, Petitioner filed a request at Commerce to revise the scope language. In its request, Petitioner proposed that the scope be revised , in pertinent part, to state as follows:

> The merchandise subject to these proceedings consists of crystalline photovoltaic ("PV") cells and modules and panels, whether or not partially or fully assembled into other products, including but not limited to, panels laminates, and building integrated materials . . . .
>
> These proceedings cover crystalline silicon PV cells whether exported directly to the United States, or via third countries; crystalline silicon PV modules/panels produced in the PRC; regardless of the country of manufacture of cells used to produce the modules or panels, and whether exported directly to the United States, or via third countries; and crystalline silicon PV cells manufactured in the PRC, whether exported directly to the United States, or via third countries.

Petitioner indicated that it always intended to include CSPV modules produced and imported from China using

B. Product Description

CSPV cells and modules (commonly referred to as panels) are made from crystalline silicon and are the building blocks of solar CSPV systems. Solar CSPV systems convert sunlight (photons) into electricity for on-site use or for distribution through the electric grid.

CSPV cells use crystalline silicon to convert sunlight directly into electricity. The cells have a positive layer, a negative layer, and a positive-negative junction ("p/n junction"). Positive and negative charge carriers are released in the cells when sunlight strikes the cell, causing electrical current to flow.[17] CSPV cells can be monocrystalline (also referred to as "c-Si") which have a single crystal lattice, or multi-crystalline (also referred to as "polycrystalline" or "mc-Si") which have variable crystal lattice patterns. Monocrystalline cells are made from a single grown crystal and tend to have a higher conversion efficiency[18] than polycrystalline cells, which are made from several crystals and have a random crystal structure. Most cells are five inches by five inches or six by six inches and have an output of 3 to 4.5 watts.[19]

CSPV cells typically are the main input of CSPV modules. CSPV modules are made from cells that are conductively connected to one another in the form of a string or matrix. The matrix or string of cells is laminated to strengthen and weather-proof the cells and may be framed, depending on how and where the module is to be used. Additionally, an electrical junction box is soldered or joined to the module. Once these tasks are performed, the CSPV module is considered complete.[20]

There are four primary market segments for CSPV cells and modules. Three of these market segments are residential, nonresidential, and utility, which are considered on-grid markets. The fourth market segment is the off-grid market. CSPV modules are often installed as a system of panels on or above the roofs of residential and non-residential buildings, as free field installations or as stand alone units. The module is the main component of the installation, accounting for about half of the installation cost.[21] The same type of module generally is used in grid-connected applications as in off-grid applications. Modules ranging from 225 to 230 watts are popular for residential applications. Modules

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CSPV cells from nonsubject sources; and modules from nonsubject countries processed from CSPV cells manufactured in China in the scope of the investigation. It stated that it submitted the revision to clarify its intention. Conference Tr. at 186 (Brightbill). Commerce, however, declined to adopt the change in its notice of initiation. 76 Fed. Reg. 70960 (Nov. 16, 2011).

We note that Commerce permitted the parties to submit comments related to the definition of subject merchandise by November 28, 2011, for purposes of Commerce's preliminary determination. Despite what Commerce may later decide, the Commission must make preliminary determinations based upon the dumping margin or margins published by Commerce in its notice of initiation of the investigation. 19 U.S.C. 1677(35)(c)(i); see also Co-Steel Raritan, Inc. v. United States, 357 F.3d 1294 (Fed. Cir. 2004).

It is unclear from the current scope language, however, whether CSPV modules produced in China from CSPV cells from nonsubject sources and CSPV modules processed in nonsubject countries from CSPV cells produced in China are within the scope of the investigation as Petitioner indicated at the conference. We discuss data issues raised by the current scope language in section VI. B. below.

[17] CR at I-8-I-9, PR at I-7-I-8.

[18] Conversion efficiency is the percent of sunlight that is converted into electricity. CR at I-11 n.17, PR at I-9 n.17.

[19] CR at I-9, PR at I-7.

[20] CR at I-9, PR at I-7.

[21] There are a number of other components of the installation, which are called the balance of the system ("BOS"). The BOS includes components such as the inverter and the racking on which the system is installed. CR at I-13, PR at I-10.

ranging from 275 watts to 300 watts are used for large solar installations such as commercial buildings. Off-grid modules are usually less than 200 watts and often are smaller than on-grid modules.[22]

Residential CSPV systems are typically installed on the roofs of individual homes. In 2010, the average size of a residential PV installation in the United States was 5.7 kilowatts ("kW"). The electricity generated by the system is used for power in the individual home. When the electricity generated by the solar power system is insufficient, the homeowners use electricity from the electric grid.[23] Non-residential CSPV systems are installed at commercial, industrial, government, and other similar types of buildings and sites. Although typically larger than residential installations, with an average of 81 kW in 2010, non-residential systems function similarly, providing electricity to meet on-site needs and pulling electricity from the electric grid when needed.[24] CSPV systems used in the utility market segment are the largest CSPV systems and typically are ground-mounted, averaging more than 1,450 kilowatts ("kW") per installation. These systems generally provide electricity directly to the electric grid for sale to customers rather than for on-site use.[25] The off-grid market includes a range of uses such as water pumping and purification systems, emergency phones, homes in remote locations, telecommunication systems, and military applications.[26]

C. Analysis

There are three issues with respect to the definition of domestic like product that we must address in these investigations: (1) whether to expand the domestic like product beyond the scope to encompass thin film products; (2) whether cells and modules should be separate domestic like products; and (3) whether grid-connected and off-grid products should be separate domestic like products. We address these three issues below.

1. Whether the domestic like product should include thin film products.

Respondents argue that the domestic like product should be expanded beyond the scope of these investigations to include thin film products. Petitioner disagrees.

Physical Characteristics and End Uses. Both CSPV cells/modules and thin film products are used in solar power-generation systems that convert sunlight into electricity.[27] CSPV cells are made from crystalline-silicon and are round, quasi-square, or square in shape and typically are 50 micrometers or more in thickness. CSPV cells are connected together and laminated to form CSPV panels. Thin film products are made from a thin layer of a compound, such as cadmium telluride, copper indium, or amorphous silicon, which is deposited directly onto a glass, stainless steel, or plastic substrate and takes on the form of the substrate to which the compound is applied.[28] Certain thin film modules that are made using a plastic or stainless steel substrate tend to be flexible and lightweight. Thin film solar products typically are thinner than CSPV cells. Both thin film systems and CSPV systems can be ground-mounted or roof-mounted and also generally require an inverter and other BOS components.[29]

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[22] CR at I-13, PR at I-10.

[23] CR at I-13, PR at I-10.

[24] CR at I-14, PR at I-11-I-12.

[25] CR at I-15, PR at I-12.

[26] CR at I-16, PR at I-12.

[27] CR at I-13, I-25, PR at I-10, I-19.

[28] Petition Vol. 1 at 17.

[29] CR at I-26-I-27, PR at I-19-I-20.

Because CSPV products and thin film products are made from different materials, the conversion efficiencies of the two types of products differ, with thin film products generally being the less efficient of the two. While conversion efficiencies vary by technology type, there is some overlap in the efficiencies of CSPV modules and thin film modules. Moreover, although thin film products may be generally less efficient than CSPV modules, thin film products are able to generate electricity with lower levels of sunlight. Additionally, CSPV modules typically have wattage outputs of 120 to 300 watts while thin film products generally range from 60 watts to 350 watts.

Both CSPV and thin film modules are used in all three major grid-connected market segments – residential, commercial, and utility – and in the off-grid market segment. According to Petitioner, because thin film products often require environments without significant space limitations, these products are used predominately in the utility market segment. Although Respondents emphasize thin film products usage in all market segments, they acknowledge that thin film module use in the residential and non-residential segments is less prevalent.[30] Additionally, both CSPV and thin film products are used in building integrated products.[31]

Common Manufacturing Facilities, Production Processes, and Production Employees. CSPV cells/modules are produced through several technologically sophisticated processing steps including the growth of crystals from crystalline silicon, production of wafers, and the conversion of wafers into cells capable of generating electricity. Assembly of modules typically involves connecting the cells, mating the cell strings, laminating the matrix with glass, encasing the laminated cells and glass in a frame, and soldering or joining an electric box to the module.[32] In contrast, thin film products are produced by directly placing thin photovoltaic material (e.g., amorphous silicon, cadmium telluride, copper gallium selenide) onto dye-sensitized substrate such as glass or stainless steel.[33]

As Respondents acknowledge, because the production of CSPV cells/modules and thin film products involve very different technologies, they are manufactured in different facilities using different employees.[34] There is no U.S. manufacturer that produces both CSPV and thin film modules in the same manufacturing facilities, using the same equipment, or with the same employees.[35]

Interchangeability. Petitioner claims that the different physical characteristics of CSPV and thin film products limit their interchangeability. Specifically, because thin film panels are less efficient and have lower wattage outputs, more thin film modules are needed to produce the same wattage as CSPV modules. As a result, thin film products weigh more and require more space for installation. Petitioner states that thin film products are therefore used in the utility sector of the market and are not suitable in places in which space is limited, such as residential roof-tops and commercial applications.[36] Respondents claim that the two products are interchangeable in the marketplace and compete in all market segments.[37] Sun Edison states that it uses both products in its power generation systems.[38]

The record indicates that thin film modules can be used in all three of the major grid-connected market segments and in the off-grid market. Additionally, the more flexible and lightweight thin film

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[30] Sun Edison Brief at 7.

[31] CR at I-10, I-26, PR at I-8, I-19. Building integrated products are building materials that incorporate solar cells, such as solar shingles and solar windows. CR at I-10, PR at I-8.

[32] CR at I-31-32, PR at I-22-I-23.

[33] CR at I-32, PR at I-23.

[34] CCCME Brief at 15; Sun Edison Brief at 14; CR at I-32, PR at I-23.

[35] CR at I-32, PR at I-23.

[36] Petitioner Brief Ex. 1 at 14-15.

[37] CCCME Brief at 11-12; Sun Edison Brief at 7-8.

[38] Sun Edison Brief at 7-8.

modules can be used on rooftops that are not able to hold a significant amount of weight.[39] As noted earlier, Respondents acknowledge that thin film module use in the residential and non-residential segments is less prevalent than in the utility segment of the market.

Producer and Customer Perceptions. Petitioner claims that customers and producers generally perceive CSPV cells to be the established PV technology with high efficiency and thin- film products as a newer technology that is less efficient than CSPV products.[40] Respondents maintain that customers and producers perceive both products to be similar and in direct competition with each other. They also claim that customers, especially large solar project developers, will consider bids for both types of technology.[41]

Channels of Distribution. Petitioner indicates that CSPV and thin film products are sold in different channels of distribution. Specifically, it notes that CSPV modules are sold to distributors and installers in the residential and nonresidential segments of the market and thin- film products are sold generally to utilities.[42] Respondents claim that the channels of distribution for both types of products are identical as both are sold directly to utilities and both are sold to wholesalers and distributors for resale in the residential and commercial segments.[43] Within the utility segment, the record indicates that there might be an additional distinction, with thin film sales occurring primarily through bilateral negotiations, while CSPV installations are sold more often through a reverse auction process.[44]

Price. Petitioner states that, given the different technologies and raw material inputs, CSPV and thin film products have different cost structures. Generally, thin film solar panels are less costly to produce and are therefore priced lower than CSPV products.[45] Respondents indicate that while thin film products may be less expensive than CSPV products on a per watt basis, they are priced competitively when the full installation costs are taken in consideration. They note that more BOS components generally are required in a thin film system than in a CSPV system and this increases the total cost. According to Respondents the higher price for a thin film system is due to the fact that a thin film system of a particular capacity will generally require more land, more labor, more structure, and more wiring than a CSPV system of the same capacity.[46]

Conclusion. We find that whether to expand the domestic like product beyond the scope to include thin film products is a close question. CSPV products and thin film products have different chemical compositions and physical characteristics that affect the inherent properties of each and may limit their interchangeability. In particular, thin film products tend to be less efficient than CSPV modules and thin film systems require more panels than CSPV systems to achieve comparable efficiencies and output. To a large degree, these distinctions result in the sales of thin film products being concentrated in the utility segment of the market, while CSPV systems are not so limited and are used more broadly in all market segments. When serving different market segments, they are generally sold in different channels of distribution. Finally, the parties agree that prices for CSPV and thin film products differ on a per watt basis, with a total film system generally more expensive than a total CSPV system of the same capacity. The evidence, however, is mixed as to whether the established PV technology and newer thin film product technology are perceived by producers and customers to compete with each other.

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[39] CR at I-28, PR at I-21.

[40] Petitioner Brief Ex. 1 at 19.

[41] CCCME Brief at 12-14.

[42] Petitioner Brief Ex. 1 at 16-18, Petition at 19-20.

[43] CCCME Brief at 12; Sun Edison Brief at 13.

[44] Petitioner Brief Ex 1 at 16-19.

[45] Petitioner Brief Ex. 1 at 11.

[46] CCCME Brief at 16.

Based on the evidence in the record, we do not expand the definition of domestic like product beyond the scope to include thin film products. We will, however, revisit this issue in any final phase investigations.

2. Whether CSPV cells and modules should be separate like products.

Because CSPV cells are an intermediate product whose ultimate use is to be processed into modules, we use the semifinished like product analysis to examine whether they should be in the same domestic like product.[47] We note that no party has advocated that we define CSPV cells and modules as two separate like products.

Whether Upstream Article is Dedicated to Production of Downstream Article. CSPV cells are dedicated to the production of the final product, CSPV modules. Only a very small portion of domestic cell production is used for products other than assembled modules.[48]

Independent Markets for Upstream and Downstream Articles. In essence, both PV cells and modules are the building blocks of solar photovoltaic power generation systems. Cells are strung together into modules to increase the power generated by the module. The modules are then interconnected into a power generation system to achieve the total wattage for a particular project, regardless of the market segment.[49]

Cells are typically either internally consumed by vertically integrated firms to produce modules or are sold to module assemblers. Moreover, the merchant market in the United States for cells produced domestically is very small. In 2010, only *** percent of total cells produced were sold commercially and most of these cells were used for module assembly.[50] [51]

Differences in Physical Characteristics and Functions of the Upstream and Downstream Articles. Both cells and modules are made from crystalline silicon and ultimately convert sunlight directly into electricity through photovoltaic effect. Modules are groups of cells conductively connected into a string, and laminated with special solar glass and other materials to facilitate electricity generation and protect the cells. Thus, the physical characteristics and functions of cells and modules essentially are the same.[52]

Differences in Cost or Value of the Vertically Differentiated Articles. There is a moderate difference in the cost or value of cells and final module products. The most expensive step in the production of the final product, modules, is the crystallization of cells themselves, which involve several capital intensive steps, namely, growing the crystals, producing the wafers, and then converting the

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[47] In the semifinished products analysis, the Commission examines the following: (1) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (2) whether there are perceived to be independent markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles. The semifinished product analysis generally is applied to assess whether products at different stages of processing that are vertically related to each other should be included in the same like product. See e.g., Drill Pipe and Drill Collars from China, Inv. Nos. 701-TA-474 and 731-TA-1176 (Preliminary), USITC Pub. 4127 (March 2010) at 7 (involving green tubes and finished drill pipe).

[48] Petitioner Brief Ex.1 at 3.

[49] Petitioner Brief Ex.1 at 3-4.

[50] Petitioner Brief Ex.1 at 3-4.

[51] Commissioner Pinkert focuses here on the fact that most cells produced by the domestic industry are either consumed internally or exported to related parties, which results in a very limited market for domestically produced cells. CR/PR at Table III-5.

[52] CR at I-11, PR at I-9.

wafers into cells capable of generating electricity. The U.S. producer data submitted to the Commission indicate that the CSPV cell accounted for *** percent of the total cost of goods sold for modules in 2010.[53]

Significance and Extent of Processes Used to Transform Upstream into Downstream Articles. Production of the finished product, modules, involves four primary steps – crystallization, wafer production, cell conversion, and module assembly – along with packing and inspection of the final product. CSPV cells undergo only one additional production step, the assembly into modules, before transformation into the finished product.[54]

Conclusion. The record indicates that nearly all CSPV cells are dedicated to the production of PV modules; both cells and modules are sold in similar markets; both CSPV cells and modules share the same primary physical characteristics; cells represent a substantial portion of the cost and the value of a finished module; and cells undergo only one major production step before transformation into modules. We therefore define cells and modules as one domestic like product.

3. Whether "off-grid" modules should be a separate domestic like product.

We also have considered whether "off-grid" modules should be considered a separate domestic like product from grid-connected CSPV cells and modules. "Off-grid" modules are modules that are used in CSPV systems that are designed to operate outside an electrical grid.[55] Petitioner argues that "off-grid panels" should be included with the definition of domestic like product under the Commission's traditional six-factor analysis. Respondents have not raised any arguments with respect to this issue.

The record indicates that "off-grid" modules are not produced domestically.[56] Where there is no domestic production of an article described in the scope, the Commission must include "the most similar" article that is domestically produced in the like product.[57] In this instance, the product most similar to the subject merchandise would be grid-connected CSPV cells and modules.

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[53] CR/PR at V-1.

[54] Petitioner Brief at 6.

[55] CR at I-14, PR at I-11.

[56] CR at I-24 n.64, PR at I-19 n.64.

[57] See, e.g., Certain Cold-Rolled Steel Products from Argentina, Australia, Belgium, Brazil, China, France, Germany, India, Japan, Korea, the Netherlands, New Zealand, Russia, South Africa, Spain, Sweden, Taiwan, Thailand, Turkey, and Venezuela, Inv. Nos. 701-TA-422-425 (Preliminary) and 731-TA-964-983 (Preliminary), USITC Pub. 3471 (November 2001) at 5-6, n. 21; Silicomanganese from India, Kazakhstan, and Venezuela, Inv. Nos. 731-TA-929-931 (Preliminary), USITC Pub. 3427 (May 2001) at 4-5 & n. 15; Synthetic Indigo from China, Inv. No. 731-TA-851 (Preliminary), USITC Pub. 3222 at 7 (Aug. 1999) ("[S]ince indigo slurry is within the scope of the investigation, and there is no domestic production of indigo slurry for domestic sales, the `domestic like product' is the product `most similar in characteristics and uses with' the subject imports"); Extruded Rubber Thread from Malaysia, Inv. No. 753-TA-34, USITC Pub. 3112 at 5 (June 1998) (Since domestic production of food-grade ERT product "d[id] not exist in any practical sense," the Commission concluded it could not be considered a domestic like product); Professional Electric Cutting and Sanding/Grinding Tools from Japan, Inv. No. 731-TA-571 (Preliminary), USITC Pub. 2536 at 17 (July 1992) ("The Commission has rejected `the notion that a like product could be defined as a product not produced by a U.S. industry.' Such proposals ignore our obligation under the statute to determine which U.S.-made products are like or most similar to the imports under investigation"); Nepheline Syenite from Canada, Inv. No. 731-TA-525 (Final), USITC Pub. 2502 at 7 (April 1992) (Since nepheline syenite was not produced in the United States, the Commission defined the domestic like product to include two similar products, feldspar and aplite.), aff'd, Feldspar Corp. v. United States, 825 F. Supp. 1095 (Ct. Int'l Trade 1993).

Conclusion. For the reasons discussed above, for purposes of these preliminary investigations, we define a single domestic like product, CSPV cells and modules, that is coextensive with the scope of these investigations as defined by Commerce.

IV. DOMESTIC INDUSTRY

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[58] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

Petitioner asks the Commission to determine that there is one domestic industry comprised of the U.S. producers that produce crystalline silicon PV cells and modules as defined by the scope of the investigations.[59] In so doing, Petitioner argues that producers that assemble modules in the United States engage in sufficient production-related activities to be considered part of the domestic industry. Petitioner, however, argues that the Commission should exclude certain related parties from the domestic industry. Respondents have not raised any arguments with respect to the definition of the domestic industry.

For the reasons discussed below, we define the domestic industry as producers of the domestic like product, i.e., all U.S. manufacturers of CSPV cells and modules.

1. Sufficient Production-Related Activities

When assessing the nature and extent of production-related activities associated with particular operations, the Commission usually applies a six-factor framework:

(1) source and extent of the firm's capital investment;
(2) technical expertise involved in the production activities;
(3) value added to the product;
(4) employment levels;
(5) quantity, type and source of parts; and
(6) any other costs and activities directly leading to production of the like product.

No single factor is determinative and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. The Commission has repeatedly emphasized the sui generis nature of this inquiry.[60]

a. Analysis

Source and extent of the firm's capital investment. Petitioner states that, although the critical technology, intellectual property, and capital investment are most concentrated in the cell stage of

[58] 19 U.S.C. § 1677(4)(A).

[59] Petitioner Brief at 4.

[60] See Lightweight Thermal Paper from China, Germany, and Korea, Inv. No. 701-TA-451 and 731-TA-1126 to 1128 (Prelim.), USITC Pub. 3964 at n.76 (Nov. 2007); Diamond Sawblades and Parts Thereof from China and Korea, Invs. Nos. 731-TA-1092 to 1093 (Final), USITC Pub. 3862 at 8-11 (Jul. 2006) (assemblers included in the industry); Certain Frozen or Canned Warmwater Shrimp and Prawns from Brazil, China, Ecuador, India, Thailand, and Vietnam, Invs. Nos. 731-TA-1063-68 (Final), USITC Pub. 3748 at 12-14 (Jan. 2005)

production, module assembly operations also require continuing research and development and capital expenditures in order to improve crystalline silicon PV technology, increase manufacturing efficiencies, and lower costs. In 2010, reported capital expenditures for cell production were $***, while reported capital expenditures for module production were $***.[61]

Technical expertise involved in U.S. production activities. Production of crystalline silicon PV cells is highly automated and involves several technologically sophisticated processing steps including the growth of crystals, production of wafers, and the conversion of wafers into cells capable of generating electricity. Assembly of modules typically involves connecting the cells, mating the cell strings, laminating the matrix with glass, encasing the laminated cells and glass in a frame, and soldering or joining an electric box to the module. According to Petitioner, the module assembly process is more labor intensive than cell production, but nonetheless is a highly automated and sophisticated process.[62]

Value added to the product in the United States. Although CSPV cells account for the greater proportion of the cost and value of a finished solar panel, module assembly operations account for approximately *** percent of the total cost of production of a finished module.[63] In 2010, CSPV module assembly costs expended by module producers were $***.[64]

Employment levels. Module assembly accounts for the majority of labor production costs in the production of the finished module. Producers of modules employ *** production and related workers than producers of cells.[65]

Quantity and type of parts sourced in the United States. Most cells used in the production of finished modules are sourced in the United States.[66] The remainder are imported from nonsubject countries and China.[67]

Any other costs and activities in the United States directly leading to production of the like product. In 2010, U.S. CSPV cell assets of the *** domestic cell producers were $***, while U.S. module assets amounted to close to $***.[68]

Conclusion. Module operations have substantial capital investments and other costs, and require significant technical expertise and a large number of employees for the production of the finished module. Additionally, assembly of cells into modules adds significant value to the finished module. Accordingly, we find that U.S. module assemblers engage in sufficient production-related activities to include them as part of the domestic industry (and their finished products as shipments of the domestic like product).

2. Related Parties

We must determine whether any producer of the domestic like product should be excluded from the domestic industry pursuant to 19 U.S.C. § 1677(4)(B). Subsection 1677(4)(B) allows the Commission, if appropriate circumstances exist, to exclude from the domestic industry producers that are related to an exporter or importer of subject merchandise or which are themselves importers.[69] Exclusion

[61] CR/PR at Tables VI-8 and VI-9.

[62] Petitioner Brief at 6.

[63] Petitioner Brief at 6.

[64] Petitioner Brief at 6.

[65] CR/PR at Table III-9.

[66] Petitioner Brief at 7.

[67] Petitioner Brief at 7.

[68] Petitioner Brief at 7.

[69] 19 U.S.C. § 1677(4)(B).

of such a producer is within the Commission's discretion based upon the facts presented in each investigation.[70]

Petitioner argues that four firms - Evergreen, SunTech, Motech, and Wanxiang - should be excluded from the domestic industry based on the statutory related party provision.[71] Respondents do not make any arguments concerning related party issues. In addition to the four firms identified by Petitioner, there are five other firms, ***, that fall within the definition of related parties by virtue of their affiliation with a subject exporter and/or their importation of subject imports during the period of investigation.

We note that ***, reported importing subject merchandise only after June 30, 2011.[72] The Commission did not collect financial data for any U.S. producer after the end of June, thus rendering the question of whether to exclude *** essentially moot. Additionally, one of the other firms, ***, did not report U.S. production of CSPV cells or modules during the period of investigation.[73] As such, *** was not a domestic producer during the period of investigation and therefore it is not considered as part of the domestic industry. We therefore analyze whether there are appropriate circumstances to exclude the remaining six firms from the domestic industry.

a. ***

*** qualifies as a related party because it imported subject merchandise during the period of investigation. The company is the *** producer of cells and modules. It imported *** cells from China in 2008, which were equivalent to *** percent of its domestic production of cells for that year.[74] It does not appear that *** derived a significant benefit from its importation of the subject merchandise in 2008, as it *** for that year.[75] We do not exclude *** from the domestic industry as a related party because it is the ***, the *** producer, its primary interest is in domestic production rather than importation, no party argued for its exclusion, and exclusion of its data would skew the data on the domestic industry.[76] [77]

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[70] The primary factors the Commission has examined in deciding whether appropriate circumstances exist to exclude a related party include the following:

(1) the percentage of domestic production attributable to the importing producer;

(2) the reason the U.S. producer has decided to import the product subject to investigation, i.e., whether the firm benefits from the LTFV sales or subsidies or whether the firm must import in order to enable it to continue production and compete in the U.S. market; and

(3) the position of the related producer vis-a-vis the rest of the industry, i.e., whether inclusion or exclusion of the related party will skew the data for the rest of the industry.

See, e.g., Torrington Co. v. United States, 790 F. Supp. 1161 (Ct. Int'l Trade 1992), aff'd without opinion, 991 F.2d 809 (Fed. Cir. 1993).

The Commission has also concluded that a domestic producer that does not itself import subject merchandise, or does not share a corporate affiliation with an importer, may nonetheless be deemed a related party if it controls large volumes of imports. The Commission has found such control to exist where the domestic producer was responsible for a predominant proportion of an importer's purchases and the importer's purchases were substantial. See, e.g., Foundry Coke from China, Inv. No. 731-TA-891 (Final), USITC Pub. 3449 (September 2001) at 8-9.

[71] Petition at 22-25.

[72] CR/PR at Table III-7 n. 1 and 2.

[73] CR at III-14 n.4, PR at III-5 n.4.

[74] Calculated from CR at Table III-7.

[75] CR/PR at Table VI-5.

[76] Consistent with her practice in past investigations and reviews, Commissioner Aranoff does not rely on individual-company operating income margins, which reflect a domestic producer's financial operations related to production of the domestic like product, in assessing whether a related party has benefitted from importation of subject merchandise. Rather, she determines whether to exclude a related party based principally on its ratio of

Evergreen, a domestic producer of CSPV cells during the period of investigation, is a related party as a result of a joint venture it formed with a Chinese subject producer in 2010.[78] Evergreen shut down its U.S. production operations in March 2011 and, according to Petitioner, moved its production to China due to its inability to compete with Chinese imports.[79] Evergreen, however, did not import or purchase subject merchandise during the period examined.[80] As it had throughout the period of investigation, Evergreen reported *** in 2010 and January-June 2011 ("interim 2011"), the period of time that would have been affected by the joint venture.[81] Evergreen accounted for *** percent of U.S. production of CSPV modules in 2010.[82] We do not find that appropriate circumstances exist to exclude Evergreen from the domestic industry because there is no clear indication that it has benefitted from its joint venture. Moreover, given that the record suggests that Evergreen's move to China may be due in part to its inability to compete with Chinese imports, we find it would be anomalous to exclude a producer's data when that producer appears to have been driven out of business by the effects of subject imports.

b. U.S. cell producers

*** producer of CSPV cells, also qualifies as a related party because it imported cells and modules from China. The company ***.[83] *** imported *** cells from China in 2008 and *** cells in 2009, corresponding to approximately *** and *** percent, respectively of its cell production for each of those two years.[84] *** also imported *** modules from China in 2009, *** modules from China in 2010, *** modules in interim 2010, and *** modules in 2011.[85] Because *** imported subject CSPV cells in just the first two years of the period of investigation and its imports of subject CSPV modules declined, we find that its interest lies in domestic production rather than importation. As with many of the U.S. producers, *** reported *** throughout the period.[86] *** accounted for only *** percent of U.S. CSPV cell production in 2010.[87] For all of these reasons, we find that appropriate circumstances do not exist to exclude *** from the domestic industry as a related party.

c. U.S. Module Producers

Three U.S. producers of CSPV modules are related parties due to their importation of subject merchandise during the period of investigation. Analysis of whether appropriate circumstances exist to

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subject imports to domestic production and whether its primary interests lie in domestic production or importation.

[77] Commissioner Pinkert does not rely upon financial performance as a factor in determining whether there are appropriate circumstances to exclude related parties from the domestic industry in these investigations. The record is not sufficient to infer from their profitability on U.S. operations whether they have derived a specific benefit from importing. See Allied Mineral Products v. United States, 28 CIT 1861, 1865-67 (2004).

[78] Petition Vol. I at Ex. 24.

[79] CR at III-14 n.4, PR at III-5 n.4; Petition Vol. I at 25, Ex.24.

[80] CR at III-14 n.4, PR at III-5 n.4.

[81] CR/PR at Table VI-5.

[82] CR/PR at Table III-1.

[83] CR/PR at Table III-1.

[84] Calculated from CR at Table III-7.

[85] CR/PR at Table III-7.

[86] CR/PR at Table VI-5.

[87] CR/PR at Table III-1.

exclude any of these producers from the domestic industry is complicated by the fact that most of their imports of subject merchandise were of CSPV cells that they used in their production of modules. Ordinarily, we would consider the ratio of imports to the related party's production to determine whether a related party's interest lies with domestic production or importation. Given that these firms import cells and produce multi-cell modules, this ordinary analysis is inappropriate because there is not a one-to-one correlation of imported cells to assembled modules. Additionally, cells used by these particular assemblers are imported from subject and nonsubject sources which makes it difficult to ascertain the degree of financial benefit, if any, that has been derived from each of these firm's importation of the subject merchandise or imports from nonsubject sources. We, therefore, have considered the ratio of subject imports to total imports of each of these producers as well as the other factors we generally consider in determining whether appropriate circumstances exist to exclude any of these module producers.[88]

***, the *** reporting producer of CSPV modules, qualifies as a related party by virtue of its importation of subject merchandise during the period of investigation. ***, imported *** cells from China in 2010 and *** cells from China in interim 2011, compared to *** cells imported from China in interim 2010.[89] Its ratio of subject imports to nonsubject imports was *** percent in 2010 and was higher at *** percent in interim 2011.[90] Whether or not it derived any benefits from its imports from China is unclear. *** increased its U.S. production of modules from *** units in 2009 to *** units in 2010, and from *** units in interim 2010 to *** units in interim 2011, but reported *** in 2010 and *** in interim 2011.[91] *** accounted for *** percent of U.S. production of CSPV module production in 2010.[92] For these reasons, we determine that *** should not be excluded from the domestic industry for purposes of these preliminary investigations, but intend to revisit this issue in any final phase investigations.[93]

SunTech is a subsidiary of a Chinese producer of solar cells and imported an unknown quantity of CSPV cells, all from its parent company in China.[94] SunTech began operations in late 2010 and ***.[95] Consequently, the question of whether to exclude SunTech is largely moot. SunTech *** with respect to the petition in its questionnaire response.[96] In light of the limited data, we do not determine that appropriate circumstances exist to exclude SunTech from the domestic industry. We, however, intend to revisit the issue in any final phase investigations.

Motech is a subsidiary of Motech Industries, Inc., a Taiwan cell producer with production facilities in China. Motech, which began U.S. production in 2010, imported *** modules from China in interim 2011. Motech's imports of subject modules in interim 2011 represented *** percent of its

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[88] Given these concerns, in any final phase investigations, we invite the parties to address what the appropriate mode of analysis would be for related parties that import subject imports that are then utilized in the production of an article that is also part of the domestic like product such as the importation of cells used in the production of modules here. Parties are reminded that any requests for additional data sought through Commission questionnaires must be made in written comments to draft questionnaires pursuant to 19 C.F.R. section 207.20(b).

[89] CR/PR at Table III-7.

[90] CR/PR at Table III-7.

[91] CR/PR at Table IV-5.

[92] CR/PR at Table III-1.

[93] For purposes of determining whether to exclude *** and *** from the domestic industry, Commissioner Pinkert places substantial reliance on the ratio of subject imports of cells to the totality of cells used in the production or sale of CSPV modules (calculated on a value basis). In 2010, that ratio was below *** for both companies. See EDIS document 466352.

[94] CR/PR at Table III-7.

[95] CR/PR at Table III-7 n.3 and CR/PR at Table VI-5.

[96] CR/PR at Table III-1.

domestic module production for that time frame.[97] Motech also imported *** cells from China in 2010 and *** cells from China in interim 2011. Motech imported cells from nonsubject sources as well and its ratio of subject imports to total imports was *** percent in 2010 and *** percent in interim 2011. Whether or not it derived any benefits from its imports from China is unclear, as it reported *** in 2010 and *** than those reported in interim 2010.[98] We note that Motech *** with respect to the petition and accounted for *** percent of CSPV module production in 2010.[99] For these reasons, we do not find that appropriate circumstances exist to exclude Motech from the domestic industry but intend to revisit the issue in any final phase investigations.

Conclusion

For the reasons stated above, we define the domestic industry to include all domestic producers of CSPV cells and modules.

VI. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF SUBJECT MERCHANDISE FROM CHINA[100]

A. Legal Standard

In the preliminary phase of antidumping duty or countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[101] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[102] The statute defines "material injury" as "harm which is not inconsequential, immaterial, or unimportant."[103] In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, we consider all relevant economic factors that bear on the state of the industry in the United States.[104] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[105]

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is "materially injured by reason of" unfairly traded imports,[106] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the

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[97] Calculated from CR at Table III-7.

[98] CR/PR at Table VI-5.

[99] CR/PR at Table III-1.

[100] Negligibility under 19 U.S.C. § 1677(24) is not an issue in these investigations. During the 12-month period prior to the filing of the petitions, subject imports from China accounted for 44.1 percent of total imports. Calculated from official import statistics.

[101] 19 U.S.C. §§ 1671b(a), 1673b(a).

[102] 19 U.S.C. § 1677(7)(B)(i). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... {a}nd explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

[103] 19 U.S.C. § 1677(7)(A).

[104] 19 U.S.C. § 1677(7)(C)(iii).

[105] 19 U.S.C. § 1677(7)(C)(iii).

[106] 19 U.S.C. §§ 1671b(a), 1673b(a).

Commission's reasonable exercise of its discretion.[107] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[108]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[109] In performing its examination, however, the Commission need not isolate the injury caused by other factors from injury caused by unfairly traded imports.[110] Nor does the

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[107] Angus Chemical Co. v. United States, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), aff'g 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

[108] The Federal Circuit, in addressing the causation standard of the statute, has observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." Nippon Steel Corp. v. USITC, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was re-affirmed in Mittal Steel Point Lisas Ltd. v. United States, 542 F.3d 867, 873 (Fed. Cir. 2008), in which the Federal Circuit, quoting Gerald Metals, Inc. v. United States, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" See also Nippon Steel Corp. v. United States, 458 F.3d 1345, 1357 (Fed. Cir. 2006); Taiwan Semiconductor Industry Ass'n v. USITC, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[109] Statement of Administrative Action ("SAA") on Uruguay Round Agreements Act ("URAA"), H.R. Rep. 103-316, Vol. I at 851-52 (1994) ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); accord Mittal Steel, 542 F.3d at 877.

[110] SAA at 851-52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); Taiwan Semiconductor Industry Ass'n v. USITC, 266 F.3d 1339, 1345 (Fed. Cir. 2001) ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports . . . . Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); Asociacion de Productores de Salmon y Trucha de Chile AG v. United States, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); see also Softwood Lumber from Canada, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 at 100-01 (Dec. 2003) (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, i.e., it is not an 'other causal factor,' then there is nothing to further examine regarding attribution to injury"), citing Gerald Metals, Inc. v. United States, 132 F.3d 716, 722 (Fed. Cir. 1997) (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.").

"by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[111] It is clear that the existence of injury caused by other factors does not compel a negative determination.[112]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports" and the Commission "ensure{s} that it is not attributing injury from other sources to the subject imports."[113] [114] Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[115]

The Federal Circuit's decisions in Gerald Metals, Bratsk, and Mittal Steel all involved cases in which the relevant "other factor" was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit's guidance in Bratsk as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market presence of price-competitive nonsubject imports.[116] The additional "replacement/benefit" test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago determination that underlies the Mittal Steel litigation.

Mittal Steel clarifies that the Commission's interpretation of Bratsk was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific methodology; instead, the Court requires the Commission to have "evidence in the record 'to show that the harm occurred 'by reason of' the LTFV imports,'" and requires that the Commission not attribute

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[111] S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

[112] See Nippon Steel Corp., 345 F.3d at 1381 ("an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[113] Mittal Steel, 542 F.3d at 877-78; see also id. at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... . {and has} broad discretion with respect to its choice of methodology.") citing United States Steel Group v. United States, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75.

[114] Commissioner Pinkert does not join this paragraph or the following three paragraphs. He points out that the Federal Circuit, in Bratsk and Mittal, held that the Commission is required, in certain circumstances when considering present material injury, to undertake a particular kind of analysis of nonsubject imports, albeit without reliance upon presumptions or rigid formulas. Mittal explains as follows:

> What Bratsk held is that "where commodity products are at issue and fairly traded, price-competitive, nonsubject imports are in the market," the Commission would not fulfill its obligation to consider an important aspect of the problem if it failed to consider whether nonsubject or non-LTFV imports would have replaced LTFV subject imports during the period of investigation without a continuing benefit to the domestic industry. 444 F.3d at 1369. Under those circumstances, Bratsk requires the Commission to consider whether replacement of the LTFV subject imports might have occurred during the period of investigation, and it requires the Commission to provide an explanation of its conclusion with respect to that factor.

542 F.3d at 878.

[115] Nucor Corp. v. United States, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); see also Mittal Steel, 542 F.3d at 879 ("Bratsk did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

[116] Mittal Steel, 542 F.3d at 875-79.

injury from nonsubject imports or other factors to subject imports.[117] Accordingly, we do not consider ourselves required to apply the replacement/benefit test that was included in Commission opinions subsequent to Bratsk.

The progression of Gerald Metals, Bratsk, and Mittal Steel clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.[118]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual and subject to review under the substantial evidence standard. Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[119]

B. Data Issues

A threshold question in these investigations is whether in addition to cells made in China and modules assembled from Chinese-made cells, the scope also includes imports of CSPV modules assembled in China from third-country CSPV cells and/or imports of CSPV modules assembled in a third country from CSPV cells produced in China.[120] As noted earlier, Petitioner asserts that it intended to include such modules within the scope of these investigations and proposed modified scope language to Commerce to clarify its intent. The scope clarification was not adopted by Commerce for purposes of its notice of initiation.[121] Absent further guidance from Commerce, it is unclear whether imports of CSPV modules produced in China using CSPV cells from nonsubject sources and imports of CSPV modules processed in nonsubject countries using CSPV cells produced in China are within the scope of these investigations as Petitioner claims it intended.[122]

For purposes of these preliminary determinations, the Commission has two data sets from which to choose for measuring subject and non-subject imports: official statistics and questionnaire responses. We have determined to rely on official statistics for two reasons. First, the share of imports covered by questionnaire responses in these investigations was relatively low, indicating that official statistics

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[117] Mittal Steel, 542 F.3d at 873 (quoting from Gerald Metals, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission's alternative interpretation of Bratsk as a reminder to conduct a non-attribution analysis).

[118] To that end, after the Federal Circuit issued its decision in Bratsk, the Commission began to present published information or send out information requests in final phase investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission's causation analysis, these requests typically seek information on capacity, production, and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in final phase investigations in which there are substantial levels of nonsubject imports.

[119] Mittal Steel, 542 F.3d at 873; Nippon Steel Corp., 458 F.3d at 1350, citing U.S. Steel Group, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

[120] The scope clearly includes imports of CSPV cells produced in China and imports of CSPV modules produced in China using Chinese produced cells.

[121] Emphasizing that Petitioner's revision request was filed just two days before issuance of the notice, Commerce stated that "the Department has neither the time nor the administrative resources to evaluate Petitioner's proposed language regarding merchandise produced using inputs from third-country markets, or merchandise processed in third-country markets." 76 Fed. Reg 70960, 70961 (Nov. 16, 2011)

[122] CCCME Brief at 9.

provide a more complete data set.[123] In addition, the ambiguity in the scope calls into question the usability of importer and foreign producer questionnaire responses, because different companies appear to have defined the universe of subject imports differently.[124] To the extent additional guidance on the scope is available from Commerce, we will revise definitions in our questionnaires in any final phase of these investigations to improve the consistency and reliability of importer questionnaire data. At present, however, we rely on official statistics as the most reliable source of import data. The relevant HTS reporting categories include cells made in China, modules assembled in China from Chinese cells, and modules assembled in China from cells made in other countries.[125]

Another data issue raised in these investigations is the appropriate measure of volume – units or value – to be used in our analysis. Both Petitioner and Respondents indicated that the volumes reported in official statistics under subheading 8541.40.6020 (modules) may be understated. Because this subheading defines a module as "solar cells assembled into modules or panels," the units reported may refer to the number of modules and not the number of cells imported into the United States. Imports of CSPV cells also are reported under a different HTS subheading.[126] Consequently, the unit values may be aberrational and U.S. import volumes of total cells may be understated. For these reasons, despite the fact that the most appropriate measure most often is to consider volume in terms of weight or units rather than value,[127] we have relied on value rather than quantity measurements to measure volume in the preliminary

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[123] The official statistics may include some imports of thin film products in addition to CSPV products. China is not known to export significant quantities of thin film products to the U.S., thus there should be very little nonsubject merchandise in the imports from China. See CR at IV-4, n.2; CCCME Brief at 30. Imports from nonsubject countries, however, may be overstated to the extent that they include a portion of thin film products.

[124] Although the questionnaires may have captured to some extent CSPV modules produced in China made with CSPV cells from nonsubject sources, there is no way to distinguish the origin of the cells. One questionnaire respondent appears to have deemed CSPV modules produced in China using cells from nonsubject sources as not being subject imports. None of the recipients reported modules processed in third-countries from cells produced in China to be subject imports. CR at I-8 n.8, PR at I-6 n.8.

[125] CR at I-8 n.8, PR at I-6 n.8.

[126] CR at I-8 n.9, PR at I-7 n.9.

[127] Compare, e.g., Coated Free Sheet Paper from China, Indonesia, and Korea, Invs. Nos. 701-TA-444 to 446 and 731-TA-1136 to 1137 (Final), USITC Pub. 3965 at 8 (Dec. 2007) ("the Commission generally avoids measuring import volume on the basis of value."); Certain Off-the-Road Tires from China, Invs. Nos. 701-TA-448 and 731-TA-1117 (Prelim.), USITC Pub. 3943 at 12, n.58 (Aug. 2007) (deviating from the "normal practice" by considering both value and unit measurements of volume due to " large variations in unit values both among the subject merchandise and among the articles in the domestic like product. Certain Off-the-Road Tires from China, Invs. Nos. 701-TA-448 and 731-TA-1117 (Final), USITC Pub. 4031 at 15 (Aug. 2008); and Certain Lined Paper School Supplies from China, India, and Indonesia, Invs. Nos. 701-TA-442 to 443 and 731-TA-1095 to 1097(Final), USITC Pub. 3884 at 19 (Sept. 2006) ("We typically rely on quantity-based measures of volume because value-based measures can be skewed by changes of product mix and the fact that, for subject imports, the unit values are of merchandise sold at LTFV ... . Although the Commission has relied principally on value-based measurements in rare instances, those investigations involved variations in value among articles within the scope and/or domestic like product that were much larger than those present here. In those instances, measuring volume by units was particularly problematic, because value variations for different articles could differ by factors of as much as 100."), aff'd on this point in Navneet Publications (India), Ltd. v, United States, 30 Int'l Trade Rep. 1430 (Ct. Int'l Trade Feb. 26, 2008) with, e.g., Torrington Co. v. United States, 790 F. Supp. 1161, 1172-73 (Ct. Int'l Trade 1992) (noting the statute does not specify how volume is to be evaluated and the Commission's discretion in investigative methodology) (permissible to rely on value basis to evaluate import volumes); American Bearing Manufacturers Association v. United States, 350 F. Supp. 2d. 1100, 1109 (Ct. Int'l Trade 2004) ("ITC's use of value-based indicators to evaluate volume in the context of a ball bearing investigation is consistent with its past practice."), aff'g Ball Bearings from China, Inv. No. 731-TA-989 (Final), USITC Pub. 3593 (April 2003).

phase of these investigations, unless otherwise noted.[128]

Additionally, as previously explained, modules are dedicated products and the vast majority of cells produced in the United States are internally consumed into modules. Accordingly, in order to avoid double-counting, we rely on the data in Table C-2 concerning modules for import volume as well as U.S. shipment data. We rely on Table C-3 for U.S. industry financial data as it provides the aggregate of U.S. cell and module production. We ask parties to address the appropriate unit of measure for volume, including the use of kilowatts instead of units or value, in their written comments on draft questionnaires in any final phase investigations.

C. Conditions of Competition and the Business Cycle[129]

The following conditions of competition inform our analysis of whether there is a reasonable indication of material injury by reason of subject imports.

1. Demand Conditions

U.S. demand for CSPV cells and modules is affected by the demand for alternative renewable energy sources, and by other variables such as government incentives.[130] Industry observers and participants uniformly have noted that during the period of investigation, the U.S. solar market increased substantially.[131] In line with this increase in demand for solar energy, U.S. demand for CSPV cells and modules also grew at a dramatic pace. Demand for CSPV cell and modules in the U.S. market, as measured by the value of apparent U.S. consumption, increased by *** percent from 2008 to 2010, and also was higher by *** percent in interim 2011 than in interim 2010.[132]

There are four primary market segments for CSPV cells and modules. Three of these segments are residential, nonresidential, and utility, which are considered on-grid markets. The fourth segment is the off-grid market. During the period of investigation, the utility sector, which accounts for most large scale installations, reportedly saw the largest increase in market share among the three on-grid market segments.[133]

Demand for solar energy has been affected by certain government programs at the Federal, state, and local levels.[134] Federal and state governments have implemented policies intended to promote the expansion of solar (renewable) energy generation and consumption in the United States through the

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[128] Respondents argued for the use of kilowatt data in evaluating apparent consumption. CCCME Brief at 30. The Commission's questionnaires requested kilowatt data but most of the importer respondents did not provide import volumes or shipments in kilowatts. CR at IV-8 n. 4, PR at IV-6 n.4. Given that the overall coverage of the importer questionnaire responses is limited and many of these respondents did not provide kilowatt shipment information, the Commission does not have a robust data set in kilowatts. In any final phase of these investigations, the Commission will again seek to collect data in kilowatts from the industry participants.

[129] As noted earlier, almost all of CSPV cell production in the United States is internally consumed in the production of CSPV modules, which are part of the domestic like product. In these circumstances the issue of whether or not the captive production provision of the statute applies is not raised as the captive production provision applies only to captive consumption of the domestic like product for the production of a downstream article different from the domestic like product. See 19 U.S.C. § 1677(7)(C)(iv).

[130] CR at II-13-II-18, II-25-26, PR at II-10-II-14, II-19-II-20.

[131] CR at II-13, PR at II-10.

[132] CR/PR at Table C-2. Apparent U.S. consumption was $*** in 2008, $*** in 2009, and $*** in 2010. Apparent U.S. consumption was $*** in interim 2010 and $*** in interim 2011. CR/PR at Table C-2.

[133] CR at II-2-II-3, PR at II-1-II-2.

[134] CR at II-15, PR at II-10.

enactment of rebate and incentive programs which are intended to reduce the cost of solar energy for the consumer. These incentives include federal investment tax credits or cash grant programs, as well as loan guarantees. At least 36 states have adopted Renewable Portfolio Standards, which require retail electricity suppliers to procure a minimum amount of renewable energy, such as solar energy. Certain states have also established other programs that mandate the expansion of solar power generation within those states.[135]

These government incentives have played a role in the dramatic increase in demand over the period of investigation.[136] For example, the Solar Energy Industry Association reported an "application boom" in the second quarter of 2010 and an "installation boom" in the first quarter of 2011 in the U.S. nonresidential market segment that it credits to a federal cash rebate program.[137] Additionally, the record indicates that a greater number of PV installations are located in states with state-specific incentive programs.[138] Both Petitioner and Respondents have highlighted the role that these incentives play in affecting demand and business cycles to varying degrees.[139] In any final phase investigations, we intend to examine further the effect of government incentives on U.S. demand and supply for CSPV cells and modules.

2. Demand Outside the United States

Since 2001, global demand for solar energy has increased as the overall demand for "clean energy" grew.[140] According to both Petitioner and Respondents, increased global demand for solar power was spurred by government incentives.[141] These incentives were designed to reduce costs and improve efficiencies of alternative fuels in order for them to compete with fossil fuels. Respondents have indicated that in countries such as Germany and Italy which have achieved lower solar energy costs through widespread adoption, government incentives recently have been reduced. They report that demand for solar energy in both Germany and Italy, the two largest markets for solar energy systems, has softened with the reduction of government incentives.[142]

3. Supply Conditions in the U.S. Market

The U.S. market is supplied by domestic producers, subject imports, and nonsubject imports. Sixteen firms accounted for the majority of U.S. production of CSPV cells and modules during the period of investigation.[143] The number of U.S. firms producing the domestic like product varied throughout the period as some producers entered the industry after 2008 while others had ceased production at the end of the period. Of the sixteen U.S. producers, the ***, Evergreen and SolarWorld, are integrated producers. Two other firms, Calisolar and SPI, produced only U.S. CSPV cells during the period examined. All of the remaining twelve firms are module producers that assemble modules using domestically-produced

[135] CR at II-16-18, PR at II-12-II-14, CR/PR at Table II-4.

[136] CR at II-15-II-16, PR at II-12-II-14 and industry and government reports cited therein.

[137] CR at II-15, PR at II-12.

[138] CR at II-4, PR at 3.

[139] CR at II-18, PR at 14.

[140] Petition at Ex. I-15.

[141] Sun Edison Brief at 25-28; Petition at Ex. I-15.

[142] Sun Edison Brief at 25-28.

[143] CR/PR at Table III-1.

cells or cells imported from China or nonsubject sources.[144] Many of the U.S. module producers are subsidiaries of large, foreign CSPV producers which ship their cells to the United States for assembly into modules.[145]

The domestic industry's market share, by value, *** overall from 2008 to 2010 and was *** in interim 2011 than in interim 2010. The market share of subject imports by value *** from 2008 to 2010. It was *** in interim 2010 than in interim 2011. The market share of nonsubject imports by value *** from 2008 to 2010. It was *** in interim 2010 than in interim 2011.[146]

4. Other Conditions

The degree of substitutability between CSPV cells and modules produced domestically and those imported from China depends on such factors as relative prices, quality, (e.g., wattage output, efficiency, certification), and the conditions of sale (e.g., price discounts/rebates, financing, lead times between order and delivery, payment terms, customer service).[147] Based on the information reported in these investigations, we find a high degree of substitutability between domestically produced cells and modules and subject CSPV cells and modules. Fifteen of 16 responding U.S. producers and seventeen of 22 responding importers reported that the domestic like product and subject imports were "always or frequently" interchangeable.[148]

The most commonly reported sales method for both U.S. producers and importers is through transaction-by-transaction negotiations. For both producers and importers, contracts and set price lists varied based on the channel of distribution.[149] All responding producers and most responding importers reported selling some product on a spot basis and on a short-term contract basis.[150]

Demand for CSPV cells and modules is highly responsive to changes in price. This is primarily due to the availability of substitute products, though moderated by the cost share of CSPV cells and modules in their end uses.[151]

Competition between CSPV and thin film product is another factor that may affect U.S. CSPV cell and modules prices as well as the demand for CSPV products. The majority of U.S. producers and importers reporting substitute products identified thin film products as a substitute for CSPV cells and modules, although the responding firms were closely divided as to whether thin film affected prices for CSPV products.[152] As discussed above in our domestic like product analysis, both thin film products and CSPV products can be used in all four market segments, although thin film is predominately used in the utility segment. We plan to examine further the issue of competition between CSPV products and thin film products in any final phase investigations.

The main raw input of CSPV cells is polysilicon, which is used in both the semiconductor and solar panel industries. Between 2005 and 2008, polysilicon prices increased due to supply shortages. The prices for polysilicon fell thereafter as polysilicon capacity increased and demand for polysilicon softened

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[144] CR/PR at Tables III-1 and III-2.

[145] CR/PR at Tables III-1 and III-2.

[146] CR/PR at Table C-2.

[147] CR at II-25, PR at II-19.

[148] CR at II-27, PR at II-20.

[149] CR at V-6, PR at V-4.

[150] CR at V-6-V-7, PR at V-4.

[151] CR at II-12, PR at II-9.

[152] CR at II-20, PR at II-15-II-16.

with the 2008 recession.[153] As a result of the shortage of polysilicon in 2006 and 2008, CSPV cell producers in the United States and globally now obtain the vast majority of their polysilicon supply under long-term contracts that last between six to ten years.[154] Raw material costs increased from *** percent to *** percent of the U.S. producers' total costs of goods sold ("COGS") from 2008 to 2010. Raw material costs for the production of CSPV cells decreased from ***percent of U.S. producers' total COGs in 2008 to *** percent in 2010.[155]

D. Volume of Subject Imports from China

Section 771(7)(C)(I) of the Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[156]

As discussed above, we rely on Table C-2 of the Commission's report for the import levels and market shares of apparent U.S. consumption as measured by value.

Subject imports were already present in large volumes and accounted for a significant portion of apparent U.S. consumption at the beginning of the period in 2008. These imports increased dramatically in the U.S. market throughout the period of investigation. The value of subject imports increased by 411.7 percent from 2008 to 2010, far outpacing the *** percent increase in apparent U.S. consumption for the same period. The volume of subject imports by value rose from $228.2 million in 2008 to $411 million in 2009, and to $1.17 billion in 2010. The value of subject imports also was higher in interim 2011 at $1.18 billion than in interim 2010 at $350 million.[157] The market share of subject imports measured by value *** percentage points between 2008 and 2010, from *** percent to *** percent. It was *** percent in interim 2010 and *** percent in interim 2011.[158]

The market share of subject imports by value *** from *** percent in 2008 to *** percent in 2009, and then to *** percent in 2010. It was *** in interim 2010 (***) percent than in interim 2011 (*** percent). The domestic industry's market share, by value, *** from *** percent in 2008 to *** percent in 2009 and then *** percent in 2010. It was *** in interim 2011(*** percent) than in interim 2010 (***) percent. The market share of nonsubject imports by value *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. It was *** percent in interim 2010 and *** percent in interim 2011.[159]

A significant share of the increase in market penetration by subject imports from 2008 to 2010 came at the expense of the domestic industry. While subject imports' share of apparent U.S. consumption increased substantially, the domestic industry's market share *** percentage points on a value basis despite the tremendous growth in U.S. demand. The domestic industry's market share was *** percentage points lower in interim 2011 than in interim 2010. Nonsubject import share of apparent U.S. consumption also *** percentage points on a value basis from 2008 to 2010 and was *** percent lower in interim 2011 than in 2010.[160]

Respondents argue that the *** in the volume and market share of subject imports was due in large measure to the existence of a federal cash rebate program that was set to expire at the end of 2011. According to Respondents, the increases in volume and market share occurred simply because the quickly growing U.S. market was under-supplied and companies sought to enter imports before the expiration of

[153] CR at V-2, PR at V-1-V-2.

[154] CR at V-2, PR at V-1-V-2.

[155] CR/PR at V-1.

[156] 19 U.S.C. § 1677(7)(C)(I).

[157] CR/PR at Table C-2.

[158] CR/PR at Table C-2

[159] CR/PR at Table C-2.

[160] CR/PR at Table IV-3.

this cash program.[161] However, the contention that subject imports were necessary to meet demand needs is contradicted by subject imports' gain in market share at the expense of both the domestic industry and nonsubject imports. Instead, subject imports appear to have received a disproportionate benefit from the existence of the cash benefit program.[162]

Based on the data collected in these preliminary phase investigations, we conclude that the volume of subject imports is significant both in absolute terms and relative to consumption and production in the United States.

E. Price Effects of the Subject Imports from China

> Section 771(C)(ii) of the Act provides that, in evaluating the price effects of subject imports, the Commission shall consider whether – (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[163]

As addressed above in the discussion of the conditions of competition, the evidence on the record indicates that there is a high degree of substitutability between CSPV cells and modules produced domestically and those imported from China. Price is an important – though not exclusive – consideration in U.S. purchasers' sourcing decisions. The majority of producers (9 of 16) and importers (11 of 20) reported that differences other than price were "sometimes" important in comparing the U.S. and Chinese product. At the same time, six producers and seven importers reported that there were "always" or "frequently" significant differences other than price.[164] A number of others factors cited included "bankability," quality (UL inspection, durability, reliability, warranty), certification standards, technology and customer support, solar conversion efficiency, and manufacturer reputation.[165] The cost of raw materials, particularly polysilicon, accounts for a substantial share of the total cost of CSPV cells and modules.[166]

In these investigations, U.S. producers and importers provided quarterly pricing for four CSPV module products of differing wattages. In general, the pricing data are concentrated in the last six quarters of the period and show a pattern of pervasive underselling by subject imports. Subject imports undersold the domestic like product in 18 of the 19 quarterly price comparisons, with margins ranging from ***

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[161] CCCME Brief at 32-33.

[162] Respondents have raised a number of other arguments pertaining to the significance of the volume of subject imports. CCCME Brief at 25-29. These arguments are predicated primarily on volume and market share as measured by quantity. As discussed earlier, we have found that apparent U.S. consumption as measured by value is more accurate in determining volume and market penetration of imports. We therefore do not address these arguments here.

[163] 19 U.S.C. § 1677(7)(C)(ii).

[164] CR at II-27-28, CR/PR at Table II-7.

[165] CR at II-27-28, PR at II-20-II-21. According to Respondents, "bankability" refers to such factors as the ability to obtain financing for the installation of a CSPV system and the ability to fulfill long-term warranty obligations. The ability to obtain financing generally depends upon the quality of modules to be used in an individual project and the financial stability of the module manufacturer that will be supplying the project over the long term. CCCME Brief at 22-23. We will examine the issue of "bankability" as a factor in purchasing decisions in any final phase investigations.

[166] CR/PR at Table VI-1. The share of the cost of goods sold accounted for by raw material costs ranged from *** percent in 2008 to *** percent in 2010. Id.

percent to *** percent.[167] For purposes of these investigations, we find that there has been significant underselling of the domestic like product by subject imports.[168]

We also note that the record includes several confirmed instances where the domestic industry lost sales to low-priced imports.[169] In addition, fifteen of the purchasers contacted regarding lost sales and lost revenues allegations reported that U.S. producers have reduced their prices of CSPV cells and modules in order to compete with prices of subject imports since January 2008.[170]

We have also considered movement in U.S. and subject prices over the period of investigation. The Commission's pricing data show an overall price decrease for all four domestic products and for two of the four subject import products during the period for which data were provided.[171] Specifically, for product 1 prices for the domestic articles declined while prices for the subject product declined to a greater extent. For product 4, prices for both the domestic articles and subject imports declined. However, for products 2 and 3, prices declined for the domestic articles while prices for subject imports increased.[172] [173] When viewed in conjunction with evidence of underselling and lost sales, subject imports had at least some price depressing effects. We intend to examine this issue more closely in any final phase investigations.

