

September 28, 2017

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Confidential Business Information
Deleted from pages 2, 6-8, 11-12, 19, 24, 28, 30-32, 34-35,
40, 43, 46, 52, 58; List of Attachments; Appendix A; Appendix B and
Exhibits 1-2, 9A, 10, 12, 21-22.

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-201-75
Prehearing Remedy Brief

Dear Secretary Barton:

On behalf of Solar Energy Industries Association (“SEIA”) and its member company
SunPower Corporation, we enclose for filing our Prehearing Remedy Brief in the above-
captioned investigation.

Pursuant to 19 C.F.R. § 201.6, we respectfully request that certain information contained
in this submission, identified by brackets, be accorded confidential treatment. The bracketed
information contains highly sensitive confidential business proprietary information pertaining to
company operations, production, capacity, sales, and shipments, as well as other information of

commercial value. The disclosure of such confidential business information would cause substantial harm to the competitive position of the above-mentioned companies and would impair the Commission's ability to obtain such information as is necessary to perform its statutory functions in the future. Accordingly, it is the type of information normally treated as confidential business information pursuant to 19 C.F.R. § 201.6(a).

The requisite certificate is enclosed in accordance with Sections 201.6 and 207.3 of the Commission's rules. This brief has been served by hand delivery on lead counsel for each of the parties listed on the attached public service list. Pursuant to the Commission's instructions, we request that the Commission treat the photocopied certification provided with this response as original, signed certification.

Should the Commission have any questions regarding this submission, please contact the undersigned.

Respectfully submitted,

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Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products)

Inv. No. TA-201-75


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 to Solar Energy Industries Association ("SEIA") and its member company SunPower Corporation, 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 September 27, 2017.



Notary Public

My Commission expires: June 14, 2019



**PUBLIC
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Dated: September 28, 2017

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION**

In the Matter Of:

*Crystalline Silicon
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Investigation No:
TA-201-75

SOLAR ENERGY INDUSTRIES ASSOCIATION (“SEIA”)

AND SUNPOWER CORPORATION

PREHEARING REMEDY BRIEF

VOLUME 1 – BRIEF AND APPENDICES

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I. INTRODUCTION

The Solar Energy Industries Association (“SEIA”), SunPower, and the other respondents in this case face a more difficult task than usual in preparing prehearing remedy briefs. It is not unusual that respondents fundamentally disagree with the affirmative injury determination that precipitated the remedy phase of the proceeding. Nor is it unusual that, because of the limited time made available by the statute, respondents are forced to make remedy recommendations without knowing the Commission’s reasons for reaching its affirmative injury determination. It is very unusual, however, that respondents must prepare remedy briefs without seeing petitioners’ adjustment plans, as both companies chose not to file them by the 120th day following acceptance of the petition, which is the deadline under the statute. As such, we have no idea how the petitioners think a remedy will help facilitate their adjustment to import competition. We therefore enter this phase of the investigation more blindly than respondents in almost every other U.S. safeguard proceeding to date.

Despite these limitations, we continue to explain to the Commission the flaws in the petitioners’ characterization of the U.S. solar market and the reasons why the imposition of trade-restrictive relief will not allow the domestic CSPV cell and module industry to become viable by the end of the remedy period. But, a trade-restrictive remedy will cause significant harm to the rest of the solar industry and its hundreds of thousands of workers. To be effective, any remedy recommended by the Commission should be designed to facilitate a long-term solution to the domestic industry’s structural problems. As discussed in more detail in the economic study performed by Dr. Thomas Prusa, Chair of the Economics Department of Rutgers

University,¹ a poorly tailored, trade-restrictive remedy will likely provide no benefit to the domestic industry at all, but would damage the very market actors on whom cell and module producers depend for their livelihoods, *i.e.*, downstream customers and their workers. These conclusions flow from three key points.

First, the explosive growth of this renewable energy source benefits the overwhelming majority of the workers in the broader domestic solar industry as well as the nearly two million solar consumers from all segments of American residential and commercial life.² Thanks to this growth, one in every 50 new jobs in the entire U.S. economy in 2016 was a solar job, with over 260,000 total solar jobs that year, 38,000 of which were manufacturing jobs. (Notably, only a [] solar manufacturing jobs — in fact, a fraction of []% of total solar jobs — involved domestic cell or module production, which over time became more automated.³) This growth has occurred because technologies have improved and costs have fallen. Consequently, as the petitioners and the respondents agree, prices in this industry trend in only one direction over time — downward.⁴

Second, the major obstacles to the success of Suniva and SolarWorld Americas, Inc. (“SolarWorld”) are internal, not external. We understand that the Commission has found

¹ See **Appendix A** (Thomas Prusa, *The Economic Effects of CSPV Safeguard Tariffs: Industry Profitability, Deployment, and Estimated Job Effects*) (hereinafter “Dr. Prusa’s Study”).

² See SEIA’s Prehearing Injury Brief at 7–10; SEIA’s Posthearing Injury Brief at 1–3, Appendix A (Answers to Questions) at 1–9.

³ See SEIA’s Posthearing Injury Brief, Appendix A (Answers to Questions) at 1–2 (“There are at least 10 times as many solar manufacturing jobs in related solar industries as in cells and modules and at least 70 times as many total solar jobs as in cells and modules. Industries, such as racking, adhesive-coating-insulation, bolts, fasteners, glass, inverters, ribbons, and trackers, are the source of tens of thousands of good high-paying solar *manufacturing* jobs. Moreover, the vast majority of solar related jobs, and specifically solar manufacturing jobs, are driven by *deployment*, not cell production.”); see also SEIA’s Prehearing Injury Brief at 9 (showing that in 2016, there were [] cell manufacturing jobs and [] module manufacturing jobs).

⁴ See SEIA’s Prehearing Injury Brief at 112 (“Over the whole 1976-2016 time period, prices have fallen (on average) by 11.9% per year. . . . {T}he CSPV industry has long been characterized by significant, ongoing declining prices.”); SEIA’s Posthearing Injury Brief at 12 (“the universal trend of costs for the cell and modules industry, worldwide, is downward in order to allow solar to compete.”).

imports to be no less important than any other individual cause of the domestic industry's problems. We disagree with this conclusion, but accept it for current purposes. The Commission's finding does not mean, however, that imports are the only problem for the domestic industry, or even that the harmful impact of imports is greater than the harmful impact of other problems collectively. The impact of these other factors must be taken into account as the Commission considers whether a remedy will be effective.

For instance, it is a fact that the domestic industry made a strategic decision to focus mainly on the residential and small commercial segments of the market, and does not possess the scale necessary to serve large utility-scale projects. This is the key reason it has failed to reap the benefits of massive growth in the utility-scale segment, which is the fastest growing market segment. Moreover, notwithstanding their protestations to the contrary, Suniva and SolarWorld have made many missteps that have limited their success even in the residential and small commercial segments. Meanwhile, their lack of scale has driven up their costs as well as kept them out of the residential leasing market. In addition, the petitioners never developed capabilities to produce sufficient quantities to meet anywhere near total national residential and small commercial solar demand, failed to qualify or otherwise missed significant opportunities to supply the U.S. market, and had problems with quality, timeliness, and adequacy of supply.⁵

These deficiencies cry out for deeply considered, multifaceted solutions to interdependent challenges. Given the petitioners' denial of all of the evidence of their internal problems (which may also explain why they have had difficulty drafting timely adjustment plans), it becomes

⁵ See SEIA's Prehearing Injury Brief at 71–95; SEIA's Posthearing Injury Brief at 8–13, Appendix A (Answers to Questions) at 74–78, 111–20.

even more important for the Commission to focus its attention on those issues.⁶ The Commission needs to step back and consider *all* of the factors that have hindered the performance of this industry.

Third, and finally, trade-restrictive relief of any kind — whether tariffs, quotas, or tariff-rate quotas — would fail two critical statutory requirements: a safeguard remedy should (a) most effectively facilitate the efforts of the domestic industry to make a positive adjustment to import competition and (b) give rise to greater economic and social benefits than costs. As we demonstrate below, trade-restrictive relief would provide little or no benefit to the domestic industry, and would be extremely costly to downstream industries within the solar sector and to consumers. The Commission could better accomplish the objectives of Section 201, and contribute effectively to the success of the domestic industry, by recommending non-trade-restrictive measures, including assistance that takes full advantage of the unique solar resources within the federal government.

The task at hand now for the Commission is to offer the President the best advice it can formulate. The Commission should rely on its trade policy expertise to create and recommend constructive advice instead of resorting to trade restraints. This is not your typical case and the President needs objective analysis about what is required to move the industry forward. Denying the existence of the tens of thousands of jobs that are at stake, denying the reality and importance of grid parity, and denying the domestic industry's internal problems in favor of scapegoating imports will not help the industry or serve the national interest.

⁶ SolarWorld's Posthearing Brief at 5–8, Exhibit 1 (Answers to Questions) at 5–21; Suniva's Posthearing Brief at 5–6, Exhibit 9 at 4–8.

II. CONDITIONS OF COMPETITION DO NOT SUPPORT TRADE RELIEF

In prior safeguard cases, the Commission has first considered the conditions of competition in the relevant industry to inform its analysis of the remedy to recommend to the President.⁷ This includes “conditions of competition in the domestic and world markets and likely developments affecting such conditions during the next several years in evaluating the various remedy options for . . . the domestic industr{y}.”⁸ We address the key conditions below.

A. Lack of Public Official or Industry Support

The Commission should take into consideration the profound lack of support for this investigation. An unprecedented number of public officials have expressed concern about the likely harmful effects of any trade restrictions.⁹ Numerous U.S. companies filed letters, provided

⁷ See, e.g., *Steel*, Inv. Nov. TA-201-73, USITC Pub. 3479, Vol. I at 359–61, 370–74, 380–82, 387–89, 394–96, 400–02, 410–12, 416–17, 421–22, 432–34 (Dec. 2001).

⁸ *Id.* at 370.

⁹ See Letter from U.S. Representatives Seth Moulton, Stephen F. Lynch, and Niki Tsongas (Sep. 21, 2017); Letter from U.S. Senators Martin Heinrich, Thom Tillis, Michael F. Bennet, David Perdue, Dianne Feinstein, Cory Gardner, Sheldon Whitehouse, Dean Heller, Chris Van Hollen, Jerry Moran, Benjamin L. Cardin, Tim Scott, Angus S. King, Jr., Susan M. Collins, Edward J. Marhey, and Catherine Cortez Masto, “Re: Investigation TA-201-75” (Aug. 11, 2017); Letter from U.S. Representatives Mike Thompson, Mark Sanford, Don Beyer, Ted Budd, Ken Calvert, Matthew Cartwright, Ryan Costello, Carlos Curbelo, Diana DeGette, Daniel M. Donovan, Jeff Duncan, Keith Ellison, Virginia Foxx, Colleen Hanabusa, Jim Himes, George Holding, Richard Hudson, Steve Knight, Mia Love, James McGovern, Patrick T. McHenry, Patrick Meehan, Ralph Norman, Ed Perlmutter, Robert Pittenger, Jared Polis, Mike Quigley, David G. Reichert, Tom Rice, Jacky Rosen, David Rouzer, Jackie Speier, Eric Swalwell, Pat Tiberi, David Valadao, Peter Welch, Joe Wilson, Kevin Yoder, Anna G. Eshoo, Dina Titus, Trey Gowdy, Mark Walker, Frank Pallone, Jr., Mimi Walters, Elizabeth H. Esty, Frank Lucas, Derek Kilmer, David Price, Brendan F. Boyle, Scott Peters, Ted Yoho, Jim Costa, Martha McSally, Jimmy Panetta, Jared Huffman, Ruben J. Kihuen, Diane Black, Betty McCollum, Filemon Vela, Brian Higgins, Erik Paulsen, Rob Bishop, Lloyd Smucker, John Moolenaar, Darren Soto, Thomas A. Garrett Jr., Barbara Lee, Adam Smith, and G. K. Butterfield, “Re: Investigation TA-201-75” (Aug. 11, 2017); Letter from the Governors of the State of Nevada (Brian Sandoval), the State of Colorado (John Hickenlooper), the State of Massachusetts (Charles D. Baker), and the State of North Carolina (Roy Cooper), “RE: Investigation TA-201-75” (Sep. 21, 2017); Letter from the Chairman of Energy and Finance for New York Richard Kauffman (Sep. 14, 2017); Letter from the Secretary of Commerce and Trade for the Commonwealth of Virginia Todd P. Haymore, “RE: Suniva & SolarWorld 201 Petition” (Aug. 14, 2017); Letter from Minnesota Senators Paul Gazelka, Tom Bakk, David Tomassoni, Carrie Ruud, and Justin Eichorn, Minnesota Representatives Jason Metsa, Dale Lueck, Sandy Layman, Rob Ecklund, and Julie Sandstede, Iron Range Resources & Rehabilitation Commissioner Mark Phillips, and Range Association of Municipalities and Schools Executive Director Steve Giorgi (Jul. 27, 2017); Letter from U.S. Senator Richard Burr (Jul. 20, 2017); Injury Tr. at 23-50 (Minnesota Senator Paul Gazelka, Minnesota Senator David Tomassoni, North Carolina Representative Jason Saine, Commissioner Lauren McDonald of Georgia Public Service Commission, Maryland Delegate Luke Clippinger, Al Christopher, Director, Division of Energy, Virginia Department of Mines, Minerals and Energy).

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affidavits, filed briefs, and/or appeared personally at the Commission’s hearing on injury, expressing opposition to this investigation.¹⁰

This opposition is also reflected in responses to the Commission’s questionnaires. [] U.S. module producers [].¹¹ [] safeguard relief.¹² [] import relief because []

”¹³ [] because “[]”¹⁴ [] said it well: “[]

”¹⁵ []¹⁶ [] agrees: “[]

”¹⁷ [] of [] responding U.S. module producers [].¹⁸ [] module producer explained further that any import relief “[]

¹⁰ See List of Public Officials and Company Representatives Who Have Expressed Opposition to this Investigation and Any Safeguard Remedy (**Exhibit 1**).

¹¹ CR at I-55 (Table I-2).

¹² [] U.S. Producer Questionnaire Response (hereinafter “QR”) at I-3.

¹³ Affidavit of [] (**Exhibit 2**); [] U.S. Producer QR at I-3.

¹⁴ [] U.S. Producer QR at I-3.

¹⁵ [] U.S. Producer QR at I-3.

¹⁶ Correspondence between [].

¹⁷ [] U.S. Producer QR at I-3.

¹⁸ [] U.S. Producer QR at I-3.

].”¹⁹ Multiple other companies have supplied affidavits accompanying this brief that attest to the same demand crushing effects of trade restrictions.²⁰

The dearth of support for this investigation and any trade remedy is telling. While not a traditional condition of competition, it nonetheless colors the worthiness of any trade relief.

B. U.S. Demand Conditions

Demand for CSPV cells and modules is driven by the energy markets and government incentives to deploy renewable energy. As detailed on pages 6-23 of SEIA’s Prehearing Injury Brief, along with Dr. Thomas Prusa’s economic report accompanying that brief, solar is but one of many sources of energy competing in the U.S. marketplace.

Thanks to the global CSPV cell industry’s efforts to reduce costs, solar has become a viable alternative source of electricity in the United States, experiencing twenty-fold growth from less than 0.1% of total electricity generation in 2010, to approximately 1.4% today.²¹ In 2016, solar energy was the largest source of new U.S. electricity generation capacity, with approximately 40% of all such capacity.²² The enormous growth of solar and its nationwide use

¹⁹ [] U.S. Producer QR at I-3.

²⁰ Industry Affidavits Opposing Imposition of Import Relief (**Appendix B**). These include affidavits from Craig Cornelius, NRG Renewables; Edward Fenster, Sunrun; Laura E. Stern, Nautilus Solar; Brian Evans, RES Americas, Inc.; Stephen Jones, Blattner Energy, Inc.; Jeffery Ghilardi, EDF Renewable Energy; Erik L. Schiemann, Current Powered by GE’s Distributed Solar Business; Johnnie Taul, DEPCOM Power, Inc.; Stephen K. Irvin, Amicus Solar Cooperative; Kevin M. Schulte, SunCommon; Robert A. Masinter, AES Distributed Energy; Edmond L. Murray, Aztec Solar, Inc.; James B. Marlow, Jr., Radiance Solar; Richard L. Peters, Jr., Solar Energy Services, Inc.; Constantino Nicolaou, PanelClaw; David Zwillinger, D.E. Shaw Renewable Investments; Ryan S. Creamer, sPower.

²¹ Christian Roselund, “Solar reached 1.4% of U.S. electricity in 2016,” *PV Magazine* (Mar. 3, 2017), <https://www.pv-magazine.com/2017/03/03/solar-reached-1-4-of-u-s-electricity-in-2016> (citing DOE’s Energy Information Agency) (**Exhibit 3**).

²² U.S. Department of Energy, SunShot, *Q4 2016/Q1 2017 Solar Industry Update* at 75 (“SunShot Industry Update”) (**Exhibit 4**).

to power the economy is a fact. If permitted to grow, solar is projected to surpass 3% in 2020 and 5% in 2022.²³

Thanks to the growth in solar energy's role in the United States, new jobs are being created. In 2016, the solar industry provided 260,000 American jobs, 51,000 of which were added in 2016 alone, representing the fourth straight year of 20+% workforce growth.²⁴ (Among the 260,000 jobs, the jobs related to the production of CSPV cells and modules only represent [] of the industry's current total.²⁵) An additional 114,000 employees spend *some* time working for the industry, bringing the total number of Americans working in solar to 374,000.²⁶ One out of every 50 new American jobs is related to solar — and the jobs have grown at a rate that is 17 times greater than that of the overall U.S. economy.²⁷

All of these employees and the companies they work for depend on solar's ability to compete with other sources of energy. In many places around the country, solar finally became competitive on the electrical grid (known as “grid parity”), when solar power purchase agreements (“PPAs”) reached prices on par with natural gas and wind (as shown below), which are the other two greatest contributors to new electricity generation.

²³ See SEIA, “Solar Industry Data Solar,” <https://www.seia.org/solar-industry-data> (**Exhibit 5**).

²⁴ *Id.*

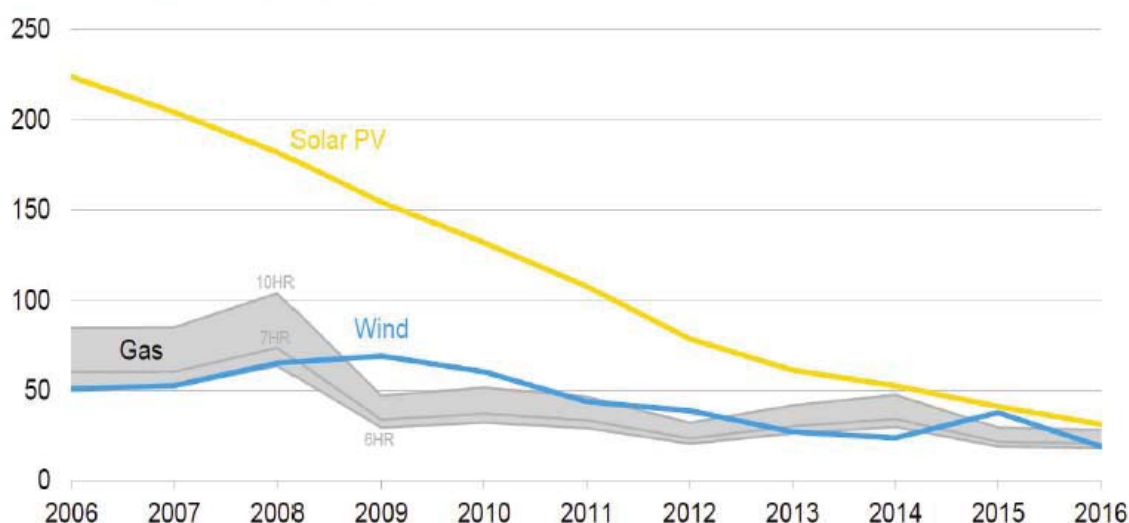
²⁵ SEIA's Prehearing Injury Brief at 8.

²⁶ SunShot Industry Update at 75 (**Exhibit 4**).

²⁷ *Id.*

Average PPA price vs. short run marginal cost of gas generation

USD per megawatt-hour (real 2016)



Source: Amy Grace, Head of North America Research, Bloomberg New Energy Finance (BNEF), “U.S. Solar PV and Power Markets” (**Exhibit 40**).

Technological innovation and improved production techniques have driven down the cost of CSPV, boosting demand for solar, especially in the utility-scale segment of the market.²⁸ Companies across the globe have enjoyed these cost declines, including the domestic industry.²⁹ Importantly, CSPV is not the only solar cell technology: thin-film (which is outside the scope of this safeguard investigation) has experienced similar cost declines, a more rapid advancement in efficiency than CSPV, and comparable visibility as an alternative source for solar power generation.³⁰ The second largest solar producer in the United States, First Solar, produces thin-

²⁸ See U.S. Department of Energy, SunShot Vision Study (Feb. 2012) at 1 (**Exhibit 6**).

²⁹ See Staff Report, Inv. No. TA-201-75 (Sep. 11, 2017) (hereinafter “CR”) and Staff Report (Public Version), Inv. No. TA-201-75 (Sep. 22, 2017) (hereinafter “PR”) at V-32 to V-47 (“Prices for all five price products decreased during 2012-16. . . . {A}verage prices of cells and modules in the U.S. market have declined during 2012-16 . . . Overall, cell and module prices fell by 60.4 percent and 58.5 percent, respectively, from 2012 to 2016.”); Fig. V-13 (showing a declining trend in quarterly data for U.S. cell and module prices between 2012 and 2016). Unless otherwise noted, all references to the Staff Report are to the revised report issued on September 22, 2017.

³⁰ SEIA’s Prehearing Injury Brief at 13 (citing IHS Markit, Global PV Module Intelligence Service, Global PV Integrated Market Tracker – Q2 2017); see also Richard M. Swanson, “A Vision for Crystalline Silicon Photovoltaics,” Progress in Photovoltaics: Research and Applications, at 452 (2006) (**Exhibit 7**) (“{T}here may well

film and is one of the most profitable producers in the world.³¹ However, the vast majority of First Solar's production capacity is in Malaysia.³²

The second major driver of U.S. demand is government incentives.³³ Tax relief (particularly the federal Investment Tax Credit) and rebates offered at the federal and state levels incentivized consumers to adopt solar technology by reducing costs and bringing solar more in line with other sources of energy.³⁴ These incentives are all on a downward trajectory, which creates the necessity to reduce not increase costs. As explained by Edward Fenster, Co-Founder and Executive Chairman of Sunrun, "almost all government incentives are designed to decline in value over time. This means that the residential solar industry must constantly be reducing costs just to maintain the current addressable market and customer savings that it offers. On a state level, some of the top states for residential solar have programs that will programmatically reduce the extent of incentives in the near term."³⁵

Finally, it is important to understand the implications of how the U.S. solar market is segmented. The U.S. solar market is primarily made up of three segments: residential,

be several thin-film technologies that are rapidly gaining market share. Module manufacturing costs . . . will be around \$1.00/W for both {CSPV and thin film} technologies, but thin films may have the advantage in further cost reductions going forward").

³¹ First Solar, "First Solar Investor Overview" (2017), at 3, 19 (**Exhibit 8**).

³² *Id.*

³³ See SEIA's Prehearing Brief at 16-17, 105-11, Appendix A (Prusa's Report); SEIA's Posthearing Brief, Appendix A. (Answers to Questions) at 42.

³⁴ See CR/PR at V-51 to V-58.

³⁵ Affidavit of Edward Fenster, Sunrun at 4 (**Appendix B-2**) (emphasis original). A recently released Lawrence Berkeley National Lab report stated: "Installed Price Declines Have Been Partially Offset by Falling Incentives. Cash incentives (i.e., rebates and performance-based incentives) provided through state and utility PV incentive programs have fallen substantially since their peak a decade ago, and have been largely phased-out in many key markets. Depending on the particular program, reductions in cash incentives over the long-term equate to roughly 70% to 120% of the corresponding drop in installed prices. This trend is partly a response to installed price declines and the emergence of other forms of incentives, however it has also been a deliberate strategy by program administrators to drive cost reductions in the industry." Galen Barbose and Naim Darghouth, "Tracking the Sun 10: The Installed Price of Residential and Non-Residential Photovoltaic Systems in the United States," at 2 (Sep. 2017), available at https://emp.lbl.gov/sites/default/files/tracking_the_sun_10_report.pdf.

commercial (also referred to as nonresidential), and utility-scale.³⁶ Utility-scale is by far the largest, representing almost three-quarters of installed capacity in 2016, followed by residential at 17%, and commercial at 11%.³⁷ The segments demand different types of modules: residential and small commercial projects primarily use 60-cell modules, while utility-scale and larger commercial projects primarily use 72-cell modules.³⁸

C. U.S. Supply Conditions

The domestic CSPV industry is comprised of integrated cell and module producers, like the petitioners, and independent module producers that purchase cells for assembly into modules. The independent module producers are highly reliant on imported CSPV cells,³⁹ because most domestic CSPV cell production is internally consumed by the integrated producers.⁴⁰ [

] largest U.S. module assemblers are [], representing []% and []% of U.S. module assembly respectively.⁴¹ These producers were running at [], even with [] in capacity that occurred during the

³⁶ CR/PR at I-33; V-1. As the Staff Report notes, the market also includes the off-grid market segment, but this prehearing brief focuses on the three on-grid market segments because “the vast majority of CSPV modules sold in the United States are connected to the grid.” *Id.* at V-1.

³⁷ GTM Research, *U.S. Solar Market Insight: Full Report Q2 2017* (Exhibit 9A); SEIA, *U.S. Solar Market Insight: Executive Summary, Q2 2017* (Exhibit 9B).

³⁸ SEIA’s Posthearing Injury Brief, Appendix A (Answers to Questions) at 35–36.

³⁹ SEIA’s Prehearing Injury Brief at 29–44; CR/PR at I-37 to I-38 (“U.S. producers reported that a minor amount of their U.S. commercial shipments consist of CSPV cells to module assemblers.”); *id.* at III-29 (discussing that the total shipment quantity of CSPV modules assembled in the United States was 513,266 kW in 2016, which is significantly lower than that year’s domestic demand of [] kW, according to Table IV-2).

⁴⁰ CR at I-38 n.101 (“CSPV cells are typically internally consumed to produce solar modules by U.S. producers”); III-27 (“Relatively few CSPV cells produced in the United States are sold commercially. In fact, during 2016, [] percent of U.S. producers’ total shipments were commercially shipped in the United States and [] percent were exported to unrelated firms.”). For instance, SolarWorld reported internal consumption of []

] of its U.S. cell production over the POI. See SolarWorld U.S. Producer QR at II-10.

Questionnaire responses confirmed this constraint. “[] U.S. Producer QR at I-3. []

] reported: “[] U.S. Producer QR at I-3.

⁴¹ CR at Table III-7; see also SEIA’s Prehearing Injury Brief at 38–39. [] is the other, representing []% of module assembly in the United States. CR at III-23, Table III-7.

period.⁴² Given the [] capacity utilization, [] could not have []. Further, this lack of ability to [] is evidenced by the fact that [].⁴³

In 2016, the domestic industry devoted []% of commercial shipments to the residential and commercial segments (*i.e.*, the “distributed” electricity segment), as imports mostly served the utility-scale segment.⁴⁴ The domestic firms’ concentration in the distributed segment reflects the lack of scale required to supply large utility projects.⁴⁵ They also lacked the ability to meet the national demand for CSPV product for the residential and small commercial segments.

The Staff Report acknowledged SEIA’s arguments that the supply elasticity was overstated and revised its range to 2 to 4.⁴⁶ Given the constraints on cell production and the domestic industry’s reliance on imported cells ([]), SEIA maintains that the more likely range is 0 to 1 for cells and 1 to 2 for modules,⁴⁷ though elasticity is non-linear due to the highly regulated and fragmented nature of solar markets.

⁴² See SEIA’s Prehearing Injury Brief at 39–40.

⁴³ See *id.*

⁴⁴ CR at Table I-1; see also “Import Shipments by Channel” (**Exhibit 10**).

⁴⁵ When asked by Chairman Schmidlein to respond to SEIA’s statement that petitioners did not participate in the utility-scale market, Suniva’s Matt Card cited “concentration risk” as the reason for not participating in larger utility-scale projects, said that Suniva was “not a qualified player to go after a 200 megawatt project” in terms of capacity, and mentioned just two utility-scale projects that Suniva had worked on — a 7 MW project and a 14 MW project. See Injury Hearing Transcript (“Injury Tr.”) at 163–64 (Mr. Card); see also *id.* at 101 (Mr. Card) (“45% of our overall cell manufacturing capacity went into 72-cell modules to serve the growing commercial and even small utility market.”).

⁴⁶ CR/PR at V-26.

⁴⁷ See SEIA’s Prehearing Injury Brief at 42–44.

D. Global Conditions

Like the United States, the global market for solar installations is growing.⁴⁸ From 2015-2016, worldwide solar installations increased by 50% to total installations of 75 GW.⁴⁹ As shown at Table IV-78 in the Staff Report, foreign producers are focusing more on markets outside the United States. CSPV exports to the U.S. market as a share of total shipments declined over the POI, from 1.6% in 2012 to 1.3% in 2016, and are projected to fall further in the near future, to less than 0.88% in 2017 and 2018.⁵⁰ At the same time, the share of total shipments to the various home markets increased from 71.5% in 2012 to 78.5% in 2016, and are projected to grow again, to about 81% in 2017 and 2018.⁵¹ Likewise, the share of CSPV module exports to the U.S. market is projected to fall from 23.4% in 2016, to 12.0% in 2018, while the share of home market shipments is projected to grow from 43.9% in 2016, to 48.4% in 2018.⁵² This focus on supplying home markets, as well as other export markets, is important context for foreign producers' capacity and production.

III. THE LACK OF ADJUSTMENT PLANS INHIBITS THE COMMISSION'S ANALYSIS OF AVAILABLE REMEDY OPTIONS

In previous cases, an important source for the Commission's analysis of various remedy options has been the adjustment plans submitted by the domestic industry.⁵³ These plans have provided concrete examples of proposed measures that domestic producers intended to undertake

⁴⁸ SEIA's Prehearing Injury Brief at 150–56; SEIA's Posthearing Brief at 13–14, Appendix A (Answers to Questions) at 15–16, 95–102.

⁴⁹ IEA PVPS, Snapshot, at. 4, http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_-_A_Snapshot_of_Global_PV_-_1992-2016__1_.pdf (**Exhibit 11**).

⁵⁰ PR at Table IV-78.

⁵¹ *Id.*

⁵² PR at Table IV-79.

⁵³ *See, e.g., Steel*, USITC Pub. 3479, Vol. I at 361–62.

if import relief were imposed,⁵⁴ such as steps to improve manufacturing efficiency and quality, develop new products, technologies, and markets, and invest in equipment, information systems, and human resources.⁵⁵ The Commission has viewed these plans as “a general blueprint that can form the starting point for positive adjustment” by the domestic industry.⁵⁶ Such plans are “the best guide to the priorities of the domestic industry and therefore identify the areas in which any import relief could best be justified.”⁵⁷ For instance, in the 1992 safeguard investigation of *Extruded Rubber Thread*, the consideration of whether a particular form of remedy would enable domestic producers to implement their adjustment plans figured largely in the Commission’s decision on remedy.⁵⁸

Moreover, under 19 U.S.C. § 2254(a)(1), the Commission must monitor developments in 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.” Section 2254(a)(2) further requires the Commission to conduct a mid-course review if the initial period for the safeguard action exceeds three years and to submit a monitoring report to the President and the Congress. In *Lamb Meat*, the Commission found that the mid-course review requirement would provide it with “an opportunity to review the domestic industry’s progress in implementing the necessary changes outlined in its adjustment plan,” enabling the President to alter relief to reflect

⁵⁴ See *id.* at I-64.

⁵⁵ See, e.g., *Steel*, USITC Pub. 3479, Vol. I at 361–62; 374; 389; 403; *Certain Steel Wire Rod*, Inv. No. TA-201-69, USITC Pub. 3207 at I-53 (July 1999); *Extruded Rubber Thread*, Inv. No. TA-201-63, USITC Pub. 2563 at 35, 39 (Dec. 1992) (hereinafter “*Extruded Rubber Thread I*”).

⁵⁶ *Certain Steel Wire Rod*, USITC Pub. 3207 at I-53.

⁵⁷ *Id.* at I-69 (Commissioner Crawford found no evidence that the domestic industry required relief from fairly traded imports in order to accomplish the goals stated in its adjustment plan).

⁵⁸ *Extruded Rubber Thread I*, USITC Pub. 2563 at 38–39.

the level of the industry's efforts to make a positive adjustment.⁵⁹ In the absence of an industry adjustment plan, the Commission's and the President's task of assessing the domestic industry's progress and optimizing relief throughout the remedy period would be unnecessarily difficult and less productive, thereby hindering effective adjustments and impeding the domestic industry and the U.S. economy at large, frustrating the purpose of Section 201.

Section 202(a)(4) of the Trade Act of 1974 establishes the procedure for petitioners to submit "a plan to facilitate positive adjustment to import competition" within 120 days after the date of filing of the petition. 19 U.S.C. § 2252(a)(4). As the Commission is already aware, neither petitioner in this case has filed an adjustment plan despite representing to the Commission an intention to do so.⁶⁰ SEIA formally requested that the Commission consider in its injury determination the fact that petitioners failed to file their adjustment plans within the statutory timeframe.⁶¹ While the language of the provision is permissive rather than mandatory, the idea behind an adjustment plan is that, upon seeking protection from presumptively fair trade, petitioners should provide an explanation of how they expect to take advantage of import relief

⁵⁹ *Lamb Meat*, Inv. No. TA-201-68, USITC Pub. 3176 (Apr. 1999) at I-35; *see also Certain Steel Wire Rod*, USITC Pub. 3207 at I-54 ("[A mid-course investigation under 19 U.S.C. § 2254(a)(2)] would provide the Commission with an opportunity to formally review, among other things, the progress of the industry in implementing its plan.").

⁶⁰ SolarWorld's Prehearing Injury Brief at 103 ("SolarWorld intends to submit a plan to facilitate positive adjustment to import competition, as referenced in 19 U.S.C. § 2252(a)(4), within 120 days of the date the petition for this investigation was filed."); Injury Tr. at 151 (Testimony of Mr. Brightbill) ("We'll also put forward an adjustment plan and consult with USTR on it."), 210 (Testimony of Mr. Brightbill) ("Again I think we're going to put forward an adjustment plan"). Suniva's counsel did not deny that no adjustment plan was submitted, but instead claimed that any restructuring plan was properly before the bankruptcy court and any adjustment will be undertaken after an affirmative injury determination. *See* Suniva's Letter to the ITC, "Response to SEIA Letter Regarding Adjustment Plans" (Sep. 19, 2017).

⁶¹ *See* "Re: Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products), Inv. No. TA-201-075; Request for Action – Commission Consideration of Petitioners' Failure to Submit Adjustment Plans" (Sep. 21, 2017) ("There is certainly good cause for the Commission to {consider the petitioners' failure to submit adjustment plans} because {such} failure . . . evidences both a lack of respect for the process contemplated by the statute and an apparent inability to devise a genuine plan for the industry's adjustment to import competition, all of which is relevant to the Commission's decision whether to send this case to the President."). This Request for Action was filed as a replacement of the original letter expressing the same concern, which had been rejected by the Commission as untimely because the letter had been characterized as a "comment," which could not be filed past the deadline for posthearing injury briefs. The revised characterization of SEIA's submission as a "Request for Action" allowed it to be properly filed with the Commission.

in the event the Commission votes in the affirmative on the issue of injury. In fact, the legislative history shows that the Senate bill had originally *required* petitioners to submit adjustment plans (and make them public and available for comment), which was replaced by a substitute provision making the submission optional as part of the conference agreement, but the conferees specifically addressed the importance of these plans.⁶²

While the conferees decided to make the submission of an adjustment plan optional, rather than to require its submission, the conferees encourage petitioners for action under this section to submit adjustment plans. The conferees believe that it is important for firms and workers in the petitioning industry to demonstrate to the ITC and the President what steps they will be taking to make a positive adjustment to import competition

In all but one prior Section 201 case over the last 25 years, domestic industry members have filed adjustment plans for the Commission's consideration.⁶³ Here, the petitioners have deprived interested parties and the Commission of a key document that should help form the basis of any remedy recommendation, a document SolarWorld promised to deliver on a timely basis under oath before the Commission.

Nonetheless, the Commission should carefully evaluate and report on the statutory requirements imposed on the Commission and the President for devising an appropriate remedy.

⁶² *Omnibus Trade and Competitive Act of 1988*, Conference Report to Accompany H.R. 3, H. Rept. 100-576 (Apr. 20, 1988), at 663.

⁶³ *Extruded Rubber Thread*, Inv. No. TA-201-72, USITC Pub. 3375 (Dec. 2000) (hereinafter "*Extruded Rubber Thread 2*") at I-1 (making a negative injury determination). Whereas we were able to locate adjustment plans submitted by the domestic industry (as the petitioner under Section 202(a)(4) or as a non-petitioning stakeholder under Section 202(a)(6)) in the dockets of all prior 201 cases going back to 1990, no such submission was found in the docket of the *Extruded Rubber Thread*. We note that the domestic extruded rubber thread industry might have filed an adjustment plan, possibly not as a public document, given North American Rubber Thread's statement in its answers to the Commission's written questions following the injury hearing (Sep. 18, 2000): "In the remedy phase, North American will present a *plan* and proposed remedy which North American believes will demonstrate that North American can be fully competitive with Malaysia" (emphasis added).

IV. THE SCOPE OF ANY RELIEF RECOMMENDED BY THE COMMISSION UNDER SECTION 201 IS SUBJECT TO CERTAIN STATUTORY RESTRICTIONS.

The statute requires any relief recommended by the Commission to meet certain criteria: (1) it should not exceed the statutory maximum relief specifically prescribed in the statute;⁶⁴ (2) it must be narrowly tailored to the actual injury suffered by the domestic industry;⁶⁵ (3) it must not exceed the amount necessary to remedy the injury;⁶⁶ (4) it must be designed to facilitate the efforts of the industry to make a positive adjustment to import competition;⁶⁷ and (5) it should provide greater economic and social benefits than costs.⁶⁸ These principles should frame the remedy recommendations in this case.

A. The Commission Must Limit Any Trade Relief Recommendations to those Permitted by the Statute

Where trade relief is appropriate (which, as discussed below, SEIA believes is not the case here), the statute permits the imposition of only certain types of trade relief. Specifically, 19 U.S.C. § 2252(e)(2) provides:

The Commission is authorized to recommend under paragraph (1)—

- (A) an increase in, or the imposition of, any duty on the imported article;
- (B) a tariff-rate quota on the article;
- (C) a modification or imposition of any quantitative restriction on the importation of the article into the United States;
- (D) one or more appropriate adjustment measures, including the provision of trade adjustment assistance under part 2 of this subchapter; or

⁶⁴ 19 U.S.C. § 2252(e)(3), 2253(e)(2).

⁶⁵ 19 U.S.C. § 2252(e)(1).

⁶⁶ 19 U.S.C. § 2252(e)(3); 2253(e)(2).

⁶⁷ 19 U.S.C. § 2252(e)(1), 2253(a)(1)(A).

⁶⁸ 19 U.S.C. § 2251(a).

(E) any combination of the actions described in subparagraphs (A) through (D).

Furthermore, the statute places limitations on the level and length of relief. Under the statute, the relief ultimately imposed by the President is restricted as follows:

(3) *No action may be taken under this section which would increase a rate of duty to (or impose a rate) which is more than 50 percent ad valorem above the rate* (if any) existing at the time the action is taken.

(4) Any action taken under this section proclaiming a quantitative restriction shall permit the importation of a quantity or value of the article which is *not less than the average quantity or value of such article entered into the United States in the most recent 3 years* that are representative of imports of such article and for which data are available, unless the President finds that the importation of a different quantity or value is clearly justified in order to prevent or remedy the serious injury.

(5) An action described in subsection (a)(3)(A), (B), or (C) that has 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.⁶⁹

These restrictions, whether applicable to the Commission or to the President, should inform any relief recommended by the Commission. In particular, and as discussed in more detail below, the limit on *ad valorem* rates applies to specific (*i.e.*, per unit) duties, like those proposed in the Petition. Meanwhile, the lack of any mention of minimum prices in the statute makes that Petition proposal unavailable as a remedy *per se*.

B. Any Recommended Remedy May Not Reach Beyond Actions with Direct Bearing on the Actual Injury Found by the Commission and May Not “Exceed the Amount Necessary to Prevent or Remedy Such Serious Injury”

The statute provides that any remedy recommended by the Commission must “address the serious injury, or threat thereof, to the domestic industry.” 19 U.S.C. § 2252(e)(1). In other words, the Commission is prohibited from recommending any remedy that would reach beyond

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

actions bearing directly on the actual injury found. At the end of the POI, before Suniva's bankruptcy filing earlier this year, Suniva and SolarWorld together represented [

] of domestic CSPV commercial cell manufacturing⁷⁰ and [] of domestic module production.⁷¹ The remedy should focus on addressing the conditions that are likely to resuscitate and assist these members of the subject domestic cell and module industry that the Commission found to be injured, not the conditions of potentially new producers of CSPV cells. Such new producers were not injured by the conditions found by the Commission to substantially cause serious injury, and they are not within the statutory ambit of concern.

In addition, any recommended relief is permitted "only to the extent the cumulative impact of such action does not exceed the amount necessary to prevent or remedy such serious injury." 19 U.S.C. § 2253(e)(2), *referred to by* 19 U.S.C. § 2252(e)(3). Section 201 relief is not punitive in nature, and it may restrict trade only to the extent that imports have caused serious injury to the domestic industry. Although the Commission may be presented with many possible remedies, it must recommend the least restrictive relief that will address the problem caused by imports. The Commission has acknowledged this limitation in many of its remedy recommendations in the safeguard context.⁷² For example, in *Circular Welded Carbon Quality Line Pipe*, the Commission's economic analysis indicated that that the domestic industry's proposed quota limits would be excessive in light of strong end use demand.⁷³ The Commission should give careful consideration to these concerns as part of its remedy recommendation in this case.

⁷⁰ CR at Table III-4.

⁷¹ CR at III-23, Table III-7.

⁷² See, e.g., *Certain Steel Wire Rod*, USITC Pub. 3207 at I-56; *Lamb Meat*, Inv. No. TA-201-68, USITC Pub. 3176 at I-30 (1999); *Wheat Gluten*, Inv. No. TA-201-67, USITC Pub. 3088 at I-25 to I-26 (1998).

⁷³ *Circular Welded Carbon Quality Line Pipe*, Inv. No. TA-201-70, USITC Pub. 3261 (Dec. 1999) at I-80.

C. Any Recommended Remedy Must Be Narrowly Tailored to be the “Most Effective in Facilitating the Efforts of the Domestic Industry to Make a Positive Adjustment to Import Competition”

The statute additionally requires that the recommended (and ultimately implemented) remedy must be the “most effective in facilitating the efforts of the domestic industry to make a positive adjustment to import competition.” 19 U.S.C. §§ 2252(e)(1), 2253(a)(1)(A). Section 201 is a safeguard law designed to assist a domestic industry in adjusting to imports of *fairly* traded goods.⁷⁴ It represents a narrowly drawn exception to the fundamental principles of the WTO trading system, which otherwise favors the free flow of fairly traded goods.⁷⁵ *Unfairly* traded imports are properly addressed through Title VII relief, like the antidumping and countervailing duty relief granted the domestic industry as a result of two prior CSPV investigations.⁷⁶

Section 201 is based on the concept that temporary relief is justified because of the need for “breathing space” to allow the domestic industry to restructure. Any remedy recommended by the Commission thus must be closely related to the plans of the industry to improve its competitiveness. The Commission has rejected proposed remedies that exceed the amount necessary to prevent or remedy the serious injury. For instance, in *Certain Steel Wire Rod*, the

⁷⁴ See USITC, “Understanding Safeguard Investigations,” available at https://www.usitc.gov/press_room/us_safeguard.htm (“Section 201 does not require a finding of an unfair trade practice, as do the antidumping and countervailing duty laws and section 337 of the Tariff Act of 1930.”); *see also* World Trade Organization (“WTO”) Appellate Body Report, *United States — Line Pipe*, WT/DS202/AB/R (Feb. 15, 2002) at para. 80 (“{Safeguard measures} are remedies that are imposed in the form of import restrictions in the absence of any allegation of an unfair trade practice. In this, safeguard measures differ from, for example, anti-dumping duties and countervailing duties to counter subsidies, which are both measures taken in response to unfair trade practices. If the conditions for their imposition are fulfilled, safeguard measures may thus be imposed on the “fair trade” of other WTO Members and, by restricting their imports, will prevent those WTO Members from enjoying the full benefit of trade concessions under the WTO Agreement.”).

⁷⁵ *See United States — Line Pipe* at para. 80 (“{S}afeguard measures are extraordinary remedies to be taken only in emergency situations.”).

⁷⁶ *Certain Crystalline Silicon Photovoltaic Products from China and Taiwan*, Inv. Nos. 701-TA-511 and 731-TA-1246-1247 (Final), USITC Pub. 4519 (Feb. 2015); *Crystalline Silicon Photovoltaic Cells and Modules from China*, Inv. Nos. 701-TA-481 and 731-TA-1190 (Final), USITC Pub. 4360 (Nov. 2012).

Commission declined to recommend the petitioners' proposed remedy because it would place a "disproportionate share of the burden of the remedy on imports from a small subset of countries, and would restrict imports to such a degree as to cause shortages of steel wire rod in the domestic market."⁷⁷ More recently, in *Steel*, the Commission disagreed with the domestic industry's tariff proposal for certain carbon and alloy flat-rolled steel, finding that it would not be necessary, or even appropriate, for achieving the desired result.⁷⁸

D. The Commission Must Consider Whether the Recommended Remedy Provides Greater Economic and Social Benefits than Costs.

Any remedy ultimately adopted by the President must "provide greater economic and social benefits than costs." 19 U.S.C. § 2251(a). Moreover, the Commission is required, in its report on remedy, to provide a description of the following:

- the short- and long-term effects that implementation of the action recommended under subsection (e) is likely to have on the petitioning domestic industry, ***on other domestic industries, and on consumers, and***
- the short- and long-term effects of not taking the recommended action on the petitioning industry, its workers ***and the communities where production facilities of such industries are located, and on other domestic industries.***⁷⁹

In order to provide a useful remedy recommendation to the President, the Commission must structure its report with an analysis of these issues in mind. This requires an analysis of costs and benefits of each permissible form of relief.⁸⁰ For example, as discussed above, in *Certain Steel Wire Rod*, the Commission denied petitioner's proposed remedy recommendation

⁷⁷ *Certain Steel Wire Rod*, USITC Pub. 3207 at I-54.

