

November 27, 2019

Inv. No. TA-201-075 (Monitoring)

NON-CONFIDENTIAL VERSION

Confidential Business Information deleted on
pages 9, 15-16, 19-21, 24-25, 27-36, 40-42,
44-46, 52-53, 60-61, 66-67, in the Exhibit List,
Appendix B, and Exhibits 3-6, 9, 12, 16, 23-25, 47.

VIA ELECTRONIC FILING (EDIS)

The Honorable Lisa R. Barton
Secretary to the Commission
U.S. International Trade Commission
500 E Street, SW
Washington, DC 20436

Re: *Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully
Assembled into Other Products)*, Inv. No. TA-201-075 (Monitoring):
Prehearing Brief of SEIA and REC Americas LLC

Dear Secretary Barton:

On behalf of Solar Energy Industries Association (“SEIA”) and REC Americas LLC, we
enclose for filing the Prehearing Brief in the above referenced proceeding.

In accordance with 19 C.F.R. § 201.8(f) and 19 C.F.R. § 206.8, the signed original of this
document is filed electronically and two true copies are submitted to the International Trade
Commission on the same day to complete the filing process. Additional copies have been served
on all other interested parties as set forth in the attached certificate of service pursuant to 19
C.F.R. § 206.8(b).

Pursuant to 19 C.F.R. § 201.6, we respectfully request proprietary treatment for confidential business information bracketed in the text. The release of the information for which we seek proprietary treatment is proprietary information of other parties or information designated as confidential in the Commission's Prehearing Report.

Please contact us if you have any questions regarding this submission, or require additional information.

Respectfully submitted,

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In accordance with section 207.3(a) of the Commission's rules (19 C.F.R. § 207.3(a)), I, Matthew R. Nicely, of Hughes Hubbard & Reed LLP, counsel for SEIA and REC Americas LLC, certify that under penalty of perjury under the laws of the United States of America and pursuant to the Commission's regulations:

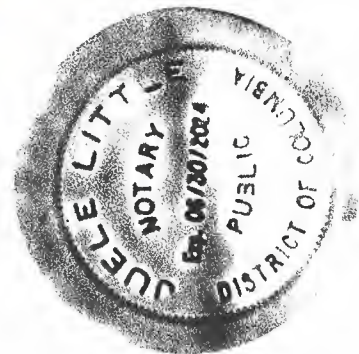
- (1) I have read the foregoing submission in the above referenced case;
- (2) to the best of my knowledge and belief, the information contained therein is accurate and complete; and
- (3) in accordance with section 201.6(b)(3)(iii) of the Commission's rules (19 C.F.R. § 201.6(b)(3)(iii)), information substantially identical to that for which we request confidential treatment is not available to the general public and the public disclosure of such information would cause substantial harm to the persons, firms, and other entities from which the information was obtained.


Matthew R. Nicely

DISTRICT OF COLUMBIA: SS
Sworn and subscribed to before me
this November 26, 2019.


Notary Public

My Commission expires: June 30, 2024



**Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully
Assembled into Other Products), Inv. No. TA-201-075 (Monitoring)**

PUBLIC CERTIFICATE OF SERVICE

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Dated: November 27, 2019

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION**

NON-CONFIDENTIAL VERSION

In the Matter of:)
)
CRYSTALLINE SILICON PHOTOVOLTAIC)
CELLS, WHETHER OR NOT PARTIALLY)
OR FULLY ASSEMBLED INTO OTHER)
PRODUCTS)
)

Inv. No. TA-201-75
(Monitoring)

**PREHEARING BRIEF of
SOLAR ENERGY INDUSTRIES ASSOCIATION (“SEIA”)
and REC AMERICAS LLC**

VOLUME I - NARRATIVE

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INTRODUCTION

The Solar Energy Industries Association (“SEIA”) represents the U.S. solar industry at large and is committed to growing the entire solar value chain in the United States, including polysilicon, ingot, wafers, cells, modules, racking, mountings, trackers, inverters, and all of the additional equipment and services necessary to provide solar energy to the consumer. It is important to recognize, however, that efforts to support a few companies or only one sector of the supply chain must not come at the expense of the broader industry. In this case, while the solar safeguard measures have led to new investments in domestic module capacity, the cost to the broader industry has been severe—several gigawatts of lost deployment, billions of dollars in lost investments, and tens of thousands of lost jobs. The safeguards measures are a bad deal for America. We welcome this opportunity to demonstrate to the U.S. International Trade Commission (“Commission”) that any benefits of the global safeguard measures on crystalline silicone photovoltaic (“CSPV”) products are far outweighed by the significant costs they have imposed on the solar industry as a whole.

It is worth emphasizing as a foundational matter that the U.S. safeguards statute, Section 201 of the Trade Act of 1974, possesses certain distinctive characteristics. For example, unlike the procedures for administering the antidumping and countervailing duty laws, the Commission has a very important role to play with respect to evaluating remedial actions. Furthermore, the considerations that must be brought to bear on such actions encompass all elements of the national economic interest. In addition, any trade restrictions imposed by the President under this law must be of limited duration, progressively liberalized, and subject to continuous monitoring to determine whether the domestic industry is using the restrictions constructively. Thus, in no way has Congress licensed domestic industries to use Section 201 to hold upstream

and downstream industries – as well as consumers – hostage on an indefinite basis in order to avoid dealing with fundamental marketplace realities. The domestic industry should be left with no illusions in this regard.

The Commission’s role at the mid-term stage of safeguard measures is absolutely central, far-reaching, and dynamic, not that of the proverbial “potted plant.” The statute calls for the submission of a report to the President on the results of monitoring “developments with respect to the domestic industry, including the progress and specific efforts made by workers and firms in the domestic industry to make a positive adjustment to import competition.”¹ This agency’s specialized economic expertise is particularly apt for taking into account the complex factors that have shaped, and will continue to shape, the domestic solar cell and module industry. The industry at issue here is not analogous to most other industries that seek trade relief, as it features an unusual degree of interdependence between price and demand, driven by the need to attain cost-competitiveness with other sources of energy on the electricity grid. The domestic industry’s facile allegations of global overcapacity must be evaluated in that context.

The core issue here is the impact the safeguard measures have had on solar installations (deployment) in the United States, because losses in deployment translate into adverse results across a broad range of indicators. As the Commission has long been aware, particularly in determining the impact of trade agreements, the issue is not simply a matter of whether the trend in question is “up” or “down.” Rather, it is a matter of where the trend stands relative to an appropriate baseline projection. On that score, as demonstrated by SEIA’s thorough impact study (**Appendix A**), the effects of the measures on solar deployment have been severe.²

¹ Trade Act §§ 204(a)(1), 204(a)(2); 19 U.S.C. §§ 2254(a)(1), 2254(a)(2).

² SEIA, *The Adverse Impact of Section 201 Tariffs: Lost Jobs, Lost Deployment and Lost Investments* (“SEIA Impact Study”) (**Appendix A**).

Professor Thomas Prusa of Rutgers University has also prepared an economic analysis (**Appendix B**) that complements SEIA's study, explaining the economic significance of the losses in deployment.³ Professor Prusa develops five key insights. First, in the United States, CSPV products compete in a highly regulated and highly localized market environment. Second, the Section 201 tariffs have significantly affected the prices of U.S. CSPV modules across all three market segments, including residential, commercial and industrial, and utility-scale. Third, by raising those prices, the tariffs have had a limiting effect on demand, slowing a long-term, beneficial movement of CSPV products toward price parity on the electricity grid. Fourth, despite the impact on U.S. module prices, the duties have not spurred new investment in cell production for the domestic market and the gains in solar module capacity are far too limited to meet the needs of U.S. consumers, particularly given the large volumes required for the utility-scale market segment. Finally, the losses in deployment result in substantial losses in investment and jobs – in other words, major opportunity costs with respect to this cutting-edge energy technology.

The safeguard measures deprive the U.S. economy of tens of thousands of well compensated jobs, and they retard the development of a sector of the economy whose promise for a sustainable energy future is indisputable. The benefits of the measures would have to be very substantial indeed to outweigh such costs, but the unfortunate truth is that the benefits have been minimal and have accrued in large measure to foreign – not domestic – production. It is time for these trade restrictions to be terminated, so that the entire solar value chain can return to

³ Thomas J. Prusa, PhD, Rutgers University, *An Economic Analysis of the Impact of Section 201 Safeguard Duties on Solar Deployment and Jobs* (Nov. 20, 2019) (Dr. Prusa's Economic Analysis") (**Appendix B**).

a more natural developmental path and thereby maximize its ability to contribute to the economic and environmental welfare of all Americans.

I. RECENT MARKET DEVELOPMENTS DEMONSTRATE THAT THE ECONOMIC COSTS OF THE SAFEGUARD MEASURES HAVE EXCEEDED ECONOMIC BENEFITS

A. Efforts to Adjust to Import Competition Should Be Considered in the Context of the Measures Having Been Designed to Promote Greater Economic and Social Benefits than Costs

Pursuant to Section 204(a)(1) of the Trade Act, “{s}o long as any safeguard measure remains in effect . . . the Commission shall monitor developments with respect to the domestic industry, including the progress and specific efforts made by workers and firms in the domestic industry to make a positive adjustment to import competition.”⁴ Because the solar safeguard measures will remain in effect for more than three years, the Commission must also submit a report to the President and Congress on the results of its monitoring by the midpoint of the relief period.⁵ The statute does not further mandate the scope of the Commission’s report, but the progress of the domestic industry’s adjustment efforts can only be gauged by reference to developments in the broader market as they may have been affected by the safeguard measures. Indeed, “{t}he legislative history of Section 204 of the Act directs that adjustment efforts should be evaluated in light of existing economic conditions.”⁶

In evaluating any changes to the domestic industry, the Commission should bear in mind that safeguard measures must be formulated so as to provide a net economic and social benefit.

⁴ Trade Act § 204(a)(1); 19 U.S.C. § 2254(a)(1).

⁵ Trade Act § 204(a)(2); 19 U.S.C. § 2254(a)(2).

⁶ *Large Residential Washers: Monitoring Developments in the Domestic Industry*, Inv. No. TA-204-013, USITC Pub. 4941 at 4 (Aug. 2019); *Steel*, Inv. 204-9 (Monitoring), USITC Pub. 3632, Vol. I at xxii (Sept. 2003). For example, the Senate Report for the Trade Act of 1974 explained, “in advising the President . . . as to the probable economic effect on the industry concerned, the Commission *must* take into account all economic factors which it considers relevant” S. REP. NO. 93-1298, *as reprinted in* 1974 U.S.C.C.A.N. 7186, 7272 (emphasis added).

In other words, as the President has acknowledged, the statute requires that the measures must “provide greater economic and social benefits than costs.”⁷ More specifically, the statute directs the President to account for “the *short- and long-term economic and social costs of the actions . . . relative to their short- and long-term economic and social benefits* and other considerations relative to the position of the domestic industry in the United States economy.”⁸ This involves consideration of “*factors related to the national economic interest of the United States*” including “*the effect of the implementation of actions under this section on consumers and on competition in domestic markets.*”⁹

In the underlying Section 201 investigation of CSPV solar cells and modules, Commissioners Johanson and Williamson recommended a remedy that turned out to be very close to the remedy that was actually imposed by the President,¹⁰ and they did not ignore likely effects on upstream and downstream industries in their remedy analysis. Specifically, they observed that Suniva’s “floor price” proposal was “lacking in flexibility to ensure a sufficient supply of CSPV products in module form in the U.S. market.”¹¹ They further indicated that implementation of Suniva’s proposal “may leave an insufficient supply of modules for the utility segment.”¹² In addition, they relied on a partial-equilibrium model, which focused on cell and module producers, to estimate the likely impact of recommended remedies. They viewed this as a flaw in the model, not a desirable feature. As the Commissioners explained, “{k}ey among

⁷ Proclamation 9693 of January 23, 2018: *To Facilitate Positive Adjustment to Competition From Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled Into Other Products) and for Other Purposes*, 83 Fed. Reg. 3541, 3542 (Jan. 25, 2018) (citing Trade Act § 203(a)(1)(A); 19 U.S.C. § 2253(a)(1)(A)).

⁸ Trade Act § 203(a)(2)(E); 19 U.S.C. § 2253(a)(2)(E) (emphasis added).

⁹ Trade Act § 203(a)(2)(F); 19 U.S.C. § 2253(a)(2)(F) (emphasis added).

¹⁰ *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 4739, Vol. I at 2-3 (Nov. 2017).

¹¹ *Id.* at 95.

¹² *Id.*

these limitations is the fact that the model does not address the impact of our proposed remedies on upstream or downstream industries or on the rest of the U.S. economy.”¹³

All of the factors considered by the President in regard to remedy in a Section 201 investigation remain relevant to any changes he decides to implement following the Commission’s monitoring report. Under Section 204(b)(1)(A)(ii), a key issue the President must consider upon the conclusion of the mid-term review is whether “the effectiveness of the action taken under Section 203 has been impaired by changed economic circumstances.”¹⁴ The legislative history of the Trade and Competitiveness Act of 1988, which added this language to the statute, provides little guidance as to its meaning other than to give examples of changed economic circumstances: “substantial shifts in currency exchange rates or attempts to circumvent the action taken.”¹⁵ In fact, the only criteria Congress has provided the President for assessing the effectiveness of safeguard measures are the ones provided in Section 203 for action by the President after the Commission’s injury investigation, which – as discussed above – require that the President take into account the *national* economic interest. Thus, in order for the Commission to provide the President with the information necessary for him to apply the Section 203 criteria in light of changed economic circumstances, it should evaluate the broad impact of the current measures.

B. Trade Restrictions Dampened Demand and Reduced Deployment at a Severe Cost to the U.S. Solar Industry

The U.S. Department of Energy touts the benefits of solar energy in the United States on its website:

Solar power is more affordable, accessible, and prevalent in the United States than ever before. Since 2008, U.S. installations have grown 35-fold to an estimated

¹³ *Id.* at 97.

¹⁴ 19 U.S.C. § 2254(b)(1)(A)(ii).

¹⁵ House Conf. Rep. No. 100-576 at 688 (Apr. 20, 1988).

62.5 gigawatts (GW) today. This is enough capacity to power the equivalent of 12 million average American homes. Since the beginning of 2014, the average cost of solar photovoltaic (PV) panels has dropped nearly 50%.

Markets for solar energy are maturing rapidly around the country, and solar electricity is now economically-competitive with conventional energy sources in several states, including California, Hawaii, and Minnesota. Moreover, ***the solar industry is a proven incubator for job growth throughout the nation***. Solar jobs have increased by nearly 160% since 2010, which is nine times the national average job growth rate in the last five years. There are more than 242,000 solar workers in the United States, with manufacturing being the second largest sector in the solar industry.¹⁶

Despite the clear benefits associated with solar energy and the progress this particular sector of the energy market has made in the last decade, which have paid substantial environmental and employment dividends, the President's solar safeguard measures have unquestionably impeded solar development in the United States.

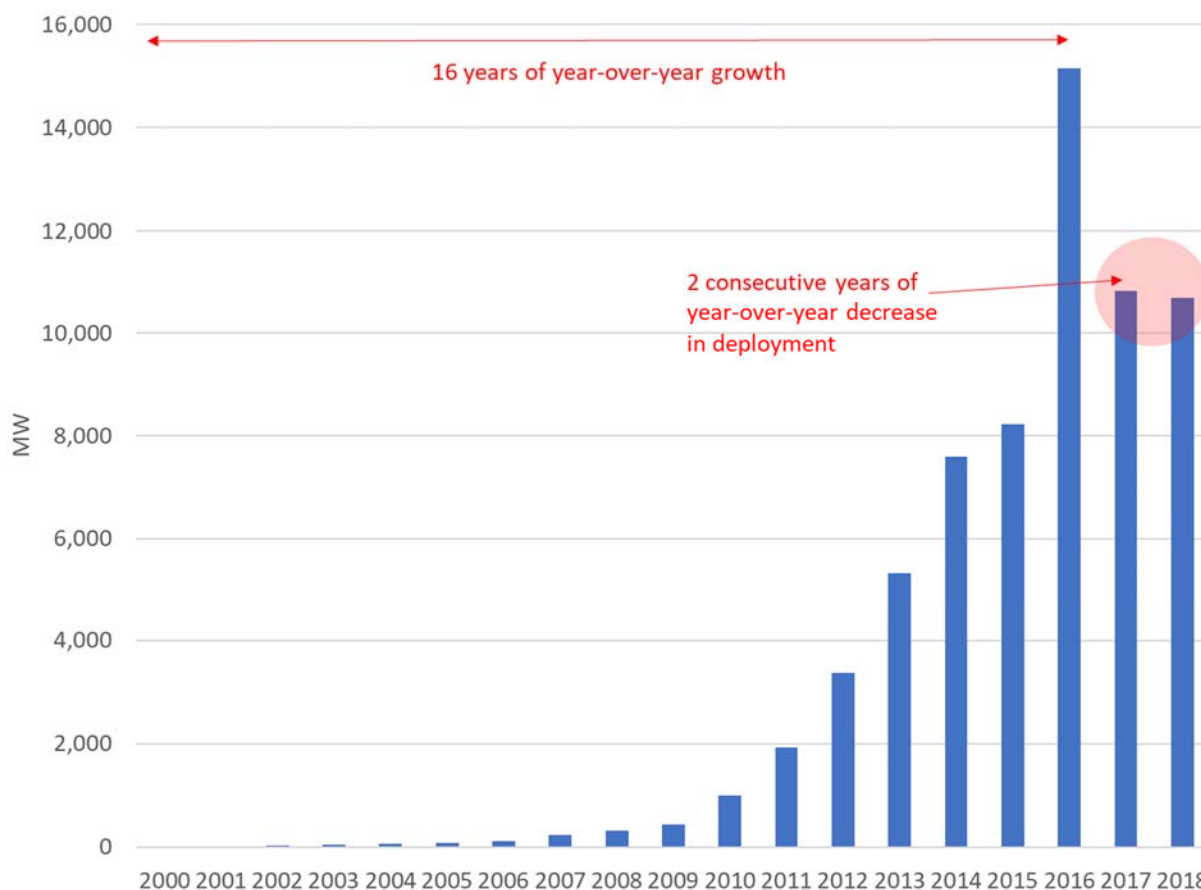
1. The Safeguard Measures Reversed Years of Growth throughout the Solar Industry

Before the safeguard investigation in 2017, the U.S. solar industry had ***16 consecutive years of growth*** with an average annual growth rate of 68% over the 2000-2016 period:¹⁷

¹⁶ U.S. Department of Energy, Office of Energy Efficiency & Renewable Energy, *Solar Energy in the United States* (<https://www.energy.gov/eere/solarpoweringamerica/solar-energy-united-states>) (citations omitted) (last visited Nov. 24, 2019) (emphasis added) (**Exhibit 1**).

¹⁷ Annual U.S. Solar Deployment (2000-2018) (**Exhibit 2**).