Respondents presented multiple alternative explanations for the declines in U.S. prices. First, Respondents argue that the decline in U.S. prices is attributable to the decline in polysilicon costs during the period of investigation. Although the record indicates that the price of polysilicon declined, the total costs of raw materials as a unit of net sales increased irregularly for both cells and modules over the period of investigation.[174] Next, Respondents argue that federal government incentives have been influential in lowering the prices of CSPV cells and modules. They argue that some federal government incentives recently have been reduced, resulting in developers and installers having to find ways to reduce the total costs of solar power projects by other means. This, in turn, has caused domestic producers to lower their prices.[175] Although some government incentives may have been reduced, low-priced subject imports increased at the end of the period of investigation, as they had throughout the period. While we will re-examine these issues in any final phase investigations, we find that, any pressure to lower costs felt by domestic producers was intensified by the increasing volumes of low-priced subject imports.

Accordingly, the record in these preliminary phase investigations indicates pervasive underselling

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[167] CR/PR at Table V-7.

[168] Respondents allege that the underselling by subject imports may be due to differences in the channels of distribution and market segments in which the subject imports and domestic like product are concentrated. This argument is based on the idea that large volume orders, such as those often in the utility market, may have lower per-unit prices, and these distinctions may not be captured in the Commission's quarterly pricing comparisons. See CCCME Brief at 40-41. In any final phase investigations, we intend to further examine the extent to which the different channels of distribution and market segments may affect pricing.

[169] CR/PR at Table V-8.

[170] CR at V-21, PR at V-12.

[171] CR/PR at Tables V-2-V-5.

[172] The price for the U.S.-produced product 1 decreased by *** percent; the price for the corresponding subject imports decreased by *** percent. The price for the U.S.-produced product 2 decreased by *** percent; the price for the corresponding subject imports increased by *** percent. The price for the U.S.-produced product 3 decreased by *** percent; the price for the corresponding subject imports increased by *** percent. Finally, the price for the U.S.-produced product 4 decreased by *** percent; the price for the corresponding subject imports decreased by *** percent. CR/PR at Table V-6.

[173] The domestic industry's ratio of COGS to net sales increased from *** percent in 2008 to *** percent in 2009 but decreased to *** percent in 2010. In interim 2011, the ratio of COGS to net sales was *** percent, *** than in interim 2010, when it was *** percent.

[174] CR at VI-2.

[175] CCCME Brief at 20-21.

by subject imports and some evidence of price depression. We also find that the underselling allowed subject imports to gain market share at the expense of the domestic industry. Consequently, we determine that subject imports had significant negative effects on domestic prices.

F. Impact of the Subject Imports from China[176]

Section 771(7)(C)(iii) of the Act provides that the Commission, in examining the impact of the subject imports on the domestic industry, "shall evaluate all relevant economic factors which have a bearing on the state of the industry."[177] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[178] As discussed earlier, we rely on Table C-2 in examining the domestic industry's trade data and Table C-3 for examining the domestic industry's financial condition.

A number of domestic industry performance indicators were positive over the period of investigation.[179] As new firms entered the industry from 2008 to 2010, and existing firms expanded capacity to serve increasing demand for CSPV products, U.S. production capacity of CSPV modules increased over the period of investigation, and was higher in interim 2011 than in interim 2010. Production capacity rose from *** units in 2008 to *** units in 2009, and then to *** units in 2010. Production capacity was *** units in interim 2010 and *** units in interim 2011.[180] Production also increased from *** units in 2008 to *** million units in 2009, and to *** units in 2010 and was higher at *** units in interim 2011 than in interim 2010 at *** units.[181] Capacity utilization increased steadily from 2008 to 2010, from *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. Capacity utilization, however, was lower in interim 2011 than in interim 2010, decreasing from *** percent in interim 2010 to *** percent in interim 2011.[182] At the same time, the number of production workers, hours

[176] In its notice initiating the antidumping investigation on cells and modules from China, Commerce reported estimated dumping margins ranging from 49.88 percent to 249.96 percent.
Commerce also reported the following countervailable programs: (1) grant programs; (2) government provision of goods and services for less than adequate remuneration (3) government provision of land for LTAR; (4) policy lending to the renewable energy industry ; (5) income and other direct tax exemption and reduction programs; (6)indirect tax and exemption programs; (7) export credit and subsidy programs; and (8) export guarantees and insurance for green technology. See CR at I-4-I-5, PR at I-3-I-4.

[177] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

[178] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851, 885; Live Cattle from Canada and Mexico, Invs. Nos. 701-TA-386, 731-TA-812-813 (Preliminary), USITC Pub. 3155 at 25 n.148 (Feb. 1999).

[179] We note, however, that there are questions as to whether the full effects of the cessation of operations of a number of firms late in the period are sufficiently reflected in the data. Given that there has been a lot of movement in this industry in terms of firms both entering and exiting the market, we intend to examine further the effects of this movement on the condition of the industry in any final phase investigations.

[180] CR/PR at Table C-2.

[181] CR/PR at Table C-2.

[182] CR/PR at Table C-2. The number of production workers steadily increased from *** in 2008 to *** in 2009 and *** in 2010. The number of production workers was *** in interim 2010 and *** in interim 2011. Hours worked also increased from *** in 2008 to *** in 2009 and *** in 2010. Hours worked were *** in interim 2010 and *** in interim 2011. Hourly wages also increased from 2008 to 2010 rising from $*** to *** in 2010 but were *** lower in interim 2011($***) than in interim 2010 ($***). Productivity rose from *** units per hour in 2008 to

worked, hourly wages and productivity increased throughout the period of investigation.[183]

Domestic producers' U.S. shipments by value increased overall from 2008 to 2010, and were higher in interim 2011 than in interim 2010. Domestic producers' U.S. shipments by value decreased *** from $*** in 2008 to $*** in 2009, and then increased to $*** in 2010. Domestic producers' U.S. shipments were $*** in interim 2010 and $*** in interim 2011.[184] Despite increasing shipments and U.S. demand, the domestic industry's market share declined overall from 2008 to 2010 and was lower in interim 2011 than in interim 2010. The domestic industry's market share decreased from *** percent in 2008 to *** percent in 2009, and then increased *** to *** percent in 2010. The domestic industry's market share was *** percent in interim 2010 and *** percent in interim 2011.[185]

The domestic industry's financial condition, which was in poor shape at the beginning of the period, worsened throughout the period of investigation as the volume and market share of subject imports grew, even though the industry was experiencing rapidly increasing demand. As previously noted, the industry saw the departure of a number of firms over the period of investigation. The cessation of operations of these firms may in fact mask the overall negative financial effects (such as the loss of start-up costs) of subject imports.

The value of the industry's total net sales increased from $*** in 2008 to $*** in 2009, and then to $*** in 2010. The value of the industry's total net sales were $*** in interim 2010 and $*** in interim 2011.[186] The industry's unit sales values, however, were insufficient to offset the unit COGS and selling, general, and administrative ("SG&A") expenses throughout the period of investigation.[187] The domestic industry's reported operating *** increased from $*** in 2008 to $*** in 2009 to $*** in 2010, with operating *** of $*** in interim 2010 and $*** in interim 2011. The domestic industry's operating margins were *** percent in 2008, *** percent in 2009 and *** percent in 2010. They were *** percent in interim 2010 and *** percent in interim 2011.[188] The number of firms reporting operating losses increased from 2009 to 2010 and *** but *** producers reported *** by the end of the period of investigation. Finally, capital expenditures decreased overall and were lower in interim 2011 than in interim 2010.[189] Capital expenditures were $*** in 2008, $*** in 2009, $*** in 2010, and $*** in interim 2010, and $*** in interim 2011.[190]

Accordingly, although many of the industry's performance indicators improved over the period of investigation, its financial condition deteriorated as subject imports increased in volume and U.S. producers lost market share despite rising demand. For purposes of these preliminary determinations, we find that the significant increases of subject imports in the U.S. market, pervasive underselling of the domestic like product by subject imports, and the domestic industry's deteriorating financial condition, adversely impacted the domestic industry.[191]

In considering whether a causal nexus exists between subject imports and material injury to the domestic industry, we have considered the role of other factors, so that we are not attributing injury from

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***units per hour in 2010 and was *** in both interim 2010 and 2011. Id.

[183] CR/PR at Table C-2.

[184] CR/PR at Table C-2.

[185] CR/PR at Table C-2.

[186] CR/PR at Table C-3.

[187] CR/PR at Table C-3.

[188] CR/PR at Table C-3.

[189] CR/PR at Table C-3.

[190] CR/PR at Table C-3.

[191] We note that export shipments accounted for a significant share of U.S. producers' net sales and COGS during the period of investigation. In any final phase investigations, we invite the parties to address how the Commission should analyze the role of U.S. industry exports in our material injury analysis.

such other factors to the subject imports.[192] Although nonsubject imports held the largest share of the U.S. market during the three full years of the period of investigation, their market share declined throughout the period even as their volume increased with the growth in U.S. demand.[193] Additionally, although limited, available quarterly price comparisons show that prices for nonsubject imports were higher than U.S. prices in 16 of 21 quarterly price comparisons and higher than prices for subject imports in all 22 quarterly price comparisons. Thus, nonsubject imports do not appear to have played a role in the deterioration of the domestic industry's condition during the period of investigation.[194] [195]

The record indicates that government incentives have played a role in affecting demand for CSPV cells and modules. In addition, competition between CSPV and thin film products may affect demand. We plan to examine further in any final phase investigations the role of government incentives as well as the effect of competition between CSPV and thin film products on U.S. demand and supply.

Consequently, the record in this preliminary phase investigation indicates a causal nexus between the subject imports and the declines in the condition of the domestic industry and thus demonstrates a reasonable indication of material injury by reason of subject imports. We therefore conclude, for purposes of this preliminary phase investigation, that subject imports have had an adverse impact on the domestic industry.

CONCLUSION

For the above-stated reasons, and based on the record in the preliminary phase of these investigations, we find that there is a reasonable indication that an industry in the United States is materially injured by reason of allegedly dumped and subsidized imports of CSPV cells and modules from China.

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[192] Based on the record evidence in the preliminary phase, Commissioner Pinkert finds that price competitive, nonsubject imports were a significant factor in the U.S. market during the period under examination. He also finds, however, that, regardless of whether CSPV cells and modules constitute a commodity product, nonsubject imports would not have replaced the subject imports without benefit to the domestic industry had the subject imports exited the market during the period. He notes that the information in Figure D-1 suggests that any such replacement by nonsubject imports would have been at higher prices than those of the subject imports, thus providing a benefit to the domestic industry. In any final phase investigations, however, Commissioner Pinkert would invite the parties to submit additional information on this issue, particularly with respect to nonsubject imports from Taiwan.

[193] On a value basis, the volume of nonsubject imports increased from $797 million in 2008 to $931million in 2009, to $1.2 billion in 2010. They were $528 million in interim 2010 and $812 million in interim 2011. The market share of nonsubject imports on a value basis *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. It was *** percent in interim 2010 and *** percent in interim 2011. CR/PR at Table IV-2.

[194] CR/PR at Tables D-1-D-4.

[195] Finally, we note that Respondents suggest that domestic producers do not have the capacity to supply the entire U.S. CSPV market. U.S. producers appear capable of supplying a larger share of the U.S. market then they do currently as their capacity utilization rates declined over the period of investigation. Moreover, as the Commission previously has noted, "there is no short supply provision in the statute" and "the fact that the domestic industry may not be able to supply all of demand does not mean the industry may not be materially injured or threatened with material injury by reason of subject imports." Softwood Lumber from Canada, Inv. Nos. 701-TA-414 and 731-TA-928 (Article 1904 NAFTA Remand) at 108, n. 310 (December 2003). See also, Certain Activated Carbon from China, Inv. No. 731-TA-1103 (Preliminary), USITC Pub. 3852 (May 2006) at 19, n. 134; Certain Orange Juice from Brazil, Inv. No. 731-TA-1089 (Final), USITC Pub. 3838 (March 2006) at 20 n. 143; Certain Lined Paper School Supplies, Inv. Nos. 701-TA-442-443 (Preliminary) and 731-TA-1095-1097 (Preliminary), USITC Pub. 3811 (October 2005) at 23, n. 155; Metal Calendar Slides from Japan, Inv. No. 731-TA-1094 (Preliminary), USITC Pub. 3792 (August 2005) at 9, n. 45 ("To the extent that Respondents claim that the Commission is legally unable to make an affirmative finding of material injury by reason of subject imports because the domestic industry is incapable of supplying domestic demand, they are incorrect.").

SEPARATE VIEWS OF COMMISSIONER CHARLOTTE R. LANE

Based on the record in the preliminary phase of these investigations, I find that there is a reasonable indication that an industry in the United States is materially injured by reason of imports of crystalline silicon photovoltaic ("CSPV") cells and modules from China that are allegedly subsidized and sold in the United States at less than fair value ("LTFV").[1]

I. THE LEGAL STANDARD FOR PRELIMINARY DETERMINATIONS

The legal standard for preliminary antidumping duty determinations requires the Commission to determine, based upon the information available at the time of the preliminary determinations, whether there is a reasonable indication that a domestic industry is materially injured or threatened with material injury, or that the establishment of an industry is materially retarded, by reason of the allegedly unfairly traded imports.[2] In applying this standard, the Commission weighs the evidence before it and determines whether "(1) the record as a whole contains clear and convincing evidence that there is no material injury or threat of such injury; and (2) no likelihood exists that contrary evidence will arise in a final investigation."[3]

II. BACKGROUND

The petition in these investigations was filed by SolarWorld Industries America, Inc. ("Petitioner"). Petitioner appeared at the staff conference and submitted a postconference brief. Parties opposing the petition at the conference included The Chinese Chamber of Commerce and Export of Machinery and Electronic Products ("CCCME"), an affiliation of producers and exporters of the subject merchandise; Sun Edison, LLC ("Sun Edison") a U.S. purchaser of CSPV cells and modules; Sun Tech Power Holdings, Ltd. a Chinese producer of CSPV cells; Trina Solar, Inc., a U.S. distributor of photovoltaic ("PV") products; and Solar Solutions, Inc., a U.S. distributor of PV products. Both CCCME and Sun Edison (collectively "Respondents") submitted postconference briefs.

U.S. industry data are based on the questionnaire responses of four U.S. producers of CSPV cells and fourteen U.S. producers of CSPV modules that accounted for the majority of U.S. production of CSPV cells and modules during the period of investigation. U.S. import data for subject and nonsubject imports are based on official Commerce statistics. Foreign industry data are based on responses to the Commission's foreign producer questionnaire.[4]

The Commission received questionnaire responses from seven firms accounting for approximately *** percent of Chinese CSPV cell production in 2010 and *** percent of 2010 Chinese CSPV module production in 2010.[5] The Commission also received responses from twenty-four U.S.

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[1] Commissioner Charlotte R. Lane filed these views with the Office of the Secretary of the U.S. International Trade Commission on December 7, 2011.

[2] 19 U.S.C. § 1673b(a) (2000); see also American Lamb Co. v. United States, 785 F.2d 994, 1001-04 (Fed. Cir. 1986); Aristech Chem. Corp. v. United States, 20 CIT 353, 354-55 (1996). No party argued that the establishment of an industry is materially retarded by reason of the allegedly unfairly traded imports.

[3] American Lamb Co., 785 F.2d at 1001; see also Texas Crushed Stone Co. v. United States, 35 F.3d 1535, 1543 (Fed. Cir. 1994).

[4] Confidential Report ("CR") at I-4.

[5] CR at VII-2.

importers accounting for 53.0 percent of CSPV cells and 17.6 percent of CSPV modules imported from China in 2010.[6]

III. DOMESTIC LIKE PRODUCT

In determining whether an industry in the United States is materially injured or threatened with material injury by reason of imports of the subject merchandise, the Commission first defines the "domestic like product" and the "industry."[7] Section 771(4)(A) of the Tariff Act of 1930, as amended ("the Tariff Act"), defines the relevant domestic industry as the "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[8] In turn, the Tariff Act defines "domestic like product" as "a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation . . . ."[9]

A. Scope Definition

In its notice of initiation, the U.S. Department of Commerce ("Commerce") defined the imported merchandise within the scope of these investigations as:

> Crystalline silicon photovoltaic cells, and modules, laminates, and panels, consisting of crystalline silicon photovoltaic cells, whether or not partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials. These investigations cover crystalline silicon photovoltaic cells of thickness equal to or greater than 20 micrometers, having a p/n junction formed by any means, whether or not the cell has undergone other processing, including, but not limited to, cleaning, etching, coating, and/or addition of materials (including, but not limited to, metallization and conductor patterns) to collect and forward the electricity that is generated by the cell.
>
> Subject merchandise may be described at the time of importation as parts for final finished products that are assembled after importation, including, but not limited to, modules, laminates, panels, building-integrated modules, building-integrated panels, or other finished goods kits. Such parts that otherwise meet the definition of subject merchandise are included in the scope of these investigations. Excluded from the scope of these investigations are thin film photovoltaic products produced from amorphous silicon (a-Si), cadmium telluride (CdTe), or copper indium gallium selenide (CIGS).
>
> Also excluded from the scope of these investigations are crystalline silicon photovoltaic cells, not exceeding 10,000mm2 in surface area, that are permanently integrated into a consumer good whose function is other than power generation and that consumes the electricity generated by the integrated crystalline silicon photovoltaic cell. Where more than one cell is permanently integrated into a

[6] CR at IV-1.

[7] 19 U.S.C. § 1677(4)(A).

[8] 19 U.S.C. § 1677(4)(A).

[9] 19 U.S.C. § 1677(10).

consumer good, the surface area for purposes of this exclusion shall be the total combined surface area of all cells that are integrated into the consumer good.[10] [11]

B. Product Description

CSPV cells and modules (commonly referred as panels) are made from crystalline silicon and are the building blocks of solar CSPV systems. Solar CSPV systems convert sunlight (photons) into electricity for on-site use or for distribution through the electric grid.

CSPV cells use crystalline silicon to convert sunlight directly into electricity. The cells have a positive layer, a negative layer, and a positive-negative junction ("p/n junction"). Positive and negative charge carriers are released in the cells when sunlight strikes the cell, causing electrical current to flow.[12] CSPV cells can be monocrystalline (also referred to as "c-Si") having a single crystal lattice, or multi-crystalline (also referred to as "polycrystalline" or "mc-Si"), having variable crystal lattice patterns. Monocrystalline cells are made from a single grown crystal and tend to have a higher conversion efficiency[13] than polycrystalline cells, which are grown from several grown crystals and have a random crystal structure. Most cells are five inches by five inches or six by six inches and have an output of 3 to 4.5 watts.[14]

CSPV cells typically are the main input of solar CSPV panels or modules. CSPV panels or modules are made from cells that are conductively connected to one another in the form of a string or matrix. The matrix or string of cells is then laminated to strengthen and weather-proof the cells and then framed, depending on the final application. Additionally, an electrical junction box is soldered or joined to the module. Once these tasks are performed, the CSPV module is considered complete.[15]

CSPV panels or modules are often installed as a system of panels on or above the roofs of residential and non-residential buildings, as free field installations or stand alone units. The module is the

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[10] 76 Fed. Reg. 70966. Merchandise covered by these investigations is currently classified in the Harmonized Tariff System of the United States (HTS) under subheadings 8501.61.0000, 8507.20.80, 8541.40.6020 and 8541.40.6030. CR at I-6.

[11] On November 7, 2011, Petitioner filed a request at Commerce to revise the scope language. In its request, Petitioner proposed that the scope, in pertinent part, to read as follows:

> The merchandise subject to these proceedings consists of crystalline photovoltaic ("PV") cells and modules and panels, whether or not partially or fully assembled into other products, including but not limited to, panels laminates, and building integrated materials . . . .
>
> These proceedings cover crystalline silicon PC cells whether exported directly to the United States, or via third countries; crystalline silicon PV modules/panels produced in the PRC; regardless of the country of manufacture of cells used to produce the modules or panels, and whether exported directly to the United States, or via third countries; and crystalline silicon PV cells manufactured in the PRC, whether exported directly to the United States, or via third countries.

Petitioner indicated that it always intended to include CSPV modules using CSPV cells from nonsubject sources; and modules in nonsubject countries processed from CSPV cells manufactured in China in the scope of the investigation. It stated that it submitted the revision to clarify its intention. Conference Tr. at 186 (Brightbill). In its notice of initiation, Commerce, however, declined to adopt the change. 76 Fed. Reg. 70960 (Nov. 16, 2011).

I note that Commerce has permitted the parties to submit comments related to the definition of subject merchandise by November 28, 2011, for purposes of Commerce's preliminary determination.

[12] CR at I-8-I-9.

[13] Conversion efficiency is the percent of sunlight that is converted into electricity. CR at I-11 n.17.

[14] CR at I-9.

[15] CR at I-9.

main component of the installation, accounting for about half of the installation cost.[16] The same type of module is generally used in grid-connected applications. Modules around 225 or 230 watts are popular for residential applications, while modules for large solar installations such as commercial buildings are around 275 watts to 300 watts. Off-grid modules are usually less than 200 watts and often are smaller than on-grid modules.[17]

There are four primary market segments for CSPV cells and modules. Three of these market segments are residential, nonresidential, and utility, which are considered on-grid markets. The fourth market segment is the off-grid market. Residential CSPV systems are typically installed on the roofs of individual homes. In 2010, the average size of a residential PV installation in the United States was 5.7 kilowatts ("kW"). The electricity generated by the system is used for power in the individual home. When the electricity generated is insufficient, the homeowners use electricity from the electric grid.[18] Non-residential CSPV systems are installed at commercial, industrial, government, and similar buildings and sites. While typically larger than residential installations, with an average of 81 kW in 2010, non-residential systems function similarly, providing electricity to meet on-site needs and pulling electricity from the grid when needed.[19] CSPV systems used in the utility market segment are the largest CSPV systems, averaging more than 1,450 kilowatts ("kW") per installation. These systems generally provide electricity directly to the electric grid for sale to customers rather than for on-site use.[20] The off-grid market includes a range of uses such as water pumping and purification systems, emergency phones, homes in remote locations, telecommunication systems, and military applications.[21]

C. Analysis

Three issues regarding the definition of domestic like product have been raised in these investigations, (1) whether to expand the domestic like product to encompass thin film products; (2) whether cells and modules should be separate like products; and (3) whether grid or non-grid products should be separate like products. I address these three issues below.

1. Whether the domestic like product should include thin film products

Respondents argue that the domestic like product should be expanded beyond the scope of these investigations to include thin film products. Petitioner disagrees.

Physical Characteristics and End Uses. Both CSPV cells/modules and thin film products are used in solar power-generation systems which convert sunlight into electricity.[22] CSPV cells are grown from crystalline-silicon and are round, quasi-square, or square in shape and typically are 50 micrometers or more in thickness. CSPV cells are connected together and laminated to form CSPV panels. Thin film products are made from a thin layer of a compound, such as cadmium telluride, copper indium, or amorphous silicon, which is deposited directly onto glass, stainless steel, or plastic substrate and take on

[16] There are a number of other components of the installation, which are called the balance of the system ("BOS"). The BOS includes components such as the inverter and the racking on which the system is installed. CR at I-13.

[17] CR at I-13.

[18] CR at I-13.

[19] CR at I-14.

[20] CR at I-15.

[21] CR at I-16.

[22] CR at I-13, I-25.

the form of the substrate to which the compound is applied.[23] Certain thin film modules that are made using a plastic or stainless steel substrate tend to be flexible and lightweight. Thin film solar products typically are thinner than CSPV cells. Both thin film systems and CSPV systems can be ground-mounted or roof-mounted and also generally require an inverter and other BOS components.[24]

Because CSPV products and thin film products are made from different materials, the conversion efficiencies of the two types of products differ, with thin film products generally being the less efficient of the two. While conversion efficiencies vary by technology type, there is some overlap in the efficiencies of CSPV modules and thin film modules. Respondents, however, note that, although thin film products may be generally less efficient than CSPV modules, thin film products are able to generate electricity with lower levels of sunlight. Additionally, in terms of wattage output, CSPV modules typically have wattage outputs of 120 to 300 watts while thin film products generally range from 60 watts to 350 watts. Both CSPV and thin film modules are used in all three major-grid connected market segments – residential, commercial, and utility – and in the off-grid market segment. According to Petitioner, because of the space limitations of thin film products, these products are used predominately in the utility market segment. Although Respondents emphasize that thin film products are used in all market segments, they acknowledge that the use of thin film modules in the residential and non-residential segments is less prevalent.[25] Additionally, both CSPV and thin film products are used in building integrated products.[26]

Common Manufacturing Facilities, Production Processes, and Production Employees. The production of CSPV cells/modules are made through several technologically sophisticated processing steps, including the growth of crystals from crystalline silicon, production of wafers, and the conversion of wafers into cells capable of generating electricity. The assembly of modules typically involves connecting the cells, mating the cell strings, laminating the matrix with glass, encasing the laminated cells and glass in a frame, and soldering or joining an electric box to the module.[27] In contrast, thin film products are produced by directly placing thin photovoltaic material (i.e., amorphous silicon, cadmium telluride, copper gallium selenide) onto dye-sensitized substrate such as glass or stainless steel.[28]

As Respondents acknowledge, because the production of CSPV modules and thin film products involve very different technologies, they are manufactured in different facilities using different employees.[29] There is no U.S. manufacturer that produces both CSPV and thin film modules on the same manufacturing facilities, same equipment or with the same employees.[30]

Interchangeability. Petitioner indicates that the different physical characteristics of CSPV and thin film products limit their interchangeability. Specifically, because thin film panels are less efficient and have lower wattage outputs, more thin film modules are needed to produce the same wattage as CSPV modules. As a result, thin film weighs more and requires more space for installation. Petitioner states that thin film products are therefore used in the utility sector of the market and are not suitable in places in which space is limited, such as residential roof-tops and commercial applications.[31]

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[23] Petition Vol. 1at 17.

[24] CR at I-26-I-27.

[25] Sun Edison Brief at 7.

[26] CR at I-10, I-26.

[27] CR at I-31-32.

[28] CR at I-32.

[29] CCCME Brief at 15; Sun Edison Brief at 14; CR at I-32.

[30] CR at I-32.

[31] Petitioner Brief Ex. 1 at 14-15.

Respondents claim that the two products are interchangeable in the marketplace and compete in all market segments. Sun Edison indicated that it uses both products in its power generation systems.[32]

The record indicates that thin film modules can be used in all three of the major grid-connected market segments and in the off-grid market. Additionally, the more flexible and lightweight thin film modules can be used on rooftops that are not able to hold a significant amount of weight.[33] As noted earlier, Respondents acknowledge that thin film module use in the residential and non-residential segments is less prevalent than in the utility segment of the market.

Producer and Customer Perceptions. Petitioner claims that customers and producers generally perceive CSPV cells to be the established PV technology with high efficiency and thin film products as a newer technology and less efficient than CSPV products.[34] Respondents maintain that customers and producers perceive both products to be similar and in direct competition with each other. They also claim that customers, especially large solar project developers, will consider bids for both types of technology.[35]

Channels of Distribution. Petitioner indicates that CSPV and thin film products are sold in different channels of distribution. Specifically, it notes that CSPV modules are sold to distributors and installers in the residential and nonresidential segments of the market, while in the utility segment, the panels are generally sold pursuant to direct negotiations. It claims that most thin film products are sold to utilities.[36] Respondents claim that the channels of distribution for both types of products are identical, as both are sold directly to utilities and both are sold to wholesalers and distributors for resale in the residential and commercial segments.[37]

Price. Petitioner states that, given the different technologies and raw material inputs, CSPV and thin film products have a different cost structure. Generally, thin film solar panels are less costly to produce and are therefore priced lower than CSPV products.[38] Respondents indicate that while thin film products may be less expensive than CSPV products on a per watt basis, they are priced to be competitive. They note that more BOS components generally are required in a thin film system than in a CSPV system. According to Respondents, the higher prices for a thin film system is due to the fact that a thin film system of a particular capacity will generally require more land, more labor, more structure, and more wiring than a CSPV system of the same capacity.[39]

Conclusion. I find that whether to expand the domestic like product beyond the scope of CSPV cells and modules to include thin film products is a close call. CSPV products and thin film products have different chemical compositions and physical characteristics which affect the inherent properties of each and may limit their interchangeability. In particular, thin film products tend to be less efficient than CSPV modules and thin film systems require more panels than CSPV systems to achieve comparable efficiencies and output. A thin film system of a given capacity will generally require more land, more labor, more structure, and more wiring than a CSPV system of the same capacity. To a large degree, these distinctions result in the sales of thin film products being concentrated in the utility segment of the market, while CSPV systems are not so limited and are used in all market segments. When serving different market segments, they are generally sold in different channels of distribution. Finally, the parties agree that prices for CSPV and thin film products differ on a per watt basis, with a total thin film system generally more expensive than a total CSPV system of the same capacity. The evidence, however,

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[32] CCCME Brief at 11-12; Sun Edison Brief at 7-8.

[33] CR at I-28.

[34] Petitioner Brief Ex. 1 at 19.

[35] CCCME Brief at 12-14.

[36] Petitioner Brief Ex. 1 at 16-18, Petition at 19-20.

[37] CCCME Brief at 12; Sun Edison Brief at 13.

[38] Petitioner Brief Ex. 1 at 11.

[39] CCCME Brief at 16.

is mixed as to whether the established PV technology and newer thin film product technology are perceived by producers and customers to compete with each other.

Based on the evidence in the record, I therefore determine not to expand the definition of domestic like product beyond the scope for purposes of these preliminary phase investigations to include thin film products.

2. Whether CSPV cells and modules should be separate like products.

Because cells are produced for their ultimate use within modules, I refer to the semifinished products like product analysis to examine whether they should be in the same domestic like product.[40] I note that no party has advocated that the Commission define CSPV cells and modules as two separate like products.

Whether Upstream Article is Dedicated to Production of Downstream Article. Cells are dedicated to the production of the final product, CSPV modules, that are within the scope. They generally serve no other purpose than the creation of the downstream final product. Only a very small portion of domestic cell production is used for products other than module assembly.[41]

Independent Markets for Upstream and Downstream Articles. In essence, both PV cells and modules are "the building blocks" of solar photovoltaic power generation systems. Cells are strung together into modules to increase the power generated by the module. The modules are then interconnected into a power generation system to achieve the total wattage for a particular project, regardless of the market segment.[42]

Cells are typically either internally consumed by vertically integrated firms to produce modules or are sold to module assemblers. Moreover, the merchant market in the United States for cells produced domestically is very small. In 2010, only *** percent of total cells produced were sold commercially and most of these cells were used for module assembly.[43]

Differences in Physical Characteristics and Functions of the Upstream and Downstream Articles. Both cells and modules are made from crystalline silicon and ultimately convert sunlight directly into electricity through photovoltaic effect. Modules effectively are groups of cells conductively connected into a string, and laminated with special solar glass and other materials to facilitate electricity generation and protect the cells. Thus, the physical characteristics and functions of cells and modules essentially are the same.[44]

Differences in Cost or Value of the Vertically Differentiated Articles. There is a moderate difference in the cost or value of cells or final module products. The most expensive step in the production of the final product, modules, is the crystallization of cells themselves and involves several capital intensive steps, namely, growing the crystals, producing the wafers, and then converting the

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[40] In the semifinished products analysis, the Commission examines: (1) whether the upstream article is dedicated to the production of the downstream article or has independent uses; (2) whether there are perceived to be independent markets for the upstream and downstream articles; (3) differences in the physical characteristics and functions of the upstream and downstream articles; (4) differences in the costs or value of the vertically differentiated articles; and (5) significance and extent of the processes used to transform the upstream into the downstream articles. The semi-finished product analysis generally is applied to assess whether products at different stages of processing that are vertically related to each other should be included in the same like product. See e.g., Drill Pipe and Drill Collars from China, Inv. Nos. 701-TA-474 and 731-TA-1176 (Preliminary), USITC Pub. 4127 (March 2010) at 7 (involving green tubes and finished drill pipe).

[41] Petitioner Brief Ex.1 at 3.

[42] Petitioner Brief Ex.1 at 3-4.

[43] Petitioner Brief Ex.1 at 3-4.

[44] CR at I-11.

wafers into cells capable of generating electricity. The U.S. producer data submitted to the Commission indicate that the CSPV cell accounted for *** percent of the total cost of goods sold for modules in January-June 2011.[45]

Significance and Extent of Processes Used to Transform Upstream into Downstream Articles. Production of the finished product, modules, involves four primary steps – crystallization, wafer production, cell conversion, and module assembly – along with packing and inspection of the final product. CSPV cells undergo only one additional production step, the assembly into modules, before transformation into the finished product.[46]

Conclusion. Thus, as the record in these preliminary phase investigations indicates that nearly all CSPV cells are dedicated to the production of PV modules, both cells and modules are sold in similar markets, both share the same primary physical characteristics, cells represent a substantial portion of the cost and the value of a finished module, and cells undergo only one major production step before transformation into modules, I define cells and modules as one domestic like product.

3. Whether "off-grid" modules should be a separate like product.

Another issue raised is whether "off-grid" modules should be considered a separate like product from CSPV cells and modules. "Off-grid" modules are modules that are used in CSPV systems that are designed to operate outside an electrical grid.[47] Petitioner argues that "off-grid panels" should be included with the definition of domestic like product under the Commission's traditional six-factor analysis. It also notes it is unaware of any domestic production of off-grid panels. Respondents have not raised any arguments with respect to this issue.

The record indicates that "off-grid" modules are not produced domestically. When there is no domestic production of an article described in the scope, the Commission must include "the most similar" article that is domestically produced in the like product.[48] In this instance, the product most similar to the subject merchandise would be CSPV cells and modules.

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[45] Petitioner Brief Ex. 1 at 6.

[46] Petitioner Brief at 6.

[47] CR at I-14.

[48] See, e.g., Certain Cold-Rolled Steel Products from Argentina, Australia, Belgium, Brazil, China, France, Germany, India, Japan, Korea, the Netherlands, New Zealand, Russia, South Africa, Spain, Sweden, Taiwan, Thailand, Turkey, and Venezuela, Inv. Nos. 701-TA-422-425 (Preliminary) and 731-TA-964-983 (Preliminary), USITC Pub. 3471 (November 2001) at 5-6, n. 21; Silicomanganese from India, Kazakhstan, and Venezuela, Inv. Nos. 731-TA-929-931 (Preliminary), USITC Pub. 3427 (May 2001) at 4-5 & n. 15; Synthetic Indigo from China, Inv. No. 731-TA-851 (Preliminary), USITC Pub. 3222 at 7 (Aug. 1999) ("[S]ince indigo slurry is within the scope of the investigation, and there is no domestic production of indigo slurry for domestic sales, the `domestic like product' is the product `most similar in characteristics and uses with' the subject imports"); Extruded Rubber Thread from Malaysia, Inv. No. 753-TA-34, USITC Pub. 3112 at 5 (June 1998) (Since domestic production of food-grade ERT product "d[id] not exist in any practical sense," the Commission concluded it could not be considered a domestic like product); Professional Electric Cutting and Sanding/Grinding Tools from Japan, Inv. No. 731-TA-571 (Preliminary), USITC Pub. 2536 at 17 (July 1992) ("The Commission has rejected `the notion that a like product could be defined as a product not produced by a U.S. industry.' Such proposals ignore our obligation under the statute to determine which U.S.-made products are like or most similar to the imports under investigation"); Nepheline Syenite from Canada, Inv. No. 731-TA-525 (Final), USITC Pub. 2502 at 7 (April 1992) (Since nepheline syenite was not produced in the United States, the Commission defined the domestic like product to include two similar products, feldspar and aplite.), aff'd, Feldspar Corp. v. United States, 825 F. Supp. 1095 (Ct. Int'l Trade 1993).

Conclusion. For the reasons discussed above, for purposes of these preliminary phase investigations I define a single domestic like product, consisting of CSPV cells and modules, coextensive with the scope of these investigations.

IV. DOMESTIC INDUSTRY

The domestic industry is defined as the domestic "producers as a whole of a domestic like product, or those producers whose collective output of a domestic like product constitutes a major proportion of the total domestic production of the product."[49] In defining the domestic industry, the Commission's general practice has been to include in the industry producers of all domestic production of the like product, whether toll-produced, captively consumed, or sold in the domestic merchant market.

Petitioner asks the Commission to determine that there is one domestic industry and that it consists the U.S. producers that produce crystalline silicon PV cells and modules as defined by the scope of the investigations.[50] In so doing, Petitioner argues that producers that assemble modules in the United States engage in sufficient production related activities to be considered part of the domestic industry. Petitioner, however, argues that certain related producers be excluded from the domestic industry. Respondents have not raised any arguments with respect to the definition of the domestic industry.

For the reasons discussed below, I define the domestic industry as producers of the domestic like product, i.e., all U.S. manufacturers of CSPV cells and modules.

1. Sufficient Production-Related Activities

When assessing the nature and extent of production-related activities associated with particular operations, the Commission usually applies a six-factor framework:

(1) source and extent of the firm's capital investment;
(2) technical expertise involved in the production activities;
(3) value added to the product;
(4) employment levels;
(5) quantity, type and source of parts; and
(6) any other costs and activities directly leading to production of the like product.

No single factor is determinative and the Commission may consider any other factors it deems relevant in light of the specific facts of any investigation. The Commission has repeatedly emphasized the sui generis nature of this inquiry.[51]

a. Analysis

Source and extent of the firm's capital investment. Petitioner states while the critical technology, intellectual property, and capital investment are most concentrated in the cell stage of production, module assembly operations also require continuing research and development and capital spending in order to

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[49] 19 U.S.C. § 1677(4)(A).

[50] Petitioner Brief at 4.

[51] See Lightweight Thermal Paper from China, Germany, and Korea, Inv. No. 701-TA-451 and 731-TA-1126 to 1128 (Prelim.), USITC Pub. 3964 at n.76 (Nov. 2007); Diamond Sawblades and Parts Thereof from China and Korea, Invs. Nos. 731-TA-1092 to 1093 (Final), USITC Pub. 3862 at 8-11 (Jul. 2006) (assemblers included in the industry); Certain Frozen or Canned Warmwater Shrimp and Prawns from Brazil, China, Ecuador, India, Thailand, and Vietnam, Invs. Nos. 731-TA-1063-68 (Final), USITC Pub. 3748 at 12-14 (Jan. 2005)

improve crystalline silicon PV technology, increase manufacturing efficiencies, and lower costs. In 2010, reported capital expenditures for cell production were $***, while reported capital expenditures for module production were $***.[52]

Technical expertise involved in U.S. production activities. Production of crystalline silicon PV cells is highly automated and involves several technologically sophisticated processing steps including the growth of crystals, production of wafers, and the conversion of wafers into cells capable of generating electricity. Assembly of modules typically involves connecting the cells, mating the cell strings, laminating the matrix with glass, encasing the laminated cells and glass in a frame, and soldering or joining an electric box to the module. According to Petitioner, the assembly process is more labor intensive than cell production, but nonetheless is a highly automated and sophisticated process.[53]

Value added to the product in the United States. Although CSPV cells account for the greater proportion of the cost and value of a finished solar panel, module assembly operations account for approximately *** percent of the total cost of production of a finished module. In 2010, CSPV module assembly costs expended by module producers were $***.[54]

Employment levels. Module assembly accounts for the majority of labor production costs in the production of the finished module. Questionnaire responses reflect that producers of modules employ *** production and related workers than producers of cells.[55]

Quantity and type of parts sourced in the United States. Most cells used in the production of the finished module are sourced in the United States.[56] The remainder are imported from nonsubject countries and China.[57]

Any other costs and activities in the United States directly leading to production of the like product. In 2010, U.S. CSPV cell assets of the *** domestic cell producers were $*** in 2010, while U.S. module assets amounted to close to $***.[58]

*Conclusion***.** I find that U.S. module assembly operations constitute sufficient production-related activities to treat those engaging in these operations as part of the domestic industry (and their finished products as shipments of the domestic like product). Module operations have substantial capital investments and other costs and use significant technical expertise and a large number of employees in the production of the finished module. Additionally, the transformation of cells into the modules adds significant value to the finished module. Accordingly, I determine that U.S. module assembly operations are part of the domestic industry.

2. Related Parties

I must determine whether any producer of the domestic like product should be excluded from the domestic industry pursuant to 19 U.S.C. § 1677(4)(B). Subsection 1677(4)(B) allows the Commission, if appropriate circumstances exist, to exclude from the domestic industry producers that are related to an

[52] Petitioner Brief at 5.

[53] Petitioner Brief at 6.

[54] Petitioner Brief at 6.

[55] CR at Table III-9.

[56] Petitioner Brief at 6.

[57] Petitioner Brief at 7.

[58] Petitioner Brief at 7.

exporter or importer of subject merchandise or which are themselves importers.[59] Exclusion of such a producer is within the Commission's discretion based upon the facts presented in each investigation.[60]

Petitioner argues that four firms, Evergreen, SunTech, Motech, and Wanxiang should be excluded from the domestic industry based on the statutory related party provision.[61] Respondents do not make any arguments concerning related party issues. In addition to the four firms identified by Petitioner, there are five other firms, ***, that are related parties by virtue of their affiliation with a subject exporter and/or their importation of subject imports during the period of investigation.

I note that ***, reported importing subject merchandise after June 30, 2011.[62] The Commission did not collect financial data for any U.S. producer after the end of June, thus rendering the question of whether to exclude *** essentially moot. Additionally, another of the firms, ***, did not report U.S. production of CSPV cells or modules during the period of investigation.[63] As such, *** was not a domestic producer during the period of investigation and its data would not be included in the domestic industry. I therefore analyze whether there are appropriate circumstances to exclude the remaining six firms from the domestic industry.

a. ***

*** qualifies as a related party because it was an importer of subject merchandise during the period of investigation. The company is the *** producer of cells and modules. It imported *** cells from China in 2008, which were equivalent to *** percent of its domestic production of cells for that year.[64] It does not appear that *** derived a significant benefit from its importation of the subject merchandise in 2008, as it *** for that year.[65] I do not exclude *** from the domestic industry as a related party because it is the ***, the *** producer, no party argued for its exclusion, and exclusion of its data would skew the data on the domestic industry.

Evergreen, a domestic producer of CSPV cells during the period of investigation, is a related party as a result of a joint venture it formed with a Chinese subject producer in 2010. Evergreen shut down its U.S. production operations in March 2011 and, according to Petitioner, moved its production to China due to its inability to compete with Chinese imports.[66] As it had throughout the period of investigation, Evergreen reported *** in 2010 and January-June 2011 ("interim 2011"), the period of time that would have been affected by the joint venture.[67] Evergreen accounted for *** percent of U.S. production of CSPV modules in 2010.[68] I do not find that appropriate circumstances exist to exclude Evergreen from the domestic industry because there is no clear indication that it has benefitted from its joint venture. Moreover, it would be anomalous to exclude a producer's data when that producer appears to have been driven out of business as a result of the subject imports, given that the record suggests that Evergreen's move to China may be due in part to its inability to compete with subject Chinese imports.

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[59] 19 U.S.C. § 1677(4)(B).

[60] See Torrington Co. v. United States, 790 F. Supp. 1161, 1168 (Ct. Int'l Trade 1992); Sandvik AB v. United States, 721 F. Supp. 1322, 1331-32 (Ct. Int'l Trade 1989), aff'd without opinion, 904 F.2d 46 (Fed. Cir. 1990); Empire Plow Co. v. United States, 675 F. Supp. 1348, 1352 (Ct. Int'l Trade 1987).

[61] Petition at 22-25.

[62] CR at Table III-7 n. 1 and 2.

[63] CR at III-4 n.4.

[64] Calculated from CR at Table III-7.

[65] CR at Table VI-5.

[66] CR at III-4 n.4; Petition Vol. I at 25, Ex.24.

[67] CR at Table VI-5.

[68] CR at Table III-1.

b. U.S. cell producers

*** producer of CSPV cells, also qualifies as a related party because it was an importer of cells and modules from China. The company ***.[69] *** imported *** cells from China in 2008 and *** cells in 2009 corresponding to approximately *** and *** percent, respectively of its cell production for each of those two years.[70] *** also imported *** modules from China in 2009 and ***, modules from China in 2010 and *** modules in interim 2010 and *** modules in 2011.[71] *** imports of subject merchandise from China were generally small, except for 2009. As with many of the U.S. producers, *** reported *** throughout the period.[72] *** accounted for only *** percent of U.S. CSPV-cell production in 2010.[73] For all of these reasons, I find that appropriate circumstances do not exist to exclude *** from the domestic industry as a related party.

c. U.S. Module Producers

Three U.S. producers of CSPV modules are related parties due to their importation of subject merchandise during the period of investigation. Analysis of whether appropriate circumstances exist to exclude any of these producers from the domestic industry is complicated by the fact that most of their imports of subject merchandise were of CSPV cells which they used in their production of modules. The percentage of imports of cells to production of modules is unknown, as there is not a one-to-one correlation of cells to panels assembled. Ordinarily, I would consider the ratio of imports to the related party's production to determine whether a related party's interest lies with domestic production or importation. Additionally, given that most of the cells used by these particular assemblers are imported from nonsubject sources as well as from China, it is difficult to ascertain what financial benefit, if any, has been derived from each of these firm's importation of the subject merchandise or imports from nonsubject sources. I have, therefore, also considered the ratio of subject imports to total imports of each of these producers as well as the other factors I generally consider in determining whether appropriate circumstances exist to exclude any of these module producers.

, the *** reporting producer of CSPV panels, also qualifies as a related party by virtue of its importation of subject merchandise during the period of investigation. ***, imported *** cells from China in 2010 and *** cells from China in interim 2011 compared to *** cells imported from China in interim 2010.[74] Its ratio of subject imports to nonsubject imports was *** percent in 2010 and was higher at *** percent in interim 2011.[75] Whether or not it derived any benefits from its imports from China is unclear. *** reported *** in 2010 and *** in interim 2011.[76] *** accounted for a relatively *** percentage (percent) of U.S. production of CSPV module production in 2010.[77] For these reasons, I determine that *** should not be excluded from the domestic industry for purposes of these preliminary investigations.

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[69] CR at Table III-1.

[70] Calculated from CR at Table III-7.

[71] CR at Table III-7.

[72] CR at Table VI-5.

[73] CR at Table III-1.

[74] CR at Table III-7.

[75] CR/PR at Table III-7.

[76] CR at Table IV-5.

[77] CR at Table III-1.

SunTech is a subsidiary of a Chinese producer of solar cells and imported an unknown quantity of CSPV cells from China.[78] Although the quantity of its imports was not reported, SunTech indicated that it imported only from its parent company. SunTech began operations in late 2010 and ***.[79] Consequently, the question of whether to exclude SunTech is largely moot. Its interim data, however, shows *** which does not suggest SunTech is benefitting from its importation of subject merchandise. SunTech *** with respect to the petition in its questionnaire response.[80] In light of the limited data in these preliminary phase investigations, I do not determine that appropriate circumstances exist to exclude SunTech from the domestic industry.

Motech is a subsidiary of Motech Industries, Inc., a Taiwanese cell producer with production facilities in China. Motech, which began U.S. production in 2010, imported *** modules from China in interim 2011. Motech's imports of modules in interim 2011 represented *** percent of its panel production for that time frame.[81] Motech also imported *** cells from China in 2010 and *** cells from China in interim 2011. Motech imported cells from nonsubject sources as well and its ratio of subject imports to total imports was *** percent in 2010 but was *** percent in interim 2011. Whether or not it derived any benefits from its imports from China is unclear, as it reported *** in 2010 and *** than those reported in interim 2010.[82] I note that Motech *** with respect to the petition. For these reasons and the fact that Motech is a relatively small producer of modules, I do not find that appropriate circumstances exist to exclude Motech from the domestic industry in these preliminary phase investigations.

Conclusion

For the reasons stated above, I define the domestic industry to include all domestic producers of CSPV cells and modules.

VI. REASONABLE INDICATION OF MATERIAL INJURY BY REASON OF SUBJECT MERCHANDISE FROM CHINA[83]

A. Legal Standard

In the preliminary phase of antidumping duty or countervailing duty investigations, the Commission determines whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury by reason of the imports under investigation.[84] In making this determination, the Commission must consider the volume of subject imports, their effect on prices for the domestic like product, and their impact on domestic producers of the domestic like product, but only in the context of U.S. production operations.[85] The statute defines "material injury" as "harm

[78] CR at Table III-7.

[79] CR at Table III-7 n.3 and CR at Table VI-5.

[80] CR at Table III-1.

[81] Calculated from CR at Table III-7.

[82] CR at Table VI-5.

[83] Negligibility under 19 U.S.C. § 1677(24) is not an issue in these investigations. During the 12-month period prior to the filing of the petitions, subject imports from China accounted for 44.1 percent of total imports. Calculated from official import statistics.

[84] 19 U.S.C. §§ 1671b(a), 1673b(a).

[85] 19 U.S.C. § 1677(7)(B)(i). The Commission "may consider such other economic factors as are relevant to the determination" but shall "identify each {such} factor ... {a}nd explain in full its relevance to the determination." 19 U.S.C. § 1677(7)(B).

which is not inconsequential, immaterial, or unimportant."[86] In assessing whether there is a reasonable indication that the domestic industry is materially injured by reason of subject imports, I consider all relevant economic factors that bear on the state of the industry in the United States.[87] No single factor is dispositive, and all relevant factors are considered "within the context of the business cycle and conditions of competition that are distinctive to the affected industry."[88]

Although the statute requires the Commission to determine whether there is a reasonable indication that the domestic industry is "materially injured by reason of" unfairly traded imports,[89] it does not define the phrase "by reason of," indicating that this aspect of the injury analysis is left to the Commission's reasonable exercise of its discretion.[90] In identifying a causal link, if any, between subject imports and material injury to the domestic industry, the Commission examines the facts of record that relate to the significance of the volume and price effects of the subject imports and any impact of those imports on the condition of the domestic industry. This evaluation under the "by reason of" standard must ensure that subject imports are more than a minimal or tangential cause of injury and that there is a sufficient causal, not merely a temporal, nexus between subject imports and material injury.[91]

In many investigations, there are other economic factors at work, some or all of which may also be having adverse effects on the domestic industry. Such economic factors might include nonsubject imports; changes in technology, demand, or consumer tastes; competition among domestic producers; or management decisions by domestic producers. The legislative history explains that the Commission must examine factors other than subject imports to ensure that it is not attributing injury from other factors to the subject imports, thereby inflating an otherwise tangential cause of injury into one that satisfies the statutory material injury threshold.[92] In performing its examination, however, the Commission need not

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[86] 19 U.S.C. § 1677(7)(A).

[87] 19 U.S.C. § 1677(7)(C)(iii).

[88] 19 U.S.C. § 1677(7)(C)(iii).

[89] 19 U.S.C. §§ 1671b(a), 1673b(a).

[90] Angus Chemical Co. v. United States, 140 F.3d 1478, 1484-85 (Fed. Cir. 1998) ("{T}he statute does not 'compel the commissioners' to employ {a particular methodology}."), aff'g 944 F. Supp. 943, 951 (Ct. Int'l Trade 1996).

[91] The Federal Circuit, in addressing the causation standard of the statute, has observed that "{a}s long as its effects are not merely incidental, tangential, or trivial, the foreign product sold at less than fair value meets the causation requirement." Nippon Steel Corp. v. USITC, 345 F.3d 1379, 1384 (Fed. Cir. 2003). This was re-affirmed in Mittal Steel Point Lisas Ltd. v. United States, 542 F.3d 867, 873 (Fed. Cir. 2008), in which the Federal Circuit, quoting Gerald Metals, Inc. v. United States, 132 F.3d 716, 722 (Fed. Cir. 1997), stated that "this court requires evidence in the record 'to show that the harm occurred "by reason of" the LTFV imports, not by reason of a minimal or tangential contribution to material harm caused by LTFV goods.'" See also Nippon Steel Corp. v. United States, 458 F.3d 1345, 1357 (Fed. Cir. 2006); Taiwan Semiconductor Industry Ass'n v. USITC, 266 F.3d 1339, 1345 (Fed. Cir. 2001).

[92] Statement of Administrative Action ("SAA") on Uruguay Round Agreements Act ("URAA"), H.R. Rep. 103-316, Vol. I at 851-52 (1994) ("{T}he Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports."); S. Rep. 96-249 at 75 (1979) (the Commission "will consider information which indicates that harm is caused by factors other than less-than-fair-value imports."); H.R. Rep. 96-317 at 47 (1979) ("in examining the overall injury being experienced by a domestic industry, the ITC will take into account evidence presented to it which demonstrates that the harm attributed by the petitioner to the subsidized or dumped imports is attributable to such other factors;" those factors include "the volume and prices of nonsubsidized imports or imports sold at fair value, contraction in demand or changes in patterns of consumption, trade restrictive practices of and competition between the foreign and domestic producers, developments in technology and the export performance and productivity of the domestic industry"); accord Mittal Steel, 542 F.3d at 877.

isolate the injury caused by other factors from injury caused by unfairly traded imports.[93] Nor does the "by reason of" standard require that unfairly traded imports be the "principal" cause of injury or contemplate that injury from unfairly traded imports be weighed against other factors, such as nonsubject imports, which may be contributing to overall injury to an industry.[94] It is clear that the existence of injury caused by other factors does not compel a negative determination.[95]

Assessment of whether material injury to the domestic industry is "by reason of" subject imports "does not require the Commission to address the causation issue in any particular way" as long as "the injury to the domestic industry can reasonably be attributed to the subject imports" and the Commission "ensure{s} that it is not attributing injury from other sources to the subject imports."[96] Indeed, the Federal Circuit has examined and affirmed various Commission methodologies and has disavowed "rigid adherence to a specific formula."[97]

The Federal Circuit's decisions in Gerald Metals, Bratsk, and Mittal Steel all involved cases in which the relevant "other factor" was the presence in the market of significant volumes of price-competitive nonsubject imports. The Commission interpreted the Federal Circuit's guidance in Bratsk as requiring it to apply a particular additional methodology following its finding of material injury in cases involving commodity products and a significant market presence of price-competitive nonsubject imports.[98] The additional "replacement/benefit" test looked at whether nonsubject imports might have replaced subject imports without any benefit to the U.S. industry. The Commission applied that specific additional test in subsequent cases, including the Carbon and Certain Alloy Steel Wire Rod from Trinidad and Tobago determination that underlies the Mittal Steel litigation.

Mittal Steel clarifies that the Commission's interpretation of Bratsk was too rigid and makes clear that the Federal Circuit does not require the Commission to apply an additional test nor any one specific

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[93] SAA at 851-52 ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports."); Taiwan Semiconductor Industry Ass'n v. USITC, 266 F.3d 1339, 1345 (Fed. Cir. 2001) ("{T}he Commission need not isolate the injury caused by other factors from injury caused by unfair imports . . . . Rather, the Commission must examine other factors to ensure that it is not attributing injury from other sources to the subject imports." (emphasis in original)); Asociacion de Productores de Salmon y Trucha de Chile AG v. United States, 180 F. Supp. 2d 1360, 1375 (Ct. Int'l Trade 2002) ("{t}he Commission is not required to isolate the effects of subject imports from other factors contributing to injury" or make "bright-line distinctions" between the effects of subject imports and other causes.); see also Softwood Lumber from Canada, Inv. Nos. 701-TA-414 and 731-TA-928 (Remand), USITC Pub. 3658 at 100-01 (Dec. 2003) (Commission recognized that "{i}f an alleged other factor is found not to have or threaten to have injurious effects to the domestic industry, i.e., it is not an 'other causal factor,' then there is nothing to further examine regarding attribution to injury"), citing Gerald Metals, Inc. v. United States, 132 F.3d 716, 722 (Fed. Cir. 1997) (the statute "does not suggest that an importer of LTFV goods can escape countervailing duties by finding some tangential or minor cause unrelated to the LTFV goods that contributed to the harmful effects on domestic market prices.").

[94] S. Rep. 96-249 at 74-75; H.R. Rep. 96-317 at 47.

[95] See Nippon Steel Corp., 345 F.3d at 1381 ("an affirmative material-injury determination under the statute requires no more than a substantial-factor showing. That is, the 'dumping' need not be the sole or principal cause of injury.").

[96] Mittal Steel, 542 F.3d at 877-78; see also id. at 873 ("While the Commission may not enter an affirmative determination unless it finds that a domestic industry is materially injured 'by reason of' subject imports, the Commission is not required to follow a single methodology for making that determination ... . {and has} broad discretion with respect to its choice of methodology.") citing United States Steel Group v. United States, 96 F.3d 1352, 1362 (Fed. Cir. 1996) and S. Rep. 96-249 at 75.

[97] Nucor Corp. v. United States, 414 F.3d 1331, 1336, 1341 (Fed. Cir. 2005); see also Mittal Steel, 542 F.3d at 879 ("Bratsk did not read into the antidumping statute a Procrustean formula for determining whether a domestic injury was 'by reason' of subject imports.").

[98] Mittal Steel, 542 F.3d at 875-79.

methodology; instead, the court requires the Commission to have "evidence in the record 'to show that the harm occurred 'by reason of' the LTFV imports,'" and requires that the Commission not attribute injury from nonsubject imports or other factors to subject imports.[99] Accordingly, I do not consider myself required to apply the replacement/benefit test that was included in Commission opinions subsequent to Bratsk.

The progression of Gerald Metals, Bratsk, and Mittal Steel clarifies that, in cases involving commodity products where price-competitive nonsubject imports are a significant factor in the U.S. market, the Court will require the Commission to give full consideration, with adequate explanation, to non-attribution issues when it performs its causation analysis.[100] [101]

The question of whether the material injury threshold for subject imports is satisfied notwithstanding any injury from other factors is factual, subject to review under the substantial evidence standard. Congress has delegated this factual finding to the Commission because of the agency's institutional expertise in resolving injury issues.[102]

B. Data Issues

A threshold question in these investigations is whether the scope includes CSPV modules assembled in China from third-country CSPV cells and CSPV modules assembled in a third country from CSPV cells produced in China as well as CSPV cells produced in China and CSPV modules produced in China using Chinese produced cells. As noted earlier, Petitioner indicated that it intended to include CSPV modules using CSPV cells from nonsubject sources; and modules in nonsubject countries processed from CSPV cells manufactured in China in the scope of the investigation. This request was not adopted by Commerce for purposes of initiation.[103] However, it is unclear from the current scope language whether CSPV modules produced in China from CSPV cells from nonsubject sources and CSPV modules processed in nonsubject countries from CSPV cells produced in China are within the scope of the investigations. Respondents argue that the data collected by the Commission to a large extent did not capture these categories of imports.

With respect to data in the record, questionnaires were issued at the beginning of the investigations seeking data on CSPV cells produced in China and CSPV modules produced in China. Although the questionnaire data captured to some extent CSPV modules produced in China made with

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[99] Mittal Steel, 542 F.3d at 873 (quoting from Gerald Metals, 132 F.3d at 722), 875-79 & n.2 (recognizing the Commission's alternative interpretation of Bratsk as a reminder to conduct a non-attribution analysis).

[100] I also refer to my dissenting views in Polyethylene Terephthalate Film, Sheet, and Strip from Brazil, China, Thailand, and the United Arab Emirates, Inv. Nos. 731-TA-1131-1134 (Final), USITC Pub. 4040 (Oct. 2008), for further discussion of Mittal Steel.

[101] To that end, after the Federal Circuit issued its decision in Bratsk, the Commission began to present published information or send out information requests in final phase investigations to producers in nonsubject countries that accounted for substantial shares of U.S. imports of subject merchandise (if, in fact, there were large nonsubject import suppliers). In order to provide a more complete record for the Commission's causation analysis, these requests typically seek information on capacity, production, and shipments of the product under investigation in the major source countries that export to the United States. The Commission plans to continue utilizing published or requested information in final phase investigations in which there are substantial levels of nonsubject imports.

[102] Mittal Steel, 542 F.3d at 873; Nippon Steel Corp., 458 F.3d at 1350, citing U.S. Steel Group, 96 F.3d at 1357; S. Rep. 96-249 at 75 ("The determination of the ITC with respect to causation is ... complex and difficult, and is a matter for the judgment of the ITC.").