⁷⁸ *Steel*, USITC Pub. 3479, Vol. I at 363.

⁷⁹ 19 U.S.C. § 2252(f)(2)(G) (emphasis added).

⁸⁰ See *Certain Steel Wire Rod*, USITC Pub. 3207 at I-53; *Circular Welded Carbon Quality Line Pipe*, USITC Pub. 3261 at I-79.

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as likely to restrict imports to such a degree as to cause shortages in the domestic market.⁸¹ In particular, the Commission would not recommend a quota that “would be the least flexible of remedy options, and would not allow imports to respond sufficiently to increased demand or supply shortages if they were to occur.”⁸² The Commission has also accommodated the needs of end users by excluding specialty products that were not available (in commercially significant volumes) from domestic suppliers, to avoid undue hardship with no benefit to domestic producers.⁸³ The possible effect of a remedy on a related industry has also been a factor in the Commission’s recommendation.⁸⁴

No relief has been imposed when the possible benefits of relief would be outweighed by its economic and social costs.⁸⁵ In *Nonrubber Footwear*,⁸⁶ President Reagan took no action because import relief would not help the domestic industry, consumer burdens from import restrictions would be “costly and unjustifiable” compared to the relatively small benefit to the domestic industry, and the risk of trade retaliation was too great.⁸⁷ Again, in *Unwrought*

⁸¹ *Certain Steel Wire Rod*, USITC Pub. 3207 at I-54.

⁸² *Id.*

⁸³ *Id.* at I-56; see also *Circular Welded Carbon Quality Line Pipe*, USITC Pub. 3261 at I-80.

⁸⁴ *Wheat Gluten*, USITC Pub. 3088 at I-26 (concluding that a tariff was not an acceptable remedy because the Commission could not adequately determine the effect on wheat starch, a co-product of wheat gluten).

⁸⁵ See, e.g., *Nonrubber Footwear Import Relief Determination*, Memorandum of Aug. 28, 1985, Inv. No. TA-201-55, 50 Fed. Reg. 35205 (1985); *Copper Import Relief Determination*, Memorandum of September 6, 1994, Inv. No. TA-201-52, 49 Fed. Reg. 35609 (1994); *Determination Under Section 202(b) of the Trade Act; Leather Wearing Apparel*, Memorandum of March 24, 1980, Inv. No. TA-201-40, 45 Fed. Reg. 19543 (1980) (determining that expedited adjustment assistance would be “the only positive action” that would aid the domestic industry’s adjustment process because import relief would have an inflationary impact and possibly cause a further erosion in consumer demand); *Determination Under Section 202(b)(1) of the Trade Act, Stainless Steel Table Flatware*, Memorandum of June 30, 1978, Inv. No. TA-201-30, 43 Fed. Reg. 29259 (1978); *Determination Under Section 202(a) of the Trade Act, Bolts, Nuts and Large Screws of Iron or Steel*, Memorandum of Feb. 10, 1978, Inv. No. TA-201-27, 43 Fed. Reg. 6575 (1978) (declining to provide import relief because it would significantly raise costs for U.S. manufacturers who use fasteners to make their products and cause unemployment in other U.S. industries); *Decision on Honey Under Section 202(b) of the Trade Act of 1974*, Memorandum of Aug. 28, 1976, Inv. No. TA-201-14, 41 Fed. Reg. 36787, 36788 (1976) (deciding not to provide import relief because it would cause inflation and inflict harm on other U.S. industries while adding little value to the present state of the domestic industry).

⁸⁶ *Nonrubber Footwear*, Inv. No. TA-201-55, USITC Pub. 1717 (Jul. 1985).

⁸⁷ See *Nonrubber Footwear Import Relief Determination*, 50 Fed. Reg. 35205 (1985). The President estimated that, if safeguard action was taken, U.S. trade could suffer as much as \$2.1 billion in trade damage through compensatory

Copper,⁸⁸ President Reagan determined that import relief was not in the national economic interest, due in part to the negative effect on the downstream fabrication industry and domestic demand, adding to the problems faced by U.S. producers.⁸⁹ In *Stainless Steel Table Flatware*,⁹⁰ President Carter decided against imposing import relief because most major domestic producers substantially and increasingly relied on imports to supplement their specialized product lines, a trend that was expected to continue.⁹¹ In that case, import relief was disfavored because it would have raised the cost to consumers substantially, adversely affecting demand and discriminating against low-income purchasers.⁹²

The Commission should therefore ensure that its remedy recommendation does not impose costs that are disproportionate to the corresponding benefits. In addition to imposing direct costs on producers in the industry and consumers, trade relief can also harm downstream industries in the United States by forcing companies out of business entirely, reducing their workforces, or motivating them to move offshore, which is a real possibility with inverter and racking manufacturers in this case. The Commission should craft any remedy recommendation to avoid encouraging such disruption and the attendant loss of U.S. jobs.

tariff reductions or retaliatory actions by foreign suppliers, which would mean a loss of U.S. jobs and a reduction in U.S. exports.

⁸⁸ *Unwrought Copper*, Inv. No. TA-201-52, USITC Pub. 1549 (Jul. 1984).

⁸⁹ *Copper Import Relief Determination*, 49 Fed. Reg. 35609 (1984).

⁹⁰ *Stainless Steel Flatware*, Inv. No. TA-201-30, USITC Pub. 884 (1978).

⁹¹ *See Determination Under Section 202(b)(1) of the Trade Act, Stainless Steel Table Flatware*, 43 Fed. Reg. 29259 (1978).

⁹² *Id.*

V. THE SPECIFIC TARIFF AND MINIMUM IMPORT PRICE REMEDIES PROPOSED IN THE PETITION ARE CONTRARY TO LAW

The petition filed in this case requests a tariff of \$0.40/watt on imported cells and a minimum price of \$0.78/watt on imported modules.⁹⁶ These trade restrictions do not comply with the statute, which as discussed in Section IV.A above establishes a maximum additional 50 percentage points *ad valorem* and does not authorize the use of minimum prices as a safeguard remedy.

The table below converts tariffs stated in cents per watt to *ad valorem* rates, given current market prices:

***Ad Valorem* Tariff Equivalencies⁹⁷**

Tariff quoted as cents per watt	Equivalent <i>Ad Valorem</i> Tariff on Cells	Equivalent <i>Ad Valorem</i> Tariff on Modules ⁹⁸
\$0.10	50.0%	25.0%
\$0.15	75.0%	37.5%
\$0.20	100.0%	50.0%
\$0.25	125.0%	62.5%
\$0.30	150.0%	75.0%
\$0.35	175.0%	87.5%
\$0.40	200.0%	100.0%

A. The Petition’s Proposed Tariff Exceeds the Statutory Maximum

The statute establishes a maximum duty rate. Under 19 U.S.C. § 2253(e)(3), the President is not permitted to impose a duty that would “increase a rate of duty to (or impose a

⁹⁶ Suniva Petition at 45-46.

⁹⁷ According to BNEF, cells sold for \$0.24/watt and modules sold for \$0.42/watt in August 2017. See [], BNEF, [] (**Exhibit 12**). Customs value is at a minimum 80% of these prices. As such, this table assumes customs value of \$0.20/watt for cells and \$0.40/watt for modules.

⁹⁸ These module tariff equivalents assume that the entire value of the module would be subject to the duty. However, the scope of this investigation and any remedy that might be imposed remains unclear, because the investigation covers cells and the cells within the modules, not the modules themselves. Hence, the tariffs listed here may overstate the ultimate duty that may be imposed if only the value of the cells within the modules is considered to be subject to the remedy..

rate) which is more than 50% *ad valorem* above the rate (if any) existing at the time the action is taken.” As the legislative history makes clear, this restriction is on the number of percentage *points* by which the *ad valorem* tariff may be increased by means of a remedy under Section 201. The House Ways and Means Committee Report for the Trade Act of 1974 clarified that “{f}or example, a duty of 25-percent *ad valorem* could be increased to a rate of 75-percent *ad valorem*; a rate of 50-percent *ad valorem* could be imposed on an item which was duty-free at the time of the proclamation.”⁹⁶ The Commission in *Wheat Gluten* additionally clarified that this 50 percentage point maximum applies to a tariff-rate quota as well.⁹⁷

Applying these principles, Suniva’s proposed \$0.40/watt duty on imported cells exceeds the statutory maximum of 50% *ad valorem* established at 19 U.S.C. § 2253(e)(3). Given that the average cell price earlier this year, before the initiation of this case, was approximately \$0.20/watt, the proposed \$0.40/watt duty would be equivalent to **200% *ad valorem***, which is 150 percentage points above the statutory maximum. The statutory limit on a duty given current price levels would be the equivalent of \$0.10/watt on imported cells, and \$0.20/watt on imported modules. Furthermore, because prices for this product continuously decline, as petitioners themselves have admitted,⁹⁸ any specific duty could eventually violate the 50% *ad valorem* duty rate maximum required by the statute.

⁹⁶ H. Rep. 93-571, at 50.

⁹⁷ In *Wheat Gluten*, in considering whether to apply a tariff-rate quota, the Commission found that “as in the case of a straight tariff, the maximum increase in tariffs that could be imposed on over-quota imports is 50 percent *ad valorem*.” *Wheat Gluten*, USITC Pub. 3088 at I-27. Because neither an increase in tariffs imposed on over-quota imports nor an increase in straight tariffs even at the 50% statutory maximum would adequately remedy the injury, the Commission declined to recommend either of them and instead recommended a quantitative restriction. *Id.* at I-3, I-26 to I-27.

⁹⁸ Suniva’s Mr. Card admitted during the hearing that “in nine years, I don’t think we ever raised prices.” Injury Tr. at 224. Mr. Shea of Beamreach agreed: “I have never seen a solar business plan that anticipated prices going up in my history.” Injury Tr. at 226.

In addition, Suniva's proposal for a specific \$0.40/watt tariff is also inconsistent with the Commission's past practice. In cases where the Commission has recommended duties as a part of a safeguard remedy, the Commission has consistently recommended *ad valorem* duties – not specific duties. In fact, in *Lamb Meat*, although the existing duties on the subject merchandise were specific duties (cents per kilogram), the tariff portion of the tariff-rate quotas imposed by the Commission were *ad valorem*,⁹⁹ reflecting the Commission's recognition that the statute permits only *ad valorem* duties – or, at least, that a specific duty risks violation of the 50% *ad valorem* threshold.

The Commission must also consider that these calculations overstate the statutory limit because customs values are actually lower than market prices due to the adjustments that must be made to determine customs values. The best way for the Commission to prevent the imposition of duties that are, or will become, *ultra vires* is to refuse to recommend specific tariffs.

B. The Petition's Proposed Minimum Import Prices Are Not Permitted by the Statute

A minimum price arrangement is not among the types of remedies that the Commission is authorized to recommend to the President. Nor is a minimum price among the types of remedies that the President is expressly authorized to impose under 19 U.S.C. § 2253(a)(3)(A)-(H),¹⁰⁰ or a

⁹⁹ See Harmonized Tariff Schedule of the United States (1998) (the general rates of duty for the subheadings providing for lamb meat – 0204.10.00, 0204.22.20, 0204.23.20, 0204.30.00, 0204.42.20, and 0204.43.20 – ranged from 0.8 cents per kilogram to 3 cents per kilogram); *Lamb Meat*, USITC Pub. 3176 at I-1 (recommending, *inter alia*, 20% *ad valorem* on imports over 78 million pounds in the first year of remedy; 17.5% *ad valorem* on imports over 81.5 million pounds in the second year, 15% *ad valorem* on imports over 81.5 million pounds in the third year, and 10% *ad valorem* on imports over 81.5 million pounds in the fourth year); see also *To Facilitate Positive Adjustment to Competition From Imports of Lamb Meat*, Presidential Proclamation 7208, 64 Fed. Reg. 37387 (1999) (establishing *ad valorem*-based tariff-rate quotas that declined from 31% to 21% over a period of three years).

¹⁰⁰ 19 U.S.C. § 2253(a)(3) provides:

The President may, for purposes of taking action under paragraph (1)—

(A) proclaim an increase in, or the imposition of, any duty on the imported article;

(B) proclaim a tariff-rate quota on the article;

(C) proclaim a modification or imposition of any quantitative restriction on the importation of the article into the United States;

type of action which the President may take “under the authority of law” under § 2253(a)(3)(I). Moreover, the petition cites no authority or precedent that would support the imposition of such an arrangement.

The Commission has in the past rejected a proposed minimum import price scheme and should do the same in the instant case. In the 2001 steel safeguard case, the United Steelworkers of America (“USWA”) requested that the Commission recommend to the President to propose new temporary legislation that would permit the establishment of a floor price on domestic sales of all covered flat rolled steel products.¹⁰¹ The Commission, in its final determination, concluded that such a proposal would “require legislation to be implemented, since the President does not currently have such authorization.”¹⁰² The Commission decided not to recommend such a legislative proposal to the President because “the Commission may only recommend to the President actions currently authorized under law.”¹⁰³

Even if the Commission were to conclude that minimum prices are permissible as a remedy under the statute, there is little reason to conclude that the 50 percentage point maximum should not apply to minimum import prices, which operate to raise the price of imports

(D) implement one or more appropriate adjustment measures, including the provision of trade adjustment assistance under part 2 of this subchapter;

(E) negotiate, conclude, and carry out agreements with foreign countries limiting the export from foreign countries and the import into the United States of such article;

(F) proclaim procedures necessary to allocate among importers by the auction of import licenses quantities of the article that are permitted to be imported into the United States;

(G) initiate international negotiations to address the underlying cause of the increase in imports of the article or otherwise to alleviate the injury or threat thereof;

(H) submit to Congress legislative proposals to facilitate the efforts of the domestic industry to make a positive adjustment to import competition;

(I) take any other action which may be taken by the President under the authority of law and which the President considers appropriate and feasible for purposes of paragraph (1); and

(J) take any combination of actions listed in subparagraphs (A) through (I).

¹⁰¹ USWA’s Pre-hearing Remedy Brief (2011) at 32–35. USWA recognized “that a floor price remedy is an exceptional and unusual request.” *Id.* at 34.

¹⁰² *Steel*, USITC Pub. 3479, Vol. I at 368.

¹⁰³ *Id.*

artificially in the same way that tariffs generally do. Suniva's proposed minimum price of \$0.78/watt for modules would effectively be a \$0.36/watt duty on the current average module price of \$0.42/watt — according to BNEF, cells sold for \$0.24/watt and modules sold for \$0.42/watt in August 2017.¹⁰⁴ This is equivalent to a duty of **95% *ad valorem*** – which is 45 percentage points above the statutory maximum under 19 U.S.C. § 2253(e)(3).

Therefore, the Commission should disregard Suniva's proposed trade restrictions as unlawful and consider other permitted remedies that would more likely address any serious injury.

VI. GLOBAL TRADE RESTRICTIONS AT THE MAXIMUM LEVEL PERMITTED UNDER THE STATUTE WOULD PROVIDE LITTLE BENEFIT TO THE DOMESTIC INDUSTRY

As discussed above, there are multiple other factors affecting the domestic industry's performance that have nothing to do with imports. Even though the Commission concluded that imports were no less important than any other individual cause, this does not mean that imports are the only cause, and therefore it cannot be assumed that a trade-restrictive remedy will solve the industry's problems. Importantly, Suniva and SolarWorld have missed significant opportunities to supply the U.S. market, have had issues with quality, and according to multiple U.S. purchasers, have been unreliable in terms of timeliness and adequacy of supply. These factors may have been deemed less important individually than imports in the Commission's injury analysis, but they will greatly complicate the industry's adjustment. It is imperative that Section 201 relief be carefully structured so as to maximize the industry's chance of emerging from the period of relief more competitive than it is today.

¹⁰⁴ See [], BNEF, [] (**Exhibit 12**). It should be noted that customs value is at a minimum 80% of these prices, or about \$0.20/watt on cells and \$0.40/watt on modules.

A. The Problems of the Domestic Industry Would Not Be Remedied by Global Trade Restrictions

Global trade restrictions are not the answer to the domestic CSPV cell and module industry's problems.¹⁰⁵ Unlike other industries the Commission typically faces in Section 201 cases, where import restrictions can create market opportunities for the domestic industry, the opposite is true here. Import restrictions here will result in fewer sales of CSPV cells and modules in favor of alternative forms of energy. Competition for space on the electricity grid is fierce, not only due to natural gas, but also other renewable energy sources, including wind and thin-film solar, each of which have steadily reduced their costs and prices over time given this competitive reality. CSPV prices have declined in response, as petitioners themselves have admitted.¹⁰⁶

As a result, tariffs that impose a cost on the importer would logically push CSPV cell and module prices higher, but the adverse demand effects and limitation on domestic industry capacity will make it impossible for the industry to become profitable. Binding quotas would also fail to help the industry. Imposing a limit on import supply in a market where the domestic industry's capacity is unable to fulfill the vast majority of demand will, by necessity, cause demand to shift to alternative products. The supply shock will also increase prices, which will have the same effect as any tariff, which in turn will also reduce demand in a market that has many substitute products that can sell for a lower price.¹⁰⁷ The domestic industry will not be

¹⁰⁵ Dr. Prusa's Study at Parts III and V (**Appendix A**).

¹⁰⁶ Injury Tr. at 223–26 (Matthew Card testifying that prices have not increased in the last nine years, and Steve Shea testifying that he has never seen a solar business plan that anticipated prices going up in his career); *see also* SEIA's Posthearing Injury Brief at 12.

¹⁰⁷ Tariff rate quotas are essentially quantitative restrictions, and all of the problems we identify with respect to quotas apply to them. While it is true that, in theory, they permit over-quota importation, they would not do so in practice in this industry, as over-quota pricing would not be competitive with that of substitute products on the grid. Minimum prices function as variable tariffs, with the tariff rate increasing as prices decline.

able to increase its profits as a result of increased sales volumes and higher prices if there is a more limited market to sell to at those higher prices.

Dr. Thomas Prusa has prepared a study accompanying this brief at **Appendix A** that models the effect of the imposition of both Suniva's proposed tariff and the maximum tariff allowed under the law. We report an overview of his financial analysis here, but we urge the Commission to read his full report.

Dr. Prusa reviewed the confidential financial statements submitted by U.S. cell and module producers who responded to the Commission's questionnaire. He then considered the impact of an *ad valorem* tariff remedy on both cells and modules on the industry's bottom line. His study accounts for both the per-unit revenue increase (stemming from a tariff), and also the increase in module producer's costs (who purchase imported cells). The domestic industry is first defined as the entire industry, *i.e.*, the integrated producers and also those firms that produce modules using cells that they purchased from another firm (which is almost always [

]). The report includes results from the scenario most favorable to the domestic industry – namely, the case where the domestic industry is not affected by the expected decrease in deployment resulting from tariffs (anywhere from 24% to 42% decrease in demand, depending on the tariff rate). Although unlikely, it is highly instructive. If the domestic industry cannot turn a profit when only foreign suppliers are affected by decreased demand, then it is inconceivable that trade remedy relief will ever result in the domestic industry becoming profitable.

Below we report the results from Dr. Prusa's study for two possible policies: Suniva's proposed remedy and a 50% *ad valorem* tariff, the maximum tariff allowed under U.S. law.

NON-CONFIDENTIAL VERSION

Financial Impact on Domestic Cell and Module Producers

	Cells	Modules	Total
<i>Suniva's Proposed Trade Remedy</i>			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
<i>50% ad valorem tariff</i>			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

The results demonstrate that import tariffs will not solve the industry's problems. Under either policy the industry's []. Under Suniva's remedy, the cell portion of the integrated producers' balance sheet []. Yet, that [] is more than [] on the module business, which include [] by the independent module producers. Under the 50% *ad valorem* tariff remedy, both segments [].

Alternatively, we can consider the case where the domestic industry is defined as only integrated cell and module producers, which effectively limits the scope of the analysis to []. In this case, the financial impact of trade protection looks as follows:

Financial Impact on Integrated Domestic Cell and Module Producers

	Cells	Modules	Total
<i>Suniva's Proposed Trade Remedy</i>			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
<i>50% ad valorem tariff</i>			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

In this situation, Dr. Prusa finds the integrated producers [] under Suniva's proposal but [] under a 50% *ad valorem* tariff. Yet, even though [], the domestic industry will not earn anywhere near the capital they have indicated in their questionnaire responses that they need in order to restructure.¹⁰⁸

Consequently, given the lack of any real benefit to the industry, the benefits cannot outweigh the costs to the solar industry as a whole, which we show below are significant, and which both the Commission and the President must take into account when choosing a remedy. Without significantly enhanced profit margins, the industry cannot finance the overhaul it needs, as it lacks the necessary capital and is currently not attractive to external sources of finance. The capital this industry needs to restructure will not be conjured into existence by trade relief.

Furthermore, each petitioning company has its own unique limitations that cannot be resolved via trade relief. Significant problems with Suniva's technology make its current product line uncompetitive with all but low-end foreign suppliers (most of whom do not sell to the United States¹⁰⁹), and – even assuming it survives bankruptcy – Suniva is essentially restricted for the foreseeable future to small-scale projects.¹¹⁰ Suniva made a crucial business decision to rely on foreign firms to build its modules.¹¹¹ As a result, it is unable to provide for any significant increase in U.S. jobs regardless of the amount of import relief that is imposed.

¹⁰⁸ CR at Appendix D.

¹⁰⁹ Because of Suniva's size and the fact that it is not a Tier 1 supplier, it cannot compete either for larger projects or for projects that require bank financing.

¹¹⁰ See SEIA's Posthearing Injury Brief, Appendix A at 75 ("The record evidence demonstrates that both Suniva and SolarWorld have foregone opportunities to sell CSPV products in the domestic market due to their failure to qualify as vendors for many U.S. purchasers, including the largest residential customer, Sunrun. As detailed in SEIA's Prehearing Injury Brief at 74-80, companies will not buy from the petitioners without assurance that the product they receive is reliable in terms of quality and delivery. Their businesses depend on it.").

¹¹¹ Injury Tr. at 289-91; Declaration of Paolo Maccario, Silfab Solar Inc., Canadian Producers Prehearing Injury Brief, Attachment II, Exhibit C (Aug. 8, 2017); Affidavit of Kenny Hughes, Radiance Solar (**Exhibit 13**); SEIA's Prehearing Injury Brief at 85-86. This was in lieu of using the company's module facility in Michigan, which experienced production difficulties. *Id.*

Further, based on past experience, some customers simply will not buy from the petitioners, with or without trade restraints:

- “Sunrun is an unlikely consumer of modules from SolarWorld or Suniva, even if these companies offered their panels at any price – *even for free*.”¹¹²
- “For the record, we will never buy anything from SolarWorld or Suniva.”¹¹³
- A “tariff would not convince us to start buying cells from Suniva or SolarWorld.”¹¹⁴

This is due in part to sustained problems with Suniva and SolarWorld that are unlikely to improve.¹¹⁵ Suniva has shut down all production for months and shed nearly its entire workforce. As a practical matter, this means all the company’s human capital has moved to other companies, likely permanently. In addition, Suniva’s documented quality and customer service problems have created negative brand equity, which means that it is in a worse position than a new entrant making solar products in the United States.¹¹⁶

SolarWorld has other problems. Even before this investigation, some customers would not buy from SolarWorld, which has a spotty reputation both due to uneven quality and its perceived penchant to rely on trade remedies instead of market fundamentals. SolarWorld’s success has also been hindered by its German parent company’s financial and legal difficulties, leading to its recent insolvency.¹¹⁷ Even if that hindrance is resolved in the near term, its brand

¹¹² Affidavit of Edward Fenster, Sunrun, at 6 (**Appendix B-2**) (emphasis added).

¹¹³ Affidavit of Johnnie Taul, DEPCOM Power Inc., at para. 10 (**Appendix B-7**).

¹¹⁴ Affidavit of Richard L. Peters, Jr., Solar Energy Services, Inc., at para. 8 (**Appendix B-14**) (detailing performance and reliability problems with Suniva and SolarWorld) (referring to testimony and affidavit from the injury phase of the proceeding).

¹¹⁵ See, e.g., Affidavit of Brian Evans, RES Americas Inc., at para. 9 (**Appendix B-4**) (“If significant remedies are imposed, I do not believe that Suniva, SolarWorld, or emergent domestic manufacturing will be able to deliver our CSPV needs at the scale, specification, and cost that the market demands.”).

¹¹⁶ See Affidavit of Laura E. Stern, Nautilus Solar, at para. 9 (**Appendix B-3**) (“As stated in my affidavit dated August 7, 2017, Nautilus did purchase and install Suniva panels on a portfolio of six projects in Ontario, Canada, totaling approximately 2.75 MW. Due to concerns about Suniva’s panel quality and financial ability to support the panel warranty, Nautilus’s bank did not finance these panels, after extensive diligence conducted by our bank and independent engineering firm.”).

¹¹⁷ SolarWorld’s Germany parent company is insolvent and is embroiled in litigation with a supplier of polysilicon. Hemlock Semiconductor won a \$676 million judgment in U.S. District Court against SolarWorld Industries Sachsen GmbH, a subsidiary of SolarWorld GmbH for breaching its obligations under four take-or-pay long-term supply

equity will take time to rebuild.¹¹⁸ Not being a “Tier 1” supplier undermines SolarWorld’s ability to sell to larger customers that finance purchases through sophisticated lenders.¹¹⁹

Craig Cornelius of NRG Renewables confirms trade-restrictive remedies would not help the domestic industry:

In order for these companies to meet our qualification standards and those of our financing partners, and for us to begin purchasing at scale from them, they would need to not only stay in business but completely transform their management and approach to doing business. Based on my experience with these companies and their leadership, I do not see that as a realistic possibility. 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.¹²⁰

In any event, imports are necessary to meet a significant share of domestic CSPV demand because U.S. cell and module producers lack sufficient capacity. As discussed in SEIA’s Prehearing Injury Brief at pages 39-40 and Posthearing Injury Brief, **Appendix** at page 71, SolarWorld in particular []¹²¹ Not only does this [] indicate that constricting imports would aggravate the existing

agreements for polysilicon. *See* William Pentland, “SolarWorld Scrambles To Survive Take-Or-Pay Lawsuits,” *Forbes* (Nov. 3, 2015), <https://www.forbes.com/sites/williampentland/2015/11/03/solarworld-scrambles-to-survive-take-or-pay-lawsuits/#59bdb5d34d01> (**Exhibit 14**). U.S. purchasers are reluctant to source from SolarWorld’s U.S. operations in part because of this debt. *See* Prehearing Brief of 8minutenergy Renewables LLC at Section II.c.i.

¹¹⁸ *See* Affidavit of Ed Fenster, Sunrun (**Appendix B-2**).

¹¹⁹ *See* SEIA’s Posthearing Remedy Brief at 112 (discussing the impact of the insolvency of SolarWorld’s parent on SolarWorld’s bankability, industry reputation, and ability to procure new business).

¹²⁰ Affidavit of Craig Cornelius, NRG Renewables LLC, at para. 7 (**Appendix B-1**).

¹²¹ *See also* Affidavit of James B. Marlow, Jr., Radiance Solar, at para. 8 (**Appendix B-13**) (“Radiance has been a longtime supporter of Suniva as they are headquartered 20 miles from our office in Atlanta. We used Suniva on many projects in the southeast but they were not able to keep up with the increase in panel efficiency. Our most demanding issues with Suniva was panel availability, specifically with their 72-cell product. Several years ago, we worked with Suniva on the first 20 MW solar plant east of the Mississippi only for them to with draw from the project unable to supply the volume of panels needed. These panels were to be manufactured in China.”) (emphasis added).

[] issue, but it also means any trade restrictions would further [

] Under such circumstances, import restrictions would do more harm than good.

As discussed above, in *Circular Welded Carbon Quality Line Pipe*, the Commission's economic analysis indicated that the domestic industry's proposed quota limits would be excessive in light of strong end-use demand.¹²² And, as the President has considered in the past, the Commission should give careful consideration to whether these concerns warrant recommending no trade relief. For instance, the President decided not to provide import relief in the safeguards case on *Bolts, Nuts and Large Screws*, citing *inter alia* that domestic producers or their wholly owned subsidiaries imported 20-25% of shipments.¹²³ Similarly, in the *Honey* case, the President declined to grant safeguard relief, in part because "{e}ven with a good crop, domestic production of honey {fell} short of consumption," and imports had "varied widely in the past, tending to even out consumption needs" and fill the gap left by domestic production.¹²⁴ Given domestic supply shortages, restrictions on imports would have shrunk the U.S. market, impairing the long-run growth prospects and profitability of domestic producers while also hurting related industries and consumers.

Likewise, in the solar industry, because U.S. cell producers do not currently have sufficient capacity to meet demand, and because U.S. module producers continue [

], imposition of trade restrictions would not contribute to positive adjustment to import competition but instead would only harm the domestic industry. In recommending a remedy to the President, the Commission is advised to take into account this issue of short supply and the totality of its impact on the downstream industries in the United States and on

¹²² See *Circular Welded Carbon Quality Line Pipe*, USITC Pub. 3261 at I-80.

¹²³ *Determination Under Section 202(a) of the Trade Act, Bolts, Nuts and Large Screws of Iron or Steel*, 43 Fed. Reg. 6575 (1978).

¹²⁴ *Decision on Honey Under Section 202(b) of the Trade Act of 1974*, 41 Fed. Reg. 36787 (1976).

consumers — and importantly, on the profitability of the domestic CSPV industry beyond the short-term future.

B. Non-Subject Thin-Film Producer and Importer First Solar Would Be the Biggest Beneficiary of Global Trade Restrictions

First Solar, which does not produce CSPV products, would benefit the most from global trade restrictions, largely because U.S. demand for CSPV products will decline if the price is forced up by trade relief.¹²⁵ First Solar manufactures thin-film PV, utilizing Cadmium Telluride (CdTe) technology, and is the most profitable solar PV manufacturer in the world.¹²⁶ It is also one of the largest producers, with a reported production capacity of over 3 GW.¹²⁷ Thin-film solar directly competes with CSPV solar in the marketplace. Consequently, global trade restrictions on CSPV products would raise rivals' costs and drive customers toward First Solar's products, strengthening First Solar's already strong hand.¹²⁸ Recent press reports have discussed First Solar's plans to expand its capacity to 5-6 GW, which would further enhance a dominant position for its products.¹²⁹ However, there is little hope for new U.S. jobs because First Solar produces mostly in Malaysia.¹³⁰ Even if thin-film is produced in the United States, one of the

¹²⁵ See Chris Martin, "First Solar to Profit If Trump Slaps Tariffs on Panel Imports," *Bloomberg* (Aug. 14, 2017), <https://www.bloomberg.com/news/articles/2017-08-14/first-solar-to-profit-if-trump-slaps-tariffs-on-panel-imports> (**Exhibit 1**); Joe Rennison and Jessica Dye, "Solar tariff threat takes shine off sector," *Financial Times* (Aug. 21, 2017), <https://www.ft.com/content/5b62cc46-8688-11e7-bf50-e1c239b45787> (**Exhibit 16**).

¹²⁶ See SunShot Industry Update at 80 (**Exhibit 4**); see also First Solar, "First Solar Investor Overview" (2017) at 19 (**Exhibit 8**).

¹²⁷ *Id.*

¹²⁸ See <http://www.morningstar.com/stocks/XNAS/FSLR/quote.html> (reported First Solar's stock price rising over 80% since April 2017) (**Exhibit 17**); Martin, "First Solar to Profit If Trump Slaps Tariffs on Panel Imports" (**Exhibit 15**); Rennison and Dye, "Solar tariff threat takes shine off sector" (**Exhibit 16**).

¹²⁹ See "First Solar Apparently Plans To Double Production Capacity To 5.75 GW Per Year," *Seeking Alpha* (May 5, 2017), https://seekingalpha.com/article/4069761-first-solar-apparently-plans-double-production-capacity-5_75-gw-per-year (**Exhibit 18**) (citing First Solar's Q1 2017 and Q4 2016 earnings calls).

¹³⁰ According to First Solar, the company currently manufactures its solar modules at its Perrysburg, Ohio and Kulim, Malaysia manufacturing facilities. See First Solar's annual 10-K SEC filing, for the fiscal year ended December 31, 2016, at 17, available at <http://investor.firstsolar.com/static-files/149b7d39-aa58-4998-8ae1-76a318a705fc> (**Exhibit 19**). The company in 2016 ran its manufacturing facilities at approximately 97% capacity utilization, producing 3.1 GW of solar modules; this suggests that the company's total production capacity is about

petitioners' witnesses at the injury hearing, who is in the thin-film business, has informed the Commission that thin-film module production uses a fully automated process.¹³¹

Petitioners' decision to exclude thin-film from the scope of this investigation is therefore likely to backfire. Non-subject thin-film, which competes directly with CSPV,¹³² will have unimpeded access to the U.S. market if import restrictions are imposed on only CSPV cells and modules. The Commission should be cognizant of this imbalance as it deliberates on an appropriate remedy for CSPV goods.

VII. THE ECONOMIC CONSEQUENCES OF GLOBAL TRADE RESTRICTIONS WOULD BE SEVERE

The Commission is charged with the responsibility to analyze and explain how imposition of any trade relief would impact other industries and consumers. Industry experts have found that the Petition's proposed tariff on CSPV cells and minimum price on modules would reverse the positive growth of the solar industry. Given the limited benefit that the domestic CSPV industry would receive from the proposed remedy, these economic costs are excessive and demonstrate that trade restrictions would cause more harm than good. The Commission should take these likely negative effects into account to formulate its remedy

3.2 GW. See *id.* at 47. First Solar also announced that its Malaysia facility in 2016 had a total annual production capacity of over 2.5 GW. See First Solar, "First Solar Plant Performance in Southeast Asia" at 13, available at http://www.firstsolar.com/-/media/First-Solar/Knowledge-Center/First-Solar_Plant-Performance-in-Southeast-Asia.ashx (**Exhibit 20**). This means that the Ohio facility's production capacity is only about 0.7 GW.

¹³¹ Injury Tr. at 135–36 (Yang) ("Stion is one of two companies producing thin film solar panels in the U.S. along with First Solar . . . Thin film panels are made using a fully automated high volume process . . .").

¹³² See Injury Tr. at 248 (Statement of Thomas Werner) ("CSPV is now competing against other sources of energy like natural gas and thin film solar"); *id.* at 325–26 (Cornelius) (testifying that for a recent 200-MW project, either a mono-CSPV or thin-film solution would have been suitable, but his company could not find the required availability of mono-CSPV modules and had no choice but to build the project with thin-film modules). First Solar has itself identified CSPV (more specifically, multi-CSPV) as "historically {its} primary competitor," First Solar's annual 10-K SEC filing at 4 (**Exhibit 19**), and predicted that "in the future, {its} primary competition might transition from multi-crystalline to mono-crystalline PERC with higher conversion efficiencies," in light of the emergence of new CSPV technologies. *Id.* at 12.

recommendation and inform the President that any trade restrictions would be devastating to the solar industry as a whole.

A. U.S. Solar Deployments Would Plummet Under Global Trade Restrictions

The solar industry is at a critical juncture. It has made enormous progress in the last few years as a result of increased efficiency and lower costs. Global trade restrictions threaten to undo this progress and send customers flocking to other competing sources of energy. In the absence of new trade restrictions, the future prospects of the industry are bright. But, if substantial new tariffs are imposed, the prospects of the industry will dim considerably. Any analysis that does not take into account the explosive growth in demand during the period of investigation, and its expected trajectory going forward, would not satisfy the statutory requirement to weigh overall economic and social benefits versus costs.

Economic modelling performed by Dr. Prusa demonstrates that the effects of global trade restrictions would be severe in terms of losses to the CSPV industry as well as with respect to the consumers who rely on CSPV for lower-priced electricity. The consequences are severe by any measure.¹³³ Other market analysts agree. IHS Markit recently estimated that if Suniva's

¹³³ See Dr. Prusa's Study at 24–36 (**Appendix A**). Our assertion that tariffs and/or quotas would cause a very substantial decrease in U.S. solar installations and employment is also supported by recent reductions in the stock prices of publicly traded companies that would be impacted by tariffs or quotas. Equity valuations in solar are typically the sum of (a) the value of existing installed solar facilities, net of debt, and (b) expectations regarding the addition of new, profitable, customers in the future ("Future Prospects Value"). For explanation of Future Value theory see *Investment Valuation: Tools and Techniques of Valuing Any Asset* by Aswath Damodaran, 2002 (2d edition). The threat of tariffs or quotas impacts only the Future Prospects value element. We are aware of no recent event or threat other than the threat of trade restrictions that would have negatively affected Future Prospects Value. Sunrun and Vivint Solar are two publicly traded residential solar companies that are directly exposed to the risk of trade restrictions. In the last month, stock market investors reduced the Future Prospects Value of these companies by 67% and 90% respectively, amid the threat of proposed restrictions. This implies the market has reduced its expectation of future MW installations by approximately 67% and 90% respectively, assuming constant unit economics. This occurred during the time period (August 24, 2017- September 25, 2017) during which the stock price for the two companies declined 32- 33% respectively, while value of existing installed facilities remained stable. This evidences a view by equity market investors that a tariff or quota will very significantly reduce demand for future U.S. solar installations. This is supported by timely analysis on Vivint Solar by Guggenheim stating: "...we think the shares are trading below estimated liquidation value. While we think that Section 201 proceedings

proposed remedy were adopted, solar installations would fall 5.4 GW in 2018 and 6.9 GW in 2019.¹³⁴ If a 50% *ad valorem* tariff were imposed, solar installations would fall by 3 GW in 2018 and 3.7 GW in 2019.¹³⁵ IHS Markit estimates that over the four-year period, between 2018 and 2021, Suniva’s proposed remedy would result in a cumulative reduction in solar deployment of 28.5 GW (45% decrease) and a fifty percent tariff remedy would result in a cumulative reduction of 15.1 GW (24% decrease).¹³⁶ The cumulative reduction in CSPV deployment over 2018-2021 is greater than all solar deployment in the history of the United States through the end of 2015.¹³⁷

will continue to create an overhang on the shares in the near term, the downside risk appears to be priced in. We estimate that the shares are trading below their \$4/share theoretical “liquidation value” – i.e., net equity value of its contracted portfolio less recourse debt. While we do not expect the company to actually liquidate, given the fact that the trade case currently in front of the ITC is threatening the viability of downstream businesses, including residential installers such as VSLR, we find such analysis helpful in quantifying valuation floor.” (Guggenheim Securities, LLC report on Vivint Solar, Inc. September 27, 2017.)

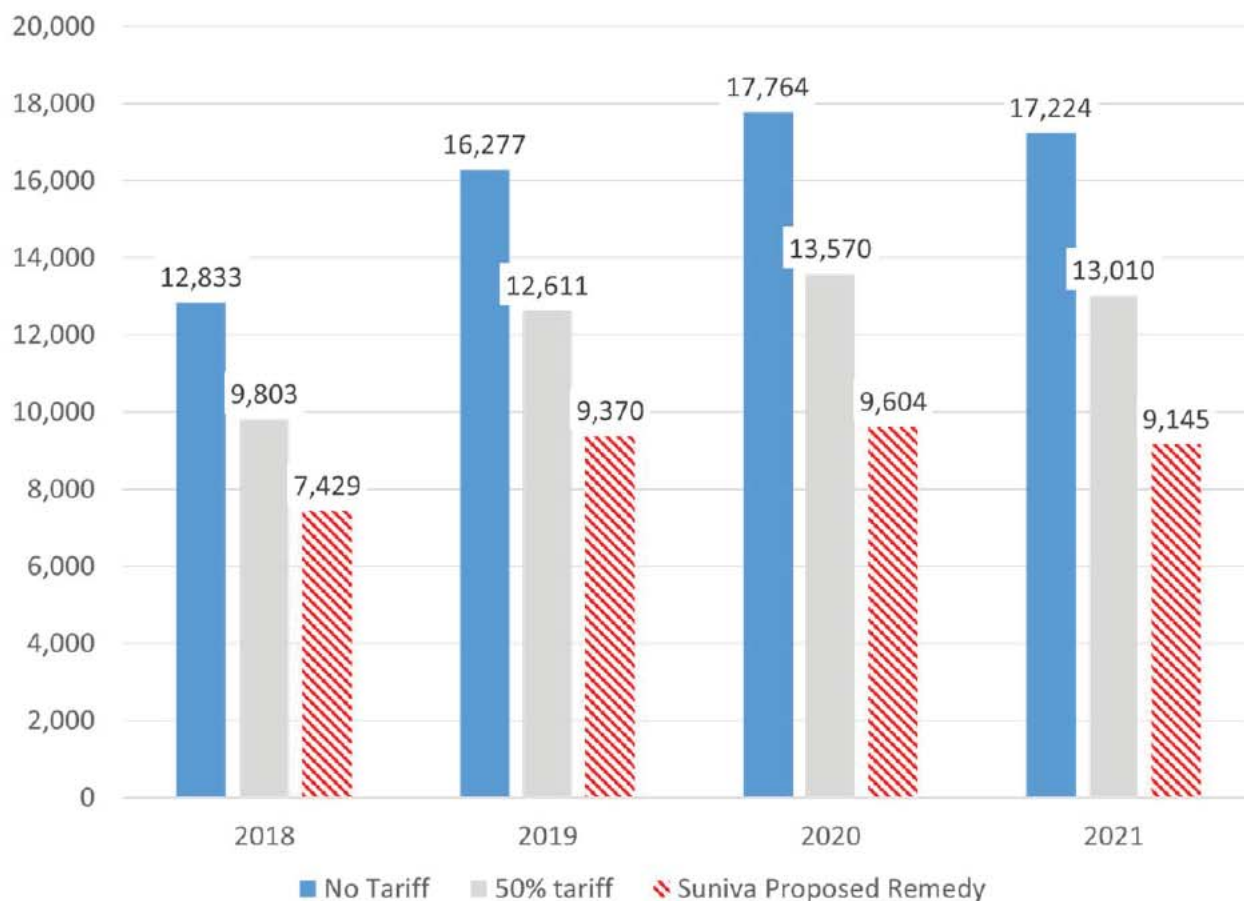
¹³⁴ Dr. Prusa’s Study at Annex A, Table 13 (**Appendix A**).

¹³⁵ *Id.*

¹³⁶ *Id.*

¹³⁷ *Id.* at 26–27.

IHS Markit Estimated Deployment Effects of Safeguard Trade Remedy



IHS Markit is not alone in its dire assessment. Bloomberg New Energy Finance (“BNEF”) recently predicted that []¹³⁸

GTM Research also agrees. It ran its solar deployment model to study the possible effects of safeguard protection and reported the following:

- This Section 201 case “could send shockwaves through the solar industry.”¹³⁹
- []¹⁴⁰

¹³⁸ BNEF, [] (Exhibit 21).

¹³⁹ GTM Research, “U.S. Solar Outlook Under Section 201: The Trade Case’s Impact on U.S. Solar Demand” (Jun. 2017) at 4 (Exhibit 22).

- “Between 2018 and 2022, total new solar installations in the United States would fall from 72.5 GWdc cumulatively to just 36.4 GWdc under a \$.078/Wdc year one minimum module price.”¹⁴¹ This represents a **55% decline** in solar installations over the next three years compared to the baseline forecast that was projected absent trade restrictions:¹⁴²

GTM Research’s market projection under Suniva’s proposed remedy is depicted in the following chart.

GTM Research Estimated Deployment Effects of Suniva’s Proposed Trade Remedy (June 2017)

Figure 1.2 U.S. PV Installation Forecast: Base-Case Outlook vs. Tariff Scenarios



Source: GTM Research

¹⁴⁰ *Id.* at 8.

¹⁴¹ *Id.* at 5.

¹⁴² *Id.*

Breaking down the GTM Research results by market segment, the negative effects on demand are clear:

- “Utility PV is expected to see the largest downward revisions to its base-case forecast. A majority of utility PV procurement now hinges on solar being cost-competitive with natural gas alternatives {M}ost of that is at risk of cancelation {sic.} unless PPA prices are renegotiated.”¹⁴⁶

Impact on utility scale: “[]% reduction to the 2018-2022 forecast.”¹⁴⁷

- In the residential segment, “the number of state markets at grid parity in 2021 would fall from 43 to 35 in the minimum module price only scenario.”¹⁴⁸

Impact on residential: “[]% reduction to the 2018-2022 forecast.”¹⁴⁹

- Commercial, industrial, and community solar customers “non-residential PV {would} experienc{e} a larger downturn than residential PV” as costs and risks increase.¹⁵⁰

Impact on nonresidential: “[]% reduction to the 2018-2022 forecast.”¹⁵¹

As shown above, the consequences of global trade restrictions would be especially severe in the utility-scale segment of the market, where the domestic industry largely does not compete. By raising import prices and/or reducing the availability of the products that are demanded in the marketplace, trade restrictions would deprive solar of its competitive status on the grid. Cornelius Craig, President of NRG Renewables (one of the largest independent power producers in the United States and one of the largest owner-operators of renewable generation) explained “A tariff at that level would have a catastrophic impact on the U.S. solar industry. It would undo years of progress our industry has made toward price competitiveness with other forms of

¹⁴⁶ *Id.*

¹⁴⁷ *Id.* at 11.

¹⁴⁸ *Id.* at 5.

¹⁴⁹ *Id.* at 11.

¹⁵⁰ *Id.* at 5.

¹⁵¹ *Id.* at 17.

energy. [

]”¹⁴⁹ Jeffrey Ghilardi at EDF Renewable Energy agrees.

“Suniva’s proposal of a tariff equal to 40 cents per watt on cells and a 78 cent per watt minimum price on modules is commercially unworkable. The existing projects under contract would in all likelihood be discontinued and no new CSPV projects would be pursued.”¹⁵⁰

Furthermore, a key segment of the residential solar industry is comprised of companies that “lease” solar panels to homeowners, a very prominent example of which is Sunrun.¹⁵¹ This business model currently accounts for approximately half of new residential installations.¹⁵² The companies that employ it are highly leveraged, as their businesses incur large up-front costs.¹⁵³ Their prospects are therefore jeopardized not only by the projected 25-30% decline in residential demand that would be caused by Suniva’s proposed trade restrictions, but also by likely difficulties in bank financing for new installations given the higher costs and lower margins that will be experienced by these producers.

Importantly, diminished demand affects industries all along the solar supply chain, including the U.S. CSPV producers seeking relief. If the intent of a safeguard remedy is to create opportunities for the domestic industry, any measure that would significantly reduce demand would be counterproductive. Tariffs would *directly* undermine the competitiveness of solar and cause consumer demand to shift to those other sources of electricity generation. As discussed above, the modelling shows that substantial new tariffs will impose cataclysmic costs

¹⁴⁹ Affidavit of Craig Cornelius, NRG Renewables LLC, at para. 5 (**Appendix B-1**).

¹⁵⁰ Declaration of Jeffrey Ghilardi, EDF Renewable Energy Inc., at para. 3 (**Appendix B-6**).

¹⁵¹ See Injury Tr. at 270–71.