Impact of Safeguard Case on U.S. Solar Deployment ¹⁸



Between 2012 and 2016, solar demand grew by more than 45% per year (on average). Even focusing on 2012 to 2015 (and not 2016 when demand was fed by the impending expiration of the federal Investment Tax Credit), demand grew by more than 30% per year. After years of dynamic growth, however, total solar installations declined as a direct result of the safeguard investigation.¹⁹ Moreover, after growing “steadily” as a share of new U.S. electricity

¹⁸ Annual U.S. Solar Deployment (2000-2018) (**Exhibit 2**).

¹⁹ SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 6 (**Exhibit 5**).

generating capacity additions during 2012-2016,²⁰ solar fell from 40% of new capacity additions in 2016, to 33% in 2017 and 29% in 2018, just below the 2015 level of 30%.²¹

For purchases of CSPV products alone, apparent U.S. consumption increased in every year from 2012 to 2016, growing by []% in total over the period, with an annual average growth rate of []%.²² Between 2016 and 2018, however, apparent consumption fell by []%, falling by []% between 2017 and 2018.²³

This reversal of fortunes is directly attributable to the safeguard measures.

2. There Are Fewer Solar Installations Due to the Safeguard Measures

SEIA conducted an impact analysis (**Appendix A**), using industry-accepted modeling, to quantify the effect of the safeguard measures on U.S. demand in terms of losses in the deployment of solar installations.²⁴ Taking into account the chilling effect of the investigation starting in 2017 and the increased cost of the tariffs imposed starting in 2018, SEIA found that the safeguard measures come at a high cost to the American solar industry. By the end of the safeguard period, the specific costs are as follows:

- **10.5 GW of lost solar deployment**
(Enough to power 1.8 million homes and avoid 26 million metric tons of carbon dioxide emissions)
- **\$19 billion in lost investments**
- **Up to 62,000 fewer annual solar jobs²⁵**

²⁰ Prehearing Report at II-12.

²¹ Prehearing Report at II-14 (Figure II-3).

²² Prehearing Report at D-5 (Table C-1a from the safeguard investigation).

²³ Prehearing Report at C-3 (Table C-1).

²⁴ SEIA Impact Study (**Appendix A**).

²⁵ *Id.* at 2.

Thus, SEIA found that the U.S. solar market would have been much better off without the measures: “The Section 201 tariff {on modules} is significantly undercutting price gains from technology advancements and slowing the pace of solar adoption.”²⁶

In a separate report focusing solely on the 2018-2021 safeguard period (**Appendix B**), Dr. Thomas Prusa, Professor of Economics at Rutgers University, confirmed SEIA’s conclusions.²⁷ Dr. Prusa explains:

Importantly, the deployment and employment models demonstrate that, despite the annual step-down in the size of the tariffs, the economic impact of the tariffs is increasing over time. In other words, as bad as the last two years have been, the most significant deployment losses from the safeguard duties are still in front of us.

This insight can be explained as follows. Wood Mackenzie’s sophisticated deployment model captures a variety of economic incentives that affect the viability of PV. Among the factors the Wood Mackenzie model incorporates are information on module prices, balance of system costs, state and local regulations, and Federal tax incentives (the ITC). And as of February 2018, the model incorporates the safeguard tariffs. Importantly, the safeguard tariffs are not the only economic consideration that the model permits to change over time. Even more subtly, Wood Mackenzie’s model allows some of the factors to change not just over time but also by region (i.e., it allows for the fact that the rules governing PV for the state of Indiana are not the same as those for the state of California). As conditions change, projects that might not have been economically viable in 2019 might become viable in 2020 – but not if the safeguard tariffs remain in place (even if stepped lower). Wood Mackenzie’s analysis reveals that the tariffs have a fundamental impact on the economics of greater and greater volumes of deployment in 2020 and 2021. As a result, it is incorrect to simply use the size of the tariff as a measure of the restrictiveness of the CSPV safeguard policy. A proper economic analysis must take into account the precise competitive conditions in thousands of local markets to correctly compute the impact of the safeguard policy.²⁸

Dr. Prusa highlights the importance of grid parity, which reflects the competition solar faces from other forms of electricity generation. “Demand for CSPV products is a derived demand in the sense that the product ultimately being demanded is electricity.”²⁹ Demand for

²⁶ *Id.* at 6 (**Appendix A**).

²⁷ Dr. Prusa’s Economic Analysis (**Appendix B**).

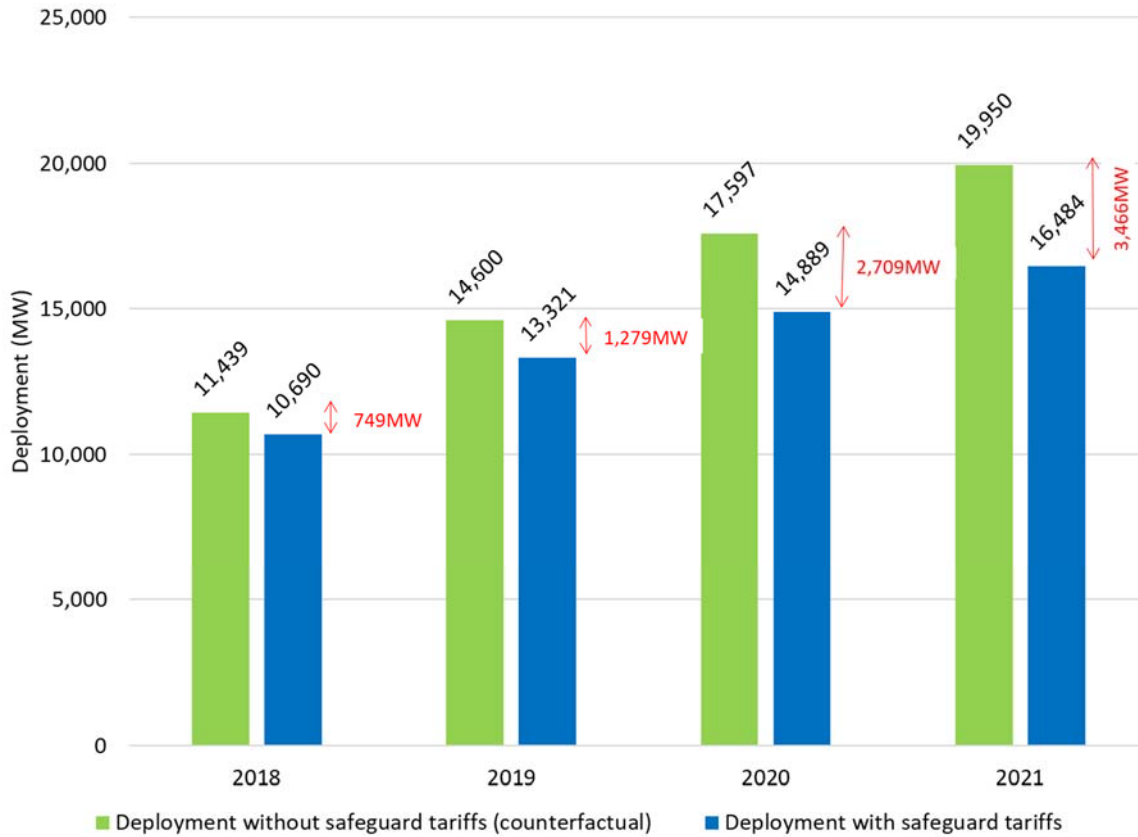
²⁸ *Id.* at 4-5.

²⁹ *Id.* at 10.

CSPV therefore depends on whether the cost of electricity generation is competitive with the cost of electricity generated using alternative methods, such as coal, natural gas, hydro, nuclear power, wind, and thin film solar. Constant and predictable cost reductions in this industry – which are technologically driven and understood as manifestations of “Swanson’s Law” – have continued over the last two years. These gains, however, are being undercut significantly by the safeguard measures.

As a result, instead of 63.6 GW of new solar deployment during the period of the safeguard measures, only 55.4 GW are expected – an opportunity cost of 8.2 GW of deployment:

**Estimated Solar Deployment,
with and without the Safeguard Measure ³⁰**



The calculations summarized in the figure above, and discussed in detail in Dr. Prusa’s report, do not rely upon the traditional Armington elasticities approach used by the Commission, which is an inadequate policy tool as it cannot capture critical location-specific and segment-specific demand considerations. A modeling approach that analyzes national demand (without any regional or market segment nuance) simply cannot accurately assess the impact of the safeguard tariffs on deployment. Key to an understanding of the cost competitiveness of solar is

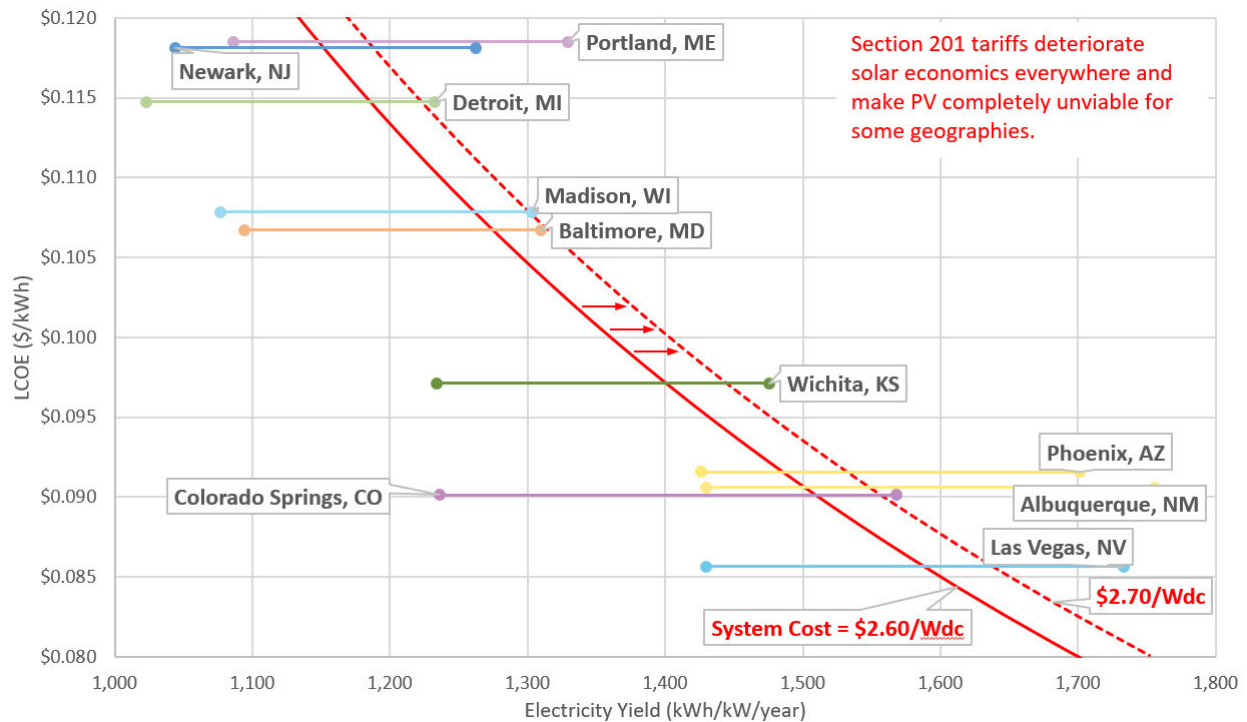
³⁰ *Id.* at 38 (citing SEIA’s Impact Study (**Appendix A**) and various issues of Wood Mackenzie *Solar Market Insight* (**Exhibits 3-4, 6**)).

the critical geographical variation in “levelized cost of electricity” (“LCOE”). As Dr. Prusa explains:

CSPV’s ability to have “grid parity” with other forms of electricity production depends not just on the cost of CSPV (vis-à-vis other forms of electricity generation) but also on the amount of sunlight in a given location. For instance, at a given price/watt, a solar installation might be cost efficient in Phoenix, AZ but not in, say, Madison, WI. Or more subtly, at a given price/watt a solar installation might be economically cost efficient for a south-facing location in Phoenix but not for an east- or west-facing location in Phoenix.³¹

Local increases in LCOE as a result of the tariffs have likely pushed solar out of grid parity in several state markets. The following discussion explains the subtle analysis that implies differential impact from region to region.

Viability of PV for Selected Cities – System Cost with and without Safeguard Tariff³²



³¹ Dr. Prusa’s Economic Analysis at 19 (Appendix B).

³² *Id.* at 15 (citing SEIA’s Impact Study (Appendix A) and various issues of Wood Mackenzie *Solar Market Insight* (Exhibits 3-4, 6)).

The curves represent the “break even” trade-off between LCOE and electricity yields for a given system cost (per Watt).³³ One curve represents “break even” if the installed cost of a residential PV system is \$2.60/W; the other curve depicts “break even” if the installed cost of a residential PV system is \$2.70/W. The rightward shift in the cost curves (from \$2.60/W to \$2.70/W) illustrates the impact of a tariff on modules on the cost of a residential PV system. The figure reveals that even in highly advantageous locations for solar, like Phoenix, AZ, the tariff makes solar uneconomical for some residential locations. Under the assumptions in the chart, in Wichita, KS, the tariff makes solar uneconomical in all but the most ideal locations. Under the same assumptions, the cost shift would eliminate the economic rationale for all residential solar in Baltimore, MD and Madison, WI.

In addition to the locational variation in grid parity shown above, there is also variation in grid parity by market segment even within a given geographical area. That is, for a particular location, a residential solar installation might be cost effective while a commercial installation might not be. This is because other costs of solar deployment vary by segment as do demand-side incentives; these differences can mean residential solar might thrive in an area while utility-scale solar might not be able to compete (or vice-versa).

Using the deployment forecasts from one of the world’s foremost solar industry experts (Wood Mackenzie), Dr. Prusa’s report assesses demand at a disaggregated location-specific and market-segment level and thus can accurately capture these types of highly nuanced demand effects. It is granular enough to capture that the impact on demand will vary over time due to the complicated economic considerations in the choice of electricity generation. As noted above,

³³ For a more detailed analysis, see Dr. Prusa’s Economic Analysis at pages 13-20 (**Appendix B**).

this model shows that solar deployment from 2018 to 2021 will be 8.2 GW lower as a result of the imposition of the safeguard tariffs.

Market participants have confirmed the negative effect of the safeguard measures on demand:

- Swinerton Renewable Energy: “In 2019 and into 2020, we are continuing to see the impact of the tariffs on our project pipeline. The Section 201 safeguard tariff caused a slowdown in solar development projects. Projects that, absent the tariff, would have been constructed in 2018 or 2019 are now being forecasted for 2020 and 2021 due to costs. The continued delay of these projects impacts our ability to create more jobs, as well as train and retain employees, which is critical to the mostly rural economies where we operate. As an example, on average for a 50MW project, we make about 130 local hires and for a 300MW project we make roughly 500 local hires. The income that could be generated coupled with the money spent in the local communities on goods and services, rental equipment, and local suppliers is also lost or postponed as a result of these tariffs.”³⁴
- []: “[]”³⁵ “[]”³⁶
- “[]”³⁷
- “[]”³⁸
- []: “[]”³⁹

³⁴ Affidavit of George Hershman, President, Swinerton Renewable Energy at 2 (**Exhibit 7**).

³⁵ [] U.S. Purchaser Questionnaire Response at III-7.

³⁶ [] U.S. Purchaser Questionnaire Response at III-2.

³⁷ [] U.S. Purchaser Questionnaire Response at III-2.

³⁸ [] U.S. Purchaser Questionnaire Response at III-6(b).

³⁹ [] U.S. Purchaser Questionnaire Response at III-12(b).

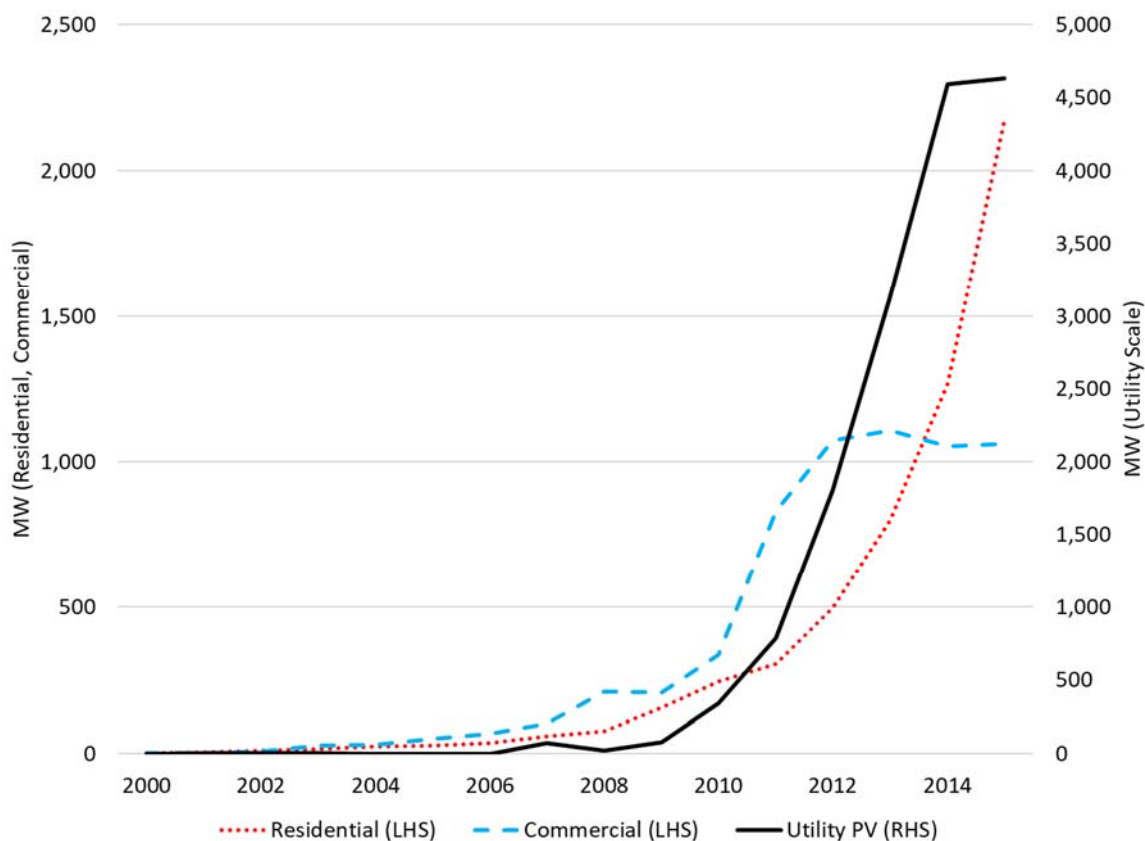
- []: “[]”⁴⁰ “[]”⁴¹
- []: “[]”⁴² “[]”⁴³

The Staff acknowledged that demand forecasts in the United States anticipate growth, “but in a more tempered manner.”⁴⁴ This is putting it mildly. The safeguard measures have had a severe impact on U.S. deployment at a cost to our country’s development of cleaner renewable energy as well as thousands of quality jobs, and that impact is ongoing.