[103] Emphasizing that Petitioner's revision request was filed just two days before issuance of the notice, Commerce stated that "the Department has neither the time nor the administrative resources to evaluate Petitioner's proposed language regarding merchandise produced using inputs from third-country markets, or merchandise processed in third-country markets." 76 Fed. Reg 70960, 70961 (Nov. 16, 2011)

CSPV cells from nonsubject sources and CSPV modules imported from third countries made with CSPV cells made in China, there is no way to distinguish these imports from other nonsubject sources. According to the Commission's staff report, only one questionnaire recipient deemed CSPV modules produced using cells from nonsubject sources not to be subject imports. None of the recipients reported modules processed from cells produced in China to be subject imports. Additionally, U.S. importers and foreign producers in China were asked to submit data regarding both their cell and module imports and their exports of cells and modules. As such, U.S. importers and foreign producers should have reported module imports or exports in their questionnaire responses regardless of the country of origin of the cells. Nevertheless, the staff report has compiled U.S. imports from China and nonsubject countries from official Commerce statistics as defined by statistical reporting numbers. The data from official Commerce statistics should include CSPV cells produced in China, CSPV modules produced in China from Chinese produced cells, and CSPV modules produced in China that are processed from cells produced in nonsubject countries.[104] Consequently, for purposes of these preliminary determinations, I rely on official Commerce statistics for the subject and nonsubject import volume and market share.

Another data issue raised in these investigations is measure of quantity: volume or value. Both Petitioner and Respondents indicated that the volumes reported in official statistics under subheading 8541.40.6020 (modules) may be understated. Because this subheading defines a module as "solar cells assembled into modules or panels," the modules reported most likely report the number of modules and not the number of cells imported into the United States. Consequently, the unit values may be aberrational and U.S. import volumes of total cells may be understated.

For these reasons, despite the fact that our normal practice is to consider volume in terms of weight or units rather than value,[105] I have relied on value rather than quantity measurements to measure volume in the preliminary phase of these investigations, unless otherwise noted. Additionally, because modules are dedicated products and the vast majority of cells produced in the United States are internally consumed into modules, to avoid double-counting, I rely on Table C-2 (modules) for import volume as

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[104] CR at I-8 n.8.

[105] Compare, e.g., Coated Free Sheet Paper from China, Indonesia, and Korea, Invs. Nos. 701-TA-444 to 446 and 731-TA-1136 to 1137 (Final), USITC Pub. 3965 at 8 (Dec. 2007) ("the Commission generally avoids measuring import volume on the basis of value."); Certain Off-the-Road Tires from China, Invs. Nos. 701-TA-448 and 731-TA-1117 (Prelim.), USITC Pub. 3943 at 12, n.58 (Aug. 2007) (deviating from the "normal practice" by considering both value and unit measurements of volume due to " large variations in unit values both among the subject merchandise and among the articles in the domestic like product. Further, one of the issues presented in these investigations is whether the domestic industry has begun producing and selling more of the higher-valued products within the domestic like product, and, if so, the extent to which this is due to the effects of the subject imports or other factors."); Certain Off-the-Road Tires from China, Invs. Nos. 701-TA-448 and 731-TA-1117 (Final), USITC Pub. 4031 at 15 (Aug. 2008); and Certain Lined Paper School Supplies from China, India, and Indonesia, Invs. Nos. 701-TA-442 to 443 and 731-TA-1095 to 1097(Final), USITC Pub. 3884 at 19 (Sept. 2006) ("We typically rely on quantity-based measures of volume because value-based measures can be skewed by changes of product mix and the fact that, for subject imports, the unit values are of merchandise sold at LTFV ... . Although the Commission has relied principally on value-based measurements in rare instances, those investigations involved variations in value among articles within the scope and/or domestic like product that were much larger than those present here. In those instances, measuring volume by units was particularly problematic, because value variations for different articles could differ by factors of as much as 100."), aff'd on this point in Navneet Publications (India), Ltd. v, United States, 30 Int'l Trade Rep. 1430 (Ct. Int'l Trade Feb. 26, 2008) with, e.g., Torrington Co. v. United States, 790 F. Supp. 1161, 1172-73 (Ct. Int'l Trade 1992) (noting the statute does not specify how volume is to be evaluated and the Commission's discretion in investigative methodology) (permissible to rely on value basis to evaluate import volumes); American Bearing Manufacturers Association v. United States, 350 F. Supp. 2d. 1100, 1109 (Ct. Int'l Trade 2004) ("ITC's use of value-based indicators to evaluate volume in the context of a ball bearing investigation is consistent with its past practice."), aff'g Ball Bearings from China, Inv. No. 731-TA-989 (Final), USITC Pub. 3593 (April 2003).

well as U.S. shipment data. I rely on Table C-3 for U.S. industry financial data, as it provides the aggregate of U.S. cell and module production.

C. Conditions of Competition and the Business Cycle[106]

The following conditions of competition inform our analysis of whether there is a reasonable indication of material injury by reason of subject imports.

1. Demand Conditions

U.S. demand for CSPV cells and modules is affected by the demand for alternative renewable energy sources, and by other variables such as government incentives and weather.[107] Various industry observers and participants have noted that during the period of investigation, the U.S. solar market increased substantially.[108] In line with this increase in demand for solar energy, U.S. demand for CSPV cells and modules also grew at a dramatic pace. Demand for CSPV cell and modules in the U.S. market, as measured by the value of apparent U.S. consumption, increased by *** percent from 2008 to 2010, and also was higher by *** percent in interim 2011 than in interim 2010.[109]

There are four primary market segments for CSPV cells and modules. Three of these market segments are residential, nonresidential, and utility, which are considered on-grid markets. The fourth market segment is the off-grid market. During the period of investigation, the utility market sector, which accounts for most large scale installations, reportedly saw the largest increase in market share among the three on-grid market segments .[110]

Demand for solar energy has been affected by certain government programs at the Federal, state, and local levels.[111] Federal and state governments have implemented policies intended to promote the expansion of solar (renewable) energy generation and consumption in the United States through the enactment of rebate and incentive programs intended to reduce the cost of solar energy for the consumer. These incentives include federal tax investment credits or cash grant programs, as well as loan guarantees. At least 36 states have adopted Renewable Portfolio Standards, which require retail electricity suppliers to procure a minimum amount of renewable energy, such as solar energy. States have also established other programs that mandate the expansion of solar power generation within that state.[112]

The record indicates that these government incentives have played a role in the dramatic increase in demand over the period of investigation.[113] For example, the Solar Energy Industry Association reported an "application boom" in the second quarter of 2010 and an "installation boom" in the first quarter of 2011 in the U.S. nonresidential market segment that it credits to a federal cash rebate

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[106] As noted, almost all of CSPV cell production in the United States is internally consumed for the production of CSPV modules, which is part of the domestic like product. Under these circumstances, however, the issue of whether or not the captive production provision of the statute applies is not raised, as the captive production provision applies only to captive consumption of the domestic like product for the production of a downstream article outside of the domestic like product. See 19 U.S.C. § 1677(7)(C)(iv).

[107] CR at II-13.

[108] CR at II-13.

[109] CR/PR at Table C-2.

[110] CR at II-2-II-3.

[111] CR at II-15.

[112] CR at II-16-18, CR/PR at Table II-4.

[113] CR at II-15-16 and industry and government reports cited therein.

program.[114] Additionally, the record indicates that a greater number of PV installations are located in states with state-specific incentive programs.[115] Both Petitioner and Respondents have highlighted the role of these incentives play in affecting demand and business cycles to varying degrees.[116]

2. Demand Outside the United States

The evidence on the record indicates that global demand for solar energy has increased since 2001 as the demand for "clean energy" grew.[117] According to both Petitioner and Respondents, increased global demand for solar power was spurred by government incentives.[118] These incentives were designed to reduce costs and improve efficiencies of alternative fuels in order for them to compete with fossil fuels. Respondents have indicated that in countries, such as Germany and Italy, which have achieved lower costs, government incentives have been reduced. They report that demand for solar energy and economic uncertainty in both Germany and Italy, the two largest markets, has softened with the reduction of government incentives.[119]

3. Supply Conditions in the U.S. Market

The U.S. market is supplied by domestic producers, subject imports, and nonsubject imports. Sixteen firms accounted for the majority of U.S. production of CSPV cells and modules during the period of investigation.[120] The number of U.S. firms producing the domestic like product varied throughout the period as some producers entered the industry after 2008 while others, including some new entrants, had ceased production at the end of period. Of the sixteen U.S. producers, the ***, Evergreen and SolarWorld, are integrated producers. Two other firms, Calisolar and SPI, produced only U.S. CSPV cells during the period examined. All of the remaining twelve firms are module producers that produce modules using domestically-produced cells or cells imported from China or nonsubject sources.[121] Many of the U.S. module producers are subsidiaries of large, foreign CSPV producers that ship their cells to the United States for assembly into modules.[122]

The domestic industry's market share, by value, *** from *** percent in 2008 to *** percent in 2009 and then *** percent in 2010. It was *** in interim 2011(*** percent) than in interim 2010 (***) percent. The market share of subject imports by value *** from *** percent in 2008 to *** percent in 2009, and then to *** percent in 2010. It was *** in interim 2010 (***) percent than in interim 2011 (*** percent). The market share of nonsubject imports by value *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. It was *** percent in interim 2010 and *** percent in interim 2011.[123]

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[114] CR at II-15.

[115] CR at II-4.

[116] CR at II-18.

[117] Petition at Ex. I-15.

[118] Sun Edison Brief at 25-28; Petition at Ex. I-15.

[119] Sun Edison Brief at 25-28.

[120] CR/PR at Table III-1.

[121] CR/PR at Tables III-1 and III-2.

[122] CR/PR at Tables III-1 and III-2.

[123] CR/PR at Table C-2.

4. Other Conditions

The degree of substitutability between CSPV cells and modules produced domestically and those imported from China depends on such factors as relative prices, quality, (e.g., wattage output, efficiency, certification), and the conditions of sale (e.g., price discounts/rebates, financing, lead times between order and delivery, payment terms, customer service).[124] Based on the information reported in these investigations, I find a high degree of substitutability between domestically produced cells and modules and subject CSPV cells and modules. Fifteen of 16 responding U.S. producers and seventeen of 22 responding importers responded that the domestic like product and subject imports were "always or frequently" interchangeable.[125]

The most commonly reported sales method for both U.S. producers and importers is through transaction-by-transaction negotiations. For both producers and importers, contracts and set price lists varied based on the channel of distribution.[126] All responding producers and most responding importers reported selling some product on a spot basis and on a short-term contract basis.[127]

The record indicates that price is highly elastic and that a change in the price level of CSPV cells and modules would likely result in a large change in the quantity of CSPV cells and modules demanded. This is primarily due to the availability of substitute products, though moderated by the cost share of CSPV cells and modules in their end uses.[128]

Price is an important – though not exclusive – consideration in U.S. purchasers' sourcing decisions. The majority of producers (9 of 16) and importers (11 of 20) reported that differences other than price were "sometimes" important in comparing the U.S. and Chinese product. At the same time, six producers and seven importers reported that there were "always" or "frequently" significant differences other than price.[129] A number of others factors cited included "bankability," quality (UL inspection, durability, reliability, warranty), certification standards, tech and customer support, solar conversion efficiency, and manufacturer reputation.[130]

Another factor that may affect U.S. CSPV cell and modules prices as well as the demand for CSPV products is the competition between CSPV and thin film products. The majority of U.S. producers and importers reporting substitute products , primarily identified thin film products as a substitute for CSPV cells and modules, although responding firms were equally divided as to whether thin film affected prices for CSPV products. As discussed above in our like product analysis, both thin film products and CSPV products can be used in all four market segments, although thin film is predominately used in the utility segment.

The main raw input of CSPV cells is polysilicon, which is used in both the semiconductor and solar panel industries. Between 2005 and 2008, polysilicon prices increased due to supply shortage. The prices for polysilicon fell thereafter, as new polysilicon capacity increased and demand for polysilicon softened with the 2008 recession.[131] As a result of the shortage of polysilicon in 2006 to 2008, a report

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[124] CR at II-25.

[125] CR at II-27.

[126] CR at V-6.

[127] CR at V-6-V-7.

[128] CR at II-12.

[129] CR at II-27-28, CR/PR at Table II-7.

[130] CR at II-27-28. According to Respondents, "bankability" is the ability to obtain financing for the installation of a CSPV system. The ability to obtain financing generally depends upon the quality of modules to be used in an individual project and the financial stability of the module manufacturer that will be supplying the project over the long term. CCCME Brief at 22-23.

[131] CR at V-2.

submitted by Petitioner indicates that the polysilicon prices have been set by fixed supply agreements lasting between six to ten years.[132] Raw material costs for the production of solar modules (much of which are cells) increased from 75.6 percent in 2008 to 77.4 percent of production of U.S. producers' total costs of good sold ("COGs"). Raw material costs for the production of CSPV cells decreased from 49.2 percent of U.S. producers' total COGs in 2008 to 48.6 percent in 2010.[133]

D. Volume of Subject Imports from China

Section 771(7)(C)(I) of the Act provides that the "Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States, is significant."[134]

As discussed above, I rely on Table C-2 for the volumes and market shares of apparent U.S. consumption as measured by value.

Subject imports were already present in large volumes and market share as measured by value at the beginning of the period and increased dramatically in the U.S. market throughout the period. The value of subject imports increased by *** percent from 2008 to 2010, far outpacing the *** percent increase in apparent U.S. consumption for the same period. The volume of subject imports by value *** in 2008 to $*** in 2009, and to *** in 2010. The value of subject imports also was *** percent higher in interim 2011 at *** than in interim 2010 at $***.[135] The market share of subject imports measured by value *** percentage points in 2008 to 2010, from *** percent in 2008 to *** percent in 2010. It was *** percent in interim 2010 and *** percent in interim 2011.[136]

Much of the increase in market penetration by subject imports from 2008 to 2010 came at the expense of nonsubject imports but also at the expense of the domestic industry. While the subject import share of apparent U.S. consumption increased substantially, the domestic industry's market share *** percentage points on a value basis despite the tremendous growth in U.S. demand. The domestic industry's market share was also *** percentage points lower in interim 2011 than in interim 2010. Nonsubject import share of U.S. consumption also *** percentage points on a value basis from 2008 to 2010 and was *** percent lower in interim 2011 than in 2010.[137]

Respondents argue that the *** in the volume and market share of subject imports was due in large measure to the existence of a federal cash rebate program that was set to expire at the end of 2011. According to Respondents, the increases in volume and market share occurred simply because the quickly growing U.S. market was under-supplied and companies sought to enter imports before the expiration of this cash program.[138] However, the contention that subject imports were necessary to meet supply needs is contradicted by subject imports' gain in market share at the expense of both the domestic industry and nonsubject imports. Simply put, subject imports appear to have received a disproportionate benefit from the existence of the cash benefit program.[139]

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[132] CR at V-2.

[133] CR at V-1.

[134] 19 U.S.C. § 1677(7)(C)(I).

[135] CR/PR at Table C-2.

[136] CR/PR at Table C-2.

[137] CR/PR at Table IV-3.

[138] CCCME Brief at 32-33.

[139] Respondents have raised a number of other arguments pertaining to the significance of the volume of subject imports. These arguments are predicated primarily on volume and market share as measured by quantity. As discussed earlier, I have found that apparent U.S. consumption as measured by value is more accurate in determining volume and market penetration of imports. Thus, I do not address these arguments here.

Based on the data collected in this preliminary phase investigation, I conclude that the volume of subject imports is significant both in absolute terms and relative to consumption and production in the United States.

E. Price Effects of the Subject Imports from China

> Section 771(C)(ii) of the Act provides that, in evaluating the price effects of subject imports, the Commission shall consider whether – (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.[140]

As addressed above in the discussion of the conditions of competition, the evidence on the record indicates that there is a high degree of substitutability between CSPV cells and modules produced domestically and those imported from China. Price is considered an important factor in purchasing decisions, but a number of other considerations may also play a role. The cost of raw materials , most of which is polysilicon, accounts for a substantial share of the total cost of CSPV cells and modules.[141]

In these investigations U.S. producers and importers provided quarterly pricing for four CSPV module products of differing wattages. In general, the pricing data are concentrated in the last six quarters of the period and show a pattern of pervasive underselling by subject imports. Subject imports undersold the domestic like product in 18 of the 19 quarterly price comparisons, with margins ranging from *** percent to *** percent.[142] For purposes of these investigations, I find that there has been significant underselling of the domestic like product by subject imports.

I also note that the record includes several confirmed instances where the domestic industry lost sales to low-priced imports.[143] In addition, fifteen of the purchasers contacted regarding lost sales and lost revenues allegations reported that U.S. producers have reduced their prices of CSPV cells and modules in order to compete with prices of subject imports since January 2008.[144]

I have also considered movement in U.S. and subject prices over the period of investigation. The Commission's pricing data show an overall price decrease for all four domestic products and for two of the four subject import products during the period for which data were provided.[145] Specifically, for product 1, prices for the domestic articles declined while prices for the subject product declined to a greater extent. For product 2, prices for both the domestic articles and subject imports declined. However, for products 2

[140] 19 U.S.C. § 1677(7)(C)(ii).

[141] CR/PR at Table VI-1. The share of the cost of goods sold accounted for by raw material costs ranged from 46.1 percent in 2008 to 68.2 percent in 2010. Id.

[142] CR/PR at Table V-7.

[143] CR/PR at Table V-8.

[144] CR at V-21.

[145] CR/PR at Tables V-2-V-5.

and 3, prices also declined for the domestic articles while prices for subject imports increased.[146] [147] Typically, given a period of increasing demand, as here, I would expect prices to rise, not fall. Accordingly, I find that subject imports had at least some price depressing effects.

Respondents argue that the decline in U.S. prices is attributable to the decline in polysilicon costs during the period of investigation. Although the record indicates that the price of polysilicon declined, the total costs of raw materials as a unit of net sales increased irregularly for both cells and modules over the period of investigation.[148]

According to Respondents, federal government incentives have been the key in lowering net costs of solar power installations. They argue that some federal government incentives has recently been reduced, resulting in developers and installers having to find ways to reduce the total costs of solar power projects by other means. This, in turn, has caused domestic producers to lower their costs.[149] Although some government incentives may have been reduced, low-priced subject imports increased at the end of the period of investigation, as they had throughout the period. As such any pressure to lower costs felt by domestic producers was intensified by the increasing volumes of subject imports.

Accordingly, the record in these preliminary phase investigations indicates pervasive underselling by subject imports and evidence of price depression. I also note that the underselling allowed subject imports to gain market share at the expense of the domestic industry. I consequently determine that subject imports had significant negative effects on domestic prices.

F. Impact of the Subject Imports from China[150]

Section 771(7)(C)(iii) of the Act provides that the Commission, in examining the impact of the subject imports on the domestic industry, "shall evaluate all relevant economic factors which have a bearing on the state of the industry."[151] These factors include output, sales, inventories, capacity utilization, market share, employment, wages, productivity, profits, cash flow, return on investment, ability to raise capital, research and development, and factors affecting domestic prices. No single factor is dispositive and all relevant factors are considered "within the context of the business cycle and conditions

[146] The price for the US-produced product 1 decreased by *** percent; the price for the corresponding subject imports decreased by *** percent. The price for the U.S.-produced product 2 decreased by *** percent; the price for the corresponding subject imports increased by *** percent. The price for the U.S. produced product 3 decreased by *** percent; the price for the corresponding subject imports increased by *** percent. Finally, the price for the U.S.-produced product 4 decreased by *** percent; the price for the corresponding subject imports decreased by *** percent. CR/PR at Tables V-6.

[147] The domestic industry's ratio of COGS to net sales increased from *** percent in 2008 to *** percent in 2009 but decreased to *** percent in 2010. In interim 2011, the ratio of COGS to net sales was *** percent, *** than in interim 2010, when it was *** percent.

[148] CR at VI-2.

[149] CCCME Brief at 20-21.

[150] In its notice initiating the antidumping investigation on cells and modules from China, Commerce reported estimated dumping margins ranging from 49.88 percent to 249.96 percent.
Commerce also reported the following countervailable programs: (1) grant programs; (2) government provision of goods and services for less than adequate remuneration (3) government provision of land for LTAR; (4) policy lending to the renewable energy industry ; (5) income and other direct tax exemption and reduction programs; (6)indirect tax and exemption programs; (7) export credit and subsidy programs; and (8) export guarantees and insurance for green technology. See CR at I-4-I-5.

[151] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851 and 885 ("In material injury determinations, the Commission considers, in addition to imports, other factors that may be contributing to overall injury. While these factors, in some cases, may account for the injury to the domestic industry, they also may demonstrate that an industry is facing difficulties from a variety of sources and is vulnerable to dumped or subsidized imports.").

of competition that are distinctive to the affected industry."[152] As discussed earlier, I rely on Table C-2 in examining the domestic industry's trade data and Table C-3 fin examining the domestic industry's financial condition.

Domestic industry performance indicators were generally positive over the period of investigation.[153] As new firms entered the industry from 2008 to 2010, and existing firms expanded capacity to serve increasing demand for CSPV, U.S. production capacity of CSPV modules increased from 2008 to 2010, and was higher in interim 2001 than in interim 2010. Production capacity rose from *** units in 2008 to *** units in 2009, and then to *** units in 2010. Production capacity was *** units in interim 2010 and *** units in interim 2011.[154] Production also increased from *** units in 2008 to *** million units in 2009, and to *** units in 2010 and was higher at *** units in interim 2011 than in interim 2010 at *** units.[155] Capacity utilization increased steadily from 2008 to 2010, from *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. Capacity utilization, however, was lower at *** percent in interim 2011than in interim 2010 at *** percent.[156] At the same time, the number of production workers, hours worked, hourly wages and productivity increased throughout the period of investigation.[157]

Domestic producers' U.S. shipments by value increased overall from 2008 to 2010, and were higher in interim 2011 than in interim 2010. Domestic producers' U.S. shipments by value decreased *** from $*** in 2008 to $*** in 2009, and then increased to $*** in 2010. Domestic producers' U.S. shipments were $*** in interim 2010 and $*** in interim 2011.[158] Despite increasing shipments and U.S. demand, the domestic industry's market share declined overall from 2008 to 2010 and was lower in interim 2011 than in interim 2010. The domestic industry's market share decreased from *** percent in 2008 to *** percent in 2009, and then increased *** to *** percent in 2010. The domestic industry's market share was *** percent in interim 2010 and *** percent in interim 2011.[159]

The domestic industry's financial condition, which was in poor shape at the beginning of the period, worsened throughout the period of investigation as the volume and market share of subject imports grew. As previously noted, the industry saw the departure of a number of firms, including new entrants to the industry. The cessation of operations of these firms may in fact mask the overall negative financial effects (such as the loss of start-up costs) of subject imports.

The value of the industry's total net sales increased from $*** in 2008 to $*** in 2009, and then to $*** in 2010. The value of the industry's total net sales were $*** in interim 2010 and $*** in interim 2011.[160] The industry's unit sales values, however, were insufficient to offset the unit COGS and selling, general, and administrative ("SG&A") throughout the period of investigation.[161] The domestic industry

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[152] 19 U.S.C. § 1677(7)(C)(iii); see also SAA at 851, 885; Live Cattle from Canada and Mexico, Invs. Nos. 701-TA-386, 731-TA-812-813 (Preliminary), USITC Pub. 3155 at 25 n.148 (Feb. 1999).

[153] I note, however, that one issue is whether the full effects of the cessation of operations of a number of firms, including multiple new entrants to the industry, late in the period are sufficiently reflected in the data.

[154] CR/PR at Table C-2.

[155] CR/PR at Table C-2.

[156] CR/PR at Table C-2. The number of production workers steadily increased from *** in 2008 to *** in 2009 and *** in 2010. The number of production workers was *** in interim 2010 and *** in interim 2011. Hours worked also increased from *** in 2008 to *** in 2009 and *** in 2010. Hours worked were *** in interim 2010 and *** in interim 2011. Hourly wages also increased from 2008 to 2010 rising from $*** to *** in 2010 but were *** lower in interim 2011($***) than in interim 2010 ($***). Productivity rose from *** units per hour in 2008 to ***units per hour in 2010 and was *** in both interim 2010 and 2011. Id.

[157] CR/PR at Table C-2.

[158] CR/PR at Table C-2.

[159] CR/PR at Table C-2.

[160] CR/PR at Table C-3.

[161] CR/PR at Table C-3.

reported operating *** increased from $*** in 2008 to $*** in 2009 to $*** in 2010 and operating *** of $*** in interim 2010 and $*** in interim 2011. The domestic industry's operating margins were *** percent in 2008, *** percent in 2009 and *** percent in 2010. They were *** percent in interim 2010 and *** percent in interim 2011.[162] The number of firms reporting operating losses increased from 2009 to 2010 and *** but *** firms reported *** by the end of the period of investigation. Finally, capital expenditures decreased overall and were lower in interim 2011 than in interim 2010.[163] Capital expenditures were $*** in 2008, $*** in 2009, $*** in 2010, and $*** in interim 2010, and $*** in interim 2011.[164]

Accordingly, although many of the industry's performance indicators improved over the period of investigation, its financial condition deteriorated as subject imports increased in volume and domestic market share as measured by value decreased. For purposes of these preliminary determinations, I find that the dramatically increasing presence of subject imports in the U.S. market, pervasive underselling of the domestic like product by subject imports, price depression, and the domestic industry's deteriorating financial condition, had a negative impact on the domestic industry.

In considering whether a causal nexus exists between subject imports and material injury to the domestic industry, I have considered the role of nonsubject imports, so that I am not attributing injury from such other factors to the subject imports. Although nonsubject imports held the largest share of the U.S. market during the period of investigation, while their volume increased, nonsubject market share declined throughout the period.[165] Additionally, although limited, available quarterly price comparisons show that prices for nonsubject imports were higher than U.S. prices in 16 of 21 quarterly price comparisons and higher than prices for subject imports in all 22 quarterly price comparisons. Thus, nonsubject imports do not appear to have played a role in the deterioration of the domestic industry's condition during the period of investigation.[166] [167]

Consequently, the record in these preliminary phase investigations indicates a causal nexus between the subject imports and the declines in the condition of the domestic industry and thus demonstrates a reasonable indication of material injury by reason of subject imports. I therefore conclude, for purposes of these preliminary phase investigations, that subject imports have had an adverse impact on the domestic industry.

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[162] CR/PR at Table C-3.

[163] CR/PR at Table C-3.

[164] CR/PR at Table C-3.

[165] On a value basis, the volume of nonsubject imports increased from $*** in 2008 to $*** in 2009, to $*** in 2010. They were $*** in interim 2010 and $*** in interim 2011. The market share of nonsubject imports on a value basis *** percent in 2008 to *** percent in 2009 and to *** percent in 2010. It was *** percent in interim 2010 and *** percent in interim 2011. CR/PR at Table IV-2.

[166] CR/PR at Tables D-1-D-4.

[167] Finally, I note that Respondents suggest that domestic producers do not have the capacity to supply the entire U.S. CSPV market. U.S. producers appear capable of supplying a larger share of the U.S. market then they do currently as their capacity utilization rates declined over the period of investigation. Moreover, as the Commission previously has noted, "there is no short supply provision in the statute" and "the fact that the domestic industry may not be able to supply all of demand does not mean the industry may not be materially injured or threatened with material injury by reason of subject imports." Softwood Lumber from Canada, Inv. Nos. 701-TA-414 and 731-TA-928 (Article 1904 NAFTA Remand) at 108, n. 310 (December 2003). See also, Certain Activated Carbon from China, Inv. No. 731-TA-1103 (Preliminary), USITC Pub. 3852 (May 2006) at 19, n. 134; Certain Orange Juice from Brazil, Inv. No. 731-TA-1089 (Final), USITC Pub. 3838 (March 2006) at 20 n. 143; Certain Lined Paper School Supplies, Inv. Nos. 701-TA-442-443 (Preliminary) and 731-TA-1095-1097 (Preliminary), USITC Pub. 3811 (October 2005) at 23, n. 155; Metal Calendar Slides from Japan, Inv. No. 731-TA-1094 (Preliminary), USITC Pub. 3792 (August 2005) at 9, n. 45 ("To the extent that Respondents claim that the Commission is legally unable to make an affirmative finding of material injury by reason of subject imports because the domestic industry is incapable of supplying domestic demand, they are incorrect.").

CONCLUSION

For the above-stated reasons, and based on the record in the preliminary phase of these investigations, I find that there is a reasonable indication that an industry in the United States is materially injured by reason of allegedly dumped and subsidized imports of CSPV cells and modules from China.

PART I: INTRODUCTION

BACKGROUND

These investigations result from a petition filed on October 19, 2011, by SolarWorld Industries America, Inc. ("SolarWorld")[1], alleging that an industry in the United States is materially injured or is threatened with material injury, by reason of imports from China of crystalline silicon photovoltaic cells and modules ("CSPV cells and modules")[2] that are allegedly sold in the United States at less-than-fair-value ("LTFV") and subsidized by the government of China. Information relating to the background of these investigations is provided below.[3]

Effective date	Action
October 19, 2011	Petition filed with Commerce and the Commission; Commission institutes investigation (76 FR 66748, October 27, 2011)
November 8, 2011	Commission's conference[1]
November 16, 2011	Initiation of countervailing duty investigation by Commerce (76 FR 70960)
November 16, 2011	Initiation of antidumping investigations by Commerce (76 FR 70966)
December 2, 2011	Commission's vote
December 5, 2011	Commission's determinations transmitted to Commerce
December 12, 2011	Commission's views transmitted to Commerce
[1] A list of witnesses that appeared at the conference is presented in app. B.	

ORGANIZATION OF REPORT

Section 771(7)(B) of the Tariff Act of 1930 (the "Act") (19 U.S.C. § 1677(7)(B)) provides that in making its determinations of injury to an industry in the United States, the Commission–

> *shall consider (I) the volume of imports of the subject merchandise, (II) the effect of imports of that merchandise on prices in the United States for domestic like products, and (III) the impact of imports of such merchandise on domestic producers of domestic like products, but only in the context of production operations within the United States; and. . . may consider such other economic factors as are relevant to the determination regarding whether there is material injury by reason of imports.*

Section 771(7)(C) of the Act (19 U.S.C. § 1677(7)(C)) further provides that--

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[1] The petition states that it is also supported by the Coalition for American Solar Manufacturing, which includes U.S. producers SolarWorld, ***. The members of the coalition, with the exception of SolarWorld, wish their identities to remain confidential.

[2] A complete description of the imported product subject to these investigations is presented in *The Subject Product* section located in Part I of this report.

[3] *Federal Register* notices cited in the tabulation are presented in app. A.

In evaluating the volume of imports of merchandise, the Commission shall consider whether the volume of imports of the merchandise, or any increase in that volume, either in absolute terms or relative to production or consumption in the United States is significant.

. . .

In evaluating the effect of imports of such merchandise on prices, the Commission shall consider whether . . . (I) there has been significant price underselling by the imported merchandise as compared with the price of domestic like products of the United States, and (II) the effect of imports of such merchandise otherwise depresses prices to a significant degree or prevents price increases, which otherwise would have occurred, to a significant degree.

. . .

In examining the impact required to be considered under subparagraph (B)(i)(III), the Commission shall evaluate (within the context of the business cycle and conditions of competition that are distinctive to the affected industry) all relevant economic factors which have a bearing on the state of the industry in the United States, including, but not limited to

. . .

(I) actual and potential declines in output, sales, market share, profits, productivity, return on investments, and utilization of capacity, (II) factors affecting domestic prices, (III) actual and potential negative effects on cash flow, inventories, employment, wages, growth, ability to raise capital, and investment, (IV) actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and (V) in {an antidumping investigation}, the magnitude of the margin of dumping.

Information on the subject merchandise, alleged margins of dumping and subsidies, and domestic like product is presented in *Part I*. Information on conditions of competition and other relevant economic factors is presented in *Part II*. *Part III* presents information on the condition of the U.S. industry, including data on capacity, production, shipments, inventories, and employment. The volume of imports of the subject merchandise is presented in *Part IV* and pricing of domestic and imported products is presented in *Part V*. *Part VI* presents information on the financial experience of U.S. producers. Information obtained for use in the Commission's consideration of the question of threat of material injury is presented in *Part VII*.

U.S. MARKET SUMMARY

The U.S. market for CSPV cells and modules totaled approximately $3.7 billion and 224 million units in 2010. The Commission received responses from 4 firms that produce CSPV cells in the United States, SolarWorld, Calisolar, Evergreen, and Solar Power Industries, which accounted for a majority of U.S. CSPV cell production in 2010. The Commission received 12 responses from firms that produce only CSPV modules in the United States. At least 17 firms have reported importing CSPV cells or modules from China in 2011.

U.S. producers' U.S. shipments of CSPV cells totaled *** units valued at $*** in 2010, and accounted for *** percent of apparent U.S. consumption by quantity (*** percent by value). U.S. imports of CSPV cells from China totaled 6.6 million units in 2010, and accounted for *** percent of apparent U.S. consumption by quantity (*** percent by value). U.S. imports from all other sources combined totaled approximately 26 million units, and accounted for *** percent of apparent consumption

by quantity (*** percent by value). U.S. producers' U.S. shipments of CSPV modules totaled *** units valued at $*** in 2010, and accounted for *** percent of apparent U.S. consumption by quantity (*** percent by value). U.S. imports of CSPV modules from China totaled 10.8 million units in 2010, and accounted for *** percent of apparent U.S. consumption by quantity (*** percent by value). U.S. imports from all other sources combined totaled 53.8 million units, and accounted for *** percent of apparent consumption by quantity (*** percent by value).

CSPV cells and modules are generally used in integrated solar power generating systems for large utilities and commercial and residential roof-top applications.

SUMMARY DATA AND DATA SOURCES

A summary of data collected in these investigations is presented in appendix C, tables C-1 (cells), C-2 (modules), and C-3 (cells and modules). U.S. industry data are based on questionnaire responses of four U.S. producers of CSPV cells and 14 U.S. producers of CSPV modules that accounted for a majority all of U.S. production of CSPV cells and modules during the period of investigation. Data for U.S. imports from China and nonsubject countries are based on official Commerce statistics. Foreign industry data are based on responses to the Commission's U.S. foreign producer's questionnaires. Appendix C, table C-4 presents domestic industry data without a number of U.S. producers of CSPV modules who are related to Chinese foreign producers.

PREVIOUS AND RELATED INVESTIGATIONS

There have been no previous antidumping or countervailing duty investigations on CSPV cells or modules.[4]

NATURE AND EXTENT OF ALLEGED SALES AT LTFV

On November 16, 2011, Commerce published a notice in the *Federal Register* of the initiation of its antidumping investigation on CSPV cells and modules from China.[5] The alleged estimated weighted-average dumping margins (in percent *ad valorem*), as reported by Commerce are between 49.88 percent and 249.96 percent

[4] On November 2, 2011, the Commission instituted a Section 337 investigation on certain integrated solar power systems. This investigation involves the alleged patent infringement of a Andalay Solar, Inc. patent on its solar panel mounting system technology. Canadian Solar is a respondent in the investigation. The specific solar mounting system is not at issue in these investigations. *See Certain Integrated Solar Power Systems and Components Thereof: Notice of Institution of Investigation Pursuant to 19 U.S.C. 1337*, 76 FR 69284, November 8, 2011.

[5] *Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules from the People's Republic of China: Initiation of Antidumping Duty Investigation;* 76 FR 70960, November 16, 2011.

NATURE OF ALLEGED COUNTERVAILABLE SUBSIDIES

China

On November 16, 2011, Commerce published a notice in the *Federal Register* of the initiation of its countervailing duty investigation on CSPV cells and modules. In its notice, Commerce listed the following programs alleged in the petition to have provided countervailable subsidies to producers of CSPV cells and modules in China:[6]

A. Grant Programs

1. Export Product Research and Development Fund
2. Subsidies for Development of "Famous Brands" and "China World Top Brands"
3. Sub-Central Government Subsidies for Development of "Famous Brands" and "China World Top Brands"
4. Special Energy Fund established by Shandong Province
5. Funds for Outward Expansion of Industries in Guangdong Province
6. Golden Sun Demonstration Program

B. Government Provision of Goods and Services for Less Than Adequate Remuneration ("LTAR")

1. Government Provision of Polysilicon for LTAR
2. Government Provision of Aluminum for LTAR
3. Government Provision of Power for LTAR

C. Government Provision of Land for LTAR

D. Policy Lending to the Renewable Energy Industry

E. Income and Other Direct Tax Exemption and Reduction Programs

1. "Two Free, Three Half" Program for Foreign Invested Enterprises ("FIEs")
2. Income Tax Reductions for Export-Oriented FIEs
3. Income Tax Benefits for FIEs Based on Geographic Location
4. Local Income Tax Exemption and Reduction Programs for "Productive" FIEs
5. Tax Reductions for FIEs Purchasing Chinese-Made Equipment
6. Tax Offsets for Research and Development by FIEs
7. Tax Refunds for Reinvestment of FIE Profits in Export-Oriented Enterprises
8. Preferential Tax Programs for FIEs Recognized as High or New Technology Enterprises
9. Tax Reductions for High and New-Technology Enterprises Involved in Designated Projects
10. Preferential Income Tax Policy for Enterprises in the Northeast Region
11. Guangdong Province Tax Programs

[6] *Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules from the People's Republic of China: Initiation of Countervailing Duty Investigation;* 76 FR 70966, November 16, 2011.

F. Indirect Tax and Tariff Exemption Programs

1. Value Added Tax ("VAT") Exemptions for Use of Imported Equipment
2. VAT Rebates on FIE Purchases of Chinese-Made Equipment
3. VAT and Tariff Exemptions for Purchases of Fixed Assets Under the Foreign Trade Development Fund Program

G. Export Credit Subsidy Programs

H. Export Guarantees and Insurance for Green Technology

THE SUBJECT PRODUCT

Commerce's Scope

Commerce has defined the scope of these investigations as follows:

> The merchandise covered by these investigation are crystalline silicon photovoltaic cells, and modules, laminates, and panels, consisting of crystalline silicon photovoltaic cells, whether or not partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials.
>
> These investigations cover crystalline silicon photovoltaic cells of thickness equal to or greater than 20 micrometers, having a p/n junction formed by any means, whether or not the cell has undergone other processing, including, but not limited to, cleaning, etching, coating, and/or addition of materials (including, but not limited to, metallization and conductor patterns) to collect and forward the electricity that is generated by the cell.
>
> Subject merchandise may be described at the time of importation as parts for final finished products that are assembled after importation, including, but not limited to, modules, laminates, panels, building-integrated modules, building-integrated panels, or other finished goods kits. Such parts that otherwise meet the definition of subject merchandise are included in the scope of this investigation.
> Excluded from the scope of this investigation are thin film photovoltaic products produced from amorphous silicon (a-Si), cadmium telluride (CdTe), or copper indium gallium selenide (CIGS).
>
> Also excluded from the scope of this investigation are crystalline silicon photovoltaic cells, not exceeding 10,000mm2 in surface area, that are permanently integrated into a consumer good whose function is other than power generation and that consumes the electricity generated by the integrated crystalline silicon photovoltaic cell. Where more than one cell is permanently integrated into a consumer good, the surface area for purposes of this exclusion shall be the total combined surface area of all cells that are integrated into the consumer good.

> Merchandise covered by this investigation is currently classified in the Harmonized Tariff System of the United States (HTS) under subheadings 8501.61.0000, 8507.20.80, 8541.40.6020 and 8541.40.6030. These HTS subheadings are provided for convenience and customs purposes; the written description of the scope of this investigation is dispositive.

Scope Issues at Commerce

On November 7, 2011, the day before the Commission's preliminary staff conference, petitioner submitted to Commerce a scope clarification, which added the following paragraph to the original scope definition:

> These proceedings cover crystalline silicon PV cells, whether exported directly to the United States or via third countries; crystalline silicon PV modules/panels produced in the PRC, regardless of country of manufacture of the cells used to produce the modules or panels, and whether exported directly to the United States or via third countries, and crystalline silicon PV modules or panels produced in a third country from crystalline silicon PV cells manufactured in the PRC, whether exported directly to the United States or via third countries.

Commerce did not adopt this specific revision in its notice of initiation and invited parties to comment on the revision during the 20 day scope comment period. Commerce stated in its notice of initiation:

> Because Petitioner's November 7, 2011, scope submission was filed one day prior to the statutory deadline for initiation, the Department has had neither the time nor the administrative resources to evaluate Petitioner's proposed language regarding merchandise produced using inputs from third-country markets, or merchandise processed in third-country markets.[7]

The original scope definition and the proposed revision essentially has raised the issue of whether four separate product categories may be included in the final scope definition. These categories are: (1) CSPV cells produced in China; (2) CSPV modules produced in China using CSPV cells produced in China; (3) CSPV modules produced in China using CSPV cells produced in a third-country; and (4) CSPV modules produced in a third country using CSPV cells produced in China. The parties appear to agree that the first two product categories are properly covered by the original scope definition. At the staff conference, petitioner claimed that product categories 3 and 4 were always intended to be included in the original scope definition, but submitted the November 7, 2011 scope revision to Commerce to clarify its intention. At the staff conference, respondents claimed that according to their reading of the original scope definition only the first two product categories were properly within the scope of these investigations and the inclusion of product categories 3 and 4 dramatically increases the scope of these investigations.[8]

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[7] *Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules from the People's Republic of China: Initiation of Antidumping Duty Investigation;* 76 FR 70960, November 16, 2011.

[8] Respondents asserted that the November 7, 2011 scope revision and its alleged attempt to include products in categories (3) and (4) may render the Commission's questionnaire data unreliable. They do, however, note that Commerce did not incorporate the revision in its scope definition which it published in its notice of initiation. Respondent CCCME's postconference brief, pp. 1-6. Commerce has requested comments from parties as to whether product categories (3) and (4) are within the scope of these investigations. With regard to the Commission's questionnaire data, it appears that one questionnaire recipient, ***, deemed category (3) products as not being U.S. imports from China. No questionnaire recipient appears to have deemed category (4) products as being U.S. imports from China. Throughout this report, U.S. imports from China and nonsubject countries are compiled using official

(continued...)

Tariff Treatment

The subject merchandise is provided for in subheadings 8541.40.60 (statistical reporting numbers 8541.40.60.20 ("solar cells, assembled into modules or made up into panels") and 8541.40.60.30 ("solar cells, other")) of the Harmonized Tariff Schedule of the United States ("HTS"), and is free of duty under the general duty rate.[9] These products may also be imported as parts or subassemblies of goods provided for in subheadings 8501.61.00.00 and 8507.20.80.

Physical Characteristics and Uses

Solar CSPV systems convert sunlight into electricity for on-site use or for distribution through the electric grid. The main components of CSPV systems are modules (also commonly referred to as panels), which are comprised of cells that use crystalline silicon to convert sunlight into electricity. CSPV modules can be used in both ground-mounted and rooftop-mounted systems and in both the off-grid market segment and the three on-grid market segments—residential, nonresidential, and utility.[10]

Physical Characteristics

CSPV cells use crystalline silicon to convert sunlight to electricity and are the basic elements of a PV module (figure I-1). They have a positive layer, a negative layer and a positive-negative junction (p/n junction). Electricity is generated when sunlight strikes the cell, knocking electrons loose that flow onto thin metal "fingers"that run across the cell and conduct electricity to the busbars.[11] Most cells are five inches by five inches or six inches by six inches and have an output of 3 to 4.5 watts.[12]

[8] (...continued)
Commerce statistics, which as defined by the statistical reporting numbers should include product categories (1), (2), and (3). Also, U.S. importers and foreign producers in China were requested to submit data regarding both their cell and module imports or exports separately. As petitioner observed, U.S. importers and foreign producers should have reported module imports or exports in their questionnaire regardless of the country of origin of the cells. Petitioner's postconference brief, exh. 1, pp. 33-34.

If Commerce ultimately determines that category (4) products are included in the scope of these investigations then U.S. imports and exports from China may be understated as currently presented in the staff report. If Commerce ultimately determines that both category (3) and (4) are not included in the scope of these investigations then U.S. imports and exports from China may be overstated as currently presented in the staff report.

[9] Generally, CSPV cells enter under HTS 8541.40.60.30 and solar modules under 8541.40.60.20.

[10] Photovoltaics (PV) do not include solar water heat and concentrated solar power (CSP). While PV uses a photosensitive semiconductor material to convert sunlight directly to electricity, solar water heat uses sunlight to heat water and CSP uses reflected sunlight to generate steam or a vapor that turns a turbine to generate electricity. Petition, p. 21.

[11] Conference transcript, pp. 69–70 (Gordon); Petition, pp. 7–8, 17; Stephanie Chasteen and Rima Chaddha, "Inside a Solar Cell," http://www.pbs.org/wgbh/nova/solar/insi-nf.html.

[12] European Photovoltaic Industry Association (EPIA), *Solar Generation 6*, 2011, p. 20.

Figure I-1
CSPV cell (left) and module (right)

Source: Petition, Exhibit I-11.

CSPV cells are interconnected and encapsulated between a backing material and a glass front. A frame is often added and a junction box is attached to form a complete module.[13] The junction box can be attached to other modules, an inverter (which converts the direct current generated by the system to alternating current), or, in the case of off-grid modules, a charge controller (which controls battery charging) and battery.[14] Typical on-grid modules have 60 to 72 cells and a power output of between 120 watts and 300 watts. They are generally around 62 to 78 inches long, 32 to 39 inches wide, and 1.2 to 2 inches thick. Modules generally weigh between 34 and 62 pounds.[15] In addition to standard size modules, CSPV cells can be used in building integrated PV (BIPV), which are building materials that incorporate solar cells, such as solar shingles or solar windows (figure I-2).[16]

[13] Petition, p. 8–9,
[14] Conference transcript, p. 73–74 (Brinser); Petition, Exhibit I-11, p. 14.
[15] EPIA, *Solar Generation 6*, 2011, p. 20; Petitioners' postconference brief, Exhibit 28; Suntech, 290 Watt Polycrystalline Solar Module brochure; Suntech, 190 Watt Monocrystalline Solar Module brochure; Yingli, YGE 285 Series brochure; Trina Web site, http://www.trinasolar.com/us/products-us/mono-series-us?tab=Mono%20Series (accessed November 16, 2011).
[16] Petition, p. 8.

Figure I-2
Building integrated CSPV

Source: Photos courtesy of U.S. Department of Energy (DOE)/National Renewable Energy Lab (NREL), credit Spire Solar Chicago (left) and Atlantis Energy, Inc. (right).

The two main types of CSPV cells and modules are monocrystalline silicon and multicrystalline (or polycrystalline) silicon. Monocrystalline cells are made from a single grown crystal and tend to have a higher conversion efficiency. Multicrystalline cells have a random crystal structure and tend to have a lower conversion efficiency (table I-1).[17]

Table I-1
Monocrystalline and multicrystalline module efficiencies, 2010

Module type	Commercial module efficiency *(percent)*
Monocrystalline silicon	13 to 20
Multicrystalline silicon	11 to 15

Note: For modules currently in commercial production.

Source: EPIA, *Solar Generation 6*, 2011, 25; SunPower, E19/245 and E19/240 Solar Panels brochure.

CSPV modules for grid-connected applications, whether residential, commercial, or industrial, are generally the same regardless of the application.[18] Modules around 225 to 230 watts are popular for residential applications, while modules for large solar installations are around 275 to 300 watts.[19]

[17] Conversion efficiency is the percent of sunlight that is converted to electricity. String-ribbon cells are a type of multicrystalline cell produced via a different production method, as discussed below. Respondents' conference exh., p. 2; Petition, p. 8, 17; EPIA, *Solar Generation 6*, 2011, p. 25.

[18] Conference transcript, pp. 109 (Kilkelly).

[19] Conference transcript, pp. 221–222 (Efird).

Off-grid CSPV modules are usually less than 200 watts and are often smaller that on-grid modules. Off-grid modules may have different output voltages in order to charge batteries and often use fewer cells, and sometimes divided cells, to achieve the desired output.[20] Modules typically used in on-grid applications, such as a standard 240 watt monocrystalline module, may also be used in off-grid applications if that wattage module is required.[21] For example, a house that is not connected to the grid could use the same modules as a house that is connected to the grid.[22]

Uses

The are four primary market segments for CSPV cells and modules. There are three grid-connected market segments–residential, nonresidential, and utility–and an off-grid market. In the grid-connected market, installations are usually either ground-mounted or roof-mounted.[23] The module is the main component of the installations, accounting for about half of the installation cost,[24] but there are a number of other components of the installation, which are called the balance of system (BOS). The BOS includes components such as the inverter,[25] and the racking on which the system is installed.[26]

Residential grid-connected systems are installed at individual homes (figure I-3). CSPV modules are typically installed on the roof, though they can also be ground-mounted, and connected to an inverter. The system can use a central inverter, which converts the power from multiple modules, or each module can have its own microinverter attached. The electricity generated by the system is used for power in the individual home. Homeowners use grid energy when solar electricity generation is not sufficient to meet demand and often feed energy back into the grid when solar electricity generation exceeds home use. In the United States, the average size of a 2010 residential PV installation was 5.7 kilowatts (kW).[27]

[20] Conference transcript, pp. 58–60 (Brinser and Kilkelly), 166–167 and 233–234 (Azzam), and 232 (King).

[21] Conference transcript, pp. 58–59 (Brinser).

[22] Conference transcript, pp. 232–233 (King)

[23] Petition, pp. 17, 19; EPIA, *Solar Generation 6*, 2011, pp. 12–13.

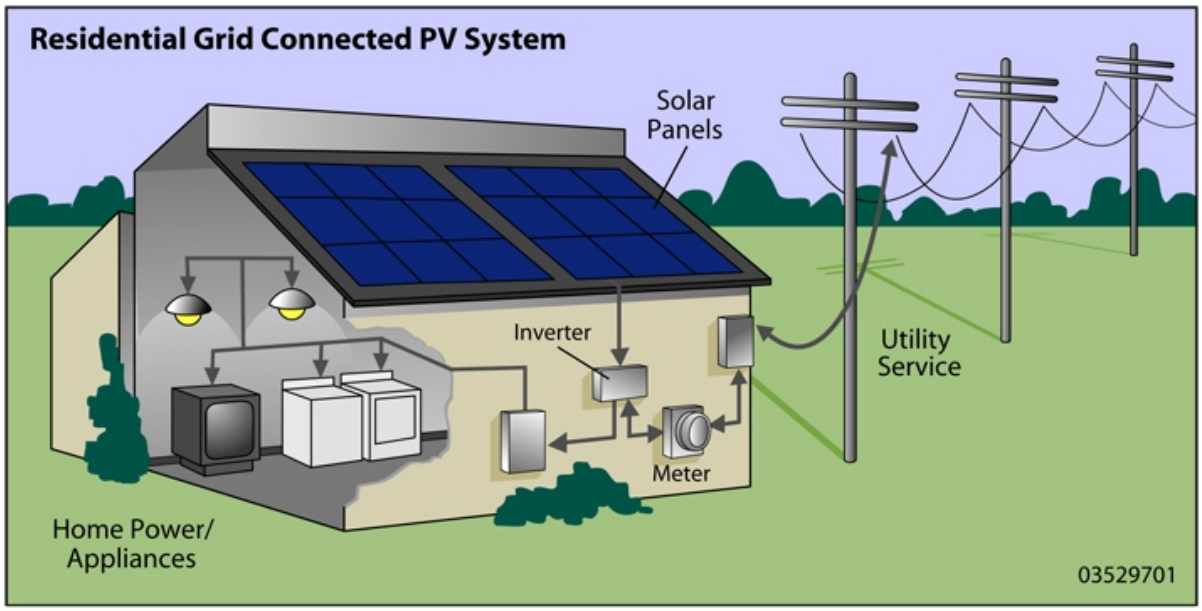
[24] Conference transcript, p. 137 (Petrina) and 160 (Button); CCCME postconference brief, p. 21; Sun Edison postconference brief, Galen Barbose, Naim Darghouth, Ryan Wiser, and Joachim Seel, *Tracking the Sun IV*, Lawrence Berkeley National Lab, September 2011, p. 16.

[25] The inverter represented about 9.5 percent of the installed system cost for distributed PV systems in 2010. Galen Barbose, Naim Darghouth, Ryan Wiser, and Joachim Seel, *Tracking the Sun IV*, Lawrence Berkeley National Lab, September 2011, p. 16

[26] The balance of system also includes the labor costs, permitting fees, etc. for installing a PV system. EPIA, *Solar Generation 6*, 2011, pp. 18–19; Sun Edison's postconference brief, DOE, *$1/W Photovoltaic Systems*, p. 18.

[27] CCCME postconference brief, Exhibit 41, Larry Sherwood, *U.S. Solar Market Trends 2010*, June 2011, pp. 5–7; EPIA, *Solar Generation 6*, 2011, p. 12; Joseph McCabe, "Solar Electric System Basics," October 1, 2011, http://ases.org/index.php?option=com_content&view=article&id=1492&Itemid=211 (accessed November 16, 2011).

Figure I-3
Residential grid connected CSPV system



Source: DOE, Office of Energy Efficiency and Renewable Energy (EERE) Web site, http://www.energysavers.gov/your_home/electricity/index.cfm/mytopic=10720 (accessed November 9, 2011).

Nonresidential systems are installed at commercial, industrial, government, and similar buildings and sites (figure I-4). While typically larger than residential installations, with an average size of 81 kW in 2010, they function similarly, providing electricity to meet onsite needs and pulling additional electricity from the grid when needed and feeding excess electricity back into the grid when it is not needed.[28]

Figure I-4
Installation of a nonresidential CSPV system

Source: Photos courtesy of DOE/NREL, credit Dennis Schroeder.

[28] CCCME postconference brief, Exhibit 41, Larry Sherwood, *U.S. Solar Market Trends 2010*, June 2011, pp. 5–7; EPIA, *Solar Generation 6*, 2011, p. 12.

Utility systems are generally the largest systems, averaging more than 1,450 kW per installation in 2010, and provide electricity directly to the electric grid for sale to customers rather than for on-site use (figure I-5). These systems are generally ground-mounted and currently tend to use central inverters rather than microinverters.[29]

Figure I-5
LA Ola PV plant, a utility CSPV system on Lanai, Hawaii

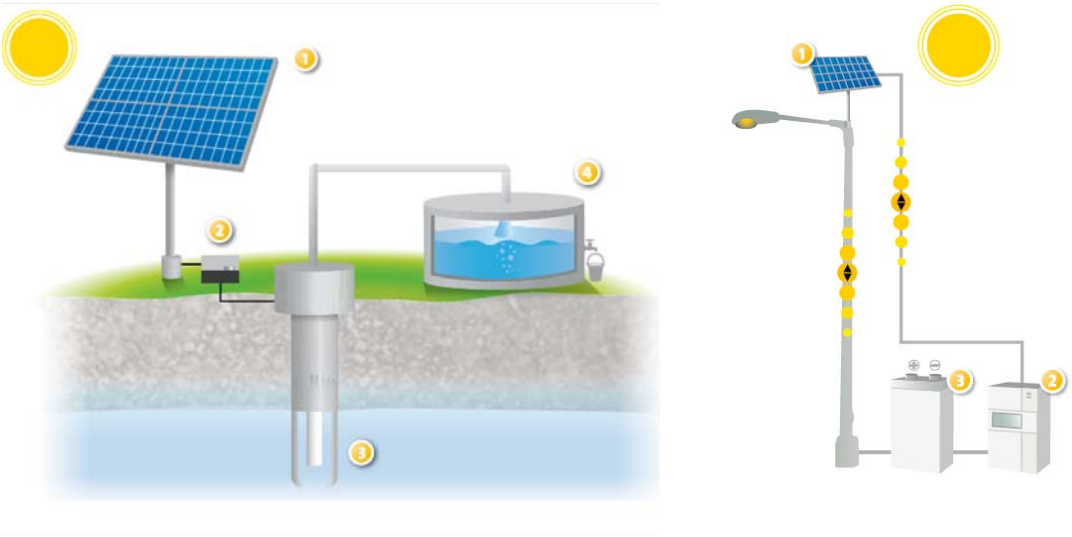
Source: Photo courtesy of DOE/NREL, credit Jamie Keller.

The off-grid market includes a range of uses such as water pumping and purification systems, street lights, emergency phones, homes in remote locations, telecommunications systems, and military applications (figure I-6). These systems often have additional balance of system components, such as a battery and charge controller, though inverters are not needed for all off-grid applications.[30]

[29] CCCME postconference brief, exh. 41, Larry Sherwood, *U.S. Solar Market Trends 2010*, June 2011, pp. 5–7; Petition, p. 19; MJ Shiao, "Can Micro-Inverters Penetrate the Megawatt-Scale PV Market?" Greentech Solar, July 21, 2010, http://www.greentechmedia.com/articles/read/can-micro-inverters-penetrate-the-megawatt-scale-pv-market (November 16, 2011).

[30] SolarWorld, "Sunmodule for Off-grid Systems," pp. 3–6; Conference transcript, pp. 58–61 (Brinser and Kilkelly) and 166–67 (Azzam).

Figure I-6
Off-grid water pumping system (left) and light system (right)



1. Module
2. Control unit
3. Solar water pump
4. Water reservoir

1. Module
2. Charge controller
3. Battery

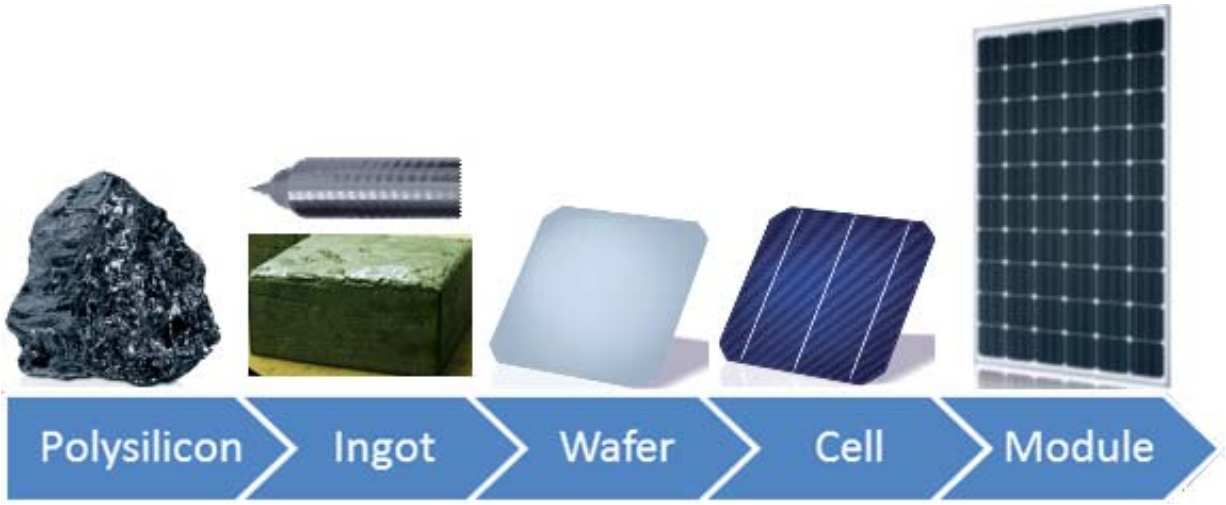
Source: SolarWorld, "Sunmodule for Off-grid Systems," 3.

Production Process

There are five principal stages of the CSPV value chain. First, polysilicon is refined, then it is formed into ingots, which are sliced into wafers, which are converted to cells that are assembled into modules, the finished product (figure I-7). These are discrete production steps that may be done in different plants or locations. Companies may source products at each stage of the value chain or produce the products in-house.[31] The ingot and wafer production process differs for monocrystalline and polycrystalline cells, as discussed below. Overall, labor accounts for about 10 percent of production costs in the industry, with module assembly accounting for the majority of labor costs in the production process.[32]

[31] Conference transcript, p. 116 (Brinser and Brightbill); Petitioner's postconference brief, p. 11.
[32] Conference transcript, p. 19 (Brinser), 44 (Brinser), and 231 (King).

Figure I-7
CSPV production process



Note: For ingots, the top picture is a crystal used in monocrystalline wafers, while the bottom picture is an ingot used in making multicrystalline wafers.

Source: Petition, Exhibit I-11; ingot photo courtesy of DOE/NREL, credit John Wohlgemuth, Solarex; Petitioner's conference handouts, p. 6.