¹⁵² See Nicole Litvak, “It’s Official: More Residential Solar Customers Buy Than Lease,” *Greentech Media* (Mar. 6, 2017), <https://www.greentechmedia.com/articles/read/its-official-more-residential-solar-customers-buy-than-lease> (**Exhibit 23**).

¹⁵³ See Injury Tr. at 270–71.

on this industry. For instance, Mr. Fenster predicts that “{a} material tariff or other import restraint would surely cause a meaningful contraction in the size of the overall market for residential solar,” and even his company — the largest dedicated provider of residential solar energy systems in this country — may be forced to exit some of the state markets it currently participates in, while a large number of other residential solar businesses would have to shut down or go bankrupt — *not* because of imports but because of the *restrictions* on imports.¹⁵⁴

According to Kevin Schulte, owner and CEO for SunCommon, the commercial segment would be hurt even more than the residential segment because the commercial segment’s “already razor thin margins” would become eliminated, forcing developers like SunCommon to abandon many of their projects to “die on the vine.”¹⁵⁵ Players in the utility-scale segment also fear that their market would be “decimated,” as “a very significant majority of {the} utility scale solar pipeline (an estimated constructed value of more than \$3 billion) would fail to be realized due to the price sensitivity of long-term power purchasers,” forcing them to build fewer projects and losing millions of dollars of already expended development spend.¹⁵⁶

Quantitative restrictions have their own inherent difficulties for the solar industry. Demand for solar products that cannot, as a practical matter, be supplied by domestic producers of cells and modules will grow over time, if the market is permitted to grow. It is not beneficial to the long-term health of the industry to bring this process of market acceptance to a screeching halt, and it is even worse to reverse it.

¹⁵⁴ Affidavit of Ed Fenster, Sunrun, at 2–3 (**Appendix B-2**).

¹⁵⁵ Affidavit of Kevin Schulte, SunCommon, at para. 4 (**Appendix B-10**).

¹⁵⁶ Affidavit of Brian Evans, RES Americas Inc., at para. 4 (**Appendix B-4**).

B. Global Trade Restrictions Would Cause Massive Job Loss

The dramatic fall in demand that will occur with proposed safeguard remedies will translate into many lost jobs. As seen in the following table, all forms of employment have grown in the solar industry. According to The Solar Foundation, U.S. manufacturing jobs have increased since 2010 by 53%, developer jobs by 331%, sales jobs by 174%, and blue-collar installation jobs by 212%.¹⁵⁷ Overall, “downstream” employment in installation, sales, distribution, and project development grew by 266% between 2010 and 2016, from 55,678 to 203,680 jobs.¹⁵⁸

Solar Energy Sector Employment, 2010–2016¹⁵⁹

	2010	2011	2012	2013	2014	2015	2016	% Change 2010-16
Manufacturing	24,916	24,064	29,742	29,851	32,490	30,282	38,121	53%
Project Development	n/a	n/a	7,988	12,169	15,112	22,452	34,400	331%*
Sales & Distribution	11,744	17,722	16,005	19,771	20,185	24,377	32,147	174%
Installation	43,934	52,503	57,177	69,658	97,031	119,931	137,133	212%
Other	12,908	5,948	8,105	11,248	8,989	11,816	18,274	42%
Total	93,502	100,237	119,017	142,697	173,807	208,859	260,077	178%

* Growth since 2012

Moreover, solar jobs are directly linked to the level of annual PV deployment, as shown below. *The correlation between solar deployment and the number of solar jobs is 0.97.*¹⁶⁰

¹⁵⁷ The Solar Foundation, *2016 National Solar Jobs Census* at 8 (Table 2: Solar Energy Sector Employment, 2010–2017 (Projected)) (**Exhibit 24**).

¹⁵⁸ *Id.*

¹⁵⁹ *Id.*

¹⁶⁰ Dr. Prusa’s Study at Annex F (**Appendix A**).

Solar Deployment and Solar Jobs, 2010-16¹⁶¹ (CBI)

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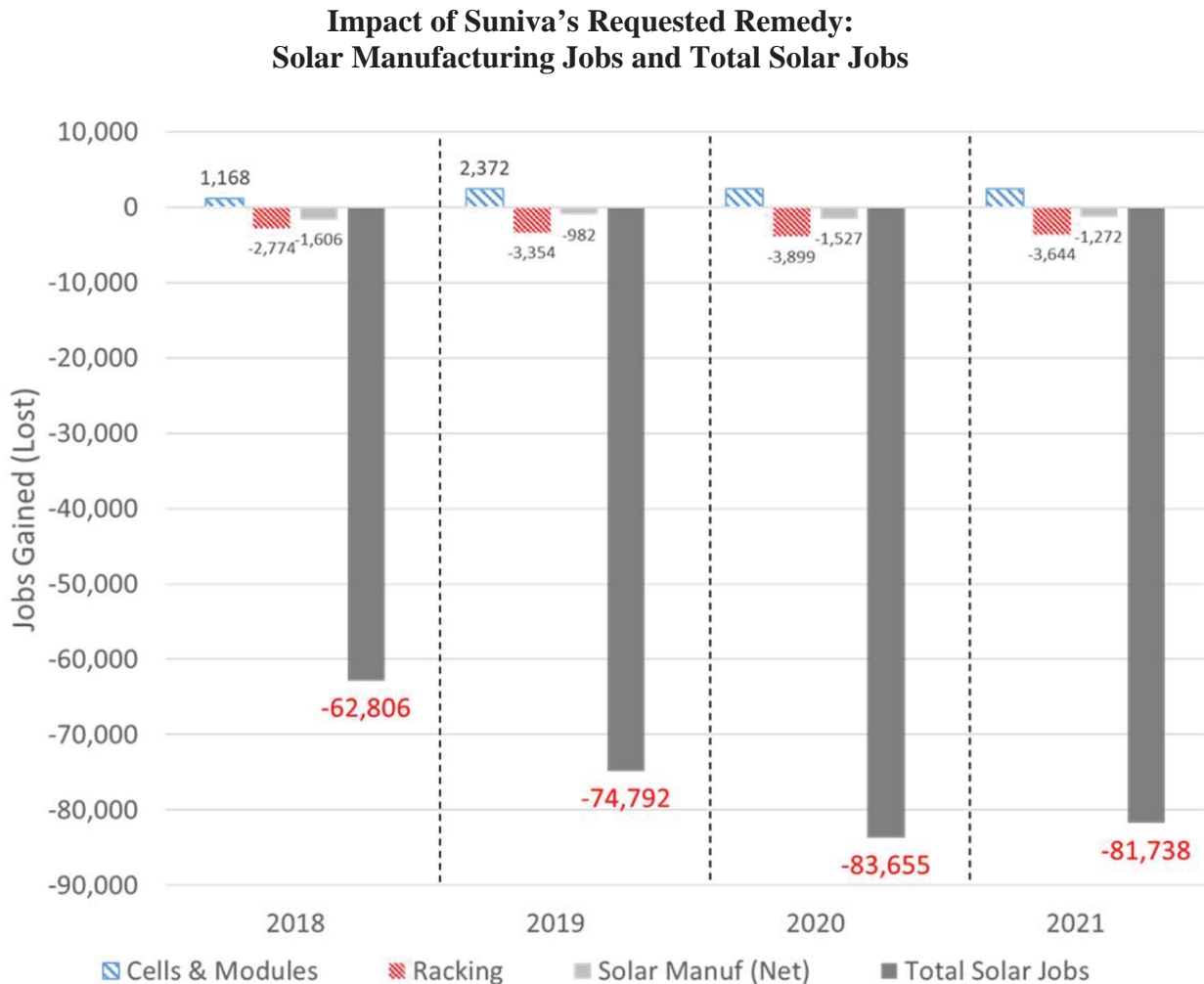
Dr. Prusa analyzed the job impact of trade remedies on CSPV. His report documents job losses throughout the solar production chain.

The following figure from his report depicts job losses under Suniva's remedy proposal. As seen, Suniva's proposal would increase employment in cells and modules by about 1,100 in 2018 and 2,200 in 2019. However, Suniva's proposal would also reduce employment in the much more labor intensive racking sector by 2,774 in 2018 and 3,354 in 2019. Taken together, manufacturing employment falls in both years. In fact, manufacturing employment falls in every year under the Suniva proposal – over 1,600 lost manufacturing jobs in the first year alone.

¹⁶¹ GTM Research, *U.S. Solar Market Insight, Full Report, Q2 2017*, at 6 (**Exhibit 9A**); SEIA, *U.S. Solar Market Insight: Executive Summary, Q2 2017* at 8 (**Exhibit 9B**); The Solar Foundation, *2016 National Solar Jobs Census* at 8 (**Exhibit 24**).

NON-CONFIDENTIAL VERSION

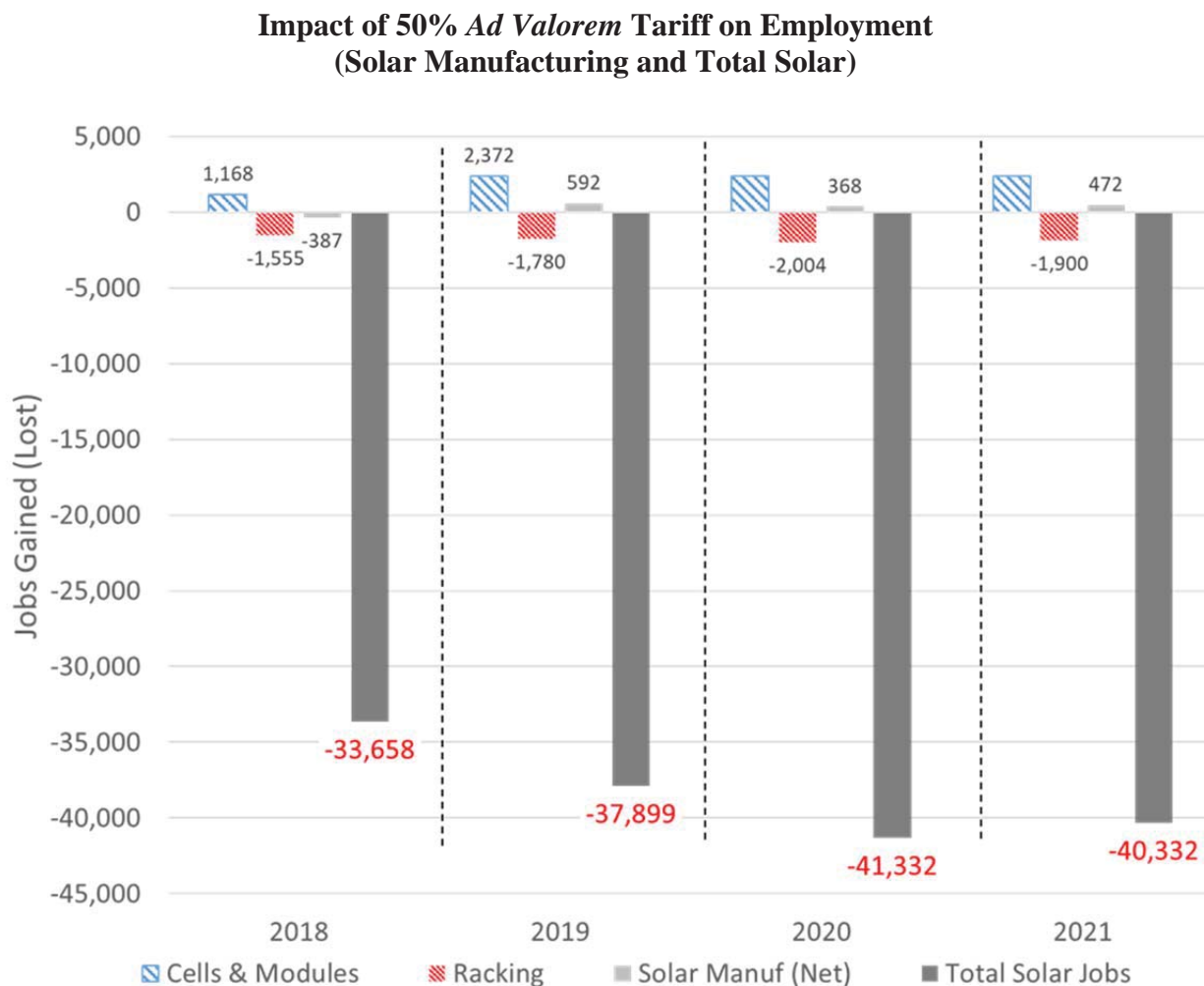
Overall job losses are astronomical. Over 62,800 jobs will be lost in 2018 alone; over 80,000 jobs will be lost in 2020 and 2021. With job losses in both solar manufacturing and in overall solar jobs, it is hard to see *any* benefit at all from Suniva's proposal.



Dr. Prusa's analysis also documents significant job loss at the state level, finding that Suniva's proposal will result in a loss of jobs in every state across the country, including the

petitioners' home states of Georgia and Oregon, both of which would lose more than a thousand jobs a year under the proposed trade remedy.¹⁶²

Job losses would occur at lower tariff rates, too. The following figure presents the estimated job losses if the maximum a 50% tariff were imposed.



The job losses associated with the estimated solar deployment under the 50% *ad valorem* tariff are stunning. In 2018, 33,658 solar jobs would be lost. Adding further salt to the jobs

¹⁶² Dr. Prusa's Study at 2, 32, 41 (**Appendix A**).

wound, Dr. Prusa's results imply that in the initial year of the remedy, a 50% tariff would reduce net solar manufacturing jobs.

Dr. Prusa assumes the safeguard remedy would result in new U.S. cell and module capacity and that this new capacity would become operational in 2019. As a result of the new cell and module capacity that comes onboard in 2019, 591 (net) solar manufacturing jobs will be created. However, these come at the expense of an overall loss of 37,899 solar jobs. These numbers imply a "job lost" to "jobs created" ratio of 64 to 1. Once again, in terms of cost-benefit analysis, the costs vastly outweigh the benefits.

The evidence is quite clear. Tariffs on cells and modules reduce employment at almost all solar manufacturing facilities. The reason is that most U.S. solar manufacturing jobs are tied to deployment, not cell and module production. The Commission must consider these dire consequences in determining what remedy to propose. Increasing the cost of CSPV by means of a tariff or quota would severely reduce demand and cause massive job losses. Instead, the Commission should explore other measures, more narrowly defined to address the domestic industry's poor performance.

VIII. THE PROBLEMS FACING THE DOMESTIC INDUSTRY ARE MOST EFFECTIVELY ADDRESSED THROUGH PROVISION OF MONETARY OR OTHER ASSISTANCE TO THE DOMESTIC INDUSTRY

As discussed above, import relief will do little to address the fundamental issues facing the domestic industry. The Commission would be providing far more value to the President, and would more faithfully serve the national interest, by focusing on helping the domestic industry improve its production processes. It is clear from the Petition that Suniva, at least, thinks that creation of an "economic investment development program" is critical to improving the

industry's competitiveness.¹⁶³ Our own witnesses and written testimony pointed clearly to two companies with technical, logistical, and management shortcomings. Petitioners suffered from significant quality and supply issues that are major obstacles to the industry's future success. Thus, the Commission should not recommend any new trade restrictions, but instead recommend some form of monetary or other support the domestic industry desperately needs and directly addresses their competitiveness issues.

This case therefore presents a situation where trade adjustment assistance under 19 U.S.C. § 2252(e)(2)(D) should be the central element of any remedy. Under 19 U.S.C. § 2252(e)(1), the Commission may recommend "action," not necessarily import restrictions. Subsection (e)(2)(D) specifically enumerates as an option "one or more appropriate adjustment measures."¹⁶⁴ The legislative history suggests that adjustment assistance is preferable to import relief, which is an extraordinary event requiring compelling reasons: "The President is required to report to the Congress on the relief provided. The report must include his reasons for choosing to provide import relief as a remedy rather than relying on adjustment assistance"¹⁶⁵

A. Technical Assistance

Under the Trade Act, the Secretary of Commerce is authorized to provide technical assistance, "on terms and conditions as the Secretary determines to be appropriate," for certified

¹⁶³ Petition at 46–47.

¹⁶⁴ The President is likewise authorized to take "one or more appropriate adjustment measures" upon receiving a report from the Commission containing an affirmative injury finding. 19 U.S.C. § 2253(a)(3)(D). According to the legislative history, the term "adjustment measures" refers to "existing authority to provide adjustment assistance, such as community assistance programs or manpower programs, not only trade adjustment assistance," to the extent that such action leads to "benefits other than those to which workers are already entitled under chapter 2 of the Trade Act of 1974." *Conference Report to Accompany H.R. 3, Omnibus Trade and Competitiveness Act of 1988*, H. Rept. 100-576 (1988), at 674–75. Similarly, the same term, as used in 19 U.S.C. § 2253(a)(3)(D) to authorize the President to implement certain safeguard action, is defined in the same manner. *Id.* at 684. Currently, the Trade Act authorizes, *inter alia*, adjustment assistance for firms – such as technical assistance – under 19 U.S.C. §§ 2341–2355; adjustment assistance for workers – such as readjustment allowances, training and other employment services – under 19 U.S.C. §§ 2271–2331; and adjustment assistance for communities – such as the Community College and Career Training Grants – under 19 U.S.C. §§ 2371–2372.

¹⁶⁵ *House Ways and Means Committee Report of the Trade Act of 1974*, H. Rep. 93-571, at 50.

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).”¹⁶⁶ 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.”¹⁶⁷ The same section permits expenditures for technical assistance of up to \$10 million annually per industry, typically spread out over several years.¹⁶⁸

Structural adjustment is what the domestic industry needs most in light of the injury found by the Commission. The approach would be tailored to facilitate adjustment and can be recalibrated as frequently as needed based on how the industry adjusts or fails to adjust.

Suniva and SolarWorld have two critical areas of need that can and should be addressed by adjustment assistance: (1) making improvements to their technical processes so that they can achieve the necessary scale to compete in all segments of the market, and (2) obtaining adequate levels of capital to make periodic technical improvements and hence move toward competitiveness. In fact, as Mr. Fenster, founder of the largest residential solar developer in the nation, testified at the Commission’s injury hearing, these two kinds of challenges are deeply interdependent.¹⁶⁹

¹⁶⁶ 19 U.S.C. § 2343.

¹⁶⁷ 19 U.S.C. § 2355.

¹⁶⁸ *See Lamb Meat*, USITC Pub. 3176 at I-61 (1999).

¹⁶⁹ Injury Hearing Tr. at 269–73.

Suniva’s and SolarWorld’s top competitors, such as First Solar and SunPower, produce to the scale needed to thrive in solar – scale that the petitioners have been unable to achieve.¹⁷⁰ Fortunately, there is an extraordinary amount of technical expertise residing in the National Renewable Energy Laboratory (“NREL”) and Lawrence Berkeley National Laboratory (“LBNL”) – parts of the U.S. Department of Energy (“DOE”) laboratory system. Years ago, DOE helped to jumpstart Suniva, and later provided additional financial and technical assistance under the SunShot program.¹⁷¹ DOE has helped to ensure that hundreds of technologies make their way from research and development to eventual commercialization,¹⁷² and has the ability to tap into university expertise across the country.

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.¹⁷³

One way in which NREL could provide assistance is through its successful program of providing technical services under strategic partnership agreements with private-sector

¹⁷⁰ See SEIA’s Posthearing Injury Brief at 10; see also BNEF, [

] in 2016. See “SolarWorld Americas expects immediate infusion of cash to lift up U.S. operations,” SolarWorld, Newsroom (Jul. 12, 2017), <http://www.solarworld-usa.com/newsroom/news-releases/news/2017/solarworld-americas-expects-immediate-infusion-of-cash> (**Exhibit 25**); see also CR at Table III-7.

¹⁷¹ SEIA’s Prehearing Injury Brief at 149.

¹⁷² *Id.* at 149–50.

¹⁷³ NREL, Negotiable Technology Licensing, <https://www.nrel.gov/workingwithus/licensing.html> (**Exhibit 26**).

companies.¹⁷⁴ The IN² program approach accelerates technology uptake by connecting technology manufacturers, investors and end users. NREL is currently working to expand this approach to accelerate an increasing number of technologies.¹⁷⁵ 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.¹⁷⁶ SunShot has been working to expand this approach to commercialization that combines private capital with access to NREL's talent and infrastructure by linking in the eighteen energy incubators across the United States.¹⁷⁷ IN² has succeeded beyond most other federal partnership programs in engaging capital interest due to its innovate structure.¹⁷⁸

NREL could work individually with domestic producers to assess the current state of cell and module 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.

¹⁷⁴ NREL, Technical Partnership Agreements, <https://www.nrel.gov/workingwithus/technology-partnership-agreements.html#sppa> (**Exhibit 27**).

¹⁷⁵ NREL, Wells Fargo Innovation Incubator (IN²), <https://www.nrel.gov/workingwithus/in2.html> (**Exhibit 28**).

¹⁷⁶ *Id.*

¹⁷⁷ See DOE, SunShot Incubator Program, <https://energy.gov/eere/sunshot/sunshot-incubator-program> ("The Incubator program provides early-stage assistance to help startup companies cross technological barriers to commercialization while encouraging private sector investment. . . . More than 100 startup companies have received awards to participate in the SunShot Incubator program since it began in 2007, working to develop and launch transformative photovoltaic, concentrating solar power, grid integration, system installation, and soft costs products and services.") (**Exhibit 29**); see also NREL, Catalyst: Round 2, <http://catalyst.energy.gov/a/pages/catalyst2> (**Exhibit 30**).

¹⁷⁸ For example, IN² is the only national laboratory model without government claw-back provisions that can be off putting to capital investors. See DOE, SunShot Incubator Program (**Exhibit 29**).

B. Other Adjustment Assistance

The Trade Act refers to adjustment assistance as permissible safeguards relief, including training, employment services, and financial assistance to adversely affected workers administered by the U.S. Department of Labor.¹⁷⁹ The Trade Act also provides for adjustment assistance for communities in the form of grants of up to \$1 million for training programs at community colleges. Under 19 U.S.C. § 2371, the U.S. Department of Commerce could use such grant programs to promote training geared toward diverse occupations in the solar industry. This would be important because, according to The Solar Foundation, “[d]espite efforts by public and private solar training providers, 80.2% of the solar industry still reports difficulty finding qualified applicants to fill open positions,” which often stems from the lack of candidates with sufficient technical and safety skills.¹⁸⁰ For the solar manufacturing sector, 80.3% of the solar manufacturing sector reported difficulty in hiring, 20.2% of which responded “very difficult.”¹⁸¹ The Solar Foundation found that such “gap between solar workforce supply and demand, and associated difficulty hiring qualified employees, creates inefficiencies and increases the cost of deploying solar.”¹⁸²

As discussed earlier in Part IV.D, in several previous Section 201 cases, import relief was viewed as not in the national economic interest. In both *Nonrubber Footwear* and *Unwrought Copper*, President Reagan decided against import relief measures and instead “directed the Secretary of Labor to work with State and local officials to develop a plan of job retraining and

¹⁷⁹ 19 U.S.C. §§ 2271, 2322. 19 U.S.C. § 2252(e)(2)(D) refers to the provision of trade adjustment assistance under Part 2 of Subchapter II of the Trade Act, 19 U.S.C. §§ 2271–2331.

¹⁸⁰ The Solar Foundation, *2016 National Solar Jobs Census* at 36 (**Exhibit 24**).

¹⁸¹ *Id.* at 37.

¹⁸² *Id.*

relocation assistance for workers in affected industries.”¹⁸³ He specifically instructed the Secretary of Labor to use “{a}ppropriate programs of the Job Training Partnership Act . . . to the fullest extent possible,” with respect to the nonrubber footwear industry.¹⁸⁴ In *Leather Wearing Appeal*, expedited adjustment assistance was preferred over import relief as the “most effective remedy” for the injury suffered by the domestic industry, partly because it was “not clear that the industry would be in a position to compete once relief expire{d}.”¹⁸⁵

Even though the petitioners have failed to submit an adjustment plan, the Commission knows exactly how much relief to recommend to the President based on the CSPV cell and module industry’s questionnaire responses.¹⁸⁶ Complementing the positive effect of the firm- and/or industry-level technical assistance, these adjustment assistance measures for communities and workers would help raise the productivity and overall quality of the U.S. firms including Suniva and SolarWorld and also provide vital support to American workers. They would be crucial investments in the long-run success of the U.S. solar industry.

C. Other Assistance

The domestic industry’s ability to obtain financing was a significant issue identified during the injury phase of this proceeding.¹⁸⁷ As discussed above, Suniva is in Chapter 11 bankruptcy and SolarWorld’s financial strength is jeopardized by the insolvency of its Germany parent.¹⁸⁸ Under these circumstances, petitioners will likely encounter substantial difficulty obtaining loans for capital improvements or other investments needed to facilitate the positive

¹⁸³ See *Nonrubber Footwear Import Relief Determination*, 50 Fed. Reg. 35205, 35206; *Copper Import Relief Determination*, 49 Fed. Reg. 35609.

¹⁸⁴ *Nonrubber Footwear Import Relief Determination*, 50 Fed. Reg. 35205, 35206.

¹⁸⁵ *Determination Under Section 202(b) of the Trade Act; Leather Wearing Apparel*, 45 Fed. Reg. 19543.

¹⁸⁶ CR at Appendix D.

¹⁸⁷ See SEIA’s Posthearing Injury Brief, Appendix 1 at 73-74; Injury Tr. at 404.

¹⁸⁸ See SEIA’s Posthearing Injury Brief, Appendix 1 at 112; Affidavit of Bastel Wardak, California Solar Systems (**Exhibit 31**); Injury Tr. at 267 (Statement of Dan Shugar).

adjustment to import competition that they and other members of the industry have indicated they would want to undertake if a remedy is provided in this proceeding. Given the discussion above about the negative consequences of restrictive trade relief, any additional remedy should therefore be focused on raising funds for the industry.

1. Alternative Funding Mechanisms

There may be other forms of assistance that the President already has the authority to provide or that could be requested from the Congress. Suniva proposed in its Petition that the President find a way to use the AD/CVD duty deposits as a fund from which to disburse assistance to the domestic industry. SEIA and its members would welcome such a remedy as part of a settlement of the AD/CVD orders, which the President could negotiate in the same fashion that prior cases have been settled (e.g., *Softwood Lumber from Canada*¹⁸⁹ and *Cement from Mexico*¹⁹⁰).

SEIA would also welcome the use of Section 1102 of the Trade Act of 1979, under which the President could collect import license fees for distribution to CSPV cell and module industry

¹⁸⁹ In September 2006, the United States and Canada signed a temporary settlement agreement (often referred to as the “SLA 2006”), ending a large portion of the outstanding litigation over trade in softwood lumber and lifting the U.S. AD and CVD duties (provided lumber prices continue to stay above a certain range). As part of the agreement, approximately \$4.3 billion of the duty deposits which were then being held in clearing accounts by U.S. Customs and Border Protection was to be returned to the importers; \$500 million to be provided to the Coalition for Fair Lumber Imports (the petitioners in the AD/CVD cases); \$50 million to be provided to a bi-national industry council; and \$450 million to be disbursed to promote “meritorious initiatives” in the United States. Three organizations were identified to receive meritorious initiatives funds. Under Art. XIII of the SLA 2006, such “meritorious initiatives” would relate to educational and charitable causes in timber-reliant communities; low-income housing and disaster relief; and certain educational and public-interest projects addressing forest management and sustainability issues. See SLA 2006, available at <https://www.state.gov/documents/organization/107266.pdf>; see also “Softwood Lumber,” Archive, Office of the United States Trade Representative, https://ustr.gov/archive/World_Regions/Americas/Canada/Softwood_Lumber/Section_Index.html.

¹⁹⁰ In March 2006, the United States and Mexico signed a settlement agreement (often referred to as “Trade in Cement Agreement”) to resolve all outstanding litigation in connection with an U.S. AD order on Mexican cement, which would be revoked at the conclusion of the agreement. As part of the agreement, duty deposits in excess of an agreed-upon rate was to be refunded to designated escrow accounts to be paid to certain cement producers in monthly disbursements. As a result, the refunds were shared among the various Mexican and American cement industry participants. See Trade in Cement Agreement, available at <http://enforcement.trade.gov/download/mexico-cement/cement-final-agreement.pdf>; SEC, “Certain Information with Respect to CEMEX” at 120, available at <https://www.sec.gov/Archives/edgar/data/1076378/000119312510065014/dex1.htm>.

members. Section 1102 enables the President to create a manufacturing incentive structure by using the section's import license fee auction authority: "the President may sell import licenses at public auction under such terms and conditions as he deems appropriate." By creating a license fee structure based on a fixed-price auction set at a low price that would not damage the greater solar industry, and a very high quota level that would not interfere with U.S. solar growth, the President could then direct collected fees back to the domestic CSPV cell and module industry to encourage capital investment needed to scale and gain in competitiveness.

The Section 1102 approach would allow a strong industry to continue to grow while affording the domestic industry in this case an opportunity for much-needed capital, unlike traditional trade relief in which the domestic industry, including petitioners, would not have this opportunity to recapitalize. It would be key to have a very transparent license fee structure that allowed flexibility for importers to bid on such licenses, of a short duration (*e.g.*, three years) to help the domestic cell industry get back on its feet. The terms and structure of such a mechanism, while assisting the domestic industry, would have to allow the industry's growth to continue in order to be supported by respondents.

These are just some ideas under existing Presidential authority. Other funding mechanisms could also be considered, though they may require Congressional authorization.

2. Amount of Funding Needed

In their U.S. producer questionnaire responses, U.S. cell and module producers were asked to report adjustments they would make if they were to receive import relief as a result of

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this safeguard investigation (question II-5). The dollar value of these proposed adjustment investments were as follows:¹⁹¹

Company	Anticipated Expenditure (\$)
[]	[]
[]	[]
[]	[]
[]	[]
[]	[]
[]	[]
[]	[]
[]	[]
[] ¹⁹²	[]
TOTAL	[]

Over a three-year remedy period, the domestic producers' responses imply approximately [] in required adjustment support per year.

The collected fees discussed in the previous section could be set aside for distribution to the domestic CSPV industry to provide capital necessary to facilitate restructuring,¹⁹³ generating what the Commission has referred to in past cases as "revenues otherwise lost to foreign producers in the form of economic rents."¹⁹⁴ Funds could be allocated based, perhaps, on the production of CSPV cells and modules in a given year in order to ensure equitable distribution among producers of the domestic industry that was found to be seriously injured. Alternatively,

¹⁹¹ CR at Appendix D, Table D-2.

¹⁹² The domestic producer questionnaire response requested firms report the estimated expenditures for anticipated adjustment in thousands of dollars. However, one company, [], appears to have reported in dollars. If not corrected, [] reported expenditure would be [] times larger than the entire rest of the industry put together. This seems implausibly large as [] accounted for less than [] of domestic producers' commercial sales of modules. The table above was corrected accordingly.

¹⁹³ Distribution of collected fees is analogous to program established under the *Continued Dumping and Subsidy Offset Act of 2000* ("CDSOA"), whereas duties collected pursuant to antidumping and countervailing duty orders are redistributed to eligible domestic producers. This provision was successfully challenged at the WTO as not in compliance with the Anti-Dumping Agreement. AB Report, *United States – Continued Dumping and Subsidy Offset Act of 2000*, WT/DS217/AB/R, WT/DS/234/AB/R (Jan. 16, 2003). Import licensing is permitted under the WTO Agreement on Import Licensing Procedures for the purposes of administering a quantitative restriction. See Agreement on Import Licensing Procedures at Article 3.

¹⁹⁴ *Wheat Gluten*, USITC Pub. 3088 at I-27 n.130.

funds could be provided based on projected production, with adequate assurance mechanisms, to members of the industry seeking to invest in manufacturing who have not produced in recent years.

According to the Prehearing Staff Report, the United States imported 12.8 GW of CSPV products in 2016.¹⁹⁵ Although future years may differ from this figure, based either on the price or volume of imports, we use this known figure to estimate how much revenue would have been raised in 2016 using a relatively low fee level (i.e., fees sufficiently low to cause only minor or even immaterial demand effects). As seen, a fee of no more than \$0.01 per watt would generate a sufficient value to fund the requested adjustment support over a three-year remedy period, and thereby not exceed the statutory limitations on the remedy.

License Fee per Watt	Annual Revenue Raised (\$)
\$0.005	\$64,000,000
\$0.01	\$128,000,000

The collection and distribution of the import licensing fees would be within the Commission’s authority to recommend an action “likely to facilitate positive adjustment to import competition”¹⁹⁶ without the damaging effects on the broader solar industry of a restrictive quota or tariff. We do not anticipate a measurable impact on total solar industry jobs at this level of license fee in part due to the distribution of funds back into the industry and as supported by industry leader affidavits.¹⁹⁷

¹⁹⁵ CR/PR at Table II-1.

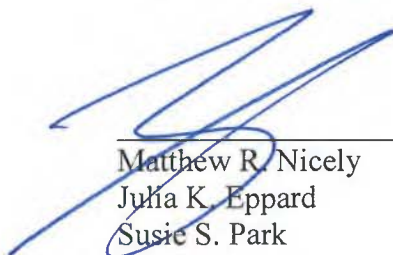
¹⁹⁶ 19 U.S.C. § 2252(e)(4)(B).

¹⁹⁷ Industry Affidavits Opposing Imposition of Import Relief (**Appendix B**).

IX. CONCLUSION

SEIA disagrees with the Commission's finding that increased imports were the substantial cause of serious injury to the domestic industry in this case. But what's done is done. Now, the Commission must make a remedy recommendation that is narrowly tailored to counteract the injury it has found and facilitate the positive adjustment of the domestic industry, as well as to ensure that the overall benefits of the remedy exceed its costs. In other words, the recommendation should be fully informed by the Commission's trade policy expertise. SEIA submits that the Commission can come to only one fundamental conclusion in this regard: the domestic industry needs financial and other adjustment assistance – not global trade restrictions – to facilitate restructuring. All existing statutory and other avenues for such assistance must be explored, so that the result is a “win-win-win” for the domestic industry, the broader solar industry and the consumers and communities it serves, and the U.S. economy as a whole.

Respectfully submitted,



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LIST OF ATTACHMENTS

APPENDIX A:

Dr. Thomas Prusa, *The Economic Effects of CSPV Safeguard Tariffs: Industry Profitability, Deployment, and Estimated Job Effects*

- A. IHS Markit Estimated Deployment Effects
- B. SEIA Methodology on Computing Job Impact
- C. State Level Job Impact
- D. Analysis of Financial Impact of Tariff Remedy on Domestic Cell and Module Industry (CBI)
- E. Commentary on Mayer-Brown's Job Creation Study
- F. Correlation of Jobs, Cell Production, Module Production, and Deployment (CBI)
- G. Author's CV

APPENDIX B:

Industry Affidavits Opposing Imposition of Import Relief

- B-1. Affidavit of Craig Cornelius, NRG Renewables (CBI)
- B-2. Affidavit of Edward Fenster, Sunrun, Inc. (CBI)
- B-3. Affidavit of Laura E. Stern, Nautilus Solar (Public)
- B-4. Affidavit of Brian Evans, RES Americas, Inc. (CBI)
- B-5. Affidavit of Stephen Jones, Blattner Energy, Inc. (CBI)
- B-6. Declaration of Jeffery Ghilardi, EDF Renewable Energy (Public)
- B-7. Affidavit of Erik L. Schiemann, General Electric Company (CBI)
- B-8. Affidavit of Johnnie Taul, DEPCOM Power, Inc. (CBI)
- B-9. Affidavit of Stephen K. Irvin, Amicus Solar Cooperative (Public)
- B-10. Affidavit of Kevin M. Schulte, SunCommon (CBI)

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- B-11. Affidavit of Robert A. Masinter, AES Distributed Energy (Public)
- B-12. Affidavit of Edmond L. Murray, Aztec Solar, Inc. (Public)
- B-13. Affidavit of James B. Marlow, Jr., Radiance Solar (Public)
- B-14. Affidavit of Richard L. Peters, Jr., Solar Energy Services, Inc. (CBI)
- B-15. Affidavit of Constantino Nicolaou, PanelClaw, Inc. (CBI)
- B-16. Affidavit of David Zwilling, D.E. Shaw Renewable Investments (CBI)
- B-17. Affidavit of Ryan S. Creamer, sPower (Public)
- B-18. Affidavit of George W. Hershman, Swinerton Renewable Energy (Public)

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BRIEF EXHIBITS		
EXHIBIT	DESCRIPTION	Public/ CBI
1.	List of Public Officials and Company Representatives Who Have Expressed Opposition to this Investigation and Any Safeguard Remedy	CBI
2.	Affidavit of []	CBI
3.	Christian Roselund, “Solar reached 1.4% of U.S. electricity in 2016,” <i>PV Magazine</i> (Mar. 3, 2017), https://www.pv-magazine.com/2017/03/03/solar-reached-1-4-of-u-s-electricity-in-2016	Public
4.	U.S. Department of Energy, SunShot, <i>Q4 2016/Q1 2017 Solar Industry Update</i> (“Sunshot Industry Update”)	Public
5.	SEIA, Solar Industry Data, www.seia.org/solar-industry-data	Public
6.	U.S. Department of Energy, <i>SunShot Vision Study</i> (Feb. 2012)	Public

NON-CONFIDENTIAL VERSION

7.	Richard M. Swanson, “A Vision for Crystalline Silicon Photovoltaics,” <i>Progress in Photovoltaics: Research and Applications</i> (2006)	Public
8.	First Solar, “First Solar Investor Overview” (2017)	Public
9A.	GTM Research, <i>U.S. Solar Market Insight: Full Report Q2 2017</i>	CBI
9B.	GTM Research, <i>U.S. Solar Market Insight: Executive Summary Q2 2017</i>	Public
10.	Import Shipments by Channel	CBI
11.	IEA PVPS, Snapshot, http://www.iea-pvps.org/fileadmin/dam/public/report/statistics/IEA-PVPS_-_A_Snapshot_of_Global_PV_-_1992-2016__1_.pdf	Public
12.	[], Bloomberg New Energy Finance (BNEF), []	CBI
13.	Affidavit of Kenny Hughes, Radiance Solar	Public
14.	William Pentland, “SolarWorld Scrambles To Survive Take-Or-Pay Lawsuits,” <i>Forbes</i> (Nov. 3, 2015), https://www.forbes.com/sites/williampentland/2015/11/03/solarworld-scrambles-to-survive-take-or-pay-lawsuits/#59bdb5d34d01	Public

NON-CONFIDENTIAL VERSION

15.	Chris Martin, “First Solar to Profit If Trump Slaps Tariffs on Panel Imports,” <i>Bloomberg</i> (Aug. 14, 2017), https://www.bloomberg.com/news/articles/2017-08-14/first-solar-to-profit-if-trump-slaps-tariffs-on-panel-imports	Public
16.	Joe Rennison and Jessica Dye, “Solar tariff threat takes shine off sector,” <i>Financial Times</i> (Aug. 21, 2017), https://www.ft.com/content/5b62cc46-8688-11e7-bf50-e1c239b45787	Public
17.	First Solar Inc. Morningstar Rating	Public
18.	“First Solar Apparently Plans To Double Production Capacity To 5.75 GW Per Year,” <i>Seeking Alpha</i> (May 5, 2017), https://seekingalpha.com/article/4069761-first-solar-apparently-plans-double-production-capacity-5_75-gw-per-year	Public
19.	First Solar’s 10-K Filing, available at http://investor.firstsolar.com/static-files/149b7d39-aa58-4998-8ae1-76a318a705fc	Public
20.	First Solar, “First Solar Plant Performance in Southeast Asia,” available at http://www.firstsolar.com/-/media/First-Solar/Knowledge-Center/First-Solar_Plant-Performance-in-Southeast-Asia.ashx	Public
21.	Bloomberg New Energy Finance (BNEF), []	CBI
22.	GTM Research, <i>U.S. Solar Outlook Under Section 201: The Trade Case's Impact on U.S. Solar Demand</i> (June 2017)	CBI

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23.	Nicole Litvak, “It’s Official: More Residential Solar Customers Buy Than Lease,” <i>Greentech Media</i> (Mar. 6, 2017), https://www.greentechmedia.com/articles/read/its-official-more-residential-solar-customers-buy-than-lease	Public
24.	The Solar Foundation, <i>2016 National Solar Jobs Census</i>	Public
25.	“SolarWorld Americas expects immediate infusion of cash to lift up U.S. operations,” SolarWorld, Newsroom (Jul. 12, 2017), http://www.solarworld-usa.com/newsroom/news-releases/news/2017/solarworld-americas-expects-immediate-infusion-of-cash	Public
26.	NREL, Negotiable Technology Licensing, https://www.nrel.gov/workingwithus/licensing.html	Public
27.	NREL, Technical Partnership Agreements, https://www.nrel.gov/workingwithus/technology-partnership-agreements.html#sppa	Public
28.	NREL, Wells Fargo Innovation Incubator (IN ²), https://www.nrel.gov/workingwithus/in2.html	Public
29.	DOE, SunShot Incubator Program, https://energy.gov/eere/sunshot/sunshot-incubator-program	Public
30.	NREL, Catalyst: Round 2, http://catalyst.energy.gov/a/pages/catalyst2	Public

NON-CONFIDENTIAL VERSION

31.	Affidavit of Bastel Wardak, California Solar Systems	Public
32.	Diane Cardwell and Ana Swanson, “Creating Test for Trump, Panel Says Imported Solar Gear Hurts U.S. Firms”, <i>The New York Times</i> (Sept. 22, 2017), https://www.nytimes.com/2017/09/22/business/energy-environment/solar-imports.html	Public
33.	Erin Ailworth, “Trade Decision Roils U.S. Solar Industry,” <i>Fox Business</i> (Sept. 22, 2017), http://www.foxbusiness.com/features/2017/09/22/trade-decision-roils-u-s-solar-industry.html	Public
34.	“Suniva Calls on GTM to Retract Inaccurate Report,” <i>Business Wire</i> , http://www.businesswire.com/news/home/20170627006535/en/Suniva-Calls-GTM-Retract-Inaccurate-Report	Public
35.	“First Solar Posts Strong Q2, Increases Full Year Guidance,” <i>Forbes Magazine</i> , https://www.forbes.com/sites/greatspeculations/2017/07/28/first-solar-posts-strong-q2-increases-full-year-guidance/#64b66d936635	Public
36.	Julia Pyper, “Suniva and SolarWorld Claim Their Trade Case Will Create More Than 114,800 Jobs,” <i>Greentech Media</i> (Aug. 9, 2017), https://www.greentechmedia.com/articles/read/suniva-solarworld-claim-trade-case-will-create-more-than-114800-jobs#gs.NI4FEPg	Public
37.	Mayer Brown, “Impact of the Section 201 Remedy on Employment in the U.S. Solar Industry” (Aug. 8, 2017), available at http://www.ourenergypolicy.org/wp-content/uploads/2017/08/REPORT_Final-Economic-Analysis-of-Section-201-Remedy.pdf	Public

NON-CONFIDENTIAL VERSION

38.	National Renewable Energy Laboratory, Jobs and Economic Development Impact (JEDI) Models, https://www.nrel.gov/analysis/jedi/about_jedi.html	Public
39.	Tesla, “Tesla and Panasonic Will Begin Manufacturing Solar Cells and Modules in Buffalo, NY,” (Dec. 27, 2016), https://www.tesla.com/blog/tesla-and-panasonic-will-begin-manufacturing-solar-cells-modules-in-buffalo-ny	Public
40.	Amy Grace, Head of North America Research, Bloomberg New Energy Finance (BNEF), “U.S. Solar PV and Power Markets”	Public
41.	Cory Honeyman, “Suniva and SolarWorld Trade Dispute Could Halt Two-Thirds of US Solar Installations Through 2022,” <i>Greentech Media</i> (Jun. 26, 2017), https://www.greentechmedia.com/articles/read/suniva-dispute-could-halt-two-thirds-of-us-solar-installations	Public
42.	SEIA, “Solar Industry Expects Loss of 88,000 Jobs in U.S. Next Year if Government Rules in Company’s Favor in Trade Case” (Jun. 15, 2017), http://www.seia.org/news/solar-industry-expects-loss-88000-jobs-us-next-year-if-government-rules-companys-favor-trade	Public

Appendix A

The Economic Effects of CSPV Safeguard Tariffs: Industry Profitability, Deployment, and Estimated Job Effects

Thomas J. Prusa, PhD*
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September 27, 2017

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Executive Summary

In April 2017 two U.S. solar module producers, Suniva and SolarWorld, filed a petition seeking Section 201 (“safeguard”) protection against imports of crystalline silicon photovoltaic (CSPV) cells and modules. Most of the broader solar industry, including [] U.S. module producers, oppose the petition and any potential remedy.

Given that the solar industry has only recently approached, and in some locations reached, grid parity with other forms of electricity generation, the broader U.S. solar industry is concerned that the proposed tariffs will force many firms out of business and will result in the laying off of thousands of workers; some firms have already put expansion and hiring plans on hold.¹ Bloomberg New Energy Finance states “tariffs endanger up to 90% of U.S. solar build over the next four years.”² Consequently, there is a sense that the recommended remedies will harm the U.S. economy, the broader solar industry, and solar workers.

While downstream effects are common in any trade remedy case, and particularly in a safeguard action targeting global trade, the effects here are particularly acute because CSPV cells and modules compete with other, highly substitutable, forms of energy. Whereas imposition of trade relief in previous safeguard cases (e.g., flat-rolled steel, line pipe) did not cause purchasers to stop buying the affected product, in large part because of a lack of viable substitutes, safeguard relief on CSPV cells and modules will cause buyers to turn to alternative energy sources – or simply not buy at all.

This phenomenon not only increases the negative consequences of trade relief for the significant downstream businesses that have been created as solar deployment has increased (spurred by the reductions in the cost of producing CSPV cells and modules), it also means that the benefit of trade relief for U.S. cell and module producers is extremely limited.

When determining its remedy recommendation, it is my understanding that the U.S. International Trade Commission (USITC) is required to take all of these factors into account. This study therefore analyzes the impact of trade relief on the

¹ See Diane Cardwell and Ana Swanson, “Creating Test for Trump, Panel Says Imported Solar Gear Hurts U.S. Firms,” *New York Times* (Sept. 22, 2017), <https://www.nytimes.com/2017/09/22/business/energy-environment/solar-imports.html> (**Exhibit 32**); see also Erin Ailworth, “Trade Decision Roils U.S. Solar Industry,” *Fox Business* (Sept. 22, 2017), <http://www.foxbusiness.com/features/2017/09/22/trade-decision-roils-u-s-solar-industry.html> (**Exhibit 33**).

² Bloomberg New Energy Finance, [] (**Exhibit 21**).

domestic industry's profitability, on the demand for CSPV solar, and on the employment of U.S. solar workers.