3. The Effects on Deployment Have Been Severe Across All Segments that Use Solar

As shown below, for many years, all three market segments – residential, commercial, and utility – experienced nearly continuous, high rates of growth. The annual reductions in price/watt allowed PV to be economically more and more viable over the entire period.

⁴⁰ [] U.S. Purchaser Questionnaire Response at II-3.
⁴¹ [] U.S. Purchaser Questionnaire Response at III-2.
⁴² [] U.S. Purchaser Questionnaire Response at IV-1.
⁴³ [] U.S. Purchaser Questionnaire Response at III-2.
⁴⁴ Prehearing Report at II-16.

Deployment by Market Segment, 2000-2015 (MW)⁴⁵

The large gains in deployment levels from 2010 to 2015 make it impossible to see here that PV had experienced impressive growth *rates* throughout the entire 15-year period preceding the safeguard tariffs.⁴⁶ To see it, in the following table we divide the 2000-2015 period into three 5-year sub-periods: 2000-2005, 2005-2010, and 2010-2015. For each 5-year period, we compute the cumulative average growth rate (“CAGR”) for each market segment. As seen, the CAGR for each of the three segments was impressive throughout the period. For the commercial segment, the 26% growth rate over 2010-2015 was the lowest growth rate of any of the three

⁴⁵ Dr. Prusa’s Economic Analysis at 7 (citing Annual U.S. Solar Deployment, 2000-2018 (**Exhibit 2**)) (**Appendix B**).

⁴⁶ This period was selected because 2016 and 2017 were anomalous years; the large increase in deployments in 2016 was due in large part to the impending expiration of the federal Investment Tax Credit and 2017 was distorted due to the safeguard investigation.

periods. The same is true for the residential segment: the 54% growth rate over 2010-2015 was the lowest of the three periods. For utility-scale, the 2010-2015 growth (68%) was about one-fourth the growth rate of the 2005-2010 period (248%):

Cumulative Average Growth Rates, by Market Segment, 2000-2015⁴⁷

	Commercial	Residential	Utility Scale	Grand Total
2000-2005	87%	94%	7%	85%
2005-2010	46%	55%	248%	66%
2010-2015	26%	54%	68%	52%

Looking forward, during the four-year safeguard period, Wood Mackenzie projects lost deployment in each sector, which is clearly at odds with the historical trend. Deployment fell in 2017 and again in 2018. These deployment reductions correspond to the year of the Section 201 investigation (which created considerable uncertainty for the market) and the first year the safeguard duties were in place (which made the U.S. the highest cost CSPV market among all major markets).⁴⁸ Importantly, each of the three market segments are damaged by the safeguard duties, with the residential segment experiencing the largest percentage impact and the utility segment suffering the largest drop in volume.

Summary: Impact of Safeguard Tariff, 2018-2021⁴⁹

	Lost Deployment (MW)	% Reduction Deployment
Residential	3,214	-22%
Commercial	1,265	-14%
Utility-Scale	3,724	-9%
TOTAL	8,203	-13%

These figures include projects that used non-subject solar products (*i.e.*, thin-film PV). As discussed further below, there has been a surge of non-subject thin-film PV imports from

⁴⁷ Dr. Prusa's Economic Analysis at 7 (citing Annual U.S. Solar Deployment, 2000-2018 (**Exhibit 2**)) (**Appendix B**).

⁴⁸ *Id.* at 9.

⁴⁹ SEIA analysis based on comparison of Wood Mackenzie's deployment forecast with safeguard tariffs versus deployment forecast without safeguard tariffs on a segment-specific basis (**Exhibit 8**).

Malaysia and Vietnam, as First Solar has ramped up its capacity and production in those countries. The impact of reduced deployments was therefore concentrated in projects that would have used subject CSPV modules.

This is confirmed by questionnaire data modules, which show that the utility segment disproportionately bore the brunt of the decline in shipments of modules. Shipments of modules from all sources to the utility segment accounted for between []% of total shipments, but they accounted for a much larger share ([]%) of the decline from 2017 to 2018.⁵⁰

There are many concrete examples of these kinds of losses:

President Donald Trump's tariff on imported solar panels has led U.S. renewable energy companies to cancel or freeze investments of more than \$2.5 billion in large installation projects, along with thousands of jobs, the developers told Reuters.

. . . *"Solar was really on the cusp of being able to completely take off,"* said Zoe Hanes, chief executive of Charlotte, North Carolina solar developer Pine Gate Renewables.

. . . *Leading utility-scale developer Cypress Creek Renewables said it had been forced to cancel or freeze \$1.5 billion in projects* — mostly in the Carolinas, Texas, and Colorado — because the tariff raised costs beyond the level where it could compete, spokesman Jeff McKay said.

. . . *Developer Southern Current has made similar decisions on about \$1 billion of projects*, mainly in South Carolina, said Bret Sowers, the company's vice president of development and strategy.

. . . Pine Gate, meanwhile, will complete about half of the 400 megawatts of solar installations it had planned this year and has ditched plans to hire 30 permanent employees, Hanes said. The company also withdrew an 80-megawatt project that would have cost up to \$150 million from consideration in a bidding process held by Southern Co. utility Georgia Power. It pulled the proposal late last year when it learned the Trump administration was contemplating the tariff. "It was just not feasible," Hanes said.⁵¹

⁵⁰ Module Shipments by Channel (citing Prehearing Report at II-4 (Table II-1)) (**Exhibit 9**).

⁵¹ *Billions in US solar projects have been shelved after Trump panel tariff*, CNBC (June 7, 2018) (emphasis added) (**Exhibit 10**).

Clearway Energy is one of the Nation’s largest solar development companies with a portfolio spread across 25 states that includes 2.8 GW of wind, 1.1 GW of utility solar, and over 300 MW of distributed and community solar. Clearway Energy’s President, Craig Cornelius, has attested, “{t}he Section 201 safeguard tariff caused a slowdown in solar development projects in 2018 and 2019. . . Clearway and other developers found it challenging to procure domestically manufactured modules for our utility-scale development projects. Reduced deployment impacts American companies and workers. Reduced deployment impacts American companies and workers. Based on our portfolio, for a utility-scale solar project, each megawatt of solar brings with it two full-time equivalent (FTE) jobs, primarily in construction; for distributed solar, the number is higher. Simply put, reduced deployment means lost jobs.”⁵²

[] in its U.S. purchaser questionnaire response:

[]⁵³

Similarly, [] explained:

[]⁵⁴

⁵² Affidavit of Craig Cornelius, President, Clearway Energy Group at 2 (**Exhibit 11**).

⁵³ [] U.S. Purchaser Questionnaire Response at IV-1.

⁵⁴ [] U.S. Purchaser Questionnaire Response at IV-1.

] ⁵⁵

EDF Renewables Distributed Solutions, Inc. (“EDF-R”) is one of the nation’s largest utility-scale energy development companies, employing approximately 900 people in the United States.⁵⁶ EDF-R placed about 408 MW of solar projects into service during 2016-2018 and has installed or is scheduled to install another [] MW in 2019 – all throughout the country.⁵⁷ Jamie Roser, EDF-R’s Chief Executive Officer, attests to the negative impact that the safeguard measure has had on demand:

For each of the next 2 years (in 2020 and 2021), EDF-R expects to place into service at least the scale of solar projects brought on line in 2018 and 2019; however, current trade restrictions and uncertainties could will limit these amounts for 2020 and 2021. Trade restrictions on Crystalline Silicon Photovoltaic (“CSPV”) solar modules harm U.S. demand for utility-scale solar energy, which competes with other forms of power generation in the United States. *Trade restrictions have led to reduced demand for new solar energy, fewer installations, cancelled projects, lost revenue, and reduced employment across all sectors of the domestic solar market.* EDF-R is opposed to restrictions that inhibit the ability to create new solar energy in the United States.⁵⁸

In summary, as explained by Dr. Prusa, “{b}ecause of the tariffs, deployment and employment in the solar industry have been adversely impacted to a substantial degree over the last two years. In 2018 and 2019 alone, thousands of megawatts of solar have not been deployed because of the safeguard tariffs. In turn, the fall in deployment has resulted in the loss of tens of thousands of jobs, mostly jobs held by blue-collar workers ⁵⁹

⁵⁵ [] U.S. Purchaser Questionnaire Response at II-2(b).

⁵⁶ Affidavit of Jamie Roser, Chief Executive Officer of EDF Renewables Distributed Solutions, Inc. at 1 (**Exhibit 12**).

⁵⁷ *Id.*

⁵⁸ *Id.* at 2 (emphasis added); *see also id.* (“There are significant domestic supply limitations for such equipment {modules and other equipment}, and the various import duties in place impede what would otherwise be more aggressive installation plans for solar power.”).

⁵⁹ Dr. Prusa’s Economic Analysis at 3 (**Appendix B**).

C. Reduced Deployment Has Cost U.S. Jobs Throughout the Solar Supply Chain

1. The Safeguard Investigation and the First Year of the Measures Have Already Put Thousands of People Out of Work

The positive job trends in recent years reversed due to the safeguard measures. The solar industry had been a major engine of growth for the economy, with solar employment having grown by 159% from just over 93,000 jobs in 2010 to more than 242,000 in 2018 in all 50 states.⁶⁰ According to the Solar Foundation:

This year's *National Solar Jobs Census* found that solar employment experienced its ***second decline*** since The Solar Foundation first began tracking jobs in 2010.⁶¹

After the safeguard investigation was initiated, the industry lost 17,000 jobs since 2016 and 8,000 jobs since 2017.⁶² By comparison, the 2017 National Solar Job Census had predicted job *growth* of 5.2% in 2018, indicating that the safeguard case had a net negative effect of 8.4 percentage points (3.2% decline compared to 5.2% increase).⁶³

The Solar Foundation cited the Section 201 investigation as the first of two key factors leading to the decline in solar jobs (state policy and economic challenges was the second factor):

Uncertainty over the outcome of the Section 201 trade case before the new solar tariffs were announced in January 2018. This uncertainty led to project delays, especially for the larger, utility-scale installations.⁶⁴

Although module production in the United States has expanded, this has not translated into more American manufacturing jobs. During the period of review, solar manufacturing jobs actually *declined* by 11.5%.⁶⁵ Moreover, manufacturing – which comprises more than cell and

⁶⁰ Solar Foundation, *National Solar Jobs Census 2018* at 5 (**Exhibit 14**).

⁶¹ *Id.* (emphasis added).

⁶² *Id.* at 5, 64.

⁶³ Solar Foundation, *National Solar Jobs Census 2017* at 5 (**Exhibit 13**).

⁶⁴ Solar Foundation, *National Solar Jobs Census 2018* at 5 (**Exhibit 14**).

⁶⁵ *Id.* at 15.

module production⁶⁶ – represents only 14% of total solar employment in the United States; the majority of job losses occurred in downstream sectors:⁶⁷

U.S. Solar Industry Market Segments	2016	2017	2018
Installation/Project Development	171,533	165,174	155,157
Manufacturing	38,121	36,885	33,726
Wholesale Trade/Distribution	32,147	30,912	29,243
All Others	18,274	17,300	13,053
Operations/Maintenance			11,164
Overall	260,075	250,271	242,343

The loss of solar manufacturing jobs is not reflective of the broader economy where “U.S. manufacturing overall grew by 2.3% in 2018.”⁶⁸

As such, the safeguard measures did not achieve what the President intended. According to Greentech Media, “{i}n announcing Section 201 tariffs, President Trump promised they would buoy U.S. solar manufacturing and create ‘lots of really great jobs with products that are going to be made in the good old USA.’ So far, the results have been mixed.”⁶⁹ For example, “while SunPower has touted the factory as its commitment to U.S. manufacturing, the estimated 200 workers that it employs to make its P-19 modules is far less than the 700 which the SolarWorld factory employed at its peak”⁷⁰ and the company closed SolarWorld’s cell

⁶⁶ *Id.* at 38. “Solar energy systems are comprised of hundreds of components, such as cells, wafers, modules, racking, and inverters.” *Id.*

⁶⁷ *Id.* at 12-13, 15. The Solar Foundation added “Operations and maintenance” as a job category for the 2018 Census to “better reflect the current state of the industry.” *Id.* at 12. “All others” mainly represents research and development and related services, consulting, engineering, finance, legal, and other professional support services. *Id.* at 13.

⁶⁸ *Id.* at 38 (citing Establishment data, Table B-1a., Current Employment Statistics, Bureau of Labor Statistics).

⁶⁹ Emma Foehringer Merchant, *The Status of US Solar Manufacturing, One Year After Tariffs*, GREENTECH MEDIA (Feb. 25, 2019) (**Exhibit 15**).

⁷⁰ Christian Roselund, *SunPower is selling the former SolarWorld factory in Oregon*, PV MAGAZINE (May 17, 2019) (**Exhibit 17**).

production operations.⁷¹ The net result is thus far fewer jobs than SolarWorld promised during the remedy phase of the Commission's investigation.⁷²

An important reason for the lower than anticipated growth in solar manufacturing jobs is the high level of automation in the production process. One U.S. purchaser observed that “[

]”⁷³

For example, JinkoSolar's new module facility in Florida has been described as “state-of-the-art”: “Soldering is completely automated. Robots place and attach junction boxes. Artificial intelligence is used to find any microcracks in modules before they're laminated. Machines sort and box modules for shipment.”⁷⁴ Similarly, LG admits that its module facility in Huntsville, Alabama is “highly automated.”⁷⁵

There are substantially more manufacturing jobs along the broader solar supply chain, for example in the production of such essential equipment as racking, tracking, and mounting systems, than there are in cell and module production. The Solar Foundation projects 34,949 total solar manufacturing jobs in 2019.⁷⁶ Even if assemblers follow through with announced capacity expansions, total employment by U.S. CSPV module producers will be a fraction of that total – fewer than [] jobs.⁷⁷ According to the data collected by the Commission, total

⁷¹ Pete Danko & Jon Bell, *SunPower selling former SolarWorld facility in Hillsboro, settling into smaller operation on site*, PORTLAND BUSINESS JOURNAL (May 15, 2019) (**Exhibit 18**); Mark Osborne, *SunPower to spin off manufacturing operations*, PV TECH (Nov. 11, 2019) (“SunPower will only retain the P-Series module assembly operations at its facility in Oregon and focus on its downstream residential and commercial businesses.”) (**Exhibit 19**).

⁷² SolarWorld's Posthearing Remedy Brief, at 3 (**Exhibit 59**).

⁷³ [] U.S. Purchaser Questionnaire Response at III-3.

⁷⁴ Kelly Pickerel, *Three things SPW learned after touring JinkoSolar's Florida panel facility*, SOLAR POWER WORLD (Feb. 27, 2019) (**Exhibit 20**).

⁷⁵ Emma Foehringer Merchant, *The Status of US Solar Manufacturing, One Year After Tariffs*, GREENTECH MEDIA (Feb. 25, 2019) (**Exhibit 15**).

⁷⁶ Solar Foundation, *National Solar Jobs Census 2018* at 15 (**Exhibit 14**).

⁷⁷ Capacity and Employment of U.S. Module Manufacturers (**Exhibit 16**).

employment for domestic production of all CSPV products fell from [] production-related workers (“PRWs”) in 2016 to [] PRWs in 2017, fell slightly to [] PRWs in 2018, and increased from [] to [] PRWs between interim 2018 and 2019.⁷⁸ Notwithstanding the increase in employment in 2019, however, the number of jobs in cell and module manufacturing is small compared to the number of jobs in solar manufacturing as a whole, let alone the broader solar industry.⁷⁹

2. Tens of Thousands of Quality Jobs Will Be Lost during the Safeguard Period

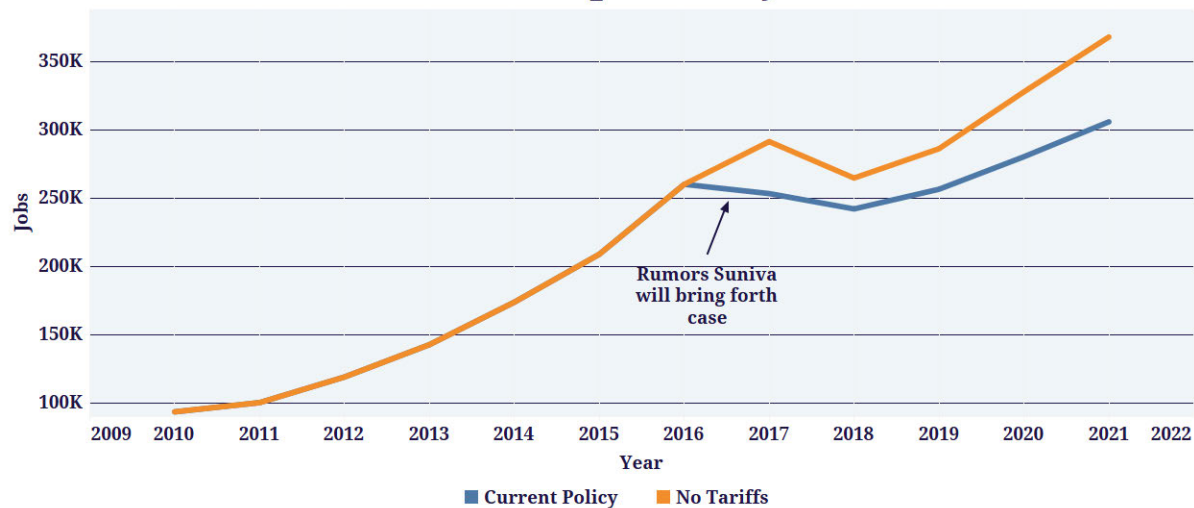
The net losses in actual jobs is only part of the story. SEIA went on to assess how many additional jobs there would have been without the tariffs. Using a projection developed before the safeguard investigation to provide a baseline for analyzing the current data, the results are clear:⁸⁰

⁷⁸ Prehearing Report at III-27 (Table III-11). The number of module production related workers, in particular, may be understated. The Commission received 15 questionnaire responses representing approximately 90% of cell capacity and only 40% of module capacity in the United States in 2018. Prehearing Report at I-32. Still, the number of jobs in cell and module manufacturing is small even if the Commission had complete data. *See* Capacity and Employment of U.S. Module Manufacturers (**Exhibit 16**)

⁷⁹ *Compare* Solar Foundation, *National Solar Jobs Census 2018* at 15 (**Exhibit 14**) with Capacity and Employment of U.S. Module Manufacturers (**Exhibit 16**). The hourly wages at these new factories are also, on average, lower than those paid for other jobs along the solar supply chain. *Compare* Prehearing Report at III-27 (Table III-11) (1H 2019 wages) with Solar Foundation, *National Solar Jobs Census 2018* at 53 (**Exhibit 14**).