Silicon refining

The first step in the CSPV value chain is refining polysilicon. There are multiple approaches to polysilicon refining, but this discussion will focus on the Siemens method, which was used for almost 80 percent of the polysilicon produced in 2009.[33] The polysilicon accounts for about 23 percent of the value added in a PV module.[34]

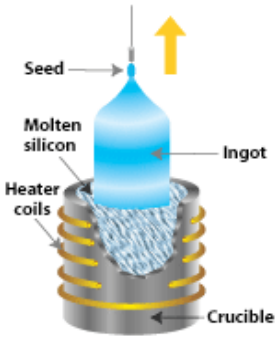
In the first step in the Siemens process, quartz (silicon dioxide) and carbon are heated to around 1,800 degrees Celsius. The carbon reacts with the oxygen, resulting in carbon dioxide and silicon with a purity of around 98 to 99 percent. The silicon is then combined with hydrogen chloride gas at 300 to 350 degrees Celsius, with the reaction resulting in the liquid trichlorosilane. Next, heated silicon rods are inserted into a Siemens reactor, where they are further heated to 1,000 degrees or more. Hydrogen and trichlorosilane gas are fed into the reactor. The silicon from the trichlorosilane is deposited onto the rods, which steadily increase in size until they are removed from the reactor about a week later. The resulting products are polysilicon chunks or rocks with purity of 99.9999 percent to 99.999999 percent (or 6N to 8N).[35]

[33] Nitol Web site, http://www.nitolsolar.com/entechnologies (accessed November 6, 2011).
[34] Sun Edison postconference brief, p. 7.
[35] REC Web site, "Glossary," http://www.recgroup.com/tech/glossary; Wacker Polysilicon, "The History of the Future: Fifty Years of Wacker Polysilicon," p. 7; Centrotherm Web Site, http://www.centrotherm.de/en/products-services/silicon-wafer/technology.html (accessed November 6, 2011); Nitol Web site, http://www.nitolsolar.com/entechnologies (accessed November 6, 2011).

Ingots and wafers for monocrystalline cells

In the Czochralski process[36] for producing crystals used in monocrystalline wafers, polysilicon rocks are first placed into a quartz crucible along with a small amount of boron, which is used to provide a positive electric orientation (figure I-8). The crucible is then loaded into a Czochralski furnace and heated to about 2,500 degree Fahrenheit. Once the polysilicon is melted, a seed crystal is lowered into the material and rotated, with the crucible rotated in the opposite direction. The melt starts to solidify on the seed and the seed is slowly raised out of the melt—creating a single long crystal. The crystal is then cooled before it is moved onto the next step.[37]

Figure I-8
Czochralski process



Source: DOE, EERE Web site, http://www.eere.energy.gov/basics/renewable_energy/types_silicon.html (accessed November 5, 2011).

Once the crystal has cooled, it is processed into wafers. The top and tail (each end of the cylindrical crystal) are cut off and the crystal (or ingot) is squared and cut into equal length pieces. In squaring, the rounded sides of the ingot are cut into four flat sides, leaving only rounded corners. A wire saw then cuts the ingots into wafers.[38]

[36] The Czochralski process is discussed here as it is used by the petitioners and several of the respondents. Another process is the float-zone process which "produces purer crystals than the Czochralski method because the crystals are not contaminated by a crucible. In the float-zone process, a silicon rod is set atop a seed crystal and then lowered through an electromagnetic coil. The coil's magnetic field induces an electric field in the rod, which heats and melts the interface between the rod and the seed. Single-crystal silicon forms at the interface and grows upward as the coils are slowly raised." DOE, EERE Web site, http://www.eere.energy.gov/basics/renewable_energy/types_silicon.html (accessed November 5, 2011); Trina Solar, "Form 20-F," April 18, 2011, p. 39; Suntech, "Form 20-F," May 9, 2011, p. 37; Petition, Exhibit I-11.

[37] Petition, pp. 9–10 and exh. I-11; Suntech, "Form 20-F," May 9, 2011, p. 37.

[38] Petition, p. 10 and exh. I-11; Suntech, "Form 20-F," May 9, 2011, p. 37.

Ingots and wafers for multicrystalline cells

For multicrystalline ingots,[39] the first step is also loading polysilicon into a crucible. This crucible is then loaded into a direction solidification systems (DSS) furnace. In this furnace, the polysilicon is "cast into multicrystalline ingots under precise heating and cooling conditions."[40]

The ingot is then cut into blocks. These blocks are tested and any parts of the block that do not pass these tests are cropped off. Finally, the blocks are sliced into wafers using a wire saw.[41]

Cells

The monocrystalline and polycrystalline wafers, which are 180 to 200 micrometers thick, are next processed into cells.[42] This step of the process is the "most capital intensive part of the manufacturing process."[43] It is "a highly automated, capital intensive, and technologically sophisticated process, requiring skilled technicians and employees with advanced degrees."[44] Petitioner stated that the value added in the cell production step accounts for about 30 percent of the value of a module, while the respondents stated that it was less than 25 percent.[45]

First, the wafers are cleaned, then the surface of the wafer undergoes a chemical treatment which reduces the reflection of sunlight and increases light absorption.[46] In the next step, "phosphorus is diffused into a thin layer of the wafer surface. The molecular-level impregnation occurs as the wafer surface is exposed to phosphorus gas at a high heat, a step that gives the surface a negative potential electrical orientation. The combination of that layer and the boron-doped layer below creates a positive-negative, or P/N, junction–a critical partition in the functioning of a PV cell."[47]

Following diffusing, an antireflective coating is added to the PV cells and metals are then printed on the solar cell to collect the electricity. On the front of the cell these metals are printed in thin metal strips called fingers, which are connected to the rest of the module via busbars. The final step in the process is the testing and sorting of the cells.[48]

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[39] In addition to the production process discussed here, multicrystalline wafers can be produced using string-ribbon wafers. Cells using string-ribbon wafers accounted for only 1 percent of CSPV cell production in 2010. These were the types of products produced by Evergreen Solar. The wafers used in string-ribbon silicon cells are produced by "growing thin strips of silicon that are then cut into wafers." String-ribbon wafers use less silicon than other multicrystalline silicon wafers. Petition, exh. I-10, "Year of the Tiger," *Photon International*, March 2011, p. 208; Evergreen Solar, "Form 10-K," March 9, 2011, pp. 3–4.

[40] GT Advanced Technologies Inc., "Form 10-K," May 25, 2011, p. 9.

[41] Suntech, "Form 20-F," May 9, 2011," p. 37; Yingli, "Form 10-K," May 5, 2011, p. 50.

[42] CCCME postconference brief, Exhibit 1, p. 25.

[43] Conference transcript, p. 42 (Brinser).

[44] Petition, p. 20.

[45] Conference transcript, p. 42 (Brinser) and 148 (Hannah).

[46] Petition, exh. I-11; Suntech, "Form 20-F," May 9, 2011, p. 38; Yingli, "Form 20-F," May 5, 2011, p. 53.

[47] Petition, exh. I-11.

[48] Petition, exh. I-11; Suntech, "Form 20-F," May 9, 2011, p. 38; Yingli, "Form 20-F," May 5, 2011, 53; Conference transcript, p. 40 (Brinser).

Modules

The cells are next assembled into modules. Module assembly accounts for the majority of labor costs in the production process.[49] Petitioners note that module assembly "is more labor intensive than cell production, but nonetheless is still a highly automated and sophisticated process."[50] There is a trend in the industry toward more automation in module assembly, but some companies employ highly automated processes while others balance automation and manual labor.[51] Respondents note that module assembly in China and the United States use similar levels of automation.[52]

First, a string of cells is soldered together, then laid out in rectangular matrix that will provide the appropriate wattage and power requirements.[53] Typically a sealant is added, often ethyl vinyl acetate, and a back sheet is added.[54] The cells are then laminated in a vacuum and are cured.[55] At this stage the cells are referred to as a "laminate."[56] Frames are then usually attached to the laminate, and a junction box is attached to the back.[57] In the final step, modules are cleaned and inspected.[58]

INTERMEDIATE PRODUCTS

CSPV Cells vs. CSPV Modules

When an issue arises as to whether products at different stages of production should be included in the same domestic like product, the Commission has employed a five-factor "semifinished/finished products" analysis. In these investigations, CSPV modules are downstream products of CSPV cells, which are the upstream or intermediate product. The issue then is whether CSPV cells and CSPV modules, although in the definition of the scope of these investigations, should be included in the definition of the domestic like product. The five factors that the Commission has considered in analyzing semifinished products include: (1) uses (is the upstream product dedicated to the production of the downstream product or does it have independent uses?); (2) markets (are there separate markets for the upstream and downstream products?); (3) characteristics and functions (are there differences in the physical characteristics and functions of the upstream and downstream products?); (4) value (are there differences in the production costs and/or sales values (transfer values or market prices as appropriate) of the upstream and downstream products?); and (5) transformation processes (what is the significance and extent of the processes used to transform the upstream product into the downstream product?).

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[49] Conference transcript, p. 231 (King).

[50] Petitioner's postconference brief, p. 6.

[51] Canadian Solar, "Form 20-F," May 17, 2011, pp. 31-32; Jessica Lillian, "Further Automation, Improved Encapsulants Reshape Module Assembly," *Solar Industry*, April 2011, 40, 42; Trina Solar Ltd., "Form 20-F," April 18, 2011, 40; Conference transcript, pp. 230–231 (Efird) and 231 (King).

[52] Conference transcript, p. 231 (King).

[53] Petition, exh. I-11.

[54] Conference transcript, p. 42–43 (Brinser).

[55] Petition, exh. I-11; Yingli, "Form 20-F," May 5, 2011, 54; Suntech, "Form 20-F, May 9, 2011, 38.

[56] Conference transcript, p. 40–41, 73 (Brinser).

[57] Petition, p. 12 and exh I-11; Conference transcript, p. 41 (Brinser).

[58] Petition, exh. I-11.

Whether the Upstream Product is Dedicated to the Production of the Downstream Product

Petitioner stated that CSPV cells are produced for the sole purpose of being assembled into CSPV modules with virtually 100 percent of CSPV cells ending up assembled into modules.[59]

Whether There are Separate Markets for the Upstream and Downstream Products

Petitioner claimed that CSPV cells are either internally consumed by firms that produce CSPV modules or are sold to firms that assemble CSPV modules, many of which obtain CSPV cells from related producers overseas. It states that the merchant market for CSPV cells is limited and accounted for approximately *** percent of total U.S. cell production.[60]

Whether There are Differences in the Physical Characteristics and Functions of the Upstream and Downstream Products

Petitioner stated that there are no differences in physical characteristics and functions between the CSPV cells and modules. They maintained that the essential physical characteristics and function is to convert sunlight into electricity through a photovoltaic effect.[61]

What Is the Significance and Extent of the Processes Used to Transform the Upstream Product into the Downstream Product?

Petitioner stated that the production of CSPV modules includes four primary steps: (1) crystallization; (2) wafer production; (3) cell conversion; and (4) module assembly. Thus, petitioner contended that CSPV cells undergo only one additional production step before becoming CSPV modules, namely, the assembly of the cells into modules.[62]

Value Added by U.S. Producers of CSPV Modules

Petitioner stated that CSPV cell production accounted for approximately *** percent of the total cost of a CSPV module and approximately *** percent of the total final value of the module. U.S. producer data submitted to the Commission indicate that the CSPV cell accounted for *** percent of the total cost of goods sold for modules in January-June 2011.[63]

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[59] Petitioner's postconference brief, exh. 1, pp. 2-3. Respondents did not directly address a semi-finished product analysis.

[60] Ibid., exh. 1, pp. 3-4.

[61] Ibid., exh. 1, p. 6.

[62] Ibid., exh. 1, pp. 6-7.

[63] Ibid., exh. 1, p. 6.

DOMESTIC LIKE PRODUCT ISSUES[64]

CSPV Cells & Modules vs. Thin Film Solar Products

The petitioner contends that the Commission should find one domestic like product that includes the scope of the investigations as identified by Commerce.[65] Respondents argue that the Commission should expand the definition of the domestic like product to include thin film solar products and include in the domestic industry those firms that produce those products.[66]

Thin Film Photovoltaic (PV) Cells and Modules–Definition and Background

Thin film cells and modules use a several micron thick layer of either amorphous silicon (a-Si), cadmium telluride (CdTe), copper indium (gallium) (di)selenide (CIS or CIGS), or a combination of a-Si and micro-crystalline silicon (µc-Si) to convert sunlight to electricity (figure I-9).[67] CdTe modules are typically on glass while a-Si and CIGS can be on glass or a flexible substrate such as stainless steel or plastic (figure I-9).[68] A typical CdTe module is about 47 inches long, 24 inches wide, and 0.27 to 0.32 inches thick and weighs between 26.5 and 28.7 pounds. CdTe modules generally have an output ranging from about 65 to 88 watts.[69] Sharp's multijunction a-Si and µc-Si on glass is about 56 inches long, 40 inches wide, and 1.8 inches thick and weighs about 42 pounds, though its frameless module is about 0.29 inches thick. The output for these Sharp modules ranges from 121 watts to 142 watts.[70] However, many thin film modules, particularly amorphous silicon and CIGS modules, have a broader range of sizes given the different substrates that can be used and the flexibility those substrates allow in module size selection. For example, one of United Solar's products is available in lengths of 109.1 inches or 213.1 inches and with a power output of 68 watts (for the shorter module) or more than 130 watts (136 or 144 watts). The modules have the same width (14.7 inches) and thicknesses (0.12 inches), and weigh either 8.5 pounds or

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[64] At the staff conference, SolarOne Solutions, Inc. of Needham, MA, a seller of off-the-grid solar products testified that U.S. producers do not produce these products in the United States and that the Commission should find that these products are a separate domestic like product. Conference transcript, pp. 165-169 (Azzam). Off-the-grid solar products have a lower wattage output typically used to charge batteries in applications not connected to a power grid. Petitioner stated that it did not produce these products in the United States and was not aware of any domestic production. Petitioner argued that since there is no U.S. production of off-the-grid products, there can be no separate domestic like product and the issue is more appropriately addressed by Commerce as a scope exclusion request. Petitioner's postconference brief, exh. 1, pp. 20-21.

[65] Petition, p. 16; Petitioner's postconference brief, "Answers to Questions from Staff," exh. 7.

[66] Respondent CCCME's postconference brief, pp. 7-17; Respondent Sun Edison's postconference brief, pp. 5-17.

[67] Other PV technologies in small scale commercial production (i.e., 30 MW or less of global production in 2009) "include fully organic PV (OPV) and hybrid dye-sensitized solar cells (DSSC)." OPV and DSSC cells in commercial production or on large surfaces have efficiencies of less than 4 percent. EPIA, *Solar Generation 6*, 2011, 25.

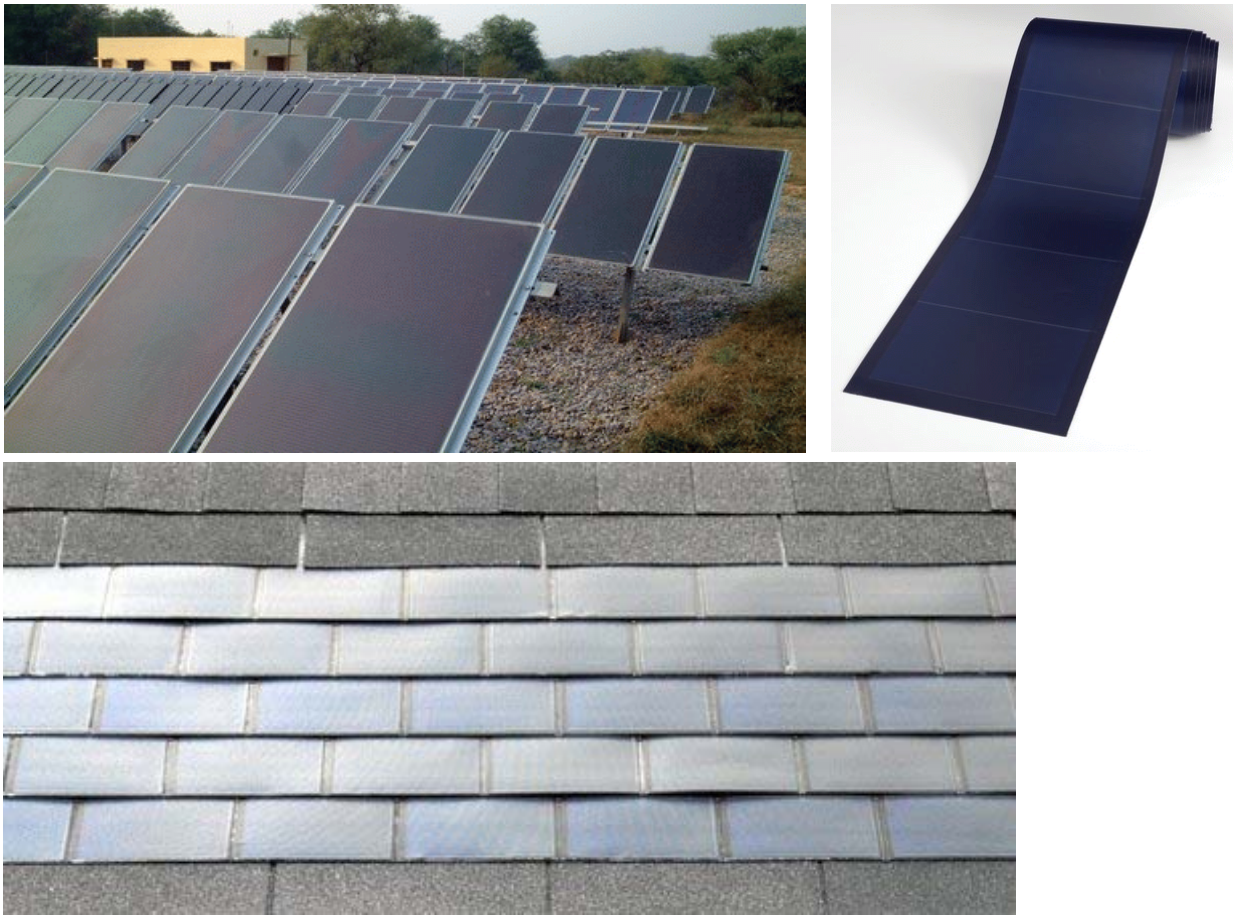
[68] Solarbuzz Web site, "Technologies," http://www.solarbuzz.com/going-solar/understanding/technologies (accessed November 14, 2011); EPIA, *Solar Generation 6*, 2011, 22–23; CCCME postconference brief, Exhibit 1, p. 25.

[69] First Solar, First Solar FS Series 2 PV Module brochure; First Solar, First Solar FS Series 3 PV Module brochure; Abound Solar, AB1 Series Thin-Film Photovoltaic Module brochure; GE Web site, http://www.ge-energy.com/products_and_services/products/solar_power/cdte_thin_film_solar_module78.jsp (accessed November 17, 2011).

[70] Sharp, 135 Watt Thin Film Module brochure; Sharp, 135 Watt Frameless, Glass-on-Glass Thin Film Module brochure; Sharp Web site, http://www.sharpusa.com/SolarElectricity/SolarProducts/UtilityScaleProducts.aspx (accessed November 17, 2011).

16.2 pounds.[71] Thin film module outputs generally range from 60 watts to 350 watts.[72] Thin film products can also be used in building integrated products such as solar shingles.[73]

Figure I-9
Ground mounted thin film installation (left), flexible a-Si module (right), and thin film solar shingles (bottom)



Source: Photos courtesy of DOE NREL, credit Peter McNutt (left) and United Solar Ovonic (right and bottom).

Conversion efficiencies vary by technology type and there is some overlap in the efficiencies of the various technologies (table I-2).[74] Thin film modules are capable of generating power in low light conditions, such as early in the morning or late in the day.[75]

[71] EPIA, *Solar Generation 6*, 2011, p. 23; United Solar, PowerBond ePVL brochure.
[72] EPIA, *Solar Generation 6*, 2011, p. 23.
[73] EPIA, *Solar Generation 6*, 2011, p. 22; United Solar Web site, http://www.uni-solar.com/products/residential-products/powershingle-2 (accessed November 17, 2011).
[74] EPIA, *Solar Generation 6*, 2011, p. 25.
[75] Conference transcript, p. 125 (Efird); CCCME postconference brief, p. 11.

Table I-2
Thin film commercial module efficiencies, 2010

Module type	Module efficiency *(percent)*
Amorphous silicon	4 to 8
Cadmium telluride	10 to 11
Copper indium (gallium) (di)selenide	7 to 12
Multijunction amorphous silicon and microcrystalline silicon	7 to 9

Note: For modules currently in commercial production.

Source: EPIA, *Solar Generation 6*, 2011, p. 25.

Thin film PV systems convert sunlight into electricity for use on-site or for distribution through the electric grid. Thin film systems can be ground-mounted or roof-mounted and also generally require an inverter and other balance of system components, though flexible thin films may not require the same racking as modules on glass.[76] Thin film modules can be used in all three of the major grid-connected market segments—residential, commercial, and industrial—and in the off-grid market. However, depending on the technology and substrate, the number of market segments in which thin film modules produced by particular companies are used may vary.[77] For example, the primary applications of flexible a-Si and CIGS modules are generally the residential and nonresidential markets, particularly the building integrated market and on rooftops that are not able to hold a significant amount of weight (due to the modules' flexibility and light weight).[78] In contrast, CdTe modules on glass are primarily sold in the nonresidential and utility market segments.[79] CIGS modules on glass are used in all three of the major grid-connected market segments and in the off-grid market.[80]

U.S. production of thin film cells increased from *** in 2008 to 566 MW in 2010 (table I-3). The leading manufacturers in 2010 were CdTe producer First Solar (241 MW), a-Si producer United Solar (150 MW), and CIGS producer Solyndra (68 MW).[81] While Solyndra announced its intention to file for bankruptcy in August 2011 and United Solar announced a temporary suspension in production in November 2011 due to high levels of inventory, other thin film companies are expanding U.S. production. For example, First Solar is adding a plant that will double its U.S. production capacity, CdTe

[76] A diagram of a residential installation would be the same as in figure I-3.

[77] First Solar, "Form 10-K," February 28, 2011, pp. 1, 4; Energy Conversion Devices, "Form 10-K," August 25, 2011, pp. 1–2; Ascent Solar Technologies, "Form 10-K," February 28, 2011, p. 2–3; Dow, "Industry First: DOW POWERHOUSE Solar Shingle Protects and Powers the Home," News release, January 19, 2010; Abound Web site, http://www.abound.com/solar-modules/manufacturing (accessed November 17, 2011); Stion Web site, http://www.stion.com/applications.html (accessed November 17, 2011); Solar Frontier Web site, http://www.solar-frontier.com/Projects/Gunkul+Megasolar/70 and http://www.solar-frontier.com/Projects/Gunkul+Megasolar/70&page=2&ct= (accessed November 17, 2011).

[78] Energy Conversion Devices, "Form 10-K," August 25, 2011, pp. 1–2; Ascent Solar Technologies, "Form 10-K," February 28, 2011, pp. 2–3; Dow, "Industry First: DOW POWERHOUSE Solar Shingle Protects and Powers the Home," News release, January 19, 2010.

[79] First Solar, "Form 10-K," February 28, 2011, p. 4; Abound Web site, http://www.abound.com/solar-modules (accessed November 17, 2011).

[80] Stion Web site, http://www.stion.com/applications.html (accessed November 17, 2011); Solar Frontier Web site, http://www.solar-frontier.com/Projects/Gunkul+Megasolar/70 and http://www.solar-frontier.com/Projects/Gunkul+Megasolar/70&page=2&ct= (accessed November 17, 2011).

[81] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 194–195; ***.

producer GE is planning a 400 MW plant, CIGS producer Stion opened a plant in September 2011, and CIGS producer SoloPower is planning a new plant.[82]

Table I-3
U.S. thin film cell production, 2008–10

Company	Technology		Cell production	
		2008	2009	2010
			megawatts	
First Solar	CdTe	***	143.0	241.0
United Solar	a-Si	***	123.4	150.0
Solyndra	CIGS	***	30.0	68.0
Abound Solar	CdTe	***	3.0	30.0
Global Solar	CIGS	***	10.0	30.0
Other		***	15.0	47.0
Total		***	324.4	566.0

Source: Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 194–195; ***.

Production Process

The thin film production process often varies by company and technology, with companies often employing proprietary production processes.[83] In general, a thin layer of the photosensitive material (a-Si, CdTe, CIGS, etc.) is deposited directly onto a glass, stainless steel, or plastic substrate via physical vapor deposition, chemical vapor deposition, electrochemical deposition, or a combination of methods. For CdTe modules on glass, the process is continuous and automated, with a piece of glass entering the production line every ten seconds and emerging on the other as a complete module in about two hours, according to Abound Solar's production rate. First Solar notes that there are three main stages in the CdTe production process: (1) in the deposition stage, a layer of cadmium sulfide is applied and then a layer of cadmium telluride; (2) in the cell definition stage, lasers are used to create interconnected cells; and (3) in the third stage, busbars, an inter-laminate material, and a rear piece of glass are added, the

[82] Steve Leon, "Solyndra To File for Bankruptcy; 1,100 Lose Jobs," Renewable Energy World, August 31, 2011, http://www.renewableenergyworld.com/rea/news/article/2011/08/solyndra-to-file-for-bankruptcy-1100-lose-jobs (accessed November 22, 2011); "Auburn Hills Solar Energy Company Suspends Production, Plans Jobs Cuts," *Detroit Business News*, November 9, 2011, http://www.mlive.com/business/detroit/index.ssf/2011/11/auburn_hills_solar_energy_comp.html (accessed November 22, 2011). First Solar, "First Solar Dedicates Mesa Factory Site," News release, August 19, 2011; Christopher Martin, "GE Picks Colorado for $300 Million Solar Panels Production Plant," *Bloomberg*, October 13, 2011, http://www.bloomberg.com/news/2011-10-14/ge-picks-colorado-for-300-million-solar-panels-production-plant.html# (accessed November 22, 2011); "Stion Opens 100 MW CIGSSe PV factory in Mississippi," *Semiconductor Today*, September 21, 2011, http://www.semiconductor-today.com/news_items/2011/SEPT/STION_210911.html (accessed November 22, 2011); Jim Redden, "SoloPower Sees Portland as Great Location," *Portland Tribune*, May 13, 2011, http://www.portlandtribune.com/news/story.php?story_id=130531028619081700 (November 22, 2011).

[83] This section provides a general overview of thin film production techniques and includes some specific examples, but does not cover all possible production methods.

module is laminated, and a junction box and wires are added. For modules on a flexible substrate, a roll to roll manufacturing process is used, whereby a long roll of the plastic or stainless steel substrate is unrolled as it moves through production equipment that deposits the photosensitive material, such as through vacuum deposition (figure I-10). In some cases this results in a more manual module assembly process as the roll is cut into individual cells that are interconnected and then laminated to form the module.[84]

Figure I-10
Roll to roll CIGS production equipment (left) and CIGS on a flexible substrate (right)

Source: Photos courtesy of DOE/NREL, credit Global Solar Energy.

Commission's Six-factor Domestic Like Product Analysis

The Commission's decision regarding the appropriate domestic products that are "like" the subject imported products is based on a number of factors including: (1) physical characteristics and uses; (2) common manufacturing facilities, production processes, and production employees; (3) interchangeability; (4) customer and producer perceptions; (5) channels of distribution; and (6) price. The following sections provide information regarding these factors provided by the parties. In these preliminary phase investigations, the Commission did not collect data regarding thin film solar products in its questionnaires.

[84] EPIA, *Solar Generation 6*, 2011, p. 22–24; DOE, EERE Web site, http://www.eere.energy.gov/basics/renewable_energy/polycrystalline_thin_film.html (accessed November 17, 2011); Record of Categorical Exclusion for SoloPower, Inc.; SoloPower Web site, http://www.solopower.com/solopower-launches-breakthrough-flexible-cigs-module-product-line.html (accessed November 17, 2011); Ascent Solar Technologies, "Form 10-K," February 28, 2011, p. 2, 4, 8–9; Energy Conversion Devices, "Form 10-K," August 25, 2011, p. 2; First Solar, "Form 10-K," February 28, 2011, p. 3; Abound Web site, http://www.abound.com/solar-modules/manufacturing (accessed November 17, 2011).

Physical Characteristics and Uses

Petitioner argued that CSPV cells and thin film solar products use completely different raw material inputs and production technologies. It also stated that the two products have different efficiency and energy output rates with thin film solar products being less efficient and producing a lower wattage rate than CSPV cells.[85] Respondents argued that both products share the same physical characteristics and end uses stating that both products are laminated products that capture sunlight and convert it to electricity by a photovoltaic effect. They also stated that although thin film solar products may be generally less efficient by generating less electricity per square meter they are able to generate electricity with lower levels of sunlight.[86] Respondents argued that although the basic raw material input for CSPV cells, crystalline silicon, may not be used in thin film solar products, the material used for sunlight absorption only accounts for approximately 23 percent of the total cost of a CSPV module and less than 8 percent of the cost of a thin film module.[87]

Common Manufacturing Facilities, Production Processes, and Production Employees

Petitioner stated that the production processes and manufacturing facilities for CSPV cells and thin film products are completely different. It stated that the thin film production process uses entirely different inputs and bypasses an essential step in CSPV cell production process, namely the production of the silicon crystal and wafer. Thin film solar products, by contrast, are produced by directly placing thin layers of photovoltaic material onto a substrate. These photovoltaic materials most commonly consist of amorphous silicon, cadmium telleride, and copper indium gallium selenide, materials not used in the production of CSPV cells.[88] Respondents agreed that the two product types do not share common manufacturing facilities, production process, and production employees.[89]

Interchangeability

Petitioner stated that because of the different physical characteristics of the two products, especially efficiency and output rates, the interchangeability of CSPV cells and thin film solar products is limited. Therefore, thin film solar products need more surface area to generate the same amount of electricity that can be generated by CSPV cells, and thus, are less suitable for roof-top residential and commercial applications. Because of the larger geographic areas needed for thin film solar products, petitioner alleged that they are typically used in the utility market segment, which is a relatively small segment for solar applications accounting for approximately *** percent of total U.S. installations in the second quarter of 2011.[90] Respondents claimed that the two product types are interchangeable in the marketplace and compete in utility sector as well as the residential and commercial roof-top sectors.[91] Respondent Sun Edison stated that it purchases both CSPV cells and thin film solar products for its solar

[85] Petition, pp. 17-18; Petitioner's postconference brief, exh. 1, pp. 11-13 and exh. 28 (product specifications comparisons, by company).

[86] Respondent CCCME's postconference brief, pp. 8-11; Respondent Sun Edison's postconference brief, pp. 6-9.

[87] Respondent Sun Edison's postconference brief, p. 7.

[88] Petition, pp. 20-21; Petitioner's postconference brief, exh. 1, pp. 8-10.

[89] Respondent CCCME's postconference brief, p. 15. Respondent Sun Edison cited its production of silane gas that it uses in the production of polysilicon and sells to other producers, which they use in their production process of thin film solar products. Respondent Sun Edison cited this sub manufacturing process as one both CSPV cells and thin film solar products share. Ibid., at p. 14.

[90] Petition, pp. 18-19; Petitioner's postconference brief, exh. 1, pp. 14-15.

[91] Respondent CCCME's postconference brief, pp. 11-12.

power systems and determines which product to use in a given project based on a number of factors including ***.[92]

Customer and Producer Perceptions

Petitioner stated that customers and producers generally perceive CSPV cells to be the established PV technology with higher efficiency and thin film solar products to be a newer, less established and less efficient technology.[93] Respondents claimed that customers and producers perceive both products to be similar and in direct competition with one another. Respondents cited the largest producer of thin film solar product, First Solar's 2010 annual report in which it states that manufacturers of CSPV cells are among its main competitors. Respondents also claimed that customers, especially large solar project developers, will consider bids for both types of technology.[94]

Channels of Distribution

Petitioner stated that there are three primary market segments: (1) utilities; (2) commercial roof-top; and (3) residential roof-top. CSPV cells compete in all markets whereas thin film solar products are highly concentrated in the utility sector. The utility market segment is a relatively small segment for solar applications accounting for approximately *** percent of U.S. installations in the second quarter of 2011. The utility sector generally purchases its solar panels in direct negotiations between the solar producer and the utility or developer whereas residential and commercial roof-top applications are generally sold from solar producer to distributor or installer and then to end user.[95] Respondents claimed that the channels of distribution for both products are identical whereby both products are sold directly to utilities and sold to wholesalers and distributors to be sold in the residential and commercial roof-top sector.[96]

Price

Petitioner maintained that because CSPV cells and thin film solar products use different production technology and raw material inputs, the two products' respective cost structures and therefore their respective prices are different. Generally, thin-film solar products are less costly to produce and are priced lower than CSPV cells.[97] Respondents argued that although thin film solar products may be priced less on per-watt basis, they are priced comparably to CSPV cells on a system-wide basis due to the additional costs necessary to accommodate the less efficient thin-film solar products such as more land, more labor, more structure, and more wiring.[98] Respondent Sun Edison stated that it believes thin film solar products to be the price leaders in the solar module market and that the lower production costs of thin film solar products push down the prices of CSPV cells.[99]

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[92] Respondent Sun Edison's postconference brief, pp. 9-10. Respondent Sun Edison agreed that thin film solar products are not used as prevalently in the residential and commercial rooftop sectors, but cited a number of examples of thin film solar products being used in those sectors. Ibid., at pp. 7-8.

[93] Petition, p. 20; Petitioner's postconference brief, exh. 1, p. 19.

[94] Respondent CCCME's postconference brief, pp. 12-14.

[95] Petition, pp. 19-20; Petitioner's postconference brief, exh. 1, pp. 16-18.

[96] Respondent CCCME's postconference brief, p. 12; Respondent Sun Edison's postconference brief, p. 13.

[97] Petition, p. 21; Petitioner's postconference brief, exh. 1, p. 11.

[98] Respondent CCCME's postconference brief, pp. 16-17.

[99] Respondent Sun Edison's postconference brief, p. 16.

PART II: CONDITIONS OF COMPETITION IN THE U.S. MARKET

U.S. MARKET CHARACTERISTICS

Channels of Distribution

According to Petitioner, CSPV cells and modules are sold primarily through three channels of distribution (distributors, installers, and utility co/developers).[1] As shown in table II-1, the majority of U.S.-produced cells and modules were sold to distributors, with that percent increasing between 2008 and 2009, before decreasing slightly in 2010. Shares of shipments of imports from subject and nonsubject sources varied throughout the period, but the majority was primarily to installers and utility co/developers combined.

Table II-1
CSPV cells and modules: Channels of distribution for commercial shipments of domestic product and subject imports sold in the U.S. market, by year and by source, 2008-10, January-June 2010, and January-June 2011

				January-June	
	2008	2009	2010	2010	2011
Item	Shares of reported U.S. commercial shipments (percent)				
Domestic producers' U.S. shipments:					
To distributors	70.8	97.0	91.7	96.5	89.5
To installers	9.5	1.2	4.0	1.8	5.8
To utility co/developers	19.7	1.8	4.3	1.7	4.7
U.S. importers' U.S. shipments from China:					
To distributors	0.5	23.7	20.8	25.2	15.5
To installers	57.5	33.9	28.1	28.3	32.3
To utility co/developers	42.1	42.4	51.1	46.5	52.2
U.S. importers' U.S. shipments from nonsubject countries:					
To distributors	18.7	7.9	7.3	6.1	1.3
To installers	60.8	56.7	66.6	81.6	93.4
To utility co/developers	20.5	35.4	26.1	12.3	5.3

Source: Compiled from data submitted in response to Commission questionnaires

Market Segments

Petitioner notes that within the channels of distribution (distributors, installers, and utilities/developers), there are three main market segments:[2]

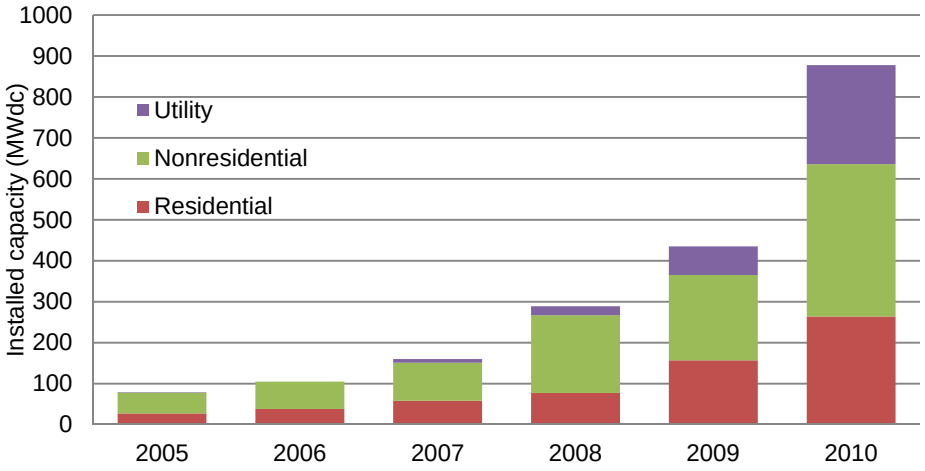
(1) Utility-scale, where large scale solar panel arrays are installed as stand-alone units;
(2) Commercial{also referred to as nonresidential}, where panels are affixed to large, non-residential rooftops or installed in stand-alone systems; and
(3) Residential, where panels are affixed to residential rooftops or installed in stand-alone systems.

[1] Petition, p. 19.
[2] Petition, p. 19.

The residential market segment consists primarily of installations by home or building owners in order to generate electricity for use on site. Some residential installations may be owned by a third-party provider who sells the electricity to a residential client. The nonresidential market segment consists primarily of building owners in order to generate electricity for use on site, and may also be provided by third-party providers. The utility market segment is primarily installations owned by utility companies or third parties where the electricity is generated for a power grid.[3]

Although all three of these market segments have been growing, relative share of installed capacity has been shifting from the nonresidential segment to the utility segment, driven in large part by state renewable portfolio standard requirements (figure II-1). The increase in market share by segment is in part driven by differences in the average installation size across each segment. Although the residential market segment accounts for the largest number of installations, the average capacity for nonresidential and utility installations is several-fold larger than residential installations. For example, whereas the average residential installation in 2010 was 5.7 KW, the average for nonresidential installation was 81 KW and for utility, 1,450 KW.[4] In addition, Petitioner noted that the effect of renewable energy portfolio standards started to take effect on companies about two to three years ago, and consequently, there has been a "deployment of those larger utility scales actually being built at the second half of this year, and going into the next year. And that's why you see in the SEIA data that the installed projections will increase because those projects are now getting built."[5]

Figure II-1
Annual PV installed capacity by market segment, 2005–10



Source: Petition, SEIA, "U.S. Solar Market Insight: 2010 Year in Review—Executive Summary," p. 6, Figure 2-2.

[3] IREC, "U.S. Solar Market Trends 2010," June 2011, p. 5. Respondents also stated that few utility companies purchase solar systems, but instead purchase electricity from projects done by independent power producers, which are private companies. Conference transcript, p. 190 (Efrid). A 2011 report for the U.S. Department of Energy states that "four broad categories of utility solar business models have emerged in the United States: utility ownership of assets, utility financing of assets, development of customer programs, and utility purchase of solar output." Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, p. 24.

[4] IREC, "U.S. Solar Market Trends 2010," June 2011, p. 7, Figure 3, and Figure 4. In addition, although the utility scale installations are larger, these often vary substantially on a project-by-project basis.

[5] Conference transcript, p. 94-5 (Kilkelly). Respondents also noted that development companies may sign contracts with utility companies for solar projects two to five years in advance of the project. Conference transcript, p. 156 (Kimber).

GEOGRAPHIC DISTRIBUTION

Table II-2 presents information provided by U.S. producers and importers on the specific geographic markets served by their firm. Most responding producers (8 of 15) and importers (10 of 18) reported serving the entire continental United States. Five producers and four importers reported serving only one or two of the identified regions.

Table II-2
CSPV cells and modules: Geographical market areas in the United States served by domestic producers and importers

Region	Producers	Importers
Northeast[1]	12	16
Midwest[2]	8	12
Southeast[3]	11	14
Central Southwest[4]	8	11
Mountains[5]	11	14
Pacific Coast[6]	10	15
Other[7]	7	13

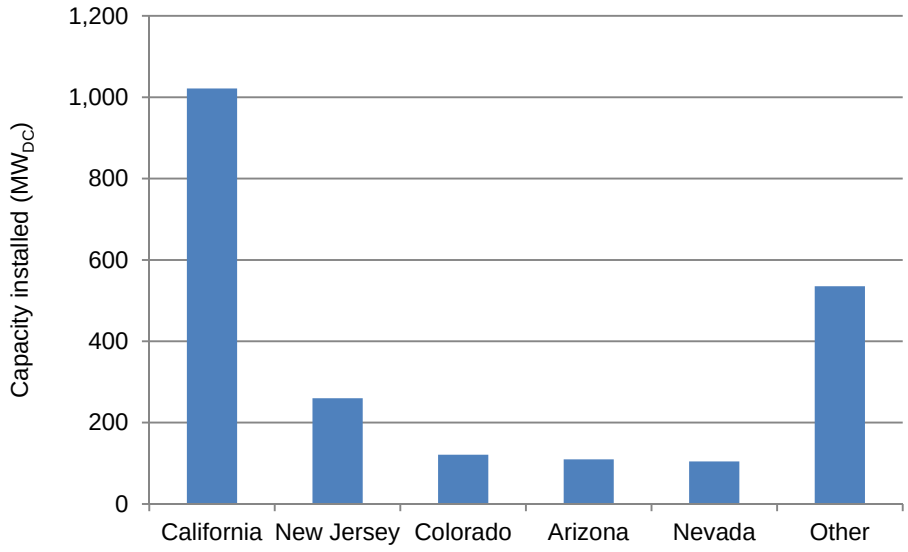
[1] Includes CT, ME, MA, NH, NJ, NY, PA, RI, and VT.
[2] Includes IL, IN, IA, KS, MI, MN, MO, NE, ND, OH, SD, and WI.
[3] Includes AL, DE, DC, FL, GA, KY, MD, MS, NC, SC, TN, VA, and WV.
[4] Includes AR, LA, OK, and TX.
[5] Includes AZ, CO, ID, MT, NV, NM, UT, and WY.
[6] Includes CA, OR, and WA.
[7] Includes all other markets in the United States not previously listed, such as AK, HI, PR, and VI.

Source: Compiled from data submitted in response to Commission questionnaires.

Although many U.S. producers and importers serve the entire continental United States, PV solar installations are generally concentrated in a few states, primarily as a result of state-specific incentives, although the distribution has been expanding and changing over time. As the SEIA reports, "Whereas California comprised around 80% of total installations in 2004-2005, by 2010 it accounted for less than 30% of the national market."[6] In 2010, most of the top 10 states, by annual installed capacity, increased market share relative to California; and New Mexico, Nevada, Pennsylvania, and Texas each experienced annual increases of over 500 percent (figure II-2 and table II-3).

[6] Petition, Solar Energy Industries Association (SEIA), "U.S. Solar Market Insight: 1st Quarter 2011—Executive Summary," Exh. I-23, p. 8.

Figure II-2
Cumulative capacity by top 5 states



Source: U.S. Solar Market Trends 2010, June 2011, Appendix C.

Table II -3
PV capacity, share of total, and percent change, 2009 and 2010, by leading states

	2009 Capacity (MW)	Share of 2009	2010 Capacity (MW)	Share of 2010	Percentage change (09-10)
California	213.7	48.9%	252.0	28.2%	17.9%
New Jersey	57.3	13.1%	132.4	14.8%	131.1%
Nevada	2.5	0.6%	68.3	7.6%	2632.0%
Arizona	21.1	4.8%	63.6	7.1%	201.4%
Colorado	23.4	5.3%	62.0	6.9%	165.0%
Pennsylvania	4.4	1.0%	46.5	5.2%	956.8%
New Mexico	1.4	0.3%	40.9	4.6%	2821.4%
Florida	35.7	8.2%	34.8	3.9%	-2.5%
North Carolina	6.6	1.5%	28.7	3.2%	334.8%
Texas	4.2	1.0%	25.9	2.9%	516.7%
Other	67.1	15.3%	137.8	15.4%	105.4%
Source: U.S. Solar Market Trends 2010, June 2011, Appendix C.					

SUPPLY AND DEMAND CONSIDERATIONS

U.S. Supply

Based on available information, U.S. CSPV cells and modules producers have the ability to respond to changes in demand with moderate to large changes in the quantity of shipments of U.S. produced CSPV cells and modules to the U.S. market. The main contributing factor to the high degree of responsiveness of supply is the availability of unused capacity and alternative markets; supply responsiveness is somewhat constrained due to limited inventories and an inability to produce alternate products.

Industry Capacity

U.S. producers' capacity utilization, by units, for CSPV cells and modules increased from approximately 38 percent in 2008 to slightly more than 80 percent in 2009, and declined in 2010 to slightly less than 80 percent (figure II-3).[7] The increase in capacity utilization was largely a result of production increases, which increased at more than twice the rate of total capacity increases.

Figure II-3
CSPV cells and modules: U.S. production and capacity utilization, 2008—2010, Jan.-June 2010, and Jan.-June 2011

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Various industry and government reports also provide estimates of U.S. production and capacity. According to two reports by the International Energy Agency for the U.S. Department of Energy, in 2008, there were five U.S. producers producing crystalline cells and modules. By 2010, there were 13 U.S. producers producing crystalline cells and modules, and cell production had increased by 326 percent, cell production capacity by more than 300 percent, module production by more than 450 percent, and module production capacity by more than 480 percent.[8]

According to the SEIA, from 2008 to 2010, U.S. wafer production increased by 184 percent, U.S. cell production increased by 164 percent, and U.S. module production increased by 121 percent.[9] With respect to industry capacity utilization, SEIA notes that utilization differed among U.S. firms based on export exposure. It reports that export-oriented firms and facilities experienced larger production declines stemming from reduced demand in Germany and Italy, whereas domestically oriented firms and facilities were buffeted by the "robust demand environment in the U.S."[10]

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[7] Capacity utilization was approximately *** percent and *** percent in interim 2010 and interim 2011, respectively. Capacity utilization for CSPV cells increased from approximately *** percent in 2008 to approximately *** percent in 2010. Capacity utilization for CSPV modules increased from approximately *** percent in 2008 to approximately *** percent in 2010.

[8] International Energy Agency, "National Survey Report of PV Power Applications in the United States 2008," prepared for the U.S. Department of Energy by the National Renewable Energy Laboratory, June 8, 2009, p. 7; and Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, p. 17.

[9] Petition, SEIA, "U.S. Solar Market Insight: 2010 Year in Review—Executive Summary," Exh. I-14, p. 12, figure 2-8.

[10] Specifically, SEIA states, "On one hand, production from export-oriented firms and facilities dipped quite materially on account of soft demand conditions in the key feed-in tariff markets of Germany and Italy through the first few months of the year. At the same time, plants that serve the domestic market enjoyed far healthier

Alternative Markets

U.S. producers have a limited ability for CSPV cells and moderate-to-large ability for CSPV modules to divert shipments to or from alternative markets in response to price changes in the price of CSPV cells and modules. Exports by U.S. producers as a share of total shipments of CSPV cells, by units, fluctuated but increased overall from *** percent in 2008 to *** percent in 2010; the share of exports of CSPV cells increased from *** percent to *** percent between interim 2010 and interim 2011. Exports by U.S. producers as a share of total shipments of CSPV modules, by units, fluctuated but increased overall from *** percent in 2008 to *** percent in 2010; exports of CSPV modules decreased from *** percent to *** percent between interim 2010 and interim 2011.

European markets are the United States' main alternative market, although Canada has also emerged as a leading U.S. export market.[11] SEIA notes that "A first-half slowdown in major European markets (most notably Italy and Germany) combined with continued strength in the U.S. has already led most PV manufacturers and developers to seek opportunities in the U.S. market with many in the industry expecting it to be the largest market in the world within a few years."[12] Respondents state that U.S. producers "have historically exported much of their production, U.S. production primarily to Europe. Thus demand outside of the United States is a critical driver of success in the industry."[13]

Inventory Levels

U.S. producers have a limited ability to use inventories as a means of increasing shipments of CSPV cells and modules. The ratio of end-of-period inventories to total shipments for U.S. producers increased slightly from *** percent, by units, in 2008 to *** percent in 2010; the end-of-period inventories to total shipments increased from *** percent to *** percent between interim 2010 and interim 2011.

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utilization of manufacturing capacity given robust demand environment in the U.S. SolarWorld, for example, which has strong historical presence in the domestic market, attributed the 32 percent growth in its overall wafer and module shipments to its strong performance especially in the US market." Petition, SEIA, "U.S. Solar Market Insight: 1st Quarter 2011—Executive Summary," Exh. I-23, pp. 11-12.

[11] USITC Dataweb/USDOC (accessed November 28, 2011).

[12] Petition, SEIA, "U.S. Solar Market Insight: 2nd Quarter 2011—Executive Summary," Exh. I-16, p. 2.

[13] Conference transcript, p. 145 (King).

Production Alternatives

All responding U.S. producers reported that no other products could be produced using the same machinery and equipment used in the production of CSPV cells and modules.[14]

Supply Constraints

Seven of the 15 responding U.S. producers indicated that their firm had refused, declined, or been unable to supply CSPV cells and modules since January 2008. Two producers (***) attributed the supply constraint directly to the increased demand driven by the expected expiration of the 1603 Treasury cash grant program,[15] which resulted in a "rush of orders." Three producers (***) identified general conditions in which demand exceeded supply generally from late 2009 through 2010. Two producers identified firm-specific events, including ***.[16]

Supply of Subject Imports

Based on available information, Chinese CSPV cells and modules producers have the ability to respond to changes in demand with large changes in the quantity of shipments of U.S. produced CSPV cells and modules to the U.S. market. The main contributing factor to the high degree of responsiveness of supply are the moderate availability of unused capacity, increasing capacity, and substantial alternative markets; supply responsiveness is somewhat constrained due to limited inventories and an inability to produce alternate products.

Industry Capacity

Responding foreign producers' capacity utilization, by units, for CSPV cells and modules increased substantially from approximately *** percent in 2008 to approximately *** percent in 2010, and is projected to increase to *** and *** percent in 2011 and 2012, respectively (figure II-4).[17] The increase in capacity utilization was driven by increases in both production and total capacity.

In addition, Petitioner reports that China's supply is large and growing rapidly. Petitioner states, for example, that "China's capacity is large and growing exponentially every year. Chinese producers are planning to double their capacity by the end of 20ll (to 37 GW), and will have unused capacity in 2011 (9 GW) that is several times larger than the US market."[18] According to Petitioner, China accounts for 50 percent of global CSPV cell capacity in 2010, compared to less than 15 percent in 2006.[19] Data provided by Petitioner describes China's capacity as increasing from 3.2 gigawatts in 2008 to 16.1 gigawatts in 2010 (an increase of more than 400 percent in two years), with an estimated projected increase to 27.4 gigawatts in 2011 (an increase of about 70 percent in one year).[20] A report in the California Management Review notes that "In 2009, 49% of solar PV came from China and Taiwan; when limited to crystalline-

[14] Two producers responded "yes" but subsequently listed CSPV modules.

[15] See Table II-4 for additional information on the investment tax credit and the 1603 Treasury cash grant program.

[16] According to Respondent firm, Yingli, it entered the U.S. market in late 2009 because "the U.S. at the time was grossly underserved," and "{the} supply shortage was so great that U.S. customers were at times waiting for six months to receive product." Conference transcript, p. 131 (Petrina).

[17] Capacity utilization for CSPV cells and modules was approximately *** percent and *** percent in interim 2010 and interim 2011, respectively, and is projected to be *** percent and *** percent in 2011 and 2012, respectively. Capacity utilization for CSPV cells increased from approximately *** percent in 2008 to approximately *** percent in 2010. Capacity utilization for CSPV modules decreased from approximately *** percent in 2008 to approximately *** percent in 2010.

[18] Petition, p. 39.

[19] Petition, p. 46; Petition, EPIA, "Global Market Outlook for PhotoVoltaics until 2015," April 2011, Exh. I-15, p. 36.

[20] Conference transcript, Petitioner exh. slide 5.

silicon cells, the figure jumped to 56%."[21] This same report also reports an estimate of 65 percent for China's share of global wafer-production capacity in 2009, up from 59 percent in 2008.[22]

Figure II-4
CSPV cells and modules: Chinese production and capacity utilization, 2008—10, Jan-June 2011, and Jan.-June 2011

* * * * * * *

Source: Compiled from data submitted in response to Commission questionnaires.

Alternative Markets

Responding Chinese producers have a limited ability for CSPV cells and a large ability for CSPV modules to divert shipments to or from alternative markets in response to price changes in the price of CSPV cells and modules. Most CSPV cells (consistently more than 95 percent by watts) were internally consumed, and less than 1 percent was exported during the period of investigation. Home market shipments of CSPV cells were minimal (consistently less than 5 percent). Home market shipments of CSPV modules fluctuated, but increased overall from *** percent in 2008 to *** percent in 2010 and is projected to represent *** percent and *** percent in 2011 and 2012, respectively.[23] Shipments of CSPV modules to the United States increased from *** percent in 2008 to *** percent in 2010 and is projected to represent *** percent and *** percent in 2011 and 2012, respectively. Shipments of CSPV modules to external markets other than the United States decreased from *** percent in 2008 to *** percent in 2010 and is projected to represent *** percent and *** percent in 2011 and 2012, respectively.

Most research and data indicate that the vast majority of China's production is destined for export. For example, a PV industry publication, *PV News* reported in May 2010 that ***.[24] Petitioner also reports that while the vast majority of China's production is for export, primarily to the EU, recent softening in demand in the EU, especially in Germany and Italy, is expected to result in increased shipments to the U.S. market.[25] Data provided by Petitioner describes China's exports as representing 95 percent of production (10.7 out of 11.2 gigawatts), most of which was exported to Europe, which is expected to experience decreasing demand in 2012.[26] As noted earlier, the SEIA also reports that an economic slowdown in major European markets, primarily Italy and Germany, combined with growth in the U.S. market, has resulted in increased interest by PV manufacturers and developers in U.S. market opportunities.[27]

Inventory Levels

Responding Chinese producers have a limited ability to use inventories as a means of increasing shipments of CSPV cells and modules. The ratio of end-of-period inventories to total shipments for Chinese producers decreased from *** percent, by units, in 2008 to 2.6 percent in 2010.

Production Alternatives

[21] Supplement to the Petition, California Management Review, "Government Policy and Firm Strategy in the Solar Photovoltaic Industry," Exh. Supp-2, p. 24.

[22] Supplement to the Petition, California Management Review, "Government Policy and Firm Strategy in the Solar Photovoltaic Industry," Exh. Supp-2, p. 24.

[23] Respondents indicated that Chinese demand increased from 0 MW in 2008 to 1,500 MW in 2011 and is projected to increase to 4,000 MW in 2012. Respondent CCCME's postconference brief, p. 12.

[24] ***.

[25] Petition, pp. 4, 40, 48, and 49.

[26] Conference transcript, Petitioner exh. slides 7 and 13.

[27] Petition, SEIA, "U.S. Solar Market Insight: 1st Quarter 2011—Executive Summary," Exh. I-23, p. 2.

All responding Chinese producers responded that no other products could be produced using the same machinery and equipment used in the production of CSPV cells and modules.

Supply Constraints

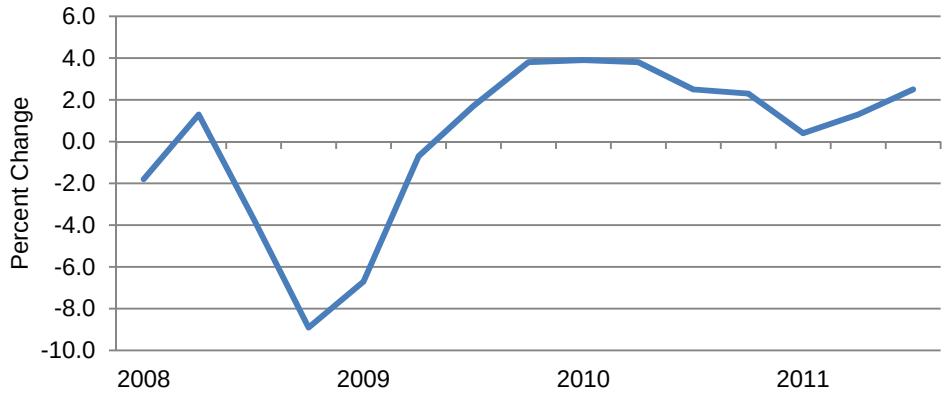
Eleven of the 22 responding importers indicated that their firm had refused, declined, or been unable to supply CSPV cells and modules since January 2008. Two producers (***) attributed the supply constraint directly to the increased demand driven by the expected expiration of the 1603 Treasury cash grant program, which resulted in a "rush of orders." Several importers (***) stated that, in general, conditions existed in which demand exceeded supply or there was limited availability for various time periods generally from late 2009 through 2010 (e.g., 4Q2010, 2009, 2010, before 2011).

U.S. Demand[28]

Based on available information, it is likely that changes in the price level of CSPV cells and modules would result in a large change in the quantity of CSPV cells and modules demanded. The main contributing factor is the availability of substitute products, moderated by the high cost share of CSPV cells and modules in their end uses.

Petitioner states that "the Commission should analyze the relevant statutory factors in light of the economic crisis that began in 2008," and that demand for CSPV cells and panels depends in part on the ability finance new solar energy projects, which require significant amounts of capital, and that the financial crisis in 2008 and the resulting credit crunch limited access to capital, thereby limiting growth of the solar industry.[29] Respondent Sun Edison states, however, that despite the economic downturn, it has not had any difficulties raising capital for its projects.[30] As seen in figure II-5, after a U.S. GDP growth of 1.3 percent in the 2nd quarter of 2008, quarterly GDP growth rates were negative for four consecutive quarters, until the 3rd quarter of 2009. Since then, quarterly GDP growth has fluctuated between 0.4 and 3.9 percent.

Figure II-5
Real U.S. GDP growth: Percentage change, quarterly, Jan. 2008-Sept. 2011



[28] Respondents stated that "the demand for solar electricity is highly price elastic, as it is very sensitive to changes in solar electricity prices. A decline in solar electricity prices tends to cause a shift in demand away from other generation sources towards solar electricity. The demand for solar modules is a derived demand, arising from the demand for solar electricity. Because solar modules constitute up to 50 percent of the total cost for a solar electricity system, a change in the price of solar module has a substantial direct impact on the total cost of a solar electricity system and, hence, the quantity of modules demanded in the market. As a result, the elasticity of demand for solar modules is, itself, very high." Conference transcript, pp. 159-160 (Button); Respondent CCCME's postconference brief, p. 40.

[29] Petition, p. 41.

[30] Respondent Sun Edison's postconference brief, p. 34.

Source: National Income and Product Accounts- Table 1.1.1, Percent Change from Preceding Period in Real Gross Domestic Product, Bureau of Economic Analysis, http://www.bea.gov/national/nipaweb, retrieved October 28, 2011.

Apparent Consumption

Apparent U.S. consumption of CSPV cells and modules increased from $*** billion in 2008 to $*** billion in 2010. Various industry observers and participants have noted the relatively large increase in the U.S. PV market. Petitioner reports that the U.S. solar market increased from $3.6 billion in 2009 to $6 billion in 2010, with grid-connected PV installations increasing from 435 MW to 878 MW over the same period.[31] According to Respondents, the U.S. solar energy market doubled between 2008 and 2009, and between 2009 and 2010."[32] According to the SEIA, "2010 was a banner year for the solar energy market in the United States. In contrast to U.S. GDP growth of 2.8%, the U.S. solar market grew 67%."[33]

Business Cycles and Incentives

Almost all responding U.S. producers and importers indicated that the CSPV cells and modules market is subject to business cycles or conditions of competition distinctive to the CSPV cells and modules market.[34] The two most frequently identified factors were incentives and the weather. Most responding firms identified federal incentives (e.g., investment tax credit expected expiration and extension, 1603 Treasury cash grant program sunset) and state incentives and policies (e.g., RPS (renewable portfolio standards), tax credits, renewable energy policies), as well as associated uncertainties, as contributing to swings in market conditions. The role of European incentives was also included, both as affecting business cycles in general as a government incentive (e.g., changes or reduction in feed-in-tariffs) and as affecting conditions in U.S. market by increasing the amount of competition in the U.S. market. Several responding firms indicated that demand generally increased in the latter part of the calendar year (particularly in the 4th quarter of the year), but many of these firms tied the increase to end-of-year tax or other government incentives.[35] As one importer stated, "As these government incentives wax and wane, so does the market for CSPV;" and a U.S. producer/importer added, "Because solar is reliant on government incentives, uncertainty around policy decisions can cause drastic swings in demand."