The results are as follows:

- **With respect to financial viability, trade relief will not make the domestic cell and module industry profitable.** Whether one focuses on the entire domestic cell and module industry or only on the integrated cell and module producers, trade protection will not make the domestic industry profitable. An analysis of the financial data submitted by the domestic industry to the USITC indicates that the domestic industry will lose money if Suniva's proposed remedy is imposed or if the statutory maximum 50% ad valorem tariff is imposed. (Logically, any lower tariff would similarly do them no good.)
- **Suniva's requested level of protection would devastate the U.S. CSPV industry. Suniva's 40 cent per watt tariff** (equivalent to approximately 100% ad valorem tariff on modules and 200% ad valorem on cells) **would cause solar deployment to fall by 42% (5.4 GW) in 2018 alone and by 28.6 GW over the 2018-21 period.** The cumulative reduction in PV deployment is greater than all PV deployment in the United States through the end of 2015.
- **A 50% ad valorem tariff would cause solar deployment to fall by 24% (3 GW) in 2018 and by more than 15 GW over the whole period.**
- Workers and firms in the U.S. solar industry have every reason to be concerned about their future. **Suniva's proposed tariff on CSPV cells and modules would lead to a loss of more than 62,000 U.S. jobs in the first year and more than 83,000 U.S. jobs by year three.** A 50% ad valorem tariff would result in the loss of 37,899 solar jobs in the first year and more than 41,000 jobs by year three.
- **U.S. solar manufacturers (including petitioners) will experience little to no job creation** as a result of the tariff. Despite Suniva's and SolarWorld's claim that the protection will boost manufacturing jobs, the analysis shows otherwise. **Under Suniva's proposal there is a net reduction in solar manufacturing jobs** in addition to the massive overall loss in solar jobs.
- Under a 50% ad valorem tariff there is an increase of a few hundred solar manufacturing jobs, but that increase comes at the expense of tens of thousands of other solar jobs. **Overall a 50% ad valorem tariff results in 64 jobs being lost for every one job created.**
- These job numbers contrast with those offered by Mayer Brown in its August 2017 jobs report. Mayer Brown claims safeguard protection would create about 40,000 solar manufacturing jobs (despite the devastating drop in deployment). I demonstrate that Mayer Brown's report is terribly flawed. Its job growth results are not based on growth from current job levels; rather **Mayer Brown's job estimates start with job levels from an earlier era when employment was more than 120,000 jobs below job levels reported for 2016.** In effect, Mayer Brown's

study masks the job losses documented in this report by pretending the solar industry's job growth over the last six years never happened.

- The state-level results are dismal. **Suniva's proposed safeguard protection will cause job loss in every state.** The job losses range from states who will "only" lose a hundred or fewer jobs (e.g., North Dakota, Wyoming, and Alaska), to those who will lose hundreds of jobs (e.g., Alabama, Arkansas, Iowa, Kentucky, Louisiana, West Virginia), to those that will lose a thousand or more jobs (e.g., Florida, Texas, Nevada, California, Minnesota, Michigan, Virginia).
- Interestingly, **the states that are the home of the two petitioners in this case, Georgia and Oregon, each lose more than a thousand jobs each year under Suniva's proposed remedy.** The large and widespread job losses help to explain why so many state legislators appeared before the USITC to ask that tariffs not be imposed.
- Perhaps the only firm in the entire PV industry that will benefit from the proposed safeguard protection is First Solar, a thin-film PV producer. Even though thin-film PV is a close substitute to CSPV, neither imports nor U.S. production of this product is the subject of this safeguard investigation. Suniva's proposed remedy will enrich First Solar, already the most profitable PV firm in the world. Yet, this will not create U.S. jobs as the vast majority of First Solar's thin-film PV is imported from Malaysia.

I. Introduction

On September 22, 2017 the USITC made an affirmative injury determination with respect to crystalline silicon photovoltaic (CSPV) cells and modules. The investigation is now at the second stage of the investigation, during which the USITC is asked to consider and report to the President the impact any recommended remedy will have on (i) the domestic industry producing CSPV cells and modules, (ii) solar workers, (iii) other related industries (and their workers), (iv) American consumers, and (v) the greater U.S. economy.

This study reports the results of a detailed economic analysis of each of these impacts for various remedy proposals. I begin by reviewing the financial data submitted by the domestic industry to the USITC as part of this investigation. I then analyze the effect of the one proposal the petitioners have put forward,³ which would effectively place about a 200% duty on the current market price of a cell and about a 100% duty on the current market price of a module. Even at these high – and as I understand it, illegal – duty rates, the domestic industry will have negative operating income. Likewise, if I assume the maximum legal tariff is imposed (50% ad valorem), the domestic industry will remain unprofitable. Said differently, trade protection will not make the domestic industry viable. This analysis suggests that policies such as direct trade adjustment assistance are needed.

³ Suniva proposed in its petition a \$0.40/watt tariff on cells and a \$0.78 minimum price on modules.

I next review solar demand (i.e., “deployment”) projections by solar industry experts at IHS Markit who analyzed the U.S. photovoltaic (PV) market and prices on a state-by-state basis. This demand-side model analyzes the attractiveness of the resulting levelized cost of energy of PV (relative to other sources of electricity generation) in each state for each market segment (residential, commercial, and utility-scale). IHS Markit then estimates PV demand for each segment in each state in each year. The analysis fully accounts for state policies such as renewable portfolio standards (RPS), rebates, and tax incentives.

The results of the IHS Markit demand analysis were then fed into the publicly available “Jobs and Economic Development Impact” (JEDI) model for PV. JEDI is an input-output economic model developed and maintained by the National Renewable Energy Laboratory, a part of the U.S. Department of Energy. The JEDI model analyzes the economic impacts of energy project development, including both downstream (construction, operations, maintenance, etc.) and upstream (module, inverter, and racking manufacturing) employment impacts.⁴

Using the IHS Markit/JEDI model, I find Suniva’s requested 40 cent per watt tariff would devastate the U.S. solar industry and its workers, causing a 42% decrease in PV deployment and the loss of more than 62,000 solar jobs in just the first year. The job losses are deep and widespread. Suniva’s remedy would result in job losses in its home state of Georgia and in SolarWorld’s home state of Oregon. In fact, Suniva’s remedy would result in job losses in every state.

⁴ The jobs model is discussed in greater detail in **Annex B**.

Even if no more than a legal remedy is imposed, the costs to the rest of the solar industry are significant. A 50% ad valorem tariff would cause a 24% decrease in PV deployment and the loss of more than 33,000 jobs in the first year alone. Importantly, even though the impact on the rest of the industry is less severe than with Suniva's proposal, the impact clearly imposes greater costs than benefits, as the domestic cell and module producing industry is not able to make a profit with a 50% tariff (as discussed in the following section).

These job findings could not be more different than those claimed by Mayer Brown in its August 8, 2017 report. In Annex E, I demonstrate that Mayer Brown's report is terribly flawed. Stunningly, Mayer Brown's job growth result is not based on growth from current job levels. Rather, Mayer Brown's estimates start with job levels from an earlier era when employment was more than 120,000 jobs below what is reported by The Solar Foundation for 2016.⁵ In effect, Mayer Brown's study masks the job losses documented in this report by pretending the solar industry's job growth over the last six years never happened. I show that if Mayer Brown were to calculate its job numbers starting from the current level of employment, its own study demonstrates Suniva's safeguard remedy causes a loss of more than 80,000 jobs.

Overall, this report makes it clear that trade protection either of the sort requested by the domestic industry or at the maximum legal level will not make the

⁵ The Solar Foundation, *2016 National Solar Jobs Census* at 8 (**Exhibit 24**).

industry financially viable and will in the meantime impose large costs on the overall economy and lead to the loss of tens of thousands of U.S. jobs.

II. Analysis of the Financial Impact of Tariff Remedy on Domestic Cell & Module Industry

Before delving into demand and job effects, I will examine whether trade protection will make the domestic industry financially profitable – that is, profitable enough to make the millions of dollars of investments that would be necessary for the firms to upgrade their facilities, purchase new state-of-the-art equipment, and expand their capacity so as to be able to service the largest segment of demand, the utility-scale segment.

To answer this question, I reviewed the confidential financial statements submitted by the cell and module producers in the United States who responded to the USITC's questionnaire request. Given that this is likely the set of firms by which the Commission made its determination that the industry is suffering serious injury from imports, it is reasonable to consider it as fully representative of the domestic cell and module industry.

The domestic industry can be conceivably be defined in two different ways:

- (i) the entire industry, i.e., the integrated producers and also those firms that produce modules using cells that they purchased from another firm (which is almost always a foreign cell supplier) and
- (ii) the integrated producers (i.e., those firms who

produce cells and modules).⁶ The former group includes the integrated producers, [], plus module producers []. The Commission's practice is to consider the industry as a whole, which would suggest the correct definition of the industry is the former group – all domestic producers of cells and modules. The latter group is composed of []. However, given that the two petitioners fall into the latter group, it is possible they will argue that what matters is their profitability, not the rest of the industry's performance. As a result, I consider both industry definitions.

The next consideration for analyzing how trade protection will affect the industry is the sizeable reduction in demand that industry analysts predict will occur should tariffs be imposed.⁷ CSPV is unlike the typical product that comes before the Commission where consumers have few (or no) alternative options. For example, if flat-rolled steel were the product under investigation, an automaker or appliance maker would have no alternative but to pay higher prices if a tariff were imposed on flat-rolled steel. That simply is not the case for CSPV. The single biggest demand influencer for CSPV is its price relative to other source of electricity, a concept known as “grid parity.” If CSPV prices rise by more than a few

⁶ See CR/PR at I-38 n.101 (“CSPV cells are typically internally consumed to produce solar modules by U.S. producers”); III-27 (“Relatively few CSPV cells produced in the United States are sold commercially. In fact, during 2016, [] percent of U.S. producers' total shipments were commercially shipped in the United States and [] percent were exported to unrelated firms.”). For instance, SolarWorld reported internal consumption of [] of its U.S. cell production over the POI. See SolarWorld U.S. Producer QR at II-10.

⁷ GTM Research, “U.S. Solar Outlook under Section 201: The Trade Case's Impact on U.S. Solar Demand” (June 2017) (**Exhibit 22**).

cents, the question for the bulk of PV buyers is, “what is my other energy source option?”. As I will discuss later in this report, IHS Markit, a well-known and respected industry expert, estimates that PV demand will fall by 24% if a 50% tariff were imposed.⁸ IHS Markit estimates PV demand will fall by 42% if Suniva’s proposed remedy were imposed.

As I will explain later in the report, IHS Markit’s estimate of the decrease in deployment (or “solar demand”) due to a possible trade remedy is measured relative to its estimate for each year during the remedy period, not relative to 2016 demand. Given that 2016 was a boom year for CSPV demand, the fact that my financial analysis uses 2016 as the basis for domestic demand likely results in a more favorable demand picture for the domestic industry (given forecasted market conditions).⁹

Given IHS Markit’s analysis that total U.S. PV demand will fall by 24% (50% ad valorem tariff) or 42% (Suniva’s remedy), the question is how much will demand fall for domestic producers. Suniva and SolarWorld might argue that the domestic industry will see no decrease in demand (in spite of the fact that the domestic firms are also raising their prices in tandem with the tariff). This seems like a “best

⁸ A 50% ad valorem tariff is approximately equivalent to a 20 cent per watt specific tariff on modules and a 10 cent per watt specific tariff on cells.

⁹ According to GTM Research, about 15 GW of solar was installed, or “deployed,” in 2016. This demand surge was largely due to the uncertainty surrounding the expiration of the ITC. GTM Research estimates that without any trade remedy being imposed, deployment will fall to 12.6 GW in 2017 and 11.1 GW in 2018. This means my assumption that the domestic industry will not experience any volume loss relative to its 2016 level is very bullish because the U.S. solar market is expected to be smaller than it was in 2016. *See* GTM Research, *U.S. Solar Market Insight: Full Report Q2 2017* at 59 (**Exhibit 9A**); GTM Research, *U.S. Solar Market Insight: Executive Summary Q2 2017* at 8 (**Exhibit 9B**).

case,” but also highly unrealistic, scenario for the domestic industry. Nonetheless, it is one worth considering, for if the industry cannot earn a profit under such a strong assumption then it seems inconceivable that trade protection will be beneficial overall.

More likely, the domestic industry will also experience some of the demand fall. Giving the domestic industry a considerable “benefit of the doubt,” I consider a second scenario where demand for domestic CSPV holds up far better than does demand for foreign CSPV, but where there is nevertheless some demand loss. In particular, I assume that domestic demand falls by only half as much as total demand falls by (i.e, falls by only 12% if a 50% ad valorem tariff is imposed, and by 21% if Suniva’s remedy is imposed).¹⁰

To estimate the financial condition of the industry with protection, I adjust each firm’s reported 2016 financial statement as follows:

CELLS

- Net Sales Quantity – Commercial Sales, internal transfers, or transfers to related firms:
 - (quantity) adjusted by demand change
- Net Sales Values – Commercial Sales, internal transfers, or transfers to related firms
 - (per unit value) adjusted by the tariff and
 - (quantity) adjusted by the demand change
- Cost of Goods Sold (COGS) – Polysilicon, Ingots, Wafers, all other raw material costs (CSPV cells)
 - all treated as a variable cost, i.e., adjusted by demand change

¹⁰ That the domestic industry suffers only half the demand loss is an assumption. We can consider alternative levels, but given that the industry loses money in every case, we only report two scenarios.

NON-CONFIDENTIAL VERSION

- Direct labor (CSPV cells)
 - treated as a variable cost, i.e., adjusted by demand change
- All other factory costs (CSPV cells)
 - treated as a fixed cost
- Selling expenses
 - treated as a variable cost, i.e., adjusted by demand change
- General and administrative expenses
 - treated as a fixed cost

MODULES

- Net Sales Quantity – Commercial Sales, internal consumption (if any), transfers to related parties (if any):
 - (quantity) adjusted by demand change
- Net Sales Values – Commercial Sales, internal consumption (if any), transfers to related parties (if any):
 - (per unit value) adjusted by the tariff and
 - (quantity) adjusted by the demand change
- Cost of Goods Sold (COGS) – raw materials
 - (per unit value) adjusted by the tariff on cells and
 - (quantity) adjusted by the demand change
- Direct labor (CSPV modules)
 - treated as a variable cost, i.e., adjusted by demand change
- Other factory costs (CSPV modules)
 - treated as fixed cost
- Selling expenses
 - treated as a variable cost, i.e., adjusted by demand change
- General and administrative expenses
 - treated as a fixed cost

I then performed several analyses. I began by considering the 40 cent per watt on cell and module proposal of Suniva. For that trade remedy, I considered each firm's

financial “bottom-line” assuming no adverse demand effect and also assuming some (partial) demand effect. Then, I computed the industry total by summing across all firms. Finally, I performed a similar set of calculations for the 50% ad valorem tariff remedy. Below I present the results of the financial analysis based on (i) the Suniva remedy and (ii) a 50% ad valorem tariff:¹¹

As seen in the following table, Suniva’s remedy does nothing to solve the industry’s financial problems. Suniva’s remedy dramatically increases the cost of cells when a large portion of the domestic industry needs to purchase cells from another firm. This is disastrous for independent module producers. Given that [], this means independent module producers will be paying a large tariff on cells. This sharp rise in costs makes it inevitable that the industry loses money, whether demand stays the same (unrealistic “best case”) or declines somewhat as discussed above (“optimistic case”).

Even if the Commission decided that the only segment of the industry that warrants evaluation is integrated cell and module producers, the industry still loses money. In addition to likely being illegal under U.S. law, Suniva’s proposal is a disaster for the industry.

¹¹ Complete accounting is given in **Annex D**.

Table 1: Financial Impact, Suniva's Proposed Remedy

	Cells	Modules	Total
Domestic Industry Defined as All Cell and Module Producers			
Unrealistic "Best Case" for Domestic Industry			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
"Optimistic Case"			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
Domestic Industry is Defined as Only Integrated Cell and Module Producers (i.e., [])			
Unrealistic "Best Case" for Domestic Industry			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
"Optimistic Case"			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

Note that the industry does not make money under Suniva's proposal even if the domestic industry's demand remains at its 2016 level (i.e., the domestic industry suffers none of the decrease in demand forecasted by IHS Markit).

In the table below I report financial results if a 50% ad valorem tariff were imposed on cells and modules. This is the largest tariff allowed under U.S. law and, presumably, would be something the domestic industry regards as extremely beneficial to its ability to compete with foreign firms. As seen, however, that is not borne out by the data.

Consider first the USITC's traditional way of viewing the industry – that is, all domestic producers. In this case, even with a 50% tariff, industry operating income is negative – between [] to []. The magnitude of the loss

depends on how much demand for domestically produced CSPV falls. The net income results are even worse.

Table 2: Financial Impact, 50% ad valorem tariff

	Cells	Modules	Total
Domestic Industry is Defined as All Cell and Module Producers			
Unrealistic “Best Case” for Domestic Industry			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
“Optimistic Case”			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
Domestic Industry is Defined as Only Integrated Cell and Module Producers (i.e., [])			
Unrealistic “Best Case” for Domestic Industry			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]
“Optimistic Case”			
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

We can alternatively consider a scenario where the domestic industry is defined as only the integrated cell and module producers (i.e., []).

As shown above, in this scenario (which is inconsistent with how the Commission collected data for the injury phase), the domestic industry’s operating income is []. The industry’s net income is [] in all cases.

Even if one only focuses on operating income and assumes that the domestic industry suffers no effects of the large drop in overall PV demand, the industry’s return is too small to support the type of adjustment the [] would

need to undertake in order to be competitive once the safeguard period is over. Assuming a 50% ad valorem tariff and no change in quantity demanded of their products, I find the industry would (at best) earn only [] in operating income. This is less than [] of what the petitioners' reported as costs of adjustment in their questionnaire responses. And, as discussed in greater detail below, any limited benefit that might accrue to the industry as a consequence of trade relief is far outweighed by the cost to the rest of the solar industry.

III. Economic Analysis of Deployment and Job Effects in the PV Industry

The next step in my analysis concerns the effect imposition of trade relief will have on the broader solar industry.¹² Below I first explain the data and the models on which my analysis depends, and then I discuss my results.

A. The IHS Markit Deployment Model

The first step in estimating solar energy industry employment involves estimating solar installations (or deployment) in the U.S. under different global CSPV tariff scenarios. SEIA obtained cost and demand (installation) forecasts from IHS Markit based on different tariff scenarios.¹³ Those scenarios include a “no new

¹² The broad set of economic activities related to the solar product chain is discussed at length in the The Solar Foundation, *2016 National Solar Jobs Census* on pages 13 and 17–34 (**Exhibit 24**). The Solar Foundation uses the phrase “establishments involved in solar activity” to describe the broader solar industry.

¹³ IHS Markit's deployment model is similar to that used by GTM Research. *See, e.g.,* GTM Research, *U.S. Solar Outlook under Section 201: The Trade Case's Impact on U.S. Solar Demand* (June 2017) (**Exhibit 22**).

tariff” scenario (baseline), a 50% ad valorem tariff on cells and modules, and a \$0.40/watt scenario (40 cent) in line with the remedy requested by Suniva. The analysis assumes the tariff is put in place in January 2018.¹⁴ The cost and demand forecast results accounted for demand drivers by state and by market segment (residential, commercial and utility) with consideration for known policies impacting demand in each states and market segment in the years 2018-2021. The forecast also considered domestic CSPV supply and non-subject thin-film PV supply.

IHS Markit’s approach to modeling PV demand is widely used because PV competes in a highly regulated market environment that sets very specific parameters for competition. Electricity markets are, perhaps, the most heavily regulated markets in the United States. This is because electricity markets are dominated by natural monopolies (electric utilities) who also have some degree of territorial monopsony, or at least oligopsony, power.

This style of demand modeling is used by all industry experts including two federal entities and several major market analysis firms:

- The Energy Information Administration (EIA), an independent agency within the Department of Energy charged with tracking and analyzing all aspects of the U.S. energy markets uses this type of modeling in its National Energy Modeling System (NEMS);¹⁵

¹⁴ The scenario did not explicitly account for a minimum import price (MIP) since Mayer Brown indicated the tariff and MIP requests are not intended to be additive. *See* “Suniva Calls on GTM to Retract Inaccurate Report,” *Business Wire* (June 27, 2017), <http://www.businesswire.com/news/home/20170627006535/en/Suniva-Calls-GTM-Retract-Inaccurate-Report> (**Exhibit 34**).

¹⁵ U.S. Energy Information Administration, “Annual Energy Outlook 2017” (last released Jan. 5, 2017), https://www.eia.gov/outlooks/aeo/info_nems_archive.php.

- The National Renewable Energy Laboratory (NREL), a Department of Energy Lab, uses this sort of system in its Renewable Energy Deployment System (ReEDS) for utility scale forecasting and dGen/dSolar model for distributed generation demand forecasting;¹⁶
- Bloomberg New Energy Finance;
- IHS Markit; and
- GTM Research.

All of these models compare the Levelized Avoided Cost of Electricity (LACE) to the Levelized Cost of Electricity (LCOE) to demonstrate the price signal received by the potential solar customer. Both metrics are based on discounted energy and cash flow calculations. LACE is impacted by the generation mix and utility load profile of the location where a solar system could be installed. LCOE is a function of the cost of a PV system, the solar resource (essentially sun-hours but also temperature, snow, etc.), financing parameters, incentives, etc. These models capture all of these features for every geography in the United States as divided up into about 3,000 different utilities. Some models like NREL's dSolar model get as granular as Census tracts.

The solar market is not homogenous, limiting the ability of a standard elasticity model such as COMPAS to describe it. However, the style of demand model utilized by IHS Markit (and others) addresses that heterogeneity by closely analyzing the mechanics that drive the market.

¹⁶ NREL, "Regional Energy Deployment System Model," <https://www.nrel.gov/analysis/reeds>.

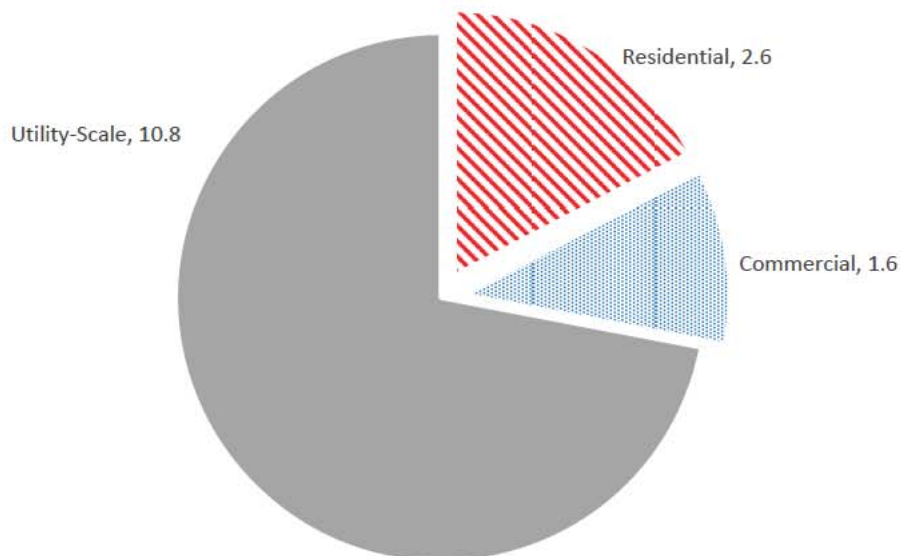
The economic underpinning of the IHS Markit analysis is a demand-side model that separately estimates the solar deployment for the three main segments of the solar market:

- 1) **Residential** (i.e., primarily roof-top solar but also some ground mounted solar),
- 2) **Commercial** (i.e., big box stores, grocery stores, churches, malls, industrial roofs, schools, etc.), and
- 3) **Utility-scale** (i.e., installations typically greater than 20 MW which feed the electricity into the grid, supplying a utility with energy).¹⁷

The segments are broken out this way because of the market environment in which they compete. Residential solar installations compete with grid-supplied electricity at retail rates with rate structures that are heavily volumetric (i.e. cents per kilowatt-hour). Commercial solar installations compete with grid-supplied electricity at retail rates with rate structures that may only be half volumetric with the rest of their rates determined by a monthly *demand-charge* (dollars per kilowatt based on the highest 15 minutes of power demand in the month), which makes solar economics more challenging. Utility solar competes with the generation mix on the transmission grid at wholesale rates.

¹⁷ In addition, virtually every utility-scale solar facility has a power purchase agreement with a utility, guaranteeing a market for its energy for a fixed term of time.

Figure 1: U.S. Solar Deployment, by Segment (GW), 2016¹⁸



As seen in Figure 1, in 2016 the utility-scale segment accounted for 72% of installed PV, the residential segment 17%, and the commercial segment 11%.

As has been noted by industry experts,¹⁹ the operating margins are the lowest for utility-scale solar which makes it most vulnerable to a tariff-driven price hike. Moreover, utility-scale solar is the segment of the market that Suniva and SolarWorld have publicly admitted they have little ability to service due to their relatively small production capacities.²⁰ Suniva and SolarWorld's small production

¹⁸ See GTM Research, *U.S. Solar Market Insight: Full Report Q2 2017*, at 13, 30, 46–49 (**Exhibit 9A**).

¹⁹ See *id.* at 68 (residential), 70 (commercial), and 72 (utility-scale) (**Exhibit 9A**).

²⁰ When asked by Chairman Schmittlein to respond to SEIA's statement that petitioners did not participate in the utility-scale market, Suniva's Matt Card cited "concentration risk" as the reason for not participating in larger utility-scale projects, said that Suniva was "not a qualified player to go after a 200 megawatt project" in terms of capacity, and mentioned just two utility-scale projects that Suniva had worked on — a 7 MW project and a 14 MW project. See Injury Hearing Transcript ("Injury Tr.") at 163–64 (Mr. Card); see also *id.* at 101 (Mr. Card) ("45% of our overall cell

capacities mean they cannot participate for any but the smallest utility-scale projects (i.e., they can't meet the project design parameters of the larger projects). Moreover, their low capacity means even a modestly sized utility-scale project would require them to commit a large portion of their capacity to a single project. This is very risky. At the USITC injury hearing, petitioners acknowledged this “concentration risk” as a reason why they did not serve the utility-scale segment beyond the smaller projects.²¹

In addition, as discussed by Bloomberg New Energy Finance (BNEF), neither Suniva nor SolarWorld is rated a “Tier 1” supplier.²² This makes it essentially impossible for utility-scale buyers to obtain financing for projects utilizing Suniva or SolarWorld modules. (This lack of Tier 1 status also made financing for residential and commercial solar challenging; imagine trying to sell a car that banks would not finance or would only finance at much higher interest rates.) Without the ability to finance a project, it cannot be built.

Suniva's and SolarWorld's lack of participation in the utility-scale segment is important to remember because any safeguard remedy that primarily decreases utility-scale demand is therefore almost guaranteed to hurt the overall U.S. solar industry. Petitioners do not have the capacity or wherewithal to serve the utility-scale segment, which is where most of the deployment and jobs are located.

[]. According to the Staff Report, the largest

manufacturing capacity went into 72-cell modules to serve the growing commercial and even small utility market.”).

²¹ *Id.*

²² Bloomberg New Energy Finance, [

] (**Exhibit 21**).

domestic module producer, [], has a capacity equivalent to [].²³ Since Suniva publicly testified it is too small to supply large utility-scale projects, then the same must be true for []. All other domestic module producers are considerably [] than [] so they also are [] to supply utility-scale projects.

B. IHS Markit/JEDI Model vs. COMPAS

The IHS Markit/JEDI model is far superior to the “one size fits all” COMPAS model that the Commission often uses in remedy analysis. First, the IHS Markit/JEDI demand-side and job models were developed by the two groups within the U.S. Department of Energy (Energy Information Administration and the National Renewable Energy Laboratory). COMPAS was developed by the USITC Office of Economics to offer quantitative analysis when a widely accepted economic model is not available (which is indeed often the case). This is not the situation in this investigation.

Second, the COMPAS model does not capture the demand-side consequences of grid parity. COMPAS is a partial equilibrium model, designed to study the effects of trade policy on a single market in isolation. That is a profoundly incomplete approach in the PV market. The competition between imported and domestic CSPV cannot be viewed in isolation. The single biggest demand factor is the competitiveness of CSPV relative to other sources of electricity generation. A consumer considering buying electricity generation has many options in addition to

²³ CR at Table III-7.

CSPV: natural gas, water, wind power, etc. By contrast, consider a consumer considering buying a home appliance to wash his dishes; he has little choice but to consider buying a dishwasher, regardless of whether a safeguard remedy is imposed on dishwashers. That's not the case for CSPV. The IHS Markit/JEDI model captures this grid parity effect, but COMPAS does not.

Third, COMPAS does not just fail to capture grid parity demand effects, it also cannot properly capture the competition within the PV sector. The petitioners opted to exclude thin-film PV from this case, but that hardly means thin-film PV is not a major factor on how a safeguard remedy will affect the solar market. By construction, COMPAS views CSPV as a completely separate market from the thin-film market. The substitution parameters in COMPAS are capturing the substitution between domestic and foreign CSPV but not between CSPV and thin-film. The fact that leading thin-film producer First Solar is reportedly experiencing a big demand boost as buyers fear the consequences of safeguard remedies on CSPV products and is opening new capacity to meet that demand is stark evidence that thin-film and CSPV are inter-related.²⁴ COMPAS does not capture this.

Fourth, COMPAS does not capture dynamic effects. COMPAS is a static model – and thus it is unable to produce estimates of effects beyond its initial results, e.g., the first year of relief. By contrast, the IHS Markit/JEDI model

²⁴ See “First Solar Posts Strong Q2, Increases Full Year Guidance,” *Forbes Magazine*, <https://www.forbes.com/sites/greatspeculations/2017/07/28/first-solar-posts-strong-q2-increases-full-year-guidance/#64b66d936635> (**Exhibit 35**); “First Solar Apparently Plans To Double Production Capacity To 5.75 GW Per Year,” *Seeking Alpha* (May 5, 2017), https://seekingalpha.com/article/4069761-first-solar-apparently-plans-double-production-capacity-5_75-gw-per-year (**Exhibit 18**).

incorporates time varying state and local regulatory and incentive policies. Thus, IHS Markit/JEDI can accurately describe solar deployment in future years.

Finally, COMPAS does not distinguish between benefits of relief to the companies found by the USITC to have been harmed by the increase in imports as opposed to new entrants. That is, as much as petitioners might claim that COMPAS shows they would gain a certain amount of new revenue and sales as a result of a safeguard remedy, COMPAS does not show that. Rather, COMPAS is an agnostic model as to whether any revenue or sales increase experienced by the domestic industry accrues to existing firms or to new entrants.

C. The Evidence: PV Deployment Drives Jobs

Solar represents one of the great success stories in the U.S. economy over the last decade. The growth in solar deployment and, in turn, solar jobs is astounding. In recent years 1 out of every 50 new U.S. jobs was in the solar industry; the industry created over 50,000 new jobs in 2016 alone.²⁵ According to GTM Research, annual U.S. solar deployment has grown from just under 1 GW in 2010 to approximately 15 GW in 2016.²⁶

As seen in Figure 2, solar jobs are directly related to the level of annual PV deployment. The correlation between solar deployment and the number of solar jobs is 0.97.

²⁵ See The Solar Foundation, *2016 National Solar Jobs Census*, at 8 (Table 2: Solar Energy Sector Employment, 2010–2017 (Projected)) (**Exhibit 24**).

²⁶ See GTM Research, *U.S. Solar Market Insight: Full Report Q2 2017*, at 6 (**Exhibit 9A**).



The great lesson from this figure is “as goes demand for solar installations, so goes solar jobs.” Technological changes have driven down the cost of CSPV and have stimulated demand for solar; this, in turn, has led to increased solar employment. Likewise, changes in government policies toward solar (e.g., changes in renewable portfolio standards, the extension of the investment tax credit, etc.) can affect solar demand and, in turn, influence the number of solar jobs.

In contrast to the high correlation between solar deployment and solar jobs, the correlation between domestic cell production and solar jobs is *negative* (–0.27).²⁸

²⁷ See *id.* at 6; The Solar Foundation, *2016 National Solar Jobs Census* at 8 (**Exhibit 24**).

²⁸ See **Annex F** for the underlying data behind these correlation statistics. It is also worth pointing out that the lack of positive correlation between cell and module production and overall solar

The correlation between domestic module production and solar jobs is better, but still only 0.46. In other words, neither cell nor module production is a good barometer for job creation.

The over-riding issue for the long-term viability of the solar industry is its ability to compete for space on the grid. Given that the solar industry has only recently approached, and in some locations only recently reached, grid parity with other forms of electricity generation, solar industry experts have expressed concern that the proposed tariffs will force many solar companies out of business, which in turn means the laying off of thousands of workers. For example, Bloomberg New Energy Finance states the following:

Tariffs endanger up to 90% of U.S. solar build over the next four years.... This is because most state policy mandates for solar have been met – solar must now compete against other forms of renewables (such as in markets driven by renewable portfolio standards), or all forms of new and incumbent power generation (in non-policy-driven markets).²⁹

It is also important to realize that solar jobs span the spectrum of white- and blue-collar jobs. The Solar Foundation’s *National Solar Jobs Census* documents that solar is a socioeconomically diverse job creator. The rise of solar deployment has created tens of thousands of new jobs, ranging from welders, assemblers, and installers to sales professionals, accountants, and engineers. As seen in the

industry jobs contrasts with assertions made by Mayer Brown in its jobs report. See Julia Pyper, “Suniva and SolarWorld Claim Their Trade Case Will Create More Than 114,800 Jobs,” *Greentech Media* (Aug. 9, 2017), <https://www.greentechmedia.com/articles/read/suniva-solarworld-claim-trade-case-willcreate-more-than-114800-jobs> (**Exhibit 36**). See **Annex E** for a critique of the Mayer Brown report.

²⁹ Bloomberg New Energy Finance, [

] (**Exhibit 21**).

following table, all forms of employment have grown in the solar industry.

According to The Solar Foundation, U.S. manufacturing jobs have increased by 53%, developer jobs by 331%, sales jobs by 174%, and blue-collar installation jobs by 212%.³⁰ Overall, solar jobs have grown by 178% since 2010.

Table 3: Solar Energy Sector Employment, 2010–2016³¹

	2010	2011	2012	2013	2014	2015	2016	% Change 2010-16
Manufacturing	24,916	24,064	29,742	29,851	32,490	30,282	38,121	53%
Project Development	n/a	n/a	7,988	12,169	15,112	22,452	34,400	331%*
Sales & Distribution	11,744	17,722	16,005	19,771	20,185	24,377	32,147	174%
Installation	43,934	52,503	57,177	69,658	97,031	119,931	137,133	212%
Other	12,908	5,948	8,105	11,248	8,989	11,816	18,274	42%
Total	93,502	100,237	119,017	142,697	173,807	208,859	260,077	178%

* Growth since 2012

It is the strong relationship, discussed above, between deployment and jobs that gives rise to the concerns of so many solar industry workers. The historical data make it clear that any trade remedy that reduces solar deployment will likely reduce U.S. employment.

³⁰ For video reports of how solar is creating jobs across the country, see <https://www.youtube.com/watch?v=MBBxEr829PU> (“A West Virginia Solar Story”) and <https://www.youtube.com/watch?v=DMkP36hkHTs> WOAY TV “Solar Energy Growing in WV”).

³¹ The Solar Foundation, *2016 National Solar Jobs Census*, at 8 (Table 2: Solar Energy Sector Employment, 2010–2017 (Projected)) (**Exhibit 24**).

IV. Effects of Suniva’s Proposed Remedy

A. Suniva Remedy Proposal (78 ¢/W minimum price on modules, 40 ¢/W tariff on cells)

1. *National Effects*

The following table reports IHS Markit’s solar deployment forecasts under two scenarios – the current “no safeguard tariff” situation and Suniva’s proposal to impose a minimum module price of \$0.78/W.³² As seen, Suniva’s suggested remedy will devastate solar demand in the United States. In the first year of the remedy, residential demand will fall by 25%, commercial solar demand by 32%, and utility-scale demand by an incredible 53%. Overall, U.S. PV demand will fall by 42% in 2018.³³

Table 4: Solar Deployment (MW), No Safeguard Tariff vs. Suniva’s Proposed Tariff

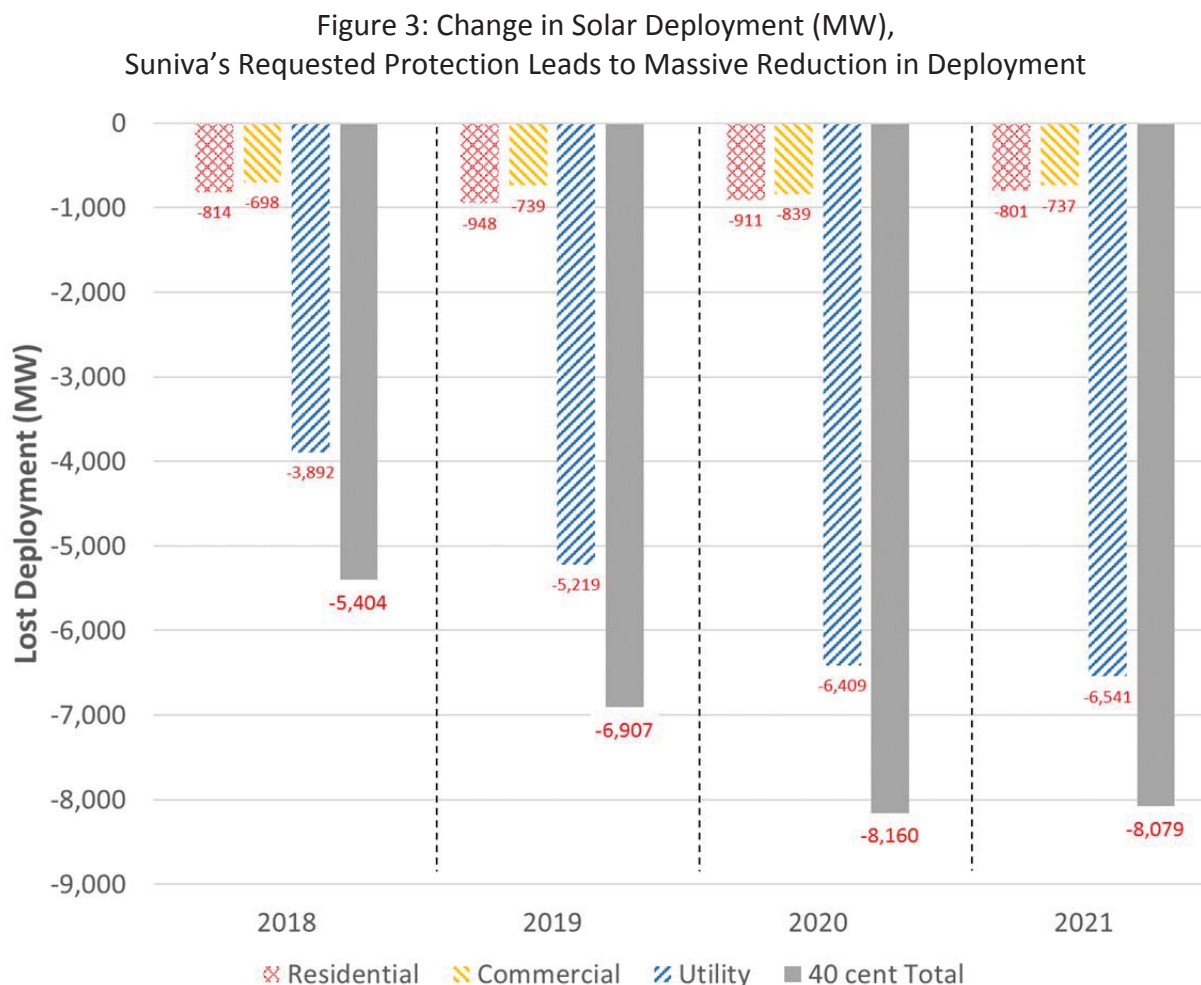
	2018	2019	2020	2021
<i>No Safeguard Tariff</i>				
Residential	3,264	3,915	3,423	2,701
Commercial	2,176	2,477	2,544	2,201
Utility	7,393	9,885	11,797	12,322
Total	12,833	16,277	17,764	17,224
<i>Suniva Tariff</i>				
Residential	2,450	2,967	2,512	1,901
Commercial	1,478	1,738	1,705	1,463
Utility	3,501	4,666	5,388	5,781
Total	7,429	9,370	9,604	9,145

³² This also roughly equates to the impact of a \$0.40/watt cell tariff (for cells whether or not assembled into modules). Suniva’s remedy discussion also refers to their proposed policy as a “40 cent per watt tariff”.

³³ Full results are included in **Annex A**.

	<i>Percentage Change in Deployment</i>			
Residential	-24.9%	-24.2%	-26.6%	-29.6%
Commercial	-32.1%	-29.8%	-33.0%	-33.5%
Utility	-52.6%	-52.8%	-54.3%	-53.1%
Total	-42.1%	-42.4%	-45.9%	-46.9%

Figure 3 depicts the decrease in solar deployment under the Suniva remedy proposal. In the first year residential demand will fall by 814 MW, commercial PV demand will fall by 698 MW, and utility-scale demand will fall by 5,404 MW. For perspective on how large these demand changes are, it is worth recalling that the entire U.S. PV market in 2010 amounted to just 850 MW; even in 2013 the entire U.S. PV market was less the 4,800 MW. Hence, there is little doubt that Suniva’s proposed remedy would result in massive reduction in solar deployment.



As seen in Table 4 and Figure 3, the demand destruction is not limited to 2018. In fact, the situation gets significantly worse as the remedy period continues. Suniva's proposal lowers total PV demand by 5.4 GW in 2018, by 6.9 GW in 2019, by 8.2 GW in 2020, and by 8.1 GW in 2021. Over the 2018-2021 period, Suniva's remedy would decrease U.S. PV deployment by 28.6 GW.³⁴ For perspective, this

³⁴ The timing of this prospective remedy is unfortunate in that it coincides with the beginning of the phase-out of the 30% federal solar investment tax credit in 2020, a factor that is captured in IHS Markit's demand model.

reduction is greater than the cumulative amount of all solar PV installed in the United States through the end of 2015.

Given the magnitude of the demand destruction, it follows that the JEDI model forecasts massive job losses for U.S. workers. The JEDI model works by feeding in deployment forecasts by state and market segment along with the detailed cost forecasts by state and market segment to derive labor intensity values and overall labor requirement estimates. (The IHS Markit analysis provided the required inputs for the JEDI model runs.) JEDI was developed by the National Renewable Energy Laboratory (a Department of Energy Lab) based on widely used IMPLAN economic multipliers. The model was specifically built to allow policymakers to understand the employment and economic impacts of solar energy development. It is capable of estimating both downstream and upstream employment impacts.³⁵

The job numbers are given in Table 5. There are several important takeaways. First, losses to solar employment are shockingly large (see Figure 4). Compared to the baseline forecast, over 62,800 workers would lose their jobs in the first year, 74,792 in the second year and 83,655 in the third year. For perspective, solar job losses would be as large as the total number of employees in a wide variety of mid-sized U.S. industries. For instance, fewer U.S. workers are employed by U.S.

³⁵ A more detailed explanation of the JEDI jobs model is included in **Annex B**.

appliance manufacturers than would be laid-off by the solar industry under Suniva’s proposal. The same is true for the forestry industry.³⁶

Table 5: Job Impact of Suniva’s Proposed Safeguard Remedy

	2018	2019	2020	2021
<i>Total Solar Jobs</i>				
No Tariff	226,027	263,017	263,316	246,842
Suniva’s Tariff Proposal	163,221	188,226	179,661	165,104
<i>Solar Manufacturing Jobs</i>				
No Tariff	36,363	38,964	39,547	38,828
Suniva’s Tariff Proposal	34,757	37,981	38,020	37,556

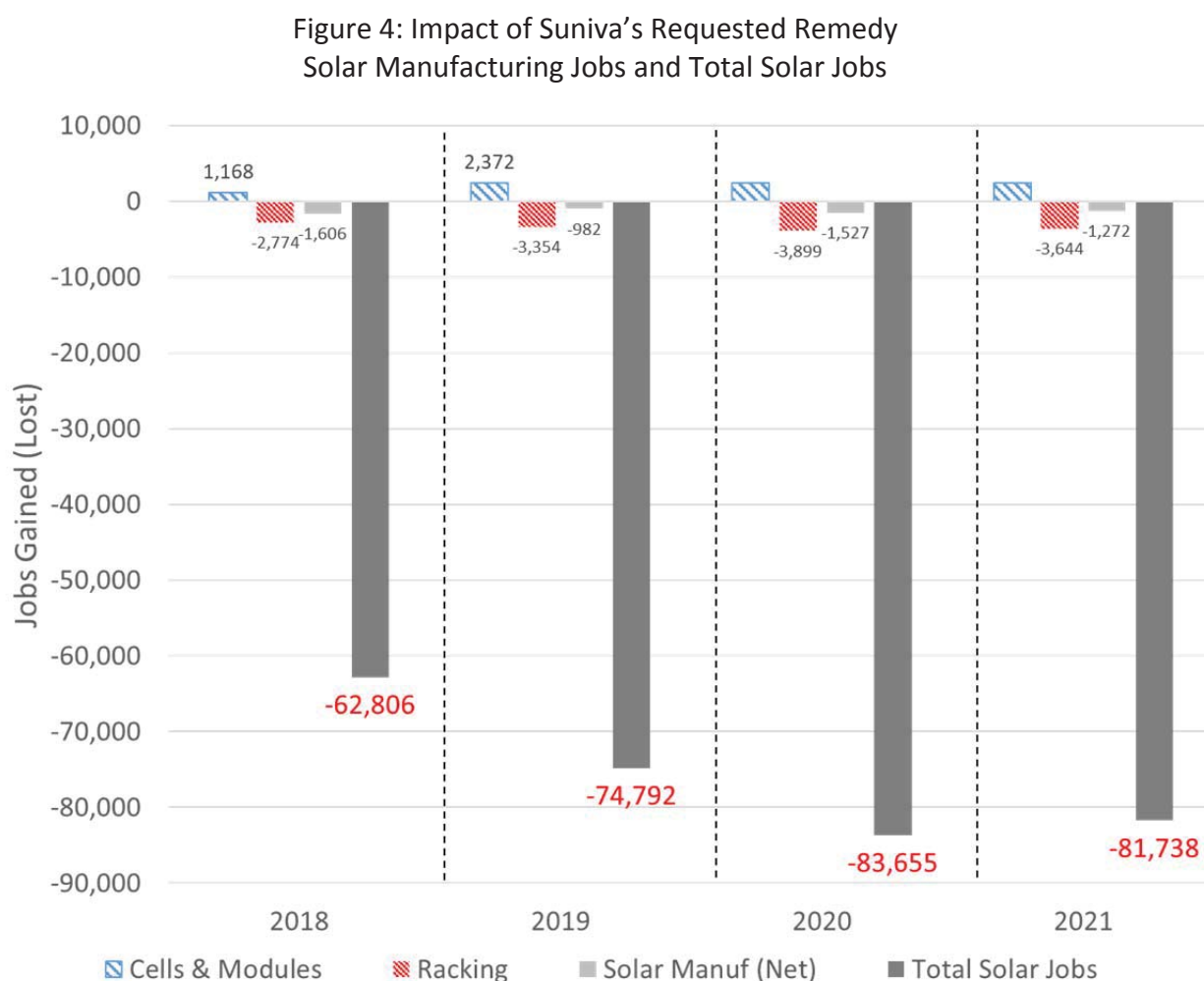
Second, petitioners partly justify their safeguard request as a way to save solar manufacturing jobs.³⁷ This is a false narrative. Suniva’s proposed remedy will actually reduce the total number of solar manufacturing jobs. The cell and module segment of the solar industry is among the least labor intensive of the entire solar supply chain. Moreover, technological changes are making cell and module production increasingly automated. As discussed in SEIA’s Prehearing Injury Brief on page 9, only a few thousand U.S. workers are employed by cell and module producers.³⁸ Yet, as documented in Table 3, manufacturing comprises the second largest share of solar jobs (trailing only installation) with over 38,000 solar jobs in 2016. It must be the case, therefore, that far more manufacturing jobs are located in other links of the solar PV supply chain. Solar energy systems involve

³⁶ USITC Commissioners are very familiar with these two industries as they are currently involved in trade investigations before the USITC. See Bureau of Labor Statistics, Employment by major industry sector, “Industry employment and output projections to 2024,” *Monthly Labor Review* (Dec. 2015).