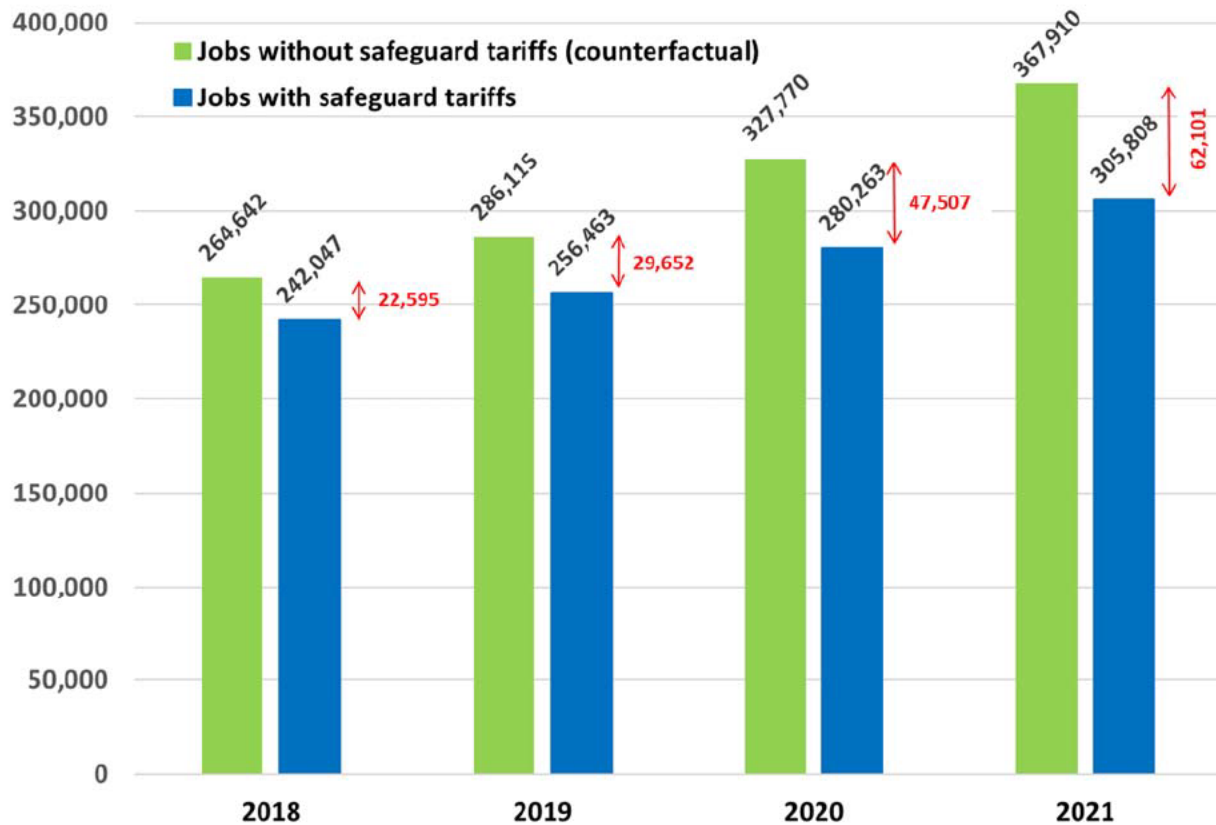
⁸⁰ SEIA’s Impact Study at 9 (**Appendix A**).

Tariff Impact on Jobs



Over the course of the four years of safeguard relief, SEIA estimates a loss of **over 62,000 jobs** that would have been powered by a larger number of solar installations absent the tariffs.

Impact of the Safeguard Measure on Jobs ⁸¹



By comparison, new module facilities (when fully ramped up) will create only around 1,100 new jobs.⁸² The costs therefore far outweigh any benefit gained from the tariffs. Indeed, “{e}ach new solar panel manufacturing job cost{s} the U.S. 31 {solar-related} jobs, 5.3 MW of deployment, and nearly \$9.5 million in investments.”⁸³

Overall solar-related jobs – including manufacturing jobs – would have flourished with increased deployment, but the safeguard measures artificially limit that growth by favoring a

⁸¹ Dr. Prusa’s Economic Analysis at 53 (citing SEIA’s Impact Study (**Appendix A**) and various issues of Wood Mackenzie *Solar Market Insight* (**Exhibits 3-4, 6**)) (**Appendix B**).

⁸² *Id.* at 2, 30, 52. Based on questionnaire data, and including existing module producers, the total is only about [] new jobs. See Capacity and Employment of U.S. Module Manufacturers (**Exhibit 16**).

⁸³ SEIA’s Impact Study at 11 (**Appendix A**).

narrow segment of the supply chain that creates relatively few jobs. These costs far outweigh any benefits gained from increased domestic CSPV module production.

II. THE U.S. MARKET FOR SOLAR MODULES IS FACING SEVERE SHORTAGES

A. Public Sources and Questionnaire Data Confirm that the United States Lacks Sufficient Domestic Module Capacity

Three new module assembly facilities have opened in the United States since the safeguard measures were imposed: Hanwha's 1.7 GW factory in Georgia, LG's 500 MW factory in Alabama, and JinkoSolar's 400 MW factory in Florida.⁸⁴ In addition, Heliene revamped its 150 MW facility in Minnesota in 2018 to produce modules from cells instead of laminates and Silfab bought an existing plant in Washington to which it plans to add lines for 400-500 MW by the end of 2019.⁸⁵ With these additions, once fully ramped up, total CSPV U.S. module production capacity will be around 5 GW, but the United States is expected to install more than 12 GW of solar in 2019 – more than double domestic capacity.⁸⁶

Total domestic industry module capacity reported in the data collected by the Commission was 1.2 GW in first-half 2019,⁸⁷ which is dwarfed by apparent U.S. consumption of [] GW during that same period.⁸⁸ The reported capacity is equal to roughly 2.4 GW in 2019

⁸⁴ Christian Roselund, *Hanwha Q Cells opens the largest solar factory in the Western Hemisphere*, PV MAGAZINE (Sept. 23, 2019) (**Exhibit 21**). First Solar is constructing a fourth module facility in Ohio with the capacity to produce 1.2 GW using thin-film cells. *Id.* Announcements by CSUN and SolarTech Universal to expand module production are unconfirmed. *See* Kelly Pickerel, *New U.S. solar panel manufacturing activity happening in 2019*, SOLAR POWER WORLD (Jan. 8, 2019) (**Exhibit 22**). SolSuntech is a new company that may begin commercial production by the end of 2019. *Id.*

⁸⁵ Heliene U.S. Producer Questionnaire Response at II-2; Prehearing Report at Table III-1; Kelly Pickerel, *New U.S. solar panel manufacturing activity happening in 2019*, SOLAR POWER WORLD (Jan. 8, 2019) (**Exhibit 22**). Mission Solar announced plans to expand its 200 MW facility by an additional 200 MW, but the status of that expansion has not been confirmed. *Id.*

⁸⁶ NREL, *Q1/Q2 2019 Solar Industry Update* (Aug. 6, 2019) at 27 (**Exhibit 46**); Christian Roselund, *Hanwha Q Cells opens the largest solar factory in the Western Hemisphere*, PV MAGAZINE (Sept. 23, 2019) (**Exhibit 21**).

⁸⁷ Prehearing Report at III-14 (Table III-4).

⁸⁸ Prehearing Report at C-3 (Table C-1).

on an annualized basis; adding in the 1.2 GW of capacity for the nine module producers that did not provide questionnaires to the Commission⁸⁹ yields a total annual module capacity of 3.6 GW. Even if total solar installations in 2019 are [] GW (annualized first-half 2019 apparent consumption) as opposed to the 12 GW figure cited above, it is clear that domestic module capacity is woefully inadequate to meet the demands of the market. And when demand is permitted to flourish, following removal of demand-squelching safeguard relief, domestic capacity will be even less adequate to supply the market.

According to the Prehearing Staff Report, “a few purchasers . . . stated that domestic demand still exceeds domestic capacity.”⁹⁰ This is an understatement; it was more than a few. Many purchasers reported severe supply constraints in the United States and other supply-related problems. In fact, “{i}n contrast to U.S. producers’ responses,” most purchasers (27 of 41) reported that a supplier had refused, declined, or been unable to supply them with CSPV products since February 7, 2018.⁹¹ “One purchaser ([]) . . . reported that it added suppliers due to market-wide shortages, while another stated that there was a lack of domestic suppliers, and another stated that most available capacity remains overseas.”⁹² Other purchasers made similar statements:

- []: “[

]”⁹³ “[

]”⁹⁴ “[

⁸⁹ Prehearing Report at I-35 (Table I-10).

⁹⁰ Prehearing Report at II-10.

⁹¹ Prehearing Report at II-11.

⁹² Prehearing Report at II-18 to II-19.

⁹³ [

] U.S. Purchaser Questionnaire Response at III-6(b).

⁹⁴ [

] U.S. Purchaser Questionnaire Response at III-14.

- ”⁹⁵
- []: “[]”⁹⁶
 - []: “[]”⁹⁷ “[]”⁹⁸ “[]”⁹⁹
 - []: “[]”¹⁰⁰
 - []: “[]”¹⁰¹
 - []: “[]”¹⁰²
 - []: “[]”¹⁰³
 - []: “[]”¹⁰⁴
 - []: “[]”¹⁰⁵
- “[]”¹⁰⁶ “[]”¹⁰⁷

⁹⁵ [] U.S. Purchaser Questionnaire Response at III-13(c).
⁹⁶ [] U.S. Purchaser Questionnaire Response at III-14.
⁹⁷ [] U.S. Purchaser Questionnaire Response at II-3.
⁹⁸ [] U.S. Purchaser Questionnaire Response at III-2; *see also id.* at III-6(b)
 (“[]”).
⁹⁹ [] U.S. Purchaser Questionnaire Response at III-7.
¹⁰⁰ [] U.S. Purchaser Questionnaire Response at III-7.
¹⁰¹ [] U.S. Purchaser Questionnaire Response at III-6(b).
¹⁰² [] U.S. Purchaser Questionnaire Response at III-3.
¹⁰³ [] U.S. Purchaser Questionnaire Response at II-3.
¹⁰⁴ [] U.S. Purchaser Questionnaire Response at III-7.
¹⁰⁵ [] U.S. Purchaser Questionnaire Response at III-7.
¹⁰⁶ [] U.S. Purchaser Questionnaire Response at II-3.
¹⁰⁷ [] U.S. Purchaser Questionnaire Response at III-7.

- []: “[]”¹⁰⁸
- []: []¹⁰⁹ “[]”¹¹⁰
- []: “[]”¹¹¹
- []: “[]”¹¹²

Indeed, companies that expanded operations in the United States continue to import modules. [] explained that it imports because “[]

”¹¹³ []

]; yet, the company imported [] of modules during the first half of 2019.¹¹⁴ In fact, the company reported that “demand exceeded supply in 2019 for both U.S. and imported CSPV products, and that it had to refuse some new customers in order to fulfill orders with its existing customer base.”¹¹⁵

¹⁰⁸ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁰⁹ [] U.S. Purchaser Questionnaire Response at III-14.

¹¹⁰ [] U.S. Purchaser Questionnaire Response at III-6(b).

¹¹¹ [] U.S. Purchaser Questionnaire Response at III-6(b).

¹¹² [] U.S. Purchaser Questionnaire Response at II-3 *see also* [] U.S. Purchaser Questionnaire Response at III-7 (reporting a “[]”); [] U.S. Purchaser Questionnaire Response at III-8 (“[]”); *id.* at III-7 (“[]”).

¹¹³ [] U.S. Importer Questionnaire Response at II-4 (emphasis added); *see also* Prehearing Report at [].

¹¹⁴ Prehearing Report at []; []

].

¹¹⁵ Prehearing Report at II-11.

Similarly, [] explained that it imports because “[

]”¹¹⁶ [] imported [] MW of modules in the first six months of 2019 despite the fact that the []¹¹⁷ []

]”¹¹⁸ This is consistent with its reported imports of [

] during the first half of 2019.¹¹⁹ In addition, [] explained that “[

]”¹²⁰ And, [] reported [

]”¹²¹ Other U.S. producers made similar

statements. [] reported that it is “[

¹¹⁶ Prehearing Report at []; [] U.S. Importer Questionnaire Response at II-4.

¹¹⁷ Prehearing Report at []; [] U.S. Importer Questionnaire Response at []; [] U.S. Importer Questionnaire Response at []; []

[]. The firms also had over [] of arranged imports from July 2019 to June 2020, but the total is not segregated between cells and modules. [] U.S. Importer Questionnaire Responses at II-3. (Arranged imports by [] are not included in this amount because it stated that it imports []. [] U.S. Importer Questionnaire at II-4.)

¹¹⁸ Prehearing Report at []; [] U.S. Importer Questionnaire Response at II-4. []

¹¹⁹ [] U.S. Importer Questionnaire Response at []. [] of modules during interim 2019. Prehearing Report at [].

¹²⁰ [] U.S. Importer Questionnaire Response at II-4; *see also id.* at [] (reporting imports of [] during interim 2019); Prehearing Report at [].

¹²¹ Prehearing Report at []; [] U.S. Importer Questionnaire Responses at II-4; *see also id.* at [] (reporting imports of [] during interim 2019).

]”¹²² [] stated “[]”¹²³

This shortfall in domestic supply is not a new phenomenon; it was a principal concern in the original investigation. Nevertheless, domestic producers have focused on the production of products targeting the residential and commercial/industrial segments. The safeguard measures must be adjusted to recognize the supply shortage.

B. Existing Domestic Module Capacity Is Already Committed to Other Contracts, Leaving Many U.S. Purchasers without a U.S. Source of Supply

Availability of domestically produced modules is further constrained by existing supply commitments. Based on questionnaire responses, the Staff noted that “significant amounts of production has been promised through 2020.”¹²⁴ “Several firms reported high demand that supply has been unable to keep pace with, with some stating that many manufacturers are ‘booked’ through 2019 and 2020.”¹²⁵ And “{o}ne firm commented that while all sectors have experienced shortages, it is felt most heavily in the utility sector.”¹²⁶

For example, JinkoSolar’s new 400-MW plant in Florida is reportedly “focused on high-efficiency 60-cell and 72-cell monocrystalline PERC modules, primarily for supply contracts signed with US-based clean energy firm NextEra Energy and parent of utility, Florida Power & Light, totaling 2,750MW over a four year period.”¹²⁷ Limited availability is widespread. U.S. purchaser questionnaire responses confirm that domestic module producers are already committed to existing customers:

¹²² Prehearing Report at [].

¹²³ Prehearing Report at [].

¹²⁴ Prehearing Report at II-10.

¹²⁵ Prehearing Report at II-11.

¹²⁶ Prehearing Report at II-11.

¹²⁷ Mark Osbourne, *JinkoSolar officially opens 400MW module assembly plant in US*, PV TECH MAGAZINE (Feb. 26, 2019) (**Exhibit 26**); see also Kelly Pickerel, *Three things SPW learned after touring JinkoSolar’s Florida panel facility*, SOLAR POWER WORLD (Feb. 27, 2019) (**Exhibit 20**).

- []: “[]”¹²⁸
- []: “[]”¹²⁹
- []: []”¹³⁰
- []: “[]”¹³¹
- []: “[]”¹³²
- []: “[]”¹³³ “[]”¹³⁴ “[]”¹³⁵
- []: “[]”¹³⁶

¹²⁸ [] U.S. Purchaser Questionnaire Response at III-7.
¹²⁹ [] U.S. Purchaser Questionnaire Response at III-7.
¹³⁰ [] U.S. Purchaser Questionnaire Response at III-7.
¹³¹ [] U.S. Purchaser Questionnaire Response at III-7.
¹³² [] U.S. Purchaser Questionnaire Response at III-7.
¹³³ [] U.S. Purchaser Questionnaire Response at III-7.
¹³⁴ [] U.S. Purchaser Questionnaire Response at III-3.
¹³⁵ [] U.S. Purchaser Questionnaire Response at III-6(b).
¹³⁶ [] U.S. Purchaser Questionnaire Response at III-7. []

- []: “[]”¹³⁷
- []: “[]”¹³⁸
- []: “[]”¹³⁹
- []: “[]”¹⁴⁰

C. Domestic Production Does Not Meet the Needs of the Utility Sector, Even with Changes in the Industry Since Imposition of the Safeguard Measures

Of critical importance to the Commission’s investigation, only a small portion of domestic capacity is available for the utility-scale segment of the market, which is by far the largest segment, representing 58% to total solar installations in 2018 (6.2 GW of the total 10.7 GW) and forecast to represent more than 10 GW of solar installations in 2020.¹⁴¹ Only []% of U.S. producers’ shipments of modules in first-half 2019 went to the utility sector;¹⁴² thus, even though domestic module capacity falls far short of demand overall, only a minority of that capacity is available to serve the largest market segment.

For example, Hanwha Q CELLS’s U.S. facility markets to all segments, including residential, commercial/industrial, and utility-scale markets; JinkoSolar’s facility produces modules for residential and utility applications; and LG’s facility serves only the residential and

¹³⁷ [] U.S. Purchaser Questionnaire Response at III-7.

¹³⁸ [] U.S. Purchaser Questionnaire Response at III-7.

¹³⁹ [] U.S. Purchaser Questionnaire Response at III-7.

¹⁴⁰ [] U.S. Purchaser Questionnaire Response at III-7.

¹⁴¹ SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 20, 27, 41 (**Exhibit 5**); *see also id.* at 26, 38, 47 (projecting a total of 14.8 GW of solar installations in 2020: residential = 2,869 MW, commercial = 1,934 MW, and utility = 10,003 MW).

¹⁴² Prehearing Report at II-4 (Table II-1).

commercial segments.¹⁴³ According to [

] moved their U.S. supply from utility scale to support commercial and residential markets, which paid higher pricing than the utility scale market.”¹⁴⁴

As explained by several leaders in the U.S. solar industry:

Based on bankability and production-scale requirements, there are only four domestic solar module manufacturers even capable of servicing the utility segment, including CSPV module manufacturers Hanwha Q CELLS, Jinko Solar, and LG, and thin-film solar module manufacturer First Solar. Each of these companies primarily supplies U.S. utility projects by importing solar modules from their Southeast Asian manufacturing factories. The companies are limited in what they can supply to the utility segment from U.S. production.¹⁴⁵

Given Hanwha’s and JinkoSolar’s representations that they intend to serve all three market segments, we estimate that there is currently less than 1.0 GW of CSPV domestic production dedicated to producing utility-scale products, applying the utility segment’s 58% market share to Hanwha’s and JinkoSolar’s total production capacity.¹⁴⁶ Even once these plants are fully ramped up, their combined capacity to supply utility-scale projects will be barely over 1.0 GW.¹⁴⁷ And even assuming all of Hanwha’s and JinkoSolar’s U.S. production was dedicated

¹⁴³ Hanwha Q-CELLS website (<https://www.q-cells.us/>) (**Exhibit 27**); LG website (<https://www.lg.com/us/solar>) (**Exhibit 28**); Kelly Pickerel, *Three things SPW learned after touring JinkoSolar’s Florida panel facility*, SOLAR POWER WORLD (Feb. 27, 2019) (**Exhibit 20**); *LG Electronics Announces Plans for U.S. Solar Panel Assembly Plant*, RENEWABLE ENERGY WORLD (July 2, 2018) (**Exhibit 29**).