In addition, many responding firms indicated that demand generally declines during winter months, as it can be more difficult to install solar on rooftops in snow or ice conditions, although this business cycle is more relevant for northern states (or northern countries in Europe) and less relevant for Sunbelt/southern states (or southern countries in Europe). A few responding firms (four companies) identified business cycle changes driven by availability of affordable credit and access to financing, as well as financial strength of firms and warranty strength of products. In addition, one firm identified raw

[31] Petition, p. 29.

[32] Conference transcript, p. 132 (Petrina) and exh. slide 1.

[33] Petition, SEIA, "U.S. Solar Market Insight: 2010 Year in Review—Executive Summary," Exhibit I-14, p. 2. In addition, "On the whole, the US is currently the strongest, most stable national growth market for PV. This is reflected both in the numbers and in the chatter from global suppliers, distributors, and developers, all of which are bullish on near-term U.S. demand. By the end of 2011, the U.S. market has the potential to nearly double its global market share and support a more equitable distribution of installation types than has previously been seen in any leading demand center." Petition, SEIA, "U.S. Solar Market Insight: 2nd Quarter 2011—Executive Summary," Exh. I-16, p. 14.

[34] One producer and two importers selected "no."

[35] Respondents also stated that "We're now in the fourth quarter of 2011. To the extent that there's an increase of imports this quarter, it is largely due to federal and state incentives to provide advantages for importations or installations prior to December 31, 2011;" and "Recognizing the existence of programs like {the Section 1603 cash grant program} is key to interpreting the timing and trends in the solar power business and to explain the supposed wave of imports referenced by Petitioner in its claims." Conference transcript, p. 141-2 (Young).

material shortages and declining polysilicon prices, and another identified increasing demand for large-scale projects as affecting CSPV cells and modules conditions of competition.

Almost all responding U.S. producers and importers indicated that there had been changes in the business cycles or conditions of competition for CSPV cells and modules since January 2008.[36] The two most frequently identified factors were government incentives and increased Chinese presence in the market. Many responding firms cited the uncertainty and changing nature of U.S. Federal and state incentives (e.g., 1603 Treasury cash grant, tax incentives) and the decrease in incentive program support and demand in Europe (e.g., revision or reduction in feed-in-tariffs and economic slowdown in Europe). One firm (***) added that incentives have "carried less importance as lower and lower prices have affected the market." Several responding firms identified an increase in new entrants in the market, an increase in imports from Asia (especially China), and increased production in China. Many of these firms linked these changes to lower prices for CSPV cells and modules. In addition, a few firms identified the global economic slowdown and financial crisis, lack of credit and financing, financing practices by Chinese firms, and decreasing cost of raw materials and the decline in polysilicon prices as contributing to changes in business cycles and conditions of completion.

Various types of supply and purchase incentives are provided in the United States by Federal, state, and local entities. While not comprehensive, table II-4 provides a summary of several types of programs.[37]

Several industry and government reports have analyzed how these incentives have affected supply and demand in the U.S. market. According to a historical report summarizing the U.S. PV industry, the U.S. PV market has been largely driven by national, state, and local government incentives.[38] In addition, industry association sources note the role Federal and state incentives have had on business cycles and demand. The SEIA reports that as a result of the expected expiration of the Section 1603 Treasury Cash Grant program in December 31, 2010, during the summer of 2010 many project developers initiated projects to meet the start-construction deadline at the end of 2010. The program was ultimately extended through December 31, 20ll. As a result, SEIA identified an "application boom" in Q2-2010, and an "installation boom" in Q1-2011 in the nonresidential market segment. SEIA adds that, given the extension of the program, a similar cycle is expected in mid-2011 and early 2012.[39] Similarly, the IREC reports that the pending expiration of the Federal tax credit spurred the beginning of construction starts in late 2010 that would not be completed until 2011 or later.[40] A publication by the U.S. Department of Energy and the National Renewable Energy Laboratory reports on the role of incentives in stimulating U.S. demand. It states that "Two of the major federal policy drivers for growth in PV installations include the 30% investment tax credit (ITC) and the five-year accelerated depreciation (modified accelerated cost recovery schedule or MARCS)."[41] The 2008 report describes in detail the role

[36] One producer and two importers selected "no."

[37] Additional information is available from the Database of State Incentives for Renewables and Efficiency (DSIRE)'s website: http://www.dsireusa.org/. "DSIRE is a comprehensive source of information on state, local, utility and federal incentives and policies that promote renewable energy and energy efficiency. Established in 1995 and funded by the U.S. Department of Energy, DSIRE is an ongoing project of the N.C. Solar Center and the Interstate Renewable Energy Council."

[38] Barbose, Galen et al., "Tracking the Sun IV," September 2011, p. 5.

[39] Petition, SEIA, "U.S. Solar Market Insight: 1st Quarter 2011—Executive Summary," Exhibit I-23, pp. 6-10 and Figure 2-2. SEIA also adds that as a result of the "2010 Overhang," 2010 module shipments greatly exceeded 2010 module installations.

[40] Specifically, IREC states, "As part of the federal stimulus legislation passed in February 2009, commercial entities may receive the federal incentives as a cash grant instead of a tax credit. The rules governing the cash grant program were not created for several months, so the impact on 2009 installations was muted. In 2010, the program operated for the entire year. … The threatened expiration {in end of 2010} caused many projects to begin construction in late 2010, in order to qualify for the cash grant program. These late 2010 project starts did not significantly affect the number of completed installation in 2010. They will be completed in 2011 or later." IREC, "U.S. Solar Market Trends 2010," June 2011, p. 6-7.

[41] Additionally, "To increase the benefits and accessibility of the ITC, in 2010 federal legislation was enacted that allows solar assets placed in service from 2009-2012 to receive a cash grant from the Treasury Department

of the Federal investment tax credit in spurring PV installations in the utility sector: "First, {in 2008,} anxiety over the possible expiration of the ITC on 1 January 2009 encouraged a rush by businesses and consumers to install systems using the existing credits. Then, on 3 October 2008, the Emergency Economic Stabilization Act of 2008 (P.L. 110-343) was passed that extended the 30% commercial ITC through December 2016, eliminated the monetary cap for the ITC applied to residential solar electric installations, and allowed utility companies and alternative minimum tax filers to take the tax credit."[42]

(1603 Cash Grant). Worth 30% of qualified costs of a solar project, recipients can opt to receive a grant in lieu of the ITC. Under an amendment to MARCS, eligible PV property placed in service after 8 September 2010, and before 1 January 2012, qualifies for 100% first-year bonus depreciation. For 2012, bonus depreciation is still available, but the allowable deduction reverts from 100% to 50% of the eligible basis;" and "Electricity utility interest continues to increase in the United States. The key drivers are policy—the 30% ITC at the national level and renewable portfolio standards at the state level. As consumer demand increases and grid parity moves closer in different markets, cooperation and dialogue between the electricity utility industry and the solar industry is increasing." Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, pp. 6-7, and 9.

[42] International Energy Agency, "National Survey Report of PV Power Applications in the United States 2008," prepared for the U.S. Department of Energy by the National Renewable Energy Laboratory, June 8, 2009, p. 6.

Table II-4
Description of various selected types of Solar PV incentives

Incentive Typed	Description
Enhanced feed-in tariffs (gross/net)	The legality of feed-in tariffs was challenged before the Federal Energy Regulatory Commission (FERC) in proceedings involving the California Public Utilities Commission and three California utilities. A FERC order issued in October resolved the uncertainty by providing clarifying validation, within strict parameters, for a state-level feed-in tariff.
Capital subsidies for equipment or total cost	Federal (incl. 1603 Treasury cash grant program): 30% Investment Tax Credit (ITC), which can be taken as a grant in lieu of the credit if the system meets certain requirements. The Energy Policy Act of 2005 created tax incentives for solar energy–a new 30% ITC for commercial and residential solar energy systems that applied from January 1, 2006 through December 31, 2007. These credits were extended for one additional year in December 2006 by the Tax Relief and Health Care Act of 2006. In 2008, Congress enacted the Emergency Economic Stabilization Act of 2008, which, among other things, included an eight-year extension of the commercial and residential solar ITC, elimination of the monetary cap for residential solar electric installations, and permitted utilities and alternative minimum tax (AMT) filers to utilize the credits. State: 20 states, the District of Columbia, and Puerto Rico offer capital subsidies
Renewable Energy Credit (REC) purchase programs	There are seven REC regional tracking systems or registries and at least 30 REC products available.
Green electricity schemes	Green pricing programs are offered by utilities in 41 states. More than 20 states have environmental disclosure policies in place, requiring electricity suppliers to provide information on fuel sources used and, in some cases, emissions associated with electricity generation.
Renewable portfolio standards (RPS)	36 states plus the District of Columbia, Guam, Puerto Rico, and Virgin Islands have an RPS.
PV requirement in RPS	22 states and the District of Columbia have solar or distributed generation provisions.
Investment funds for PV	U.S. private sector capital investment reached $6.8 billion in 2010.
Income tax credits	- Federal: federal investment tax credit of 30 % for residential, commercial, and utility systems. - About $1.1 billion in income tax credits were awarded to solar manufacturers under the Advanced Energy Manufacturing Tax Credit program. - State: 21 states offer tax credits for solar projects.
Net metering	43 states plus the District of Columbia and Puerto Rico have net metering policies.
Commercial bank activities	Federal: DOE Loan Program Office administers two loan programs that are applicable to solar energy: 1) Title XVII Section 1703 of the Energy Policy Act of 2005 – Provides loan guarantees to innovative clean technologies, where obtaining conventional private financing is difficult due to high technology risk and capital-intensive nature of investment. 2) Title XVII Section 1705 of the Energy Policy Act of 2005 – Provides loan guarantees to commercial-scale renewable energy projects, including those employing more mature technologies that begin construction prior to 30 September 2011. Although 25 states plus the District of Columbia authorize Property Assessed Clean Energy (PACE), the Federal Housing Financing Agency (FHFA) issued a statement in July 2010 concerning the senior lien status associated with most PACE programs. In response to the FHFA statement, most local PACE programs have been suspended until further clarification is provided. Commercial banks are engaged in all aspects of PV financing. Through their project finance arms, they provide project-level debt, construction and term, equity, and tax equity for solar projects. Commercial banks also invest in solar companies engaged in project development and manufacturing along the supply chain.
Electricity utility interest	Policy is the key driver for electric utility activity—the federal tax credit (30%) at the national level and renewable portfolio standards at the state level.
Sustainable building requirements	Federal: No federal codes exist, but DOE produces best-practices guides for sustainable building for both residential and commercial builders. State and Local: Some states and local jurisdictions have sustainable building requirements.
Source: Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, p. 22 (Table 11); SEIA, "Backgrounder: Success of the Section 1603 Treasury Program," Respondent CCCME's postconference brief, exh. 25.	

To varying degrees, Petitioner and Respondents have highlighted the role of Federal, state, and local government incentives in affecting demand and business cycles. Petitioners noted that there are a number of incentives, including the investment tax credit, that are "pushed through the Federal level, and local, and State utilities all have different types of incentive programs to shift people away from traditional fossil fuels," but that "it makes solar more appealing to the end-consumer, but it doesn't drive the pricing."[43]

According to Respondents, "the availability of Federal and state incentive programs are important in shaping demand."[44] Suntech asserted that "solar power only thrives where governments provide incentives and mandate renewables. Most utilities would not buy solar unless required by some renewable portfolio standard. For example, incentives in California, Hawaii, New Jersey, and Maryland, now make solar power prices actually beat utility pricing. States like California have mandated that 30 percent of their energy come from renewables by the year 2020."[45] Of particular note by Respondents is the 1603 Treasury program.[46]

Demand Characteristics

Demand trends

Most U.S. producers (11 of 15) and importers (18 of 23) indicated that demand within the United States had increased and a number indicated that it had fluctuated (3 of 14 producers and 4 of 23 importers) (table II-5).[47] Producers and importers attributed the increased demand to lower prices and incentives (e.g., Federal tax policies, and state and regional Renewable Portfolio Standards); increasing power rates and energy consumption; increased consumer acceptance; grid parity of solar in some states and increased solar competitiveness with traditional fossil fuel sources; improved technology, lower costs, and higher efficiency; increased availability of financing; and global warming, "green awareness," increased demand for "clean energy," and concerns about the environment and sustainability.

Most U.S. producers (6 of 11) and importers (11 of 18) indicated that demand outside the United States had increased, and a number indicated that it had fluctuated (5 of 11 producers and 7 of 18 importers). Producers and importers attributed the increased demand outside the United States to lower prices and incentives (e.g., feed-in-tariff in Europe); increased public awareness and consumer interest; technology improvements and higher efficiencies; increased energy needs and costs; availability of financing; and increased demand for "clean energy." Two companies that identified fluctuating demand outside the United States (***) attributed it to reduction in European feed-in-tariffs and other government incentives in 2011 and decreased demand in Europe due to the "economic crisis."

[43] Conference transcript, pp. 62-63 (Kilkelly), p. 64 (Brinser).

[44] Conference transcript, p. 12 (Weiner).

[45] Conference transcript, p. 129 (Efrid).

[46] "The most important recent program created to promote deployment of renewable energy is known as the Section 1603 cash grant program. Under this program, renewable energy developers may opt to convert the existing renewable investment tax credit into a cash grant payment upon commercial operation of the project. At the end of 2010, the 30 percent Treasury grant program was extended for an additional year and is available for qualifying projects that commence by the end of 2011. To further illustrate, the Section 1603 cash grant program requires a solar project developer to either: (1) place the renewable energy product into service by the end of 2011; or (2) qualify for the safe harbor, which essentially requires incurring at least five percent of the qualifying project cost, such as modules and equipment, before the end of 2011, then placing the project in service before the applicable tax credit determination date, which, in this case, was 2016 for solar. Recognizing the existence of programs like this is key to interpreting the timing and trends in the solar power business and to explain the supposed wave of imports referenced by Petitioner in its claims." Conference transcript, p. 141 (Young), and conference exhibit slide 3.

[47] One producer indicated that demand in the United States had decreased (***) because of a decline in ARRA-funded projects.

Table II-5
CSPV cells and modules: U.S. producers and importers, perceptions regarding the demand for CSPV cells and modules

	Number of firms reporting			
Item	**Increase**	**No Change**	**Decrease**	**Fluctuate**
Demand within the United States				
U.S. producers	11	0	1	3
Importers	18	0	1	4
Demand outside the United States				
U.S. producers	6	0	0	5
Importers	11	0	0	7

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. producers and importers identified a number of product changes since January 2008. Most identified changes related to various performance aspects of CSPV cells and modules, including increased power output, increased wattage per panel, and improved efficiency. These performance changes were attributed to increased panel sizes and/or improved technology (such as improved cell performance or combinations of polysilicon and thin film cells). Other product changes included various product aspects such as stronger frames, additional or improved racking components, increased variety, more colors, and sleeker designs. A few firms mentioned entering the utility sector/power plant market segment and the advent of solar farms (***); although, one producer (***) indicated that it had exited larger-scale segments due to declining panel prices. Two companies identified production-related changes including ***.

Other factors affecting demand

On a broad level, purchasers can demand energy and electricity from a wide variety of sources, ranging from traditional fossil fuels to various forms of renewable energy (including wind, solar, geothermal, and biomass). According to the U.S. Energy Information Administration (EIA),[48] the levelized cost of energy (LCOE) is "is often cited as a convenient summary measure of the overall competiveness of different generating technologies." Respondents stated that the LCOE is used to "consider all factors so that solar, nuclear, gas, and coal can be compared on technically the same basis," and added that because thin film has a lower, but close, LCOE compared to crystalline silicon, thin film is considered a competitive alternative to CSPV modules.[49] Petitioner contends, however, that the role of LCOE in the price difference and interchangeability is more limited as there are "four generation technologies whose levelized costs come between silicon PV and thin film."[50]

Substitute products

Six of 15 responding U.S. producers and nine of 21 responding importers indicated that there were substitute products for CSPV cells and modules. The most often identified substitute product for CSPV cells and modules by U.S. producers and importers was thin film, though responding firms were closely divided as to whether thin film affected the price of CSPV cells and modules.[51] Those indicating that thin film prices did not affect the price of CSPV cells and modules cited the use of thin film for "specific applications," and the lower efficiency and price of thin film products. Respondents indicating

[48] U.S. Energy Information Administration, "Levelized Cost of New Generation Resources in the Annual Energy Outlook 2011," November 2010, http://www.eia.gov/oiaf/aeo/electricity_generation.html (accesses November 13, 2011).

[49] Conference transcript, p. 144-145 (King), Respondents' conference exh. slide 5.

[50] Petitioner's postconference brief, p. 47.

[51] Other identified substitutes include concentrated solar PV/thermal and gas, wind, coal power generation.

that thin film prices did affect the price of CSPV cells and modules cited lower manufacturing cost of thin film as a competitive pressure, increased price and sales pressure from thin film modules, the similarity of thin film in generating solar power, the price-efficiency trade-off between thin film and CSPV, the low price leadership of First Solar (a thin film PV module producer), lower price of thin film based on the levelized cost of energy, and the role of international prices in determining sourcing patterns. The two main end uses for thin film as a substitute for CSPV cells and modules were general electricity/grid power generation (no specific market segment) and utility or other large scale installations. Several firms reported that thin film was more widely used in solar farms, whereas CSPV cells and modules were more widely used in rooftop applications.

According to Respondents, an important contributor to purchasing decisions and the prices of CSPV cells and modules is sales and pricing of thin film products, and competition between crystalline silicon and thin film. Respondents state that "It is undeniable that lower prices for thin film solar panels pressure CSPV panel prices, and thin film has a significant presence in the U.S. market."[52] Respondents state that the lower cost of thin film products places "downward pricing pressure" on crystalline silicon products, which is not limited to any specific market segment.[53] Respondents argue that although thin film is less efficient and lower cost, thin film is competitive with crystalline silicon because "thin film systems require more land, more labor, more structure, and more wiring than a CSPV system of the same capacity. Thus, on a system-wide basis, thin film and CSPV modules are very competitive."[54] Suntech representatives also state that head-to-head competition is evident in the types of bids it participates in: "I know of numerous projects in the last two years in which Suntech bid that was ultimately won by First Solar {a thin film producer}. By contrast, I am not aware of a single similar project on which Suntech bid that was awarded to SolarWorld."[55] In addition, Respondent Sun Edison provided data indicating that when the price of polysilicon increased, thin film production experienced increased venture capital investment, and that the global share of thin film relative to CSPV increased from 9 percent in 2006 to 20.8 percent in 2009 before declining to 12.7 percent in 2011 as purchasers shifted between thin film and CSPV.[56]

Petitioner contends, however, that there is little head-to-head competition between CSPV cells and modules and thin film. SolarWorld representative stated that for public solicitations in the last two years, SolarWorld has "not gone head-to-head with any thin-film company or producer out there, and we have been very successful in competing in the utility sector."[57] Petitioner asserts, however, that thin film did not cause CSPV prices to decline. Petitioner indicates that although First Solar (the largest U.S. thin film producer) has been producing thin films since 2002, the industry did not experience a "crash" in prices until recently with the increase in Chinese imports.[58]

End uses, cost share and installed costs

The primary end use for CSPV cells are modules,[59] and for modules, some form of solar power generation installation or system (see *Part I* for more information). U.S. producer *** estimated that CSPV cells represent 70 percent of the cost of CSPV modules. With respect to CSPV modules,

[52] Conference transcript, p. 12 (Weiner), p. 122 (Ellis), Respondent's conference exh. slide 4.

[53] Conference transcript, p. 123 (Ellis), p. 125 (Efrid). Respondent Yingli also stated that "an important area of competition between the two technologies is in larger scale projects, such as the utilities sector." Conference transcript, p. 134 (Petrina). Petitioner SolarWorld stated, however, "Seldom do we see them going head-to-head on utility scale RFPs. Usually the thin-film market strategy has been to go into bilateral negotiations directly with the utility." Conference transcript, p. 54 (Kilkelly).

[54] Conference transcript, p. 126 (Efrid).

[55] Conference transcript, pp. 125-126 (Efrid).

[56] Respondent Sun Edison's postconference brief, pp. 10-11, and 16.

[57] Conference transcript, p. 58 (Kilkelly).

[58] Petitioner's postconference brief, p. 31.

[59] Six U.S. producers and seven importers identified modules as an end-use product. Cost-share of CSPV cells in CSPV modules ranged from 70-75 percent to more than 90 percent.

responding firms identified various types of power generation systems: general power systems such as installation, grid, PV or power generation, and solar system (five U.S. producers and three importers); residential segment installation (three U.S. producers and five importers); commercial segment installation (five U.S. producers and five importers); and utility/power plant/EPC segment installation (three U.S. producers and five importers).[60] Most cost-share estimates provided by responding producers and importers varied between 30 and 80 percent for various end uses: general installation systems (30 to 55 percent); residential (25 to 50 percent); commercial (40 to 50 percent); and utility/EPC (40 to 55 percent).[61]

Various industry sources have tracked the cost share of PV modules in solar installations. The cost share of modules in PV systems or installations varies depending on the year, market segment, geographic market, and other components in the system. For example, according to EPIA, "While in 2005, PV modules represented almost 75% of a PV system price for large ground-mounted systems, nowadays they account for less than 60%. For small residential systems, this can even be as low as 50%."[62] Another report estimates that between 2007 and 2010, modules accounted for between 50 and 60 percent of the overall installed cost of PV system.[63] As a result, declines in installed PV systems prices have been largely driven by declines in module prices; the lag between module price changes and installed price changes is, on average, longer for the utility market segment than for the residential and nonresidential market segments.[64] Since the first quarter of 2010, all three market segments have experienced declines in the weighted average system cost, although the average cost for the utility segment was substantially lower than for the residential and nonresidential market segments.[65] (See figures II-6 and II-7.) Respondents state that increased demand in the utility segment (which has a larger volume) intensified the observed decline in overall prices.[66] In addition, a 2011 report for the U.S. Department of Energy reports that in 2010, much of the decline in national weighted average system prices is attributable to an increased share of large-scale, utility PV installations.[67]

[60] Other identified end uses included off-grid, RV solar charge, and renewable distributors.

[61] Respondent Sun Edison estimated the "material used for sunlight absorption" to account for about 23 percent of the total cost of a CSPV module. Respondent Sun Edison postconference brief, p. 7. Respondents also estimated the cost of modules for a utility-scale project at "roughly 50 percent." Conference transcript, p. 137 (Petrina).

[62] Petition, EPIA, "Global Market Outlook for PhotoVoltaics until 2015," April 2011, Exh. I-15, p. 37.

[63] Barbose, Galen et al., "Tracking the Sun IV," September 2011, p. 16, Figure 9.

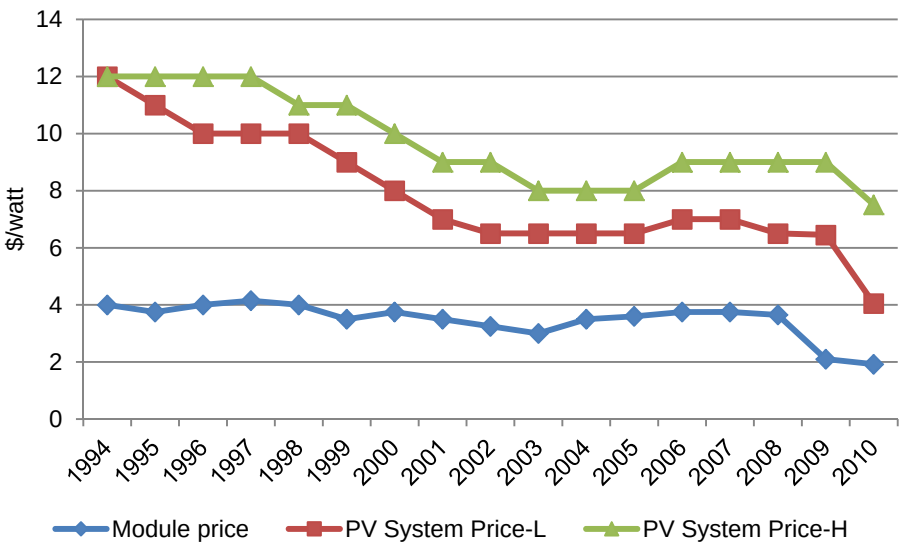
[64] "The recent decline in installed costs is, in large part, attributable to falling wholesale module prices…. The fact that average installed costs remained flat from 2008 to 2009, before dropping significantly in 2010, illustrates that movements in global wholesale module prices do not necessarily translate into an immediate, commensurate change in the cost borne by the final system owner; a time lag is apparent." "This price reduction {in module prices} represents 52% of the total decline in average installed costs over this period {1998-2010}, confirming that module price reductions are a significant, but by no means the only, factor underlying the long term decline in average installed costs." "The installed cost of any individual utility-sector project may reflect component pricing one or even two years prior to project completion, and therefore the cost of the utility-sector projects within the data sample may not fully capture the steep decline in module or other component prices that occurred over the analysis period." Barbose, Galen et al., "Tracking the Sun IV," September 2011, pp. 2, 14, 40.

[65] Respondents also stated that because utility-scale projects involve sales of more than five megawatts, utilities "tend to pay slightly lower prices for their panel purchasers," in part due to "lower transaction costs." Conference transcript, p. 135 (Petrina).

[66] Respondent CCCME's postconference brief, p. 24.

[67] Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, p. 2. The report adds that "four broad categories of utility solar business models have emerged in the United States: utility ownership of assets, utility financing of assets, development of customer programs, and utility purchase of solar output." (p. 24)

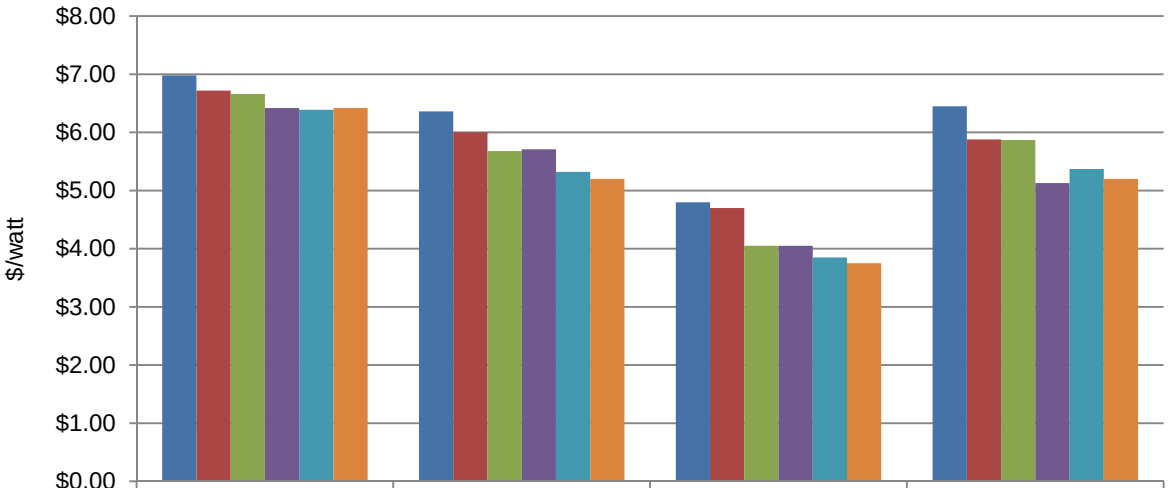
Figure II-6
Module and system prices, 1994-2010



Note.--"L"=low and "H"=high.

Source: Bolcar, Katie (U.S. DOE) and Kristen Ardani (National Renewables Energy Laboratory), International Energy Agency, "National Survey Report of PV Power Applications in the United States--2010," May 2011.

Figure II-7
Installed PV cost, by market segment, by quarter, 1Q2010 to 2Q2011



	Residential	Non-Residential	Utility	Blended
Q1 2010	$6.98	$6.36	$4.80	$6.45
Q2 2010	$6.72	$6.00	$4.70	$5.88
Q3 2010	$6.66	$5.68	$4.05	$5.87
Q4 2010	$6.42	$5.71	$4.05	$5.13
Q1 2011	$6.39	$5.32	$3.85	$5.37
Q2 2011	$6.42	$5.20	$3.75	$5.20

Source: Petition, Exh. I-16, SEIA, "U.S. Solar Market Insight" 2nd Quarter 2011, p. 11.

SUBSTITUTABILITY ISSUES[68]

The degree of substitution between domestic and imported CSPV cells and modules depends on such factors as relative prices, quality (e.g., wattage output, efficiency, certification) and conditions of sale (e.g., price discounts/rebates, financing, lead times between order and delivery, payment terms, customer service). Based on available data, staff believes that there is a high degree of substitutability between domestically produced CSPV cells and modules and CSPV cells and modules imported from China.

Lead Times

One-half of responding U.S. producers (six of 12) sold 100 percent their CSPV cells and modules out of inventory (with lead times ranging from 1 to 30 days), and two reported selling 100 percent produced-to-order (both with a lead time of 30 days).[69] Most responding importers sold more than 95 percent of their CSPV cells and modules out of inventory (seven of 14—lead times mostly 30 days or less) or produced-to-order (three of 14). Three importers reported shipping product from foreign manufacturer's inventory (with lead times of 20 to 45 days).

Factors Affecting Purchasing Decisions

According to Petitioner, "Regardless of the channel of sale, the main driver in the decision making process for U.S. customers is the price of a cell or panel per watt."[70] Petitioner adds that by the end of 2009, Chinese companies had pushed the price of solar panels down by almost half from the previous year[71] and that "despite the fact that US demand was relatively strong in 2010 and the first half of 2011, Chinese pricing practices caused prices in the US market to collapse, falling more than 40 percent in less than a year."[72] As a result of the importance of price, Petitioner states that "U.S. producers have had to significantly reduce prices to compete with Chinese product or lose U.S. sales."[73]

According to Respondents, "while Petitioner claims that price is the only factor that drives sales of CSPV cells and modules, that is patently not the case."[74] Respondents identify other factors such as bankability, the price of thin film, and the price of other energy sources, as affecting purchasing decisions.[75] Respondents note that the price of PV solar modules varies very little from country to country, and the price has been steadily declining for many years, before Chinese producers entered the PV market. They add that the short-term increase during 2004 to 2008 was a result of the temporary shortage of polysilicon, and the decline in module prices thereafter continued its long-term trend.[76]

Respondents identified "bankability" as a factor that affects demand and purchasing decisions in addition to price. According to Respondents, bankability, or the "willingness to share risk, plays a critical role in the selection of suppliers."[77] Bankability is related to "technical due diligence" and the "issue is stability and the degradation rate of the performance," and the goal is for a project to have a predictive

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[68] According to an article in California Management Review, "Standard crystalline silicon cells have become highly commoditized with little perceived differentiation across suppliers." Supplement to the Petition, California Management Review, "Government Policy and Firm Strategy in the Solar Photovoltaic Industry," Exh. Supp-2, p. 24.

[69] Three of the remaining four responding producers reported 75 to 80 percent of sales out of inventory, and the fourth reported 25 percent of sales out of inventory.

[70] Petition, p. 30.

[71] Petition, p. 30.

[72] Petition, pp. 26 and 31.

[73] Petition, p. 34.

[74] Conference transcript, p. 12 (Weiner).

[75] Conference transcript, p. 12 (Weiner).

[76] Conference transcript, p. 128 (Efrid), p. 164 (Button), Respondent conference exh. slide 13.

[77] Conference transcript, p. 12 (Weiner), p. 130 (Efrid).

output over time.[78] Bankability is important because lenders need assurance that investors will receive the projected power, and therefore revenue, returns over the project's lifetime, which can be as long as 25 years.[79]

Investing in a solar panel system can require significant funding, especially for the large-scale utility company/developer and large commercial projects. Parties raised the issue of access to financing as a decision-making factor in choosing which firms to source from. Petitioner stated that within the "last five months," the ability to finance construction-related costs "is becoming increasingly more and more of a value proposition."[80] Petitioner added that Chinese firms provide low-cost financing tied to the sourcing of Chinese imported modules.[81] Petitioner also noted that the importance of the ability to offer financing has led SolarWorld to begin to offer financing options.[82] Respondents stated, however, that private sector financing is readily available, and, although new to the solar power industry, this type of vendor financing is "standard operating procedure in building power plants."[83] Representatives of Suntech, Yingli, Canadian Solar, and Trina each stated that their firm does not participate in the type of financing deals described by the Petitioner.[84]

Petitioners stated that although "Buy America" provisions were a factor in purchasing decisions, primarily in the commercial segment (government rooftops), the percentage requirement or threshold is "so low" that it is covered by assemblers and are, therefore, not a significant factor.[85] Petitioners also estimated the "less than 10 percent of the U.S. market" falls under the ARRA Act or the Buy America Act.[86]

Comparison of U.S.-Produced and Imported Products

Most U.S. producers and importers indicated that CSPV cells and modules produced in the United States and China were "always" or "frequently" interchangeable. Fifteen of 16 responding producers reported that domestic and Chinese products are "always" or "frequently" interchangeable (table II-6). Seventeen of 22 responding importers reported that domestic and Chinese products are "always" or "frequently" interchangeable.[87] Several responding U.S. producers and importers noted that the interchangeability assessment assumed compliance with UL and EST safety standards, and two responding firms noted that certification standards and power tolerance differ between the United States and the rest of the world/Europe.

The majority producers (9 of 16) and importers (11 of 20) reported that differences other than prices were "sometimes" important in comparing U.S. and Chinese product; however, six producers and seven importers reported that there were "frequently" or "always" significant differences other than price (table II-7).[88] The most commonly identified factor other than price was "bankability." One U.S. producer (***) reported that Chinese companies were seen as more "bankable" because of ease of access to credit from "state-owned" banks, low risk of bankruptcy, and ability to fulfill warranties; and another producer (***) reported that U.S. purchasers pay attention to the likelihood of a manufacture remaining a "going concern" for the life of the 25-year warranty. One importer (***) reported that "In today's

[78] Conference transcript, p. 186 (Young). See Comparison of U.S.-Produced and Imported Products section below for questionnaire responses related to the role of bankability.

[79] Conference transcript, p. 139 (Young).

[80] Conference transcript, p. 48 (Kilkelly).

[81] Conference transcript, p. 48 (Kilkelly), p. 50 (Kaplan).

[82] Conference transcript, p. 49 (Kilkelly).

[83] Conference transcript, p. 150 (Hannah), p. 188 (Efrid), p. 193 (Kimber).

[84] Conference transcript, p. 194 (Efrid, Petrina, King, Young).

[85] Conference transcript, p. 91 (Brinser), p. 93 (Kilkelly).

[86] Conference transcript, p. 92 (Kilkelly).

[87] Two responding firms noted that all CSPV cells and modules are used to produce electricity from sunlight and are, therefore, interchangeable. A large majority of producers and importers reported that domestic or Chinese product and product from Mexican or Japanese product were "always" or "frequently" interchangeable."

[88] Most producers and importers reported that there were "sometimes" or "never" significant differences other than price between domestic or Chinese and nonsubject country (Mexico or Japan) products.

market, the number one factor is often 'bankability' or the ability of a particular project to get finance by a lending institution," which encompasses a broad number of factors; and another importer (***) also reported that a "critical factor" was "bankability" and the existence of a financeable product, also covering a wide range of identified factors. In addition to "bankability," other identified factors other than price include quality (UL inspection, durability, reliability, and warranty), certification standards, tech and customer support, solar conversion efficiency, and manufacturer reputation.

Table II-6
CSPV cells and modules: Perceived interchangeability of products produced in the United States and in other countries, by country pairs

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting			
	A	F	S	N	A	F	S	N
U.S. vs. subject countries:								
U.S. vs. China	10	5	1	0	9	8	5	0
U.S. vs. other countries:								
U.S. vs. Mexico	8	3	0	0	6	6	3	0
U.S. vs. Japan	9	5	1	0	7	8	5	0
U.S. vs. other nonsubject	8	4	1	0	6	7	1	0
China vs. other countries:								
China vs. Mexico	7	3	0	0	5	5	3	1
China vs. Japan	9	3	0	0	7	7	3	0
China vs. other nonsubject	8	2	0	0	6	5	0	0
Nonsubject countries:								
Mexico vs. Japan	8	3	0	1	5	5	3	0
Mexico vs. other nonsubject	7	2	0	0	4	4	0	0
Japan vs. other nonsubject	8	3	0	0	6	5	0	0

Note.--A = Always, F = Frequently, S = Sometimes, N = Never.

Source: Compiled from data submitted in response to Commission questionnaires.

Table II-7
CSPV cells and modules: Perceived significance of differences other than price between products produced in the United States and in other countries, by country pairs

Country pair	Number of U.S. producers reporting				Number of U.S. importers reporting			
	A	F	S	N	A	F	S	N
U.S. vs. subject countries: U.S. vs. China	2	4	9	1	4	3	11	2
U.S. vs. other countries: U.S. vs. Mexico	1	2	7	0	3	3	8	1
U.S. vs. Japan	1	2	10	1	3	2	12	1
U.S. vs. other nonsubject	0	3	9	0	0	3	9	1
China vs. other countries: China vs. Mexico	1	1	6	1	2	2	7	2
China vs. Japan	1	1	8	1	2	2	10	1
China vs. other nonsubject	0	1	6	1	0	2	6	2
Nonsubject countries: Mexico vs. Japan	1	1	8	0	2	2	9	1
Mexico vs. other nonsubject	0	1	6	1	0	2	5	2
Japan vs. other nonsubject	0	1	7	0	0	2	8	1

Note.--A = Always, F = Frequently, S = Sometimes, N = Never.

Source: Compiled from data submitted in response to Commission questionnaires.

PART III: U.S. PRODUCERS' PRODUCTION, SHIPMENTS, AND EMPLOYMENT

Information presented in this section of the report is based on (except as noted) the questionnaire responses of four U.S. producers of CSPV cells and twelve U.S. producers of only CSPV modules which are believed to account for a majority of U.S. production of CSPV cells and modules in 2010.

U.S. PRODUCERS

The Commission sent producers' questionnaires to 19 firms identified in the petition as U.S. producers of CSPV cells and/or modules. The Commission received responses from 16 firms.[1] Of the reporting firms, four U.S. producers reported that they produce CSPV cells and twelve reported that they produce only CSPV modules in the United States. Petitioner maintained that the domestic industry properly includes both U.S. producers of CSPV cells and CSPV modules.[2]

Table III-1 presents the list of reporting U.S. producers of CSPV cells and modules with each company's U.S. production location, share of reported U.S. CSPV cell or module production in 2010, and position on the petition.

[1] The Commission did not receive questionnaire responses from ***.

[2] Petitioner's postconference brief, pp. 4-7. Petitioner argued that sufficient production related activity is done in the United States for the U.S. producers of CSPV modules to be properly included into the domestic industry. It cited extensive capital investment and research and development necessary to engage in module production. For example, it cited total reported total assets and capital expenditures of $*** and $***, respectively for U.S. module producers compared to $*** and $*** for U.S. producers of cells. Petitioner also stated that although the module production process may be more labor intensive, it is still a highly automated and technically sophisticated process which adds approximately *** percent of the value to the final product. Ibid.

The petitioner argued, however, that a number of U.S. producers should be excluded from the domestic industry as related parties. *See, infra*.

Table III-1
CSPV cells and modules: U.S. producers of cells and modules, U.S. production locations, shares of U.S. production in 2010, and positions on the petition

Firm	Production location	Share of reported 2010 U.S. production (*percent*)	Position on the petition
U.S. producers of CSPV cells			
SolarWorld[1]	Camarillo, CA Hillsboro, OR	***	Petitioner
Calisolar[2]	Sunnyvale, CA	***	***
Evergreen[3]	Devens, MA	***	***
SPI[4]	Belle Vernon, PA	***	***
U.S. producers of CSPV modules			
1SolTech	Farmers Branch, TX	***	***
ASP[5]	Lake Mary, FL	***	***
Evergreen	Devens, MA	***	***
Helios	Milwaukee, WI	***	***
Kyocera[6]	Scottsdate, AZ	***	***
Motech[7]	Newark, DE	***	***
MX Solar[8]	Somerset, NJ	***	***
Schott[9]	Albuquerque, NM Santa Clara, CA Billerica, MA	***	***
Sharp[10]	Memphis, TN Camas, WA	***	***
Silicon Energy	Marysville, WA Mt. Iron, MN	***	***
Solartech[11]	Kingston, NY	***	***
SolarWorld	Camarillo, CA Hillsboro, OR	***	Petitioner
SunPower[12]	San Jose, CA Milpitas, CA	***	***
Suntech[13]	Goodyear, AZ	***	***

Table continued on next page

Table III-1--*Continued*
CSPV cells and modules: U.S. producers of cells and modules, U.S. production locations, shares of U.S. production in 2010, and positions on the petition

[1] ***.
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[3] ***.
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[11] ***
[12] ***.
[13] ***.

Source: Compiled from data submitted in response to Commission questionnaires.

U.S. Producers of CSPV Cells

Of the sixteen responding U.S. producers, four firms reported that they manufactured CSPV cells in the United States. These firms include: (1) SolarWorld; (2) Calisolar; (3) Evergreen; and (4) SPI. *** reported internally consuming their CSPV cells in their U.S. production of CSPV modules. *** reported commercial shipments of its U.S. CSPV cell production during the period of investigation and began module production in July 2011. *** reported commercial shipments of its CSPV cells and currently does not produce CSPV modules.

U.S. Producers of CSPV Modules

Of the sixteen responding U.S. producers, twelve firms reported that they did not produce CSPV cells in the United States, but rather assembled CSPV modules using CSPV cells either transferred, purchased, or imported from another related or unrelated firm. Table III-2 lists the U.S. producers of CSPV modules, affiliated CSPV cell producers, and the source of their CSPV cells, by firm and country of origin.

Table III-2
CSPV cells and modules: U.S. producers of modules, affiliated firms, sources of CSPV cells, by firm and country of origin

* * * * * * *

U.S. CAPACITY, PRODUCTION, AND CAPACITY UTILIZATION

Numerous U.S. producers of CSPV cells and modules reported events that affected total U.S. capacity and production during the period of investigation as firms both exited and entered the U.S. market.[3] Table III-3 lists these events that occurred during the period of investigation.

[3] See also, petition, pp. 35-37 (list of U.S. firms either reducing production or declaring bankruptcy); Petitioner's postconference brief, pp. 25-28 and exh. 1, pp. 49-53; Respondent CCCME's postconference brief, p. 29 (list of firms commencing production in the United States during the period of investigation).

Table III-3
CSPV cells and modules: U.S. producers of CSPV cell and modules, activities affecting U.S. capacity, by date

* * * * * * *

Data on U.S. producers of CSPV cells and modules capacity, production, and capacity utilization are presented in table III-4. Total U.S. capacity of CSPV cells increased from 2008 to 2010 by *** percent and was higher by *** percent between January-June 2010 and January-June 2011. Total U.S. capacity of CSPV modules increased from 2008 to 2010 by *** percent and was higher by *** percent between January-June 2010 and January-June 2011. Total U.S. production of CSPV cells increased from 2008 to 2010 by *** percent and was higher by *** percent between January-June 2010 and January-June 2011. Total U.S. production of CSPV modules increased from 2008 to 2010 by *** percent and was higher by *** percent between January-June 2010 and January-June 2011. Annual capacity utilization rates for CSPV cell production ranged from *** percent in 2008 to *** percent in 2009. Capacity utilization rates for CSPV module production ranged from *** percent in interim 2011 to *** percent in interim 2010.

Table III-4
CSPV cells and modules: U.S. producers' capacity, production, and capacity utilization, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

U.S. PRODUCERS' U.S. SHIPMENTS AND EXPORT SHIPMENTS

As detailed in table III-5, the volume of U.S. shipments of CSPV cells increased by *** percent from 2008 to 2010, and was higher by *** percent from January-June 2010 to January-June 2011. The value of U.S. shipments also increased by *** percent from 2008 to 2010, and was higher by *** percent from January-June 2010 to January-June 2011. During the period of investigation, the vast majority of U.S. produced CSPV cells were internally consumed by their producers to manufacture CSPV modules. In 2010, U.S. producers of CSPV cells reported that *** of total U.S. shipments were internally consumed.

As shown in table III-6, the volume of U.S. shipments of CSPV modules increased by *** percent from 2008 to 2010, and was higher by *** percent from January-June 2010 to January-June 2011. The value of U.S. shipments also increased by *** percent from 2008 to 2010, and was higher by *** percent from January-June 2010 to January-June 2011.

Table III-5
CSPV cells: U.S. producers' shipments of cells, by types, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Table III-6
CSPV modules: U.S. producers' shipments of modules, by types, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

U.S. PRODUCERS' IMPORTS AND PURCHASES OF IMPORTS

*** of the sixteen reporting U.S. producers reported U.S. imports or purchases of imports from China.[4] *** U.S. producers reported purchasing or importing CSPV modules and *** firms reported importing CSPV cells to be assembled into modules in the United States. Table III-7 presents those firms who purchased and/or imported of CSPV cells and modules from China, the quantity of purchases and/or imports and their U.S. production.

Table III-7
CSPV cells and modules: U.S. producers' subject imports and purchases of subject imports, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

U.S. PRODUCERS' INVENTORIES

Data on end-of-period inventories of CSPV cells and modules for the period of investigation are presented in table III-8.

Table III-8
CSPV cells and modules: U.S. producers' end-of-period inventories, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

U.S. EMPLOYMENT, WAGES, AND PRODUCTIVITY

Data provided by U.S. producers on the number of production and related workers ("PRWs") engaged in the production of CSPV cells and modules, the total hours worked by such workers, wages paid to such PRWs, productivity, and unit labor costs during the period of investigation are presented in table III-9.

Table III-9
CSPV cells and modules: Average number of production and related workers producing CSPV cells and modules, hours worked, wages paid to such employees, and hourly wages, productivity, and unit labor costs, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

[4] Petitioners claimed that *** firms should be excluded from the domestic industry as related parties. These firms include: ***. Petitioner argued that ***. Petition, pp. 22-25. ***. Appendix C, table C-4 presents the summary data excluding ***.

PART IV: U.S. IMPORTS, APPARENT CONSUMPTION, AND MARKET SHARES

U.S. IMPORTERS

The Commission sent importer questionnaires to 26 firms listed in the petition as likely to be U.S. importers of CSPV cells or modules, as well as to all U.S. producers. Questionnaire responses containing usable data were received from 24 firms[1] and accounted for approximately 53.0 percent of U.S. imports of CSPV cells and 17.6 percent of U.S. imports of CSPV modules from China in 2010.

Table IV-1 lists all responding U.S. importers of CSPV cells and modules, their U.S. locations, and their quantities of imports, by source, in January-June 2011.

Table IV-1
CSPV cells and modules: Reported U.S. imports, by importers and by sources of imports, January-June 2011

		Quantity *(1,000 units)*				
		China		Nonsubject countries		
Importer	U.S. location(s)	Cells	Modules	Cells	Modules	Country
ASP[1]	Lake Mary, FL	***	***	***	***	***
AES[2]	Arlington, VA	***	***	***	***	***
BP Solar[3]	Houston, TX	***	***	***	***	***
Canadian Solar[4]	San Ramon, CA	***	***	***	***	***
Carmanah[5]	Victoria, BC	***	***	***	***	***
Essco[6]	Chandler, AZ	***	***	***	***	***
Helios[7]	Milwaukee, WI	***	***	***	***	***
Kyocera[8]	Scottsdale, AZ	***	***	***	***	***
Mitsubishi[9]	Cypress, CA	***	***	***	***	***
Motech[10]	Newark, DE	***	***	***	***	***
MX Solar[11]	Somerset, NJ	***	***	***	***	***
OneSource[12]	Oceanside, CA	***	***	***	***	***
RMT[13]	Madison, WI	***	***	***	***	***
Schott[14]	Albuquerque, NM Santa Clara, CA Billerica, MA	***		***	***	***

Table continued on next page

[1] In addition to the 24 usable responses (those respondents are shown in table IV-1), the Commission received responses from *** indicating that they did not import CSPV cells or modules during the period examined.

Five firms did not respond to the Commission's U.S. importer questionnaire. These firms include: ***.

Table IV-1--*Continued*
CSPV cells and modules: Reported U.S. imports, by importers and by sources of imports, January-June 2011

Importer	U.S. location(s)	Quantity *(1,000 units)*				
		China		Nonsubject countries		
		Cells	Modules	Cells	Modules	Country
Schuco[15]	Newington, CT	***	***	***	***	***
Sharp[16]	Memphis, TN	***	***	***	***	***
Silicon[17]	Marysville, WA	***	***	***	***	***
SPI[18]	Belle Vernon, PA	***	***	***	***	***
SolarWorld[19]	Hillsboro, OR	***	***	***	***	***
Sun Edison[20]	Belmont, CA	***	***	***	***	***
SunPower[21]		***	***	***	***	***
Trina[22]	San Jose, CA	***	***	***	***	***
Wanxiang	Rockford, IL	***	***	***	***	***
Yingli[23]	New York, NY San Francisco, CA	***	***	***	***	***
Total		***	***	***	***	

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Source: Compiled from data submitted in response to Commission questionnaires.

U.S. IMPORTS

Table IV-2 presents data for U.S. imports of CSPV cells and modules from China and nonsubject countries. The data below are compiled using official Commerce statistics.[2] As shown, U.S. imports of cells from China increased by 447.2 percent from 2008 to 2010 and were higher by 335.8 percent from January-June 2010 to January-June 2011. U.S. imports of modules from China increased by 311.2 percent from 2008 to 2010 and were higher by 325.2 percent from January-June 2010 to January-June 2011. The volume of U.S. imports of CSPV cells from nonsubject countries decreased by 16.4 percent from 2008 to 2010, but were higher by 88.9 percent from January-June 2010 and January-June 2011. The volume of U.S. imports of CSPV modules from nonsubject countries increased by 350.4 percent from 2008 to 2010, and were higher by 12.8 percent from January-June 2010 and January-June 2011. The largest sources of U.S. imports from nonsubject countries in 2010 were (in descending order of volume): (1) Taiwan, (2) Malaysia, (3) Germany, (4) Japan, and (5) Mexico.

[2] Petitioner and respondents observed that the volumes reported in the official Commerce statistics under HTS 8541.40.6020 (modules) most likely report the number of modules and not the number of cells imported into the United States. This may result in quantities that when summed do not accurately reflect the total volume of imported cells. Thus, unit values may be aberrational and U.S. import volumes of total cells may be understated. Petition, p. 15, fn. 28. Nonetheless, petitioner stated that official Commerce statistics are the most appropriate measure of U.S. import volume and value. Petitioner's postconference brief, p. 17. Respondents urged the Commission not to rely on official Commerce statistics as a measure of U.S. imports because of the inconsistency and unreliability of the volumes reported in "units" and that official Commerce statistics, although most likely overwhelmingly reporting imports of CSPV products, may include some thin-film solar products. Respondent CCCME's postconference brief, p. 30.

Throughout this report, U.S. import data are compiled using official Commerce statistics. In order to minimize unit of quantity issues between CSPV cells and modules, the data for CSPV cells and modules are presented separately when appropriate.

Table IV-2
CSPV cells and modules: U.S. imports of cells and modules, by sources, 2008-10, January-June 2010, and January-June 2011

Source	Calendar year			January-June	
	2008	2009	2010	2010	2011
			Quantity (*1,000 units*)		
China					
Cells	1,199	1,517	6,562	2,430	10,588
Modules	2,629	5,121	10,810	3,101	13,185
Total	3,828	6,637	17,372	5,530	23,773
All others					
Cells	30,653	17,520	25,621	11,531	21,786
Modules	9,551	6,951	43,021	16,213	18,294
Total	40,204	24,471	68,642	27,744	40,080
Total	44,032	31,108	86,014	33,274	63,853
			Value (*$1,000*)[1]		
China					
Cells	5,051	12,351	38,470	13,196	55,110
Modules	228,286	411,686	1,168,079	349,832	1,179,674
Total	233,337	424,037	1,206,549	363,028	1,234,785
All others					
Cells	221,809	107,670	210,062	71,557	140,386
Modules	797,757	931,943	1,275,257	528,906	812,467
Total	1,019,566	1,039,613	1,485,319	600,463	952,853
Total	1,252,902	1,463,650	2,691,868	963,491	2,187,638
			Unit value (*per unit*)		
China					
Cells	4.21	8.14	5.86	5.43	5.20
Modules	86.83	80.40	108.06	112.83	89.47
Total	60.95	63.89	69.46	65.64	51.94
All others					
Cells	7.24	6.15	8.20	6.21	6.44
Modules	83.53	134.07	29.64	32.62	44.41
Total	25.36	42.48	21.64	21.64	23.77
Total	28.45	47.05	31.30	28.96	34.26

Table continued on next page

Table IV-2--*Continued*
CSPV cells and modules: U.S. imports of cells and modules, by sources, 2008-10, January-June 2010, and January-June 2011

Source	Calendar year			January-June	
	2008	2009	2010	2010	2011
			Share of quantity (*percent*)		
China					
Cells	2.7	4.9	7.6	7.3	16.6
Modules	6.0	16.5	12.6	9.3	20.6
Total	8.7	21.3	20.2	16.6	37.2
All others					
Cells	69.6	56.3	29.8	34.7	34.1
Modules	21.7	22.3	50.0	48.7	28.6
Total	91.3	78.7	79.8	83.4	62.8
Total	100.0	100.0	100.0	100.0	100.0
			Share of value (*percent*)		
China					
Cells	0.4	0.8	1.4	1.4	2.5
Modules	18.2	28.1	43.4	36.3	53.9
Total	18.6	29.0	44.8	37.7	56.4
All others					
Cells	17.7	7.4	7.8	7.4	6.4
Modules	63.7	63.7	47.4	54.9	37.1
Total	81.4	71.0	55.2	62.3	43.6
Total	100.0	100.0	100.0	100.0	100.0

[1] Landed, duty-paid.

Source: Compiled from official Commerce statistics. U.S. imports of cells are compiled using HTS 8541.4060.30. U.S. imports of modules are compiled using HTS 8541.4060.20.

NEGLIGIBILITY

The Tariff Act of 1930 provides for the termination of an investigation if imports of the subject product from a country are less than 3 percent of total imports, or, if there is more than one such country, their combined share is less than or equal to 7 percent of total imports, during the most recent 12 months for which data are available preceding the filing of the petition.[3] Section 771(24)(B) of the Act further provides that in a countervailing duty investigation under section 701, imports of subject merchandise from developing countries are negligible if such imports account for less than 4 percent of the volume of all such merchandise imported into the United States in the specified 12-month period. U.S. imports from China accounted for 20.4 percent of total U.S. imports of CSPV cells and 20.1 percent of total U.S. imports of CSPV modules in 2010. U.S. imports from China accounted for 32.7 percent of total U.S. imports of CSPV cells and 41.9 percent of total U.S. imports of CSPV modules in January-June 2011. No party disputes that the share of the total quantity of U.S. imports from China surpassed the requisite negligibility threshold during the period.

APPARENT U.S. CONSUMPTION AND MARKET SHARES

Data on apparent U.S. consumption of CSPV cells and modules are presented in table IV-3. From 2008 to 2010, the quantity of apparent U.S. consumption of CSPV cells and modules increased by *** percent and was higher by *** percent from January-June 2010 to January-June 2011. From 2008 to 2010, the value of apparent U.S. consumption increased by *** percent and was higher by *** percent between the interim periods.

Data on U.S. market shares for CSPV cells and modules are presented in table IV-4. From 2008 to 2010, U.S. producers' market share based on value decreased by *** percentage point(s).[4] Between January-June 2010 and January-June 2011, U.S. producers' market share based on value lost *** percentage points. U.S. imports from China gained *** percentage points of U.S. market share during 2008-2010 based on value. Between the interim periods, U.S. imports from China gained *** percentage points of U.S. market share based on value. U.S. imports from nonsubject countries lost *** percentage points of U.S. market share from 2008 to 2010 based on value. Between the interim periods, U.S. imports from nonsubject countries lost *** percentage points of U.S. market share based on value.

[3] 19 U.S.C. § 1677(24)(A)(ii).

[4] Petitioner argued that in order to minimize double-counting, the Commission should examine market share data using the value of the CSPV modules as the vast majority of cells are internally consumed to produce modules. Petitioner's postconference brief, exh. 1, p. 37. Respondents argued that apparent consumption and market share are best measured using kilowatts of U.S. and import shipments of CSPV modules as reported in Commission questionnaire responses. Respondent CCCME's postconference brief, pp. 29-30. Most U.S. importer questionnaire respondents, however, failed to report import or shipment volumes in kilowatts.

Table IV-3
CSPV cells and modules: U.S. shipments of domestic product, U.S. imports by sources, and apparent U.S. consumption, 2008-10, January-June 2010, and January-June 2011

Item	Calendar year			January-June	
	2008	2009	2010	2010	2011
			Quantity (*1,000 units*)		
U.S. producers' U.S. shipments of–					
Cells	***	***	***	***	***
Modules	***	***	***	***	***
Total	***	***	***	***	***
U.S. imports from--China					
Cells	1,199	1,517	6,562	2,430	10,588
Modules	2,629	5,121	10,810	3,101	13,185
Total	3,828	6,637	17,372	5,530	23,773
U.S. imports from--All other countries					
Cells	30,653	17,520	25,621	11,531	21,786
Modules	9,551	6,951	43,021	16,213	18,294
Total	40,204	24,471	68,642	27,744	40,080
Total imports	44,032	31,108	86,014	33,274	63,853
Apparent U.S. consumption	***	***	***	***	***
			Value (*$1,000*)		
U.S. producers' U.S. shipments of–					
Cells	***	***	***	***	***
Modules	***	***	***	***	***
Total	***	***	***	***	***
U.S. imports from--China					
Cells	5,051	12,351	38,470	13,196	55,110
Modules	228,286	411,686	1,168,079	349,832	1,179,674
Total	233,337	424,037	1,206,549	363,028	1,234,785
U.S. imports from--All other countries					
Cells	221,809	107,670	210,062	71,557	140,386
Modules	797,757	931,943	1,275,257	528,906	812,467
Total	1,019,566	1,039,613	1,485,319	600,463	952,853
Total imports	1,252,902	1,463,650	2,691,868	963,491	2,187,638
Apparent U.S. consumption	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

Table IV-4
CSPV cells and modules: Apparent U.S. consumption and market shares, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

RATIO OF IMPORTS TO U.S. PRODUCTION

Data on the ratio of imports to U.S. production of CSPV cells and modules are presented in table IV-5.