³⁷ See Injury Tr. at 88 (Stein); 102–05 (Card); 115–16 (Shea); 117–18 (McCarty).

³⁸ See also SEIA’s Posthearing Injury Brief, App. A at 7–8; CR at III-38 to III-39.

not only of cells and modules but of hundreds of components such as ingots, wafers, glass, mounting systems (both fixed and tracking, also, carport-mounted solar structures), inverters, power optimizers, controllers, junction boxes, combiner boxes, wiring, and even the equipment used to manufacture solar components. Given that jobs in those parts of the solar supply chain depend on deployment, the destruction of CSPV demand resulting from Suniva's proposed remedy will result in the loss of manufacturing jobs. As seen in Figure 4, solar manufacturing jobs are lost due to safeguard protection in every year.



Third, the failure for Suniva’s proposed relief to generate any job growth makes the standard economic “x jobs gained for y jobs lost” calculation inapplicable in this investigation. Consider 2018 as an example. Suniva’s remedy will result in (i) a solar manufacturing job loss of 1,606 workers and (ii) total solar job losses of 62,806 workers. It is worth noting that for the purpose of this calculation, the JEDI model was forced to run using the overly optimistic claims made in the Mayer Brown report that suggested U.S. CSPV cell capacity would expand to 3 GW/year, U.S. CSPV module capacity would expand to 2.6 GW/year, and that cell and module facilities would run at 100% utilization.³⁹ That is, even assuming the most wildly optimistic outcome for U.S. cell and module production under Suniva’s proposed remedy, the U.S. would still lose solar manufacturing jobs because of the negative impact on other parts of the hardware value chain.

The JEDI model also produces an estimate of “induced” impacts created by the solar economy. Induced impacts are jobs at local retail stores, grocery stores, gas stations, banks, child care centers, and other facilities benefitting from the household spending (of wages) of individuals directly and indirectly supported by the solar projects. Induced jobs are related to the number of direct jobs, which in turn depends on solar deployment. As seen in the following table, Suniva’s remedy has even wider adverse consequences than suggested by the preceding job numbers. In addition to the 62,000 to 83,000 direct solar industry jobs lost, the JEDI model

³⁹ Mayer Brown, “Impact of the Section 201 Remedy on Employment in the U.S. Solar Industry” (Aug. 8, 2017), available at http://www.ourenergypolicy.org/wp-content/uploads/2017/08/REPORT_Final-Economic-Analysis-of-Section-201-Remedy.pdf. See **Annex E** for a detailed critique of the Mayer Brown report.

estimates 15,000 to over 20,000 “indirect” or “induced” jobs lost. I note that JEDI’s estimates are modest as compared to those in many labor market studies (where induced job multipliers are often on order to 2 to 3). Nevertheless, even under JEDI’s conservative estimate the number of induced jobs lost far exceeds the number of solar manufacturing job created.

Table 6: Induced Job Impact of Suniva’s Proposed Safeguard Remedy

	2018	2019	2020	2021
Number of Induced Jobs				
No Remedy	49,556	58,594	58,156	53,677
Suniva’s Proposed Remedy	33,659	40,166	37,740	33,798
Induced Jobs Lost	-15,897	-18,428	-20,416	-19,879
Pct Change Induced Jobs	-32%	-31%	-35%	-37%

The analysis reveals there is no basis for petitioners to claim “x jobs gained” as a result of their proposed remedy. Thus, while economists often talk about “winners and losers” when trade protection is imposed, under Suniva’s remedy there are only losers.

2. State-Level Effects

The national deployment and jobs numbers reported in the prior section are the aggregate of the individual state effects. It is instructive to look at the job losses in some of the states suffering the greatest job losses. A complete list of all states included in Annex C. As seen in Table 7 and Figure 5, large job losses are found throughout the United States: thousands of workers lose jobs in Southeastern states like Florida, Georgia, Virginia, and North Carolina, Midwestern states like

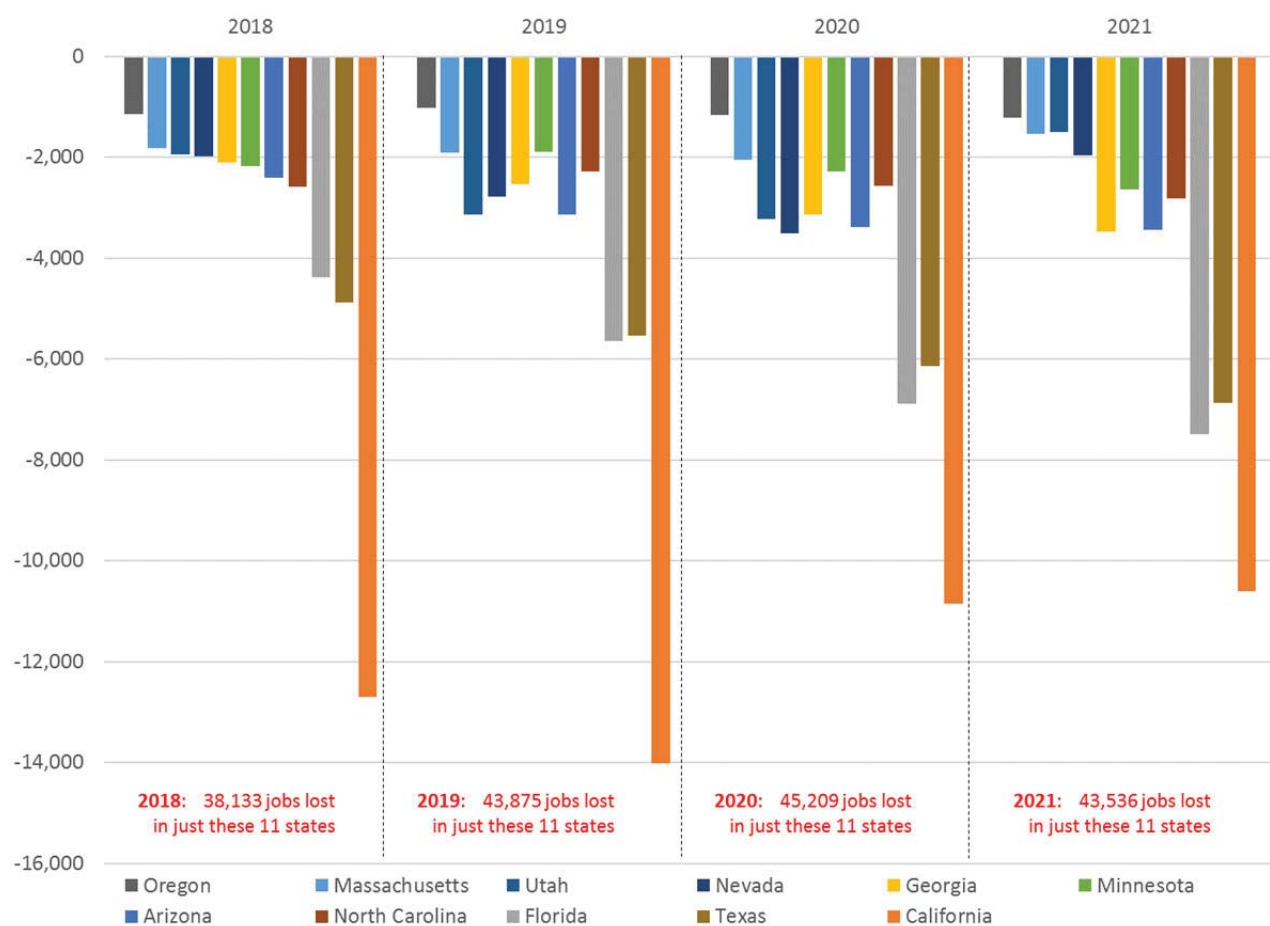
Michigan, and Minnesota, Atlantic Coast states like Maryland, Massachusetts, New Jersey, and New York, and Western states like Arizona, California, Nevada, Oregon, and Utah.

It is worth noting that the states that are the home of the two petitioners in this case, Georgia and Oregon, both lose more than a thousand jobs each year under Suniva's proposed remedy. The large and widespread job losses help to explain why so many state legislators, regulators, governors and members of Congress appeared before and sent letters to the USITC to ask that tariffs not be imposed.

Table 7: Solar Job Losses, Selected States (Suniva's Proposed Remedy)

	2018	2019	2020	2021
Arizona	-2,412	-3,128	-3,391	-3,438
California	-12,698	-14,016	-10,854	-10,612
Florida	-4,387	-5,647	-6,879	-7,499
Georgia	-2,102	-2,533	-3,142	-3,469
Idaho	-1,140	-1,189	-1,287	-1,375
Maryland	-1,970	-2,058	-2,382	-1,537
Massachusetts	-1,825	-1,916	-2,060	-1,528
Michigan	-1,008	-906	-1,103	-1,400
Minnesota	-2,174	-1,888	-2,277	-2,637
N. Carolina	-2,582	-2,275	-2,562	-2,812
Nevada	-1,981	-2,780	-3,516	-1,959
New Jersey	-1,706	-1,815	-1,904	-1,327
New York	-3,053	-3,543	-3,842	-3,702
Oregon	-1,151	-1,015	-1,165	-1,219
S. Carolina	-1,487	-2,067	-2,486	-1,946
Texas	-4,885	-5,540	-6,140	-6,866
Utah	-1,936	-3,137	-3,223	-1,498
Virginia	-1,859	-2,239	-2,726	-3,050

Figure 5: Solar Job Losses Employment, selected states (Suniva’s proposed remedy)



B. Declining Tariff Levels

The above analysis clearly shows that Suniva’s proposed remedy would be a terrible policy for all parts of the U.S. solar industry – manufacturing employment would fall along with overall employment.

Suniva’s petition did specify a somewhat less onerous trade remedy than simply the 40 cent per watt tariff on cells and 78 cents minimum price every year. In the table below I report the extent to which Suniva “progressively liberalized” its remedy. As seen, both the per unit tariff on cells and the minimum price on

modules decrease over time. That being said, even in year 4, Suniva's proposed remedy for cells and modules exceeds 50% ad valorem.

Table 8: Suniva's Declining Safeguard Remedy Schedule

	Cells (specific tariff)	Module (min price)
Year 1 (2018)	40 cents per watt	78 cents per watt
Year 2 (2019)	37 cents per watt	72 cents per watt
Year 3 (2020)	34 cents per watt	69 cents per watt
Year 4 (2021)	33 cents per watt	68 cents per watt

The IHS Markit/JEDI model allows one to analyze different trade remedies in each year. As discussed above, the IHS Markit model incorporates changing policy parameters into its demand system. The deployment results from the declining remedy model are given in the next table. As seen, while the demand decrease is not quite as dramatic as in the baseline scenario, it is still a bloodbath for solar deployment. In 2018 (year 1) deployment falls by 42%; in 2019, 38%; in 2020, 34%; and in 2021 deployment falls by 34.6%.

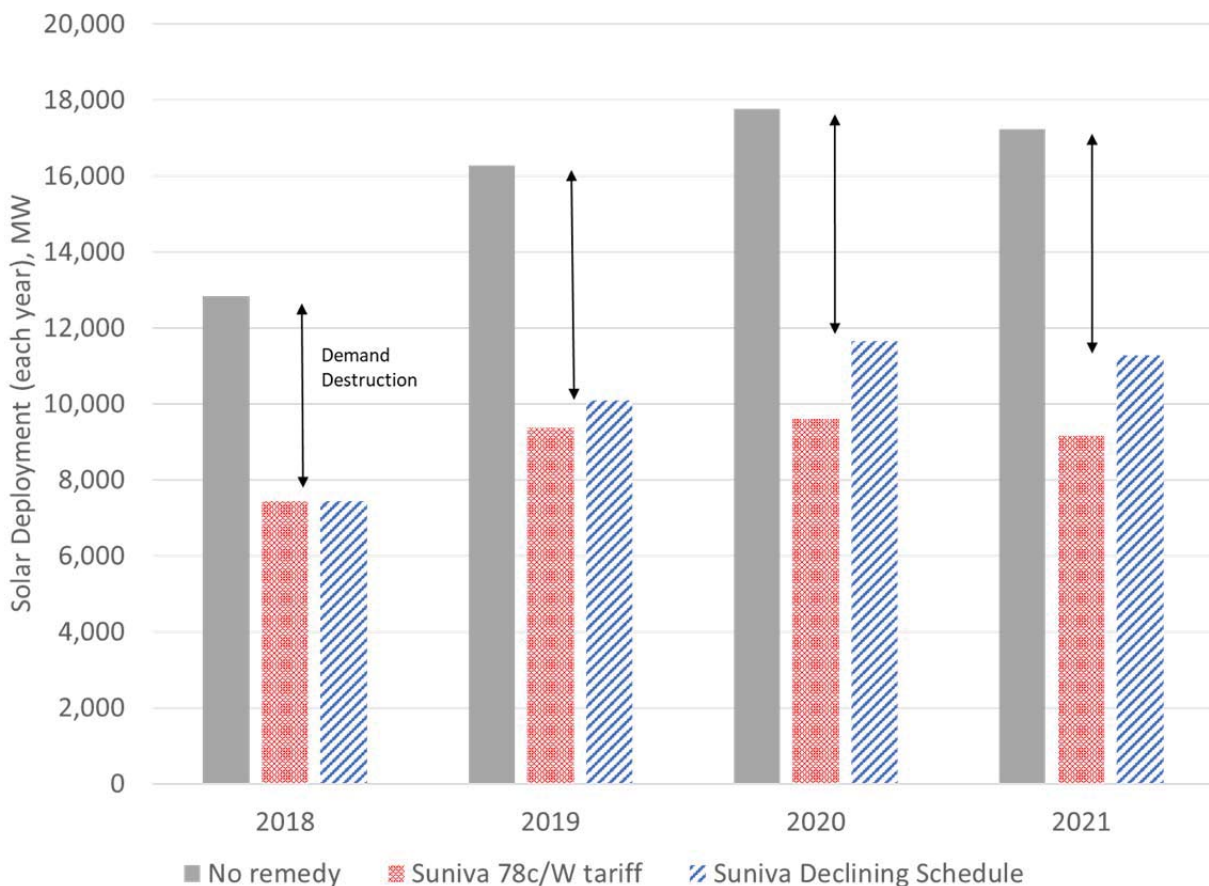
Table 9: Solar Deployment Under Suniva's Declining Remedy (MW)

	2018	2019	2020	2021	Cumulative
No Tariff	12,833	16,277	17,764	17,224	64,098
Suniva Declining Schedule	7,429	10,082	11,648	11,263	40,422
Deployment Loss	-5,404	-6,195	-6,116	-5,961	-23,676
% Loss	-42.1%	-38.1%	-34.4%	-34.6%	-36.9%

The next figure depicts the large fall in deployment no matter how the Commission chooses to interpret Suniva's proposal. Whether a constant or

declining remedy, Suniva’s proposed remedy would devastate solar demand in the United States.

Figure 6: Solar Deployment (MW) Under Suniva’s Proposal Remedies



As discussed above, as goes deployment, so goes solar jobs. In the following table, I report the employment effects of Suniva’s declining tariff trade remedy. As was found in the earlier analysis, Suniva’s remedy is a job killer. It would result in the loss of manufacturing jobs in every year. It would result in the loss of related solar jobs in every year. All considered, Suniva’s proposal would result in about 60,000 Americans losing their jobs each and every year of the safeguard remedy.

Table 10: Solar Jobs Under Suniva's Declining Remedy

Manufacturing				
	2018	2019	2020	2021
No Tariff	36,363	38,964	39,547	38,828
Suniva Declining Tariff Schedule	34,757	38,500	38,997	38,511
Jobs Lost	-1,606	-464	-551	-317

Downstream Jobs				
	2018	2019	2020	2021
No Tariff	189,664	224,054	223,769	208,014
Suniva Declining Tariff Schedule	128,464	161,914	162,151	149,598
Jobs Lost	-61,200	-62,140	-61,618	-58,416

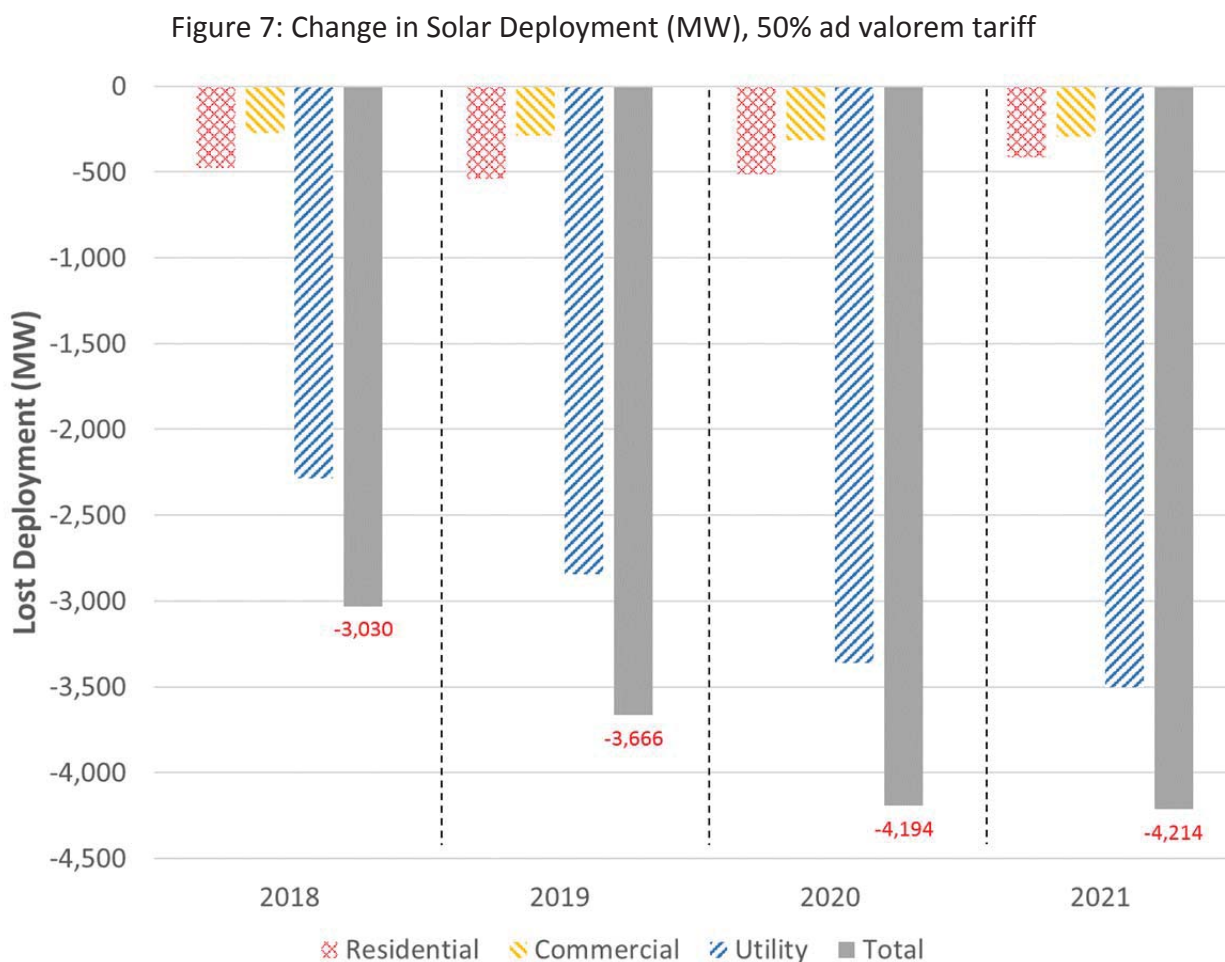
Total Solar Jobs (Downstream + Manufacturing)				
	2018	2019	2020	2021
No Tariff	226,027	263,017	263,316	246,842
Suniva Declining Tariff Schedule	163,221	200,414	201,148	188,109
Jobs Lost	-62,806	-62,603	-62,168	-58,733

V. Analysis of the Deployment and Job Effects of Maximum Legal Tariff

The U.S. safeguard statute restricts protection to no more than 50% ad valorem. Suniva's proposal to impose a minimum module price of \$0.78/W and a \$0.40/W tariff on cells is approximately equivalent to a 100% ad valorem tariff on modules and a 200% ad valorem tariff on cells; it is therefore impermissible under the statute. I now analyze the deployment and job effects of tariffs that do not violate U.S. law. In this section, I consider a very large tariff: 50% ad valorem on cells and modules.

1. National Effects

The deployment results are shown in Figure 7. As seen, the patterns are similar to what was discussed above, albeit the magnitudes are smaller. Solar deployment falls by 3,030 MW in 2018. This is equivalent to a 24% decrease in demand. The demand destruction continues throughout the period: 3,666 MW destroyed in 2019, 4,194 MW in 2020, and 4,214 MW in 2021. Over the whole period, a 50% ad valorem tariff will destroy over 15 GW of solar deployment.



The job losses associated with the estimated solar deployment under the 50% ad valorem tariff are reported in Figure 8. The picture is bleak. In 2018, 33,658

solar jobs will be lost. Moreover, the results imply that, in the initial year of the remedy, a 50% tariff will reduce net solar manufacturing jobs.

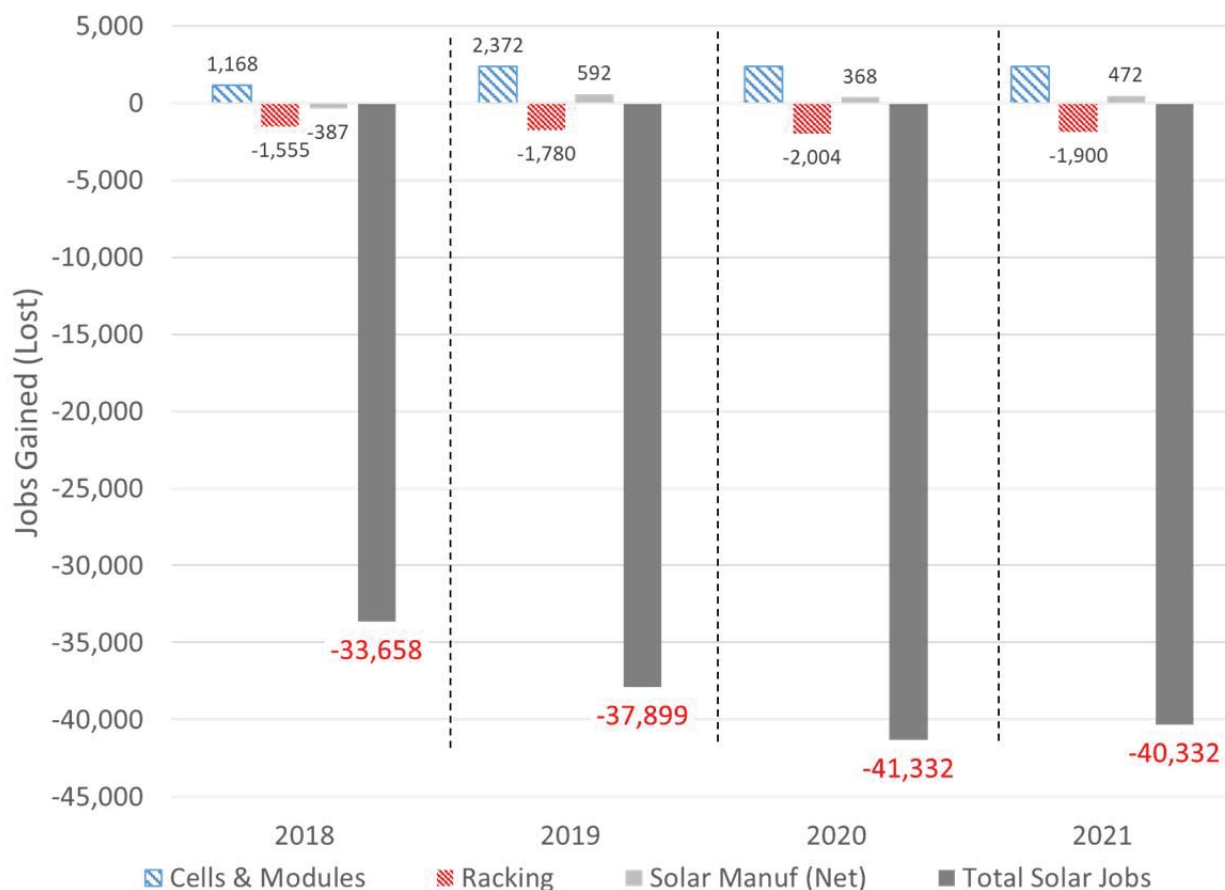
I assume the safeguard remedy would result in some new U.S. cell and module capacity⁴⁰ and that this new capacity would become operational in 2019.⁴¹ As a result of the new cell and module capacity that comes onboard in 2019, 591 (net) solar manufacturing jobs will be created. However, these come at the expense of an overall loss of 37,899 solar jobs. These numbers imply a “job lost” to “jobs created” ratio of 64 to 1.

Finally, petitioners claim high tariffs are beneficial for solar manufacturing, but this is hardly the case. Tariffs on cells and modules reduce employment at almost all solar manufacturing facilities. The reason is that most U.S. solar manufacturing jobs are tied to deployment, not cell and module production (e.g., it is likely that the racking industry alone employs more workers than do petitioners).

⁴⁰ I assume the capacity expansion as laid out in the Mayer Brown study occurs. *See* discussion in **Annex B** of this report.

⁴¹ This is an ambitious time frame. It is more likely any new capacity would come online in late 2019. My analysis presumes the capacity comes online at the beginning of 2019. For perspective, it has taken Tesla more than two years to bring its new Buffalo facility online.

Figure 8: Change in Employment (Solar Manufacturing and Total Solar), 50% ad valorem tariff



As discussed above, the JEDI model produces an estimate of “induced” jobs driven by the solar economy. We see a large negative induced job effect stemming from the 50% tariff trade remedy. In the case of a 50% ad valorem tariff, the JEDI model estimates 8,300 to almost 9,800 “indirect” or “induced” jobs lost. For perspective, the number of induced jobs lost is many times larger than the number of solar manufacturing created by the 50% tariff remedy.

Table 11: Induced Job Impact of 50% ad valorem tariff

	2018	2019	2020	2021
Number of Induced Jobs				
No Remedy	49,556	58,594	58,156	53,677
50% ad valorem	41,168	49,534	48,363	44,143
Induced Jobs Lost	-8,388	-9,060	-9,793	-9,534
Pct Change Induced	-17%	-15%	-17%	-18%

2. State-Level Effects

As discussed above, the national deployment and jobs numbers reported in the prior section are the aggregate of the individual state effects. As with Suniva proposed remedy, the job and deployment effects at the state level are consistently negative: 50 of the 51 states (plus Washington, DC) lose jobs if a 50% tariff were imposed. Ironically, the one state that experiences job growth – Mississippi – does so because the JEDI model estimates an increase in employment due to an expansion of a thin-film facility, not CSPV. In fact, downstream solar jobs (related to deployment) decrease in Mississippi.

It is instructive to look at the job losses in some of the states suffering the greatest job losses. (A complete list of all states is included in Annex C.) As seen in Table 12, large job losses are once again found throughout the United States: hundreds to thousands of workers lose jobs in Southeastern states like Florida, Georgia, Virginia, South Carolina and North Carolina, Midwestern states like Minnesota, Atlantic Coast states like Maryland, Massachusetts, New Jersey, and New York, and Western states like Arizona, California, Nevada, Oregon, and Utah.

Once again I note that the states that are the home of the two petitioners in this case, Georgia and Oregon, are among the states with the largest number of job losses.

Table 12: Solar Job Losses, Selected States (50% ad valorem tariff)

	2018	2019	2020	2021
California	-5,525	-5,814	-4,030	-3,757
Texas	-2,408	-2,071	-2,497	-2,779
Florida	-2,342	-2,896	-3,057	-3,848
Arizona	-1,733	-2,048	-2,206	-2,284
New York	-1,618	-1,787	-1,893	-1,826
Nevada	-1,419	-2,000	-2,256	-1,259
North Carolina	-1,273	-1,095	-1,222	-1,358
Utah	-1,172	-1,937	-2,005	-909
Virginia	-1,138	-1,192	-1,419	-1,592
Maryland	-1,109	-1,096	-1,264	-789
Minnesota	-1,068	-934	-1,140	-1,370
Georgia	-1,023	-1,206	-1,473	-1,669
Massachusetts	-974	-983	-1,052	-765
New Jersey	-969	-976	-1,016	-694
South Carolina	-796	-1,084	-1,242	-943
Oregon	-757	-644	-739	-765
Total (16 states)	-25,325	-27,762	-28,509	-26,606

VI. Concluding Comments

The findings of this study indicate that a trade remedy such as a tariff is not what will serve to remedy the domestic cell and module industry's problems. My review of the financial data the U.S. industry submitted to the USITC during the course of this investigation shows that the industry will not become profitable if either Suniva's proposed remedy or a 50% ad valorem tariff remedy were imposed.

In addition, using a widely accepted deployment model developed by two groups within the U.S. Department of Energy (Energy Information Administration and National Renewable Energy Laboratory), IHS Markit finds that either proposed remedy will cause a massive decrease in solar deployment. The modeling approach used by IHS Markit is very similar to deployment models used by Bloomberg New Energy Finance and GTM Research. This model was designed specifically to study the solar industry, has a level of detail that drills down to not simply the state level but to the sub-state level. When seeking an accurate understanding of the solar market, the U.S. D.OE. deployment model is far superior to the rudimentary COMPAS model.

The jobs consequences of the massive drop in deployment are calamitous. Using the JEDI jobs model developed NREL I find that the trade remedies will lead to the loss of tens of thousands of U.S. solar jobs. Even more striking, in a number of the scenarios I studied I found no net gain in solar manufacturing jobs.

The bottom-line conclusion from the IHS Markit/JEDI modeling is that there is little to no prospect of job creation at any level of the solar production chain as a result of trade restrictions. Upstream inputs, related manufacturers (such as racking systems, trackers, inverters, power optimizers, and controllers), and solar installers will all experience job losses. CSPV trade relief is a job-killing policy.

Remarkably, Suniva's proposal results in job losses in every state in the country. More than a dozen states will lose at least one thousand jobs in each year

of the remedy. Included in that set of “big losers” are Oregon and Georgia, the home states of the two petitioners.

All this said, I am not arguing that no firm in the PV industry is made better off by a trade remedy on CSPV. There is clearly one firm in the PV industry that will benefit from the proposed safeguard protection: First Solar. First Solar is a thin-film PV producer. Even though thin-film PV is a close substitute to CSPV, neither imports nor domestic sales of that product are subject of this safeguard investigation. First Solar is one of the largest PV producers in the world.⁴² First Solar is likely the most profitable PV firm in the world. Ironically, even though it has some thin-film capacity in the U.S., the majority of First Solar’s capacity is in Malaysia. Thus, the trade remedy on CSPV will enrich First Solar executives and stockholders, but it will not lead to appreciably more U.S. jobs.

⁴² Bloomberg New Energy Finance, [

] (Exhibit 21).

Annexes

Annex A

IHS Markit Estimated Deployment Effects

A. *IHS Markit Estimated Deployment Effects*

Table 13: National Annual PV Deployment (MWdc)

Scenario	2018	2019	2020	2021
Baseline	12,833	16,277	17,764	17,224
50% ad valorem tariff	9,803	12,611	13,570	13,010
Suniva's Proposed Remedy	7,429	9,370	9,604	9,145

Table 14: National Annual PV Deployment (MWdc), by segment

	2018	2019	2020	2021
No Tariff				
Residential	3,264	3,915	3,423	2,701
Commercial	2,176	2,477	2,544	2,201
Utility-Scale	7,393	9,885	11,797	12,322
Total	12,833	16,277	17,764	17,224
50 % ad valorem				
Residential	2,788	3,377	2,907	2,287
Commercial	1,905	2,191	2,229	1,907
Utility-Scale	5,109	7,043	8,435	8,817
Total	9,803	12,611	13,570	13,010
Suniva's Proposed Remedy				
Residential	2,450	2,967	2,512	1,901
Commercial	1,478	1,738	1,705	1,463
Utility-Scale	3,501	4,666	5,388	5,781
Total	7,429	9,370	9,604	9,145

State-Level Deployment (MWdc) All Market Segments

State/Scenario	2018	2019	2020	2021
Alabama				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Alaska				
No Tariff	[]	[]	[]	[]

NON-CONFIDENTIAL VERSION

50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Arizona				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Arkansas				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
California				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Colorado				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Connecticut				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Delaware				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
District of Columbia				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Florida				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Georgia				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Hawaii				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Idaho				

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No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Illinois				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Indiana				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Iowa				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Kansas				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Kentucky				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Louisiana				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Maine				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Maryland				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Massachusetts				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Michigan				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]

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Minnesota				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Mississippi				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Missouri				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Montana				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Nebraska				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Nevada				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
New Hampshire				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
New Jersey				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
New Mexico				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
New York				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
North Carolina				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]

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Suniva's Proposed Remedy	[]	[]	[]	[]
North Dakota				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Ohio				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Oklahoma				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Oregon				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Pennsylvania				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Rhode Island				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
South Carolina				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
South Dakota				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Tennessee				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Texas				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Utah				
No Tariff	[]	[]	[]	[]

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50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Vermont				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Virginia				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Washington				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
West Virginia				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Wisconsin				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]
Wyoming				
No Tariff	[]	[]	[]	[]
50% Ad Valorem	[]	[]	[]	[]
Suniva's Proposed Remedy	[]	[]	[]	[]

Annex B

SEIA Methodology on Computing Job Impact

B. SEIA Methodology on Computing Job Impact

IHS Markit demand forecasts were fed into the publicly available Jobs and Economic Development Impact (JEDI) model for PV⁴³. JEDI is an input-output economic model derived from the widely used Minnesota IMPLAN Group⁴⁴. The National Renewable Energy Laboratory (NREL), a U.S. Department of Energy Research Laboratory, developed and maintains the JEDI model to allow for the easy analysis of the economic impacts of energy project development, including both downstream (construction, operations, maintenance, etc.) and upstream (module, inverter and racking manufacturing) employment impacts.

The Excel-based version of the PV JEDI model takes inputs for deployment by state and market segment, on a year-by-year basis. The inputs for cost by component were obtained from IHS Markit except for data on the percent of domestic manufacturing (“local” procurement in JEDI terms). For inverters, domestic supply was held constant across scenarios at 1 GW/year. For racking, domestic supply was set conservatively at 75% of demand. Domestic racking manufacturers are very competitive in the U.S. market and report that the vast majority of their domestically-produced products are consumed domestically.

In an effort to give petitioners every benefit of the doubt about the job outcomes for domestic manufacturing, we assume the domestic module

⁴³ NREL, “About JEDI Models,” https://www.nrel.gov/analysis/jedi/about_jedi.html.

⁴⁴ IMPLAN, <http://implan.com>.

manufacturing values laid out in the Mayer Brown Report from August 8, 2017.⁴⁵

That is, the baseline scenario assumes domestic cell and module production declines in 2017 and then increases in 2018 when the Tesla/Panasonic factory in Buffalo comes online. Further, we assume (as claimed by Mayer Brown) the Suniva remedy will increase domestic module capacity to 3 GW/year in 2019.

Table 15: Domestic Module Manufacturing Assumptions (MWdc)

Scenario	2018	2019	2020	2021
Baseline	2,500	2,500	2,500	2,500
Suniva's Proposed Remedy	2,500	3,000	3,000	3,000

JEDI's outputs include details for the following job categories:

- **During construction and installation period**
 - *Project Development and Onsite Labor Impacts*
 - Construction and Installation Labor
 - Construction and Installation Related Services
 - *Module and Supply Chain Impacts*
 - Manufacturing Impacts
 - Trade (Wholesale and Retail)
 - Finance, Insurance, and Real Estate
 - Professional Services
 - Other Services
 - Other Sectors
 - *Induced Impacts*
- **During operating years (Operations & Maintenance)**
 - *Onsite Labor Impacts*
 - PV Project Labor Only
 - *Local Revenue and Supply Chain Impacts*
 - *Induced Impacts*

⁴⁵ Mayer Brown, "Impact of the Section 201 Remedy on Employment in the U.S. Solar Industry."

The JEDI model was run and results⁴⁶ were processed to account for the nature of operations & maintenance jobs persisting over time and being a function of the cumulative installed PV fleet.

Results were also adjusted to reconcile JEDI outputs (which are given as full-time equivalent, FTE) with results from The Solar Foundation's (TSF) *National Solar Jobs Census*⁴⁷ (the definitive source for historical solar industry employment estimates, as cited by both petitioners and SEIA). TSF reports *solar workers* rather than FTEs, where a solar worker is defined as someone who spends more than 50 percent of their time on solar-related business (TSF reports that 90 percent of solar workers spend 100 percent of their time on solar business). Further adjustment was made to account for the fact that TSF's job estimates are end-of-year values whereas the JEDI model estimates annual averages. During a period of time when deployments (and hence jobs) are experiencing large changes from quarter-to-quarter, the JEDI job count does not correspond to year-end jobs.

Because JEDI only estimates employment impacts for manufacturing related directly to the equipment purchased for deployment, JEDI does not account for domestic manufacturing of solar goods made for export. A substantial portion of U.S. solar manufacturing is done for export (approximately 30,000 more jobs than is explained by domestic demand). This includes manufacturing of polysilicon, manufacturing equipment, chemical feed-stocks, etc. Additionally, some

⁴⁶ Given the number of JEDI runs necessary (50 states + DC * 3 market segments * 4 years per scenario = 612 runs per scenario). A visual basic for applications (VBA) script was used to run accept inputs and compile outputs of the JEDI model.

⁴⁷ The Solar Foundation, *2016 National Solar Jobs Census* (**Exhibit 24**).

manufacturing represented in TSF's numbers is for non-PV manufacturing of products such as solar water heaters and ancillary products like energy storage systems. To reconcile the JEDI manufacturing outputs with TSF manufacturing values, a base level of employment adjustment was made.

Table 16: Jobs, by Type

Solar Cell & Module Manufacturing Jobs				
Scenario	2018	2019	2020	2021
Baseline	2,214	3,496	3,496	3,496
50% ad valorem tariff	3,382	5,868	5,868	5,868
Suniva's Proposed Remedy	3,382	5,868	5,868	5,868

Solar Racking Jobs				
Scenario	2018	2019	2020	2021
Baseline	6,587	7,905	8,489	7,769
50% ad valorem tariff	5,032	6,125	6,485	5,869
Suniva's Proposed Remedy	3,813	4,551	4,590	4,125

Solar Manufacturing Jobs (i.e., , cells, modules, racking, inverters, etc.)				
Scenario	2018	2019	2020	2021
Baseline	36,363	38,964	39,547	38,828
50% ad valorem tariff	35,976	39,555	39,915	39,299
Suniva's Proposed Remedy	34,757	37,981	38,020	37,556

Solar Non-Manufacturing Jobs (i.e., project development, sales & distribution, installation)				
Scenario	2018	2019	2020	2021
Baseline	189,664	224,054	223,769	208,014
50% ad valorem tariff	156,394	185,564	182,069	167,210
Suniva's Proposed Remedy	128,464	150,244	141,641	127,548

Total Solar Jobs (Direct)				
Scenario	2018	2019	2020	2021
Baseline	226,027	263,017	263,316	246,842
50% ad valorem tariff	192,369	225,119	221,984	206,510
Suniva's Proposed Remedy	163,221	188,226	179,661	165,104

Table 17: Job Losses

Solar Cell & Module Manufacturing Jobs				
Scenario	2018	2019	2020	2021
50% ad valorem tariff	1,168	2,372	2,372	2,372
Suniva's Proposed Remedy	1,168	2,372	2,372	2,372
Solar Racking Jobs				
Scenario	2018	2019	2020	2021
50% ad valorem tariff	-1,555	-1,780	-2,004	-1,900
Suniva's Proposed Remedy	-2,774	-3,354	-3,899	-3,644
Solar Manufacturing Jobs (i.e., , cells, modules, racking, inverters, etc.)				
Scenario	2018	2019	2020	2021
50% ad valorem tariff	-387	591	368	471
Suniva's Proposed Remedy	-1,606	-983	-1,527	-1,272
Solar Non-Manufacturing Jobs (i.e., project development, sales & distribution, installation)				
Scenario	2018	2019	2020	2021
50% ad valorem tariff	-33,270	-38,490	-41,700	-40,804
Suniva's Proposed Remedy	-61,200	-73,810	-82,128	-80,466
Total Solar Jobs (Direct)				
Scenario	2018	2019	2020	2021
50% ad valorem tariff	-33,658	-37,898	-41,332	-40,332
Suniva's Proposed Remedy	-62,806	-74,791	-83,655	-81,738

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Table 18: Jobs, By Segment

	2018	2019	2020	2021
No Tariff				
Residential	84,805	96,935	82,777	64,269
Commercial	34,498	37,593	37,589	33,590
Utility	70,362	89,526	103,403	110,155
Total	189,664	224,054	223,769	208,014
50% ad valorem				
Residential	77,382	89,102	75,452	58,639
Commercial	32,695	35,785	35,620	31,710
Utility	58,547	76,096	88,185	94,235
Total	168,624	200,983	199,257	184,584
Suniva's Remedy				
Residential	65,022	74,877	62,129	46,672
Commercial	24,573	27,492	26,418	23,528
Utility	38,869	47,876	53,094	57,348
Total	128,464	150,244	141,641	127,548

Table 19: Jobs Losses, by Segment

	2018	2019	2020	2021
50% ad valorem				
Residential	-7,423	-7,833	-7,325	-5,630
Commercial	-1,803	-1,808	-1,969	-1,880
Utility	-11,815	-13,430	-15,218	-15,920
Total	-21,040	-23,071	-24,512	-23,430
Suniva's Remedy				
Residential	-12,360	-14,225	-13,323	-11,967
Commercial	-8,122	-8,293	-9,202	-8,182
Utility	-19,678	-28,220	-35,091	-36,887
Total	-40,160	-50,739	-57,616	-57,036

Annex C

State Level Job Impact

C. *State Level Job Impact*

Table 20: Solar Job Losses, By State (Suniva's Proposed Remedy)

	2018	2019	2020	2021
Alabama	-659	-884	-1,038	-1,248
Alaska	-1	-1	-2	-2
Arizona	-2,412	-3,128	-3,391	-3,438
Arkansas	-728	-691	-736	-782
California	-12,698	-14,016	-10,854	-10,612
Colorado	-952	-953	-1,131	-1,140
Connecticut	-815	-919	-1,036	-840
Delaware	-215	-252	-309	-274
Wash DC	-87	-82	-95	-67
Florida	-4,387	-5,647	-6,879	-7,499
Georgia	-2,102	-2,533	-3,142	-3,469
Hawaii	-295	-286	-306	-332
Idaho	-1,140	-1,189	-1,287	-1,375
Illinois	-648	-822	-984	-1,072
Indiana	-508	-1,213	-1,734	-2,134
Iowa	-430	-579	-809	-878
Kansas	-337	-585	-868	-905
Kentucky	-166	-458	-821	-868
Louisiana	-385	-608	-894	-1,163
Maine	-386	-256	-280	-303
Maryland	-1,970	-2,058	-2,382	-1,537
Massachusetts	-1,825	-1,916	-2,060	-1,528
Michigan	-1,008	-906	-1,103	-1,400
Minnesota	-2,174	-1,888	-2,277	-2,637
Mississippi	-301	-357	-558	-556
Missouri	-262	-540	-1,116	-1,132
Montana	-337	-198	-207	-148
Nebraska	-49	-333	-428	-469
Nevada	-1,981	-2,780	-3,516	-1,959
New Hampshire	-200	-355	-396	-445
New Jersey	-1,706	-1,815	-1,904	-1,327
New Mexico	-770	-1,109	-1,545	-1,117
New York	-3,053	-3,543	-3,842	-3,702
N. Carolina	-2,582	-2,275	-2,562	-2,812
North Dakota	-2	-2	-2	-2
Ohio	-526	-829	-1,224	-1,783

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Oklahoma	-434	-723	-1,227	-1,201
Oregon	-1,151	-1,015	-1,165	-1,219
Pennsylvania	-590	-705	-782	-936
Rhode Island	-251	-242	-332	-421
S. Carolina	-1,487	-2,067	-2,486	-1,946
South Dakota	-4	-4	-4	-4
Tennessee	-724	-893	-1,021	-1,058
Texas	-4,885	-5,540	-6,140	-6,866
Utah	-1,936	-3,137	-3,223	-1,498
Vermont	-141	-257	-349	-208
Virginia	-1,859	-2,239	-2,726	-3,050
Washington	-923	-1,169	-1,260	-944
West Virginia	-132	-205	-287	-482
Wisconsin	-186	-468	-754	-765
Wyoming	-6	-122	-182	-189

Table 21: Solar Job Losses, By State (50% ad valorem tariff)

	2018	2019	2020	2021
Alabama	-345	-426	-494	-605
Alaska	-1	-1	-1	-1
Arizona	-1,733	-2,048	-2,206	-2,284
Arkansas	-377	-326	-345	-361
California	-5,525	-5,814	-4,030	-3,757
Colorado	-622	-575	-676	-692
Connecticut	-466	-510	-567	-461
Delaware	-121	-135	-165	-141
District of Columbia	-36	-39	-44	-31
Florida	-2,342	-2,896	-3,057	-3,848
Georgia	-1,023	-1,206	-1,473	-1,669
Hawaii	-108	-104	-113	-122
Idaho	-748	-770	-818	-882
Illinois	-413	-457	-506	-568
Indiana	-269	-664	-875	-1,084
Iowa	-284	-288	-423	-464
Kansas	-185	-302	-442	-468
Kentucky	-85	-224	-401	-428
Louisiana	-218	-314	-455	-589
Maine	-257	-158	-168	-182
Maryland	-1,109	-1,096	-1,264	-789
Massachusetts	-974	-983	-1,052	-765
Michigan	-605	-292	-323	-500
Minnesota	-1,068	-934	-1,140	-1,370
Mississippi	47	97	77	34
Missouri	-125	-283	-586	-598
Montana	-167	-95	-99	-75
Nebraska	-20	-165	-208	-231
Nevada	-1,419	-2,000	-2,256	-1,259
New Hampshire	-109	-199	-230	-284
New Jersey	-969	-976	-1,016	-694
New Mexico	-498	-673	-936	-666
New York	-1,618	-1,787	-1,893	-1,826
North Carolina	-1,273	-1,095	-1,222	-1,358
North Dakota	-1	-1	-1	-1
Ohio	-277	-452	-663	-990
Oklahoma	-233	-356	-521	-555

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Oregon	-757	-644	-739	-765
Pennsylvania	-340	-387	-399	-457
Rhode Island	-167	-148	-200	-247
South Carolina	-796	-1,084	-1,242	-943
South Dakota	-2	-2	-2	-2
Tennessee	-387	-459	-493	-519
Texas	-2,408	-2,071	-2,497	-2,779
Utah	-1,172	-1,937	-2,005	-909
Vermont	-77	-164	-225	-131
Virginia	-1,138	-1,192	-1,419	-1,592
Washington	-654	-797	-847	-619
West Virginia	-75	-111	-145	-254
Wisconsin	-102	-278	-406	-425
Wyoming	-4	-81	-120	-125

Annex D

Analysis of Financial Impact of Tariff Remedy on Domestic Cell and Module Industry (BPI)

D. Analysis of Financial Impact of Tariff Remedy on Domestic Cell and Module Industry (BPI)

**Trade Remedy: 50% ad valorem tariff on cells and modules
(definition of domestic industry: All Cell & Module Producers)**

Realistic “Optimistic Case”

Fall in demand for domestic producers is half of what happens to overall market demand (i.e., domestic producers do far better than foreign producers in retaining demand)

IHS Markit Estimate of Overall Demand Decrease: 23.6%

Demand Decrease for Domestic Firms: 11.8%

	Industry Definition: All Cell and Module Producers		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: 50% ad valorem tariff on cells and modules
(definition of domestic industry: Petitioners Only)**

Realistic “Optimistic Case”

Fall in demand for domestic producers is half of what happens to overall market demand (i.e., domestic producers do far better than foreign producers in retaining demand)

IHS Markit Estimate of Overall Demand Decrease: 23.6%

Demand Decrease for Domestic Firms: 11.8%

	Industry Definition: Petitioners Only		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: 50% ad valorem tariff on cells and modules
(definition of domestic industry: All Cell & Module Producers)**

Unrealistic “Best Case for Domestic Industry”

No change in demand for domestic producers (i.e., all demand destruction accrues only to foreign producers despite the fact that domestic producers also raise their prices in response to the tariff)

IHS Markit Estimate of Overall Demand Decrease: 23.6%

Demand Decrease for Domestic Firms: 0%

	Industry Definition: All Cell and Module Producers		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: 50% ad valorem tariff on cells and modules
(definition of domestic industry: Petitioners Only)**

Unrealistic “Best Case for Domestic Industry”

No change in demand for domestic producers (i.e., all demand destruction accrues only to foreign producers despite the fact that domestic producers also raise their prices in response to the tariff)

IHS Markit Estimate of Overall Demand Decrease: 23.6%

Demand Decrease for Domestic Firms: 0%

	Industry Definition: Petitioners Only		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

Trade Remedy: Suniva Remedy Proposal
(40 cents per watt on tariffs and modules)
(definition of domestic industry: All Cell & Module Producers)

Realistic “Optimistic Case”

Fall in demand for domestic producers is half of what happens to overall market demand (i.e., domestic producers do far better than foreign producers in retaining demand)

IHS Markit Estimate of Overall Demand Decrease: 42.1%
Demand Decrease for Domestic Firms: 21.05%

	Industry Definition: All Cell and Module Producers		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: Suniva Remedy Proposal
(40 cents per watt on tariffs and modules)
(definition of domestic industry: Petitioners Only)**

Realistic “Optimistic Case”

Fall in demand for domestic producers is half of what happens to overall market demand (i.e., domestic producers do far better than foreign producers in retaining demand)

IHS Markit Estimate of Overall Demand Decrease: 42.1%

Demand Decrease for Domestic Firms: 21.05%

	Industry Definition: Petitioners Only		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: Suniva Remedy Proposal
(40 cents per watt on tariffs and modules)
(definition of domestic industry: All Cell & Module Producers)**

Unrealistic “Best Case for Domestic Industry”

No change in demand for domestic producers (i.e., all demand destruction accrues only to foreign producers despite the fact that domestic producers also raise their prices in response to the tariff)

IHS Markit Estimate of Overall Demand Decrease: 42.1%

Demand Decrease for Domestic Firms: 0%

	Industry Definition: All Cell and Module Producers		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

**Trade Remedy: Suniva Remedy Proposal
(40 cents per watt on tariffs and modules)
(definition of domestic industry: Petitioners Only)**

Unrealistic “Best Case for Domestic Industry”

No change in demand for domestic producers (i.e., all demand destruction accrues only to foreign producers despite the fact that domestic producers also raise their prices in response to the tariff)

IHS Markit Estimate of Overall Demand Decrease: 42.1%
Demand Decrease for Domestic Firms: 0%

	Industry Definition: Petitioners Only		
	Cells	Modules	Total
Total net sales quantities	[]	[]	[]
Total net sales values	[]	[]	[]
Total COGS	[]	[]	[]
Gross profit or (loss)	[]	[]	[]
Total SG&A expenses	[]	[]	[]
Operating income or (loss)	[]	[]	[]
All other income or expenses, net	[]	[]	[]
Net income or (loss) before income taxes	[]	[]	[]
Depreciation/amortization included above	[]	[]	[]
Net Cash Flow	[]	[]	[]
Operating Income or loss, percent	[]	[]	[]
Net Income or loss, percent	[]	[]	[]

Annex E

Commentary on Mayer Brown's Job Creation Study

E. Commentary on Mayer Brown's Job Creation Study

Mayer Brown released a report indicating that remedy would increase U.S. solar jobs.⁴⁸ It is clear, however, that this report is profoundly flawed, if not outright misleading. There are several ways this is apparent, as discussed below.