¹⁴⁴ Prehearing Staff Report at II-19.

¹⁴⁵ Letter to Honorable Jeffrey D. Gerrish, Deputy U.S. Trade Representative, from Craig Cornelius, CEO, Clearway Energy Group LLC; Tristan Grimbert, President & CEO, EDF Renewable Energy; Tom Buttgenbach, Co-Founder, President, & CEO 8minute Solar Energy; Nathanaël Esposito, President, Solar & Energy Storage, E.ON Climate & Renewables North America; Michael Polsky, CEO, Invenergy LLC, Ty Daul, President, Recurrent Energy Group; Jon Downey, CEO Southern Current; Ryan Creamer, CEO sPower; Goerge Hershman, President, Swinerton Renewable Energy; Guy Vanderhaegen, CEO, Orgis Energy (Aug. 7, 2019) at 1. (**Exhibit 30**). We note that LG is listed here as a possible supplier of utility-scale modules in theory, but as noted above, LG is not a realistic supplier for utility-scale projects due to its focus on residential and commercial markets.

¹⁴⁶ The utility segment accounted for 58% of total U.S. deployment in 2018 (6.2 GW of 10.6 GW total). See SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 6, 41 (**Exhibit 5**).

¹⁴⁷ Once fully operational, Hanwha and JinkoSolar will have combined U.S. module capacity of 2.1 GW. See Kelly Pickerel, *New U.S. solar panel manufacturing activity happening in 2019*, SOLAR POWER WORLD (Jan. 8, 2019) (**Exhibit 22**).

to serving the utility segment, total domestic capacity available to serve this market would still represent only 21% of total 2020 utility-scale demand.¹⁴⁸

The total amount of capacity is not the only relevant factor for utility-scale developers. Production scale and the ability to deliver within a limited time-period are critical issues as well. While a supplier might theoretically have adequate annual capacity to fill a utility-scale order, developers often require delivery of consistent supply over a period of a few months.¹⁴⁹ In addition, as explained by George Hershman, President of Swinerton Renewable Energy (an Engineering, Procurement, and Construction (“EPC”) that built 3.3 GW of utility-scale solar projects across the country during 2016-2018), developers also do not want a single project to equal a supplier’s total capacity:

Utility-scale developers and companies that procure modules, like mine, must mitigate as much risk as possible. We are unable to finance large scale projects if the majority of a module manufacture’s capacity is being consumed by only one company. As an example, if Swinerton Renewable Energy is contracted to build a 250MW project, we would not be able to procure from a plant in the US that produces 500MW or less, as procuring 50 percent of a manufacturer’s capacity is a high risk. However, we are able to procure from a company that has 2 to 3 GW of production capacity as our company would be consuming a much smaller percentage of the manufacturer’s overall output. This is particularly important as it relates to a manufacture’s ability to deliver a significant amount of product, over a determined period of time and with high levels of quality control.¹⁵⁰

In addition, when modules can be shipped is critically important to qualifying for the tax benefits afforded by the federal Investment Tax Credit. “Several purchasers stated that imported modules are in short supply due to high demand and the stepdown of incentives like the

¹⁴⁸ Utility installations are projected to be 10 GW in 2020, representing 21% of Hanwha’s and Jinko’s 2.1 GW of combined U.S. capacity. See SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 47 ((**Exhibit 5**)).

¹⁴⁹ See, e.g., Affidavit of Jamie Resor, Chief Executive Officer, EDF Renewables Distributed Solutions, Inc. at 2 (requiring suppliers to “deliver solar modules at a rate not less than 10 MW per week.”) (**Exhibit 12**).

¹⁵⁰ Affidavit of George Hershman, President, Swinerton Renewable Energy at 2-3 (**Exhibit 7**).

investment tax credit on December 31, 2019.”¹⁵¹ Currently, there is a 30% credit claimed against the tax liability of residential, commercial, and utility investors in solar energy property.¹⁵² For commercial and utility projects, companies may still qualify for the tax credit if they incur at least 5% of the project cost in the year construction commenced (known as the “safe harbor” provision).¹⁵³ This can be satisfied by purchasing necessary modules, but developers have found it difficult to reach this threshold given the supply constraints in the market.¹⁵⁴

According to EDF-R, “the U.S. investment tax credit currently motivates demand to purchase solar modules and equipment before 2020 for in-service installation before 2024. There are significant domestic supply limitations for such equipment, and the various import duties in place impede what would otherwise be more aggressive installation plans for solar power.”¹⁵⁵ Similarly, Clearway Energy, a leading developer, owner, and operator of renewable energy projects in the United States, explains that “{g}iven the competing demands for a limited supply of panels that are financeable, Clearway has struggled to purchase all the safe harbor panels required even for its 2020-2021 project execution.”¹⁵⁶

¹⁵¹ Prehearing Report at II-10.

¹⁵² SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 45 (**Exhibit 5**). The tax credit steps down annually to 26% and 22% for projects that begin in 2020 and 2021, respectively. *Id.* After 2021, the residential credit drops to zero and the commercial and utility credit will drop to a permanent 10%. *Id.*

¹⁵³ Julia Pyper, *IRS Issues Favorable Tax Credit Guidance for New Solar Projects*, GREENTECH MEDIA (June 22, 2018) (**Exhibit 31**).

¹⁵⁴ Nichola Groom, *Expiring U.S. solar subsidy spurs rush for panels*, REUTERS (July 19, 2019) (**Exhibit 32**); *see also* Prehearing Report at II-21 (“Others noted that the spike in demand created by the tax credit and safe harbor law created a tight supply, as earlier movers receive a higher credit.”).

¹⁵⁵ Affidavit of Jamie Resor, Chief Executive Officer, EDF Renewables Distributed Solutions, Inc. at 2 (**Exhibit 12**).

¹⁵⁶ Affidavit of Craig Cornelius, Clearway Energy Group at 4 (**Exhibit 11**).

1. Bifacial Modules Cannot Be Obtained Domestically to Meet Contractual Requirements

Demand for bifacial modules is growing as utility operators seek increased output without significant increased cost.¹⁵⁷ “Many advanced commercial solar cells are inherently bifacial, which means that the electricity from the back side comes with little additional cost at the cell manufacturing level, and a marginal increase on the module assembly level, to allow the back side of the panel to access the sunlight.”¹⁵⁸ The increased efficiency translates to cost savings, making solar more competitive with alternative sources of energy. In addition, “balance-of-system costs for cables, racking, labor and land are also proportionately reduced because fewer modules can produce the same amount of energy.”¹⁵⁹ Bifacial modules can also have extended durability because the cell is often encased in glass on both sides, providing added protection from environmental or other damage.¹⁶⁰

With these advantages, the emergence of bifacial modules is “widening the energy production gap when compared to traditional multi modules.”¹⁶¹ Bifacial modules are about 10-25% more efficient than monofacial modules.¹⁶² Bifacial modules “give U.S. developers more tools to design optimal projects, based in part on their ability to generate more output on the

¹⁵⁷ See, e.g., Affidavit of George Hershman, President, Swinerton Renewable Energy at 4 (“the developer sought to use bifacial modules due to the higher efficiency and higher energy yield, as this allows the developer to gain more efficiency per installed module.”) (**Exhibit 7**).

¹⁵⁸ *First Solar to exit EPC market; US bifacial installs to hike four-fold in 2020*, NEW ENERGY UPDATE: PV BY REUTERS EVENTS (Oct. 2, 2019) (quoting Xiaojing Sun, Senior Research Analyst, Wood Mackenzie) (**Exhibit 34**).

¹⁵⁹ *Bifacial Plus Tracking Boosts Solar Energy Yield by 27 Percent*, GTM CREATIVE STRATEGIES (April 18, 2018) (**Exhibit 35**).

¹⁶⁰ *Important Facts About Bifacial Solar Modules*, POWER FROM SUNLIGHT (Oct. 16, 2017) (**Exhibit 36**); Kelly Pickerel, *Bifacial solar panels: Breaking the barriers of module efficiency*, SOLAR POWER WORLD (June 13, 2017) (**Exhibit 37**).

¹⁶¹ *Bifacial Plus Tracking Boosts Solar Energy Yield by 27 Percent*, GTM CREATIVE STRATEGIES (April 18, 2018) (**Exhibit 35**).

¹⁶² *Id.*; Kelly Pickerel, *Bifacial solar panels: Breaking the barriers of module efficiency*, SOLAR POWER WORLD (June 13, 2017) (**Exhibit 37**).

same Balance of Solar structure.”¹⁶³ Accordingly, installations of bifacial modules are expected to reach 2 GW in 2020, increasing to 7 GW by 2024.¹⁶⁴

However, there is simply no domestic source for this technology at the scale needed to meet demand. There were [] of bifacial modules reported by U.S. producers during the period of review.¹⁶⁵ In comparison, U.S. imports of bifacial modules increased from [] KW in 2016 to [] KW (over [] MW) in the first six months of 2019 – or a total of [] of bifacial modules during the period of review.¹⁶⁶

Looking forward, based on public information, there is less than 300 MW of capacity to produce bifacial modules in the United States. Prism Solar has a 60 MW assembly plant in New York that produces 60-cell and 72-cell bifacial solar modules, but the company manufactures lower wattage (1,000 volt) modules, not the 1,500 volt modules required for utility projects.¹⁶⁷ The company also promotes its product for rooftop residential and commercial/industrial applications and already has a commercial supply agreement in place.¹⁶⁸ Auxin Solar offers bifacial modules (among other products), but has only 100-120 MW of production capacity at its California facility.¹⁶⁹ SolarTech Universal produces 60-cell bifacial modules in Florida, but its 80 MW of production capacity is focused on the residential and commercial sectors.¹⁷⁰

¹⁶³ Affidavit of Jamie Resor, Chief Executive Officer, EDF Renewables Distributed Solutions, Inc. at 4 (**Exhibit 12**).

¹⁶⁴ *First Solar to exit EPC market; US bifacial installs to hike four-fold in 2020*, NEW ENERGY UPDATE: PV BY REUTERS EVENTS (Oct. 2, 2019) (**Exhibit 34**).

¹⁶⁵ Prehearing Report at III-23 (Table III-8).

¹⁶⁶ Prehearing Report at V-11 (Table V-3).

¹⁶⁷ Prism Solar website (**Exhibit 38**).

¹⁶⁸ *Id.*; Kelly Pickerel, *U.S. bifacial solar module manufacturer Prism Solar will supply panels to JPMorgan Chase Banks*, SOLAR POWER WORLD (Nov. 4, 2019) (**Exhibit 39**).

¹⁶⁹ Christian Roselund, *It's official: The bifacial tariff exemption is over*, PV MAGAZINE (Oct. 8, 2019) (**Exhibit 40**).

¹⁷⁰ SolarTech Universal website (**Exhibit 41**). SolarTech Universal had announced plans to expand from 80 MW to 180 MW per year, but there is no information about expansion on SolarTech Universal's website or other public sources. *Id.*; see also John Weaver, *Hurricane Maria moves SolarTech Universal's expansion to South Florida*, PV MAGAZINE (May 21, 2018) (**Exhibit 42**).

GreenBrilliance (an Indian producer) announced plans to produce bifacial modules in Maryland, but the company’s website says nothing about manufacturing in the United States.¹⁷¹ But most importantly, none of these suppliers has the ability to meet the volume and bankability requirements of utility-scale projects.¹⁷²

As noted in the Prehearing Report, among the 16 purchasers reporting that certain wattages, types, technologies, or sizes of CSPV products were available from only certain country sources, most commented that bifacial modules are either not available or in short supply from domestic producers.¹⁷³ Relevant responses are presented below:

- []: “[

]”¹⁷⁴

- []: “[

]”¹⁷⁵

“[

]”¹⁷⁶

¹⁷¹ *GreenBrilliance USA announces PV manufacturing in the United States*, PV MAGAZINE (July 10, 2018) (**Exhibit 43**); GreenBrilliance website (<http://greenbrilliance.com/about-us/>) (**Exhibit 44**).

¹⁷² *See, e.g.*, Affidavit of George Hershman, President, Swinerton Renewable Energy at 3 (**Exhibit 7**).

¹⁷³ Prehearing Report at II-11.

¹⁷⁴ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁷⁵ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁷⁶ [] U.S. Purchaser Questionnaire Response at IV-1.

- []: “[]”¹⁷⁷
- []: “[]”¹⁷⁸
- []: “[]”¹⁷⁹
- []: “[]”¹⁸⁰
- []: “[]”¹⁸¹
- []: “[]”¹⁸²
- []: “[]”¹⁸³
- []: “[]”¹⁸⁴
- []: “[]”¹⁸⁵

Indeed, as discussed further below, the Administration agreed that trade protection was not needed for bifacial modules when it excluded them from the safeguard measures for lack of domestic supply.¹⁸⁶ Several companies (including SolarWorld’s German parent company) had urged the USTR to exclude these modules as unavailable domestically.¹⁸⁷ This supply shortfall

¹⁷⁷ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁷⁸ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁷⁹ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸⁰ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸¹ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸² [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸³ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸⁴ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸⁵ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁸⁶ *Exclusion of Particular Products From the Solar Products Safeguard Measure*, 84 Fed. Reg. 27,684, 27,685 (June 13, 2019).

¹⁸⁷ SolarWorld Industries GmbH, *Request for Exclusion from of {sic.} Particular Products from the Solar Products Safeguard Measures* (Doc. Id. USTR-2018-0001-0053)” (undated) (**Exhibit 45**).

is also unlikely to change in the near future. The National Renewable Energy Laboratory (“NREL”) explained that “{t}here continues to be an undersupply of bifacial modules in the U.S. market,” but “many {domestic} suppliers will not shut down production to make the switch to {bifacial}, as they are oversold.”¹⁸⁸ It is therefore unlikely that domestic capacity of bifacial modules will keep up with demand in the near future.

2. Larger 72-Cell and Other Types Modules Are Not Available in the United States in the Quantities Required by the Utility Sector

The lack of domestic supply of bifacial modules is exacerbated by the unavailability of other technologies important to the utility sector. Larger modules (measured as either 72-cell or by surface area of greater than or equal to 1.9 m²) are required for utility scale because of their greater power generation and their ability to compete on price with other sources of energy.¹⁸⁹

According to Craig Cornelius, CEO of Clearway Energy Group:

It is also important to point out that the type of modules used by Clearway’s utility-scale projects are not manufactured in the United States in quantities sufficient to meet domestic demand over the next two years. Clearway and other utility-scale solar developers have sourced modules outside of the United States out of necessity. In 2019, the demand for utility-scale solar projects in the U.S. exceeded 10,000 MW, but domestic manufacturing capacity only amounts to about 1000 MW of 72 cell modules – or 10% of utility-scale module demand. *Due to the high cost associated with 72 cell production, domestic capacity is entirely used for the higher-margin 1000 volt modules which are appropriate for the residential and commercial sectors.* No available data indicates there was any production of a 1500 volt module from 2014 to 2017. This huge disparity between domestic supply and domestic demand existed before the original 201 case in 2017, and despite the 201 tariffs being in place over the past two years, and growing demand for utility-scale modules, the domestic manufacturers still have not increased production in a meaningful way. Furthermore, in the unlikely event that domestic producers choose to transition existing operations to 72 cell modules suitable for utility-scale projects,

¹⁸⁸ David Feldman & Robert Margolis, *Q1/Q2 2019 Solar Industry Update*, NATIONAL RENEWABLE ENERGY LABORATORY (Aug. 6, 2019) at 5 (**Exhibit 46**).

¹⁸⁹ *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 4739, Vol. I at 60 (Nov. 2017) (“Residential and smaller commercial installations typically use 60-cell modules due to their higher conversion efficiency and smaller size, whereas the majority of utility projects now use 72-cell modules that are typically less expensive to install due to lower labor and balance of system costs per kW installed.”); *see also* Prehearing Report at II-1.

production would remain far below the quantities Clearway requires. We have not seen an increase in the manufacture of domestic, utility-scale panels, and *there is no indication that domestic manufacturers will be able to meet current or future demand*.¹⁹⁰

The new Hanwha U.S. facility has 1.7 GW of capacity to supply larger half-cut cell modules to utility projects.¹⁹¹ SunPower has 220 MW of capacity at the old SolarWorld facility in Hillsboro, Oregon to assemble its P-series modules, which are slightly larger than the standard 72-cell module, but it no longer sells into the utility segment.¹⁹² JinkoSolar produces 60-cell and 72-cell modules for residential and utility applications, but has an existing supply agreement with NextEra for use in Florida Power & Light projects.¹⁹³ Even with this capacity for these modules, these companies cannot supply what the utility sector demands.

According to the Staff, “{a} few firms also reported that higher efficiency and/or higher wattage modules are generally more available outside the United States, primarily from Asia.”¹⁹⁴ Again, this is an understatement; more than a few purchasers reported to the Commission that certain critical technologies are not made in the United States:

- []: “[]”¹⁹⁵

- []: “[]”¹⁹⁶

¹⁹⁰ Affidavit of Craig Cornelius, Clearway Energy Group at 2-3 (emphasis added) (**Exhibit 11**).

¹⁹¹ Christian Roselund, *Hanwha Q Cells opens the largest solar factory in the Western Hemisphere*, PV MAGAZINE (Sept. 23, 2019) (**Exhibit 21**).

¹⁹² Tim Sylvia, *SunPower officially producing P-Series at former SolarWorld factory in Oregon*, PV MAGAZINE (Feb. 7, 2019) (**Exhibit 48**); Will Wade, *One of America’s Biggest Solar Panel Makers Quits Manufacturing*, BLOOMBERG NEWS (Nov. 11, 2019) (**Exhibit 49**).

¹⁹³ Kelly Pickerel, *Three things SPW learned after touring JinkoSolar’s Florida panel facility*, SOLAR POWER WORLD (Feb. 27, 2019) (**Exhibit 20**).

¹⁹⁴ Prehearing Report at II-11.

¹⁹⁵ [] U.S. Purchaser Questionnaire Response at III-14; *see also id.* (“[]”).

¹⁹⁶ [] U.S. Purchaser Questionnaire Response at III-14.

- []: “[]”¹⁹⁷
- []: “[]”¹⁹⁸
- []: “[]”¹⁹⁹
- []: “[]”²⁰⁰
- []: “[]”²⁰¹

This is a business strategy for some producers. [

]”²⁰² These plans are unlikely to change.

According to the company, “[

]”²⁰³

Safeguard measures covering products the U.S. industry does not make – or makes in only very small quantities – do no one any good. The costs far outweigh the non-existent benefits.

¹⁹⁷ [] U.S. Purchaser Questionnaire Response at III-8.