Table IV-5
CSPV cells and modules: U.S. production, U.S. imports, and ratios of imports to production, 2008-10, January-June 2010, and January-June 2011

Item	Calendar year			January-June	
	2008	2009	2010	2010	2011
Cells					
			Quantity (*1,000 units*)		
U.S. production of cells	***	***	***	***	***
U.S. imports of cells from–					
China	1,199	1,517	6,562	2,430	10,588
All others	30,653	17,520	25,621	11,531	21,786
Total imports of cells	31,852	19,036	32,183	13,961	32,374
			Ratio of imports to U.S. production (*percent*)		
U.S. imports of cells from--					
China	***	***	***	***	***
All others	***	***	***	***	***
Total imports of cells	***	***	***	***	***
Modules					
			Quantity (*1,000 units*)		
U.S. production of modules	***	***	***	***	***
U.S. imports of modules from–					
China	2,629	5,121	10,810	3,101	13,185
All others	9,551	6,951	43,021	16,213	18,294
Total imports of modules	12,180	12,072	53,830	19,314	31,479
			Ratio of imports to U.S. production (*percent*)		
U.S. imports of modules from--					
China	***	***	***	***	***
All others	***	***	***	***	***
Total imports of modules	***	***	***	***	***

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

PART V: PRICING AND RELATED INFORMATION

FACTORS AFFECTING PRICES

Raw Material Costs

Raw material costs for the production of solar modules (much of which are cells) accounted for *** percent of U.S. producers' total cost of goods sold during 2010, up from *** percent in 2008.[1] Raw material costs for the production of solar cells (much of which is polysilicon) accounted for *** percent of U.S. producers' total cost of goods sold during 2010, down from *** percent in 2008.[2]

The main raw material input for CSPV cells is polysilicon (see *Part I* for additional information on the production process).[3] In general, the polysilicon used for CSPV production is a relatively high grade. According to Petitioner, solar-grade polysilicon is a completely separate class of silicon, and because the global supply of solar-grade polysilicon is limited, pricing for solar grade polysilicon is exponentially higher than that of other grades of silicon, even those with purity levels of 99.9 percent or more.[4] According to Green Rhino Energy, seven companies supply approximately 90 percent of the total polysilicon market.[5] In addition, historically much of the global production of polysilicon resided in the United States and Europe. China's production of polysilicon is, however, increasing.[6] A 2011 report estimated that in 2010, China represented more than 30 percent of global polysilicon production.[7]

The two main industries using polysilicon are the semiconductor and solar panel industries. As the global CSPV industry has expanded, relative global demand for polysilicon has been shifting from semiconductors to CSPV cells.[8] The expansion of the CSPV industry contributed to a substantial polysilicon supply shortage and price increases between 2005 and 2008, which was followed by a substantial decline in polysilicon prices as new capacity came online and demand softened as a result of the 2008 economic recession.[9] Respondents provided data and testimony indicating that as a result of

---

[1] This value increased from approximately *** percent in interim 2010 to approximately *** percent in interim 2011.

[2] This value increased from approximately *** percent in interim 2010 to approximately *** percent in interim 2011.

[3] According to Green Rhino Energy, "Around a quarter of the cost of a crystalline module is just for polysilicon." Petition, Green Rhino Energy, "Poysilicon, Solar Value Chain," Exh. AD-Supp-1, p. 1.

[4] Supplement to the Petition, October 25, 2011, p. 14.

[5] Petition, Green Rhino Energy, "Poysilicon, Solar Value Chain," Exh. AD-Supp-1, p. 3.

[6] "Polysilicon falls into two rough grades: the higher semiconductor and the lower, less-pure solar grades. ... In 2009, the world produced 69,000 tons of polysilicon, a rise of 92% from the previous year. Most of that increase came from China's producing 20,000 tones (about 27% of world production), a 317% increase from the 4,800 tons it produced in 2008. ... Despite China's recent rise, for decades the U.S. has dominated polysilicon manufacturing with about 35% of global production, and two of the four largest polysilicon manufacturers, Hemlock Semiconductor and MEMC Electronic Materials. The other two leading manufacturers include Germany's Wacker and Norway's REC. ... Few of China's 31 polysilicon plants, many of which use aging Soviet technology, can produce at that scale {of 10,000 ton plant}." Supplement to the Petition, California Management Review, "Government Policy and Firm Strategy in the Solar Photovoltaic Industry," Exh. Supp-2, pp. 23-24.

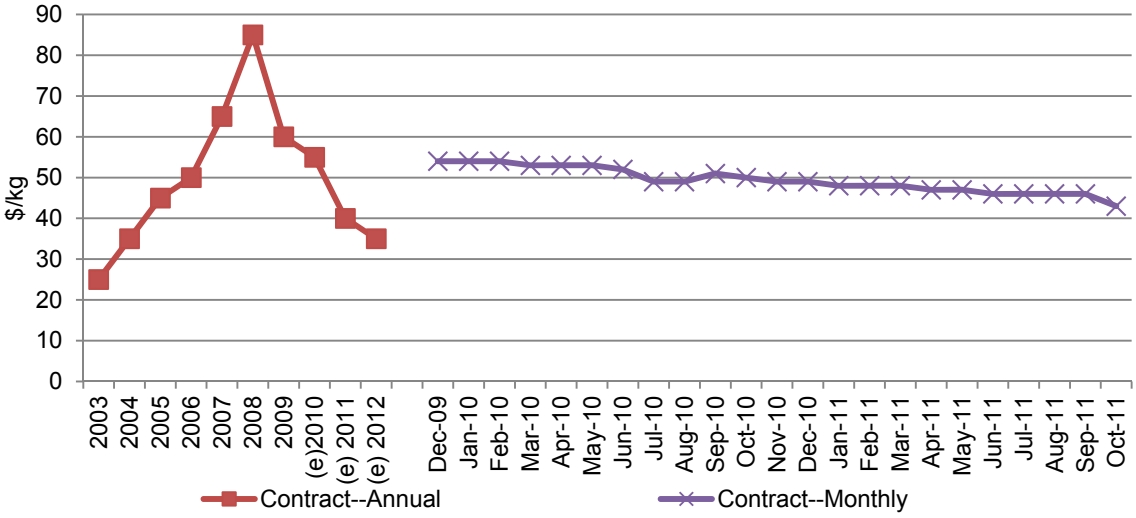
[7] GTM Research Study, "U.S. Solar Energy Trade Assessment 2011," August 2011, Respondent CCCME's postconference brief, exh. 40, figure 2-1, p. 19.

[8] ***.

[9] "In 2011, the global production capacity for silicon could be of 370,000 tons, up from approximately 350,000 tons in 2010. Huge expansions have taken place since the 2005 and 2008 shortages, many of which only came on-line last year." Petition, EPIA, "Global Market Outlook for PhotoVoltaics until 2015," April 2011, Exhibit I-15, p. 37; and "Following a collapse in demand for solar electricity at the same time as new polysilicon capacity has come online, the spot price for polysilicon has collapsed from a $450 per kg peak in August 2008 to below $100 in June 2009. However, contract prices have always been well below the spot market. According to a CSFB report, average polysilicon contract price in 2009 is well south of $60 per kg." Petition, Green Rhino Energy, "Poysilicon, Solar Value Chain," Exh. AD-Supp-1, p. 6.

shortages, polysilicon prices increased significantly in 2007 and 2008, but have been declining since 2008 (with a 40 percent decline since the beginning of 2011) due to increased supply, as it can take about two years to add polysilicon capacity.[10] Data on contract polysilicon prices and the increasing global supply are provided in figures V-1 and V-2. As Green Rhino Energy notes, "Due to the supply shortage {in} 2006 – 2008, 90% of the market is governed by fixed supply agreements lasting 6–10 years."[11]

Figure V-1
Polysilicon contract prices, annual average, 2003-2011(e), and monthly average, Dec. 2009-Oct. 2011



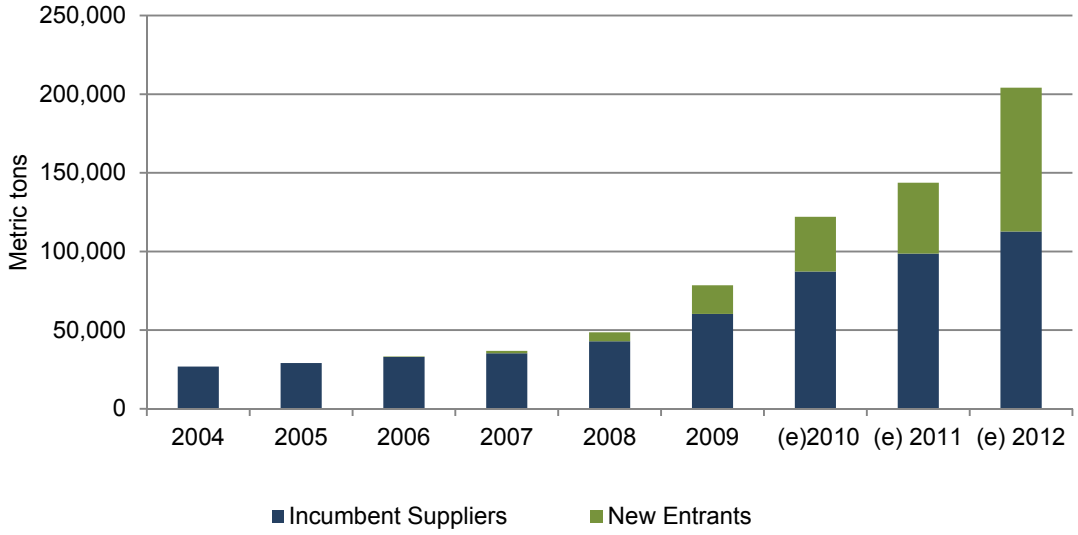
Note.--Petitioner's postconference brief exhibit 18 consists of two series of contract prices with slightly different values for 4 months, two of which are below Respondent CCCME's postconference brief data and two of which are above. Staff used the Respondent CCCME's brief's data as it consisted of a longer series of data.

Source: Conference transcript, Respondents' exh. slide 6; Respondent CCCME's postconference brief, exh. 46; Petitioner's postconference brief, exh. 18.

[10] Conference transcript, p. 132 (Petrina), p. 148 (Hannah), p. 214 (Hannah), Respondents' conference exh. slide 6.

[11] Petition, Green Rhino Energy, "Poysilicon, Solar Value Chain," Exh. AD-Supp-1, p. 4.

Figure V-2
Global polysilicon supply



Source: Respondent CCCME's postconference brief, exh. 52.

According to Respondents, the price of polysilicon and the role of contracts is an important factor in explaining the price of CSPV cells and modules. They state that "Polysilicon prices have dropped sharply in recent years, and consequently, so, too, have prices for CSPV cells and modules," and claim that SolarWorld's "own poor supply chain management... locked SolarWorld into undesirable contracts for key inputs, such as polysilicon."[12] In addition, Suntech added that "during the time that you had that spike, in order to get into a long-term contract, the length of time was very often five to eight years. So if I signed a contract five years ago, I could still be paying $85 per kilo for silicon when all of my competitors are paying less than half that today."[13] Respondents provided information on changes in polysilicon prices, wafer prices, and cell prices to support their statement that "the sharp decline in polysilicon prices, which explains a similar decline in CSPV cell and module pricing that you have seen recently."[14]

In response, Petitioner states that "We do have long term contracts with those silicon supplies, but... {the} product has really decoupled from the cost of the polysilicon."[15] Petitioner also states that given the need for uninterrupted supply, U.S. producers often have a series of overlapping long-term contracts, no different from Chinese producers.[16]

Regarding trends related to raw materials used for CSPV cells and modules, most responding U.S. producers and importers described a decrease in the price of polysilicon. Descriptions include: "cost of polysilicon has dropped significantly in the last 6 months;" "sharp drop in the cost of silicon wafers and cells since 2008;" "prices have been very volatile in this market, which has generally moved downward since January 2008;" and "during the period of investigation, there was a significant decline in polysilicon prices." One producer (***) cited a decline in the "price of silicon" from $450/kg in mid-2008 to less than $40/kg in 2011. An importer (***) also cited prices, indicating that "poly" spot prices had declined from $80+/kg in 1Q2011 to low-to-mid $30/kg "now." Two importers described the

[12] Conference transcript, p. 12 (Weiner), p. 154 (Kimber), Respondent conference exh. slides 7 and 8.
[13] Conference transcript, p. 242 (Efrid).
[14] Conference transcript, p. 122 (Ellis),
[15] Conference transcript, p. 47 and p. 84 (Brinser).
[16] Conference transcript, p. 89 (Brinser); Petitioner's postconference brief, p. 22. Petitioner added that ***. Petitioner's postconference brief, p. 25. According to Respondents, ***. Respondent CCCME's postconference brief, Exh. 9, p. 2.

industry forces behind these declines: *** stated that "Polysilicon demand has steadily increased since 2008 {and in} response, market supplies increased and prices declined;" and *** stated that the drop in the cost of polysilicon "is due to both additional capacity online, as well as newer more efficient production technologies being adopted." Responding U.S. producers and importers (e.g., ***) generally expected the declining trend to continue. U.S. producer *** added that "changing raw material suppliers is not very easy since it requires retesting and requalification with UL, and takes several months to complete."

Several responding firms, primarily U.S. producers, also added that module prices have fallen to a greater extent than the cost of raw materials. For example, *** stated that "the drop in polysilicon prices has not kept pace with cell/module declines; *** stated that "Imported finished modules & cell prices have fallen far faster and more significantly than raw material prices;" and *** stated that "This price decrease allows for the production of less expensive modules but cannot account for the rapid decline of modules from CPSV manufacturers in China."[17]

U.S. Inland Transportation

Transportation costs for U.S. inland shipments for CSPV cells and modules generally account for a small share of the delivered price of these products. Most responding producers and importers reported that costs ranged from less than 1 percent to 3 percent.[18] Four of 15 responding producers reported making at least 75 percent of shipments within 100 miles, seven reported making 25 to 60 percent from 101 to 1,000 miles, and six reported making more than 65 percent of shipments in excess of 1,000 miles from their production facilities. Of the responding 13 importers, seven reported making between 25 and 50 percent of shipments within 100 miles, 13 reported making 25 to 60 percent of shipments from 101 to 1,000 miles, and 11 reported making less than 30 percent of shipments in excess of 1,000 miles from storage facility or point of importation.[19]

PRICING PRACTICES

The most commonly reported pricing method for both U.S. producers and importers is transaction-by-transaction negotiations (table V-1). For both producers and importers, contracts and set price lists varied based on the channel of distribution. Other types of pricing methods identified by producers include: attempt to match market pricing, prices set by distribution, and periodic price quotes.[20] One importer additionally identified "monthly/quarterly pricing reviews" for sales to distributors and installers. Types of discounts varied across channels of distribution, with responding producers and importers most commonly reporting "no discounts." Other types of discounts listed by producers and importers include case-by-case, project-by-project, favorable pricing for higher volume distributors and integrators, quarterly volume discounts, and prices set by distribution.[21] The typical sales term for most responding producers and importers is net 30 days.

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[17] One U.S. producer (***) added that "many competitors have 'take or pay' contracts for polysilicon that are in the hundreds of millions of dollars, so they continue to produce modules out of necessity, which exacerbates the supply/demand inequality in the market and puts further pressure on prices."

[18] One producer reported a range of 2-10 percent, and two producers reported values greater than 90 percent; three importers reported 12, 50, and 90 percent, respectively.

[19] One importer reported 52 percent for U.S. inland transportation costs.

[20] One producer (***) added that it "cannot compete" in all three channels of distribution because it is "unable to match the pricing offered by" Chinese firms and/or is "unable to offer extended (e.g., 90 day)" financing terms.

[21] One producer (***) noted that compared to Chinese offerings, the firm would first have to match terms then offer discounts to close the sale, that it has no pre-set discount policy, and that it cannot discount the utility co./developer channel because of "extremely low price points offered by Chinese companies." Another producer (***) added that its sales through all three channels of distribution "are falling rapidly due to the current below cost offerings out of China."

Most responding producers reported selling on an f.o.b. basis, whereas responding importers were closely split between selling on a delivered and f.o.b. basis. All responding producers reported selling some product through spot sales, seven of which had spot sales that represented 80 percent or more of sales, and three of which represented less than 50 percent of sales. Of the nine responding producers reporting use of short-term contracts, three used it for 70 percent or more of sales and five for less than 30 percent of sales. Two producers identified using long-term contracts, representing between 50 and 60 percent of sales.[22]

Table V-1
CSPV cells and modules: Price setting, discount policy, and price terms

	Price setting							
	Producers				Importers			
Channels of distribution	Transaction by transaction	Contracts	Set price lists	Other	Transaction by transaction	Contracts	Set price lists	Other
Distributors	11	6	4	3	14	7	6	1
Installers	8	3	3	4	12	7	4	2
Utility Co./ Developer	8	3	2	2	13	9	2	0
Total	27	12	9	9	39	23	12	3
	Discount policy							
	Producers				Importers			
Channels of distribution	Quantity discounts	Annual total volume discounts	No discount policy	Other	Quantity discounts	Annual total volume discounts	No discount policy	Other
Distributors	4	3	7	2	5	3	10	0
Installers	4	3	4	4	5	4	10	2
Utility Co./ Developer	4	3	4	3	4	3	11	1
Total	12	9	15	9	14	10	31	3
	Price terms							
	Producers				Importers			
	Net 30 days	Net 60 days	2/10 net 30 days	Other	Net 30 days	Net 60 days	2/10 net 30 days	Other
Total	8	3	0	7	10	3	0	6

Source: Compiled from data submitted in response to Commission questionnaires.

Most (11 of 14) responding importers reported selling some product through spot sales, six of which spot sales represented more than 90 percent or more of sales, and three of which it represented less than 30 percent of sales. Of the nine responding importers reporting use of short-term contracts, six used it for 70 percent or more of sales. Three importers identified using long-term contracts, all three for less than 20 percent of sales. For short-term contracts, of the responding importers, approximately one-half indicated that price could be renegotiated, and about one-half that it could not; most short-term contracts fixed price and quantity, and most did not have a meet-or-release clause.[23]

[22] Eleven of 16 producers identified contract provisions as "not applicable," and no U.S. producer provided information on long-term contract provisions.

[23] Seventeen of 25 importers identified long-term contract provisions as "not applicable."

PRICE DATA

The Commission requested U.S. producers and importers of CSPV cells and modules to provide quarterly data for the total quantity and f.o.b. value of CSPV cells and modules that were shipped to unrelated customers in the U.S. market that were either produced in the United States or imported from China or nonsubject countries Mexico and Japan. Data were requested for the period January 2008 to June 2011. The products for which pricing data were requested are as follows:

> ***Product 1.***–Crystalline silicon module, with a peak power wattage of between 226 to 230, inclusive, P-max or Wp
>
> ***Product 2.***–Crystalline silicon module, with a peak power wattage of between 231 to 235, inclusive, P-max or Wp
>
> ***Product 3.***–Crystalline silicon module, with a peak power wattage of between 236 to 240, inclusive, P-max or Wp
>
> ***Product 4.***–Crystalline silicon module, with a peak power wattage of between 241 to 245, inclusive, P-max or Wp

Eight U.S. producers and 11 importers provided usable pricing data for sales of the requested products, though not all firms reported pricing for all products for all quarters.[24] Pricing data reported by these firms accounted for approximately 54.7 percent of U.S. producers' shipments of CSPV modules and 10.7 percent of U.S. shipments of subject imports from China in 2010.

In general, pricing data was concentrated in the last six quarters of the period.[25] Forty-five percent of quarterly observations were in 2010, and 45 percent were in the first two quarters of 2011. Approximately 50 percent of all pricing data observations were for product 1. Nonsubject country prices are presented in Appendix D.

Price data are shown in table V-2 to V-5, and figure-V-3. Price trend summary data are presented in table V-6. During 2008-10, domestic and imported subject products 1 and 4 experienced overall price declines. Although the product 4 price decline was the same for domestic and imported subject product (*** percent), the imported subject product 1 price decline was larger (*** percent) than for domestic product 1 (*** percent). For both products 2 and 3, imported subject product experienced a slight price increase over the period (*** percent for product 2 and *** percent for product 3), and domestic product experienced a slight price decrease over the period (*** percent for product 2 and *** percent for product 3).

Margins of under and over selling for the period are presented in table V-7. Based on these data, prices for CSPV cells and modules imported from China were below those for U.S.-produced CSPV cells

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[24] Over the last few years, a number of firms have entered and exited the industry. Several responding firms indicated having entered the industry within the last year to year and a half. For example, the 2009 DOE International Energy Agency survey report identified five "crystalline module manufacturers (2 of which were producing using a string ribbon technology). The 2011 update identified 13 "crystalline silicon manufacturers" in the United States. International Energy Agency, "National Survey Report of PV Power Applications in the United States 2008," prepared for the U.S. Department of Energy by the National Renewable Energy Laboratory, June 8, 2009, p. 7; and Bolcar, Katie (U.S. Department of Energy) and Kristen Ardani (National Renewable Energy Laboratory), International Energy Agency, National Survey Report of PV Power Applications in the United States 2010, May 2011, p. 17.

[25] According to Petitioners, the distribution of power output for modules resembles a bell curve distribution that is continually shifting as technology and output per panel improves. Conference transcript, p. 97 (Kilkelly). This movement may, in part, clarify the larger amount of pricing product data for the lower wattage modules in the earlier years of the period of investigation. In addition, Suntech stated that it did not make a single module during the period of time that falls into the pricing products categories, as it makes higher wattage (e.g., 275, 280, 285, and 290) panels. Conference transcript, pp. 225-226 (Efird).

and modules in 18 of 19 instances; margins of underselling ranged from *** percent to *** percent. In the remaining 1 instance, prices for CSPV cells and modules from China was *** percent above prices for the domestic product.[26]

Table V-2
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 1,[1] and margins of underselling/(overselling), by quarters, January 2008-June 2011

Period	United States		China		
	Price *(per unit)*	Quantity (*units*)	Price *(per unit)*	Quantity (*units*)	Margin (*percent*)
2008:					
Jan.-Mar.	--	0	$***	***	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	***	***	--
Oct.-Dec.	--	0	***	***	--
2009:					
Jan.-Mar.	--	0	***	***	--
Apr.-June	--	0	***	***	--
July-Sept.	$***	***	567.43	6,903	***
Oct.-Dec.	***	***	453.03	49,699	***
2010:					
Jan.-Mar.	***	***	420.23	88,144	***
Apr.-June	***	***	467.62	150,783	***
July-Sept.	***	***	387.29	299,362	***
Oct.-Dec.	***	***	397.68	330,809	***
2011:					
Jan.-Mar.	444.35	63,392	380.97	284,432	14.3
Apr.-June	***	***	364.70	255,392	***

[1] Product 1.--Crystalline silicon modules, with a peak power wattage of between 226 to 230, inclusive, P-max or Wp.

Source: Compiled from data submitted in response to Commission questionnaires.

[26] Respondents, however, question the representativeness of the selected pricing products and data. They state that "Limited insights can be gleaned from any underselling identified in the quarterly pricing data," because pricing data is aggregated across all three major market segments. They state that model pricing levels are determined by and sensitive to sales volumes, with larger volumes exhibiting lower per-unit prices, and to the extent that subject imports are concentrated in larger volume segments, they would be expected to have lower per-unit costs. Respondent CCCME's postconference brief, p. 40-41.

Table V-3
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 2,[1] and margins of underselling/(overselling), by quarters, January 2008-June 2011

Period	United States		China		
	Price *(per unit)*	Quantity (*units*)	Price *(per unit)*	Quantity (*units*)	Margin (*percent*)
2008:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	--	0	--
Oct.-Dec.	--	0	--	0	--
2009:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	--	0	--
Oct.-Dec.	--	0	--	0	--
2010:					
Jan.-Mar.	$***	***	--	0	--
Apr.-June	***	***	$***	***	***
July-Sept.	***	***	***	***	***
Oct.-Dec.	442.51	36,276	390.66	161,656	11.7
2011:					
Jan.-Mar.	441.57	84,583	374.24	243,634	15.2
Apr.-June	425.05	98,568	368.81	246,582	13.2

[1] Product 2.--Crystalline silicon modules, with a peak power wattage of between 231 to 235, inclusive, P-max or Wp.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-4
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 3,[1] and margins of underselling/(overselling), by quarters, January 2008-June 2011

Period	United States		China		
	Price *(per unit)*	Quantity (*units*)	Price *(per unit)*	Quantity (*units*)	Margin (*percent*)
2008:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	--	0	--
Oct.-Dec.	--	0	--	0	--
2009:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	$***	***	--
Oct.-Dec.	--	0	***	***	--
2010:					
Jan.-Mar.	--	0	***	***	--
Apr.-June	--	0	***	***	--
July-Sept.	$***	***	***	***	***
Oct.-Dec.	***	***	***	***	***
2011:					
Jan.-Mar.	***	***	381.66	23,860	***
Apr.-June	433.23	33,652	472.97	29,784	(9.2)

[1] Product 3.--Crystalline silicon modules, with a peak power wattage of between 236 to 240, inclusive, P-max or Wp.

Source: Compiled from data submitted in response to Commission questionnaires.

Table V-5
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 4,[1] and margins of underselling/(overselling), by quarters, January 2008-June 2011

Period	United States		China		
	Price *(per unit)*	Quantity (*units*)	Price *(per unit)*	Quantity (*units*)	Margin (*percent*)
2008:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	--	0	--
Oct.-Dec.	--	0	--	0	--
2009:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	--	0	--	0	--
Oct.-Dec.	--	0	--	0	--
2010:					
Jan.-Mar.	--	0	--	0	--
Apr.-June	--	0	--	0	--
July-Sept.	$***	***	--	0	--
Oct.-Dec.	***	***	--	0	--
2011:					
Jan.-Mar.	***	***	$***	***	***
Apr.-June	***	***	***	***	***

[1] Product 4.--Crystalline silicon modules, with a peak power wattage of between 241 to 245, inclusive, P-max or Wp.

Source: Compiled from data submitted in response to Commission questionnaires.

Figure V-3
CSPV cells and modules: Weighted-average f.o.b. prices and quantities of domestic and imported product, by quarters, January 2008-June 2011

* * * * * * *

Table V-6
CSPV cells and modules: Summary of weighted-average f.o.b. prices for products 1, 2, 3, and 4 from the United States and China

* * * * * * *

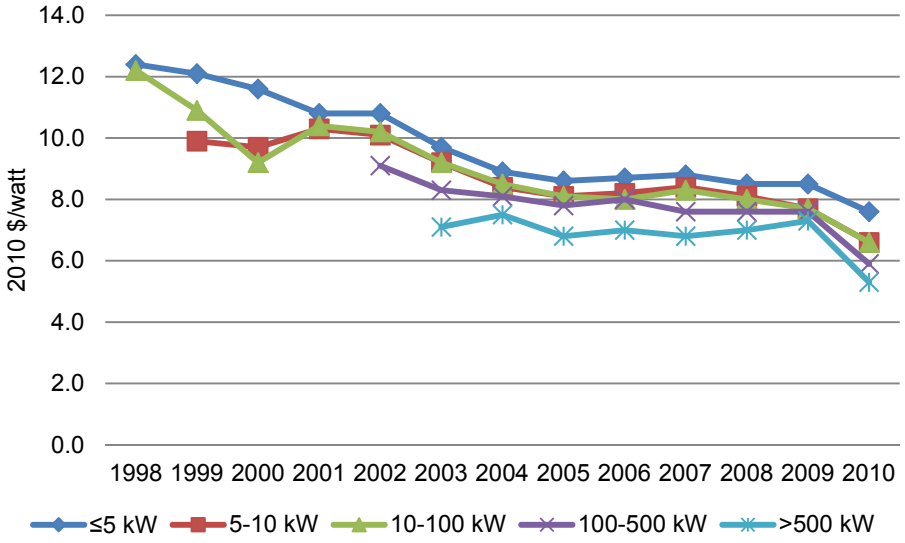
Table V-7
CSPV cells and modules: Instances of underselling/overselling and the range and average of margins, 2008-2011

* * * * * * *

PUBLISHED PRICE DATA

In general, PV product prices have been trending downward since the 1990s, despite a period of increasing prices between 2003 and 2008; in addition, prices for small-quantity buyers, on average, have been higher than for mid-range and large quantity buyers, although the gap between these three groups has been larger in the last decade.[27] Although modules are generally priced on a per-watt basis, the quoted price per watt varies with the volume purchased.[28] As seen in figure V-4, the installed cost of PV systems, in general, declines with the size of the system installation. According to an industry survey, global factory gate c-Si module prices declined by more than 40 percent during 2009, almost 9 percent during 2010, and approximately 20 percent from January to August 2011 (figure V-5).

Figure V-4
Installed cost, trends over time for behind-the-meter PV, by system size



Source: Barbose, Galen et al., "Tracking the Sun IV," September 2011, p. 17, Figure 10.

Figure V-5
Global factory-gate c-Si module prices, weekly, 1/9/2009–9/2/2011

* * * * * * *

[27] Petition, Navigant Consulting, "PV Market Analysis: Mid-2011 Pause for Reflection—Just Don't Pause for Long," Exh. I-24, p. 1 (Figure 1).

[28] According to Petitioner, price is driven by volume. Conference transcript, p. 100 (Kilkelly)

LOST SALES AND LOST REVENUES

The commission requested U.S. producers of CSPV cells and modules to report any instances of lost sales or revenues they experienced due to competition from imports of CSPV cells and modules from China since January 2008. Of the 16 responding U.S. producers, six reported reducing prices and rolling back announced price increases to avoid losing sales to competitors selling CSPV cells and modules from China and eight reported only reducing prices. Two producers (***) reported that they did not reduce their prices or roll back price increases to avoid losing sales. The more than 180 lost sales allegations totaled $249 million and involved 735 thousand units of CSPV cells and modules and the seven lost revenue allegations totaled $11 million and involved 182 thousand units of CSPV cells and modules. Staff attempted to contact all of these purchasers and a summary of the information obtained follows (tables V-8 and V-9).[29]

Eight of 30 responding purchasers named in lost sale and lost revenue allegations indicated that they had switched purchases of CSPV cells and modules from U.S. producers to suppliers of CSPV cells and modules from China since January 2008, and four reported that price was the reason for shifting purchases. Fifteen purchasers reported that U.S. producers reduced their prices of CSPV cells and modules in order to compete with prices of CSPV cells and modules imported from China since January 2008. Two purchasers indicated that prices have declined, but could not confirm that the decline was attributable Chinese imports. Three purchasers reported that decreasing CSPV cells and modules prices were a global trend in the market, and one purchaser reported that the fall in prices was due to declining raw material costs. Seven purchasers cited the fact that they were not producers, and therefore could not comment on pricing decisions made by producers.

Table V-8
CSPV cells and modules: U.S. producers' lost sales allegations

* * * * * * *

Table V-9
CSPV cells and modules: U.S. producers' lost revenue allegations

* * * * * * *

*** of *** agreed with the lost sale allegation involving his firm. He indicated that in a few instances *** sourced Chinese modules because of lower prices and stated that projects with ARRA funding, which carry the requirement of U.S. produced modules, cost more to install than if Chinese modules were an option.

***'s representative, ***, disagreed with the two lost sale allegations involving his company. He reported that the project did not come to fruition and indicated that he could not say that if prices were substantially lower the customer would have proceeded with the project.

*** of *** disagreed with three of the five lost sale allegations involving his firm.[30] He reported that the modules were purchased from ***. *** reported that *** only purchases American made modules. He also stated that U.S. producers of CSPV cells and modules reduced their prices to compete with prices of CSPV cells and modules imported from China, but also attributed the decline in prices to the expiration of Federal and State incentives.

[29] Additional lost sale allegations, which totaled *** and involved approximately *** units of CSPV cells and modules and lost revenue allegations, which totaled *** and involved approximately *** units of CSPV cells and modules, were received, without valid fax numbers, from questionnaire respondents. Staff attempted to contact the producers who provided these allegations to obtain valid fax numbers without success. These allegations are not reported here.

[30] *** did not respond to the remaining two allegations.

*** disagreed with the lost sale allegation involving ***. While indicating that his firm often purchases from both domestic and Chinese producers, the specific project named in the allegation was installed using modules from U.S. producer, ***.

*** of *** disagreed with the lost sale allegation involving his firm. He stated "*** did not win a sales order 'against' ***, the product named in the allegation, especially of such size." *** also indicated that his firm stopped purchasing *** due to quality issues.

***'s *** disagreed with both lost sale allegations involving his company stating that no product was purchased. *** also indicated that the firm has not switched purchases from U.S.-produced CSPV cells and modules to CSPV cells and modules imported from Chinese suppliers in the last three years.

*** disagreed with the lost sale allegation involving ***. He stated that his company "did not get the sale," and he did not know the reason.

*** of *** disagreed with the lost sale allegation involving his firm. He reported that they were unable to complete the order due to a lack of funds.

*** neither agreed nor disagreed with the lost sales allegation involving ***. He stated that the information provided in the allegation was "a little confusing," and he suspected that the "panels" referred to in the allegation might actually be "solar cells" instead, but in either case, *** had not made a purchase in that amount. *** reported that *** has not purchased many cells from China, and in fact, most of their business over the last three years has been ***. He stated that now that the solar cell shortage is over, the company is not exporting cells to China anymore and has an existing inventory of U.S. manufactured cells. He indicated that a much smaller portion of their business is ***. He indicated that most of their cells are purchased from ***.

*** disagreed with the two lost sale allegations involving ***. He stated the project did not go forward due to complications with the power purchase agreement between his customer and the host of the project. He also indicated that the prices he received from a U.S. supplier were not higher than the offer received from a Taiwanese firm. *** indicated that since 2007, prices for panels have fallen due to economies of scale, improved manufacturing equipment, and increased cell efficiency, and that all three factors were driven by global competition and risky investments.

***'s representative, ***, disagreed with the lost sale allegation involving his firm. He indicated that *** did not purchase any *** product in the alleged volume at the alleged time. *** reported that his company switched from U.S. produced CSPV cells and modules to Chinese CSPV cells and modules seeking to higher wattage, higher efficiency, and higher quality product.

*** of *** disagreed with the lost sale allegation involving her company. She stated that they accepted a quote from a different U.S. manufacturer. *** noted that since *** began operations in ***, they have sourced Chinese made modules. However, since then, they have begun to switch some of their purchases to U.S.-produced modules, which include the project named in the allegation.

*** responded to the lost sale allegation involving ***. *** indicated that his company only purchases products manufactured in the United States, and that they have never attempted to purchase any Chinese-made solar modules or other products. He stated, "I believe pricing is very competitive and the products are equally as good that are made here or there."

*** of *** disagreed with two of the three lost sale allegations involving his firm indicating that his firm did not get the job that was bid. For the third allegation, involving a *** product, he reported purchasing product from U.S. producer *** for the job.

*** responded to the lost sale allegation involving ***. She indicated that *** is not a purchaser or producer of CSPV cells and modules. Instead, her company is involved in research and development of CSPV cells and modules. *** indicated that the offer mentioned in the allegation was an occurrence of her firm passing along information to one of their research and development clients, but she is not aware of what took place after providing the information.

*** disagreed with both lost sale allegations involving ***. She reported that *** is a solar PV integrator and was soliciting quotes only from American solar panel manufacturers at the time of the allegations for an ARRA funded project. She stated that her firm would have been a subcontractor on the project, for which they did not win the bid, and therefore, did not purchase the products detailed in the allegations. ***.

*** of *** agreed with both lost sale allegations involving his firm. He stated, "Chinese supplied product is driving the U.S. module manufacturers out of business." *** reported that most of ***'s projects have been ARRA funded jobs requiring U.S. produced modules. He stated that if they were not required to use U.S. product for these jobs, that they would have used imported modules to complete the projects.

*** disagreed with the lost sale allegation involving ***. He indicated that the project never went forward due to unacceptable finance terms offered by ***. He stated that *** requested 100 percent of the payment in advance, and *** could not accept the terms of the contract as proposed.

*** disagreed with the two lost sale allegations involving his company ***. He reported that one product listed in the allegation, the ***, was purchased from U.S. producer *** for ***.

***'s representative *** disagreed with all three lost sale allegations involving his firm indicating that no sale was actually made. He also reported that, "Chinese modules are far less expensive than U.S. modules."

*** of *** did not respond to the specific allegation involving his company. He indicated that he was not familiar with the specific transaction named in the allegation, but that *** has mostly purchased product from overseas suppliers since they have been in business.

*** of *** agreed with the lost revenue allegation involving his firm. He reported that ***'s initial quote for the product named in the allegation was above the market for similar product, however, the revised quote was in line with market pricing and *** accepted the price for the project. *** reported that *** still purchases product from ***, but also indicated that his company had switched a portion of purchases of CSPV cells and modules from U.S. producers to suppliers of CSPV cells and modules, reporting price as the primary reason for the switch. He also indicated quality was a factor in ***'s decision to switch purchases to Chinese-produced CSPV cells and modules. In his response, *** noted, "The Chinese have achieved the most significant increases in volume and scale globally allowing the downward movement in price. Chinese manufacturers leading the market to lower prices does not imply illegal or anticompetitive activities were used to achieve those lower prices."

*** disagreed with the lost sale and lost revenue allegations involving his firm ***. He stated that, given the general nature of the data provided in the allegation, *** was not able to provide specific details of why another product was purchased over the product named in the allegations as his company uses a number of factors to determine which products they purchase. Those factors include price, payment terms, cost of installation and electrical hardware, efficiency, reliability, warranty, bankability, and the supplier's ability to meet delivery requirements among other things. He also indicated that *** has switched purchases from U.S. made CSPV cells and modules to suppliers of product from China, but that price was only one of the myriad of reasons for the switch.

*** of *** agreed with the lost sale allegation involving his company. He also indicated that *** has switched purchases of CSPV cells and modules from U.S. producers to suppliers of CSPV cells and modules from China.

*** of *** disagreed with the lost sale allegation involving the company. He stated that the specific quote named in the allegation was part of a "Master Procurement Agreement" and the alleged modules were never procured.

*** neither agreed nor disagreed with the allegation involving his company ***. He indicated that the project specified in the allegation had been postponed indefinitely due to the collapse of the New Jersey "spec market" and no product was ever purchased. *** also reported that *** has not purchased any modules since January 2008.

*** of *** did not agree or disagree with the lost revenue allegation involving his firm. He stated that he did not recall the transaction detailed in the allegation.

*** disagreed with all three lost sale allegations involving ***. For the allegation involving a *** product she indicated that a the company did not make any purchase of the alleged product and volume during the specified time frame. Another allegation involved one ***. ***. Her comments also indicated that since the supplier was not indicated in the information provided in the allegation, she was unable to provide additional details on the allegations.

There were three lost sale allegations involving ***. *** of *** indicated that without more specific information involving the projects named in the allegations, it would be difficult for him to determine if the sales were lost to modules imported from China.

*** was named in one lost sale allegation. *** of *** disagreed with the allegation indicating that the alleged quote was for modules in an ARRA project requiring U.S. made modules. He stated that the project was lost to another supplier of U.S. made modules, ***. He also noted that his firm has not switched purchases from U.S. made CSPV cells and modules to suppliers of CSPV cells and modules from China and stated that *** has never imported product from China.

PART VI: FINANCIAL EXPERIENCE OF U.S. FIRMS

BACKGROUND

Sixteen firms provided usable financial data on their operations producing CSPV cells and modules.[1] These reported data are believed to represent the majority of production of CSPV cells and CSPV modules in the United States in 2010.[2]

OPERATIONS ON CSPV CELLS AND MODULES

Income-and-loss data for the reporting U.S. firms' operations are presented in table VI-1 CSPV cells, table VI-2 CSPV modules, and table VI-3 CSPV cells and modules combined. CSPV cells and CSPV modules data are briefly summarized here.

- Sales quantity of both CSPV cells and CSPV modules rose dramatically from 2008 to 2010 and was higher in January-June 2011 than in January-June 2010. Sales value of both CSPV cells and CSPV modules likewise increased, due to the increase in quantity sold. Contributing to the increase was the greater number of reporting U.S. firms in 2010 compared to 2008 as well as in January-June 2011 compared with January-June 2010. Average unit values ("AUV") per cell and per module fell from 2008 to 2010; for CSPV cells these AUVs were higher in January-June 2011 than in the same period one year earlier but lower for CSPV modules. AUVs per KW were much lower in 2010 than in 2008 and lower for both CSPV cells and modules in January-June 2011 than in January-June 2010.

- The absolute value of cost of goods sold ("COGS") rose from 2008 to 2010 and was higher in January-June 2011 than in January-June 2010 for both CSPV cells and CSPV modules; these higher costs were driven by the higher quantity sold. Each of the components of COGS was greater in value in 2010 than in 2008, again, because of the quantity increase. As a ratio to sales, the CSPV cells' COGS increased by *** percentage points from 2008 to 2010[3] but was lower in January-June 2011 than in January-June 2010. The ratio of CSPV modules' COGS declined *** between 2008 and 2010 and was *** lower in interim 2011 than in interim 2010. The AUVs of COGS of CSPV cells irregularly increased between the full years per cell but irregularly fell on a per-KW basis. The AUVs of COGS of CSPV modules declined during the periods investigated. Within COGS, raw material costs of both CSPV cells and CSPV modules irregularly increased as a ratio to sales; as an AUV per cell, raw material costs irregularly increased for CSPV cells and declined for CSPV modules between 2008 and 2010; similarly, raw material costs were higher in January-June 2011 than in the same period one year earlier, but lower for CSPV modules. As an AUV per kilowatt, raw material costs declined for both CSPV cells and modules and was ***

[1] The firms are ASP; Calisolar; Evergreen; Helios; Kyocera; Motech; MX Solar; 1SolTech; Schott; Sharp; Silicon Energy; SPI; Solartech; SolarWorld; SunPower; and SunTech. ***.

[2] The Commission's questionnaire asked for data separately for cells and modules. There are differences between the data in the trade and financial sections of the questionnaire for CSPV cells as well as for CSPV modules. The differences with regard to CSPV modules are primarily due to fiscal- versus calendar-year reporting. The differences with regard to CSPV cells are that the financial data for cells was requested for firms' commercial operations only while the trade data include internal consumption. Most of the difference was due to internal consumption of CSPV cells ***. E-mail to Commission staff from ***, November 11, 2011. The value of internal consumption of CSPV cells is generally captured in the reporting of raw materials in COGS of CSPV modules.

[3] The increase in the ratio to sales was influenced by nonrecurring charges of reporting firms, discussed later.

greater or lower for CSPV cells and modules, respectively, in interim 2011 compared with the same period one year earlier. The other components of COGS exhibited cost behavior similar to raw materials for CSPV cells and modules, as shown in tables VI-1 and VI-2. Reporting firms' nonrecurring charges (discussed later) appear to.have affected the operating results of CSPV cells to a greater extent than they did CSPV modules.

- Selling, general, and administrative ("SG&A") expenses rose in dollar terms. Like COGS, the cost behavior of SG&A expenses differed between CSPV cells and CSPV modules: these expenses rose as a ratio to sales and on a per-unit basis for CSPV cells between 2008 and 2010 but were lower in interim 2011 compared with interim 2010. As a ratio and on a per-unit basis these expenses declined for CSPV modules; they were *** higher as a ratio but lower on a per-unit basis in interim 2011 compared with interim 2010.

- Operating losses were reported in each period for both CSPV cells and CSPV modules. As a ratio to sales and on a per-unit basis, operating losses increased between 2008 and 2010 for CSPV cells but were lower for CSPV modules. Operating losses were lower in January-June 2011 than in January-June 2010 for CSPV cells; operating losses decreased and were lower in January-June 2011 compared with January-June 2010 for CSPV modules.

- Net income before taxes and cash flow (calculated as net income plus depreciation charges) were negative in each period except in 2008 with respect to CSPV cells.[4]

Table VI-1
CSPV cells: Results of total operations of U.S. firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Table VI-2
CSPV modules: Results of total operations of U.S. firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Table VI-3
CSPV cells and CSPV modules COMBINED: Results of total operations of U.S. firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Salient operating data on a firm-by-firm basis are shown in tables VI-4 and VI-5 for CSPV cells and CSPV modules, respectively.

[4] Operating income or (loss) minus interest charges and other expenses plus other income equal net income before taxes. While reported interest charges were high, other expense was the leading factor to negative net income. Asset impairment charges (plant and equipment writeoff) were classified in "other expense" by several firms, including ***. Other income reported by the firms was an important contributor to net income for those reporting firms. In 2009, *** for CSPV cells; ***.

Table VI-4
CSPV cells: Results of operations of U.S. firms, by firm, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Table VI-5
CSPV modules: Results of operations of U.S. firms, by firm, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

The cost of raw materials used in the production of CSPV cells increased during the periods for which data were gathered on a dollar-basis, as a ratio to sales, and on a per-cell basis (discussed earlier and shown in table VI-1). The increase in these indicators were due to the higher quantity of sales between 2008 and 2010 and January-June 2010 to January-June 2011 as well as to the greater number of U.S. producers industry competing for solar quality silicon; an increase in the ratio of raw material costs to sales indicates an increase of such costs relative to sales value. The ratio of raw material costs to total COGS irregularly declined from 2008 to 2010 but was higher in January-June 2011 than in the same period of the previous year. The AUV of raw material costs per kilowatt irregularly declined from 2008 to 2010 and was flat between the interim periods. These two factors may indicate greater efficiency achieved by U.S. producers in production. These indicators are shown in table VI-6.

Table VI-6
CSPV cells: Raw material costs of U.S. firms, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

The Commission's questionnaire requested that firm breakout their raw material costs in the production of CSPV modules by origin of the CSPV cells used.[5] Total raw materials used in making CSPV modules increased (as did the quantity and value of sales), but the ratio of raw material costs to sales was approximately the same during the annual periods and increased *** between the interim periods. The AUV of raw material costs fell on both a per-module and per-KW basis. The ratio or raw material costs to total COGS increased during the periods investigated. Table VI-7 presents the questionnaire data.

Table VI-7
CSPV modules: Raw material costs of U.S. firms, 2008-10, January-June 2010, and January-June 2011

* * * * * * *

The number of U.S. firms reporting the production of CSPV cells and/or CSPV modules increased during the periods investigated as noted earlier and as may be discerned in tables VI-4 and VI-5. Among those firms producing CSPV cells, *** began operations in 2010, for example;[6] it ***. With regard to CSPV modules, a majority of the reporting firms began operations only in 2010 (three firms reported data in 2008, five in 2009, 10 in 2010, and 14 in the January-June 2011 period, for

[5] ***.

[6] ***. U.S. producers' questionnaire response, section II-2 and section III-11.

example).[7] Hence, the questionnaire data include start-up costs. The questionnaire data also include restructuring expenses, including the costs incurred by ***.[8] Six other firms also reported similar charges–restructuring (shutdown of facilities, severance payments, impairment of machinery), writedown of inventory, and the like. Not including ***, these expenses were $4.8 million in 2008, $20.1 million in 2009, $30.0 million in 2010, and $1.1 million in 2011.[9] [10]

A variance analysis for the reporting U.S. firms is not presented here. A variance analysis provides an assessment of changes in profitability as related to changes in pricing, cost, and volume. However, Commission staff believe that the because the data reflect entry and start-up costs of more than half the reporting firms, a variance analysis might not be reliable.

CAPITAL EXPENDITURES AND RESEARCH AND DEVELOPMENT EXPENSES

Capital expenditures for CSPV cells rose from a high level in 2008 to a greater amount in 2009, reflecting the *** for CSPV cell production. They remained on a relatively high level in 2010 although they fell *** in the January-June 2011 period. Research and development ("R&D") expenses for CSPV cells also increased *** from 2008 to 2009 and remained on a high level in 2010.[11] Capital expenditures for CSPV modules rose *** from 2008 to 2010 and remained on a similarly high level in both interim periods, accounted for ***, reflecting the investment in plant and equipment.[12] R&D expenses for CSPV modules was ***. Data on capital expenditures and research and development ("R&D") expenses related to the production of CSPV cells are shown in table VI-8 while those relating to CSPV modules are provided in table VI-9. The combined data for CSPV cells and modules are depicted in table VI-10.

Table VI-8
CSPV cells: Capital expenditures and R&D expenses, by firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

Table VI-9
CSPV modules: Capital expenditures and R&D expenses, by firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

[7] See table III-3 in Part III of this report. ***.

[8] ***. U.S. producers' questionnaire response, section III-9.

[9] U.S. producers' questionnaire responses, section III-9 of ***. Inventory revaluation was classified in "COGS," as were ***. Likewise, ***. Asset writedown (impairment) was classified in "other expense" by ***. Compare section III-9 with III-10 and III-11, U.S. producers' questionnaire responses.

[10] *** of nonrecurring charges related to ***. These charges were accrued in ***. U.S. producers' questionnaire response, section III-9.

[11] Reportedly, these were incurred ***. See ***.

[12] ***.

Table VI-10
CSPV cells and CSPV modules COMBINED: Capital expenditures and R&D expenses, by firms, fiscal years 2008-10, January-June 2010, and January-June 2011

* * * * * * *

ASSETS AND RETURN ON INVESTMENT

The Commission's questionnaire requested data on assets used in the production, warehousing, and sale of LPTs to compute return on investment ("ROI") for 2008 to 2010. The data for operating income are from tables VI-1, VI-2 (as adjusted), and VI-3 (as adjusted).[13] Operating income was divided by total assets, resulting in ROI, shown in table VI-11.

Table VI-11
CSPV cells and CSPV modules: Value of assets used in the production, warehousing, and sale, and return on investment, fiscal years 2008-10

* * * * * * *

Changes in the values of total assets are due primarily to investments made in property, plant, and equipment, which increased dramatically from 2008 to 2009 and from 2009 to 2010, and are reflected in that firms began production. Increased value of current assets are due to increased values of items like accounts receivable (due to the increased values of sales). The increase in accumulated depreciation between 2008 and 2010 is primarily due to the *** (see earlier discussion on "nonrecurring costs").

CAPITAL AND INVESTMENT

The Commission requested U.S. firms to describe any actual or potential negative effects of imports of CSPV cells and modules from China on the firms' growth, investment, and ability to raise capital or development and production efforts (including efforts to develop a derivative or more advanced version of the product). Their responses are shown below.

Actual Negative Effects

***

"Yes. Cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; reduction in the size of capital investments; other–reduction of workforce."

***

"Yes. Cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; reduction in the size of capital investments; rejection of bank loans; lowering of credit rating; other–due to unfair competition from China, we have had to reduce our employment levels by ***; net loss of *** employees. The current market conditions have also precluded us from ramping up to gain cost efficiencies and a resultant loss of revenue. These factors are having a direct effect on the long term viability of our company along with the rest of the genuine 'Made in USA' industry."

[13] ROI is calculated based on assets and operating income or (loss) data being consistent. ***. Hence, both assets and operating income/(loss) have been adjusted for CSPV modules ***.

***

"Yes. Other–lower head counts in production, resulting in not lower volume than anticipated when purchase of capital equipment, severely impacting our cash flow and business growth potential."

***

"Yes. Other–low prices from Chinese module suppliers have led to reduction in sales of our modules and corresponding reduction in production. Our inability to match these prices, despite drastic price cuts on our part, led to us having to lay off a shift rather than add the shift we anticipated adding before the end of the year."

***

"Yes. Cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; reduction in the size of capital investments; rejection of bank loans; lowering of credit rating; other–as discussed above, the surge in unfairly priced Chinese imports has had significant negative effects *** performance over the period. *** eliminating nearly 300 jobs in the process. Beyond the shut downs, however, the negative effects from Chinese imports forced *** to significantly delay its capacity ramp up ***. The ramp up ***. The surge of unfairly priced Chinese imports have put those plans on hold indefinitely. Finally, the current market conditions caused by dumped and subsidized Chinese imports has made it extremely difficult for *** to obtain financing. *** was only able to obtain one $*** line of credit. All other attempts to obtain financing in the United States have failed."

***

"Yes. Other–In 2011, in order to maintain high utilization of our manufacturing facilities, we have reduced prices greater than plan for our CSPV modules, which has resulted in lower gross margins and lower cash flows. This price reduction was due to an oversupply of modules globally, particularly supplies from Chinese manufacturers."

***

"Yes. The cancellation, postponement, or rejection of expansion projects; other–reduction in force."

***

"Yes. The cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; reduction in the size of capital investments; rejection of bank loans; lowering of credit rating; problem related to the issue of stocks or bonds; other–the firm's survival as a US producer is absolutely at stake. Why? Because we have been unable to close normal volume of orders (see attached file which lists lost sales opportunities due to pricing). As a side note, the great majority of orders lost were at least 90% due to lower prices offered by companies of Chinese made modules or their resellers. The ripple effects were multiple. In no special order: inventory levels increased monthly at the same time the market value of said inventory decreased by each week and month. Per lower cost or market GAAP accounting, we recognized repeated monthly losses as Chinese market pricing dropped continually even to the date of this writing. As

an additional consequence, we have had to sell inventory at below cost of production and our ability to stay current with our U.S. and foreign suppliers has evaporated. Our past due trade payables is over ***. Cash flow from sales is based *** upon existing inventory and the remaining inventory will be depleted *** or less. Leaving the firm no other way to generate cash coupled with inability to purchase raw materials on credit due to the condition of late payables. All the above have forced the firm to reduce personnel (by ***) and overhead expenses simply to keep the doors open."

***

"Yes. The cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; rejection of bank loans; lowering of credit rating; problem related to the issue of stocks or bonds."

***

"No."

***

"No."

***

"Yes. Reduction in the size of capital investments; other–loss of projects to Chinese manufactured products."

***

"Yes. Other–reduced sales resulting in reduced production."

***

"Yes. The cancellation, postponement, or rejection of expansion projects; denial or rejection of investment proposal; rejection of bank loans; other–we are unable to raise funds as excessive supply from China has artificially reduced the pricing of cells and modules. As a result, we have had to reduce our costs drastically, which has reduced and/or eliminated profitability on sales of American modules."

Anticipated Negative Effects

***

"Yes. China based PV manufacturers have aggressively marketed, and continue to aggressively market, their products into the U.S. market. Their tactics include importing a high volume of product and selling at generally the lowest prices in the market. The volumes and pricing moves by these firms have had a market wide impact on pricing, and have reduced our product margin significantly. The ongoing price and margin pressure continue to impact our firm and challenges our ability to conduct business as a manufacturer ***."

***

"Yes, the opportunities for our 'Made in the USA' cells and modules have been extremely limited in 2011 due to foreign competitor products being priced below our cost even when using highly automated equipment and low cost materials. The prospects for profitable sales going forward are also greatly diminished due to competition from China with pricing below cost for cells and modules flooding the market. To have any chance of competing, *** has been forced to consider importing cells from China, which could result in the permanent closure of our cell processing line and the permanent elimination of additional jobs here in the USA, and loss of cell processing capacity and capabilities."

***

"Yes. Imports of CSPV modules from China has required us to revisit our business plan on alternative supply of modules versus our current inhouse production."

***

"Yes. China decreased pricing has a direct financial impact on our business. Margins are practically non-existent. We were on pace to operate at ***, in August. Since August, we are operating at less than *** utilization and have laid off ***. Our total employee count went from a high of ***. We estimate Chinese module prices to have been $0.10 to $0.35 cheaper per watt over the past nine months. One of our most common modules is selling for 26% less now than it was back in February of this year when we started–that is nearly 3% drop per month. The volume of that product is also less than half of what we sold in February."

***

"Yes. *** invested more than $*** million in *** and another $*** million in the *** the facility. This was a huge commitment and makes *** crystalline silicon cell and module producer in the United States. The entire operation, however, is now in jeopardy as unfairly low priced Chinese cell and module imports surge the market forcing us to significantly idle production and delay necessary capital improvements. In addition, *** has been forced to drastically slash its workforce due to the flood of unfairly priced Chinese cells and modules overwhelming the market and suppressing and depressing market prices. Chinese producers have used price to gain market share, offering modules and panels for as little as $1 per watt. Pricing at these levels is simply unsustainable and has begun to significantly impact *** negatively. As we noted *** has laid off nearly *** employees and it is losing money on every panel it sells. If unfairly traded imports from China are allowed to continue, at even a very small fraction of *** volumes and price levels, we may be forced to further scale back production and employment, including the possible closure *** U.S. facilities. Critically, the capacity built through the Chinese Government's massive subsidization far outstrips the foreseeable demand needs in China and elsewhere. This capacity is built exclusively to service China's export markets. The Chinese have been pushing supply into this market at dumped and subsidized prices. Claims that this supply and massive capacity are necessary to satisfy growing U.S. demand are simply not credible. In fact, the chief executive and founder of Suntech Power Holdings (the largest crystalline silicon cell and module producer in China and the world) admitted that Suntech's goal is to continually build market share by "selling solar panels on the American market for less than the cost of the materials, assembly, and shipping." China Racing Ahead of U.S. in the Drive to Go Solar, The NY Times (Aug. 25, 2009). If Chinese producers are allowed to continue to

substantially increase their market share through dumped and subsidized pricing, our investment of $*** in the U.S. market is in jeopardy as well as our workers who depend *** to support their families."

***

"Yes. The Chinese manufacturers are price reduction leaders. When the higher quality, bankable solar panels are reduced in price in the US due to competition from lower cost panels imported from China or anywhere else in the world, at some point *** will need to follow the pricing trend, although it may be days, weeks or months later and it could be a different absolute price reduction or percent reduction than imported Chinese panels. *** commands a price premium in the market, but such price premium may not be sustainable due to price competition. Price reduction in excess of cost reductions will compress margins which may lead to: 1) lower or negative earnings, 2) lower or negative cash flow, 3) limitations on or higher cost of debt, 4) reductions in operating expenses that lower investments in R&D and sales and corporate investment, 5) reduction in stock value, 6) higher cost of retention of employees, and 7) delay expansion projects."

***

"Yes, we experience a negative impact due to price competition caused by imports from China."

***

"Yes. Based on current pricing trends in the module market, *** anticipates continued negative and detrimental impact caused by the low prices of import of Chinese panels. From the time we ***, we have experienced a continued and unjustified drop in the price of solar panels dictated by the dumping of low-cost product from China. Prices on the market for these products are considerably below the cost of the raw materials needed to assemble them. We experience resistance from potential clients because we are not able to compete with the pricing offered by Chinese manufacturers. In addition to the lower pricing being offered by Chinese made products, these companies and/or their resellers adopted an additional strategy which also offered incentives in the form of extended (90 days) payment terms and low-interest financing. The cumulative/net effect of these 3 commercial tactics, i.e. product pricing below cost of manufacturing, extended payment terms, and low cost financing cannot be carved out of (funded) the normal business model of any manufacturer. The pure math and the economics of business model margins can not sustain those programs. The 3-incentives can only be available through the application/use of subsidies. Subsidies which can only be sourced from government-backed entities (Chinese financing institutions). To reiterate, they cannot be covered under the normal profits of a manaufacturing business model. Therefore, this condition should be recognized as unfair, the proverbial non-level playing field, and anti-competitive and/or another obvious strategy of buying the market place. In short, *** has been forced to shrink/contract production from *** shift due to lack of business at selling prices which are above the cost of production. If current imported product pricing trends do not change, we fear we will be forced to cease operations altogether, as so many other U.S. manufacturing companies. It is not a coincident that so many US manufacturing companies have closed or in the process of closing their doors. The reason for these closures cannot be attributable to lack of business acumen and competence, i.e., US companies not knowing how to conduct profitable business operations."

***

"***."

***

"No. *** manufacturing solar cells based ***. Beginning in late 2010, we determined that we have a significant technological edge with this new solar grade silicon product. Accordingly, our investment dollars would be better spent in capitalizing on the production of solar grade silicon rather than using that product to manufacture solar cells. ***.

***

"No."

***

"Yes. We are constantly competing with Chinese manufactured products that are dramatically cheaper or U.S. manufactured products that have lowered their prices dramatically to compete with Chinese products."

***

"Yes. Extreme competion from competitors related to low price point and reduced production output."

***

"Yes. Chinese modules have captured nearly entirely the utility, commercial, and residential projects. There is only a small market for U.S. modules, primarily government-funded projects. Even then, Chinese companies have gained access to the market by importing near-complete modules with final assembly in the United States. These products are then labeled "Made in the USA" and/or "ARRA Compliant." Recently, our firm has had to reduce our production hours as well as workforce as a result of artificially low solar module pricing in the current market which we cannot match or beat."