Suniva's and SolarWorld's own questionnaire responses shed light on the farcical nature of Mayer Brown's projected job creation numbers of 37,000 to 45,000 jobs. In light of the demonstrated strong relationship between deployment and solar jobs (as shown in Figure 2), it is surprising that a proposed remedy that would massively reduce deployment (Figure 3) could create so many new jobs. It is worthwhile, therefore, to review Mayer Brown's methodology. First, Mayer Brown suggests that safeguard protection will increase production capacity by 2 GW. There is no "ground up" modeling that underpins that estimate. It is just Mayer Brown's arbitrary prediction.

How many manufacturing jobs might this capacity expansion bring about? Tesla announced that its 1 GW facility will create 500 cell and module manufacturing jobs.⁴⁹ Applying Tesla's labor to GW ratio to Mayer Brown's capacity prediction suggests that petitioner's remedy might create 1,000 new

⁴⁸ Pyper, "Suniva and SolarWorld Claim Their Trade Case Will Create More Than 114,800 Jobs" (**Exhibit 36**).

⁴⁹ Tesla, "Tesla and Panasonic Will Begin Manufacturing Solar Cells and Modules in Buffalo, NY" (Dec. 27, 2016), <https://www.tesla.com/blog/tesla-and-panasonic-will-begin-manufacturing-solar-cells-modules-in-buffalo-ny> (**Exhibit 39**).

cell/module manufacturing jobs.⁵⁰ Mayer Brown's study estimates that the remedy will create close to 40,000 new jobs, implying a jobs multiple of 40 to 1.

As visually demonstrated in Figure 2, the fact is that the vast majority of solar manufacturing jobs are created when solar deployment increases, which in turn increases labor demand. Therefore, a key factor for future solar job growth, including solar manufacturing job growth, is the impact of any safeguard protection on demand and solar deployment. Mayer Brown bases its deployment growth projections on a study done by GTM Research.⁵¹ A review of the GTM study indicates GTM predicts a 50% decrease in solar deployment due to the imposition of requested duties, from 12.6 GW in 2017 to 6.3 GW in 2018.⁵² Moreover, Mayer Brown does not acknowledge the existence of a baseline (the "no trade remedy" scenario) forecast for 2018-2022 in the GTM Research study. That baseline is the appropriate point of reference for evaluating the impact of safeguard protection.

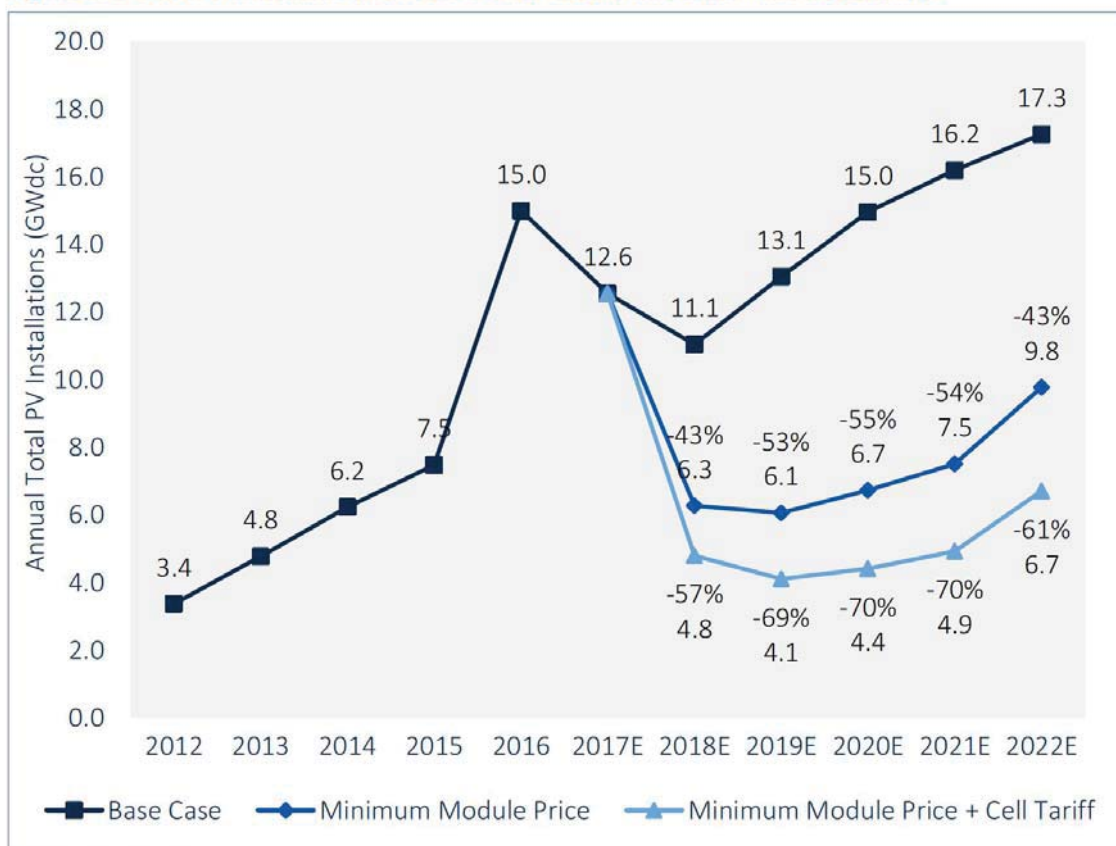
⁵⁰ Amy Grace, Head of North America Research, Bloomberg New Energy Finance (BNEF), "U.S. Solar PV and Power Markets" at 24 (**Exhibit 40**).

⁵¹ Cory Honeyman, "Suniva and SolarWorld Trade Dispute Could Halt Two-Thirds of US Solar Installations Through 2022," *Greentech Media* (June 26, 2017), <https://www.greentechmedia.com/articles/read/suniva-dispute-could-halt-two-thirds-of-us-solar-installations> (**Exhibit 41**).

⁵² *Id.*

Figure 9: GTM's Estimate of Impact of Safeguard Protection on Solar Installations⁵³

Figure 1.2 U.S. PV Installation Forecast: Base Case Outlook vs. Tariff Scenarios



Source: GTM Research


Many domestic solar manufacturing jobs are closely tied to domestic demand. Domestic mounting systems (or racking) manufacturers make the hardware that holds solar systems together. These companies would suffer under reduced demand because the vast majority of their products are sold for domestic consumption. Given that there are six times more solar non-manufacturing jobs than

⁵³ *Id.*

manufacturing jobs, one would expect such a collapse in solar demand to result in massive job losses.⁵⁴

How is it, then, that Mayer Brown could estimate 40,000 or more jobs being created when it is basing its jobs analysis on a study that predicts a 50% decrease in deployment? Mayer Brown’s “trick” is to base domestic jobs on the average number of jobs across the period, 2010-2015, not on the current number of jobs. For perspective, below is The Solar Foundation’s estimate of the total solar jobs in each year:

Table 22: Solar Foundation Solar Job Estimates⁵⁵

2010	2011	2012	2013	2014	2015	2016
93,502	100,237	119,017	142,697	173,807	208,859	260,077
 <p>Mayer Brown bases its “starting” point for analyzing job growth using the average for the 2010-2015 period, which is 139,687 jobs.</p>						

The following table summarizes the job numbers. Mayer Brown’s study is based on the assumption that there are currently 139,687 solar jobs. By contrast, The Solar Foundation estimates there are 260,077 solar jobs. The difference is

⁵⁴ SEIA estimates that there would be 88,000 jobs lost in 2018. *See* SEIA, “Solar Industry Expects Loss of 88,000 Jobs in U.S. Next Year if Government Rules in Company’s Favor in Trade Case” (June 15, 2017), <http://www.seia.org/news/solar-industry-expects-loss-88000-jobs-us-next-year-if-government-rules-company-s-favor-trade> (**Exhibit 42**).

⁵⁵ The Solar Foundation, *2016 National Solar Jobs Census*, at 8 (Table 2: Solar Energy Sector Employment, 2010–2017 (Projected)) (**Exhibit 24**).

120,391 solar jobs. These are jobs that the Mayer Brown study simply assumes away. When one combines the lost jobs with Mayer Brown's estimate of jobs that would be created by a safeguard remedy, one finds that Mayer Brown's study actually predicts 80,391 fewer jobs. The bottom line is that, by ignoring the actual current job count, Mayer Brown is able to mislabel what would be a massive job loss as a job gain.

What is remarkable is that the actual number of jobs lost in Mayer Brown's analysis is not terribly far from what the analysis presented in this report predicts for 2020 – namely, about 80,000 jobs lost.

Table 23: What the Job Estimates Really Mean

(A)	Mayer Brown Study Estimate of Solar Jobs	139,687
(B)	Actual Jobs (2016) – The Solar Foundation	260,077
(C) = B-A	Jobs Missing in Mayer Brown Study (lost jobs)	120,391
(D)	Approximate Number of “New” Jobs Predicted by Mayer Brown Study	40,000
(E) = C-D	Implied “true” job losses from Mayer Brown Study	80,391

Annex F

Correlation of Jobs, Cell Production, Module Production, and
Deployment (BPI)

F. Correlation of Jobs, Cell Production, Module Production, and Deployment (BPI)

Total net sales quantity	2012	2013	2014	2015	2016
Cells*	[]	[]	[]	[]	[]
Modules**	581,762	464,771	472,355	527,683	623,846
	2012	2013	2014	2015	2016
The Solar Foundation - Solar Jobs	119,017	142,697	173,807	208,859	260,077

* Confidential Staff Report, Cells -- Table E-2

** Confidential Staff Report, Modules -- Table E-3

Correlation: cells with jobs = -27%

Correlation: modules with jobs = +46%

	2010	2011	2012	2013	2014	2015	2016
GTM Research, PV Installed (GW)	[]	[]	[]	[]	[]	[]	[]
The Solar Foundation - Solar Jobs	93,502	100,237	119,017	142,697	173,807	208,859	260,077

Correlation (2010-2016): PV deployment with jobs = +97%

Correlation (2012-2016): PV deployment with jobs = +95%

Annex G

Thomas J. Prusa's CV

Curriculum Vitae

Thomas J. Prusa

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Home Address

77 Michelle Lane
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Degrees

Ph.D., Economics, Stanford University, 1988
M.S., Economics, Stanford University, 1985
B.A., Economics, Georgetown University, 1983

Experience

- Department of Economics Chair, 2014-15, 2016-
- Undergraduate Advisor, Department of Economics, 2006-08, 2011-12
- Director of Undergraduate Studies, Department of Economics, 2003-06
- Professor, Rutgers – The State University of New Jersey, 2001-present
- Visiting Professor of Economics and Public Policy, Princeton University, 1998-99, 2001-02
- Consultant for Food and Drug Administration, 2014
- Consultant for World Bank, 2002, 2004, 2009
- Consultant for Inter-American Development Bank, 2006, 2008
- Research Associate, National Bureau of Economic Research, 1998-present
- Associate Professor, Rutgers-The State University of New Jersey, 1995-2001
- Associate Professor, State University of New York at Stony Brook, 1994-1995
- Faculty Research Fellow, National Bureau of Economic Research, 1993-1998
- Assistant Professor, State University of New York at Stony Brook, 1988-1994

Honors and Awards

- The Warren I. Susman Award for Excellence in Teaching, Rutgers University, April 2016
- Faculty Recognition by Rutgers University Academic Athletics Oversight Committee, November 2015.
- Rutgers University Faculty of Arts & Sciences Award for Distinguished Contributions to Undergraduate Education at the Professor Level, 2001
- Economic Inquiry, Award for Best Article (1996 articles), 1997
- Review of International Economics, Award for Outstanding International Economics Article (1993 articles), 1994
- Award for Contributions to Undergraduate Education, S.U.N.Y. at Stony Brook, 1993
- Mentor of the Year, Office of Special Programs, S.U.N.Y. at Stony Brook, 1991-1992
- Recent Recipients of Ph.D. Fellowship, American Council of Learned Societies, 1989
- Lynde and Harry Bradley Research Fellowship, Center for Economic Policy Research, Stanford University, 1987-1988
- Distinguished Teaching Award, Stanford University, 1986-1987

Consulting Experience

ANTIDUMPING/COUNTERVAILING DUTY INVESTIGATIONS

- Certain Cold-Rolled Steel Products from Argentina, Brazil, China, Indonesia, Japan, Russia, Slovakia, South Africa, Taiwan Thailand, Turkey, and Venezuela; Investigation Nos. 701-TA-393-396 and 731-TA-829-840 (Decision: March & May 2000, Publication No. 3297 & 3320).
- Tin- and Chromium-Coated Steel Sheet from Japan; Investigation No. 731-TA-860, (Decision: August 2000, Publication No. 3337)
- Certain Cold-Rolled Steel Products from Argentina, Australia, Belgium, Brazil, China, France, Germany, India, Japan, Korea, The Netherlands, New Zealand, Russia, South Africa, Spain, Sweden, Taiwan, Thailand, Turkey, and Venezuela; Investigation Nos. 701-TA-422-425 and 731-TA-964-983 (Decision: September & November 2002, Publications 3536 & 3551).
- Live Swine from Canada, Investigation No. 731-TA-1076 (Preliminary and Final; Decision: May 2004, April 2005; Publication 3766).
- Circular Welded Carbon-Quality Steel Pipe from China, Investigation Nos. 701-TA-447 and 731-TA-1116, (Decision: June 2008, Publication 4019).
- Oil Country Tubular Goods from China, Investigation Nos. 701-TA-463 and 731-TA-1159, (Preliminary and Final; Decision: June 2009, December 2009, Publication 4081).
- Large Residential Washers from Korea and Mexico, Investigation Nos. 701-TA-488 and 731-TA-1199-1200 (targeted dumping issues), 2012.

- Grain-oriented electrical steel from China, Czech Republic, Germany, Japan, Korea, Poland, and Russia, Investigation Nos. 701-TA-505 and 731-1231-1237 (Decision: August 2014, Publication 4500).
- Emulsion Styrene-Butadiene Rubber from Brazil, Korea, Mexico, and Poland, Investigation Nos. 731-TA-1334-1337.

GLOBAL SAFEGUARD (SECTION 201) INVESTIGATIONS

- Lamb Meat, Investigation No. TA-201-68 (Review, November 2000)
- Steel, Investigation No. TA-201-73, (Decision: October & December 2001, Publication 3479).

GENERAL FACT-FINDING (SECTION 332) INVESTIGATIONS

- Aluminum: Competitive Conditions Affecting the U.S. Industry, Investigation No. 332-557 (October 2016).

CHINA SAFEGUARD (SECTION 421) INVESTIGATIONS

- Circular Welded Non-Alloy Steel Pipe, Investigation No. TA-421-06 (Decision: August 2005, Publication 3807).
- Certain Passenger Vehicle and Light Truck Tires from China, Investigation No. TA-421-07 (Decision: July 2009, Publication 4085).

SUNSET REVIEWS

- Certain Carbon Steel Products from Australia, Belgium, Brazil, Canada, Finland, France, Germany, Japan, Korea, Mexico, The Netherlands, Poland, Romania, Spain, Sweden, Taiwan, and The United Kingdom (Sunset Review); Investigations Nos. AA1921-197, 701-TA-231, 319-320, 322, 325-328, 340, 342, and 348-350, 731-TA-573-576, 578, 582-587, 604, 607-608, 612, and 614-618; (Decision: November 2000, Publication 3364).
- Tin- and Chromium-Coated Steel Sheet from Japan (Sunset Review); Investigation No. 731-TA-860, (Decision: June 2006, Publication 3860).
- Certain Carbon Steel Products From Australia, Belgium, Brazil, Canada, Finland, France, Germany, Japan, Korea, Mexico, Poland, Romania, Spain, Sweden, Taiwan, and The United Kingdom (Sunset Review); Investigations Nos. AA1921-197 (Second Review); 701-TA-319, 320, 325-327, 348, and 350 (Second Review); and 731-TA-573, 574, 576, 578, 582-587, 612, and 614-618 (Second Review); (Decision: January 2007, Publication 3899).
- Hot-rolled, Flat-rolled Carbon-Quality Steel Products from Brazil, Japan, and Russia, Investigations Nos. 701-TA-384 and 731-TA-806-808 (Second Review); (Decision: June 2011, Publication 4237).
- Certain Orange Juice from Brazil, Investigation No. 731-TA-1089 (Review); (Decision: March 2012, Publication 4311).
- Silicomanganese from Brazil, China, and Ukraine, Investigations No. 731-TA-671-673 (Third Review); (Decision: October 2012, Publication 4354).

- Cut-To-Length Carbon Steel Plate from China, Russia, and Ukraine, Investigations No. 731-TA-753-754, and 731-TA-756 (Third Review); (Decision: November 2015).

WTO DISPUTE SETTLEMENT

- U.S. – Washing Machines (Korea), DS464, 2015.
- Thailand – Sugar Subsidies (Brazil), DS507, 2016.

ECONOMIC ADVISOR

- U.S. Virgin Islands Government, 2011-2014.

ECONOMIC ANALYSIS FOR FDA INVESTIGATION

- Orange Juice from Brazil, 2012.

ECONOMIC IMPACT AND TRADE POLICY ANALYSIS

- Japan Automobile Manufacturers Association, 2012-2015.

COMMERCIAL LITIGATION

- Electrolux v. AK Steel, 2003.
- Bing Steel v. AK Steel, 2003.
- Silgan Containers, LLC challenge of Arcelor S.A.'s purchase of Mittal Steel, 2006.
- Savory Pie Guy, LLC v. Comtec Industries, Ltd., 2016.

Grants

- Rutgers University SAS Entrepreneurial Program (SASEP) grant, 2012.
- The Japan Foundation Center for Global Partnership, with Reiko Aoki, 7/1992-8/1993
- Rutgers University, Research Council Grants, 1995-2000, 2002-2008, 2011
- East-West Center Visiting Fellowship, Summer 2003

Courses Taught

Undergraduate Level

- Introduction to Microeconomics
- Personal Finance and Financial Decision-Making
- Intermediate Microeconomics (calculus-based)
- International Economics (trade and finance)
- Advanced International Trade
- U.S. International Trade Policies
- Game Theory

Graduate Level

- International Trade

Articles

1. Prusa, Thomas J., "An incentive compatible approach to the transfer pricing problem." *Journal of International Economics* 28(1/2) 1990: 155-172.
 - Reprinted in *The Economics of Transfer Pricing*, edited by Lorraine Eden (Edward Elgar, 2017).
2. Prusa, Thomas J., "An economic history and analysis of Section 337." *Technology, Trade, and World Competition: Protecting Intellectual Property with Trade Sanctions*, (JEIDA, Washington, D.C., 1990).
3. Prusa, Thomas J. and James A. Schmitz, Jr., "Are new firms an important source of innovation?" *Economic Letters* 35(3) 1991: 339-342.
 - Reprinted in *Entrepreneurship and Economic Growth*, edited by Martin Carree and A. Roy Thurik (Edward Elgar, 2006).
4. Prusa, Thomas J., "The selection of antidumping cases for ITC determination." in Robert E. Baldwin (ed.), *Empirical Studies of Commercial Policy*. Chicago: University of Chicago Press, 1991: 47-74.
5. Prusa, Thomas J., "Why are so many antidumping petitions withdrawn?" *Journal of International Economics* 33(1/2) 1992: 1-20. (Lead article)
 - Reprinted in *Economics Alert*, 1(2), 1993.
 - Reprinted in *The WTO and Anti-Dumping*, edited by Douglas R. Nelson and Hylke Vandenbussche (Edward Elgar, 2005).
6. Donnenfeld, Shabtai and Thomas J. Prusa, "Commercial policy towards multinational corporations under imperfect information." *Review of International Economics* 1(2) 1993: 164-179. (Winner of Award for Outstanding International Economics Article)
7. Hansen, Wendy L. and Thomas J. Prusa, "Does administrative protection protect? A reexamination of the U.S. Title VII and escape clause statutes." *Regulation* 16(1) 1993: 35-43.
 - Reprinted in *La Puerta: A doorway into the academy*. Edited by Carin Bigrigg, Mary Friedman, Karen McKinney, Wanda Martin, Kate Warne, Rick Waters, and William Waters. (Dubuque, Iowa: Kendall/Hunt Publishing Company, 1997).
8. Aoki, Reiko and Thomas J. Prusa, "International standards for intellectual property protection and R&D incentives." *Journal of International Economics* 35(3/4) 1993: 251-273.
9. Prusa, Thomas J., "Pricing behavior in the presence of antidumping law." *Journal of Economic Integration* 9(2) 1994: 260-289.
10. Prusa, Thomas J. and James A. Schmitz, Jr., "Can companies maintain their initial innovative thrust?: A study of the PC software industry." *Review of Economics and Statistics* 76(3) 1994: 523-540.
11. Hansen, Wendy L. and Thomas J. Prusa, "The road most taken: The rise of Title VII protection." *The World Economy* 18(2) 1995: 295-313.
 - Reprinted in *The WTO, Safeguards, And Temporary Protection From Imports*, edited by Chad P. Bown (Edward Elgar, 2006).

12. Donnenfeld, Shabtai and Thomas J. Prusa, "Monitoring and coordination in MNCs: Implications for transfer pricing and intra-firm trade." *Journal of Economic Integration* 10(2) 1995: 230-255.
13. Prusa, Thomas J., "An overview of the impact of U.S. unfair trade laws." in Rafael Fernandez De Castro, William B.P. Robson, and S. Dahlia Stein (eds.), *Trading Punches: Trade Disputes and Their Resolution Under NAFTA*. Washington, D.C.: National Planning Association, 1996: 183-205.
14. Hansen, Wendy L. and Thomas J. Prusa, "Cumulation and ITC decision-making: The sum of the parts is greater than the whole." *Economic Inquiry* 34(4) 1996: 746-769. (Winner of Award for Best Article)
15. Aoki, Reiko and Thomas J. Prusa, "Product development and the timing of information disclosure under U.S. and Japanese patent systems." *Journal of the Japanese and International Economies* 10(3) 1996: 233-249.
16. Aoki, Reiko and Thomas J. Prusa, "Sequential versus simultaneous choice with endogenous quality." *International Journal of Industrial Organization* 15(1) 1997: 103-122.
17. Hansen, Wendy L. and Thomas J. Prusa, "The role of the median voter in U.S. trade policy: A historical analysis." *Economic Inquiry* 35(1) 1997: 97-107.
18. Prusa, Thomas J., "The trade effects of U.S. antidumping actions," in Robert C. Feenstra (ed.), *Effects of U.S. Trade Protection and Promotion Policies*. Chicago: University of Chicago Press, 1997: 191-214.
19. Hansen, Wendy L. and Thomas J. Prusa, "Economics and politics: An empirical analysis of ITC decision-making." *Review of International Economics* 5(2) 1997: 230-245.
 - Reprinted in Douglas R. Nelson and Hylke Vandenbussche (eds.) *The WTO and Anti-Dumping*, (Edward Elgar, 2005).
20. Prusa, Thomas J., "Cumulation and antidumping: A challenge to competition." *The World Economy* 21(8) 1998: 1021-1033.
21. Koley, Dobrin R. and Thomas J. Prusa, "Tariff policy for a monopolist in a signaling game." *Journal of International Economics* 49(1) 1999: 51-76.
22. Koley, Dobrin R. and Thomas J. Prusa, "Dumping and Double Crossing: The Ineffectiveness Of Cost-Based Trade Policy Under Incomplete Information." *International Economic Review* 43(3) 2002: 895-918.
23. Prusa, Thomas J., "On the Spread and Impact of Antidumping," *Canadian Journal of Economics* 34(3) August 2001: 591-611. (Lead article)
 - Reprinted in Douglas R. Nelson and Hylke Vandenbussche (eds.) *The WTO and Anti-Dumping*, (Edward Elgar, 2005).
24. Prusa, Thomas J. and David Sharp, "A simultaneous equations approach to antidumping injury investigations." *Journal of Forensic Economics* 14(1) 2001: 63-78.
25. Prusa, Thomas J. and Susan Skeath, "The Economic and Strategic Motives for Antidumping Filings." *Weltwirtschaftliches Archive* 138(3) 2002: 389-413.

26. Fischer, Ronald, and Thomas J. Prusa, "WTO Exceptions as insurance." *Review of International Economics* 11(5) 2003: 745-757. (Lead article)
 - Reprinted in Chad P. Bown (ed.) *The WTO, Safeguards, And Temporary Protection From Imports*, (Edward Elgar, 2006).
27. Blonigen, Bruce and Thomas J. Prusa, "Antidumping." in E. Kwan Choi and James Harrigan (eds.), *Handbook of International Economics*. Malden, MA: Blackwell Publishing, 2003: 251-284.
28. Durling, James P. and Thomas J. Prusa, "Using Safeguard Protection to Raise Domestic Rivals' Costs." *Japan and the World Economy* 15(1) 2003: 47-68.
29. Blonigen, Bruce and Thomas J. Prusa, "The Cost of Antidumping: The Devil is in the Details." *Journal of Policy Reform* 6(4) December 2003: 233-245.
30. Knetter, Michael M. and Thomas J. Prusa, "Macroeconomic factors and antidumping filings." *Journal of International Economics* 61(1) 2003: 1-18. (Lead article)
 - Reprinted in Douglas R. Nelson and Hylke Vandenbussche (eds.) *The WTO and Anti-Dumping*, (Edward Elgar, 2005).
31. Prusa, Thomas J. and Susan Skeath, "Modern Commercial Policy: Managed Trade or Retaliation?" in E. Kwan Choi and James Hartigan (eds.), *Handbook of International Trade, Volume II: Economic and Legal Analyses of Trade Policy and Institutions*. Malden, MA: Blackwell Publishing, 2004: 358-382.
32. Prusa, Thomas J., "The Growing Problem of Antidumping Protection." in Takatoshi Ito and Andrew K. Rose (eds.), *International Trade in East Asia*, NBER-EASE Volume 14. Chicago: University of Chicago Press, 2005: 329-359.
33. Prusa, Thomas J., "Antidumping: A Growing Problem in International Trade." *The World Economy* 28(5) May 2005: 683-700.
34. Prusa, Thomas J., "East Asia's antidumping problem." *The World Economy* 29(6) June 2006: 743-761.
35. Durling, James P. and Thomas J. Prusa, "The Trade Effects Associated with an Antidumping Epidemic: The Hot-Rolled Steel Market, 1996-2001." *European Journal of Political Economy* (special issue on antidumping) 22(3) September 2006: 675-695.
36. Besedes, Tibor and Thomas J. Prusa, "Ins, Outs, and the Duration of Trade." *Canadian Journal of Economics* 39(1) 2006: 266-295.
37. Besedes, Tibor and Thomas J. Prusa, "Product Differentiation and Duration of U.S. Import Trade?" *Journal of International Economics* 70(2) December 2006: 339-358. (Lead article)
38. Chu, Tianshu and Thomas J. Prusa, "The Reasons for and the Impact of Antidumping Protection: The Case of People's Republic of China." in Philippa Dee and Michael Ferrantino (eds.), *Quantitative Methods for Assessing the Effects of Non-tariff Measures and Trade Facilitation*. Singapore: World Scientific Ltd. for APEC, 2005: 411-433.

39. Blonigan, Bruce and Thomas J. Prusa, "Antidumping." in Steven N. Durlauf and Lawrence E. Blume (eds.), *New Palgrave Dictionary of Economics 2nd Edition*. Palgrave Macmillan, 2008.
40. Budetta, Michella, Thomas J. Prusa, and Robert Teh "Trade remedy provisions in regional trade agreements." in Antoni Estevadeordal, Kati Suominen, and Robert Teh (eds.) *Regional Rules in the Global Trading System*. Cambridge: Cambridge University Press, 2009: 166-249.
41. Prusa, Thomas J. and Edwin Vermulst, "A One-Two Punch on Zeroing: U.S. – Zeroing (EC) and U.S. – Zeroing (Japan)." *World Trade Review* 8(1) January 2009: 187-241.
 - Reprinted in Henrik Horn and Petros C. Mavroidis (eds.) *The WTO Case Law of 2006-07*, (Cambridge University Press, 2009).
42. Prusa, Thomas J. and Edwin Vermulst, "Guilt by Association: U.S. – Measures Relating to Shrimp from Thailand and U.S. – Customs Bond Directive for Merchandise Subject to Anti-Dumping/Countervailing Duties." *World Trade Review* 9(1) January 2010: 59–84.
 - Reprinted in Henrik Horn and Petros C. Mavroidis (eds.) *The WTO Case Law of 2008*, (Cambridge University Press, 2010).
43. Besedes, Tibor and Thomas J. Prusa, "The duration of trade relationships." in Bernard Hoekman and Guido Porto (eds.), *The Cost of Adjustments to Trade Reform*. Washington, DC: The World Bank, 2010: 265-282.
44. Prusa, Thomas J. and Edwin Vermulst, "United States – Continued existence and application of zeroing methodology: The end of zeroing?" *World Trade Review* 10(1) 2011: 45-61.
 - Reprinted in Henrik Horn and Petros C. Mavroidis (eds.) *The WTO Case Law of 2009*, (Cambridge University Press, 2011).
45. Bown, Chad P. and Thomas J. Prusa, "U.S. Antidumping: Much Ado about Zeroing." in Will Martin and Aaditya Mattoo (eds.), *Unfinished Business? The WTO's Doha Agenda*. Washington, DC: The World Bank, 2011: 355-392.
46. Besedes, Tibor and Thomas J. Prusa, "The Role of Extensive and Intensive Margins and Export Growth." *Journal of Development Economics* 96(2) 2011: 371-379.
47. Prusa, Thomas J. and Robert Teh, "Protection Reduction and Diversion: PTAs and the Incidence of Antidumping Disputes." NBER working paper 16276 (August 2010).
48. Prusa, Thomas J. and Robert Teh, "Contingent Protection Rules in Regional Trade Agreements." in Kyle W. Bagwell and Petros C. Mavroidis (eds.), *Preferential Trade Agreements*. Cambridge: Cambridge University Press, 2011: 60-114.
49. Prusa, Thomas J., "Trade remedy provisions." in Jean-Pierre Chauffour and Jean-Christophe Maur (eds.), *Preferential Trade Agreement Policies for Development*. Washington, DC: The World Bank, 2011:179-196.

50. Li, Yue and Thomas J. Prusa, "Trade Liberalization, Tariff Overhang and Antidumping Filings in Developing Countries." working paper, 2011.
51. Prusa, Thomas J., "United States: Evolving Trends in Temporary Trade Barriers." in Chad P. Bown (ed.), *The Great Recession and Import Protection: The Role of Temporary Trade Barriers*. Washington, DC: The World Bank, 2011: 53-83.
52. Prusa, Thomas J. and Edwin Vermulst, "United States – Antidumping Measures on Polyethylene Retail Carrier Bags from Thailand: A Cat in the Bag." *World Trade Review* 11(2) 2012: 257-271.
 - Reprinted in Henrik Horn and Petros C. Mavroidis (eds.) *The WTO Case Law of 2010*, (Cambridge University Press, 2012).
53. Prusa, Thomas J. and Edwin Vermulst, "United States – Anti-Dumping and Countervailing Duties on Certain Products from China: Passing the Buck on Pass-Through." *World Trade Review* 12(2) 2013: 197-234.
 - Reprinted in Chad P. Bown and Petros C. Mavroidis (eds.) *The WTO Case Law of 2011*, (Cambridge University Press, 2013).
54. Rubini, Luca and Thomas J. Prusa, "United States – Use of Zeroing in Anti-Dumping Measures involving Products from Korea: It's déjà vu all over again." *World Trade Review* 12(2) 2013: 409-425.
 - Reprinted in Chad P. Bown and Petros C. Mavroidis (eds.) *The WTO Case Law of 2011*, (Cambridge University Press, 2013).
55. Durling, James P. and Thomas J. Prusa, "The Problem of Double Remedies in International Trade Disputes and the Economics of Pass-Through." *Tulane Journal of International and Comparative Law* 21(2) 2013: 513-544.
56. Prusa, Thomas J. and Edwin Vermulst, "China – Countervailing and Anti-dumping Duties on Grain Oriented Flat-rolled Electrical Steel from the United States: Exporting US AD/CVD Methodologies through WTO Dispute Settlement?" *World Trade Review* 13(2) 2014: 229-266.
 - Reprinted in Chad P. Bown and Petros C. Mavroidis (eds.) *The WTO Case Law of 2012*, (Cambridge University Press, 2014).
57. Besedes, Tibor and Thomas J. Prusa, "The Hazardous Effects of Antidumping," *Economic Inquiry*. 55(1) 2017, 9-30. (Lead article).
58. Prusa, Thomas J. and Edwin Vermulst, "China – Anti-Dumping and Countervailing Duty Measures on Broiler Products from the United States: How the chickens came home to roost." *World Trade Review* 14(2) 2015: 287-335.
 - Reprinted in Chad P. Bown and Petros C. Mavroidis (eds.) *The WTO Case Law of 2013*, (Cambridge University Press, 2015).
59. Mitchell, Andrew D. and Thomas J. Prusa, (2016). China–Autos: Haven't We Danced This Dance Before?" *World Trade Review*, 15:2, 303-25.
 - Reprinted in Chad P. Bown and Petros C. Mavroidis (eds.) *The WTO Case Law of 2014*, (Cambridge University Press, 2016).

60. Blonigen, Bruce and Thomas J. Prusa, "Dumping and Antidumping Duties" in Kyle W. Bagwell and Robert W. Staiger (eds.), *Handbook of Commercial Policy*, Volume 1B. Amsterdam, Netherlands: Elsevier, North Holland, 2016, 107-59 (Chapter 3).
61. Prusa, Thomas J. "Antidumping Provisions in Preferential Trade Agreements", in Jagdish N. Bhagwati, Pravin Krishna, and Arvind Panagariya (eds.), *The World Trade System*, Cambridge, MA: MIT Press, 2016, 117-48 (Chapter 5).
62. Mavroidis Petros C., Niall Meagher, Thomas J. Prusa, and Tatiana Yanguas, "Ask for the Moon, Settle for the Stars: What is a Reasonable Period to Comply with WTO Awards?" *World Trade Review*, 16:2, 395-425.
63. Prusa, Thomas J., "NMEs and the Double Remedies Problem," mimeo, November 2016.
64. Prusa, Thomas J., "Are the Unfair Trade Laws Fair?", *Harvard Economics Review*, Fall 2016, 27-30.
65. Mavroidis Petros C. and Thomas J. Prusa, "Zeroing in on Targeted Dumping: Did the AB Hit the Mark in US–Washing Machines?", mimeo.

Other Publications

1. Prusa, Thomas J., *International Trade Policies, Incentives, and Firm Behavior*. New York: Garland Publishing Inc., 1990.
2. Prusa, Thomas J., Review of P.K.M. Tharakan, ed., "Policy Implications of Antidumping Measures (North-Holland, Amsterdam, 1991) pp. xxii + 292, in *Journal of International Economics* 32 (1/2) 1992: 198-200.
3. Hansen, Wendy and Thomas J. Prusa, Response to T. Stewart's comments on "Does administrative protection protect?" in *Regulation* 16(2) 1993, 3-5.
4. Prusa, Thomas J., Review of Gary Clyde Hufbauer and Kimberly Ann Elliott, *Measuring the Costs of Protection in the United States*. Washington D.C.: Institute of International Economics, in *European Journal of Political Economy* 10(3) 1994: 609-612.
5. Prusa, Thomas J., Book review of Jagdish N. Bhagwati, Arvind Panagariya, and T. N. Srinivasan, *Lectures in International Trade*, 2nd edition. Cambridge: The MIT Press, 1998 in *Comparative Economic Studies* 40(4) Winter 1998: 113-114.
6. Prusa, Thomas J., Book review of Alan V. Deardorff and Robert M. Stern, *Measurement of Nontariff Barriers*. Ann Arbor: University of Michigan Press, 1998 in *Journal of International Economics* 55(1) 2001: 239-242.
7. Prusa, Thomas J., Comments on Takatoshi Ito and Andrew K. Rose (eds.) "International R&D deployment and Locational advantage: A case study of Taiwan." *International Trade in East Asia*, NBER-EASE, Chicago: University of Chicago Press, 2005: 81-106 in *International Trade in East Asia*, NBER-EASE, Chicago: University of Chicago Press, 2005: 107-108.

8. Prusa, Thomas J., Review of *World Trade Organization Trade Policy Review – The United States 2004*, World Trade Organization. Geneva, Switzerland: WTO Publications, in *The World Economy* 28(9) 2005: 1263-1275.
 - Reprinted in *The World Economy Global Trade Policy 2005*, Wiley-Blackwell Publishing, July 2006, 67-79.
9. Prusa, Thomas J., Comments on Joseph F. Francois and David Palmeter, “US – Countervailing Duty Investigation of DRAMS.” *World Trade Review* 7(1) 2008: 219-229 in *World Trade Review* 7(1) 2008: 231-234.
 - Reprinted in *The WTO Case Law of 2004-05*, edited by Henrik Horn and Petros C. Mavroidis (Cambridge University Press, 2008).
10. Prusa, Thomas J., Book review of Gary Hufbauer, Jeffrey Schott, Kimberly Elliott and Barbara Oegg, *Economic Sanctions Reconsidered* (3rd edition). Washington, D.C.: Peterson Institute for International Economics, 2007, in *Journal of International Economics* 76(1) September 2008: 135-137.
11. Prusa, Thomas J., Book review of Daniel Cohen, *Globalization and Its Enemies*. Cambridge: The MIT Press, 2006, in *Journal of Economic Literature* 48(3) September 2008: 725-726.
12. Prusa, Thomas J., Book review of Philip Bentley and Aubrey Silberston, *Anti-Dumping and Countervailing Action: Limits Imposed by Economic and Legal Theory*. Cheltenham, Edward Elgar Publishing, 2007, in *Journal of Economic Literature* 46(4) December 2008: 992-994.
13. Prusa, Thomas J., Comments on Chad P. Bown “China’s WTO Entry: Antidumping, Safeguards, and Dispute Settlement.” forthcoming *China’s Growing Role in World Trade*, Robert C. Feenstra and Shang-Jin Wei (eds.). Chicago: University of Chicago Press, 2009.
14. Prusa, Thomas J., Comments on Terence P. Stewart and Amy S. Dwyer “Antidumping: Overview of the Agreement,” in *Law and Economics of Contingent Protection in International Trade*, Kyle W. Bagwell, George A. Bermann, Petros C. Mavroidis (eds.). Cambridge: Cambridge University Press, 2009: 257-263.
15. Prusa, Thomas J., Comments on Claudio Dordi “The Appellate Body interpretation of ‘sunset reviews’ provisions of AD and CVM agreements: A critical analysis,” in *Contingent Protection in the WTO: A Law and Economics Analysis*, Kyle W. Bagwell, George A. Bermann, Petros C. Mavroidis (eds.). Cambridge: Cambridge University Press, 2009: 328-333.
16. Prusa, Thomas J., Review of *World Trade Report 2009: Trade Policy Commitments and Contingent Protection*, World Trade Organization Geneva, Switzerland: WTO Publications, 2009, in *World Trade Review* 9(4) 2010: 679 - 682.
17. Prusa, Thomas J. and Robert Teh, VoxEU commentary, “[Tilting the playing field: FTAs and the changing pattern of protection](#),” 15 September 2010.
18. Moore, Michael and Thomas J. Prusa, VoxEU commentary, “[Straight out of Mad Men: U.S. markets import protection as export promotion](#),” 8 November 2010. Longer version can be found [here](#).

19. Prusa, Thomas J., Book review of Keith E. Maskus, *Private Rights and Public Problems: The Global Economics of Intellectual Property in the 21st Century*. Washington, D.C.: Peterson Institute for International Economics, 2012, in *Journal of International Economics* 90(2) 2013: 425-426.
20. Prusa, Thomas J., "The Contribution of the Japanese-Branded Automotive Industry to the United States Economy," 2012, working paper.
 - 2012 update, October 2013.
 - 2013 update, August 2014.
 - 2014 update, December 2015.
 - 2015 update, July 2016.
21. Prusa, Thomas J., "The WTO at 20: An Economist's Perspective," *Journal of International Trade Law and Policy*, 14(3) 2015, 126-28.