¹⁹⁸ [] U.S. Purchaser Questionnaire Response at III-8

¹⁹⁹ [] U.S. Purchaser Questionnaire Response at III-8

²⁰⁰ [] U.S. Purchaser Questionnaire Response at III-8.

²⁰¹ [] U.S. Purchaser Questionnaire Response at III-8.

²⁰² [] U.S. Importer Questionnaire Response at II-4. []

²⁰³ Prehearing Report at VII-18 (Table VII-4).

D. Increasing Global Demand Will Compound the Negative Effects of the U.S. Safeguard Measures

Given the limited domestic supply of modules, U.S. solar deployments are dependent on imports. U.S. prices are among the highest in the world, due in large part to the safeguard tariff. There have thus been significant lost opportunities as solar demand has been hindered by higher costs. Moreover, the tariff's adverse impact has been compounded by strains on supply. "Global solar PV installations will reach a new high of 114.5 GW in 2019, up 17.5% on 2018" – even as demand in China as slowed.²⁰⁴ As a result, Trina, one of the world's largest module producers, is currently sold out through the first quarter of 2020.²⁰⁵ Non-subject thin-film PV producer, First Solar, is completely committed through the mid-2021.²⁰⁶ Indeed, the Commission's Staff acknowledged that growing global demand limits the extent to which foreign producers are likely to shift shipments of CSPV products to the United States.²⁰⁷

According to NREL, "the median analyst PV projection estimates that the world will double its cumulative capacity from 509 GW in 2019 to more than 1 TW in 2022."²⁰⁸ IEA has similar projections: renewable PV demand is expected to grow by 50% in the next few years, with solar PV accounting for the nearly two-third of the growth in renewable energy.²⁰⁹ The strain on global supply therefore is likely to continue throughout the safeguard period. It is important to recognize that despite changes in China's renewable energy policies, which reduced

²⁰⁴ Wood Mackenzie, *Global solar PV installations to reach record high in 2019* (July 25, 2019) (**Exhibit 50**). This is not far off from the Staff's estimates. Table I-3 of the Prehearing Report shows 2018 global installations of 99.8 GW, implying a growth rate of just under 15%.

²⁰⁵ Nichola Groom, *Expiring U.S. solar subsidy spurs rush for panels*, REUTERS (July 19, 2019) (**Exhibit 51**).

²⁰⁶ Christian Roselund, *First Solar is sold out through mid-2021*, PV MAGAZINE (Oct. 25, 2019) (**Exhibit 52**).

²⁰⁷ Prehearing Report at II-8.

²⁰⁸ David Feldman & Robert Margolis, *Q4 2018/Q1 2019 Solar Industry Update*, NATIONAL RENEWABLE ENERGY LABORATORY (May 2019) at 14 (**Exhibit 53**); *see also* Prehearing Report at I-9 (forecasting global installations of [] in 2019, [] in 2020, and [] in 2021).

²⁰⁹ IEA, *Renewables 2019: Market Analysis and forecasts to 2024* (Oct. 17, 2019) at 3 (**Exhibit 54**). IEA's 2019 forecast for demand growth is 14% higher than its forecast last year. *Id.*

deployments in that country, any excess capacity is unlikely to come to the United States due to the market-prohibitive AD/CVD and Section 301 duties on CSPV products.²¹⁰

III. SINCE THE SAFEGUARD MEASURES WERE IMPOSED, THE DOMESTIC INDUSTRY HAS NOT MADE SUFFICIENT ADJUSTMENTS TO KEEP PACE WITH TECHNOLOGICAL CHANGE AND UTILITY DEMAND

Any analysis of the domestic industry's adjustment to import competition must take into account the impact of the safeguard remedy in light of economic developments. Section 201 establishes a two-part standard for the President's decision on remedy, mandating that the President "shall take all appropriate and feasible action within his power which the President determines will facilitate efforts by the domestic industry to make a positive adjustment to import competition *and* provide greater economic and social benefits than costs."²¹¹ The statute goes on to define "positive adjustment" in terms of competitiveness of the domestic industry or orderly transition to other productive pursuits, and it clarifies that the domestic industry may be considered to have made a positive adjustment even if it is "not of the same size and composition" as it was at the time the investigation was initiated.²¹² For mid-term reviews, the statute directs the Commission to "monitor developments with respect to the domestic industry, including the progress and specific efforts made by workers and firms in the domestic industry to make a positive adjustment to import competition."²¹³ The Commission has explained that "{t}he legislative history of Section 204 of the Act directs that adjustment efforts should be evaluated in light of existing economic conditions."²¹⁴

²¹⁰ Prehearing Report at II-8.

²¹¹ Trade Act § 201(a); 19 U.S.C. § 2251(a) (emphasis added).

²¹² Trade Act § 201(b)(1)-(2); 19 U.S.C. § 2251(b)(1)-(2).

²¹³ Trade Act § 204(a)(1); 19 U.S.C. § 2254(a)(1).

²¹⁴ *Large Residential Washers: Monitoring Developments in the Domestic Industry*, Inv. No. TA-204-013, USITC Pub. 4941 at 4 (Aug. 2019); *Steel*, Inv. 204-9 (Monitoring), USITC Pub. 3632, Vol. I at xxii (Sept. 2003). For example, the Senate Report for the Trade Act of 1974 explained, "in advising the President . . . as to the probable

As discussed below, focusing on the commitments made by the domestic industry that existed at the time of the underlying investigation, the efforts of those companies to make a positive adjustment to import competition have simply been inadequate, as the companies have come nowhere close to meeting their own targets. We recognize, however, that the domestic industry now includes new module production for U.S. consumption and that the President's decision after the midterm review may focus in large part on the competitiveness of the domestic industry going forward as well as the costs and benefits of continued relief, in light of changed economic circumstances.

Suniva was the original petitioner in the underlying Section 201 investigation. Suniva's posthearing remedy submission included a "prospective forward-action plan," which indicated that the company's adjustment actions were contingent on an agreement to reorganize under Chapter 11.²¹⁵ The plan included quickly reactivating production capacity, producing at full capacity, becoming profitable, and resuming R&D efforts.²¹⁶ During the period of investigation, the company had built or upgraded two manufacturing plants: a module assembly plant, providing the infrastructure for up to 200 MW of module assembly capacity, and a cell manufacturing plant that was expanded to incorporate 450 MW of cell manufacturing.²¹⁷

Today, there is no evidence that Suniva, coming out of bankruptcy with its new equity owner Granite Holdings LLC, has any current value other than as a potential claimant in trade

economic effect on the industry concerned, the Commission *must* take into account all economic factors which it considers relevant" S. REP. NO. 93-1298, *as reprinted in* 1974 U.S.C.C.A.N. 7186, 7272 (emphasis added).

²¹⁵ Posthearing Brief on Remedy of Suniva, Inc. (Oct. 10, 2017) at Att. B (**Exhibit 55**).

²¹⁶ *Id.*, Att. B at 4.

²¹⁷ *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 4739, Vol. II at III-8 (Nov. 2017) (citing Suniva Press Release, "Suniva Begins Construction on Second Solar Facility" (Aug. 12, 2014); Suniva Press Release, "Suniva Announces Expansion Completion at U.S. Manufacturing Headquarters" (Dec. 15, 2016)).

remedy settlements.²¹⁸ There have been no announcements of an intent to restart solar manufacturing operations, and Suniva acknowledged earlier this year that the company's value is "speculative."²¹⁹

Accordingly, although the domestic industry has certainly changed since the investigation and imposition of the safeguard measure, Suniva has not done so, for many of the same reasons that it did not need trade protection in the first place. SEIA presented extensive evidence during the original safeguard investigation demonstrating Suniva's pervasive problems with quality, reliable delivery, and mismanagement.²²⁰ Suniva's aging production equipment is still idle, falling further behind as the solar industry has continued its rapid pace of technological advancement. Moreover, while Suniva might offer the excuse that it has received little to no trade relief with respect to CSPV cells – because the quantitative threshold for the tariff rate quota on cells has not been reached – Suniva has no such excuse with respect to CSPV modules. There has been a substantial tariff on imported modules since the safeguard action went into effect. We submit that, in reporting on the domestic industry's efforts to adjust to import competition, the Commission should be cognizant of Suniva's inability to keep up with developments in this dynamic, rapidly advancing, industry.

In SolarWorld America's adjustment plan, the company indicated that it had dropped from 600 to 300 U.S. workers in early 2017.²²¹ In anticipation of "effective relief" from imports, the company claimed that it had already begun the process of hiring more than 200 workers – it

²¹⁸ Jeff Montgomery, *Suniva Ch. 11 Plan, DIP Lender Deal Confirmed In Del.*, LAW360 (April 9, 2019) ("In all, Suniva exits bankruptcy with about \$1 million of cash, subject to liens, along with a chance to receive funds from the government's potential trade settlement and a leasehold interest in manufacturing equipment needed for a company attempt to restart operations.") (**Exhibit 56**).

²¹⁹ *{Proposed} Second Amended Disclosure Statement for Chapter 11: Plan of Reorganization for Suniva, Inc. Proposed by the Debtor* (filed Mar. 8, 2019) at 3 n.4 (**Exhibit 57**).

²²⁰ SEIA's Prehearing Injury Brief at 74-90 (Aug. 8, 2017) (**Exhibit 58**).

²²¹ SolarWorld's Posthearing Remedy Brief, Exh. 1 at 5 (**Exhibit 59**).

intended to ramp production back to its cell-capacity limit of 450 MW per year by May 2018, with module production to follow suit.²²²

As it happened, however, SunPower purchased the assets of SolarWorld Americas in late 2018. In February 2019, SunPower announced production of its P-Series modules at the former SolarWorld Americas factory in Oregon, relying on its foreign production of solar cells.²²³ Immediately upon taking ownership of the facility, SunPower shuttered the CSPV cell operations and put the entire facility up for sale, with a lease back option for the modest 200 MW module assembly equipment.²²⁴ The module factory featured a workforce of only 200 and had a 220 MW capacity.²²⁵

And only two weeks ago, SunPower announced that it will give up its manufacturing business to focus on installing rooftop solar systems.²²⁶ “The company is spinning off its panel production operations into a new company, Maxeon Solar, that will be based in Singapore with facilities in France, Malaysia, Mexico and the Philippines.”²²⁷ SunPower will reportedly hold onto its module factory in Oregon, but there is no indication of what is planned for that facility.²²⁸

²²² *Id.*

²²³ Tim Sylvia, *SunPower officially producing P-Series at former SolarWorld factory in the U.S.*, PV MAGAZINE (Feb. 7, 2019) (**Exhibit 48**).

²²⁴ Pete Danko & Jon Bell, *SunPower selling former SolarWorld facility in Hillsboro, settling into smaller operation on site*, PORTLAND BUSINESS JOURNAL (May 15, 2019) (**Exhibit 18**); Mark Osborne, *SunPower to spin off manufacturing operations*, PV TECH (Nov. 11, 2019) (“SunPower will only retain the P-Series module assembly operations at its facility in Oregon and focus on its downstream residential and commercial businesses.”) (**Exhibit 18**).

²²⁵ Tim Sylvia, *SunPower officially producing P-Series at former SolarWorld factory in the U.S.*, PV MAGAZINE (Feb. 8, 2019) (**Exhibit 48**).

²²⁶ Will Wade, *One of America’s Biggest Solar Panel Makers Quits Manufacturing*, BLOOMBERG NEWS (Nov. 11, 2019) (**Exhibit 49**).

²²⁷ *Id.*

²²⁸ *Id.*

Even considering the new module production in the United States that has been established since the safeguard measures were imposed, the evidence suggests that adjustments to import competition have been inadequate. As detailed above, there is nowhere near the capacity to meet U.S. demand and, as importantly, certain key technologies (particularly bifacial and larger modules for utility-scale installations) are not produced domestically at the necessary scale. For an industry that must respond to market forces demanding a rapid pace of technological advancement, domestic producers have not used existing trade restrictions to make adjustments to improve their competitiveness for the longer term.

This is just as SEIA anticipated in its arguments to the Commission during the underlying investigation.²²⁹ SEIA pointed out that trade restrictions would not cause a fundamental transformation of the domestic industry and that they would merely impede the expansion of solar demand. SEIA advocated that any remedy be formulated with a view to infusing capital into the domestic industry – helping it to compete on the technological frontier by producing cutting-edge products – while not standing in the way of advancing solar’s position in competition with other sources of energy.

IV. NON-SUBJECT THIN FILM PRODUCERS, MOSTLY OVERSEAS, HAVE RECEIVED SIGNIFICANT BENEFITS FROM THE SOLAR SAFEGUARD MEASURES

A. Non-Subject Thin-Film Producers, Like First Solar, Have Profited from the Protection Afforded by the Safeguard Measures

Thin-film PV, which is directly competitive with CSPV,²³⁰ has been excluded from trade remedy proceedings since the antidumping and countervailing duty investigations in 2012 and is

²²⁹ SEIA’s Posthearing Remedy Brief at 1-15 (**Exhibit 60**).

²³⁰ See, e.g., *First Solar 2019 Fact Sheet* at 1 (comparing thin-film PV to CSPV: “As a field-proven technology, First Solar’s high-efficiency modules offer *a clear energy yield advantage over silicon-based modules* by delivering competitive efficiency, higher real-world energy yield and long-term reliability.”) (emphasis added) (**Exhibit 61**);

expressly excluded from the solar safeguard measures.²³¹ Despite being a large producer of that non-subject product, First Solar is taking an aggressive position in this midterm review of the CSPV safeguard measures.²³² As the largest module producer in the United States, First Solar is clearly seeking to protect its non-subject thin-film operations, which returned to high profitability with a gross margin of 25.3% in Q3 2019.²³³ As predicted, the CSPV safeguard measures “let First Solar take in higher margins on module sales than it would have in a tariff-free environment.”²³⁴ Moreover, “First Solar’s thin-film cadmium telluride solar panels are exempt from the Section 201 tariffs, giving them a competitive advantage against many foreign-made modules. But the Trump administration’s import tariffs are set to decline, eroding that advantage.”²³⁵ Thus, “in short, First Solar claims the full benefits of a global supply chain and South Asian manufacturing, while also riding the wave of tariffs meant to protect the few remaining U.S. domestic producers.”²³⁶

see also First Solar U.S. Importers’ Questionnaire Response at III-12 ([

]).

²³¹ *Crystalline Silicon Photovoltaic Cells and Modules From China*, Inv. Nos. 701-TA-481 and 731-TA-1190 (Final), USITC Pub. 4360 at 5 (Nov. 2012); *Proclamation 9693 of January 23, 2018: To Facilitate Positive Adjustment to Competition From Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled Into Other Products) and for Other Purposes*, 83 Fed. Reg. 3541, 3546 (Jan. 25, 2018) (excluding from the safeguard measure “thin film photovoltaic produced from amorphous silicon (‘a-Si’), cadmium telluride (‘CdTe’), or copper indium gallium selenide (‘CIGS’)”).

²³² First Solar U.S. Importers Questionnaire Response at II-31 (“[

]); *id.* at II-34 (“[

]).

²³³ Jeff St. John, *First Solar, Once Again the Biggest US Module Maker, Returns to Profit in Q3*, GREENTECH MEDIA (Oct. 24, 2019) (**Exhibit 62**); *First Solar Q3’19 Earnings Call* (Oct. 24, 2019) at 9 (**Exhibit 63**).

²³⁴ Julian Spector, *First Solar Speeds Ahead as Tariffs Hinder the Competition*, GREENTECH MEDIA (Mar. 2, 2018) (**Exhibit 64**).

²³⁵ Jeff St. John, *First Solar, Once Again the Biggest US Module Maker, Returns to Profit in Q3*, GREENTECH MEDIA (Oct. 24, 2019) (**Exhibit 62**).

²³⁶ Julian Spector, *First Solar Speeds Ahead as Tariffs Hinder the Competition*, GREENTECH MEDIA (Mar. 2, 2018) (**Exhibit 64**).

First Solar reported [

].²³⁷

Rather, the company will [].²³⁸ Given the

protection the solar safeguard measures afford, it is therefore not surprising that First Solar

[].²³⁹ In particular, First Solar [

],²⁴⁰ most likely because the company is focused on the utility sector where

[].²⁴¹ Given that the safeguard measures are intended to benefit the

domestic CSPV industry, not non-subject production, First Solar's opportunistic advocacy

should be given no weight.

B. In Fact, Imports of Thin-Film Modules Have Benefited Significantly, Having Increased Rapidly Since the Safeguard Measures Were Imposed

As shown in the chart below from a February 2019 investor presentation, First Solar has 6.2 GW in worldwide production capacity in 2019.²⁴² Most of that capacity is in Asia: 2.2 GW in Malaysia – 2 GW for its S4 technology (which will be phased out by the end of the year) and 1.2 GW for its S6 technology – and an additional 2.4 GW in Vietnam.²⁴³ The company has another 600 MW of capacity in the United States and will open another 1.3 GW plant in 2020.²⁴⁴

²³⁷ First Solar U.S. Importer Questionnaire Response at I-5, II-2.

²³⁸ First Solar U.S. Importer Questionnaire Response at II-34 (“[]”).

²³⁹ First Solar U.S. Importer Questionnaire Response at II-31.

²⁴⁰ First Solar U.S. Importer Questionnaire Response at III-17(c).

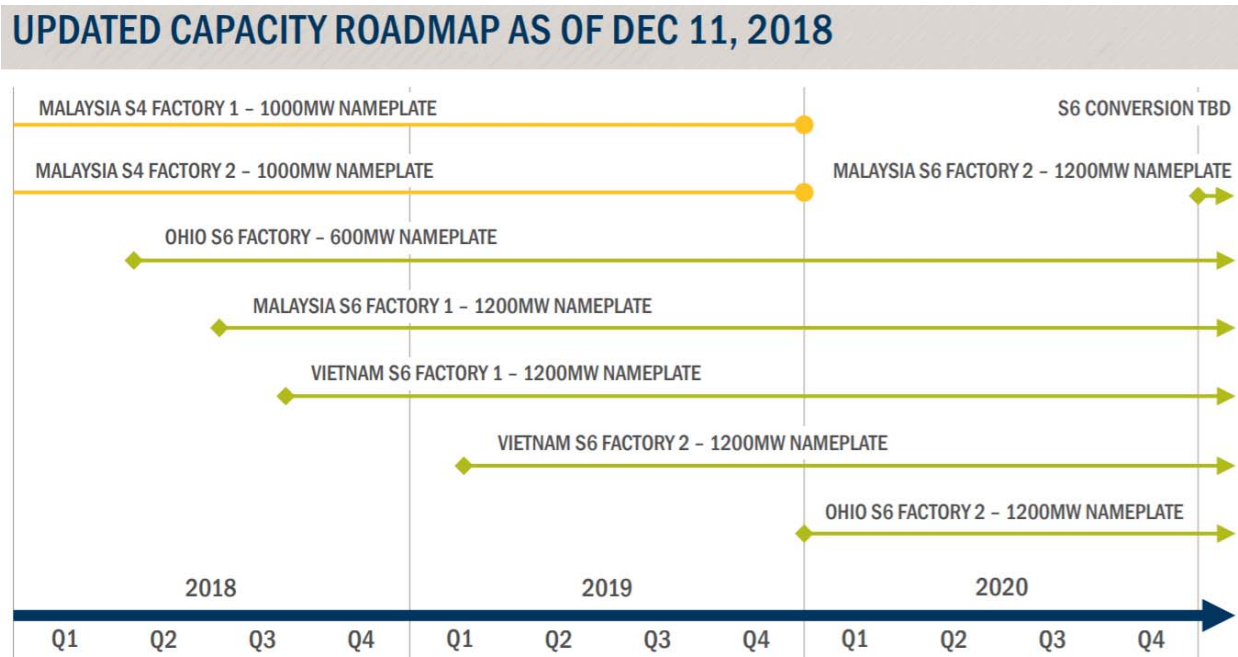
²⁴¹ *First Solar Investor Overview* (Feb. 21, 2019) at 7 (**Exhibit 65**).