PART VII: THREAT CONSIDERATIONS

Section 771(7)(F)(i) of the Act (19 U.S.C. § 1677(7)(F)(i)) provides that–

In determining whether an industry in the United States is threatened with material injury by reason of imports (or sales for importation) of the subject merchandise, the Commission shall consider, among other relevant economic factors[1]--

(I) if a countervailable subsidy is involved, such information as may be presented to it by the administering authority as to the nature of the subsidy (particularly as to whether the countervailable subsidy is a subsidy described in Article 3 or 6.1 of the Subsidies Agreement), and whether imports of the subject merchandise are likely to increase,

(II) any existing unused production capacity or imminent, substantial increase in production capacity in the exporting country indicating the likelihood of substantially increased imports of the subject merchandise into the United States, taking into account the availability of other export markets to absorb any additional exports,

(III) a significant rate of increase of the volume or market penetration of imports of the subject merchandise indicating the likelihood of substantially increased imports,

(IV) whether imports of the subject merchandise are entering at prices that are likely to have a significant depressing or suppressing effect on domestic prices, and are likely to increase demand for further imports,

(V) inventories of the subject merchandise,

(VI) the potential for product-shifting if production facilities in the foreign country, which can be used to produce the subject merchandise, are currently being used to produce other products,

(VII) in any investigation under this title which involves imports of both a raw agricultural product (within the meaning of paragraph (4)(E)(iv)) and any product processed from such raw agricultural product, the likelihood that there will be increased imports, by reason of product shifting, if there is an affirmative determination by the Commission under section 705(b)(1) or 735(b)(1) with respect to either the raw agricultural product or the processed agricultural product (but not both),

[1] Section 771(7)(F)(ii) of the Act (19 U.S.C. § 1677(7)(F)(ii)) provides that "The Commission shall consider {these factors} . . . as a whole in making a determination of whether further dumped or subsidized imports are imminent and whether material injury by reason of imports would occur unless an order is issued or a suspension agreement is accepted under this title. The presence or absence of any factor which the Commission is required to consider . . . shall not necessarily give decisive guidance with respect to the determination. Such a determination may not be made on the basis of mere conjecture or supposition."

> (VIII) the actual and potential negative effects on the existing development and production efforts of the domestic industry, including efforts to develop a derivative or more advanced version of the domestic like product, and
>
> (IX) any other demonstrable adverse trends that indicate the probability that there is likely to be material injury by reason of imports (or sale for importation) of the subject merchandise (whether or not it is actually being imported at the time).[2]

Information on the nature of the alleged subsidies was presented earlier in this report; information on the volume and pricing of imports of the subject merchandise is presented in Parts IV and V; and information on the effects of imports of the subject merchandise on U.S. producers' existing development and production efforts is presented in Part VI. Information on inventories of the subject merchandise; foreign producers' operations, including the potential for "product-shifting;" any other threat indicators, if applicable; and any dumping in third-country markets, follows.

THE INDUSTRY IN CHINA

The Commission received responses from seven firms accounting for approximately *** percent of 2010 production of CSPV cells in China and accounting for approximately *** percent of 2010 production of CSPV modules in China.[3] The seven reporting Chinese producers include: (1) Canadian Solar Manufacturing (Changshu), Inc. ("Canadian Solar"); (2) Changzhou Trina Solar Energy Co., Ltd. ("Trina China"); and (3) CNPV Dongying Solar Power Co., Ltd. ("CNPV"); (4) Eopply New Energy Technology Co., Ltd. ("Eoplly"); (5) Hanwha SolarOne (Qidong) Co., Ltd. ("Hanwha");[4] (6) Trina Solar (Changzhou) Science & Technology Co., Ltd. ("Trina S&T"); and (7) Yingli Green Energy Holding Co., Ltd. ("Yingli China").

Total capacity and production in China has greatly increased during the period of investigation and is projected to continue to expand in 2012 and beyond.[5] One source reported that in 2008 total cell capacity in China was *** megawatts and by 2011 it had expanded to *** megawatts, an increase of *** percent. It reported capacity of modules in China as *** megawatts and by 2011 it had expanded to *** megawatts, an increase of *** percent. With regard to production, it reported that in 2008 total cell production in China was *** megawatts and by 2011 it had expanded to *** megawatts, an increase of

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[2] Section 771(7)(F)(iii) of the Act (19 U.S.C. § 1677(7)(F)(iii)) further provides that, in antidumping investigations, ". . . the Commission shall consider whether dumping in the markets of foreign countries (as evidenced by dumping findings or antidumping remedies in other WTO member markets against the same class or kind of merchandise manufactured or exported by the same party as under investigation) suggests a threat of material injury to the domestic industry."

[3] Based on a comparison of foreign producers reported production of CSPV cells and modules in megawatts with total Chinese production as reported in Goldman Sachs Global Investment Research, Global Clean Energy, Solar, July 7, 2011. Attached as exh. 3 of Petitioner's postconference brief.

[4] In 2010, Hanwha Chemical Corp. purchased Solarfun Power Holdings Co., Ltd and renamed the company Hanwha Solar One.

[5] Respondent CCCME argued that Government of China incentives in its home market, including the recent announcement of a national feed-in-tariff program, will greatly increase demand for solar products in China. Respondent CCCME's postconference brief, pp. 46-47, exh. 1, p. 12 (citing a Goldman Sachs research note which states demand for solar products in China increasing from *** megawatts in 2008 to *** megawatts in 2012), and exh. 23.

*** percent. It reported production of modules in China as *** megawatts and by 2011 it had expanded to *** megawatts, an increase of *** percent.[6]

Reported cell capacity, production, and export shipment data regarding the individual firms are presented in table VII-1. Reported module capacity, production, and export shipment data regarding the individual firms are presented in table VII-2.

Table VII-1
CSPV cells: China's reported cell production capacity, production, shipments, and inventories, 2010

* * * * * * *

Table VII-2
CSPV cells: China's reported module production capacity, production, shipments, and inventories, 2010

* * * * * * *

Reporting Producers of CSPV Cells and Modules in China

Tables VII-3 to VII-8 present cumulative data for reported capacity, production, and shipments of CSPV cells and modules, in both units and megawatts,[7] for all reporting producers in China.

Cumulatively in 2010, reporting foreign producers in China reported that *** percent of their total shipments of CSPV cells were internally consumed to produce CSPV modules with the remaining shipments to its home market. *** percent of total shipments of modules by Chinese producers were exported to the United States, *** percent to their home market, and *** percent of their shipments were to other export markets. Their exports of CSPV modules to the United States increased from *** units in 2008 to *** units in 2010 and are projected to ***. Their shipments to other export markets increased throughout the period of investigation and are projected to ***.

Cumulatively, Chinese foreign producers reported that CSPV cell capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. They reported CSPV module capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012.[8] They reported CSPV cell production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. They reported CSPV module production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012.

Canadian Solar China

Canadian Solar China reported that *** percent of its total sales in the most recent fiscal year were sales of CSPV cells and modules. In 2010, *** percent of Canadian Solar China's total shipments of CSPV cells were internally consumed to produce CSPV modules and *** percent of total shipments of modules were exported to the United States, *** percent of its shipments were to its home market, and *** percent of its shipments were to other export markets such as ***. Canadian Solar China's exports of CSPV modules to the United States increased from 2009 to 2010 and then decreased from 2010 to 2011,

[6] Goldman Sachs Global Investment Research, Global Clean Energy, Solar, July 7, 2011. Attached as exh. 3 of Petitioner's postconference brief; see also, petition, pp. 47-48 (list of reported capacity expansions by Chinese producers).

[7] In this section of the report, percentage changes between periods are computed using units.

[8] ***. Trina S&T's foreign producer questionnaire, question II-2.

but is projected to ***. Its shipments to other export markets increased throughout the period of investigation and is projected to ***.

Canadian Solar China's reported CSPV cell capacity increased by *** percent from 2008 to 2010, and is projected to *** percent in 2011. Its reported CSPV module capacity increased by *** percent from 2008 to 2010, and is projected to *** percent in 2011.[9] Canadian Solar China's reported CSPV cell production increased by *** percent from 2008 to 2010, and is projected to *** percent in 2011. Its reported CSPV module production decreased by *** percent from 2008 to 2010, but is projected to *** percent in 2011. Canadian Solar China reported that its largest U.S. importer of CSPV modules during the period of investigation was ***.

Trina China

Trina China reported that *** percent of its total sales in the most recent fiscal year were sales of CSPV cells and modules. In 2010, *** percent of Trina China's total shipments of CSPV cells were internally consumed to produce CSPV modules with the remaining shipments to its home market and *** percent of total shipments of modules were exported to the United States, *** percent of its shipments were to its home market, and *** percent of its shipments were to other export markets. Trina China's exports of CSPV modules to the United States increased from *** units in 2008 to *** units in 2010 and are projected to ***. Its shipments to other export markets increased throughout the period of investigation and are projected to ***.

Trina China's reported CSPV cell capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012.[10] Trina China's reported CSPV cell production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Trina China reported that its largest U.S. importer of CSPV modules during the period of investigation was ***.

Hanwha

Hanwha reported that *** percent of its total sales in the most recent fiscal year were sales of CSPV cells and modules. In 2010, *** percent of Hanwha's total shipments of CSPV cells were internally consumed to produce CSPV modules with the remaining shipments to its home market and *** percent of total shipments of modules were exported to the United States, *** percent of its shipments were to its home market, and *** percent of its shipments were to other export markets. Hanwha's exports of CSPV modules to the United States increased from *** units in 2008 to *** units in 2010 and are projected to ***. Its shipments to other export markets increased throughout the period of investigation and are projected to ***.

Hanwha's reported CSPV cell capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Hanwha's reported CSPV cell production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Hanwha reported that its largest U.S. importer of CSPV modules during the period of investigation was ***.

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[9] ***. Canadian Solar China's foreign producer questionnaire, question II-2.

[10] ***. Trina S&T's foreign producer questionnaire, question II-2.

Yingli China

Yingli China reported that *** percent of its total sales in the most recent fiscal year were sales of CSPV cells and modules. In 2010, *** percent of Yingli China's total shipments of CSPV cells were internally consumed to produce CSPV modules with the remaining shipments to its home market and *** percent of total shipments of modules were exported to the United States, *** percent of its shipments were to its home market, and *** percent of its shipments were to other export markets. Yingli China's exports of CSPV modules to the United States increased from *** units in 2008 to *** units in 2010 and are projected to ***. Its shipments to other export markets increased throughout the period of investigation and are projected to ***.

Yingli China's reported CSPV cell capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module capacity increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Yingli China's reported CSPV cell production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Its reported CSPV module production increased by *** percent from 2008 to 2010, and is projected to *** percent by 2012. Yingli China reported that its largest U.S. importer of CSPV modules during the period of investigation was ***.

CNPV & **Eoplly**

*** reported exports to the United States of CSPV cell or modules during the period of investigation. *** of capacity and production during the period of investigation. CNPV reported that ***.

Other Non-Reporting Producers of CSPV cells and modules in China

A number of large producers of CSPV cells and modules did not respond to the Commission's foreign producer questionnaire. The largest of these non-reporting solar producers in China are listed in the tabulation below along with their 2010 CSPV cell and module production.

Firm	2010 cell production	Projected 2012 cell production	2010 module production	Projected 2012 module production
		(megawatts)		
Suntech	***	***	***	***
JA Solar	***	***	***	***
Jinko Solar	***	***	***	***
LDK	***	***	***	***
Total	***	***	***	***

Source: Photon International, "Year of the Tiger," March 2011 and Goldman Sachs Global Investment Research, Global Clean Energy, Solar, July 7, 2011. Attached as exhs. 3 and 12 of Petitioner's postconference brief.

Table VII-3
CSPV cells: China's reported production capacity, production, shipments, and inventories of cells in units, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

Table VII-4
CSPV modules: China's reported production capacity, production, shipments, and inventories of modules in units, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

Table VII-5
CSPV cells: China's reported production capacity, production, shipments, and inventories of cells in megawatts, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

Table VII-6
CSPV modules: China's reported production capacity, production, shipments, and inventories of modules in megawatts, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

Table VII-7
CSPV cells and modules: China's reported production capacity, production, shipments, and inventories of cells and modules in units, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

Table VII-8
CSPV cells and modules: China's reported production capacity, production, shipments, and inventories of cells and modules in megawatts, 2008-10, January-June 2010, January-June 2011, and projections for 2011 and 2012

* * * * * * *

U.S. IMPORTERS' INVENTORIES

Reported inventories held by U.S. importers of subject merchandise from China and nonsubject countries are shown in table VII-9.

Table VII-9
CSPV cells and modules: U.S. importers' end-of-period inventories of subject and nonsubject imports, by sources, 2008-2010, January-June 2010, and January-June 2011

* * * * * * *

U.S. IMPORTERS' CURRENT ORDERS

The Commission requested U.S. importers to indicate whether they imported or arranged for the importation of CSPV cells or modules after June 30, 2011. *** of the 24 reporting U.S. importers stated that they had imported or arranged for importation since June 30, 2011. Table VII-10 presents the U.S. importers which indicated that they had imported or arranged for the importation of the subject product from China and the quantity of those U.S. imports.

Table VII-10
CSPV cells and modules: U.S. importers' orders of subject imports from China subsequent to June 30, 2011, by firm

* * * * * * *

ANTIDUMPING AND COUNTERVAILING DUTY ORDERS IN THIRD-COUNTRY MARKETS

There have been no antidumping, countervailing duty or safeguard duty investigations on CSPV cell or modules in any other country.[11]

INFORMATION ON NONSUBJECT SOURCES

In assessing whether the domestic industry is materially injured or threatened with material injury "by reason of subject imports," the legislative history states "that the Commission must examine all relevant evidence, including any known factors, other than the dumped or subsidized imports, that may be injuring the domestic industry, and that the Commission must examine those other factors (including nonsubject imports) 'to ensure that it is not attributing injury from other sources to the subject imports.'"[12]

Global Market

Global grid-connected PV installations (including nonsubject products such as thin film) increased from 6.2 gigawatts (GW) in 2008 to 16.6 GW in 2010, with most of the growth occurring in Europe. In 2010, the largest markets were Germany (7,408 megawatts (MW), 44.5 percent of 2010 installations), Italy (2,321 MW, 14.0 percent), Czech Republic (1,490 MW, 9.0 percent), Japan (990 MW, 6.0 percent), United States (878 MW, 5.3 percent), France (719 MW, 4.3 percent), and China (520 MW, 3.1 percent).[13] Globally, CSPV accounted for 83 percent of PV installations in 2008, 79 percent in 2009, and 89 percent in 2010.[14]

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[11] Petitioner, SolarWorld, is currently considering filing a complaint against China for antidumping and countervailable subsidies on CSPV solar products in the European Union. "SolarWorld Circulates Petition for European Trade Complaint," Renewable Energy World.com, November 16, 2011.

[12] Mittal Steel Point Lisas Ltd. v. United States, Slip Op. 2007-1552 at 17 (Fed. Cir., Sept. 18, 2008), quoting from Statement of Administrative Action on Uruguay Round Agreements Act, H.R. Rep. 103-316, Vol. I at 851-52; see also Bratsk Aluminum Smelter v. United States, 444 F.3d 1369 (Fed. Cir. 2006).

[13] In Europe, residential installations account for a larger portion of installations that in the United States. Petition, Exhibit I-15, *Global Market Outlook for Photovoltaics until 2015*, p. 9–10; Conference transcript, p. 135 (Petrina).

[14] Sun Edison postconference brief, p. 11.

Global CSPV Cell Production

Global CSPV cell production also increased during 2008–10, rising from 6.9 GW in 2008 to 23.8 GW in 2010 (243 percent).[15] China was the largest global producer of CSPV cells, while the leading nonsubject producers of CSPV cells in 2010 were Taiwan (13.6 percent of global production), Germany (7.9 percent), and Japan (7.7 percent) (table VII-11).[16] ***[17]

Table VII-11
Global CSPV cell production, 2008–2010

Country	2008	2009	2010	2008	2009	2010
	(megawatts)			*(percent)*		
China[1]	***	4,746.8	13,018.4	***	45.1	53.4
United States	***	189.4	642.0	***	1.8	2.6
Nonsubject						
Taiwan	***	1,440.4	3,308.0	***	13.7	13.6
Germany	1,221.0	1,427.8	1,931.0	***	13.6	7.9
Japan	***	1,291.0	1,880.0	***	12.3	7.7
South Korea[1]	***	229.0	865.0	***	2.2	3.5
Philippines	***	397.0	558.0	***	3.8	2.3
Malaysia	***	20.0	474.0	***	0.2	1.9
Other[1]	***	790.1	1,707.4	***	7.5	7.0
Total nonsubject[1]	***	5,595.3	10,723.4	***	53.1	44.0
Total[1]	***	10,531.5	24,383.8	***	100.0	100.0

[1] May include nonsubject thin film cells. Total differs from that in the text since it includes some nonsubject products.

Source: Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, 194–214; ***; tables VII-13 to VII-15.

[15] Global CSPV production calculated based on total cell production and share of production accounted for by monocrystalline, multicrystalline, and string ribbon CSPV cells in Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 188, 208.

[16] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 194–214; tables VII-10, VII-13 to VII-15.

[17] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 206; ***.

Global CSPV Module Assembly

Global CSPV module shipments increased from 5,189 MW in 2008 to an estimated 16,487 MW in 2010.[18] Of the 19 GW of CSPV module capacity in 2009, China accounted for 54 percent, Europe 28 percent, the United States 5 percent, Japan 4 percent, Taiwan 1 percent, the rest of Asia 7 percent, and the rest of the world 1 percent.[19] In 2010, five of the top ten global CSPV module producers (Sharp, Kyocera, REC, Sanyo, and Schott) primarily assembled modules in nonsubject countries (table VII-12).[20] This included three Japanese companies (Sharp, Kyocera, and Sanyo), though these companies assemble modules both in Japan and other locations (see Japan section below). Companies that primarily assemble CSPV modules in China accounted for five of the top six companies (Suntech, Yingli, Trina, Canadian Solar, and Hanwha).[21]

Table VII-12
Leading companies, global CSPV module assembly, 2010

Company	Primary assembly locations	2010	Company	Primary assembly locations	2010
		megawatts			megawatts
1. Suntech	China	1,558	8. REC	Nonsubject countries	491
2. Yingli	China	1,061	9. Sanyo	Nonsubject countries	405
3. Trina	China	1,060	10. Schott	Nonsubject countries	390
4. Sharp	Nonsubject countries	827	11. SolarWorld	Nonsubject countries	371
5. Canadian Solar	China	804	12. LDK Solar	China	356
6. Hanwha	China	798	13. Jiawei SolarChina	China	337
7. Kyocera	Nonsubject countries	650	14. Renesola	China	295

Note: For Sharp, calculated by subtracting thin film module production from total module production. Some companies with primary assembly locations in China and/or nonsubject countries may also have assembly in the United States.

Source: Shyam Mehta, "PV News Annual Data Collection Results: 2010 Cell, Module Production Explodes Past 20 GW," May 9, 2011, http://www.greentechmedia.com/articles/print/pv-news-annual-data-collection-results-cell-and-module-production-explode-p (accessed November 15, 2011).

[18] CCCME postconference brief, Exhibit 47, *Alternative Energy Report*, June 22, 2011.

[19] Global CSPV module capacity was calculated based on the total module capacity and the share of that capacity accounted for by CSPV modules. CCCME postconference brief, EPIA, *Global Market Outlook for Photovoltaics until 2014*, p. 22, 24.

[20] Module production data by country were not available for 2010.

[21] Shyam Mehta, "PV News Annual Data Collection Results: 2010 Cell, Module Production Explodes Past 20 GW," May 9, 2011, http://www.greentechmedia.com/articles/print/pv-news-annual-data-collection-results-cell-and-module-production-explode-p (accessed November 15, 2011).

Mexico

Mexico is the leading nonsubject PV supplier to the U.S. market. U.S. PV imports from Mexico increased from $213.3 million in 2008 to $481.3 million in 2010. Imports increased from $330.5 million in the first nine months of 2010 to $355.4 million in the first nine months of 2011.[22]

The Mexican CSPV industry is comprised solely of companies that assemble modules and most PV production is exported, primarily to the United States.[23] The CSPV industry includes two Japan-based companies (Kyocera and Sanyo), one U.S.-based company (contract manufacturer Jabil Circuit), one Europe-based company (Siliken), and two Mexico-based companies (ERDM and Solartec) (table VII-13). U.S.-based SunPower announced plans in 2011 to open a plant in Mexico.[24]

Table VII-13
Companies assembling CSPV modules in Mexico, 2011

Company	Module production capacity	Headquarters
	(megawatts)	
ERDM	>30	Mexico
Jabil Circuit	Not available	United States
Kyocera	120	Japan
Sanyo	50	Japan
Siliken	75	Spain
Solartec	Not available	Mexico

Notes: Only includes CSPV manufacturers. In 2011, SunPower announced plans to open a module plant in Mexico. Jabil Circuit is a contract manufacturer for multiple companies, including JA Solar and SunPower.

Sources: Baja California Solar Industry brochure; SunPower, "SunPower Announces New Solar Panel Manufacturing Facility," News release, August 5, 2011; ERDM Web site, http://erdmsolar.com/English/who-we-are/technology.html (accessed November 14, 2011); Solartec Web site, http://www.solartecmexico.com (accessed November 14, 2011); SANYO, "Sanyo Celebrates Grand Opening of New Monterrey Solar Module Assembly Manufacturing Plant with Ceremony," News release, November 4, 2009; SunPower, "SunPower Announces Multi-Year Manufacturing Agreement With Jabil Circuit, Inc.," News release, June 8, 2009; Andrew Herndon, "JA Solar to Supply Jabil with 400 Megawatts of Solar Power Cells," *Bloomberg*, April 4, 2011.

[22] A portion of U.S. imports from Mexico are likely thin film modules. United Solar has a plant in Mexico with an annual module production capacity of 130 MW. USITC Dataweb/USDOC (accessed November 11, 2011); Baja California Solar Industry brochure.

[23] The PV market in Mexico totaled only 5.6 MW in 2010. Mexico does not have a specific subheading for PV products, but exports in the broader HS 6-digit subheading, HS 8541.40, totaled $714.0 million in 2010, of which 95 percent were exported to the United States. More than 99 percent of 2010 U.S. PV imports from Mexico were modules. USITC Dataweb/USDOC (accessed November 11, 2011); Global Trade Information Service, Inc. (GTIS), Global Trade Atlas Database (accessed November 12, 2011); International Energy Agency, Photovoltaic Power Systems Programme, *Trends in Photovoltaic Applications*, Preliminary Statistical Data, 2011, p. 3.

[24] Baja California Solar Industry brochure; SunPower, "SunPower Announces New Solar Panel Manufacturing Facility," News release, August 5, 2011; ERDM Web site, http://erdmsolar.com/English/who-we-are/technology.html (accessed November 14, 2011); Solartec Web site, http://www.solartecmexico.com (accessed November 14, 2011); SANYO, "Sanyo Celebrates Grand Opening of New Monterrey Solar Module Assembly Manufacturing Plant with Ceremony," News release, November 4, 2009; SunPower, "SunPower Announces Multi-Year Manufacturing Agreement With Jabil Circuit, Inc.," News release, June 8, 2009; Andrew Herndon, "JA Solar to Supply Jabil with 400 Megawatts of Solar Power Cells," *Bloomberg*, April 4, 2011.

Japan

Japan was the third largest nonsubject CSPV cell producer and the second largest nonsubject supplier to the U.S. market in 2010. U.S. PV imports from Japan increased from $253.4 million in 2008 to $308.8 million in 2010. Imports increased to $313.8 million in the first nine months of 2011, up from $190.9 million in the same period in 2010.[25]

Japanese companies typically produce CSPV cells in Japan and assemble modules either in Japan or close to major markets (table VII-14). Japanese CSPV cell production is led by four companies, Kyocera, Mitsubishi Electric, Sanyo, and Sharp, of which Kyocera and Sharp were among the top ten global CSPV cell producers in 2010. A number of companies have smaller scale manufacturing, primarily of modules, in Japan. During 2008 to 2010, Japanese CSPV cell production *** to 1,880 MW. Overall, however, the share of global CSPV cell production accounted for by Japanese producers *** to 7.7 percent in 2010.[26] A significant portion of Japanese production is likely exported, as the Japanese PV market totaled 990 MW, significantly less than CSPV production, and some of that demand was met through the $919.5 million in Japanese PV imports in 2010 and domestic thin film production.[27]

Table VII-14
Japanese production of CSPV cells by company, 2008–2010, and cell and module production locations

Company	CSPV cell production				CSPV module production locations
	2008	2009	2010	Production locations	
	megawatts				
Kyocera	***	400.0	650.0	Japan	China, Czech Republic, Japan, Mexico, United States
Mitsubishi Electric	***	120.0	210.0	Japan	Japan
Sanyo	***	260.0	300.0	Japan	Hungary, Japan, Mexico
Sharp	***	501.0	710.0	Japan	Japan, United Kingdom, United States
Clean Venture 21	***	10.0	10.0	Japan	Not available
Total	***	1,291.0	1,880.0		

Source: Petition, Exhibit I-10, "Year of the Tiger," Photon International, March 2011, p. 199, 211; ***; "Sharp Reviews Llay Factory Plan Over Solar Subsidy Cuts," BBC News, November 16, 2011, http://www.bbc.co.uk/news/uk-wales-north-east-wales-15760139 (accessed November 21, 2011); Sharp, "Sharp Solar Modules Qualify for 'Buy American'"; SANYO Electric Co., Ltd., "Sanyo Celebrates Grand Opening of New Monterrey Solar Module Assembly Manufacturing Plant with Ceremony," News release, November 4, 2009; Kyocera Corp., Form 20-F", June 30, 2010, p. 17; Mitsubishi Electric Web site, http://www.mitsubishielectric.com/bu/solar/overview/pvplant.html (accessed November 14, 2011); Clean Venture 21 Web site, http://www.cv21.co.jp/en/profile/outline.php (accessed November 17, 2011).

[25] Import data may include nonsubject products. USITC Dataweb/USDOC (accessed November 11, 2011); Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 206.

[26] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 190, 199, 206, 211; ***; Masamichi Yamamoto and Osamu Ikki, "National Survey Report of PV Power Applications in Japan 2010," June 17, 2011, p. 27.

[27] Japan has a specific import provision in its tariff schedule for PV cells (8541.40.020), but does not have a specific export provision. Petition, Exhibit I-15, *Global Market Outlook for Photovoltaics until 2015*, p. 9; GTIS, Global Trade Atlas Database (accessed November 12, 2011).

Taiwan

Taiwan was the largest nonsubject CSPV producer in 2010 and the third largest nonsubject supplier to the U.S. market. U.S. imports from Taiwan increased from $176.3 million in 2008 to $276.8 million in 2010, though they decreased from $212.6 million in the first three quarters of 2010 to $108.2 million in the same period in 2011. Cell imports from Taiwan declined both as a share of U.S. imports and in terms of value during 2008–10, falling from $169.1 million in 2008 to $73.0 million in 2010.[28]

Taiwan's overall PV cell production increased from *** to 3,308 MW in 2010 and its share of global CSPV cell production *** to 13.6 percent.[29] Two Taiwan-based companies, Gintech and Motech (which also has production outside of Taiwan), were among the top ten global suppliers of CSPV cells in 2010 and eight companies produced at least 100 MW in 2010 (table VII-15).[30] Taiwan's CSPV industry is concentrated in cell production, though some companies have vertically integrated into module production. No Taiwanese companies are among the top ten global producers of CSPV modules.[31]

Table VII-15
CSPV cell production in Taiwan, 2008–2010

Company	2008	2009	2010
		(megawatts)	
DelSolar	***	88.8	125.0
E-Ton Solar	***	220.0	420.0
Gintech	***	368.0	827.0
Motech	***	296.0	710.0
Neo Solar Power	***	201.0	545.0
Solartech Energy	***	132.0	260.0
Sunrise Global Solar Energy	***	17.0	120.0
Tainergy Tech	***	45.0	100.0
Other	***	72.6	201.0
Total	***	1,440.4	3,308.0

Note: Does not include production by thin film producers Auria Solar, GET, Kenmos Photovoltaic, Sinonar, Sun Well Solar, Sunner Solar, and Sunshine PV. For Big Sun, low end of estimated production range.

Source: Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 200–201, 206; ***.

Taiwan has a small domestic market, with only 12 MW in installations in 2010, so most production is exported.[32] Taiwan's PV exports increased from $2.6 billion in 2008 to $4.7 billion in 2010

[28] Import data may include nonsubject products. USITC Dataweb/USDOC (accessed November 11, 2011); Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 206.

[29] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 206; ***.

[30] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 200–201, 206, 214.

[31] Jonathan Gifford and Shamsiah Ali-Oettinger, "Global Ambitions," *PV Magazine* no. 9 (2011); Mehta, "PV News Annual Data Collection Results," May 9, 2011.

[32] Petition, Exhibit I-15, *Global Market Outlook for Photovoltaics until 2015*, p. 9–10.

and from $1.9 billion in the first half of 2010 to $2.5 billion in the first half of 2011. Taiwan's largest export market in 2010 was China, which accounted for almost $1 billion in Taiwanese exports.[33]

Philippines

The Philippines is among the leading suppliers to the U.S. market due to the manufacturing presence of SunPower. SunPower accounted for all 558 MW of CSPV cell production in the Philippines in 2010, and also has 220 MW of CSPV module production capacity in the Philippines.[34] U.S. module imports from the Philippines increased from $140.9 million in 2008 to $174.1 million in 2009, before falling to $28.3 million in 2010. However, through the first nine months of 2011, U.S. PV imports from the Philippines totaled $165.8 million.[35]

Germany

Germany was the second largest nonsubject producer of CSPV cells in 2010 and the fifth largest supplier of PV cells and modules to the U.S. market during 2008–10. U.S. PV imports from Germany fell from $172.5 million in 2008 to $86.0 million in 2010, but were up from $55.3 million in the first nine months of 2010 to $108.9 million in the first nine months of 2011.[36]

Overall German CSPV cell production increased from 1,221 MW in 2008 to 1,931 MW in 2010, but its share of global production *** to 7.9 percent. CSPV module production *** from 914 MW in 2008 to *** (table VII-16).[37] Germany had the largest global PV market in 2010, but it is also a major PV exporter, with most of its exports going to other EU members.[38]

[33] Trade in products in 8541.40.3000, "solar cells," and 8541.40.4000, "photovoltaic cells whether or not assembled into modules," in Taiwan's tariff schedule. Export data may include nonsubject products. GTIS, Global Trade Atlas Database (accessed November 12, 2011).

[34] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 199, 206; SunPower, "Form 10-K," February 28, 2011, p. 9.

[35] Import data may include nonsubject products. USITC Dataweb/USDOC (accessed November 11, 2011).

[36] Import data may include nonsubject products. USITC Dataweb/USDOC (accessed November 11, 2011); Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 206.

[37] Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 201–202, 206; Lothar Wissing, "National Survey Report of PV Power Applications in Germany 2008," May 2009, 16; ***

[38] PV cells and modules are included in 8541.40.90, "photosensitive semiconductor devices, including photovoltaic cells," in the EU Common Customs Tariff. German exports in this provision, which is not specific to PV, totaled $7.7 billion in 2010, with 77 percent going to the top six export markets—Italy, the Czech Republic, France, Spain, the Netherlands, and Greece. GTIS, Global Trade Atlas Database (accessed November 12, 2011); Petition, Exhibit I-15, *Global Market Outlook for Photovoltaics until 2015*, p. 10.

Table VII-16
CSPV cell and module production in Germany, 2008–10

	Cells			Modules		
	2008	2009	2010	2008	2009	2010
	(megawatts)					
Aleo	0.0	0.0	0.0	100.0	***	***
Arise Technologies	13.0	15.8	85.0	0.0	***	***
Bosch	140.0	200.0	385.0	0.0	***	***
Centrosolar	0.0	0.0	0.0	76.0	***	***
Conergy	50.0	100.0	210.0	60.0	***	***
Q-Cells	585.0	551.0	470.0	0.0	***	***
Scheuten	20.0	0.0	0.0	81.0	***	***
Schott Solar	120.0	229.0	320.0	0.0	***	***
SolarWorld	170.0	200.0	200.0	140.0	***	***
Solar-Fabrik	0.0	0.0	0.0	70.0	***	***
Solarwatt	13.0	0.0	0.0	107.0	***	***
Solon	0.0	0.0	0.0	120.0	***	***
Sovello	80.0	65.0	145.0	80.0	***	***
Sunways	30.0	67.0	116.0	0.0	***	***
Other	0.0	0.0	0.0	80.0	***	***
Total	1,221.0	1,427.8	1,931.0	914.0	***	***

Source: *** Lothar Wissing, "National Survey Report of PV Power Applications in Germany 2008," May 2009, p. 16; Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 201–202, 206.

Malaysia

Malaysia was the sixth largest nonsubject source of U.S. imports during 2008–10. U.S. imports from Malaysia increased from less than $1 million in 2008 to $148.1 million in 2010, and were up from $139.8 million in the first nine months of 2010 to $309.8 million in the first nine months of 2011, making Malaysia the third largest source of nonsubject imports through the third quarter of 2011. The majority of Malaysia's production is thin film products, with 933 MW of thin film cell production and 474 MW of CSPV cell production in 2010.[39] Malaysia's domestic market was less than 2 MW in 2010, so most production was exported.[40]

[39] Import data may include nonsubject products. USITC Dataweb/USDOC (accessed November 11, 2011); Petition, Exhibit I-10, "Year of the Tiger," *Photon International*, March 2011, p. 199, 206.

[40] International Energy Agency, Photovoltaic Power Systems Programme, *Trends in Photovoltaic Applications*, Preliminary Statistical Data, 2011, p. 3.

APPENDIX A

FEDERAL REGISTER NOTICES

- Effects to endangered, threatened, and special status plants and animal species;
- Visual intrusions to Grand Canyon National Park visitors;
- Noise disruptions to Grand Canyon National Park visitors;
- Effects to cultural resources and Traditional Cultural Properties;
- Potential public health effects due to exposure to uranium; and
- Effects to the local, regional, or national economy.

A Draft EIS was released for public review and comment on February 18, 2011. The Draft EIS considered these issues in its analysis of four alternatives. Alternative A was the No Action Alternative, under which no lands would be withdrawn and mineral exploration and mining would continue throughout the Proposed Withdrawal area in accordance with existing laws, regulations, and land use plans. Alternative B, which was the Proposed Action, was a withdrawal for 20 years, subject to valid existing rights, of approximately 1,010,776 acres in three parcels from location and entry under the 1872 Mining Law, but not the mineral leasing, geothermal leasing, mineral materials, or public land laws. Two of the three parcels are north of Grand Canyon National Park on BLM-managed Arizona Strip lands and the North Kaibab Ranger District of the Kaibab National Forest, and the remaining parcel is south of the Grand Canyon on the Tusayan Ranger District of the Kaibab National Forest. Alternative C was a withdrawal of approximately 652,986 acres from the 1872 Mining Law for 20 years, subject to valid existing rights. This alternative would withdraw the largest contiguous area identified on resource location maps with concentrations of cultural, hydrologic, recreational, visual, and biological resources which could be adversely affected by locatable mineral exploration and mining. As with the Proposed Action, Alternative C would not prevent any other development under the mineral leasing, geothermal leasing, mineral materials, or public land laws. Alternative D was a withdrawal of 300,681 acres from the 1872 Mining Law for 20 years, subject to valid existing rights. This alternative would withdraw the contiguous area identified on resource location maps where there is the highest concentration of overlapping cultural, hydrologic, recreational, visual, and biological resources, which could be adversely affected by locatable mineral exploration and mining. As with the Proposed Action, Alternative D would not prevent any other development under the mineral leasing, geothermal leasing, mineral materials, or public land laws.

The Draft EIS analyzed the potential effects of the alternatives on resources within, and in the vicinity of, the potential withdrawal areas as well as within, and in the vicinity of, the Grand Canyon National Park. Analysis was conducted for potential effects to air quality, geology and minerals, ground and surface water resources, soil resources, vegetation resources, fish and wildlife in general, special status plant and animal species, including those listed as threatened or endangered, visual resources, soundscapes, cultural resources, American Indian resources, wilderness, recreation, social, and economic conditions.

The public comment period was originally set for 45 days, and was subsequently extended for 30 days, resulting in a 75-day comment period concluding on May 4, 2011. During the public comment period, 296,339 comment submittals were received. From these comment letters, approximately 1,400 individual substantive comments were extracted.

In accordance with Council on Environmental Quality regulations (40 CFR 1503.4) and BLM procedures in Handbook H–1790–1, substantive public comments have been responded to in the Final EIS and appropriate revisions have been made. Chapter 5 of the Final EIS contains details of the public review and comment process and responses to substantive comments received during the public comment period.

Revisions to the EIS from Draft to Final were primarily editorial or to improve the document's clarity.

Changes to the EIS Include

- Identification of the Proposed Action as the Preferred Alternative;
- An adjustment to the boundary of the North Parcel to exclude the Kanab Creek Wilderness Area, which is already withdrawn by Congress. Acreage calculations were adjusted in each withdrawal alternative to account for the boundary change. In the Final EIS, the North Parcel has been adjusted to 549,995 acres that would be withdrawn in Alternative B, 351,965 acres that would be withdrawn in Alternative C, and 102,581 acres that would be withdrawn in Alternative D;
- An adjustment to the South Parcel Boundary excluding 40 acres within the Navajo Nation that was erroneously included. In addition, more current Federal mineral data may also cause adjusted acreage figures. Acreage calculations were adjusted for Alternative B in the Final EIS to 322,096 acres that would be withdrawn, 206,603 acres that would be withdrawn in Alternative C, and 133,273 acres that would be withdrawn in Alternative D;
- Due to the above boundary changes and acreage recalculations, the total acres of Federal minerals that would be withdrawn in each withdrawal alternative has changed. Alternative B would withdraw a total of 1,006,545, Alternative C would withdraw a total of 648,802, and Alternative D would withdraw a total of 292,086 acres;
- Detailed legal descriptions of the withdrawal alternatives by Parcel have been included in Appendix C;
- Numerous edits to improve the clarity of the analysis; and
- A further refined economic analysis.

Twelve agencies and two American Indian tribes have valid Cooperating Agency agreements with the BLM, including the U.S. Forest Service, Kaibab National Forest; National Park Service, Grand Canyon National Park; U.S. Fish and Wildlife Service; U.S. Geological Survey; Arizona Game and Fish Department; Arizona Geological Survey; Arizona State Lands Department; Hualapai Tribe; Kaibab Band of Paiute Indians; Coconino County, Arizona; Mohave County, Arizona; Kane County, Utah; San Juan County, Utah; and Washington County, Utah.

Comments on the Draft EIS received from the public and internal review were considered and incorporated as appropriate into the Final EIS. Public comments resulted in the addition of clarifying text and some refined analysis.

Authority: 40 CFR 1506.6, 40 CFR 1506.10, 43 CFR 2091.5.

Raymond Suazo,

Acting Arizona State Director.

[FR Doc. 2011–27752 Filed 10–26–11; 8:45 am]

BILLING CODE 4310–32–P

INTERNATIONAL TRADE COMMISSION

[Investigation Nos. 701–TA–481 and 731–TA–1190 (Preliminary)]

Crystalline Silicon Photovoltaic Cells and Modules From China; Institution of Antidumping and Countervailing Duty Investigations and Scheduling of Preliminary Phase Investigations

AGENCY: United States International Trade Commission.

ACTION: Notice.

SUMMARY: The Commission hereby gives notice of the institution of investigations

and commencement of preliminary phase antidumping and countervailing duty investigations Nos. 701–TA–481 and 731–TA–1190 (Preliminary) under sections 703(a) and 733(a) of the Tariff Act of 1930 (19 U.S.C. 1671b(a) and 1673b(a)) (the Act) to determine whether there is a reasonable indication that an industry in the United States is materially injured or threatened with material injury, or the establishment of an industry in the United States is materially retarded, by reason of imports from China of crystalline silicon photovoltaic cells and modules, provided for in subheadings 8541.40.60 (statistical reporting numbers 8541.40.6020 or 8541.40.6030) of the Harmonized Tariff Schedule of the United States, that are alleged to be sold in the United States at less than fair value and alleged to be subsidized by the Government of China. These goods may also be imported as parts or subassemblies of goods provided for in subheadings 8501.61.00.00 or 8507.20.80 of the Harmonized Tariff Schedule of the United States. Unless the Department of Commerce extends the time for initiation pursuant to sections 702(c)(1)(B) or 732(c)(1)(B) of the Act (19 U.S.C. 1671a(c)(1)(B) or 1673a(c)(1)(B)), the Commission must reach a preliminary determination in antidumping and countervailing duty investigations in 45 days, or in this case by December 5, 2011. The Commission's views are due at Commerce within five business days thereafter, or by December 12, 2011.

For further information concerning the conduct of these investigations and rules of general application, consult the Commission's Rules of Practice and Procedure, part 201, subparts A through E (19 CFR part 201), and part 207, subparts A and B (19 CFR part 207).

DATES: *Effective Date:* October 19, 2011.

FOR FURTHER INFORMATION CONTACT: Christopher Cassise (202–708–5408), Office of Investigations, U.S. International Trade Commission, 500 E Street, SW., Washington, DC 20436. Hearing-impaired persons can obtain information on this matter by contacting the Commission's TDD terminal on 202–205–1810. Persons with mobility impairments who will need special assistance in gaining access to the Commission should contact the Office of the Secretary at 202–205–2000. General information concerning the Commission may also be obtained by accessing its internet server (*http://www.usitc.gov*). The public record for these investigations may be viewed on the Commission's electronic docket (EDIS) at *http://edis.usitc.gov.*

SUPPLEMENTARY INFORMATION:

Background. These investigations are being instituted in response to a petition filed on October 19, 2011, by Solar World Industries America, Hillsboro, OR.

Participation in the investigations and public service list. Persons (other than petitioners) wishing to participate in the investigations as parties must file an entry of appearance with the Secretary to the Commission, as provided in sections 201.11 and 207.10 of the Commission's rules, not later than seven days after publication of this notice in the **Federal Register**. Industrial users and (if the merchandise under investigation is sold at the retail level) representative consumer organizations have the right to appear as parties in Commission antidumping and countervailing duty investigations. The Secretary will prepare a public service list containing the names and addresses of all persons, or their representatives, who are parties to these investigations upon the expiration of the period for filing entries of appearance.

Limited disclosure of business proprietary information (BPI) under an administrative protective order (APO) and BPI service list. Pursuant to section 207.7(a) of the Commission's rules, the Secretary will make BPI gathered in these investigations available to authorized applicants representing interested parties (as defined in 19 U.S.C. 1677(9)) who are parties to the investigations under the APO issued in the investigations, provided that the application is made not later than seven days after the publication of this notice in the **Federal Register**. A separate service list will be maintained by the Secretary for those parties authorized to receive BPI under the APO.

Conference. The Commission's Director of Investigations has scheduled a conference in connection with these investigations for 9:30 a.m. on November 8, 2011, at the U.S. International Trade Commission Building, 500 E Street, SW., Washington, DC. Requests to appear at the conference should be filed with the Office of the Secretary (*William.bishop@usitc.gov* and *Sharon.bellamy@usitc.gov*) on or before November 4, 2011. Parties in support of the imposition of countervailing duty and antidumping duties in these investigations and parties in opposition to the imposition of such duties will each be collectively allocated one hour within which to make an oral presentation at the conference. A nonparty who has testimony that may aid the Commission's deliberations may request permission to present a short statement at the conference.

Written submissions.—As provided in sections 201.8 and 207.15 of the Commission's rules at the date of this notice, any person may submit to the Commission on or before November 14, 2011, a written brief containing information and arguments pertinent to the subject matter of the investigations. Parties may file written testimony in connection with their presentation at the conference no later than three days before the conference. If briefs or written testimony contain BPI, they must conform with the requirements of sections 201.6, 207.3, and 207.7 of the Commission's rules. The Commission's rules do not authorize filing of submissions with the Secretary by facsimile or electronic means, except to the extent permitted by section 201.8 of the Commission's rules, as amended, 67 FR 68036 (November 8, 2002). Even where electronic filing of a document is permitted, certain documents must also be filed in paper form, as specified in II (C) of the Commission's Handbook on Electronic Filing Procedures, 67 FR 68168, 68173 (November 8, 2002). Please be aware that the Commission's rules with respect to electronic filing have been amended. The amendments will take effect on November 7, 2011. *See* 74 FR 61937 (Oct. 6, 2011). For those materials submitted to the Commission in this proceeding on and after the effective date of these amendments please refer to 74 FR 61937 (Oct. 6, 2011) and the newly revised Commission's Handbook on E-Filing.

In accordance with sections 201.16(c) and 207.3 of the rules, each document filed by a party to the investigations must be served on all other parties to the investigations (as identified by either the public or BPI service list), and a certificate of service must be timely filed. The Secretary will not accept a document for filing without a certificate of service.

Authority: These investigations are being conducted under authority of title VII of the Tariff Act of 1930; this notice is published pursuant to section 207.12 of the Commission's rules.

By order of the Commission.

James R. Holbein,

Secretary to the Commission.

[FR Doc. 2011–27761 Filed 10–26–11; 8:45 am]

BILLING CODE 7020–02–P

Comment 3: Jiheng's Prior Administrative Review Rate is not Representative of the Current Behavior of Arch China and Zhucheng.

Comment 4: Exclusion of *De Minimis* Rates from Consideration as Separate Rates for Non-Reviewed Companies.

Comment 5: Use of Multiple Separate Rates.

Comment 6: Calculation of Entered Value.

Comment 7: Calculation of Inland Freight.

Comment 8: Per-Unit Assessment Rate in Draft Liquidation Instructions.

Comment 9: Zeroing Methodology in Reviews.

Comment 10: Kangtai's New Factual Submission Should Not Have Been Rejected.

[FR Doc. 2011–29621 Filed 11–15–11; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

International Trade Administration

[A–570–979]

Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules, From the People's Republic of China: Initiation of Antidumping Duty Investigation

Dates: *Effective Date:* November 16, 2011.

FOR FURTHER INFORMATION CONTACT: Jeffrey Pedersen or Drew Jackson, AD/CVD Operations, Office 4, (202) 482–2769 or (202) 482–4406, respectively; Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue NW., Washington, DC 20230.

SUPPLEMENTARY INFORMATION: On October 19, 2011, the Department of Commerce (''Department'') received a petition concerning imports of crystalline silicon photovoltaic cells, whether or not assembled into modules (''solar cells'') from the People's Republic of China (''PRC'') filed in proper form by SolarWorld Industries America Inc. (''Petitioner'').[1] On October 21, 24, and 31, and November 4, 2011, the Department issued supplemental questionnaires requesting information and clarification of certain areas of the Petition. Petitioner timely filed additional information on October 25, 2011, (''Supplement I'') October 28, 2011, (''Supplement II–A—General Issues'' and ''Supplement II–B—AD Issues''), November 2, 2011, (''Supplement III''), November 4, 2011 (''Supplement IV''), and November 7, 2011 (''Supplement V–A—AD Issues'' and (''Supplement V–B—General Issues'').

Period of Investigation

The period of investigation (''POI'') is April 1, 2011, through September 30, 2011.[2]

The Petition

In accordance with section 732(b) of the Tariff Act of 1930, as amended (''the Act''), Petitioner alleges that imports of solar cells from the PRC are being, or are likely to be, sold in the United States at less than fair value, within the meaning of section 731 of the Act, and that such imports are materially injuring, or threatening material injury to, an industry in the United States. Also, consistent with section 732(b)(1) of the Act, the Petition is accompanied by information reasonably available to Petitioner supporting its allegations.

The Department finds, as an interested party, as defined in section 771(9)(C) of the Act, that Petitioner filed the Petition on behalf of the domestic industry and has demonstrated sufficient industry support with respect to the Petition (see ''Determination of Industry Support for the Petition'' section below).

Scope of Investigation

The products covered by the scope of this investigation are solar cells from the PRC. For a full description of the scope of the investigation, see ''Scope of Investigation'' in Appendix I of this notice.

Comments on Scope of Investigation

During our review of the Petition, we discussed the scope with Petitioner to ensure that it is an accurate reflection of the products for which the domestic industry is seeking relief. Petitioner submitted revised scope language on November 4, 2011, and November 7, 2011. The November 7, 2011, submission included various revisions. Among these revisions was the following substantive provision:

> These proceedings cover crystalline silicon PV cells, whether exported directly to the United States or via third countries; crystalline silicon PV modules/panels produced in the PRC, regardless of country of manufacture of the cells used to produce the modules or panels, and whether exported directly to the United States or via third countries, and crystalline silicon PV modules or panels produced in a third country from crystalline silicon PV cells manufactured in the PRC, whether exported directly to the United States or via third countries.

The Department has not adopted this specific revision recommended by Petitioner for the purposes of initiation.[3] Because Petitioner's November 7, 2011 scope submission was filed one day prior to the statutory deadline for initiation, the Department has had neither the time nor the administrative resources to evaluate Petitioner's proposed language regarding merchandise produced using inputs from third-country markets, or merchandise processed in third-country markets. Petitioner's November 7, 2011, scope submission also contained the following language:

> Unless explicitly excluded from the scope of these proceedings, crystalline silicon PV cells possessing the physical characteristics of subject merchandise are covered by these proceedings.

The Department has not adopted this specific revision recommended by Petitioner for the purposes of initiation because this language is superfluous, and appears to add no additional clarification as to the description of merchandise covered by the scope of the Petition. However, as discussed in the preamble to the regulations,[4] we are setting aside a period for interested parties to raise issues regarding product coverage. The Department encourages interested parties to submit such comments by Monday, November 28, 2011, which is 20 calendar days from the signature date of this notice. All comments must be filed on the records of both the PRC antidumping duty investigation as well as the PRC countervailing duty investigation. Comments should be filed electronically using Import Administration's Antidumping and Countervailing Duty Centralized Electronic Service System (''IA ACCESS''). The period of scope consultations is intended to provide the Department with ample opportunity to consider all comments and to consult with parties prior to the issuance of the preliminary determination.

Comments on Product Characteristics for Antidumping Duty Questionnaires

We are requesting comments from interested parties regarding the appropriate physical characteristics of solar cells to be reported in response to the Department's antidumping questionnaires. This information will be used to identify the key physical characteristics of the merchandise under consideration in order to more

[1] See Petition for the Imposition of Antidumping and Countervailing Duties: Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled into Modules, from the People's Republic of China dated October 19, 2011 (''Petition'').

[2] See 19 CFR 351.204(b)(1).

[3] We note that the Department has independent authority to determine the scope of its investigations. See *Diversified Products Corp.* v. *United States,* 572 F. Supp. 883, 887 (CIT 1983).

[4] *See Antidumping Duties; Countervailing Duties; Final Rule,* 62 FR 27296, 27323 (May 19, 1997).

accurately report the relevant factors of production, as well as to develop appropriate product comparison criteria.

Interested parties may provide information or comments that they believe are relevant to the development of an accurate listing of physical characteristics. Specifically, they may provide comments as to which characteristics are appropriate to use in defining unique products. We note that it is not always appropriate to use all product characteristics to define products. We base product comparison criteria on meaningful commercial differences among products. In other words, while there may be some physical product characteristics utilized by manufacturers to describe solar cells, it may be that only a select few product characteristics take into account commercially meaningful physical characteristics.

In order to consider the suggestions of interested parties in developing and issuing the antidumping duty questionnaires, we must receive comments filed electronically using IA ACCESS by November 28, 2011. Additionally, rebuttal comments must be received by December 5, 2011.

Determination of Industry Support for the Petition

Section 732(b)(1) of the Act requires that a petition be filed on behalf of the domestic industry. Section 732(c)(4)(A) of the Act provides that a petition meets this requirement if the domestic producers or workers who support the petition account for: (i) At least 25 percent of the total production of the domestic like product; and (ii) more than 50 percent of the production of the domestic like product produced by that portion of the industry expressing support for, or opposition to, the petition. Moreover, section 732(c)(4)(D) of the Act provides that, if the petition does not establish support of domestic producers or workers accounting for more than 50 percent of the total production of the domestic like product, the Department shall: (i) Poll the industry or rely on other information in order to determine if there is support for the petition, as required by subparagraph (A); or (ii) determine industry support using a statistically valid sampling method to poll the industry.

Section 771(4)(A) of the Act defines the ''industry'' as the producers as a whole of a domestic like product. Thus, to determine whether a petition has the requisite industry support, the statute directs the Department to look to producers and workers who produce the domestic like product. The U.S. International Trade Commission (''ITC''), which is responsible for determining whether ''the domestic industry'' has been injured, must also determine what constitutes a domestic like product in order to define the industry. While both the Department and the ITC must apply the same statutory definition regarding the domestic like product (see section 771(10) of the Act), they do so for different purposes and pursuant to a separate and distinct authority. In addition, the Department's determination is subject to limitations of time and information. Although this may result in different definitions of the like product, such differences do not render the decision of either agency contrary to law.[5]

Section 771(10) of the Act defines the domestic like product as ''a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation under this title.'' Thus, the reference point from which the domestic like product analysis begins is ''the article subject to an investigation'' (*i.e.,* the class or kind of merchandise to be investigated, which normally will be the scope as defined in the petition).

With regard to the domestic like product, Petitioner does not offer a definition of domestic like product distinct from the scope of the investigation. Based on our analysis of the information submitted on the record, we have determined that solar cells constitute a single domestic like product and we have analyzed industry support in terms of that domestic like product.[6]

In determining whether Petitioner has standing under section 732(c)(4)(A) of the Act, we considered the industry support data contained in the Petition with reference to the domestic like product as defined in the ''Scope of Investigation'' section above. To establish industry support, Petitioner provided its production volume of the domestic like product in 2010, and compared this to the estimated total production volume of the domestic like product for the entire domestic industry.[7] Petitioner estimated 2010 production volume of the domestic like product by non-petitioning companies based on production data published by an industry source, Photon International, along with affidavits of support for the petition, and its knowledge of the industry. We have relied upon data Petitioner provided for purposes of measuring industry support.[8]

On November 2, 2011, in consultations with the Department held with respect to the companion countervailing duty case, the Government of China raised the issue of industry support.[9] In addition, on November 8, 2011, we received two submissions on behalf of Chinese producers/exporters and affiliated importers of Solar Cells, interested parties to this proceeding as defined in section 771(9)(A) of the Act, questioning the industry support calculation.[10]

Based on information provided in the Petition, supplemental submissions, and other information readily available to the Department, we determine that the Petitioner has met the statutory criteria for industry support under section 732(c)(4)(A)(i) of the Act because the domestic producers (or workers) who support the Petition account for at least 25 percent of the total production of the domestic like product. Because the Petition did not establish support from domestic producers (or workers) accounting for more than 50 percent of the total production of the domestic like product, the Department was required to take further action in order to evaluate industry support.[11] In this case, the Department was able to rely on other information, in accordance with section 732(c)(4)(D)(i) of the Act, to determine industry support.[12] Based on information provided in the Petition, supplemental submissions, and additional information obtained by the Department, the domestic producers and workers have met the statutory criteria for industry support under section 732(c)(4)(A)(ii) of the Act because the domestic producers (or workers) who support the Petition account for more than 50 percent of the

[5] See *USEC, Inc.* v. *United States,* 132 F. Supp. 2d 1, 8 (CIT 2001), citing *Algoma Steel Corp., Ltd.* v. *United States,* 688 F. Supp. 639, 644 (CIT 1988), *aff'd* 865 F.2d 240 (Fed. Cir. 1989), *cert. denied* 492 U.S. 919 (1989).

[6] For a discussion of the domestic like product analysis in this case, see Antidumping Duty Investigation Initiation Checklist: Crystalline Silicon Photovoltaic Cells from the People's Republic of China (''Initiation Checklist''), at Attachment II, Analysis of Industry Support for the Petitions Covering Solar Cells from the People's Republic of China, on file in the Central Records Unit (CRU), Room 7046 of the main Department of Commerce building.

[7] *See* Initiation Checklist at Attachment II.

[8] For further discussion, *see* Initiation Checklist at Attachment II.

[9] *See* Memorandum to the File from Meredith Rutherford, dated November 8, 2011, titled ''Placing Consultations Memorandum on the AD Record''; *see also* Initiation Checklist at Attachment II.

[10] For further discussion of these submissions *see* Initiation Checklist at Attachment II.

[11] *See* section 732(c)(4)(D) of the Act.

[12] *See* Initiation Checklist at Attachment II.

production of the domestic like product produced by that portion of the industry expressing support for, or opposition to, the Petition. Accordingly, the Department determines that the Petition was filed on behalf of the domestic industry within the meaning of section 732(b)(1) of the Act.[13]

The Department finds that Petitioner filed the Petition on behalf of the domestic industry because it is an interested party as defined in section 771(9)(C) of the Act and it has demonstrated sufficient industry support with respect to the antidumping duty investigation that it is requesting the Department initiate.[14]

Allegations and Evidence of Material Injury and Causation

Petitioner alleges that the U.S. industry producing the domestic like product is being materially injured, or is threatened with material injury, by reason of the imports of the subject merchandise sold at less than normal value (''NV''). In addition, Petitioner alleges that subject imports exceed the negligibility threshold provided for under section 771(24)(A) of the Act.

Petitioner contends that the industry's injured condition is illustrated by reduced market share, reduced shipments, unused capacity, underselling and price depression or suppression, reduced employment, a decline in financial performance, lost sales and revenue, and an increase in import penetration.[15] We have assessed the allegations and supporting evidence regarding material injury, threat of material injury, and causation, and we have determined that these allegations are properly supported by adequate evidence and meet the statutory requirements for initiation.[16]

Allegations of Sales at Less Than Fair Value

The following is a description of the allegations of sales at less than fair value upon which the Department based its decision to initiate this investigation of imports of solar cells from the PRC. The sources of data for the deductions and adjustments relating to the U.S. price and the factors of production are also discussed in the Initiation Checklist.[17]

U.S. Price

Petitioner calculated constructed export price (''CEP'') based on sales offers of three types of solar cells to unaffiliated U.S. customers by the U.S. affiliates of three PRC producers of solar cells. Petitioners substantiated the U.S. price quotes with declarations.[18] Petitioners further provided a detailed description of the merchandise corresponding to the price quotes,[19] and an explanation and declaration of why the sales prices should be considered CEPs.[20] Based on stated sales and delivery terms, Petitioner adjusted these CEPs for discounts, freight, credit expenses, domestic brokerage and handling, ocean freight, CEP selling expenses, and CEP profit.[21]

Normal Value

Petitioner claims the PRC is a non-market economy (''NME'') country and that this designation remains in effect today.[22] The presumption of NME status for the PRC has not been revoked by the Department and, therefore, in accordance with section 771(18)(C)(i) of the Act, remains in effect for purposes of the initiation of this investigation. Accordingly, the NV of the product for the PRC investigation is appropriately based on factors of production valued in a surrogate market-economy country in accordance with section 773(c) of the Act. In the course of this investigation, all parties, including the public, will have the opportunity to provide relevant information related to the issues of the PRC's NME status and the granting of separate rates to individual exporters.

Petitioner contends that India is the appropriate surrogate country for the PRC because: (1) It is at a level of economic development comparable to that of the PRC and (2) it is a significant producer of identical merchandise and (3) that the availability and quality of data are good.[23] Based on the information provided by Petitioner, we believe that it is appropriate to use India as a surrogate country for initiation purposes. After initiation of the investigation, interested parties will have the opportunity to submit comments regarding surrogate country selection and, pursuant to 19 CFR 351.301(c)(3)(i), will be provided an opportunity to submit publicly available information to value factors of production within 40 days after the date of publication of the preliminary determination.

Petitioner calculated NV and the dumping margins using the Department's NME methodology as required by 19 CFR 351.202(b)(7)(i)(C) and 19 CFR 351.408. In calculating NV, Petitioner based the quantity of each of the inputs used to manufacture the domestic like product on reasonably available information, which Petitioner asserts that, to the best of its knowledge, is similar to the consumption of PRC producers.[24]

Petitioner valued most of the factors of production based on reasonably available, public surrogate country data, specifically, Indian import data from the Global Trade Atlas (''GTA'').[25] In addition, Petitioner made currency conversions, where necessary, based on the POI-average rupees/U.S. dollar exchange rate based on Federal Reserve exchange rates.[26] The Department determines that the surrogate values used by Petitioner are reasonably available and, thus, acceptable for purposes of initiation. With regard to the main input, Petitioner contends that solar grade polysilicon is a specialized product and used world market prices to value the input. Petitioner contends that Indian import data from the GTA did not adequately reflect the uniqueness of the input. Also, Petitioner valued silicon wafers using world market prices. The use of these data raises significant issues that the Department believes are better addressed in the context of the investigation. Therefore, for the purposes of this initiation, the Department finds that is more appropriate to rely on our standard methodology and use Indian import data to value polysilicon and solar wafers. During the course of the investigation, the Department will consider record information to determine the most appropriate surrogate value for polysilicon, solar wafers, and all other factors of production used to produce solar cells.