Professional activities

- Referee for *American Economic Review*, *American Journal of Agricultural Economics*, *Applied Economics Letters*, *Asia-Pacific Journal of Accounting & Economics*, *Canadian Journal of Economics*, *China Economic Review*, *Contemporary Economic Policy*, *Eastern Economic Journal*, *Economica*, *Economic Inquiry*, *The Economics of Transition*, *Emerging Markets Finance and Trade*, *Empirical Economics*, *European Economic Review*, *Global Finance Journal*, *International Economic Review*, *International Journal of Industrial Organization*, *International Studies Quarterly*, *Journal of Comparative Economics*, *Journal of Development Economics*, *Journal of Economic Education*, *Journal of Economics and Management Strategy*, *Journal of Environmental Economics and Management*, *Journal of Economic Policy Reform*, *Journal of Industrial Economics*, *Journal of Industry, Competition and Trade*, *Journal of Institutional and Theoretical Economics*, *Journal of International Economics*, *Journal of International Trade and Economic Development*, *Journal of Law, Economics, and Organization*, *Management Science*, *National Science Foundation*, *North American Journal of Economics and Finance*, *Oxford Economic Papers*, *RAND Journal of Economics*, *Review of Economics and Statistics*, *Review of Economic Studies*, *Review of International Economics*, *Review of International Organizations*, *The Social Science Journal*, *Social Science and Humanities Research Council of Canada*, *Southern Economic Journal*, *World Bank Economic Review*, *The World Economy*, *World Trade Review*
- Editorial Council, *Review of International Economics*, 1994-present.
- Associate Editor, *Journal of International Economics*, 1995-2004.
- Editorial Board, *North American Journal of Economics and Finance*, 2004-12
- Associate Editor, *Journal of World Trade*, 2011-present.

Presentations

- American Bar Association, “Free Trade Agreement Negotiations: Bilateral versus Multilateral”, Washington, DC, March 2017
- Institute for International Economic Policy, Elliott School of International Affairs, George Washington University, Washington DC, conference on “Trumping Trade Orthodoxy”, January 2017
- Law School, Columbia University, New York, NY, November 2016
- The WTO Case Law of 2014, European University Institute, Florence, Italy, May 2015.
- Anti-dumping: Yesterday’s Woes and Today’s Concerns, European University Institute, Florence, Italy, May 2015.
- Southern Economic Association Meetings, Atlanta, GA, November 2014
- Challenges Facing the World Trade System, School of Advanced Studies (SAIS), Johns Hopkins University, Washington DC, October 2014
- United Nations, New York City, UNITAR Seminar on International Trade Law and Policy, July 2014.
- The Barebones of the Subsidies and Countervailing Measures Agreement, European University Institute, Florence, Italy, April 2014.
- United Nations, New York City, UNITAR Seminar on International Trade Law and Policy, July 2013.
- European University Institute, Advisory Trade Council Roundtable, Florence, Italy, June 2013.
- American Law Institute conference on WTO Case Law, Florence, Italy, June 2013.
- 17th Judicial Conference of the U.S. Court of International Trade, New York, NY, December 2012
- WTO Dispute Settlement System, European University Institute, Florence, Italy, November 2012
- Canadian Agricultural Trade Policy and Competitiveness Research Network (CATPRN), keynote speaker, Toronto, Canada, September, 2012
- United Nations, New York City, UNITAR Seminar on International Trade Law and Policy, July 2012.
- CAGE/CEP Workshop on Trade Policy in a Globalised World, Venice, Italy, June 2012.
- Dissettle Workshop, Florence, Italy, June 2012.
- American Law Institute conference on WTO Disputes, Florence, Italy, June 2012.
- United Nations, New York City, Conference on International Trade and the Doha Round, December 2011.
- United Nations, New York City, Conference on International Trade and the Doha Round, July 2011.
- American Law Institute conference on WTO Disputes, Geneva, Switzerland, June 2011.
- Georgetown University, Department of Economics, February 2011.
- United Nations, New York City, Conference on International Trade and the Doha Round, December 2010.
- Columbia University, New York, NY, September 2010

- United Nations, New York City, Conference on International Trade and the Doha Round, July 2010.
- American Law Institute conference on WTO Disputes, Geneva, Switzerland, June 2010.
- Princeton University, Princeton, NJ; Workshop on The Politics of Preferential Trade Agreements, May 2010
- United Nations, New York City, Conference on International Trade and the Doha Round, July 2009.
- American Law Institute conference on WTO Disputes, Geneva, Switzerland, June 2009.
- World Bank conference on “Preferential Trade Agreements for Development: Issues and Implications,” World Bank Headquarters, Washington DC
- Institute for International Economic Policy, Elliott School of International Affairs, George Washington University, Washington DC, conference on Antidumping Use Across the World: Implications for Developing Countries and U.S. Businesses, April 2009.
- United Nations, New York City, Conference on International Trade and the Doha Round, December 2008
- Law School, Columbia University, New York, NY, September 2008
- United Nations, New York City, Conference on International Trade and the Doha Round, July 2008
- Department of Economics, Shanghai University of Finance and Economics, Shanghai, China, July 2008
- American Law Institute conference on WTO Disputes, Geneva, Switzerland, June 2008.
- Department of Economics, University of Connecticut, Storrs, CT, April 2008
- New York Federal Reserve, New York, April 2008.
- Villanova University, March 2008
- United Nations, New York City, Conference on International Trade and the Doha Round, December 2007
- United Nations, New York City, Conference on International Trade and the Doha Round, July 2007
- CUNY Graduate Center, New York, NY, May 2007.
- World Trade Organization (WTO), Geneva, Switzerland, March 2007
- Stockholm School of Economics, Stockholm Sweden, February 2007
- Stockholm University, Stockholm Sweden, February 2007
- Research Institute of Industrial Economics, Stockholm Sweden, February 2007
- National Board of Trade, Stockholm Sweden, February 2007
- Antidumping and Developing Countries Conference, The World Bank & Institut d'Etudes Politiques de Paris (Sciences-Po), Paris, France, December, 2006
- Inter-American Development Bank (IDB), Washington, DC, IADB-WTO Conference on Regional Rules in the Global Trading System, July 2006
- World Trade Organization (WTO), Geneva, Switzerland, IADB-WTO Conference on Regional Rules in the Global Trading System, October 2005
- United Nations, New York City, UNITAR Conference on Doha Round Negotiation Issues, August 2005
- University of Delaware, April 2005

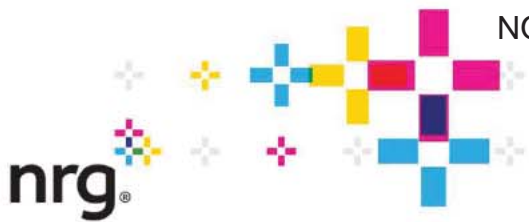
- World Trade Organization (WTO), Geneva, Switzerland, IADB-WTO Pre-Conference on Regional Rules in the Global Trading System, October 2004
- International Agricultural Trade Research Consortium, St. Petersburg, FL, December 2004
- GEP Conference on “The 100th Anniversary of Anti-Dumping Regulation,” University of Nottingham, Nottingham, England, June, 2004
- Hitotsubashi University, Tokyo, Japan, May 2004
- International Economic Relations and Structural Change: Issues and Policy Options for Japan and the United States, Tokyo, Japan, May 2004
- University of Delaware, April 2004
- Symposium on a Centennial of Anti-Dumping Legislation and Implementation, University of Michigan, Ann Arbor, MI, March 2004
- American Enterprise Institute, March 2004
- East West Center, Honolulu, HI, July 2003
- Conference on Political Economy of Policy Transfer, Learning, and Convergence, Tulane University, April 2003
- Department of Economics, University of Pittsburgh, March 2003
- Department of Economics, Georgia Tech University, February 2003
- Department of Economics, George Washington University, April 2002
- Center for Japan-U.S. Business and Economic Studies, 18th Annual Technical Symposium, New York University, April 2002
- Department of Economics, Florida International University, January 2002
- American Enterprise Institute, December 2001
- NBER International Trade and Investment Conference, Palo Alto, December 2001
- CATO Institute, October 2001
- NBER International Trade and Investment Conference, Cambridge, MA, March 2001.
- School of Business, New York University, New York, NY, March 2001.
- AEA Meetings, New Orleans, LA, January 2001.
- Industry Canada, Ottawa, Canada, September 2000
- NBER Summer Institute, Cambridge, MA, August 2000
- University of Science and Technology, Hong Kong, China; June, 2000
- Academia Sinica, Taipei, Taiwan; June 2000
- Conference on economic globalization, Tamkang University; Taipei, Taiwan; June, 2000
- NBER Trade Conference, Cambridge, MA, May 1999.
- Department of Economics, University of Connecticut, Storrs, CT, April 1999
- NBER Trade Conference, Cambridge, MA, February 1999.
- Department of Economics, Columbia University, New York, NY, October 1998
- Department of Economics, Princeton University, Princeton, NJ, September 1998
- The Kiel Institute of World Economics, University of Kiel, Kiel, Germany, June 1998
- German Institute for Economic Research (DIW), Berlin, Germany, June 1998
- Ludwig-Maximilians University of Munich, Munich, Germany, June 1998.
- Conference on Competition policy and International Trade, Brussels, Belgium, May 1998
- Department of Economics, Rutgers University, Newark, NJ, April 1997.

- Department of Economics, University of Florida, Gainesville, FL, March 1997.
- New York Federal Reserve, New York, March 1997.
- Department of Economics, Georgetown University, Washington, DC, February 1997.
- Department of Economics, New York University, New York, NY, November 1996.
- Empirical Investigations in International Trade Conference, Purdue University, November 1996.
- Department of Economics, Penn State University, State College, PA, October 1996.
- Department of Economics, University of Illinois, Champaign, IL, October 1996.
- Mid-West International Economics Meetings, Washington University, St. Louis, MO, October 1996.
- Department of Economics, Rutgers University, New Brunswick, NJ, September 1996.
- Summer Econometric Society Meetings, Iowa City, Iowa, June 1996.
- Department of Economics, University of Santa Clara, Los Angeles, CA, March 1996.
- Department of Economics, University of California-Los Angeles, Los Angeles, CA, March 1996.
- NBER Conference on “Effects of U.S. Trade Protection and Promotion Policies,” Richmond, VA, October 1995.
- Department of Economics, University of Kansas, Lawrence, KS, April 1995.
- Department of Economics, Michigan State University, East Lansing, MI, April 1995.
- NBER International Trade and Investment Conference, Cambridge, MA, March 1995.
- Department of Economics, Wesleyan College, Middletown, CT, February 1995.
- Econometric Society Winter Meetings, Washington, DC, January 1995.
- Department of Economics, University of Arizona, Tucson, AZ, October 1994.
- Department of Economics, University of Colorado, Boulder, CO, April 1994.
- NBER International Trade and Investment Conference, Cambridge, MA, March 1994.
- Department of Economics, Claremont-McKenna College, Claremont, CA, February 1994.
- Econometric Society Winter Meetings, Boston, January 1994.
- Department of Economics, New York University, New York, NY, February 1993.
- Department of Economics, University of California-Davis, Davis, CA, January 1993.
- Department of Economics, Indiana University, Bloomington, IN, January 1993.
- Econometric Society Winter Meetings, Anaheim, January 1993.
- Institute of Social and Economic Research, Osaka University, Osaka, Japan, November 1992.
- Department of Economics, Rutgers University, New Brunswick, NJ, September 1992.
- Department of Economics, Dartmouth College, Hanover, NH, April 1992.
- Workshop on Strategic and Dynamic Aspects of International Trade, Summer Conference in Game Theory, Stony Brook, NY, July 1991.

- Workshop on Cost Allocation and Transfer Pricing, Summer Conference in Game Theory, Stony Brook, NY, July 1991.
- School of Business, University of Chicago, Chicago, IL, February 1991.
- Department of Economics, University of Pennsylvania, Philadelphia, PA, November 1990.
- American Enterprise Institute Conference on Innovation, Intellectual Property, and World Competition, Washington, D.C., September, 1990.
- NBER Conference on Trade and Trade Policy, Cambridge, MA, March 1990.
- Conference on Technology, Trade and World Competition, London, England, December 1989.
- Conference on Technology, Trade and World Competition, Brussels, Belgium, November 1989.
- NBER Summer Institute Workshop on Trade Theory and Policy, Cambridge, MA, August 1989.
- Mid-West International Economics Meetings, Purdue University, April 1989.
- Georgetown University Law Center, Washington, D.C., January 1989.
- Econometric Society Winter Meetings, New York, December 1988.
- Designing Policies to Open Trade, Institute of Governmental Affairs, University of California, Davis, November, 1988.

Appendix B

Annex B-1



Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products), Inv. No. TA-201-75

AFFIDAVIT OF CRAIG CORNELIUS

September 27, 2017

I, Craig Cornelius, being first duly sworn, do hereby affirm and state as follows:

1. I serve as the President of NRG Renewables LLC. I have been with NRG Energy, Inc. (“NRG Energy”) since 2013 and have been in leadership roles in solar in the public and private sectors for more than a decade. NRG Energy is one of the largest independent power producers in the United States and is one of the largest owner-operators of renewable generation in the country with over 48,000 MW of generation across all fuel sources. As measured by gross generating capacity in the United States, we are custodians of the largest utility-scale solar fleet, the 4th largest distributed solar fleet, and the 5th largest wind fleet in the United States. In connection with its Renewables division, NRG Energy employs 548 full time employees and operates in 28 different states. Our solar business operates in all regions of the United States; we operate utility-scale projects in California, Arizona, and Utah, community solar installations in Minnesota, Colorado, and Massachusetts, and commercial installations in states as diverse as Florida, Maine, Oregon, and Texas.
2. Under our business model, which is similar to that of most other large owner/operators of solar, we develop and operate solar projects that sell power primarily through long-term contracts to utilities, municipalities, and commercial customers under long-term contracts. Whether we procure modules directly from suppliers or through an EPC contractor, we are closely involved in module purchasing decisions for all of the projects we develop.
3. As of June 2017, NRG Energy (through ownership in NRG Yield) owns, operates, or manages 2.5 gigawatts (GW) of operating solar projects. In addition, NRG Energy had 690 megawatts (MW) in backlog status (under construction, contracted, or awarded) and 3.4 GW held in pipeline across utility-scale, community, and commercial solar across all regions of the country.
4. Solar is a highly cost-competitive business, and any new import tariffs or quotas will dramatically reduce demand for solar in the United States. This is particularly true in the utility sector, which is “acutely price sensitive,” as recognized in the ITC Staff Report.¹ [

¹ Staff Report (public version), page V-4.

]

5. In its petition in this case, Suniva has proposed imposing a tariff of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, equivalent to an ad valorem tariff on CSPV cells of nearly 200%. This demand is far out of line with any reasonable assessment of the market; it also appears to be inconsistent with the statute. A tariff at that level would have a catastrophic impact on the U.S. solar industry. It would undo years of progress our industry has made toward price competitiveness with other forms of energy. [

]

6. The impact of new tariffs on PV cells and modules would extend far beyond our own employees and businesses. 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. These statistics, drawn from our own portfolio, are also consistent with NREL's analysis of the solar industry as a whole.² [

] It should

be noted that this number is very conservative, as it represents full-year FTE direct jobs only and is not inclusive of indirect or induced jobs elsewhere in the economy. Our customers would be affected as well. In cases where utilities are mandated to purchase solar power or where alternatives are not readily available, the burden of the tariff would ultimately be borne by their ratepayers through higher power prices.

7. As reflected in my testimony and post-hearing statement during the injury phase, the two petitioners in this case are failing due to shortcomings in their management and business strategy that cannot be fixed with a tariff. My assessment is based on more than a decade of experience in the industry, first in my capacity overseeing federal grant funding for upstream solar companies, then as a private-sector investor, and in my current role at NRG. In a rapidly innovating, high-tech industry, the petitioners have not proven that they can take the lead in driving technological innovation; they have been behind the curve in adopting technological improvements that became industry standard. They also misunderstood the drivers of demand for their products and were not able to meet their customers' needs. In order for these companies to meet our qualification standards and those of our financing partners, and for us to begin purchasing at scale from them, they would need to not only stay in business but completely transform their management and approach to doing business. Based on my experience with these companies and their leadership, I do not see that as a realistic possibility. 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-

² National Renewable Energy Laboratory. U.S. Solar Photovoltaic System Cost Benchmark: Q1 2017. <https://www.nrel.gov/docs/fy17osti/68925.pdf>

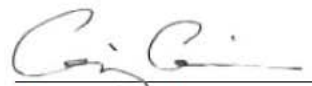
2020 timeframe, which is many times larger than current domestic production capacity. The petitioners have not identified a path forward that would allow them to clear these hurdles. Rather than leading to an expansion of domestic supply, a high tariff would lead to a dramatic contraction in domestic demand for CSPV, with petitioners attempting to compete with thin-film solar to supply a much smaller set of projects at higher prices.

8. I would support a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing and doesn't damage our business operations or our national CSPV solar market. Any fee would need to be low enough that it does not significantly hinder the ability of solar to compete on cost with other energy sources. [

.] In aggregate, however, this fee would yield a sizable revenue stream, since it would allow demand to remain high. Proceeds could be directed to support the domestic cell and module manufacturing industry in the United States, with a requirement that the funding be directed to upgrade and expand manufacturing capacity within the United States and that it supplement other sources of investment rather than displacing them. If manufacturers in the United States are able to use the limited term of a remedy to establish leadership in technology development and position themselves to stay cost-competitive, and if they are willing to commit their own capital to continue investing in the United States, supporting those efforts could be a worthy investment for the rest of the industry.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Craig Cornelius on September 27, 2017.


Craig Cornelius

Annex B-2

Affidavit of Edward Fenster

before the U.S. International Trade Commission

Inv. No. TA-201-75

*Crystalline Silicon Photovoltaic Cells,
Whether or Not Partially or Fully Assembled into Other Products*

Through this affidavit, I, Edward Fenster, Co-Founder and Executive Chairman of Sunrun Inc. (“Sunrun”), provide certain factual information relevant to the Commission’s examination of potential remedies in the above-referenced investigation. This affidavit incorporates by reference factual information previously provided in this investigation in the declarations of Dirk Morbitzer, Sunrun’s Director, Strategic Sourcing.

Sunrun is the largest dedicated provider of residential solar energy systems in the United States. Sunrun is a publically traded company that has grown rapidly in recent years to now employ over 3,000 employees in the United States. Our local channel partners and subcontractors employ approximately 8,000 more. Sunrun estimates its market share at 13 percent of the residential segment of the U.S. solar industry. The jobs provided by Sunrun, whether directly or indirectly, are high-quality, non-automatable, and non-exportable jobs, and are helping to advance economic growth and development in 22 states across the country, from Hawaii to South Carolina.

Since co-founding Sunrun 10 years ago, I have overseen at different times nearly every aspect of the business. Currently, I principally focus on policy matters, general corporate strategy, and raising the well over \$1 billion per year in capital that Sunrun needs to finance new installations.

Despite demonstrated consumer desire for low-cost solar energy reflected in Sunrun's growing customer base, the U.S. solar development business is still a nascent industry that is susceptible to various headwinds (beyond potential import restraints arising from this case) which impact overall industry growth rates. Solar deployments industry-wide, both residential and total, contracted from 2016 to 2017 (year to date). Sunrun has, so far, been able to buck this trend. For the first half of 2017, Sunrun deployment grew by [] compared to the first half of 2016. As of June 30, 2017, Sunrun served approximately [] customers and has deployed more than 1 GW of solar capacity.

As already noted in the factual declaration of Mr. Morbitzer, Sunrun achieved its market leading position by pioneering home "solar as a service," a model in which we pay for installation, and then sell power to the homeowner by the kilowatt-hour from the solar system on the homeowner's roof, which we own and maintain. The business of residential solar is predicated on providing customers solar power at a lower cost than is charged by their local utilities.

The fact that customer savings drives solar adoption is undeniable. In Hawaii, the state with the greatest amount of savings potential from solar, approximately 38% homes have solar installed. In California, second behind Hawaii in terms of savings, penetration of solar installations is approximately 12% of homes. Although penetration of detached single family homes in several states is between 1 and 12 percent, in most states, where power prices are lower or sun is less intense, penetration is still below 1 percent, due to this price elasticity.

Given Sunrun's increasing scale and falling costs, this year we were finally able to expand into seven new states, for which the necessary customer savings were previously not possible. With a material tariff or other import restraint on solar cells, we may not be able to

provide savings to customers in these seven states, leading us to potentially exit these and other markets. In states where customer savings are generally higher, a tariff or other import restraint would disqualify customers whose roofs are relatively more shaded, have a poor pitch angle, do not point southerly, or where other systems upgrades (such as a new main electrical panel) may be required. A material tariff or other import restraint would surely cause a meaningful contraction in the size of the overall market for residential solar. As savings are modest in most states (only a handful have the right mix of sun, retail electric rate, and/or incentives to create very substantial savings), we would expect to see a large number of residential solar businesses closing and/or going bankrupt in many states.

Currently, Sunrun offers approximately 20% savings to many customers. This is the rough level of savings that we have determined is required to definitively entice customers to switch to solar. For example, a study we performed concluded that, if the level of cost savings we offer falls from 20% to 10%, demand for our product falls by about two thirds. Thus, a tariff that would reduce customer savings by this amount would crush demand, even before considering the further impacts described below from other potential adverse tax and regulatory policy changes. The significant expected reduction in volume would make our fixed costs per new customer increase, requiring deep employment reductions.

One instructive example of the sensitivity of customers to savings is Nevada. In 2015, the Public Utility Commission in Nevada reduced compensation for rooftop-generated solar power, causing a reduction in customer savings. We and all our peers had to cease operations in the state immediately. Overnight, Nevada went from being the fastest growing and fourth largest residential solar market to a lost market with near total job losses resulting. Due to intense

public outcry, the Nevada Legislature this year overturned the Commission's decision, and rooftop solar power is quickly growing again in the state.

The headwind of a tariff or other comparable import restraint would add to several other uncertainties the industry is facing. For instance, lower corporate tax rates, which the Administration and Congress have committed to pursuing, would actually reduce the value of solar projects because, under the tax law, owners of solar systems can claim tax depreciation on an amount that exceeds the cost (after tax credit) of a solar system. The value of that "extra" depreciation is directly related to marginal corporate tax rates and becomes less valuable when marginal corporate tax rates fall. Sunrun has previously estimated that a 20% marginal corporate tax rate could cause a reduction in the value of new solar projects by more than 10 cents per watt, which could occur at about the same time as the imposition of a tariff or other import restraint.

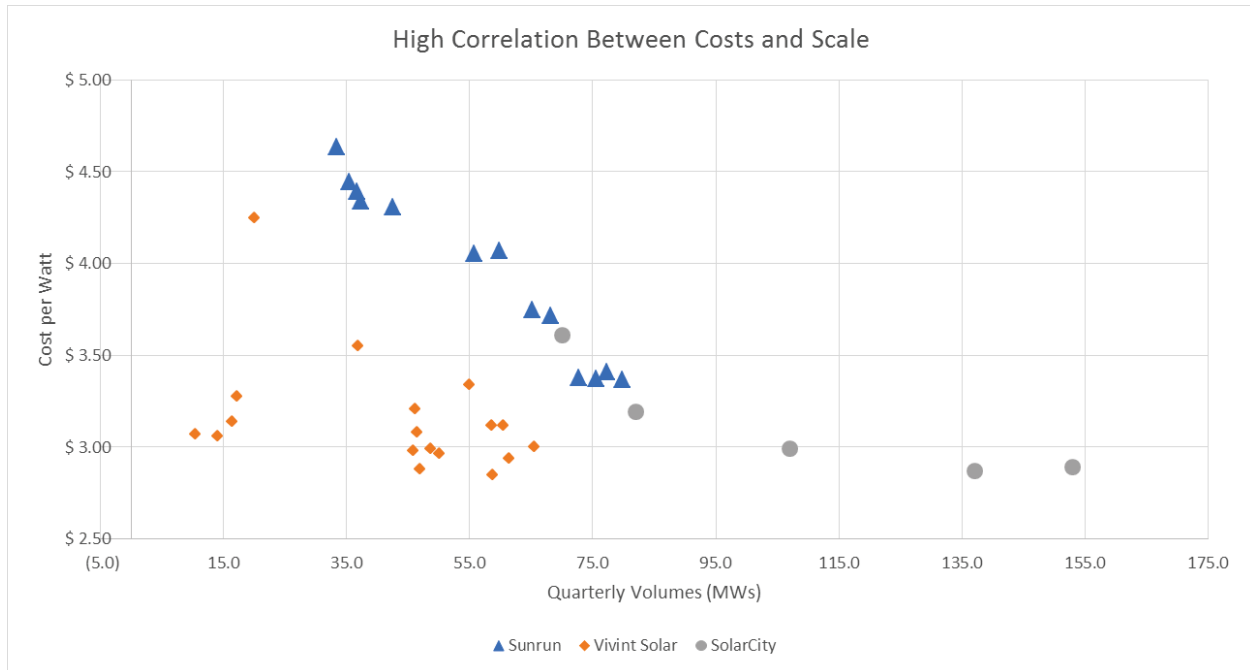
In addition, almost all government incentives are designed to decline in value over time. This means that the residential solar industry must constantly be reducing costs just to maintain the current addressable market and customer savings that it offers. On a state level, some of the top states for residential solar either have programs that will programmatically reduce the extent of incentives in the near term. For example, Nevada's solar rebate incentive, known as SolarGenerations, is capped at \$255 million and fewer than 17% of the rebate funds remain available. In Utah, the currently available \$2,000 tax credit for residential solar will be reduced in \$400 increments beginning in 2018 until it is completely eliminated at the end of 2021. Additionally, recent reductions in compensation value for residential rooftop solar have occurred in Arizona, Utah, Nevada and New Hampshire, and scheduled or naturally occurring reductions in value are coming soon in New York, Massachusetts, New Jersey, and South Carolina, absent changes in law. California regulators have stated that they will reassess

consideration paid to rooftop solar customers in 2019, which may lead to further reduction. Historically, we have a great track record of delivering the necessary cost reductions, and we have plans to continue these cost reductions. However, our cost reductions are gradual and overtime and assume that our equipment costs, like any other technology product, continue to decline over time.

Finally, the federal investment tax credit (“ITC”) is scheduled to begin to step down in stages from its current 30% to, in 2022, 10% for systems leased to homeowners and 0% for system purchased by homeowners. Overcoming this reduction requires the elimination of about \$1/watt in costs. It is essential that residential solar providers like Sunrun be able to increase our customer volumes before these step-downs in the tax credit and other local incentives occur. Unlike utility-scale development businesses, where the majority of costs are marginal (i.e., related to a specific project), residential solar businesses carry material fixed costs. Thus, key to reducing overall costs is operating leverage achieved through growth.

If solar cannot remain competitive with other energy offerings as its state and federal incentives decline, demand will decline precipitously in a highly competitive marketplace with many other options for electric energy, the ultimate commodity. To prosper, the solar industry must continue to drive down costs to keep pace with reductions in the ITC and state-level incentives. An increase in equipment costs due to any import restraint that may be imposed due to this investigation could do worse than set the industry back many years. It might kill the industry before it reaches maturity, by preventing it from obtaining the economies of scale that are necessary to offset the multitude of declining incentives that we already have plans to address.

The following chart shows the strong correlation between volume and cost:



As shown above, even small changes in volume can result in substantial changes in average cost per watt, which determine the viability of residential solar with consumers.

The totality of these industry dynamics is such that the imposition of increased costs from import restraints on equipment would reduce demand for solar across market segments. A reduction in demand puts at risk tens of thousands of well-paying domestic installation jobs that are non-automatable and non-exportable, as well as domestic manufacturing jobs, including for racking and electrical equipment, that are far more numerous than cell and module manufacturing jobs. Such job loss would be felt in the many local communities where residential solar employees live and work across the country.

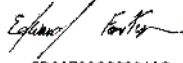
Finally, while Sunrun supports the domestic manufacture of solar panels, the reality is that Sunrun is an unlikely consumer of modules from SolarWorld or Suniva, even if these companies offered their panels at any price – even for free. Mr. Morbitzer’s factual declaration details the many reasons why SolarWorld and Suniva are not viable suppliers to Sunrun.

Demonstrated quality is first and foremost. Visiting homes to fix problematic installations is too costly relative to panel costs, and customer satisfaction suffers too much. The quality problems we have experienced with Suniva are so substantial that we would not purchase panels from them under any foreseeable circumstances. Similarly, between our experience with SolarWorld's recall, and its failure to participate in Sunrun's Vendor Quality Management Program ("VQMP"), Sunrun could not purchase from SolarWorld on any reasonable timeline, either. Sunrun cannot expose our customers to products of poor or unknown quality, and our sources of finance would simply not support such equipment, either. There is no current U.S. manufacturer of solar cells that has demonstrated high enough quality equipment for Sunrun to use in our own installations.

The imposition of any import restraint resulting from this investigation would not change the fact that Sunrun cannot source modules from Suniva and SolarWorld; it would, however, crush demand in our industry, and Sunrun would be compelled to absorb the higher costs of imported modules for a substantially smaller number of U.S. customers.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Edward Fenster on September 26, 2017.

DocuSigned by:

5D8A788C86394AC...

Edward Fenster

Annex B-3

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF Laura E. Stern
September 25, 2017

I, Laura E. Stern being first duly sworn, do hereby affirm and state as follows:

1. I am President of Nautilus Solar Energy, LLC ("Nautilus") based in Summit, NJ. Nautilus is a leading solar development and asset management company. Founded in 2006, the company focuses on developing, acquiring, executing, and managing distributed and utility-scale generation solar projects throughout North America. Over its 11-year history, Nautilus has invested in over 150+ MW of solar projects located throughout the United States and Canada and has served over 100 different clients. My company employs 25 full time employees and 1 contract employee. We have staff in NJ, CA, AZ, TX, NH and OR.
2. I have worked for Nautilus Solar Energy, LLC for over 11 years. Prior to co-founding Nautilus, I was in banking, providing non-recourse financing to wind, hydro, biomass and gas-fired power plants. I am responsible for the general management of the company, including purchasing and strategy decisions, as well as specifically responsible for finance and asset management.
3. In 2017, Nautilus expects to acquire, develop, install and finance approximately 40 MW of solar serving over 150 municipalities, colleges, housing authorities, and commercial and community solar customers across MA, MN, CA, NJ and NM. Our individual project size typically ranges from 1 to 20 MW.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would quell demand across the country among all project types. Given the long development cycle of these projects (12-18 months), there is little to no room for price adjustments across the supply chain. More importantly, we have seen no price elasticity among our customers in previous cycles. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the following effect: Our project development, acquisition and installation will stop for any projects without panel commitments. We will not be successful in acquiring any projects and

will put any projects without panels on hold. As project development represents the majority of our business, we will have to downsize to a bare bones staff that focuses on asset management. The effect will be felt first on our utility scale projects that are larger and have tighter economics, but the Suniva-proposed remedy will make projects in more lucrative markets unviable as well.

5. Even if a lower level of trade remedy is imposed, I would also expect my business to contract. If a 50% tariff is imposed, I expect up to 80% of our projects to be halted, assuming no other part of the supply chain absorbs the increased cost. Even if a 25% tariff is imposed, I expect approximately 50% of our projects to be halted.
6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other forms of energy and that customers will not adjust their energy procurement expectations based on pricing dynamics in the solar industry. It also reflects the reality that the sales and development cycle for commercial, industrial and utility projects is long (12-18 months). Projects that are currently slated for 2018 have been under development for months, with executed power purchase agreements. Panel procurement comes relatively late in the development cycle; therefore, a panel price increase for these projects can be the difference between a project being viable or not. A "new" project pipeline is predicated on customers absorbing some of the price increase through higher power prices and would take another 12-month sales cycle to develop. Most of our customers are too price sensitive to adjust and would opt to continue buying power from alternative sources.
7. Furthermore, the effect is not just on our business, but on those of our suppliers and customers as well.
8. I would support a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing and doesn't damage our business operations or our national CSPV solar market. My company could absorb a \$0.01/watt fee that returned revenues to boost US cell manufacturing. Such a fee level would not lead to layoffs within my company.
9. As stated in my affidavit dated August 7, 2017, Nautilus did purchase and install Suniva panels on a portfolio of six projects in Ontario, Canada, totaling approximately 2.75 MW. Due to concerns about Suniva's panel quality and financial ability to support the panel warranty, Nautilus's bank did not finance these panels, after extensive diligence conducted by our bank and independent engineering firm.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Laura E. Stern on September 25, 2017


Laura E. Stern

Annex B-4

BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF BRIAN EVANS – CHIEF DEVELOPMENT OFFICER, RES
AMERICAS, INC.
September 25, 2017

I, Brian Evans, being first duly sworn, do hereby affirm and state as follows:

1. I am Chief Development Officer for RES Americas, Inc., based in Broomfield, Colorado.

RES Americas, Inc. is a utility-scale, renewable energy, development, construction and asset management company that has constructed more than 10,000MW of renewable energy projects across North America. RES has been in business in the United States for 18 years and solar is increasingly becoming core to our current and future business. My company employs more than 1300 office and construction workers in multiple locations across the country. We have (a) 230 full time and 13 contract staff in our offices in Broomfield, Colorado, (b) 10 full time and 2 contract staff in our offices in Minneapolis, Minnesota (c) 25 full time and 4 contract staff in our offices in Austin, Texas, (d) 2 full time staff in our offices in Connecticut, and, (e) 920 full time and 100 contract staff which are currently employed across our nearly one dozen projects which are currently under construction across the United States.

2. I have worked for companies within the RES Group for 23 years the last 19 of which I have worked for RES in the United States. As the Chief Development Officer, I am directly responsible for the (a) creation of our corporate strategy regarding which geographic markets and technologies we will be pursuing for development activities and therefore driving our construction business, and (b) working closely with our construction arm, to ensure implementation of our strategies. A core part of this role includes evaluating and selecting potential renewable energy technology manufacturers to for partnership and procurement decisions. This includes making recommendations and/or procuring CSPV modules for projects that we develop and/or construct.
3. In 2016, (a) we achieved commercial operation on the 150MWdc Comanche Solar Project in Pueblo, Colorado which we constructed for SunEdison, (b) achieved commercial operation on the 12MWdc SKIC 10 project in Kern County, CA which we constructed for Algonquin Power and Utilities Corp, (c) finalized development and initiated construction on the 130MWdc Lamesa I solar project in Lamesa County, TX which is owned by Southern Power Corporation a subsidiary of Southern Company, (d) initiated efforts to develop and construct a pair of distributed generation projects totaling a little more than 7MWac for rural electricity cooperatives in Colorado and (e) initiated an effort to expanded our solar development portfolio to more than ten power markets and more than 3,000MW.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. Due to the price sensitivity of long-term purchasers of energy, I believe any import tariffs or quotas would directly reduce solar demand, and the scale of the reduction would be highly correlated to the size of the tariffs being imposed. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the

market for solar, and particularly utility scale solar (which is the market my company participates in), would be decimated. We would expect that a very significant majority of our utility scale solar pipeline (an estimated constructed value of more than \$3 billion) would fail to be realized due to the price sensitivity of long-term power purchasers. As a result RES would build fewer projects, lose millions of dollars of already expended development spend, fail to realize billions of dollars in planned revenues, and RES would likely face a future where a significantly smaller solar market will drive RES to cost reduction measures

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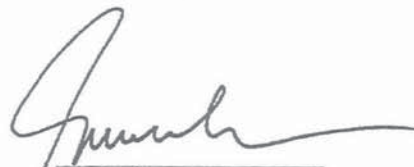
5. Even if a lower level of trade remedy is imposed, I would also expect RES's business to contract. That contraction will be directly proportional to the scale of the tariffs imposed.
6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other forms of energy. As we are a utility scale solar project developer and construction contractor, and we exist in a time of inexpensive and plentiful natural gas generation, our projects must compete with today's wholesale energy prices.
7. Furthermore, the effect of any proposed remedy is not just on our business, but on those of our suppliers and customers as well. On the supplier side we would certainly develop fewer projects affecting our environmental and engineering consultants, interconnection consultants, law firms and insurance partners. We would also construct fewer projects which would result in purchasing lesser amounts of the other components which make up the solar projects (steel, cable, concrete, aluminum, aggregate, and field labor). On the customer side, we would sell energy from fewer projects, and what projects we do sell energy from would

be at a higher price to the utility and in the end to the consumer. We would also fail to have billions in direct infrastructure investment from our long-term owner partners. In the communities in which we do business the loss would also extend to the landowners who have chosen to participate in these projects, and the often rural local and state taxing jurisdictions which are looking to the significant direct infrastructure investments to help increase the tax base and help to pay for aging infrastructure, and social systems.

8. I would support a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing and doesn't significantly impair or decimate our business operations or our national CSPV solar market. I would support a nominal fee of one to two cents per watt on imported modules and cells to boost revenues for domestic manufacturing. A relatively minor cost adder would still reduce demand, but not decimate it, and allow a not insignificant amount of money to be made available to domestic manufacturers.
9. While developing and constructing solar projects we have often found that domestic manufacturers for panels have been unable to meet the tight timeframes for deliveries that are required. Nor have they always been able to meet the specifications that are bankable for major tax equity investors, at a price that the market will bear. If significant remedies are imposed, I do not believe that Suniva, SolarWorld, or emergent domestic manufacturing will be able to deliver our CSPV needs at the scale, specification, and cost that the market demands.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Brian Evans on September 25, 2017



Brian Evans

Annex B-5

Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products) (Inv. No. TA-201-75)

**AFFIDAVIT OF STEPHEN JONES,
BLATTNER ENERGY, INC.**

September 26, 2017

I, Stephen Jones, being first duly sworn, do hereby affirm and state as follows:

1. I am the Vice President, Solar for Blattner Energy based in Avon, Minnesota. Blattner Energy is an Engineering, Procurement and Construction (EPC) contractor installing commercial and utility-scale solar energy plants nationwide. My company has served the energy industry for more than 30 years and began offering our capabilities as a solar power contractor in 2009. We employ approximately 600 full-time employees and over 3,500 hourly employees on an annual basis. Our projects span the United States from the East to West Coast and the North to South borders. Our employees install 12-15 solar projects per year in various parts of the country.

2. I have worked for Blattner Energy for 17.5 years of my entire career in various leadership and management roles. Prior to leading our solar group, I managed a large portion of our wind energy work, spanning several years. My entire career has been about helping Blattner Energy build and grow our Renewable Energy Segments, namely solar and wind. I am directly responsible for leading our Solar Segment in the company building large utility-scale projects. Projects cannot be built unless we have competitive CSPV cells and modules to produce the energy. Our business and employees are directly impacted when projects are not able to be built.

3. [

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4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. Based on my deep knowledge of the industry, I know that tariffs, minimum import prices, or quotas will have a severe impact on the demand for solar in the market for electricity because utilities and commercial solar customers have no incentive to pay more money for their power. The reductions stated above will force us to downsize our workforce, causing layoffs in states like Florida, Georgia, Minnesota, Texas, California and others across the country.

5.

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6. The undeniable fact is that our sector depends on the ability of CSPV modules to compete against other sources of energy. This is the well-established concept of grid parity, which drives the electricity market. Utilities will choose other sources of energy if they are more price-competitive than solar. They will not undertake a CSPV solar project or buy solar-generated energy through a PPA if solar is not cost-competitive vis-à-vis natural gas, wind, and other energy sources. While our company also builds wind projects, we depend on CSPV solar to diversify our mix of renewable energy offerings.

7. Furthermore, the serious adverse effects will not be just on our company, but on our suppliers and customers as well. Over half of the cost of a typical project is that of materials and other suppliers. Approximately 85% of our suppliers are U.S. companies with substantial employment in the United States. These companies have indicated to me their business and employment of American workers will be significantly cut if any import relief is imposed.

8. I would support a very low-cost mechanism, other than a tariff, which could help stimulate domestic manufacturing while not damaging our business operations or our domestic CSPV demand: I would suggest a \$0.01-\$0.02 per watt fee increase on the current base price of CSPV modules. If any import relief had to be imposed, the only appropriate mechanism would be one that inflicts the least possible impact on our business, such as a very low fee.

9. Blattner Energy has never been contacted by SolarWorld or Suniva to buy cells or modules. Given that we have had a significant market share and presence in the U.S. market, the only explanation for this oversight is that petitioners have poorly functioning sales processes or they themselves understood that their CSPV modules were not marketable for investment grade projects in the U.S. market because of subpar quality, capacity and bankability.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Stephen Jones on September 26, 2017.



Stephen Jones

Annex B-6

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE
COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon

Photovoltaic Cells (Whether
or Not Partially or Fully
Assembled into Other
Products)

Inv. No. TA-201-75

DECLARATION OF JEFFERY GHILARDI

September 26, 2017

I, Jeffery Ghilardi, hereby declare and state as follows:

1. I am the Vice President of Technical Services for EDF Renewable Energy, Inc. (hereafter "EDF-RE"). EDF-RE is headquartered in San Diego, California. EDF-RE has more than 30 years of expertise in the renewable energy industry, with a portfolio of over 8 gigawatts of developed projects and over 4 gigawatts of installed capacity. The primary technology focus of EDF-RE is wind, solar, energy storage and offshore wind.

2. EDF-RE employs approximately 1,000 full time employees and over 200 contract employees throughout the United States.

I have been active in the renewable energy industry for more than 30 years, with domestic and international experience in development, finance, construction, engineering and operations. In addition to solar, I have extensive experience in a wide range of energy generation technologies including, most notably, wind, hydroelectric, combustion gas turbines, and steam turbines, used in the production of electricity for utilities and wholesale power markets.

3. I strongly oppose any import relief that would raise the cost of Crystalline Silicon Photovoltaic (“CSPV”) cells and modules. EDF-RE currently has three executed Power Purchase Agreements (“PPAs”) for three solar PV projects, totaling 430 MWdc. The imposition of tariffs or quotas anything like what Suniva has proposed would bring these projects to a halt. Specifically Suniva’s proposal of a tariff equal to 40 cents per watt on cells and a 78 cent per watt minimum price on modules is commercially unworkable. The existing projects under contract would in all likelihood be discontinued and no new CSPV projects would be pursued. One immediate effect would be the loss of approximately 1,220 lost jobs in the engineering, construction, procurement, and operation of these projects currently under contract.


4. Even if a lower level of trade remedy were imposed, I would expect EDF-RE’s CSPV business to decrease or disappear entirely because it depends on modules being able

to commercially compete against other forms of energy, in particular, wind and natural gas. Utilities will not sign on to a CSPV solar project or buy solar-generated energy through a PPA if it is not cost-competitive with other energy sources. Electricity is fungible, and there are simply too many other acceptable options for a utility to pay more for CSPV.

5. EDF-RE would support a very low-cost mechanism other than a tariff that helps stimulate domestic cell manufacturing and doesn't damage EDF-RE's business operations or the national CSPV solar market. For example, an import charge of no more than 1 cent per watt used to boost US cell manufacturing would be acceptable. While such a charge would no doubt negatively affect EDF-RE's profitability, presumably EDF-RE could absorb such a charge for a limited period of time without having to cancel contracts, discontinue future development plans or layoff employees.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Jeffery Ghilardi on September 26, 2017



JEFFERY GHILARDI

Annex B-7

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF Erik L. Schiemann, 2017

I, Erik L. Schiemann, being first duly sworn, do hereby affirm and state as follows:

1. I am General Manager for Current Powered by GE's Distributed Solar Business, based in Boston Massachusetts ("Current"). Current is a first-of-its-kind startup within the walls of GE, blending advanced energy technologies like LED and solar with networked sensors and software to make commercial buildings and industrial facilities more energy efficient and productive. Current is helping businesses and cities unlock hidden value and realize the potential of their environment. The solar development business in GE started as an experiment 2014 and today has nearly 100 Megawatts of projects which provide less expensive, onsite energy solutions through either direct sales or PPAs.
2. I have worked for GE for 6 years. I have worked in Solar for 4 of those 6 years and have served as the founder and leader of this solar business from its inception. I am directly responsible for all business operations and functions.
3. In 2016, we had 3x growth in our installed base and signed an additional 50MW of pipeline projects in the commercial and industrial spaces. We have had to hire more capacity on our sales/development team in order to pursue the opportunities we now see for 2018.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would destroy US solar demand and create a huge head wind in what has been a massively growing market. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the following effect: Our business would see year over year declines in [] and we would adjust our considerable capital spend in solar accordingly. The value of solar to commercial and industrial customers would decrease and the overall market size for distributed solar generation would decrease in a meaningful, industry-changing fashion. Not only would Current's business suffer greatly, but the subcontractors (electricians, panel installers, civil contractors, local AHJs, etc.) and the OEMs within the solar system supply chain (inverters, racking, balance of system, monitoring, etc.) would suffer a large decrease

in demand and I would expect they would have to adjust spend within their businesses accordingly, likely through considerable layoffs. Overall solar demand within the US across all segments (residential, C&I and Utility) would decrease as the cost of delivered solar would exceed the prevailing cost of electricity in numerous markets.

5. These effects reflect the fact that our business depends on CSPV modules being competitive with other forms of energy. We deliver solar solutions to commercial and industrial customers. They will only sign up for solar energy if the value of solar energy results in immediate savings versus their retail cost of electricity. If the value of solar is artificially raised due to domestic tariffs, our customers will choose a different form of energy delivery to meet their sustainability and cost savings objectives. In the market today there simply is no better way to meet both objectives than on-site solar; and the market cost of onsite solar today is incredibly valuable to our end customer.
6. I would support a very low-cost mechanism, other than a tariff, that helps stimulate domestic manufacturing and doesn't damage our business operations or our national CSPV solar market. As a suggestion, if funds are needed to support domestic manufacturing, the industry could support a \$0.01/w fee on imports without substantially increasing the delivered cost of energy to end customers. This would provide a substantial revenue mechanism to prop up domestic manufacturing without sacrificing the entire domestic market. Our internal analysis has indicated a fee of between \$0.01/w and \$0.02/w would have a limited effect on overall market size and on down stream business (electricians, subcontractors, etc).
7. Further, I would like to address our company's experience with SolarWorld. [

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8. [

]. Additionally, I believe there is no way that they alone can supply the US demand for solar, even if their prices and quality were competitive.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Erik L. Schiemann on September 27, 2017

A handwritten signature in black ink, appearing to read 'Erik L. Schiemann', with a long horizontal flourish extending to the right.