²⁴² *Id.*

²⁴³ *Id.*

²⁴⁴ *Id.*

By 2021, First Solar will increase its worldwide capacity to 7.6 GW,²⁴⁵ but the vast bulk of the capacity will be in Asia, not the United States.



These capacity expansions correlate directly with increased thin-film shipments to the United States. Based on import statistics through the first eight months of 2019, almost 3 GW of thin-film PV came in from Malaysia and Vietnam.²⁴⁶ Annualized to 4.4 GW, this represents 78% of First Solar's Asian production capacity. As capacity came online throughout 2018 and 2019, monthly thin-film U.S. imports increased from 5.6 MW in July 2018 (the first month when import statistics were collected in kilowatts) to almost a gigawatt (996 MW) in August 2019 alone.²⁴⁷ First Solar has obviously capitalized on the CSPV safeguard measures by focusing its increasing foreign production capacity on shipments to the United States. The goal of safeguard

²⁴⁵ *Id.*

²⁴⁶ Thin-Film PV U.S. Import Statistics (**Exhibit 66**).

²⁴⁷ *Id.*

measures was to help U.S. producers of CSPV products, not bolster Asian production of thin-film products.

V. THE COMMISSION SHOULD REPORT ON THE ADVERSE IMPACT OF THE SAFEGUARD MEASURES AND THE MODIFICATIONS NEEDED TO AVOID FURTHER HARM IN LIGHT OF CHANGED ECONOMIC CIRCUMSTANCES

A. The Commission Should Exercise its Discretion to Report to the President About the Effects of the Measures on the Broader Solar Industry

The statute does not expressly require but does not prohibit the Commission from reporting about the impact of the measures. Section 204(b)(1)(A) provides that the President may reduce, modify or terminate the safeguard action “after taking into account *any report or advice* submitted by the Commission.”²⁴⁸ Use of the word “any” shows an intention by Congress to authorize the Commission to provide more than a mere report on the domestic industry’s adjustment efforts in Section 204(a)(2).²⁴⁹ Furthermore, Section 204(a)(3) requires the Commission to “hold a hearing at which interested persons shall be given a reasonable opportunity to be present, to produce evidence, and to be heard.”²⁵⁰ Like the parallel provision in Section 202(b)(3), the hearing affords a wide array of interests, not just the domestic industry, an opportunity to inform the Commission of information relevant to the President’s consideration of whether to reduce, modify, or terminate the safeguard action.²⁵¹

In past cases, the Commission has gone beyond reporting just the facts related to its monitoring effects by including comments on the effectiveness of safeguard measures and recommended modifications. Most recently, in *Large Residential Washers*, the Commission reported parties’ comments on the shortcomings of the safeguard remedy as well as their

²⁴⁸ 19 U.S.C. § 2254(b)(1)(A).

²⁴⁹ 19 U.S.C. § 2254(a)(2).

²⁵⁰ 19 U.S.C. § 2254(a)(3).

²⁵¹ 19 U.S.C. § 2252(b)(3).

proposed modifications.²⁵² Similarly, in *Certain Steel Wire Rod*, the Commission reported the domestic industry's dissatisfaction with the TRQ and discussed at length the parties' proposed modifications to the TRQ.²⁵³ In *Lamb Meat*, the Commission again reported the petitioners' proposals to adjust the safeguard remedy, as well as respondents' arguments to terminate the TRQ.²⁵⁴

In *Steel*, the Commission addressed in more detail the parties' contentions about the scope of the Commission's midterm review and monitoring report. The Commission concluded that its report "will be *mainly* {not strictly} descriptive setting out facts relating to, among other things, industry performance, trends in prices and import levels, the market and business environment, and the types of actions undertaken by companies and workers to adjust to competition from imports."²⁵⁵ The Commission also noted that some analysis – and not just statement of facts – "is also appropriate to permit greater understanding of the developments and to place them in context."²⁵⁶ For example, the Commission responded to comments relating to the effectiveness of the relief and the likelihood that the domestic industry would have undertaken certain actions even absent the relief.²⁵⁷ In turn, "{t}he President is required to take the {Commission's} report into account, and the Commission views the information *and analysis* presented in this report as providing the factual basis for any decision by the President on whether these conditions have been met."²⁵⁸

²⁵² *Large Residential Washers: Monitoring Developments in the Domestic Industry*, Inv. No. TA-204-013, USITC Pub. 4941 at IV-8 to IV-9 (Aug. 2019).

²⁵³ *Certain Steel Wire Rod*, Inv. No. TA-204-6 (Monitoring), USITC Pub. 3451 at 3, I-9 to I-12 (Aug. 2001).

²⁵⁴ *Lamb Meat*, Inv. No. TA-204-3 (Monitoring), USITC Pub. 3389 at I-10 to I-11 (Jan. 2001).

²⁵⁵ *Steel: Monitoring Developments In The Domestic Industry*, Inv. No. TA-204-9, USITC Pub. 3632, Vol. I at OVERVIEW I-2 (Sept. 2003) (emphasis added).

²⁵⁶ *Id.*

²⁵⁷ *Id.* at OVERVIEW I-2 n.6.

²⁵⁸ *Id.* at OVERVIEW I-2 (emphasis added).

Individual Commissioners have also conducted more extensive analyses of the effectiveness of safeguard remedies. In *Large Residential Washers*, Commissioner Kearns compared the estimated economic effects (as determined in the original investigation) to what actually happened after the measure was implemented:

In monitoring developments with respect to the domestic industry, while it is of course critical to compare the current conditions of the LRW market and domestic industry to their conditions during the original period of the section 201 investigation, in my view it is also useful to compare actual experience under the safeguard measure to what the recommended remedies were expected to achieve.

. . . In my view, it is appropriate to compare those estimated economic effects from the first year of the partial-equilibrium model with actual experience under the safeguard measure.²⁵⁹

In *Wheat Gluten*, Commissioner Bragg evaluated factors that, in her opinion, undermined the effectiveness of the relief and made several recommendations to modify the safeguard measure.²⁶⁰ She noted that “such steps comport with the safeguard statute and are consistent with the records developed in both the Commission’s underlying 201 investigation and this midterm review.”²⁶¹ As it turned out, the President implemented two of her recommendations.²⁶²

Recommendations and analysis are not limited to the advice contemplated in Section 204(a)(4) of the Act, which provides “{u}pon request of the President, the Commission shall advise the President of its judgment as to the probable economic effect on the industry concerned of any reduction, modification, or termination of the action taken under section 2253 of this title, which is under consideration.”²⁶³ That provision has not restricted the scope of midterm review

²⁵⁹ *Large Residential Washers: Monitoring Developments in the Domestic Industry*, Inv. No. TA-204-013, USITC Pub. 4941, Additional Comments of Commissioner Jason E. Kearns at 1 (Aug. 2019).

²⁶⁰ *Wheat Gluten*, Inv. No. TA-204-2 (Monitoring), USITC Pub. 3258 at A-4 (Dec. 1999).

²⁶¹ *Id.* at A-6.

²⁶² *Proclamation No. 7314 of May 26, 2000: To Modify the Quantitative Limitations Applicable to Imports of Wheat Gluten*, 65 Fed. Reg. 34,899, 34,899-00 (May 31, 2000).

²⁶³ 19 U.S.C. § 2254(a)(4).

reports in the past. The President did not make a request for advice under Section 204(a)(4) in any of the cases discussed above (*Large Residential Washers*, *Certain Steel Wire Rod*, *Wheat Gluten*, and *Lamb Meat*).²⁶⁴ Nonetheless, the Commission provided information and summarized arguments presented by the parties about the effect of the measures, and, in some cases, recommended modifications.

This is important because the Commission has the opportunity to inform the President in regard to any action he may decide to take following the midterm review. The statute directs the President to take into account both the adequacy of the adjustment efforts made by the domestic industry and the “effectiveness” of the safeguard action. Thus, after considering information and analysis received from the Commission and the Secretaries of Commerce and Labor, the President may alter the remedy if (1) the domestic industry has not made adequate efforts to make a positive adjustment to import competition, or (2) the effectiveness of the remedy has been impaired by changed economic circumstances.²⁶⁵ Alternatively, the President may honor on a request from the majority of the representatives of the domestic industry or in response to circumvention of actions previously taken.²⁶⁶ Before the President determines to reduce, modify, or terminate the action, he must first receive the Commission’s monitoring report. Therefore, the report should contain all relevant information to inform the President in advance of any changes to the measures.

²⁶⁴ See, e.g., *Steel: Monitoring Developments In The Domestic Industry*, Inv. No. TA-204-9, USITC Pub. 3632, Vol. I at OVERVIEW I-2 n.5 (Sept. 2003); *Wheat Gluten*, Inv. No. TA-204-2 (Monitoring), USITC Pub. 3258 at I-4 n.16 (Dec. 1999).

²⁶⁵ Trade Act § 204(b)(1)(A); 19 U.S.C. § 2254(b)(1)(A).

²⁶⁶ Trade Act § 204(b)(1)(B); 19 U.S.C. § 2254(b)(1)(B).

B. The Tariffs Should Be Eliminated Because Their Adverse Impact Far Outweighs Any Benefits Gained

The viability of solar is dependent on lower costs, to make it competitive with other sources of energy. As discussed above, the module tariffs have stunted demand in the United States. The safeguard tariffs were unwarranted in the first place and have caused more economic harm than benefit, as SEIA predicted. Craig Cornelius, then President of NRG Renewables and now CEO of Clearway Energy Group, warned the Commission of the likely consequences of such trade restrictions:

A tariff, even a very high one, will not give these companies the capacity to drive industry-leading technological innovation. It will not address the bankability and reliability issues (such as lawsuits and recalls) that have made them unattractive to financing parties. And, it will not enable them to reach the scale of production needed to meet the full potential market demand for solar in the United States in the 2018-2020 timeframe, which is many times larger than current domestic production capacity.²⁶⁷

The record of this midterm review has proved him right. Admittedly, domestic production of modules has increased since the imposition of the safeguard measures, but there is still inadequate capacity (currently and the projected future) to meet current domestic demand, which will become even less adequate when demand is permitted to flourish after the tariffs are removed. The module tariff has also caused significant and unnecessary uncertainty in the marketplace. At the time of the investigation, there was “{u}ncertainty over the outcome of the Section 201 trade case before the new solar tariffs were announced in January 2018. This

²⁶⁷ SEIA’s Prehearing Remedy Brief at 34 (citing App. B-1 (Affidavit of Craig Cornelius, NRG Renewables LLC) at para. 7) (**Exhibit 74**). Others made similar predictions. *See, e.g.*, Affidavit of George Hershman, President, Swinerton Renewable Energy at 4 (“SRE remains frustrated by the fact that the utility solar market saw not only the most significant job losses but also a lack of job creation. The tariffs are harmful to an important sector of our economy. In my affidavit to the Commission during the injury phase of the investigation, I warned that new tariffs would unfairly increase the cost of large solar projects, placing many American jobs at risk. Unfortunately, that prediction came true.”) (**Exhibit 7**).

uncertainty led to project delays, especially for the larger, utility-scale installations.²⁶⁸ The disruption of business planning continued after the measures were imposed. Market participants reported similar concerns to the Commission:

[]: “[

]”²⁶⁹

- []: “[

]”²⁷⁰

- “One firm reported that some suppliers of imported CSPV have declined to supply the market or supplied reduced quantities due to uncertainty about their costs after implementation of the safeguard measure.”²⁷¹

Importantly, there is by no means a consensus among domestic industry participants in favor of the safeguard measures. Of the fifteen domestic CSPV producers that submitted questionnaire responses, more than [] do not indicate support for the measures: [] companies oppose²⁷² and [] others were neutral, taking no position.²⁷³ The Commission

²⁶⁸ Solar Foundation, *National Solar Jobs Census 2018* at 5 (**Exhibit 14**); *see also* SEIA & Wood Mackenzie, *U.S. Solar Market Insight: Full Report: 2018 Year In Review* (Mar. 2019) at 11 (“Many utility PV projects suffered disruption, delay and even cancellation due to the uncertainty leading up to the imposition of the Section 201 tariffs. The impacts can be seen in the volume of installations in 2018, which were down 7% year-over-year for utility-scale PV.”) (**Exhibit 5**).

²⁶⁹ [] U.S. Purchaser Questionnaire Response at IV-1; *see also id.* at II-2(b) “[

]”).

²⁷⁰ [] U.S. Purchaser Questionnaire Response at III-7.

²⁷¹ Prehearing Report at II-11 to II-12.

²⁷² [] U.S.

Producer Questionnaire Responses at I-3; *see also* Prehearing Report at I-34 (Table I-9).

²⁷³ [] U.S. Producer Questionnaire Responses at I-3 (taking no position); *see also* Prehearing Report at I-34

should seize this opportunity to consider the broader impact of the tariffs and recommend actions to the President to alleviate the harmful effects they have had on the solar industry. Removal of the tariffs would put the American solar industry back onto a transformative trend line characterized by extraordinarily robust demand and job growth.

C. Alternatively, the Safeguard Measures Should Be Tailored to Ensure Sufficient Supply to Meet U.S. Market Demand

1. The Exclusion for Bifacial Modules Must Be Maintained to Ensure Adequate Supply of this Key Technology

In June 2019, the USTR granted an exclusion for bifacial solar modules consisting only of bifacial solar cells based on several exclusion requests submitted in response to the process established by the President's Proclamation and the procedures established by the USTR.²⁷⁴ Later, without any public notice and comment, the USTR revoked the exclusion.²⁷⁵

Revocation of the bifacial exclusion is a critical issue for utility-scale developers; so much so that they filed suit at the U.S. Court of International Trade to enjoin implementation of the announced revocation. Invenergy, Clearway Energy, EDF Renewables, and AES all relied on the revocation in contracts for large utility-scale development projects.

Swinerton Renewable Energy has similar concerns:

In 2020 and beyond, we have 14 potential projects that are likely to use bifacial modules, totaling over 2.5GW or 6 million bifacial panels. The repeal of the bifacial exclusion will likely have a financial impact on these projects and create general disruption to the US market as many businesses, including SRE, made business decisions based on the granting of the bifacial exclusion.²⁷⁶

(Table I-9). The Commission did not count the U.S. producer questionnaire response of [] for lack of usable data, but it is nonetheless relevant that the company [] on the safeguard measures. Prehearing Report at I-33 n.108.

²⁷⁴ *Exclusion of Particular Products From the Solar Products Safeguard Measure*, 84 Fed. Reg. 27,684, 27,685 (June 13, 2019).

²⁷⁵ *Withdrawal of Bifacial Solar Panels Exclusion to the Solar Products Safeguard Measure*, 84 Fed. Reg. 54,244, 54,245 (Oct. 9, 2019).

²⁷⁶ Affidavit of George Hershman, President, Swinerton Renewable Energy at 4 (**Exhibit 7**).

The exemption for bifacial modules further liberalized the existing safeguard measures; revoking the exemption would make the measures more restrictive by re-imposing safeguard tariffs. As such, the USTR’s decision to withdraw the bifacial exclusion is inconsistent with the statutory requirement that safeguard measures be phased down. Section 203(e)(5) of the Act requires that any measure with “an effective period of more than 1 year *shall* be phased down at regular intervals during the period in which the action is in effect.”²⁷⁷ Section 204(b)(1) of the Act – by its plain language – permits only “reduction or termination” of measures, not their increase, where the domestic industry has failed to make adequate efforts to adjust to import competition or changed economic circumstances have impaired the effectiveness of the measures.²⁷⁸

This reading is consistent with the legislative history, which explains that the United States took the lead on negotiating an agreement on safeguards during the Uruguay Round. The United States’ express objective was an international agreement that is consistent with existing U.S. law “to ensure that safeguard measures are transparent, *temporary, degressive, and subject to review and termination when no longer necessary to remedy injury and to facilitate adjustment.*”²⁷⁹

The United States achieved this objective²⁸⁰ as evidenced by Article 7.4 of the WTO Agreement on Safeguards, which states in part: “{T}he Member applying the measure *shall progressively liberalize* it at regular intervals during the period of application. If the duration of

²⁷⁷ 19 U.S.C. § 2253(e)(5) (emphasis added).

²⁷⁸ 19 U.S.C. § 2254(b)(1)(A).

²⁷⁹ *Omnibus Trade and Competitiveness Act of 1988*, Section 1102(12) of P.L. 100-418, 102 STAT 1107, 1124 (1988). The primary meaning of “degression” is “a stepping or movement downward.” WEBSTER’S THIRD NEW INTERNATIONAL DICTIONARY (1971).

²⁸⁰ The Statement of Administrative Action accompanying the Uruguay Round Agreements Act, which implemented the WTO Agreements states clearly that those efforts had been successful and that the procedures that had been agreed on were comparable to those applicable in the United States. *See Uruguay Round Agreements Act*, Statement of Administrative Action for the Agreement on Safeguards at 956, *as reprinted in* 1994 U.S.C.C.A.N. 4040, 4397.

the measure exceeds three years, the Member applying such a measure shall review the situation not later than the mid-term of the measure *and, if appropriate, withdraw it or increase the pace of liberalization.*” (Emphasis added.) There is no provision for making the measures more restrictive.

Equally important, there is nothing in the President’s proclamation that permits withdrawal of an exclusion that has already been granted by the USTR. The entirety of the authority with respect to exclusions that was granted by the President on January 23, 2018, is as follows:

Within 30 days after the date of publication of this proclamation, the USTR shall publish in the *Federal Register* procedures for requests for exclusion of a particular product from the safeguard measure established in this proclamation. If the USTR determines, after consultation with the Secretaries of Commerce and Energy, that a particular product should be excluded, the USTR is authorized, upon publishing a notice of such determination in the *Federal Register*, to modify the HTS provisions created by Annex 1 to this proclamation to exclude such particular product from the safeguard measure described in paragraph 8 of this proclamation.²⁸¹

Revocation of the bifacial exclusion is contrary to the safeguard statute. The exclusion was a fair and reasonable element of a solution to the problem of domestic module supply shortages, particularly in the utility segment. Reviving the tariffs on bifacial modules will only scuttle billions of dollars of private investment and put on hold tens of thousands of quality American jobs.