Petitioner determined energy costs using reasonably available information. Petitioner valued electricity using the Indian electricity rate for small,

[13] *See* Initiation Checklist at Attachment II.

[14] *Id.*

[15] *See* Volume I of the Petition, at 1–4, 25–44, and Exhibits I–6, I–8–9, I–14–16, I–17a, I–18a, I–19–20, I–21a, I–21b, I–22 and I–24, and Supplement II–A—General Issues, at 1–2.

[16] *See* Initiation Checklist at Attachment III, Injury.

[17] *See* Initiation Checklist, at 5–8.

[18] *See* Volume II of the Petition, at Exhibits II–1 and II–2.

[19] *See* Volume II of the Petition, at Exhibit II–3.

[20] *See* Volume II of the Petition, at 1 and Exhibit II–1.

[21] *See* Initiation Checklist at 5–6; *see also* Volume II of the Petition, at 2–16, and Exhibits II–I through II–15; *see also* Supplement I, at 19, and Exhibits 19–20, and Supplement II–B—AD Issues, at 1–7 and Exhibits 1, 4–7, and 9–11; *see also* Supplement V–A—AD Issues, at 1, 4, and Exhibit 1.

[22] *See* Volume II of the Petition, at 17.

[23] *See* Volume II of the Petition, at 18–19, and Supplement I, at 1–12.

[24] *See* Volume II of the Petition, at 20.

[25] *See* Initiation Checklist; *see also* Volume II of the Petition, at Exhibit II–21; *see also* Supplement V, at Exhibit 3.

[26] *See* Initiation Checklist; *see also* Volume II of the Petition, at Exhibit II–11; *see also* Supplement II–B—AD Issues at Exhibit 9.

medium, and large companies reported by the Central Electric Authority of the Government of India.[27]

Petitioner determined labor consumption, in hours, using reasonably available information. Petitioner valued labor using data collected by the International Labor Organization (''ILO'') and disseminated in Chapter 6A of the ILO Yearbook of Labor Statistics.[28] Petitioner adjusted labor costs using consumer price index data published by the International Monetary Fund.

Petitioner determined packing material consumption using reasonably available information and valued the relevant factors using data from GTA.[29]

Petitioner calculated factory overhead, selling, general and administrative expenses, and profit by using data from the 2009–2010 financial statement of Bharat Heavy Electricals Ltd., an Indian producer of solar cells.[30]

Fair Value Comparisons

Based on the data provided by Petitioner, there is reason to believe that imports of solar cells from the PRC are being, or are likely to be, sold in the United States at less than fair value. Based on a comparison of U.S. prices and NV calculated in accordance with section 773(c) of the Act, as described above, the estimated CEP dumping margins range from 49.88 percent and 249.96 percent.[31]

Initiation of Antidumping Duty Investigation

Based upon our examination of the Petition on solar cells from the PRC, the Department finds the Petition meets the requirements of section 732 of the Act. Therefore, we are initiating an antidumping duty investigation to determine whether imports of solar cells from the PRC are being, or are likely to be, sold in the United States at less than fair value. In accordance with section 733(b)(1)(A) of the Act and 19 CFR 351.205(b)(1), unless postponed, we will make our preliminary determination no later than 140 days after the date of this initiation.

Critical Circumstances

Petitioner alleges, based on trade statistics since August 2010 and prior knowledge of an impending trade case, that there is a reasonable basis to believe or suspect that critical circumstances exist with regard to imports of solar cells from the PRC.[32]

Section 733(e)(1) of the Act states that if a petitioner alleges critical circumstances, the Department will find that such circumstances exist, at any time after the date of initiation, when there is a reasonable basis to believe or suspect that under, subparagraph (A)(i), there is a history of dumping and there is material injury by reason of dumped imports in the United States or elsewhere of the subject merchandise, or (ii) the person by whom, or for whose account, the merchandise was imported knew or should have known that the exporter was selling the subject merchandise at less than its fair value and that there was likely to be material injury by reason of such sales, and (B) there have been massive imports of the subject merchandise over a relatively short period. Section 351.206(h) of the Department's regulations defines ''massive imports'' as imports that have increased by at least 15 percent over the imports during an immediately preceding period of comparable duration. Section 351.206(i) of the Department's regulations states that a relatively short period will normally be defined as the period beginning on the date the proceeding begins and ending at least three months later. But if the Department finds that importers, or exporters and producers, had reason to believe, at some time prior to the beginning of the proceeding, that a proceeding was likely, then the regulation permits the Department to consider a period of not less than three months from that earlier time.

With regard to the criteria of massive imports over a relatively short period of time, Petitioner argues that the Department should evaluate the level of imports during a period prior to the filing of the petition because importers and foreign exporters and producers had reason to believe that a dumping or countervailing duty proceeding was likely.[33] Petitioner contends that there were newspaper articles beginning in August 2009 that discussed unfair pricing on behalf of Chinese product.[34] Petitioner further notes that the very widely publicized closure of a large solar cell producer resulted in much media discussion of the effects of unfair trade in January 2011. Therefore, Petitioner states that ''the effects of any behavioral shifts of Chinese producers would be likely to manifest themselves in February 2011 as shipments of goods ordered in the days immediately following Evergreen's demise in January 2011 would not have reached the United States until February.'' [35] Thus, Petitioner demonstrates massive imports over a relatively short period of time by comparing imports of subject merchandise between the six-month period of August 2010 and January 2011 (base period) and the six-month period of February 2011 and July 2011 (comparison period). Based on Petitioner's calculation, imports surged 220 percent between base period and comparison period, which is greater than the 15 percent threshold defined in the Department's regulations.[36]

With regard to the requirement of history or knowledge of dumping, Petitioner alleges that importers knew, or should have known, that solar cells were being sold at less than fair value. While there have been no determinations of dumping of solar cells by the Chinese in any foreign markets, Petitioner's claim that the margins being calculated in the dumping allegation are at a level high enough to impute importer knowledge that merchandise was being sold at less than its fair value. The estimated dumping margins range between 49.88 and 249.96 percent.[37] These margins exceed the 25 percent threshold used by the Department to impute knowledge of dumping.[38] In addition, Petitioner references the media coverage discussing unfair pricing in the industry which indicates that importers had knowledge that Chinese companies were most likely selling at less than fair value.[39] With regard to injury, Petitioner acknowledges that there is no preliminary determination by the ITC at this time, however, Petitioner argues that in the past the Department ''has considered the extent of the increase in the volume of imports of the subject

[27] *See* Initiation Checklist; *see also* Volume II of the Petition, at 31, and Exhibit II–25.

[28] *See* Initiation Checklist; *see also* Volume II of the Petition, at 31 and Exhibit II–26.

[29] *See* Initiation Checklist; *see also* Volume II of the Petition, at Exhibit II–21; Supplement V–A—AD Issues at Exhibit 6.

[30] *See* Initiation Checklist; *see also* Supplement I, at 19, and Exhibit 20; *see also* Supplement V–A—AD Issues, at Exhibit AD Supp—3–3.

[31] *See* Initiation Checklist; *see also* Supplement V–A—AD Issues, at Exhibit AD—Supp—3–2.

[32] *See* Volume IV of the Petition, at 1, 7, and 10.

[33] *See* Volume IV of the Petition, at 3–9, and Exhibits IV–1 through IV–16; *see also* 19 CFR 351.206(i).

[34] *See* Volume IV of the Petition, at 4, and Exhibits IV–1 and IV–2.

[35] See Supplement II–A—General Issues, at 6.

[36] See Volume IV of the Petition, at 10–11; see also 19 CFR 351.206(h).

[37] See Volume IV of the Petition, at 11–12, and Volume II of the Petition; see also Initiation Checklist; see also Supplement V, at Exhibit 2.

[38] See *e.g., Final Determination of Sales at Less than Fair Value and Affirmative Determination of Critical Circumstances: Small Diameter Graphite Electrodes from the People's Republic of China,* 74 FR 2049 (Jan. 14, 2009) and accompanying Issue and Decisions Memorandum at Issue 4.

[39] See Volume IV of the Petition, at 12, and Exhibits IV–1 and IV–3.

merchandise, as well as the magnitude of the dumping margins, in determining whether a reasonable basis exists to impute knowledge that material injury was likely.''[40] Petitioner alleges that because imports have increased by 220 percent from base period to comparison period, and because the margins alleged in the Petition exceed the 25 percent threshold used by the Department to impute knowledge of dumping, there is therefore, adequate basis to determine that importers knew or should have known that material injury was likely due to the unfairly traded sales.[41]

Petitioner requests that the Department examine the information it has provided and make a preliminary finding of critical circumstances on an expedited basis, within 45 days of the filing of the Petition.[42] Section 732(e) of the Act states that when there is a reasonable basis to believe or suspect (1) there is a history of dumping in the United States or elsewhere of the subject merchandise, or (2) the person by whom, or for whose account, the merchandise was imported knew, or should have known, that the exporter was selling the subject merchandise at less than its fair value, the Department may request Customs and Border Protection (CBP) to compile information on an expedited basis regarding entries of the subject merchandise.

Taking into consideration the foregoing, we will analyze this matter further. We will monitor imports of solar cells from the PRC and we will request that CBP compile information on an expedited basis regarding entries of subject merchandise.[43] If, at any time, the criteria for a finding of critical circumstances are established, we will issue a critical circumstances finding at the earliest possible date.[44]

Targeted Dumping Allegations

On December 10, 2008, the Department issued an interim final rule for the purpose of withdrawing 19 CFR 351.414(f) and (g), the regulatory provisions governing the targeted dumping analysis in antidumping duty investigations, and the corresponding regulation governing the deadline for targeted dumping allegations, 19 CFR 351.301(d)(5).[45] The Department stated that ''{w}ithdrawal will allow the Department to exercise the discretion intended by the statute and, thereby, develop a practice that will allow interested parties to pursue all statutory avenues of relief in this area.''[46]

In order to accomplish this objective, if any interested party wishes to make a targeted dumping allegation in this investigation pursuant to section 777A(d)(1)(B) of the Act, such allegation is due no later than 45 days before the scheduled date of the preliminary determination.

Respondent Selection

Petitioner identified 75 PRC producers/exporters of solar cells. The Department will issue quantity and value questionnaires to each of the 75 producers/exporters of solar cells named in the Petition, and will make its respondent selection decision based on the responses to the questionnaires it receives. Parties that do not receive a quantity and value questionnaire from the Department may file a quantity and value questionnaire by the applicable deadline if they wish to be included in the pool of companies from which the Department will select mandatory respondents.

The Department requires that the respondents submit a response to both the quantity and value questionnaire and the separate-rate application by the respective deadlines in order to receive consideration for separate-rate status. On the date of the publication of this initiation notice in the **Federal Register**, the Department will post the quantity and value questionnaire along with the filing instructions on the Import Administration Web site at *http://ia.ita.doc.gov/ia-highlights-and-news.html*. A response to the quantity and value questionnaire is due no later than November 29, 2011.[47]

Interested parties must submit applications for disclosure under administrative protective order (''APO'') in accordance with 19 CFR 351.305. Instructions for filing such applications may be found on the Department's Web site at *http://ia.ita.doc.gov/apo*.

Separate-Rate Application

In order to obtain separate-rate status in NME investigations, exporters and producers must submit a separate-rate status application.[48] The specific requirements for submitting the separate-rate application in this investigation are outlined in detail in the application itself, which will be available on the Department's Web site at *http://ia.ita.doc.gov/ia-highlights-and-news.html* on the date of publication of this initiation notice in the **Federal Register**. The separate-rate application will be due 60 days after publication of this initiation notice. For exporters and producers who submit a separate-rate status application and subsequently are selected as mandatory respondents, these exporters and producers will no longer be eligible for consideration for separate rate status unless they respond to all parts of the questionnaire as mandatory respondents. As noted in the ''Respondent Selection'' section above, the Department requires that respondents submit a response to both the quantity and value questionnaire and the separate-rate application by the respective deadlines in order to receive consideration for separate-rate status. The quantity and value questionnaire will be available on the Department's Web site at *http://ia.ita.doc.gov/ia-highlights-and-news.html* on the date of the publication of this initiation notice in the **Federal Register**.

Use of Combination Rates in an NME Investigation

The Department will calculate combination rates for certain respondents that are eligible for a separate rate in this investigation. The Policy Bulletin states:

> While continuing the practice of assigning separate rates only to exporters, all separate rates that the Department will now assign in its NME investigations will be specific to those producers that supplied the exporter during the period of investigation. Note, however, that one rate is calculated for the exporter and all of the producers which supplied subject merchandise to it during the period of investigation. This practice applies both to mandatory respondents receiving an individually calculated separate rate as well as the pool of non-investigated firms receiving the weighted-average of the individually calculated rates. This practice is referred to as the application of ''combination rates'' because such rates apply to specific combinations of exporters and one or more

[40] *See* Volume IV of the Petition, at 12; see also *Final Determination of Sales at Less than Fair Value: Certain Cut-to-Length Carbon Steel Plate From the People's Republic of China,* 62 FR 61964, 61967 (Nov. 20, 1997).

[41] *See* Volume IV of the Petition, at 13.

[42] *See* Volume IV of the Petition, at 1, 2, and 16; *see also* 19 CFR 351.206(c)(2)(iii).

[43] *See* Section 732(e) of the Act.

[44] *See* Policy Bulletin 98/4, 63 FR 55364 (Oct. 15, 1998).

[45] *See Withdrawal of the Regulatory Provisions Governing Targeted Dumping in Antidumping Duty Investigations,* 73 FR 74930 (December 10, 2008).

[46] *Id.* at 74931.

[47] *See Circular Welded Austenitic Stainless Pressure Pipe From the People's Republic of China: Initiation of Antidumping Duty Investigation,* 73 FR 10221, 10225 (February 26, 2008); *Initiation of Antidumping Duty Investigation: Certain Artist Canvas From the People's Republic of China,* 70 FR 21996, 21999 (April 28, 2005).

[48] *See* Policy Bulletin 05.1: Separate-Rates Practice and Application of Combination Rates in Antidumping Investigations involving Non-Market Economy Countries, dated April 5, 2005 (''Policy Bulletin''), available on the Department's Web site at *http://ia.ita.doc.gov/policy/bull05-1.pdf*.

producers. The cash-deposit rate assigned to an exporter will apply only to merchandise both exported by the firm in question and produced by a firm that supplied the exporter during the period of investigation.[49]

Distribution of Copies of the Petition

In accordance with section 732(b)(3)(A) of the Act and 19 CFR 351.202(f), copies of the public versions of the Petition have been provided to the representatives of the Government of the PRC. Because of the large number of producers/exporters identified in the Petition, the Department considers the service of the public version of the Petition to the foreign producers/exporters satisfied by the delivery of the public version to the Government of the PRC, consistent with 19 CFR 351.203(c)(2).

ITC Notification

We have notified the ITC of our initiation, as required by section 732(d) of the Act.

Preliminary Determinations by the ITC

The ITC will preliminarily determine, no later than December 5, 2011, whether there is a reasonable indication that imports of solar cells from the PRC are materially injuring, or threatening material injury to a U.S. industry. A negative ITC determination will result in the investigation being terminated; otherwise, this investigation will proceed according to statutory and regulatory time limits.

Notification to Interested Parties

Interested parties must submit applications for disclosure under administrative protective orders in accordance with 19 CFR 351.305. On January 22, 2008, the Department published Antidumping and Countervailing Duty Proceedings: Documents Submission Procedures; APO Procedures, 73 FR 3634. Parties wishing to participate in this investigation should ensure that they meet the requirements of these procedures (*e.g.,* the filing of letters of appearance as discussed at 19 CFR 351.103(d)).

Any party submitting factual information in an antidumping duty or countervailing duty proceeding must certify to the accuracy and completeness of that information.[50] Parties are hereby reminded that revised certification requirements are in effect for company/government officials as well as their representatives in all segments of any antidumping duty or countervailing duty proceedings initiated on or after March 14, 2011.[51] The formats for the revised certifications are provided at the end of the Interim Final Rule. The Department intends to reject factual submissions in any proceeding segments initiated on or after March 14, 2011, if the submitting party does not comply with the revised certification requirements.

This notice is issued and published pursuant to section 777(i) of the Act.

Dated: November 8, 2011.

Paul Piquado

Assistant Secretary for Import Administration.

Appendix I

Scope of the Investigation

The merchandise covered by this investigation are crystalline silicon photovoltaic cells, and modules, laminates, and panels, consisting of crystalline silicon photovoltaic cells, whether or not partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials.

This investigation covers crystalline silicon photovoltaic cells of thickness equal to or greater than 20 micrometers, having a p/n junction formed by any means, whether or not the cell has undergone other processing, including, but not limited to, cleaning, etching, coating, and/or addition of materials (including, but not limited to, metallization and conductor patterns) to collect and forward the electricity that is generated by the cell.

Subject merchandise may be described at the time of importation as parts for final finished products that are assembled after importation, including, but not limited to, modules, laminates, panels, building-integrated modules, building-integrated panels, or other finished goods kits. Such parts that otherwise meet the definition of subject merchandise are included in the scope of this investigation.

Excluded from the scope of this investigation are thin film photovoltaic products produced from amorphous silicon (a-Si), cadmium telluride (CdTe), or copper indium gallium selenide (CIGS).

Also excluded from the scope of this investigation are crystalline silicon photovoltaic cells, not exceeding 10,000mm^2 in surface area, that are permanently integrated into a consumer good whose function is other than power generation and that consumes the electricity generated by the integrated crystalline silicon photovoltaic cell. Where more than one cell is permanently integrated into a consumer good, the surface area for purposes of this exclusion shall be the total combined surface area of all cells that are integrated into the consumer good.

Merchandise covered by this investigation is currently classified in the Harmonized Tariff System of the United States (''HTSUS'') under subheadings 8501.61.0000, 8507.20.80, 8541.40.6020 and 8541.40.6030. These HTSUS subheadings are provided for convenience and customs purposes; the written description of the scope of this investigation is dispositive.

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[49] *See* Policy Bulletin at 6 (emphasis added).

[50] See section 782(b) of the Act.

[51] See Certification of Factual Information to Import Administration during Antidumping and Countervailing Duty Proceedings: Interim Final Rule, 76 FR 7491 (February 10, 2011)(''Interim Final Rule'') amending 19 CFR 351.303(g)(1) and (2).

DEPARTMENT OF COMMERCE

International Trade Administration

[A–549–821]

Polyethylene Retail Carrier Bags From Thailand: Correction to the Amended Final Results of Antidumping Duty Administrative Review

AGENCY: Import Administration, International Trade Administration, Department of Commerce.

SUMMARY: On November 3, 2011, the Department of Commerce (the Department) published in the **Federal Register** the amended final results of the administrative review of the antidumping duty order on polyethylene retail carrier bags from Thailand for the period August 1, 2009, through July 31, 2010. The notice did not include the names and margins of two companies subject to the amended final results of the review. The names and the respective margins are indicated below.

FOR FURTHER INFORMATION CONTACT: Bryan Hansen, AD/CVD Operations, Office 1, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue NW., Washington, DC 20230; *telephone:* (202) 482–3683.

SUPPLEMENTARY INFORMATION:

Background

On November 3, 2011, the Department of Commerce (the Department) published the amended final results of the administrative review of the antidumping duty order on polyethylene retail carrier bags from Thailand. *See Polyethylene Retail Carrier Bags From Thailand: Amended Final Results of Antidumping Duty Administrative Review,* 76 FR 68137 (November 3, 2011) (*Amended Final Results*). The period of review is August 1, 2009, through July 31, 2010.

Subsequent to the publication of the *Amended Final Results* we identified an inadvertent error in the notice. The names and margins of the following two

companies not selected for individual examination were omitted:

Trinity Pac Co. Ltd.

U. Yong Industry Co., Ltd.

The weighted-average margin the Department determined for these companies is 28.74 percent. *See* Memorandum to the File ''Polyethylene Retail Carrier Bags from Thailand—Amended Final Results, Margin Calculation for Respondents Not Selected for Individual Examination'' dated October 27, 2011. Accordingly, the complete list of companies subject to the *Amended Final Results* with their respective margin rates is as follows:

Producer/exporter	Percent margin
First Pack Co. Ltd	28.74
K International Packaging Co., Ltd	28.74
Landblue (Thailand) Co., Ltd	25.73
Praise Home Industry, Co. Ltd	28.74
Siam Flexible Industries Co., Ltd	28.74
Thai Jirun Co., Ltd	28.74
Trinity Pac Co. Ltd	28.74
U. Yong Industry Co., Ltd	28.74

Cash Deposit Requirements and Assessment Rates

The deposit rates will be effective retroactively on any entries made on or after September 28, 2011, the date of publication of the final results of review, for shipments of polyethylene retail carrier bags from Thailand entered, or withdrawn from warehouse, for consumption on or after the publication date, as provided by section 751(a)(1) of the Act: (1) The cash-deposit rates for the companies subject to the review will be the rates shown above; (2) for previously investigated or reviewed companies not listed above, the cash-deposit rate will continue to be the company-specific rate published for the most recent period; (3) if the exporter is not a firm covered in this or a previous review or the original less-than-fair-value (LTFV) investigation but the manufacturer is, the cash-deposit rate will be the rate established for the most recent period for the manufacturer of the merchandise; (4) the cash-deposit rate for all other manufacturers or exporters will be 4.69 percent, the all-others rate from the amended final determination of the LTFV investigation revised as a result of the Section 129 determination published on August 12, 2010. *See Notice of Implementation of Determination Under Section 129 of the Uruguay Round Agreements Act and Partial Revocation of the Antidumping Duty Order on Polyethylene Retail Carrier Bags From Thailand,* 75 FR 48940 (August 12, 2010). These deposit requirements, when imposed, shall remain in effect until further notice.

The Department intends to issue liquidation instructions to U.S. Customs and Border Protection 15 days after publication of this correction to the amended final results of review.

This correction to the amended final results of administrative review is issued and published in accordance with sections 751(a)(1) and 777(i)(1) of the Tariff Act of 1930, as amended.

November 9, 2011.

Paul Piquado,

Assistant Secretary for Import Administration.

[FR Doc. 2011–29620 Filed 11–15–11; 8:45 am]

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DEPARTMENT OF COMMERCE

International Trade Administration

[C–570–980]

Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules, From the People's Republic of China: Initiation of Countervailing Duty Investigation

AGENCY: Import Administration, International Trade Administration, Department of Commerce.

DATES: *Effective Date:* November 16, 2011.

FOR FURTHER INFORMATION CONTACT: Gene Calvert, Jun Jack Zhao or Emily Halle, AD/CVD Operations, Import Administration, International Trade Administration, U.S. Department of Commerce, 14th Street and Constitution Avenue NW., Washington, DC 20230; telephone: (202) 482–3586, (202) 482–1396 or (202) 482–0176, respectively.

SUPPLEMENTARY INFORMATION:

The Petition

On October 19, 2011, the Department of Commerce (Department) received a countervailing duty (CVD) petition concerning imports of crystalline silicon photovoltaic cells, whether or not assembled into modules (solar cells), from the People's Republic of China (PRC) filed in proper form by SolarWorld Industries America Inc. (Petitioner). *See* Petition for the Imposition of Antidumping and Countervailing Duties Against Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules, from the People's Republic of China, dated October 19, 2011 (Petition).

On October 21, 24 and 31, 2011, and November 4, 2011, the Department issued supplemental questionnaires requesting information and clarification of certain areas of the Petition.

On October 24, 2011, the Department issued requests to Petitioner for additional information and for clarification of certain areas of the general issues, antidumping (AD), and CVD sections of the Petition. Based on the Department's requests, Petitioner filed a supplement to the Petition regarding the CVD section on October 26, 2011 (Supplement I), and requested an extension until October 28, 2011, for the AD and general issues supplemental questionnaire. On October 28, 2011, Petitioner filed the supplement to the Petition regarding the AD and general issues section (Supplement II–A—General Issues and Supplement II–B—AD Issues). On October 31, 2011, the Department issued an additional request for information, which Petitioner filed on November 2, 2011 (Supplement III), November 4, 2011 (Supplement IV) and November 7, 2011 (Supplement V–A—AD Issues and Supplement V–B—General Issues).

In accordance with section 702(b)(1) of the Tariff Act of 1930, as amended (the Act), Petitioner alleges that producers/exporters of solar cells from the PRC received countervailable subsidies within the meaning of sections 701 and 771(5) of the Act, and that imports from these producers/exporters materially injure, and threaten further material injury to, an industry in the United States.

The Department finds that Petitioner filed the Petition on behalf of the domestic industry because Petitioner is an interested party, as defined in section 771(9)(C) of the Act, and has demonstrated sufficient industry support with respect to the investigation that it requests the Department to initiate. *See* ''Determination of Industry Support for the Petition,'' below.

Period of Investigation

The period of investigation (POI) is January 1, 2010, through December 31, 2010.

Scope of the Investigation

The products covered by the scope of this investigation are solar cells from the PRC. For a full description of the scope of the investigation, *see* the ''Scope of the Investigation,'' in Appendix I of this notice.

Comments on Scope of the Investigation

During our review of the Petition, we discussed the scope with Petitioner to ensure that it is an accurate reflection of the products for which the domestic industry is seeking relief. Petitioner submitted revised scope language on

November 4, 2011, and November 7, 2011. The November 7, 2011, submission included various revisions. Among these revisions was the following substantive provision:

> These proceedings cover crystalline silicon PV cells, whether exported directly to the United States or via third countries; crystalline silicon PV modules/panels produced in the PRC, regardless of country of manufacture of the cells used to produce the modules or panels, and whether exported directly to the United States or via third countries, and crystalline silicon PV modules or panels produced in a third country from crystalline silicon PV cells manufactured in the PRC, whether exported directly to the United States or via third countries.

The Department has not adopted this specific revision recommended by Petitioner for the purposes of initiation.[1] Because Petitioner's November 7, 2011, scope submission was filed one day prior to the statutory deadline for initiation, the Department has had neither the time nor the administrative resources to evaluate Petitioner's proposed language regarding merchandise produced using inputs from third-country markets, or merchandise processed in third-country markets. Petitioner's November 7, 2011, scope submission also contained the following language:

> Unless explicitly excluded from the scope of these proceedings, crystalline silicon PV cells possessing the physical characteristics of subject merchandise are covered by these proceedings.

The Department has not adopted this specific revision recommended by Petitioner for the purposes of initiation because this language is superfluous, and appears to add no additional clarification as to the description of merchandise covered by the scope of the Petition. However, as discussed in the preamble to the regulations, we are setting aside a period for interested parties to raise issues regarding product coverage. *See Antidumping Duties; Countervailing Duties,* 62 FR 27296, 27323 (May 19, 1997). The Department encourages interested parties to submit such comments by Monday, November 28, 2011, which is twenty calendar days from the signature date of this notice. All comments must be filed on the records of both the PRC AD investigation as well as the PRC CVD investigation. Comments must be filed electronically through Import Administration's Antidumping and Countervailing Duty Centralized Electronic Service System (IA ACCESS), *http://iaaccess.trade.gov,* in accordance with 19 CFR 351.303. *See Antidumping and Countervailing Duty Proceedings: Electronic Filing Procedures; Administrative Protective Order Procedures,* 76 FR 39263 (July 6, 2011). The period of scope consultations is intended to provide the Department with ample opportunity to consider all comments and to consult with parties prior to the issuance of the preliminary determination.

Consultations

Pursuant to section 702(b)(4)(A)(ii) of the Act, on October 20, 2011, the Department invited representatives of the Government of the PRC (GOC) for consultations with respect to the CVD petition. On November 2, 2011, the Department held consultations with representatives of the GOC via conference call. *See* Memorandum to the File, regarding ''Consultations with Officials from the Government of the People's Republic of China on the Countervailing Duty Petition Regarding Certain Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules,'' dated November 4, 2011 (Consultations Memorandum).

Determination of Industry Support for the Petition

Section 702(b)(1) of the Act requires that a petition be filed on behalf of the domestic industry. Section 702(c)(4)(A) of the Act provides that a petition meets this requirement if the domestic producers or workers who support the petition account for: (i) At least 25 percent of the total production of the domestic like product; and (ii) more than 50 percent of the production of the domestic like product produced by that portion of the industry expressing support for, or opposition to, the petition. Moreover, section 702(c)(4)(D) of the Act provides that, if the petition does not establish support of domestic producers or workers accounting for more than 50 percent of the total production of the domestic like product, the Department shall: (i) Poll the industry or rely on other information in order to determine if there is support for the petition, as required by subparagraph (A); or (ii) determine industry support using a statistically valid sampling method to poll the industry.

Section 771(4)(A) of the Act defines the ''industry'' as the producers as a whole of a domestic like product. Thus, to determine whether a petition has the requisite industry support, the statute directs the Department to look to producers and workers who produce the domestic like product. The U.S. International Trade Commission (ITC), which is responsible for determining whether ''the domestic industry'' has been injured, must also determine what constitutes a domestic like product in order to define the industry. While both the Department and the ITC must apply the same statutory definition regarding the domestic like product (*see* section 771(10) of the Act), they do so for different purposes and pursuant to a separate and distinct authority. In addition, the Department's determination is subject to limitations of time and information. Although this may result in different definitions of the like product, such differences do not render the decision of either agency contrary to law. See *USEC, Inc.* v. *United States,* 132 F. Supp. 2d 1, 8 (CIT 2001), citing *Algoma Steel Corp., Ltd.* v. *United States,* 688 F. Supp. 639, 644 (CIT 1988), *aff'd* 865 F.2d 240 (Fed. Cir. 1989), *cert. denied* 492 U.S. 919 (1989).

Section 771(10) of the Act defines the domestic like product as ''a product which is like, or in the absence of like, most similar in characteristics and uses with, the article subject to an investigation under this title.'' Thus, the reference point from which the domestic like product analysis begins is ''the article subject to an investigation'' (*i.e.,* the class or kind of merchandise to be investigated, which normally will be the scope as defined in the petition).

With regard to the domestic like product, Petitioner does not offer a definition of domestic like product distinct from the scope of the investigation. Based on our analysis of the information submitted on the record, we have determined that solar cells constitute a single domestic like product and we have analyzed industry support in terms of that domestic like product. For a discussion of the domestic like product analysis in this case, *see* ''Countervailing Duty Investigation Initiation Checklist: Certain Crystalline Silicon Photovoltaic Cells, Whether or Not Assembled Into Modules, From the People's Republic of China'' (Initiation Checklist), at Attachment II, Analysis of Industry Support for the Petitions Covering Crystalline Silicon Photovoltaic Cells from the People's Republic of China, on file electronically on IA ACCESS, accessible via the Central Records Unit, Room 7046 of the main Commerce building, and also accessible on the Web at *http://ia.ita.doc.gov/frn.* The paper copy and electronic versions of the Initiation Checklist are identical in content.

In determining whether Petitioner has standing under section 702(c)(4)(A) of the Act, we considered the industry

[1] We note that the Department has independent authority to determine the scope of its investigations. *See Diversified Products Corp.* v. *United States,* 572 F. Supp. 883, 887 (CIT 1983).

support data contained in the Petition with reference to the domestic like product as defined in the ''Scope of Investigation'' section, above. To establish industry support, Petitioner provided its production volume of the domestic like product in 2010, and compared this to the estimated total production volume of the domestic like product for the entire domestic industry. *See* Initiation Checklist at Attachment II. Petitioner estimated 2010 production volume of the domestic like product by non-petitioning companies based on production data published by an industry source, Photon International, along with affidavits of support for the Petition, and its knowledge of the industry. We have relied upon data Petitioner provided for purposes of measuring industry support. For further discussion, *see* Initiation Checklist at Attachment II.

On November 2, 2011, in its consultations with the Department, the Government of China raised the issue of industry support. *See* Consultations Memorandum; *see also* Initiation Checklist at Attachment II. On November 7, 2011, certain Chinese producers/exporters and affiliated importers of Solar Cells, interested parties to this proceeding as defined in section 771(9)(A) of the Act filed comments regarding industry support. Because the comments did not include certifications as required under 19 CFR 351.303(g), we allowed the parties to re-file the comments. On November 8, 2011, we received comments with proper certifications. On November 8, 2011, the same Chinese producers/exporters filed additional comments regarding industry support. However, those comments were not limited to industry support as required by section 732(c)(4)(E) of the Act. Accordingly, we rejected the comments as improperly filed. The interested parties re-filed this submission on November 8 and properly limited their comments to industry support.[2]

Based on information provided in the Petition, supplemental submissions, and other information readily available to the Department, we determine that the domestic producers and workers have met the statutory criteria for industry support under section 702(c)(4)(A)(i) of the Act because the domestic producers (or workers) who support the Petition account for at least 25 percent of the total production of the domestic like product. Because the Petition did not establish support from domestic producers (or workers) accounting for more than 50 percent of the total production of the domestic like product, the Department was required to take further action in order to evaluate industry support. *See* section 702(c)(4)(D) of the Act. In this case, the Department was able to rely on other information, in accordance with section 702(c)(4)(D)(i) of the Act, to determine industry support. *See* Initiation Checklist at Attachment II; *see also* Memorandum to the File from Stephen Bailey, titled ''Conference Call,'' dated November 3, 2011. Based on information provided in the Petition, supplemental submissions, and additional information obtained by the Department, the domestic producers and workers have met the statutory criteria for industry support under section 702(c)(4)(A)(ii) of the Act because the domestic producers (or workers) who support the Petition account for more than 50 percent of the production of the domestic like product produced by that portion of the industry expressing support for, or opposition to, the Petition. Accordingly, the Department determines that the Petition was filed on behalf of the domestic industry within the meaning of section 702(b)(1) of the Act. *See* Initiation Checklist at Attachment II.

The Department finds that Petitioner filed the Petition on behalf of the domestic industry because it is an interested party as defined in sections 771(9)(C) of the Act and it has demonstrated sufficient industry support with respect to the CVD investigation that it is requesting the Department initiate. *Id.*

Injury Test

Because the PRC is a ''Subsidies Agreement Country'' within the meaning of section 701(b) of the Act, section 701(a)(2) of the Act applies to this investigation. Accordingly, the ITC must determine whether imports of subject merchandise from the PRC materially injure, or threaten material injury to, a U.S. industry.

Allegations and Evidence of Material Injury and Causation

Petitioner alleges that imports of solar cells from the PRC are benefitting from countervailable subsidies and that such imports are causing, or threaten to cause, material injury to the domestic industry producing solar cells. In addition, Petitioner alleges that subject imports exceed the negligibility threshold provided for under section 771(24)(A) of the Act.

Petitioner contends that the industry's injured condition is illustrated by reduced market share, reduced shipments, unused capacity, underselling and price depression or suppression, reduced employment, a decline in financial performance, lost sales and revenue, and an increase in import penetration. *See* Volume I of the Petition, at 1–4, 25–44, and Exhibits I–6, I–8–9, I–14–16, I–17a, I–18a, I–19–20, I–21a, I–21b, I–22 and I–24, and Supplement II–A–General Issues, at 1–2. We have assessed the allegations and supporting evidence regarding material injury, threat of material injury, and causation, and we have determined that these allegations are properly supported by adequate evidence and meet the statutory requirements for initiation. *See* Initiation Checklist at Attachment III, Injury.

Initiation of Countervailing Duty Investigation

Section 702(b)(i) of the Act requires the Department to initiate a CVD proceeding whenever an interested party files a petition on behalf of an industry that: (1) Alleges the elements necessary for an imposition of a duty under section 701(a) of the Act; and (2) is accompanied by information reasonably available to the petitioner(s) supporting the allegations. The Department has examined the CVD Petition on solar cells from the PRC and finds that it complies with the requirements of section 702(b) of the Act. Therefore, in accordance with section 702(b) of the Act, we are initiating a CVD investigation to determine whether manufacturers, producers, or exporters of solar cells in the PRC receive countervailable subsidies. For a discussion of evidence supporting our initiation determination, *see* Initiation Checklist.

We are including in our investigation the following programs alleged in the Petition to have provided countervailable subsidies to producers and exporters of the subject merchandise in the PRC:

A. Grant Programs

1. Export Product Research and Development Fund
2. Subsidies for Development of ''Famous Brands'' and ''China World Top Brands''
3. Sub-Central Government Subsidies for Development of ''Famous Brands'' and ''China World Top Brands''
4. Special Energy Fund (Established by Shandong Province)
5. Funds for Outward Expansion of Industries in Guangdong Province
6. Golden Sun Demonstration Program

[2] For further discussion of these submissions *see* Initiation Checklist at Attachment II.

B. Government Provision of Goods and Services for Less Than Adequate Remuneration (LTAR)
1. Government Provision of Polysilicon for LTAR
2. Government Provision of Aluminum for LTAR
3. Government Provision of Power for LTAR
C. Government Provision of Land for LTAR
D. Policy Lending to the Renewable Energy Industry
E. Income and Other Direct Tax Exemption and Reduction Programs
1. ''Two Free, Three Half'' Program for Foreign Invested Enterprises (FIEs)
2. Income Tax Reductions for Export-Oriented FIEs
3. Income Tax Benefits for FIEs Based on Geographic Location
4. Local Income Tax Exemption and Reduction Programs for ''Productive'' FIEs
5. Tax Reductions for FIEs Purchasing Chinese-Made Equipment
6. Tax Offsets for Research and Development by FIEs
7. Tax Refunds for Reinvestment of FIE Profits in Export-Oriented Enterprises
8. Preferential Tax Programs for FIEs Recognized as High or New Technology Enterprises
9. Tax Reductions for High and New-Technology Enterprises Involved in Designated Projects
10. Preferential Income Tax Policy for Enterprises in the Northeast Region
11. Guangdong Province Tax Programs
F. Indirect Tax and Tariff Exemption Programs
1. Value Added Tax (VAT) Exemptions for Use of Imported Equipment
2. VAT Rebates on FIE Purchases of Chinese-Made Equipment
3. VAT and Tariff Exemptions for Purchases of Fixed Assets Under the Foreign Trade Development Fund Program
G. Export Credit Subsidy Programs
H. Export Guarantees and Insurance for Green Technology

For a description of each of these programs and a full discussion of the Department's decision to initiate an investigation of these programs, *see* Initiation Checklist.

We are not including in our investigation the following programs alleged to benefit producers/exporters of the subject merchandise in the PRC.

A. Grant Programs
1. Fund for Economic, Scientific, and Technology Development (Established by Foshan City)
2. Provincial Fund for Fiscal and Technological Innovation (Established by Guangdong Province)
B. Government Provision of Water for LTAR
C. Currency Undervaluation

For further information explaining why the Department is not initiating an investigation of these programs, *see* Initiation Checklist.

Critical Circumstances

Petitioner alleges, based on trade statistics since August 2010 and prior knowledge of an impending trade case, that there is a reasonable basis to believe or suspect that critical circumstances exist with regard to imports of solar cells from the PRC. *See* Volume IV of the Petition, at 1, 7, and 10.

Section 703(e)(1) of the Act states that if a petitioner alleges critical circumstances, the Department will find that such circumstances exist, at any time after the date of initiation, when there is a reasonable basis to believe or suspect that under, subparagraph (A) the alleged countervailable subsidy is inconsistent with the Subsidies Agreement, and (B) there have been massive imports of the subject merchandise over a relatively short period. Section 351.206(h) of the Department's regulations defines ''massive imports'' as imports that have increased by at least 15 percent over the imports during an immediately preceding period of comparable duration. Section 351.206(i) of the Department's regulations states that a relatively short period will normally be defined as the period beginning on the date the proceeding begins and ending at least three months later.

With regard to the subsidies alleged in the Petition, Petitioner notes that the subsidies alleged include subsidies based on export performance, subsidies for inputs provided for LTAR, as well as interest free or low interest loans that are not otherwise available to the general public. *See* Volume IV of the Petition, at 13. Petitioner argues that based on information provided in the Petition, it is clear that Chinese exporters and producers of subject merchandise have received subsidies that are inconsistent with the Agreement on Subsidies and Countervailing Measures. *See* Volume IV of the Petition, at 13–15; *see also* Volume III of the Petition.

With regard to the criteria of massive imports over a relatively short period of time, Petitioner argues that the Department should evaluate the level of imports during a period prior to the filing a petition because importers and foreign exporters and producers had reason to believe that an AD or CVD proceeding was likely. *See* Volume IV of the Petition, at 3–9, and Exhibits IV–1 through IV–16; *see also* 19 CFR 351.206(i). Petitioner contends that there were newspaper articles beginning in August 2009 that discussed unfair pricing on behalf of Chinese producers. *See* Volume IV of the Petition, at 4, and Exhibits IV–1 and IV–2. Petitioner further notes that the very widely publicized closure of a large solar cell producer resulted in much media discussion of the effects of unfair trade in January 2011. Therefore, Petitioner states that ''the effects of any behavioral shifts of Chinese producers would be likely to manifest themselves in February 2011 as shipments of goods ordered in the days immediately following Evergreen's demise in January 2011 would not have reached the United States until February.'' *See* Supplement II–A–General Issues, at 6. Thus, Petitioner demonstrates massive imports over a relatively short period of time by comparing imports of subject merchandise between the six-month period of August 2010 and January 2011 (base period) and the six-month period of February 2011 and July 2011 (comparison period). Based on Petitioner's calculation, imports surged 220 percent between base period and comparison period, which is greater than the 15 percent threshold defined in the Department's regulations. *See* Volume IV of the Petition, at 10–11; *see also* 19 CFR 351.206(h).

Petitioner requests that the Department examine the information it has provided and make a preliminary finding of critical circumstances on an expedited basis, within 45 days of the filing of the Petition. *See* Volume IV of the Petition, at 1, 2, and 16; *see also* 19 CFR 351.206(c)(2)(iii). Section 702(e) of the Act states that when there is a reasonable basis to suspect that the alleged countervailable subsidy is inconsistent with the Subsidies Agreement, the Department may request U.S. Customs and Border Protection (CBP) to compile information on an expedited basis regarding entries of the subject merchandise.

Taking into consideration the foregoing, we will analyze this matter further. We will monitor imports of solar cells from the PRC and we will request that CBP compile information on an expedited basis regarding entries of subject merchandise. *See* Section 702(e) of the Act. If, at any time, the criteria for a finding of critical circumstances are established, we will issue a critical circumstances finding at the earliest possible date. *See Change in*

Policy Regarding Timing of Issuance of Critical Circumstances Determinations, 63 FR 55364 (October 15, 1998).

Respondent Selection

For this investigation, the Department expects to select respondents based on CBP data for U.S. imports during the POI. We intend to make our decision regarding respondent selection within 20 days of publication of this **Federal Register** notice. The Department will release CBP data under Administrative Protective Order shortly after the signature date of this notice. Given that certain Harmonized Tariff Schedule of the United States headings used in the description of the scope of this investigation are for broad ''basket categories'' of merchandise (*e.g.,* headings 8501.61.0000 and 8507.20.80), the Department intends to rely only on headings 8541.40.6020 and 8541.40.6030, which cover solar cells exclusively, in selecting respondents. Therefore, we will only release CBP data under those same two headings as well. The Department invites comments regarding the CBP data and respondent selection to be submitted to the Department within seven calendar days of publication of this **Federal Register** notice.

Distribution of Copies of the Petition

In accordance with section 702(b)(4)(A)(i) of the Act and 19 CFR 351.202(f), a copy of the public version of the Petition has been provided to representatives of the GOC. Because of the particularly large number of producers/exporters identified in the Petition, the Department considers the service of the public version of the Petition to the foreign producers/exporters satisfied by the delivery of the public version to the GOC, consistent with 19 CFR 351.203(c)(2).

ITC Notification

We have notified the ITC of our initiation, as required by section 702(d) of the Act.

Preliminary Determination by the ITC

The ITC will preliminarily determine, within 45 days after the date on which the Petition was filed, whether there is a reasonable indication that imports of subsidized solar cells from the PRC are causing material injury, or threatening to cause material injury, to a U.S. industry. *See* section 703(a)(2) of the Act. A negative ITC determination will result in the investigation being terminated; otherwise, the investigation will proceed according to statutory and regulatory time limits.

Notification to Interested Parties

Interested parties must submit applications for disclosure under administrative protective orders in accordance with 19 CFR 351.305. On January 22, 2008, the Department published *Antidumping and Countervailing Duty Proceedings: Documents Submission Procedures; APO Procedures,* 73 FR 3634. Parties wishing to participate in this investigation should ensure that they meet the requirements of these procedures (*e.g.,* the filing of letters of appearance as discussed at 19 CFR 351.103(d)).

Any party submitting factual information in an AD or CVD proceeding must certify to the accuracy and completeness of that information. *See* section 782(b) of the Act. Parties are hereby reminded that revised certification requirements are in effect for company/government officials as well as their representatives in all segments of any antidumping duty or countervailing duty proceedings initiated on or after March 14, 2011. *See Certification of Factual Information to Import Administration during Antidumping and Countervailing Duty Proceedings: Interim Final Rule,* 76 FR 7491 (February 10, 2011) (Interim Final Rule) amending 19 CFR 351.303(g)(1) and (2). The formats for the revised certifications are provided at the end of the Interim Final Rule. The Department intends to reject factual submissions in any proceeding segments initiated on or after March 14, 2011, if the submitting party does not comply with the revised certification requirements.

This notice is issued and published pursuant to section 777(i) of the Act.

Dated: November 8, 2011.

Paul Piquado,

Assistant Secretary for Import Administration.

Appendix I

Scope of the Investigation

The merchandise covered by this investigation are crystalline silicon photovoltaic cells, and modules, laminates, and panels, consisting of crystalline silicon photovoltaic cells, whether or not partially or fully assembled into other products, including, but not limited to, modules, laminates, panels and building integrated materials.

This investigation covers crystalline silicon photovoltaic cells of thickness equal to or greater than 20 micrometers, having a p/n junction formed by any means, whether or not the cell has undergone other processing, including, but not limited to, cleaning, etching, coating, and/or addition of materials (including, but not limited to, metallization and conductor patterns) to collect and forward the electricity that is generated by the cell.

Subject merchandise may be described at the time of importation as parts for final finished products that are assembled after importation, including, but not limited to, modules, laminates, panels, building-integrated modules, building-integrated panels, or other finished goods kits. Such parts that otherwise meet the definition of subject merchandise are included in the scope of this investigation.

Excluded from the scope of this investigation are thin film photovoltaic products produced from amorphous silicon (a-Si), cadmium telluride (CdTe), or copper indium gallium selenide (CIGS).

Also excluded from the scope of this investigation are crystalline silicon photovoltaic cells, not exceeding 10,000mm^2 in surface area, that are permanently integrated into a consumer good whose function is other than power generation and that consumes the electricity generated by the integrated crystalline silicon photovoltaic cell. Where more than one cell is permanently integrated into a consumer good, the surface area for purposes of this exclusion shall be the total combined surface area of all cells that are integrated into the consumer good.

Merchandise covered by this investigation is currently classified in the Harmonized Tariff System of the United States (HTSUS) under subheadings 8501.61.0000, 8507.20.80, 8541.40.6020 and 8541.40.6030. These HTSUS subheadings are provided for convenience and customs purposes; the written description of the scope of this investigation is dispositive.

[FR Doc. 2011–29624 Filed 11–15–11; 8:45 am]

BILLING CODE 3510–DS–P

DEPARTMENT OF COMMERCE

National Institute of Standards and Technology

Technology Innovation Program Advisory Board

AGENCY: National Institute of Standards and Technology, Department of Commerce.

ACTION: Notice of public meeting.

SUMMARY: The Technology Innovation Program (TIP) Advisory Board will hold a meeting via teleconference on Tuesday, December 6, 2011, from 10 a.m. to 12 noon, Eastern time. The primary purpose of this meeting is to discuss the future of TIP. Interested members of the public will be able to participate in the meeting from remote locations by calling into a central phone number.

DATES: The TIP Advisory Board will hold a meeting via teleconference meeting on Tuesday, December 6, 2011, from 10 a.m. to 12 noon, Eastern time. The meeting will be open to the public.

APPENDIX B

LIST OF CONFERENCE WITNESSES

CALENDAR OF PUBLIC PRELIMINARY CONFERENCE

Those listed below appeared as witnesses at the United States International Trade Commission's preliminary conference:

Subject: Crystalline Silicon Photovoltaic Cells and Modules from China

Inv. Nos.: 701-TA-481 and 731-TA-1190 (Preliminary)

Date and Time: November 8, 2011 - 9:30 a.m.

The session was held in connection with these preliminary investigations in the Main Hearing Room (room 101), 500 E Street, S.W., Washington, D.C.

In Support of the Imposition of
Antidumping and Countervailing Duty Orders:

Wiley Rein LLP
Washington, D.C.
on behalf of

SolarWorld Industries America Inc.

Gordon Brinser, President, SolarWorld Industries America Inc.

Kevin Kilkelly, President and Sales Manager, SolarWorld Industries America, LLC

Seth T. Kaplan, Principal, Capital Trade, Inc.

Timothy C. Brightbill)
Robert E. DeFrancesco, III) – OF COUNSEL
Adam H. Gordon)

In Opposition to the Imposition of
Antidumping and Countervailing Duty Orders:

Sidley Austin LLP
Washington, D.C.
on behalf of

The Chinese Chamber of Commerce for Import and export of
Machinery and Electronic Products and its respective members

Roger Efird, Managing Director, Suntech America

Robert Petrina, Managing Director, Yingli Green Energy Americas, Inc.

Thomas Young, Senior Director of Investor Relations, Trina Solar Limited

Alan King, Vice President of Sales, Canadian Solar (USA) Inc.

Sheldon Kimber, Chief Operating Officer, Recurrent Energy

Kenneth R. Button, Senior Vice President, Economic Consulting Services, LLC

Neil R. Ellis)
Richard L.A. Weiner)
Brenda A. Jacobs) – OF COUNSEL
Rajib Pal)
Jill Caiazzo)

Thompson Hine LLP
Washington, D.C.
on behalf of

Sun Edison, LLC

Kenneth H. Hannah, President, Solar Materials, MEMC Electronic Materials, Inc.

Bradley D. Kohn, Senior Vice President and General Counsel, MEMC Electronic Materials, Inc.

Kevin S. Lapidus, Senior Vice President and General Counsel, SunEdison, LLC

Matthew R. Nicely)
) – OF COUNSEL
David S. Christy)

Mayer Brown LLP
Washington, D.C.
on behalf of

Suntech Power Holdings Co., Ltd. ("Suntech")
and its wholly owned affiliates

Jeffrey C. Lowe) – OF COUNSEL

Arent Fox LLP
Washington, D.C.
on behalf of

Trina Solar (US) Inc. ("Trina Solar)

John M. Gurley) – OF COUNSEL

SolarOne Solutions
Needham, MA

Mooner H. Azzam, President and CEO,
SolarOne Solutions

APPENDIX C

SUMMARY DATA

Table C-1
CSPV cells: Summary data concerning the U.S. market, 2008-10, January-June 2010, and January-June 2011

(Quantity=1,000 units, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per unit; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	2008	2009	2010	2010	2011	2008-10	2008-09	2009-10	2010-11
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	1,199	1,517	6,562	2,430	10,588	447.2	26.5	332.7	335.8
Value	5,051	12,351	38,470	13,196	55,110	661.6	144.5	211.5	317.6
Unit value	$4.21	$8.14	$5.86	$5.43	$5.20	39.2	93.4	-28.0	-4.2
All other sources:									
Quantity	30,653	17,520	25,621	11,531	21,786	-16.4	-42.8	46.2	88.9
Value	221,809	107,670	210,062	71,557	140,386	-5.3	-51.5	95.1	96.2
Unit value	$7.24	$6.15	$8.20	$6.21	$6.44	13.3	-15.1	33.4	3.8
All sources:									
Quantity	31,852	19,036	32,183	13,961	32,374	1.0	-40.2	69.1	131.9
Value	226,860	120,021	248,531	84,753	195,496	9.6	-47.1	107.1	130.7
Unit value	$7.12	$6.30	$7.72	$6.07	$6.04	8.4	-11.5	22.5	-0.5
U.S. producers':									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000s)	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***
Productivity (units per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Not applicable.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

Table C-2
CSPV modules: Summary data concerning the U.S. market, 2008-10, January-June 2010, and January-June 2011

(Quantity=1,000 units, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per unit; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	2008	2009	2010	2010	2011	2008-10	2008-09	2009-10	2010-11
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	2,629	5,121	10,810	3,101	13,185	311.2	94.8	111.1	325.2
Value	228,286	411,686	1,168,079	349,832	1,179,674	411.7	80.3	183.7	237.2
Unit value	$86.83	$80.40	$108.06	$112.83	$89.47	24.4	-7.4	34.4	-20.7
All other sources:									
Quantity	9,551	6,951	43,021	16,213	18,294	350.4	-27.2	518.9	12.8
Value	797,757	931,943	1,275,257	528,906	812,467	59.9	16.8	36.8	53.6
Unit value	$83.53	$134.07	$29.64	$32.62	$44.41	-64.5	60.5	-77.9	36.1
All sources:									
Quantity	12,180	12,072	53,830	19,314	31,479	342.0	-0.9	345.9	63.0
Value	1,026,042	1,343,629	2,443,337	878,737	1,992,141	138.1	31.0	81.8	126.7
Unit value	$84.24	$111.30	$45.39	$45.50	$63.29	-46.1	32.1	-59.2	39.1
U.S. producers':									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000s)	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***
Productivity (units per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

Table C-3
CSPV cells and modules: Summary data concerning the U.S. market, 2008-10, January-June 2010, and January-June 2011

(Quantity=1,000 units, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per unit; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	2008	2009	2010	2010	2011	2008-10	2008-09	2009-10	2010-11
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1)	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	3,828	6,637	17,372	5,530	23,773	353.8	73.4	161.7	329.9
Value	233,337	424,037	1,206,549	363,028	1,234,785	417.1	81.7	184.5	240.1
Unit value	$60.95	$63.89	$69.46	$65.64	$51.94	14.0	4.8	8.7	-20.9
All other sources:									
Quantity	40,204	24,471	68,642	27,744	40,080	70.7	-39.1	180.5	44.5
Value	1,019,566	1,039,613	1,485,319	600,463	952,853	45.7	2.0	42.9	58.7
Unit value	$25.36	$42.48	$21.64	$21.64	$23.77	-14.7	67.5	-49.1	9.8
All sources:									
Quantity	44,032	31,108	86,014	33,274	63,853	95.3	-29.4	176.5	91.9
Value	1,252,902	1,463,650	2,691,868	963,491	2,187,638	114.9	16.8	83.9	127.1
Unit value	$28.45	$47.05	$31.30	$28.96	$34.26	10.0	65.4	-33.5	18.3
U.S. producers':									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1)	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000s)	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***
Productivity (units per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss)	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Not applicable.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

Table C-4
CSPV cells and modules: Summary data concerning the U.S. market (excluding * and ***), 2008-10, January-June 2010, and January-June 2011**

(Quantity=1,000 units, value=1,000 dollars, unit values, unit labor costs, and unit expenses are per unit; period changes=percent, except where noted)

	Reported data					Period changes			
				January-June					Jan.-June
Item	2008	2009	2010	2010	2011	2008-10	2008-09	2009-10	2010-11
U.S. consumption quantity:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1):									
*** + ***:	***	***	***	***	***	***	***	***	***
All other	***	***	***	***	***	***	***	***	***
Total	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. consumption value:									
Amount	***	***	***	***	***	***	***	***	***
Producers' share (1):									
*** + ***:	***	***	***	***	***	***	***	***	***
All other	***	***	***	***	***	***	***	***	***
Total	***	***	***	***	***	***	***	***	***
Importers' share (1):									
China	***	***	***	***	***	***	***	***	***
All other sources	***	***	***	***	***	***	***	***	***
Total imports	***	***	***	***	***	***	***	***	***
U.S. imports from:									
China:									
Quantity	3,828	6,637	17,372	5,530	23,773	353.8	73.4	161.7	329.9
Value	233,337	424,037	1,206,549	363,028	1,234,785	417.1	81.7	184.5	240.1
Unit value	$60.95	$63.89	$69.46	$65.64	$51.94	14.0	4.8	8.7	-20.9
All other sources:									
Quantity	40,204	24,471	68,642	27,744	40,080	70.7	-39.1	180.5	44.5
Value	1,019,566	1,039,613	1,485,319	600,463	952,853	45.7	2.0	42.9	58.7
Unit value	$25.36	$42.48	$21.64	$21.64	$23.77	-14.7	67.5	-49.1	9.8
All sources:									
Quantity	44,032	31,108	86,014	33,274	63,853	95.3	-29.4	176.5	91.9
Value	1,252,902	1,463,650	2,691,868	963,491	2,187,638	114.9	16.8	83.9	127.1
Unit value	$28.45	$47.05	$31.30	$28.96	$34.26	10.0	65.4	-33.5	18.3
U.S. producers' (2):									
Average capacity quantity	***	***	***	***	***	***	***	***	***
Production quantity	***	***	***	***	***	***	***	***	***
Capacity utilization (1)	***	***	***	***	***	***	***	***	***
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Export shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Ending inventory quantity	***	***	***	***	***	***	***	***	***
Inventories/total shipments (1	***	***	***	***	***	***	***	***	***
Production workers	***	***	***	***	***	***	***	***	***
Hours worked (1,000s)	***	***	***	***	***	***	***	***	***
Wages paid ($1,000s)	***	***	***	***	***	***	***	***	***
Hourly wages	***	***	***	***	***	***	***	***	***
Productivity (units per hour)	***	***	***	***	***	***	***	***	***
Unit labor costs	***	***	***	***	***	***	***	***	***
Net sales:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***
Cost of goods sold (COGS)	***	***	***	***	***	***	***	***	***
Gross profit or (loss)	***	***	***	***	***	***	***	***	***
SG&A expenses	***	***	***	***	***	***	***	***	***
Operating income or (loss)	***	***	***	***	***	***	***	***	***
Capital expenditures	***	***	***	***	***	***	***	***	***
Unit COGS	***	***	***	***	***	***	***	***	***
Unit SG&A expenses	***	***	***	***	***	***	***	***	***
Unit operating income or (loss	***	***	***	***	***	***	***	***	***
COGS/sales (1)	***	***	***	***	***	***	***	***	***
Operating income or (loss)/ sales (1)	***	***	***	***	***	***	***	***	***
*** + ***:									
U.S. shipments:									
Quantity	***	***	***	***	***	***	***	***	***
Value	***	***	***	***	***	***	***	***	***
Unit value	***	***	***	***	***	***	***	***	***

(1) "Reported data" are in percent and "period changes" are in percentage points.
(2) Excluding *** and ***.
(3) Not applicable.

Note.--Financial data are reported on a fiscal year basis and may not necessarily be comparable to data reported on a calendar year basis. Because of rounding, figures may not add to the totals shown. Unit values and shares are calculated from the unrounded figures.

Source: Compiled from data submitted in response to Commission questionnaires and from official Commerce statistics.

APPENDIX D

NONSUBJECT COUNTRY PRICE DATA

Four importers reported nonsubject country price data for both Mexico and Japan. For nonsubject country Mexico, three importers provided data for product 1, one importer provided data for product 2, and two importers provided data for product 3. For Japan, one importer provided data for products 1 and 4. These price items and accompanying data are comparable to those presented in tables V-2 through V-5.

In comparing nonsubject country pricing data with U.S. producer pricing data, prices for product imported from Mexico and Japan were higher than prices for U.S.-produced product in 16 instances and lower in 5 instances. In comparing nonsubject country pricing data with subject country pricing data, prices for product imported from Mexico and Japan were higher than prices for product imported from China in all 22 instances. Price and quantity data for Mexico and Japan are shown in tables D-1 to D-4 and in figure D-1 (with domestic and subject sources).

Table D-1
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 1,[1] by quarters, January 2008-June 2011

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Table D-2
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 2,[1] by quarters, January 2008-June 2011

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Table D-3
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 3,[1] by quarters, January 2008-June 2011

* * * * * * *

Table D-4
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product 4,[1] by quarters, January 2008-June 2011

* * * * * * *

Figure D-1
CSPV cells and modules: Weighted average f.o.b. prices and quantities of domestic and imported product, by quarters, January 2008-June 2011

* * * * * * *