Erik L. Schiemann
GM, Solar
Current, Powered by GE

Annex B-8

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF JOHNNIE TAUL

September 27, 2017

I, Johnnie Taul, being first duly sworn, do hereby affirm and state as follows:

1. I am Johnnie Taul, Chief Operating Officer (“COO”) for DEPCOM Power, Inc. (“DEPCOM”). DEPCOM is a development, engineering, procurement, construction, and operations service provider for utility-scale solar power plants across the United States (“U.S.”). My company employs approximately 100 full-time employees and approximately 1,000 construction employees at project sites across the U.S. In addition to our headquarters in Arizona, we have permanent offices in California, New Jersey and Alabama.
2. As background, I am a degreed engineer with over 8 years of experience in the utility-scale solar power industry. Notably, I have lead some of the largest projects in the U.S., which have generated a total of approximately \$5 Billion in EPC contract revenue.
3. As one of the founders of DEPCOM, I have worked for the company since its formation 4 years ago. Currently, as COO, I oversee engineering, procurement, construction, plant operations and major equipment strategies, including the evaluation, selection and procurement of solar modules.
4. In 2016, DEPCOM constructed over \$200 Million of utility-scale solar projects across the U.S. and procured 600,000 solar modules. Typically, we source 90% of our labor locally, hire veterans first (with 25% veteran labor content) and donate 10% of our net income to the greatest needs in the communities where we work. These are powerful positive impacts to local communities made possible by the rapidly growing solar industry in the U.S. and directed by DEPCOM’s core values.
5. If a lower level of trade remedy is imposed, my business will significantly contract. If a 50% tariff is imposed, the capital cost of an average project would increase 20%, wiping out typical construction margins of about 5%. As a result, projects would be cancelled and tens of thousands of jobs would be lost. If a 25% tariff is imposed, financial returns would still be

impacted to the point of project cancellations. [

.] By comparison, prior to the instant action, we had planned to hire over 150% additional employees from the 4th quarter 2017 through 4th quarter of 2018, which would have resulted in 1000 new jobs.

6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other forms of energy. Every utility solar project that we are bidding (over \$1 Billion in active opportunities), we compete against low-cost natural gas fired generation. Prior to the instant action, utility scale solar was competitive with gas. Now, due to the potential imposition of a trade remedy, the future is in doubt.
7. Furthermore, the effect is not just on our business, but on those of our suppliers and customers as well. For every worker that DEPCOM hires or lays off, our vendors will hire or lay off one as well.
8. I would support a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing and doesn't damage our business operations or our national CSPV solar market. We would support a nominal tariff to go to the U.S. Treasury to support National Debt Reduction, but we do not support government picking winners and losers.
9. For perspective, due to the growing utility solar power market, manufacturing is already coming back to the U.S. with these plans in motion prior to the instant action. DEPCOM fully supports U.S. manufacturing. With our "Buy American First" procurement policy, over two thirds of our content is American-made. I firmly believe that a minimal (less than 5%) tariff or no tariff will actually keep the economics of utility solar competitive with natural gas, which will support continued industry growth, job creation and an environment where domestic CSPV manufacturing can flourish. A free market economy where well-run businesses can compete is far more powerful than any tariff. In contrast to Suniva and Solar World, the poorly run foreign businesses masquerading as U.S. companies, U.S. solar companies are thriving in the current U.S. economic and policy environment.
10. For the record, we will never buy anything from SolarWorld or Suniva. They are toxic to our industry. We have relevant experience with SolarWorld (see previous testimony from DEPCOM CEO Jim Lamon) and they are the worst module supplier, by far, of the 7 suppliers we have used to date. They have proven to be untrustworthy, and incapable of meeting their contractual commitments. [

.]

11. In my experience and current role, I have been through the bankability process of approximately \$5 Billion of utility-scale solar power deals and understand the requirements for obtaining financing for an EPC company and equipment supplier. I can say with confidence that in the last 20 projects I have done, Suniva would not even rise to the level of consideration by a tier 1 financing institution for implementation on a utility-scale solar power project.

NON-CONFIDENTIAL VERSION

12. In summary, on behalf of DEPCOM and the largest job creating industry in the U.S. energy generation market, I ask that you not disrupt this rapidly growing low cost energy source.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Johnnie Taul on September 26, 2017


JOHNNIE TAUL

Annex B-9

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF STEPHEN K. IRVIN

September 25, 2017

I, STEPHEN K. IRVIN, being first duly sworn, do hereby affirm and state as follows:

1. I am Stephen Irvin, president and CEO of Amicus Solar Cooperative (Amicus) based in Boulder, Colorado. Amicus is a Certified B Corporation and the first purchasing cooperative in the United States solar industry. One of our primary goals is to support the CSPV module procurement needs of our 43 member companies, who represent the best in the business of independent, mission-aligned, values-based solar photovoltaic project development, engineering, procurement, and construction firms (our Members). Amicus and our Members are fully committed to quality, integrity, and fairness in every aspect of our businesses. Our Members have excellent reputations and have been in the solar energy industry for an average of 17 years, a testament to our longevity and experience. Our Members currently employ over 1,800 solar PV professionals (developers, salespeople, marketers, accountants, engineers, project managers, electricians, installers, etc.) based in over 60 office locations across 28 states and Puerto Rico.
2. I co-founded Amicus in August of 2011 and have been the president and CEO for 6 years. Before Amicus, I spent 7 years as the CFO and co-owner of Namaste Solar, a solar energy development, engineering, procurement, and construction company based in Colorado, New York, and California. At Amicus, I am directly responsible for engaging both domestic and foreign CSPV cell and module manufacturers under multi-year master supply agreements to support the CSPV module purchasing needs of our 43 Members.
3. In 2016, our Members installed over 200 MW of CSPV projects with total revenues of approximately \$350MM. All of our Members have seen dramatic growth over the past few years, with the reduction of CSPV cell and module costs supporting the ability of our Members to add a significant number of new high-quality, well-paid jobs in their communities. Without these cost reductions, many of our 1,800 jobs would not exist today. In 2017, the Members had planned to install approximately 385 MW of CSPV projects, but as Amicus is involved directly in procuring modules for these projects, we have seen many

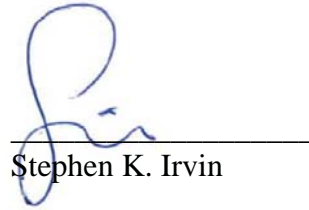
projects delayed or postponed due to a lack of module supply resulting from dramatic pre-buying activity in the U.S. market to mitigate the impacts of a potential remedy associated with this investigation.

4. I strongly oppose any import remedy that would significantly raise the cost of CSPV cells and modules. I believe import tariffs or quotas would artificially increase the cost of our Member's solar projects and ultimately not allow these projects to be built as their price of solar electricity would no longer be at parity with, or offer savings to conventional sources of electricity generation. The simple fact of the matter is that demand for solar energy, and the resulting economic growth (direct new solar jobs and the multiplier effects in supporting industries) has and will only continue to occur if the price per kWh of solar energy is on par, or less than, current and future utility rates. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78-cent per watt minimum price on modules, we will be raising the price of solar power well above utility rates in the majority of active U.S. solar markets today, and for many years to come. In 2018 alone, I would expect a dramatic reduction (likely 35%-40%) in the MW's installed by our Member businesses if Suniva's proposal is implemented. This would require the principals and owners of our Members to adjust their future plans, which could likely involve downsizing their staff.
5. Even if a lower level of trade remedy is imposed, whether it is 50% or 25%, the kWh price of solar electricity is so sensitive to increases in project costs that we would still see a magnitude of MW's not being installed in 2018 and beyond.
6. These effects reflect the fact that our Members businesses depend on the cost of CSPV modules being able to compete against other forms of energy. Our Members build both smaller residential projects as well as larger projects for businesses, hospitals, schools, municipalities, governments, non-projects, and utilities. Over two-thirds of the Members installation volumes are these larger projects where the kWh price of solar electricity is so sensitive to changes in CSPV cell and module costs.
7. Furthermore, the effect is not just on the employees of our Members businesses, but also on all the stakeholders involved (their suppliers, customers, investors, local communities, etc.). As in any industry, there are clear secondary and tertiary multiplier effects from our Members businesses which support professionals in banking, accounting, auditing, marketing, digital media, engineering, architecture, real estate, janitorial services, and sub-contracted labor in numerous fields. Many thousands of jobs are impacted by the sustainability and growth our Members.
8. I respect the professionalism and integrity of the International Trade Commission and the decision of the Commissioners to find injury in this case. Based on my description of how sensitive the kWh price of solar electricity is to increases in CSPV cell and module costs, and how such an increase would immediately make solar more expensive than conventional power, I would recommend and support a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing and doesn't damage our business operations or our national CSPV solar market. As one example, I would support a one-cent per watt fee that was used specifically to invest in domestic CSPV cell and module production. This fee would be impactful yet balance the risk of potential job losses. I would also suggest

immediately directing collected duties from existing AD and CVD tariffs on Taiwanese and Chinese cells and modules toward investments in domestic production. Overall, my greatest concern and focus is on the over 1,800 solar professionals being employed at our Members businesses. The imposition of any significant tariff or increase in CSPV module costs will directly threaten their livelihoods, negatively impacting their families and the wonderful communities being built around a clean energy future in our country.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by STEPHEN K. IRVIN on September 25, 2017.



Stephen K. Irvin

Annex B-10

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells

(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

**AFFIDAVIT OF KEVIN M. SCHULTE
SEPTEMBER 25, 2017**

I, KEVIN M. SCHULTE, being first duly sworn, do hereby affirm and state as follows:

1. I am co-founder, owner and Chief Executive Officer for SunCommon, based in Ontario, New York and Waterbury, Vermont. SunCommon is a Certified Benefit Corporation that specializes in solar development and the engineering, procurement and construction (EPC) of residential, commercial and community scale solar systems. We are the market-leading solar business in Vermont, with a focus on residential, community and small commercial installations; and the largest solar-sector employer in Western New York, with a burgeoning residential and community solar business, and a thriving best-in-class commercial solar development and EPC business. SunCommon employs 48 full time employees in New York, 85 full time employees in Vermont, and subcontract an additional 150+ ironworkers, electricians, laborers, engineers, and supervisors throughout any given year.
2. I have worked for SunCommon, formerly Sustainable Energy Developments, for a total of 16 years. As the CEO, I am directly responsible for the strategic vision and business development of our company; providing a quality and sustainable livelihood for our employees, and the delivery of the business models that will allow them to achieve our mission: to tear down the barriers to clean energy and use our business as a force for good. It is my job, and my duty to my employees and partners, to find economically viable means to deploy solar energy. Over the years, our business model has morphed, financing models and policy have changed, technology and products have advanced, and development and deployment mechanisms have evolved to meet ever changing market conditions. I navigate these changes everyday to ensure the my employees have the ability to successfully deploy solar products with the support of reliable project financiers, and State and National policies that remove obstacles to the deployment of renewable energy to help meet our country's evolving energy needs and demands. I make the the final decision regarding equipment selection from the wide array of available manufacturers and suppliers based upon

availability, performance, price-point, financeability, and long-term bankable warranties; this equipment selection is facilitated via our ownership/membership in the AMICUS Solar Purchasing Cooperative.

3. In 2016, SunCommon was the fastest growing business in the greater Rochester, NY region with a three year compound annual growth rate of over 600%; in response, we tripled our number of local jobs. We provide high quality, living-wage, local jobs with better than market benefits. Rochester, NY is an economically disadvantaged region with one of the highest concentrated rates of poverty in the Nation. To date, we have installed nearly 70 MW of renewable energy of varying project sizes, from 4 kW residential systems to over 7 MW of commercial projects powering hospitals, universities and towns. In 2017, we intend to complete more than 30 MW of installed solar and increase our local employment through partnerships with the City of Rochester and a local employee-owned cooperative that is working to provide meaningful, sustainable wealth building opportunities to residents in the City's poorest neighborhoods. Our current number of total customers served is over 4,000 and our revenues over [].
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. Import tariffs or quotas will decimate the cost-effective delivery of new energy projects, employment growth, and economic development that we are bringing to the market. Import tariffs will negatively impact the market-based solution that our industry has developed to meet the country's energy demands. I have already experienced an increase in PV module prices from \$.10 - \$.25/Watt since the introduction of this case, as companies have been pre-emptively stockpiling modules to cushion the devastating impacts the Petitioners' proposed remedy would have on the industry. As a result, I have had more than 10 MW of projects delayed, creating a projected shortfall of more than \$15 Million in revenue for 2017. Solar has experienced significant success in the marketplace as the cost of solar electricity has reached parity with conventional generation in our primary markets. The opportunity afforded by the removal of the volatility and vagaries of the market for 20-25 years has strongly driven consumer demand; there are no other opportunities for this price security available from the conventional energy industry (if price were the only driver considered). Our residential and community solar options in New York and Vermont are driving modest 10-15% cost savings to our customers, in most cases. This modest savings, coupled with effective financing, and consumer choice to engage in a low carbon future without large sums of out-of-pocket cash has driven consumer demand and confidence in our products. With the imposition of the Petitioners' proposed \$.40/watt duty on imported cells and \$.78/watt floor price for imported modules, we expect significant injury to our ability to deliver solar energy at parity with grid rates for residential to commercial/industrial (C&I) end users. The industry will be reduced to micro-markets, forced to rely upon the support of grant funding, increased subsidies or tax credits, and further government support in order to continue to deliver economically viable solar energy projects; it will revert to bloated state policy markets that might allow projects to continue in response to a doubling of module prices. We anticipate the largest impact to our C&I solar sector where our already razor thin margins would be eliminated, forcing us to abandon many of our projects to "die on the vine." I will need to immediately halt our employment growth plan in order to rework our

business model and to chase non-silicon solar module solutions, such as thin film. I anticipate a loss of two-thirds of our Western NY volume. Our Vermont residential business growth will slow dramatically. We will accept significantly reduced margins, and will no longer be able to offer viable savings to our customers. As a market solution to climate change, we would like to avoid any layoffs, which, as a business executive, will force me to significantly modify our business growth based on new markets and razor thin margins. I am plainly unsure how we will accomplish this goal. The New York solar market is already challenged by low natural gas prices but we benefit from a strong set of State policies that have encouraged solar deployment. It is because of the reasonable returns and at parity or better-than-utility prices for our consumers that this market succeeds. These proposed tariffs will increase the cost of most projects by 15 to 30%, increasing virtually everything we do to a price premium for our customers. I re-iterate, solar growth is driven by price parity or better than utility power.

5. Even if a lower level of trade remedy is imposed I expect injury to our business growth and our ability to deliver solar projects at parity with grid rates. If a 50% tariff is imposed, the kWh price of solar electricity is so sensitive to project costs it will ultimately reduce our business and installed capacity to half the currently anticipated MW. Even if a 25% tariff is imposed, I expect a 25 to 30% reduction in business in 2018 alone.
6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other forms of energy. The majority of our customers (at least 90%) are switching to solar because it is financially in their best interest to do so. Without competitive CSPV modules at lower rates, the price point for the majority of our projects disappears. Residential customers will have no incentive to switch to solar if there are no cost savings. C & I customers will only pursue solar solutions if they are cost-competitive with natural gas, wind, or other energy sources.
7. Furthermore, the effect is not just on our business, but on those of our suppliers and customers. SunCommon takes pride in the fact that we invest in our community and are able to employ more employees and share our success through the vertical spread of wealth. In addition to the solar PV manufacturers we purchase through, we additionally contract with and make every effort to buy local supplies and support local businesses with our marketing dollars and various business supply chains. We provide a steady stream of reliable contracted work to local small businesses and industries throughout our communities. These services range from temporary construction contractors, ironworkers, electricians, laborers, engineers, managers, environmental quality firms, tax firms, and legal firms; we provide a steady stream of revenue to heavy equipment rental companies and operators, roofing contractors, electricians, janitor and remediation services, marketing and IT support, catering and event companies and venues, auto-mechanic shops, and small-part supply vendors. Every job counts. There are innumerable small businesses that have earned the loyalty of SunCommon when it comes to the supply and purchase needs of a growing small business in a small community. These solar reliefs will reduce our demand of the inverter and racking manufacturing industry; from small scale projects requiring the purchase of microinverters to single inverters and associated DC optimizers, to large scale projects requiring multiple

commercial scale inverters and utility upgrades from ground mounting to roof mounting systems and attachments. A reduction in solar projects will create an immeasurable ripple effect of lost revenue and employment for partners and customers alike. Perhaps most important, is the realistic end to our research and development efforts towards a means to bring solar energy to low income communities. The proposed tariff will completely kill the premise that our SunShot solar grant is based upon, and likely halt the attempt to bring environmental justice to all.

8. At the most, I would suggest a very low-cost mechanism other than a tariff that helps stimulate domestic manufacturing to prevent the unintended yet inevitable negative impact a tariff will impose upon the solar industry. I would suggest a \$.01/Watt fee that returned revenues to boost US cell manufacturing as an acceptable recommendation. The current state of the solar energy business has been a slow and steady struggle to gain the ground it finally holds. The industry is finally experiencing the benefits of continued price decreases - the increased economies of scale, benefits and opportunities, progress in technology and innovation that have directly led to higher quality products available at lower prices will be completely undercut by the remedy proposed by the Petitioners. A tariff will only wrongfully disrupt an industry that is not based upon manufacturing but has been built upon installations. Volatile retail energy rates are increasing; and customers are demanding alternative energy sources. The two petitioners in question have not demonstrated the ability to provide the quantity of product to meet this demand, financeability, or bankable warranty of the Tier 1 products that we put our stamp of approval upon. While we root for and support a successful solar manufacturing industry in the United States, only a very low fee is the acceptable remedy; it will slow our current business growth plans, and will stall our utility scale business plan, and will halt future growth and infrastructure purchases and ownership scenarios in the short term, but it will lessen the impact upon our ability to deliver on our current pipeline projects and would hopefully allow us to retain all of our current employees otherwise impacted by the proposed remedy.
9. While I respect the professionalism and integrity of the International Trade Commission and the decision of the Commissioners to find injury in this case, I must stress that as a solar developer operating in the current market, it will be an extremely difficult choice to purchase SolarWorld or Suniva panels for future installations. This is first and foremost due to the fact that we are a Benefit Corporation that believes in people, planet, profit - in that order - and these two manufacturing firms, through the petition at hand, have demonstrated that they do not support the core values that we have founded our business upon. The proposed remedy hurts solar deployment in the US. This proposed remedy damages our ability to rapidly respond to our current climate crisis in the US. This proposed remedy hurts our ability to achieve our energy independence from fossil fuels and foreign competitors. US made products of similar quality to foreign made products are not chosen solely on its 'place of origin'. Any product must prove itself to be a premium product and fill the appropriate market niche where it is marketed, sold and delivered based on those desired premiums. The Petitioners have ignored this strategy to their own detriment. Up until this point, we have been agnostic towards selected manufacturers; we have sought Tier I products, backed by long-term warranties with price points that are enticing and satisfying to our customers. To

reiterate: low natural gas prices in Upstate New York determine the competitive price point for our PV systems. We can't afford premium products and still compete. We must continue to rely on economic products with a strong financeable warranty to remain at parity with grid power.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Kevin Schulte on September 25, 2017

A handwritten signature in blue ink, reading "Kevin M. Schulte". The signature is written in a cursive, flowing style with a large initial "K" and a distinct "M".

Kevin M. Schulte

Annex B-11

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

**AFFIDAVIT OF ROBERT A. MASINTER
SEPTEMBER 27, 2017**

I, ROBERT A. MASINTER, being first duly sworn, do hereby affirm and state as follows:

1. I am the Vice President of AES Distributed Energy, Inc. ("AES DE"), based in Boulder, Colorado. AES DE is a wholly owned subsidiary of The AES Corporation, a Fortune 200 company based in Arlington, Virginia. AES DE develops, constructs, owns and operates a fleet of distributed solar projects located across the United States, providing clean and cost-effective renewable energy to utilities, municipalities, school districts, and businesses. My company employs more than 50 full time employees.
2. I have worked for AES DE for nearly four years. Prior to serving as AES DE's Vice President I was its Chief Operating Officer. I have more than ten years of power industry and renewable energy experience, including two years leading product management for a US-based solar equipment manufacturer. As Vice President of AES DE, I am directly responsible for project engineering, procurement, construction, as well as long-term asset management and operations.
3. AES DE was founded 7 years ago as Main Street Power and was acquired by The AES Corporation in 2015. In the last 18 months alone, AES DE has developed over 150 MW of projects that are currently in development, under construction or in operation. These projects are located in California, Hawaii, New York, Massachusetts, Rhode Island, and other states serving a diverse array of commercial, utility and government clients with clean reliable power.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would devastate solar demand in every state across the United States by artificially raising the cost of solar projects. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the following potential effect for projects that employ modules subject to any tariff:

- a. Projects that are either currently in development or in construction will either be cancelled or will need to be renegotiated, as the pricing offered through long-term power purchase agreements (PPA) for those projects passed along the value of decreasing project costs to our customers in the form of less expensive energy rates;
 - b. With increased project costs, PPAs for new solar projects will become less competitive as compared to other sources of power, demand for solar-generated energy could decrease and fewer solar projects will be built;
 - c. Overall demand for solar panels will decrease as fewer solar projects are built;
 - d. the cost of solar-generated energy for our customers will increase;
 - e. [].
5. Even if a lower level of trade remedy is imposed, I would also expect my business to contract. The tremendous growth of solar over the last six years has been fueled by its ever-decreasing project costs and increasing competitiveness as compared to other energy sources. Our business depends on CSPV modules being able to compete against these other forms of generation. If project costs increase and thus the PPA pricing we can offer increases, our commercial and industrial customers are likely to enter into fewer long-term PPAs and we will build fewer solar projects. The impact of tariffs is not limited to our commercial and industrial projects. Any tariffs will also impact our utility business, where the cost of CSPV modules is an even greater percentage of total project cost. Five years ago, the majority of utility solar procurements were driven by the need to meet renewable portfolio standards and other systematic goals. Today, that has shifted and many utility procurements are driven more by the need to procure the most cost-advantaged fuel source, which in many cases recently has been solar. With increased project costs, PPA rates must rise and utilities will be less likely to undertake a CSPV solar project or buy solar-generated energy through a PPA if it's not cost-competitive with natural gas, wind, or other energy sources.
6. Furthermore, the effect is not just on our business, but on those of our suppliers as well. If solar is less cost competitive and we can sign fewer PPAs, then we will build fewer projects. We will buy less racking (much of it made with steel manufactured in US steel mills), CSPV modules, and inverters. We will hire fewer electricians, engineers, solar installers, and construction workers. Our contractors will purchase less equipment and materials for the balance of plant – including US made cable, combiner boxes, and protection equipment. The ripple effects of a tariff on foreign-origin CSPV panels will likely be far reaching, affecting not only AES DE, but our suppliers, our construction contractors, their contractors and subcontractors and the communities in which they live and the communities in which these clean, reliable energy projects are being developed and operated.
7. Finally, I note that given the break-neck speed with which the broader solar industry is developing and continually evolving, tariffs would not be an effective means for supporting

domestic CSPV manufacturing businesses. The broader solar industry in the United States is plainly a very competitive space. All industry suppliers and participants - equipment manufacturers, installers and developers – need to constantly optimize and reduce their costs to meet US market demands and to be relevant. A tariff would undermine healthy competition to bring solar energy to the market at the lowest price possible, artificially subsidizing certain businesses (US CSPV cell and module manufacturers) while penalizing other businesses that have adapted to market fundamentals (the entire remaining portion of the US solar industry).

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Robert A. Masinter on September 27, 2017

A handwritten signature in black ink, appearing to read "R. A. Masinter", written over a horizontal line.

Robert A. Masinter

Annex B-12

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF EDMOND L. MURRAY

September 26, 2017

I, Edmond L. Murray, being first duly sworn, do hereby affirm and state as follows:

1. I am President for Aztec Solar, Inc. based in Rancho Cordova, CA. We install solar electric systems for both residential and commercial customers. We are able to save money for these customers by giving them a less expensive alternative to conventional electricity. My company employs 30 full-time employees. I have worked for Aztec Solar for 38 years. In my current role as the president, I am directly responsible for managing the company and deciding where to source products for sale.
2. I am also the President of the California Solar Energy Industries Association, a 475 member company organization. Most of the companies in the organization are similar to my company in that many of them are small businesses that employ fewer than 100 employees each. These companies provide good paying jobs; many of them provide retirement plans, medical, dental and vision plans and long term employment. These jobs cover the entire spectrum of the United States labor force, including warehouse workers, general laborers, skilled solar panel installers, electricians, sales consultants, engineers and executive level employees. These companies contribute to the local economy. The ancillary expenditures of these companies are revenue sources for local building departments and a myriad of support companies. If there is a significant solar panel tariff imposed many of these jobs will disappear.
3. In 2016, Aztec Solar installed more than 300 solar systems totaling 6 MW of clean energy, both residential and commercial, helping our customers save significant energy dollars.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules because tariffs, minimum import prices, or quotas would decimate my business. If Suniva's proposal of a 40 cent per watt tariff on cells and a 78 cent per watt minimum price on modules is granted, my company will be forced to lay off part of our staff because we will not be able to show a positive return on investment for our customers. We estimate the net effect of import relief would be to stifle a growing industry across the United States, causing

massive unemployment and ultimately crushing the solar industry. Even if a lower level of trade remedy is imposed, for instance a 25% or 50% tariff, I expect many layoffs to occur.

5. The reality of the electricity market is that residential and commercial customers will not switch to solar if there is a reduced cost savings compared to other sources of electricity. Although solar is considered a good environmental technology, most people today install solar because of its favorable return on investment. When solar loses its cost competitiveness due to import relief and the demand for solar plummets, the effects will ripple through other industries in the solar business, including financial institutions due to reduced need for capital. Moreover, all of the industries which supply ancillary components of solar systems, including wire, conduit, roof racking and electrical components, will be affected dramatically and will suffer significant loss in business and workforce reduction.
6. I would support a very low-cost mechanism other than a tariff that helps support domestic manufacturing without injuring our business operations or our national CSPV market. My recommendation would be a 1 cent per watt fee that would boost U.S. cell and module manufacturing, which would still impact my business negatively but at least would prevent layoffs.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Edmond L. Murray on September 26, 2017.



Edmond L. Murray

Annex B-13

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF James B. Marlow, Jr
September 26, 2017

I, James B. Marlow, Jr, being first duly sworn, do hereby affirm and state as follows:

1. I am President and Co-Founder for Radiance Solar based in Atlanta, Georgia. Radiance Solar is an EPC that focuses on commercial and utility scale solar PV projects in the southeastern US. My company employs 46 full time employees and we have had up to 100 project employees. We have built over 300 projects in 10 states and do operations and maintenance work for solar plants across the southeastern US.
2. I have worked for Radiance Solar for 10 years, I am directly responsible for sales, marketing, business development and public policy for our company.
3. In 2016, Radiance Solar built 20 MWs of solar PV plants in 36 projects across the southeast. We built projects for utilities in five states (GA, SC, TN, FL, AL). We have built over 90 MW since our founding in 2007 and manage 100 MWs in our operations and maintenance work. Solar PV is 100% of our revenue and work.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would reduce the solar jobs in the state of Georgia by 50%. There are now over 4,000 solar works in Georgia, which are primarily in the utility scale solar market. Utility scale solar is driven by solar cost and economics alone. Suniva and SolarWorld were our preferred US made panel but they only manufactured 60 cell products domestically while the majority of our work is with 72 cell solar panels. Although, Suniva and Solarworld offered a 72 cell product these products were made in other countries including China. With the imposition of Suniva's proposal of 40 cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the following effect that many southeastern solar projects will be cancelled limiting the work available for our company and other solar companies resulting in layoffs and limited growth for our industry. Our company has already been negatively impacted by this trade case. We have seen prices increase, long term suppliers have not accepted orders, cancelled orders and changed module Wattages

requiring redesign and addition cost. The passage additional tariffs for Suniva and SolarWorld would magnify this negative impact drastically. Customers are carefully watching this and price increases will certainly delay or kill projects and require layoffs if our business decreases that size and number of projects that are available in the market. Customers are also switching the thin film panels to avoid tariffs.

5. Even if a lower level of trade remedy is imposed (I believe there should be no remedy in this case, because I believe in this case that imposition of an import tariff is inappropriate), I would also expect the business of Radiance Solar to constrict. If a 50% tariff is imposed, I expect a significant reduction in projects across the country and our southeastern markets. Even if a 25% tariff is imposed, I expect significant market challenges and a reduction in the number and size of projects.
6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other forms of energy. The southeastern US has historically had lower electric rates, policy barriers and very few state incentives (North Carolina) or no incentives (Georgia). Markets with higher electric rates may be able to better accommodate price increases but the southeastern US will not be able to withstand prices like states like California, NY, Massachusetts and other markets.
7. Furthermore, the effect is not just on our business, but on those of our suppliers and customers as well. Solar panels make up of around 50% of solar PV systems costs. The other components – inverters, racking, wire, combiner boxes, transformers, monitoring, tools, and other items – these companies will also be negatively impacted.
8. Radiance has been a longtime supporter of Suniva as they are headquartered 20 miles from our office in Atlanta. We used Suniva on many projects in the southeast but they were not able to keep up with the increase in panel efficiency. Our most demanding issues with Suniva was panel availability, specifically with their 72-cell product. Several years ago, we worked with Suniva on the first 20 MW solar plant east of the Mississippi only for them to withdraw from the project unable to supply the volume of panels needed. These panels were to be manufactured in China.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by James B. Marlow, Jr on September 26, 2017



James B. Marlow, Jr

Annex B-14



**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products), Inv. No. TA-201-75

AFFIDAVIT OF RICHARD L. PETERS, Jr.
September 25, 2017

I, Richard L. Peters Jr., being first duly sworn, do hereby affirm and state as follows:

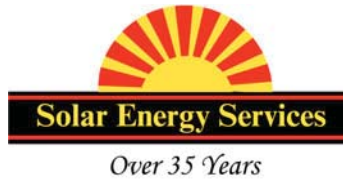
1. I am President and CEO for Solar Energy Services, Inc. (SES), based in Millersville, Maryland. Our firm designs, builds and maintains solar systems for residential, commercial and institutional customers. We are both an installer and an EPC. We employ 28 full-time employees and 6 contract employees. Early in 2017 we opened our first branch office in Easton, Maryland, to better serve our growth on the Eastern Shore of Maryland and Virginia.
2. In 2008 I left a comfortable position in IT services to enter the solar industry, primarily due to my passion for clean energy. I joined the firm as President in late 2008. I became a majority shareholder of the company in December 2012, prior to which I had had a minority share since 2009. In my current role, I am very involved in managing strategy for sales and purchasing for our firm.
3. [] Our customers include homeowners, small businesses, churches and other non-profit institutions (including the Brookings Institute and Chesapeake Bay Foundation), and federal customers (such as the U.S. Navy). The majority of our projects are in Maryland and Washington DC, with occasional work in Virginia.
4. I strongly oppose any import relief that would raise the cost of CSPV cells and modules because I believe tariffs or quotas would be a major blow to the demand for solar installations in Maryland, our home state. I genuinely believe that an imposition of Suniva's proposed tariff of 40 cents per watt on cells and a 78 cent per watt minimum price on modules would be a crushing blow to our firm. With such trade restrictions in place, our sales would decrease by 50% or more, forcing SES to lay off installers and managers. I project that under this scenario, our firm would be forced to contract our workforce to just 15 employees.



Solar Energy Services

Over 35 Years

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5. Even under a lower level of trade remedy, SES would be subjected to severe repercussions. Under a 50% tariff, our annual sales would decrease by about 40% and our staffing would be reduced by a comparable rate. Even if a 25% tariff is imposed, I expect our sales to decline by at least 25%. Many consumers of solar energy are of the mindset that price and the technology will always be getting better. Thus, they are very easily delayed in their purchasing decision when there is any level of uncertainty or cost increases. We have already seen this in Maryland where the state incentive has declined significantly in the past 18 months. A solar tariff will compound that effect dramatically, further discouraging our present and potential consumers from purchasing solar and thereby diminishing demand for solar.
 6. Simply put, in order for us to maintain and grow our business, CSPV modules need to be cost-competitive against other sources of electricity. The overwhelming majority of our customers make their solar purchasing decisions primarily based on solar's cost-competitiveness.
 7. Moreover, our various subcontracting companies will likewise suffer from adverse effects of import relief. [
] We also contract with engineers, roofers, crane operators, equipment rental firms, sales and marketing vendors, and others whose work is an indispensable part of the solar project industry. These are small businesses that are mostly local to Maryland and Washington DC.
 8. Furthermore, a tariff would not convince us to start buying cells from Suniva or SolarWorld. We used to be a frequent Suniva customer for our residential business until Suniva disappointed us on multiple occasions. On one occasion, Suniva supplied Chinese manufactured panels although we had specifically quoted U.S. manufactured panels because our end-customers had been presented proposals that specified U.S. manufactured panels. This created significant burdens for our cash flows and procurement logistics and dealt a serious blow to our customer relationships. On another occasion, we experienced a significant aesthetic quality issue that occurred in the field and was not obvious to us prior to installation. When we reported this issue to Suniva, it turned out Suniva had already been familiar with the problem. Our team had to remove and replace the blemished panels from a high, steep roof, which was very costly. Suniva eventually covered some of our costs, but the issue was expensive for all parties, not to mention the loss of goodwill with our customer. Additionally, Suniva was unable to fulfill orders to our Suniva distributor in the Q4 2014 and Q4 2015. As a result, we lost sales and had to expend significant resources to locate substitute product, absorbing the associated costs. These very negative experiences compelled our decision to seek alternatives to Suniva.
 9. Our experience with SolarWorld in about 15 projects was not much better. We specified SolarWorld product in 2014. Supply issues caused us to delay some installations for months that year, and we finally found the product through a new distributor, but at an inflated price. This experience frustrated our customers and degraded our relationship with them. Because



of the delays and the increased price we had to pay due to SolarWorld product shortages, these projects in the end were not profitable.

10. It is important for the Commission to note that in our residential solar marketplace, both Suniva and SolarWorld have already benefitted from a price premium. Many residential customers were opting for U.S. manufactured panels even when imported, alternative panels were being offered at a lower price. This shows that price competition with imports was not the driving force behind any injury Suniva and SolarWorld have experienced in recent years.
11. I believe domestic solar manufacturing is an important business and I support efforts to assist its development for our future. Therefore, I would support a very low-cost mechanism (other than a tariff) that would help domestic manufacturing without harming the rest of the solar industry. I do believe that a modest fee or tax of some kind (1 to 2 cents per watt) could serve well to generate funds to support such development. Thanks to the cost trend in solar that I have witnessed in my nine years in the business, I believe our firm can realistically absorb that modest level of burden without being dramatically impacted in our sales or our projected growth in revenue and employment.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Richard L. Peters, Jr., on September 26, 2017



Richard L. Peters, Jr.

Annex B-15

**U.S. INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or Fully Assembled into Other Products), Inv. No. TA-201-75

AFFIDAVIT OF CONSTANTINO NICOLAOU

September 25, 2017

I, Constantino Nicolaou, being first duly sworn, do hereby affirm and state as follows:

1. I am the Chief Executive Officer for PanelClaw, Inc., based in North Andover, Massachusetts. We are a flat roof mounting systems company, supplying structures for solar systems installed in three continents including North America. In the United States, we are the market leader for such flat roof structures. PanelClaw has been in business for almost 10 years and has outsourced the manufacturing of our products to both domestic and foreign contractors. We employ 26 full-time employees in Massachusetts, New Hampshire, California, Texas, North Carolina, Colorado, and New York.
2. I have worked for PanelClaw from the inception of the company. I started as the first employee, with the title of General Manager, and have continued on to become the CEO. I am directly responsible for our sales and marketing strategies and global business development. Our customers are direct buyers of photovoltaic modules, which use our structures for mounting flat roof applications. Our strategic decisions on growth, hiring, and product development will be subject to the impact from the remedy decision in this case.
3. In 2016, our structures were used to deploy between 150MW and 180MW of PV on flat roofs in the United States. This represents steel or aluminum mounting structures for 450,000–550,000 solar panels shipped to approximately 170 customers in the United States. The sales of solar panel mounting structures, license fees for such sales, and services related to the deployment of solar panel mounting structures represent 100% of our total revenue.
4. Accordingly, because our business depends on the robust consumer demand of PV panels and panel mounting structures, I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would devastate the demand for solar in the United States. With the imposition of Suniva's proposal of a \$0.40/watt tariff on cells and a \$0.78/watt minimum price on modules, I expect the following effect: cancellation of orders for existing projects, reduction in the number of projects for the foreseeable future, a hiring freeze at our company for the foreseeable future, increased pressure to manufacture our goods overseas in order to maintain margins, a slowdown in our product development efforts, and potential job cuts.

NON-CONFIDENTIAL VERSION

5. Even if a lower level of trade remedy is imposed, I would expect my business to contract nonetheless. If a 50% tariff is imposed, I expect, based on initial estimates, a 30% decrease in our 2018-2021 shipment projections for the United States. Even if a 25% tariff is imposed, I expect, based on initial estimates, a 15% decrease in our 2018-2021 shipment projections for the United States. Such decline in shipments would severely hurt our business and threaten our ability to hire or retain employees.

6. These effects reflect the fact that our business depends on CSPV modules being able to compete against other sources of energy. Our customers tell us that projects that “pencil out” at today’s module prices will be undoable with \$0.78/watt module prices. With average rooftop installed costs of \$1.56/watt in 2016 for rooftop solar, according to GTM, a \$0.78/watt price floor would take us to nearly \$2.00/watt in installed cost. Price drives the market in solar: more expensive modules will directly translate to fewer solar projects, and fewer projects will directly translate to fewer jobs.

7. Furthermore, our suppliers and customers will also suffer if import relief is imposed.
[

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8. I would support a very low-cost mechanism, other than a tariff, that helps stimulate domestic manufacturing without harming our business operations or our national CSPV market. One idea is a \$0.01/watt fee whose revenue goes toward supporting U.S. cell manufacturing: this very low fee would have an insignificant impact on our business projections.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Constantino Nicolaou on September 25, 2017.



Constantino Nicolaou

Annex B-16

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

***Crystalline Silicon Photovoltaic Cells (Whether or Not Partially or
Fully Assembled into Other Products), Inv. No. TA-201-75***

AFFIDAVIT OF DAVID ZWILLINGER

September 27, 2017

I, David Zwillinger, being first duly sworn, do hereby affirm and state as follows:

1. I am the President of D. E. Shaw Renewable Investments, L.L.C. ("DESRI"). DESRI is a member of the D. E. Shaw group and based in New York, New York. DESRI and its affiliates own and manage long-term contracted renewable energy assets in the United States, with a portfolio of 28 projects totaling approximately 1,350 megawatts of capacity across 15 states.
2. I have worked for the D. E. Shaw group for 12 years. In my current role, I oversee DESRI's acquisition, construction, and operations of renewable energy projects. In this role, I am responsible for overseeing the selection of solar modules for DESRI's projects.
3. In 2016, DESRI and its affiliates purchased approximately[] of CSPV modules for the construction of solar projects in the United States.
4. []

[]

5. []

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6. [

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Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by David Zwillinger on September 27, 2017


David Zwillinger

Annex B-17

**BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.**

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

**AFFIDAVIT OF RYAN S. CREAMER
SEPTEMBER 27, 2017**

I, RYAN S. CREAMER, being first duly sworn, do hereby affirm and state as follows:

1. I am the CEO of sPower, based in Salt Lake City, Utah. sPower is a renewable energy developer and independent power producer. SPower develops, constructs, owns and operates over 1 gigawatt of solar energy projects across the United States. My company employs more than 100 full time employees. In 2016 alone, with the projects that we developed and built we were responsible for creating over 2500 jobs and have invested over 2 billion dollars in solar energy projects in the United States.
2. I am one of the founders of sPower and have been here since 2012. Prior to forming sPower, I worked in the nuclear services industry at a company called Energy Solutions where we worked with all 104 nuclear reactors in the United States. Before that, I worked in the coal-fired power plant business where we recycled coal ash from 175 of America's 250 coal plants into the concrete ready mix industry. I have more than fifteen years of power industry and renewable energy experience. As CEO of sPower, I am directly responsible for all aspects of the business including investment decisions, equipment procurement, project development and growth.
3. In the last four years, sPower has developed, constructed and financed over 1 GW of solar installations in the U.S., from California to North Carolina to New York. sPower's portfolio of operating solar assets includes both commercial rooftop projects as small as 100 kW as well as large utility-scale projects selling wholesale power to some of the largest electric utilities in the country. sPower's portfolio also utilizes both domestic modules as well as imported modules, including some Suniva and SolarWorld modules.
4. I am strongly opposed to any import relief that would raise the cost of CSPV cells and modules. The imposition of import tariffs would destroy solar demand across the country and thousands of good jobs along with it. With the imposition of Suniva's proposal of 40


cents per watt on cells and a 78 cent per watt minimum price on modules, I expect the following potential effect for projects that employ modules subject to any tariff:

- a. Many, if not all, of our projects that utilize CSPV modules that are scheduled for construction in 2018 and 2019 will either be abandoned or materially impacted. The life cycle of these projects is often three to four years. We have signed power purchase agreements (“PPAs”) with the expectation of being able to procure modules at market prices. If we had to procure modules for these projects at an artificially inflated price, as proposed by Suniva, the executed PPAs would no longer be economical for us and we would likely be forced to abandon them.
 - b. With increased project costs, PPAs for new solar projects will become less competitive as compared to other sources of power, demand for solar-generated energy could decrease and fewer solar projects will be built;
 - c. Overall demand for solar panels, solar racking, solar inverters, transformers, combiner boxes and all other components of solar construction (many of which are manufactured here in the United States) will decrease as fewer solar projects are built;
 - d. The cost of solar-generated energy for our customers will increase;
 - e. Manufacturing jobs in the United States for solar racking, solar inverters, transformers, combiner boxes and other components of solar construction will be lost due to decreased demand for products.
 - f. Construction jobs, many of them experienced union workers, will be lost as projects are abandoned and the overall market contracts.
 - g. Over the last four years sPower has grown from approximately 10 employees to over 100 employees and has developed over 1 GW of new projects. In 2016, with the projects that we developed and built we were responsible for creating over 2500 jobs and invested over 2 billion dollars in solar energy projects. This growth will likely be slowed if tariffs are imposed and fewer projects can be developed.
5. Even if a lower level of trade remedy is imposed, I would also expect my business to contract. The tremendous growth of solar over the last six years has been fueled by its ever-decreasing project costs and increasing competitiveness as compared to other energy sources. Our business depends on CSPV modules being able to compete against these other forms of generation. If project costs increase, and the PPA pricing we can offer increases, our wholesale energy customers are likely to enter into fewer long-term PPAs and we will build fewer solar projects.
6. Furthermore, the effect is not just on our business, but on those of our suppliers as well. If solar is less cost competitive and we can sign fewer PPAs, then we will build fewer projects. We will buy less steel for racking, fewer panels for production, and fewer inverters. We will hire fewer electricians, engineers, solar installers, and construction workers. The ripple effects of a tariff on foreign-origin CSPV panels will likely be far reaching, affecting not

only sPower, but our suppliers, our construction contractors, their contractors and subcontractors and the communities in which they live.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by Ryan S. Creamer on September 27, 2017


Ryan S. Creamer

Annex B-18

BEFORE THE
UNITED STATES INTERNATIONAL TRADE COMMISSION
WASHINGTON, D.C.

IN THE MATTER OF:

Crystalline Silicon Photovoltaic Cells
(Whether or Not Partially or Fully Assembled
into Other Products)

Inv. No. TA-201-75

AFFIDAVIT OF GEORGE W. HERSHMAN

September 27, 2017

I, George Hershman, being first duly sworn, do hereby affirm and state as follows:

1. I am Senior Vice President and General Manager for Swinerton Renewable Energy, based in San Diego, CA. Swinerton Renewable Energy (SRE) offers Engineering, Procurement, Construction (EPC) and SOLV Operations and Maintenance (O&M) services for renewable energy facilities in North America. SRE has delivered over 2.5 GW solar projects and our SOLV team manages over 4.5 GW of PV plants. My company employs 470 full-time employees and 2250 contract employees annually. Operating nationwide, our EPC team has built plants in 15 states, while our SOLV team maintains renewable energy facilities in 18 states.
2. I have worked for Swinerton for over 20 years. I started in the company in May of 1997 as a project manager for the company's Management and Consulting Group in Southern California. In 2008, we formed Swinerton Renewable Energy to offer renewable energy opportunities to our clients/partners. This was a new line of business that we started during one of the most difficult periods of our long history due to the Great Recession. We recognized solar as a growing industry where we could reposition employee owners in an emerging market. I am directly responsible for the overall operations of Swinerton's Renewable Energy Business units. I am proud to have founded the group at Swinerton and to be the group's first employee, and have led our expansion into one of the largest EPC's in the country. I oversee all business transactions, procurement and product selections.
3. In 2016, Swinerton Renewable Energy built 32 solar facilities totaling nearly 1.5 GW of solar capacity in 9 states. Five projects, located in Idaho, Minnesota, California and Utah, were 100 MW or larger and created over 300 jobs each during the course of construction. 2016's volume earned us the rank of #2 EPC nationally by Solar Power World Magazine. In the

same year, our SOLV O&M group was named the #1 Affiliated Service Provider globally by GTM Research, adding 1.25 GW of PV assets to its fleet. Our hardworking team has built a reputation for quality, service and innovation, and has earned us repeat business with over 90% of our clientele.

4. As someone who has been in the renewable energy space for the past decade, I strongly oppose any import relief that would raise the cost of CSPV cells and modules. I believe import tariffs or quotas would devastate solar demand in all utility-scale markets across the nation. With the imposition of Suniva's proposal of a 40 cent per watt tariff on cells and a 78 cent per watt minimum price on modules, more than thousands of hardworking Swinerton installers throughout the United States will be negatively impacted. Under the proposed tariff and minimum price, solar projects in most markets would no longer be cost-competitive, killing a growing economy and a real opportunity for job creation. I estimate that 70% of the projects that we built in 2016 would not have been built if trade restrictions of such level had been imposed. If we apply that to the percentage of our projects moving forward, over 2,000 jobs would be lost annually, from our company alone.
5. Even if a lower level of trade remedy is imposed, I guarantee our business would contract. If a 50% tariff is imposed, I expect half our workforce would lose their jobs. Even if a 25% tariff is imposed, 30-40% of the hardworking installers in our company would lose their jobs. Due to the competitive nature of the utility-scale electricity market and the need to compete at grid parity with other forms of energy generation, any level of tariff or minimum price imposed on cells and panels will inevitably inflict significant harm on the workforce at our company. SRE's success depends upon our ability to provide the greatest value and cost-savings to our clients. Utilities will not undertake a CSPV solar project or buy solar-generated energy through a PPA if solar is not cost-competitive with natural gas, wind and other energy sources.
6. Furthermore, import relief and subsequent decrease in solar demand would negatively impact countless partner companies that SRE works with on a regular basis, including[

]

7. Even if a tariff and/or a minimum price on imports are imposed, we do not expect to buy modules from SolarWorld to supply our utility-scale demands. As an EPC, we have completed numerous projects in Oregon, where SolarWorld has its U.S. headquarters. Despite efforts to use Oregon-manufactured SolarWorld modules on over 75 MW of our installations, all products received on-site from SolarWorld came from Thailand. We see no indication that the petitioners' supply capacity and other issues would change dramatically just because import restrictions come into effect.

Pursuant to 28 U.S.C. § 1746, I declare under penalty of perjury that the foregoing is true and correct.

Executed by GEORGE HERSHMAN on September 27, 2017



George W. Hershman