2. Country Exclusions Should Also Be Granted to Imports from Canada and Singapore

During the safeguard investigation, the Commission examined separately the effect of imports from both Canada and Singapore as required by our free trade agreements (“FTAs”) with

²⁸¹ Proclamation 9693 of January 23, 2018: *To Facilitate Positive Adjustment to Competition From Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled Into Other Products) and for Other Purposes*, 83 Fed. Reg. 3541, 3544 (Jan. 25, 2018).

these countries and made negative findings as to imports from each country, despite its overall finding of serious injury. Despite these findings, the President did not exclude Canada or Singapore from the safeguard measures, apparently reaching a completely different conclusion from the Commission as to whether imports from Canada and Singapore contribute importantly to the injury of the domestic injury. By discounting the Commission's reasoned conclusion that these countries should be excluded from the safeguard measures, the safeguard measures on CSPV products undermine the spirit of FTAs. The inclusion of both Canada and Singapore was and is wholly unnecessary to address any harm to the U.S. domestic industry, as evidenced by the Commission's express findings. The Commission should thus recommend that the President exclude products from Canada and Singapore from continued imposition of safeguard measures on CSPV products. These country exclusions would be particularly helpful in moderating the adverse impact of the safeguard measures on the residential and commercial/industrial market segments.

(a) Canada

Under the North American Free Trade Agreement ("NAFTA") Implementation Act, the Commission must conduct a separate injury inquiry for imports from Canada and Mexico if it makes an affirmative injury determination under Section 201.²⁸² The Commission should normally not find that imports from a NAFTA country account for a substantial share of total imports of an item unless the country is among the top five importers of that item measured by import share over the preceding five years.²⁸³ The Act further directs the Commission "to

²⁸² 19 U.S.C. § 3371(a). Imports from Canada are measured by all imports of modules manufactured in Canada, irrespective of the source of the cells, due to NAFTA rules and the Commission's original finding on country of origin rules under NAFTA.

²⁸³ 19 U.S.C. § 3371(b)(1).

consider such factors as the change in the import share of the NAFTA country or countries, and the level and change in the level of imports of such country or countries.”²⁸⁴

The Commission conducted this analysis and concluded that imports of CSPV products from Canada neither account for a substantial share of total imports nor contribute importantly to the serious injury of the domestic industry. As the Commission noted, Canada is not one of the top five suppliers of CSPV products to the United States, but rather was the ninth, seventh, and tenth largest source of such products in the United States in 2014, 2015, and 2016, respectively.²⁸⁵ Because of its relatively small share of imports and the modest changes in the Canadian industry’s import share over the period of investigation, the Commission further determined that imports from Canada do not contribute importantly to the injury.²⁸⁶ The Commission expressly noted that the United States had alternate methods to address any possible surges of Canadian imports following the imposition of a safeguard measure, acknowledging that NAFTA provisions and antidumping and countervailing duty laws provide other methods of relief for the domestic industry.²⁸⁷

Apparently discounting the Commission’s findings with respect to imports from Canada, the President reached the opposite conclusion and determined that imports from Canada did account for a substantial share of imports to the United States and contributed importantly to the domestic industry’s injury.²⁸⁸ The President reached this conclusion despite the fact that Canada is not one of the top five foreign sources of supply and imports from Canada account for a

²⁸⁴ 19 U.S.C. § 3371(b)(2).

²⁸⁵ *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 7739, Vol. I at 67-68 (Nov. 2017).

²⁸⁶ *Id.* at 69.

²⁸⁷ *Id.* at 69-70.

²⁸⁸ *Proclamation 9693 of January 23, 2018, To Facilitate Positive Adjustment to Competition from Imports of Certain Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products) and for Other Purposes*, 83 Fed. Reg. 3541, 3542 (Jan. 25, 2018).

minimal share of the total imports.²⁸⁹ These circumstances have remained unchanged in the years following the safeguard measures and warrant Canada's exclusion under the NAFTA Implementation Act.²⁹⁰

Indeed, rather than injuring the domestic solar industry, Canadian producers have materially contributed to the U.S. domestic industry by expanding operations in the United States. Even before the United States imposed safeguard measures on imports of CSPV products from Canada, Canadian producers began investing in the United States to take advantage of the physical proximity and strong trading relationships between the two countries. For example, Heliene Inc., an Ontario-based solar company, [

].²⁹¹ The company has invested \$22 million in a Minnesota manufacturing facility that will employ over 100 U.S. citizens.²⁹² As a result, the volume of products from Canada will only continue to decline far into the future.

U.S. producers also take advantage of the Canadian market for their own products; the U.S. government identified Canada as a major market for U.S. exports of solar products.²⁹³ U.S. producers and Canadian producers alike will benefit from Canada's exclusion from the safeguard measures, allowing for a robust solar industry in both countries. According to Silfab Solar WA (a U.S. company that invested [] in module production in the United States), "[

²⁸⁹ See *id.*; *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 7739, Vol. I at 67-69 (Nov. 2017).

²⁹⁰ Prehearing Report at V-2 (Table V-1).

²⁹¹ Heliene U.S. Importer Questionnaire Response at II-2.

²⁹² Dan Kraker, *Country's Newest Solar Factory Opens on the Iron Range*, MPR NEWS (Sept. 25, 2018), (**Exhibit 67**).

²⁹³ U.S. Department of Commerce, International Trade Administration, *Top Markets Series: Renewable Energy* (last visited Nov. 25, 2019) (citing *2016 ITA Renewable Energy Top Markets Report* (Apr. 2016)) (**Exhibit 68**).

] ²⁹⁴

As the Commission's factual determinations indicated, Canadian imports neither account for a substantial share of U.S. imports nor contribute importantly to the U.S. industry's injury. As neighboring markets, the Canadian module producers support the U.S. domestic industry's growth through investment and facilitate a valuable cross-border trading relationship. Therefore, the Commission should recommend that the President exclude Canada from the safeguard measures, as continued application of the safeguard measures is unnecessary.

(b) Singapore

Likewise, the Commission should urge the President to adopt its factual findings from the original investigation with regard to imports of CSPV products from Singapore and exclude these products from the safeguard measures going forward. Under the implementing statute of the U.S.-Singapore FTA, the Commission must consider whether imports from Singapore are a substantial cause of serious injury to the U.S. domestic industry during the injury phase of a safeguard investigation.²⁹⁵ When the Commission applied this standard to imports of CSPV products from Singapore, the Commission found that imports from Singapore were not a substantial cause of serious injury to the U.S. domestic industry.²⁹⁶ The Commission noted that imports of CSPV products from Singapore had actually *decreased* between 2015 and 2016, and the Commission also found that imports from Singapore did not increase their total share or their share of the U.S. market.²⁹⁷ As with imports from Canada, the President apparently discounted

²⁹⁴ Silfab Solar WA U.S. Producer Questionnaire Response at II-4, II-5.

²⁹⁵ 19 U.S.C. § 3805 note.

²⁹⁶ *Crystalline Silicon Photovoltaic Cells (Whether or not Partially or Fully Assembled into Other Products)*, Inv. No. TA-201-75 (Safeguard), USITC Pub. 4739, Vol. I at 74 (Nov. 2017).

²⁹⁷ *Id.* at 75.

the undisputed factual findings of the Commission related to imports of CSPV products from Singapore and declined to exclude products from Singapore from the safeguard measures.

Continued application of the safeguard measures to Singapore is unnecessary in light of Singapore's small volume of CSPV imports in the United States and the relatively small size of Singapore's economy. Moreover, the United States currently has an overall trade surplus of almost \$6 billion with Singapore, a result of increased trade between the two countries under the FTA.²⁹⁸ By disregarding the Commission's factual findings with regard to Singapore, the President imposes a gratuitous trade measure on a trading partner whose products do not cause serious harm to the U.S. industry. Therefore, the Commission should recommend that the President exclude Singapore from the safeguard measures.

D. Other Forms of Assistance, Not Trade Restrictions, Would Be More Beneficial for the Domestic Industry

As discussed above, import relief has done little to address the fundamental issues facing the domestic industry. Federal investments are a much better solution for incentivizing domestic CSPV cell and module manufacturing. Indeed, there are numerous existing federal programs with available expertise that could use increased funds to help U.S. cell and module producers stay competitive.

There is also an extraordinary amount of technical expertise residing in NREL and Lawrence Berkeley National Laboratory ("LBNL") – parts of the U.S. Department of Energy ("DOE") laboratory system. DOE has helped to ensure that hundreds of technologies make their way from research and development to eventual commercialization, and has the ability to tap into university expertise across the country.

²⁹⁸ Office of the United States Trade Representative, *Singapore* (**Exhibit 69**).

The domestic industry would benefit substantially from technical assistance through NREL and LBNL to improve their market competitiveness both in the short and long term. NREL has worked in all major aspects of CSPV cell structure, manufacturing, testing, and commercialization. The domestic industry could be given access to the “crown jewels” of America’s solar scientific research through NREL’s long-established expertise and its established technology licensing program.²⁹⁹

One way in which NREL could provide assistance is through its successful program of providing technical services under strategic partnership agreements with private-sector companies.³⁰⁰ The IN² program approach accelerates technology uptake by connecting technology manufacturers, investors and end users. Under this program, participating IN² companies have access to NREL’s world-class facilities and researchers, who test, validate and incubate the companies’ technologies to help them meet critical validation milestones on their path to the commercial marketplace.³⁰¹

NREL could work individually with domestic producers to assess the current state of manufacturing technologies and collaborate with them on any necessary changes to inputs, operations, usage patterns, logistics, throughput levels, maintenance, or any other aspects of the cell manufacturing process. Raw and finished material handling, processes, and storage should be thoroughly evaluated. NREL could also consult with companies to explore capacity expansion in the most efficient and effective manner, both from a technological and an economic perspective. This would improve the prospect of achieving the scale all market participants agree is required for success in this market.

²⁹⁹ NREL, *Negotiable Technology Licensing*, <https://www.nrel.gov/workingwithus/licensing.html> (**Exhibit 71**).

³⁰⁰ NREL, *Technical Partnership Agreements*, <https://www.nrel.gov/workingwithus/technology-partnership-agreements.html> (**Exhibit 72**).

³⁰¹ *Id.*

Another example is DOE's \$3 million "American Made Solar Prize," which "incentivizes the nation's entrepreneurs to reassert American leadership in the energy marketplace."³⁰² It is a competition "designed to revitalize U.S. solar manufacturing through a series of contests and the development of a diverse and powerful support network that leverages national laboratories, energy incubators, and other resources across the country."³⁰³ "The Solar Prize supports the Administration's work to spur solar manufacturing, develop innovative solar solutions and products, and create domestic jobs and opportunities through public-private partnerships."³⁰⁴

In addition, the Secretary of Commerce is authorized to provide technical assistance, "on terms and conditions as the Secretary determines to be appropriate," for certified firms "through existing agencies and through private individuals, firms, or institutions (including private consulting services), or by grants to intermediary organizations (including Trade Adjustment Assistance Centers)."³⁰⁵ Similarly, with respect to an industry as a whole, the Secretary of Commerce is authorized to provide technical assistance, "on such terms and conditions as the Secretary deems appropriate, for the establishment of industry-wide programs for new product development, new process development, export development, or other uses."³⁰⁶

Whether by means of loan guarantees, technical assistance, or grants, the federal government could offer more meaningful assistance to the U.S. CSPV industry than the safeguard measures. The trade restrictions have caused more harm than good and provided only a fleeting palliative.

³⁰² *American-Made Solar Prize* website (<https://americanmadechallenges.org/solarprize/about.html>) (**Exhibit 73**).

³⁰³ *Id.*

³⁰⁴ *Id.*

³⁰⁵ 19 U.S.C. § 2343(a)-(b).

³⁰⁶ 19 U.S.C. § 2355(a).

CONCLUSION

There is ample evidence that the solar safeguard measures have caused more economic harm than benefits. No amount of trade restrictions will alter that. The Commission should seize the opportunity to report to the President the lost opportunities in terms of demand, investments, and quality solar jobs. To stem the flow, the tariff on modules should be eliminated or, at minimum, moderated to ensure a bright future for America's solar industry.

Respectfully submitted,

A handwritten signature in blue ink, appearing to be 'Matthew R. Nicely', is written over a horizontal line.

Matthew R. Nicely
Dean A. Pinkert
Julia K. Eppard

Counsel to SEIA and REC Americas LLC

LIST OF ATTACHMENTS

APPENDIX A:

SEIA, The Adverse Impact of Section 201 Tariffs: Lost Jobs, Lost Deployment and Lost Investments (Nov. 2019)

APPENDIX B:

Dr. Thomas J. Prusa, An Economic Analysis of the Impact of Section 201 Safeguard Duties on Solar Deployment and Jobs

- B-1. NREL, Regional Energy Deployment System Model (Public)
- B-2. NREL, JEDI: Jobs & Economic Development Impact Models (Public)
- B-3. Wood Mackenzie *PV Pulse*, April 2019, Supply/Demand Summary Metrics (CBI)
- B-4. Suniva's Prehearing Remedy Brief (Public)
- B-5. Paula Mints, *Solar Flare*, Global Price data (CBI)
- B-6. USEIA, Levelized Cost and Levelized Avoided Cost of New Generation Resources in the Annual Energy Outlook 2019 (Public)
- B-7. Lazard's Levelized Cost Of Energy Analysis—Version 13.0, November 2019 (Public)
- B-8. SEIA, "Solar Investment Tax Credit (ITC) (Public)
- B-9. Swanson, Richard M., "A Vision for Crystalline Silicon Photovoltaics," *Progress in Photovoltaics: Research and Applications*, at 452 (Feb. 1, 2006) (Public)
- B-10. Bloomberg New Energy, *2019 Sustainable Energy in America Factbook* (CBI)
- B-11. Michael Woodhouse, David Feldman, Ran Fu, Tim Remo, Brittany Smith, Kelsey Horowitz, Ashwin Ramdas, and Robert Margolis, "The International Supply Chain, Manufacturing Costs, and Lifecycle Project Economics of Photovoltaics," Presentation to the Shanghai New Energy Conference, May 28, 2018 (Public)
- B-12. Finlay Colville, "PV CellTech 2020 to explain huge shift in PV production landscape," November 14, 2019 (Public)
- B-13. JinkoSolar Holding Co., LTD, "Prospectus Supplement" (Public)
- B-14. Xiaojing Sun, "WoodMac: Bifacial Solar Market Set to Grow Tenfold by 2024," September 24, 2019 (Public)

- B-15. EnergySage, “Bifacial solar panels: what you need to know” (Public)
- B-16. Fred Lambert, *Electrek*, “Tesla is ramping up Solar Roof Tile production to 1,000 roofs per week,” July 30, 2019 (Public)
- B-17. Kelly Pickerel, “Hanwha Q CELLS completes 1.7-GW panel assembly facility in Georgia,” February 28, 2019 (Public)
- B-18. Charles Oliver, "Hanwha plant up to more than 750 employees," August 3, 2019 (Public)
- B-19. Kelly Pickerel, “JinkoSolar confirms its plans for a Florida-based, 400-MW capacity solar panel facility,” March 30, 2018 (Public)
- B-20. Mark Osborne, “LG Electronics establishing a 500MW solar module manufacturing plant in US,” June 28, 2018 (Public)
- B-21. Christian Roselund, “Mission Solar to double solar module manufacturing,” February 6, 2018 (Public)
- B-22. Rye Druzin, "San Antonio-based Mission Solar returns headquarters land to Brooks," December 19, 2017 (Public)
- B-23. Christian Roselund, “SunPower retools former SolarWorld factory for P-Series,” November 27, 2018 (Public)
- B-24. Christian Roselund, “Heliene retools its Minnesota module factory,” July 23, 2018 (Public)
- B-25. Christian Roselund, “Silfab says it will bring metal wrap through solar to the United States,” March 8, 2019 (Public)
- B-26. Fred Lambert. “Tesla’s Gigafactory 2 is now mainly a Panasonic factory to supply other solar companies, report says,” May. 15th 2019 (Public)
- B-27. Suniva/Mayer Brown, “Impact of the Section 201 Remedy On Employment in the US Solar Industry,” August 2017 (Public)
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- B-29. Emma Foehringer, Hanwha Q Cells Trade Complaint Could Further Tighten US Solar Supply, Merchant May 30, 2019 (Public)
- B-30. Nichola Groom, Global solar forecasts lowered as China cuts support policies, June 6, 2018 (Public)
- B-31. Emma Foehringer Merchant, China’s Bombshell Solar Policy Shift Could Cut

Expected Capacity by 20 Gigawatts, June 6, 2018 (Public)

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8.	Comparison of Wood Mackenzie's deployment forecast with safeguard tariffs versus deployment forecast without safeguard tariffs	Public
9.	Module Shipments by Channel	CBI
10.	<i>Billions in US solar projects have been shelved after Trump panel tariff</i> , CNBC (June 7, 2018)	Public
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15.	Emma Foehringer Merchant, <i>The Status of US Solar Manufacturing, One Year After Tariffs</i> , Greentech Media (Feb. 25, 2019)	Public
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29.	<i>LG Electronics Announces Plans for U.S. Solar Panel Assembly Plant</i> , Renewable Energy World (July 2, 2018)	Public
30.	Letter to Honorable Jeffrey D. Gerrish, Deputy U.S. Trade Representative, from Craig Cornelius, CEO, Clearway Energy Group LLC; Tristan Grimbert, President & CEO, EDF Renewable Energy; Tom Buttgenbach, Co-Founder, President, & CEO 8minute Solar Energy; Nathanaël Esposito, President, Solar & Energy Storage, E.ON Climate & Renewables North America; Michael Polsky, CEO, Invenergy LLC, Ty Daul, President, Recurrent Energy Group; Jon Downey, CEO Southern Current; Ryan Creamer, CEO sPower; George Hershman, President, Swinerton Renewable Energy; Guy Vanderhaegen, CEO, Orgis Energy (Aug. 7, 2019)	Public
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43.	<i>GreenBrilliance USA announces PV manufacturing in the United States</i> , pv magazine (July 10, 2018)	Public
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46.	David Feldman & Robert Margolis, " <i>Q1/Q2 2019 Solar Industry Update</i> , National Renewable Energy Laboratory (Aug. 6, 2019)	Public
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66.	Thin-Film PV U.S. Import Statistics	Public
67.	Dan Kraker, <i>Country's Newest Solar Factory Opens on the Iron Range</i> , MPR NEWS (Sept. 25, 2018)	Public
68.	U.S. Department of Commerce, International Trade Administration, <i>Top Markets Series: Renewable Energy</i> (last visited Nov. 19, 2019)	Public
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73.	<i>American-Made Solar Prize</i> website (https://americanmadechallenges.org/solarprize/about.html)	Public
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