



## Research

# The Impact of Tariffs on Utility-Scale Solar

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## Executive Summary

- The Trump Administration instituted tariffs on the import of solar cells and modules as part of its larger trade strategy.
- Demand for utility-scale solar development has increased while imports of Chinese panels have remained low and prices of domestically produced panels have risen.
- A repeal of the tariffs would allow U.S. manufacturers to compete globally by reducing prices, enable the creation of downstream jobs, and help the United States achieve clean energy and climate goals.

## Introduction

The installation of utility-scale solar facilities has increased and is expected to continue growing to meet the demand for clean energy in response to climate change. Between 2012 and 2016, installed solar capacity tripled due to the increased availability of low-cost solar cells and modules abroad.<sup>[1]</sup>

Domestic manufacturers and developers rely on the global supply chain to source components while competing with foreign manufacturers. The Trump Administration imposed tariff rates on the import of solar cells and modules under Section 201 in addition to pre-existing duties on these products. These tariff rates continue to be in effect during the Biden Administration.

Analysis of U.S. imports and international pricing demonstrate that the United States is not reliant on Chinese imports and import tariffs have resulted in increased prices of domestically manufactured solar equipment. As a result, domestic module manufacturers whose products were already generally more costly than foreign competitors are further disadvantaged. In addition, domestic developers and installers endured a stagnating market due to these high module prices and market growth uncertainty. A repeal of the Trump Administration's import tariffs is necessary to ensure that domestic manufacturers, developers, and installers can meet growing demand.

## Utility-Scale Solar

Solar cells are connected to create modules, also known as solar panels, that may be installed by consumers at residential properties or by operators at utility-scale facilities. According to the United States Energy Information Administration (EIA), there were more than 2,500 utility-scale solar photovoltaic (PV) electricity generating facilities in the United States as of November 2018.<sup>[2]</sup> Utility-scale facilities generate power that is sold to consumers by utilities. In 2019, utility-scale solar facilities produced 2.5 percent of the electricity consumed in the United States, and an increasing number of such facilities will be necessary in coming years to meet climate change goals.<sup>[3]</sup>

The development of utility-scale solar facilities is projected to grow in coming decades in the United States as well as abroad.[4] EIA projects that while solar generated only 15 percent of renewable electricity in 2019, it is expected to produce 46 percent by 2050.[5] The international consumption of renewable energy is expected to more than double by 2050 when compared to 2019.[6] In particular, the adoption of bifacial solar panels is expected to increase.[7] Bifacial solar panels include both a front and back capable of capturing solar energy, making them more effective and efficient at generating power.[8]

The increased adoption of solar technology in recent years is attributed to declining pricing and increased efficiency. Technological improvements have made the installation of utility-scale solar more cost effective and competitive when compared to other sources of generation. In order to effectively compete, domestic manufacturers must be able to competitively price their cells and modules. Pricing has, however, been driven up by the imposition of tariffs by the Trump Administration.[9]

## **Section 201 Solar Tariffs**

Solar tariffs were initially imposed on imports from China in the form of antidumping/countervailing duties (AD/CVD) in 2012. The Department of Commerce's International Trade Administration (ITA) found that crystalline silicon photovoltaic cells and modules from China were subsidized and sold at below fair value in the United States. Under sections 705(b) and 735(b) of the Tariff Act of 1930, ITA instituted duties that have since been continued following review at a rate of 35 percent. These duties were skirted by Chinese manufacturers who moved production to Taiwan, which then also became subject to AD/CVD.[10]

In May 2017, two domestic solar manufacturers, Suniva and SolarWorld, petitioned the International Trade Commission (ITC) under Section 202 of the Trade Act of 1974 requesting relief from imports that were injuring domestic manufacturing.[11] In response, the ITC launched an investigation and found that "crystalline silicon photovoltaic cells (whether or not partially or fully assembled into other products) ("CSPV products") are being imported into the United States in such increased quantities as to be a substantial cause of serious injury to the domestic industry producing an article like or directly competitive with the imported article." [12] Serious injury may include the idling or shuttering of production facilities, layoffs and termination of employment, or decreased financial performance.

ITC found that as imports tripled, prices for solar cells and modules declined 60 percent. The ITC provided that for over a decade the Chinese government has subsidized its manufacturers and implemented incentives and tariffs to support the growth of its solar industry. As a result, the Chinese solar industry now "produces 60 percent of the world's solar cells and 71 percent of solar modules." [13] In November 2017, the ITC issued recommendations and, as a result, the president instituted safeguard measures in the form of import tariffs in January 2018 on solar cells and solar modules.[14] As of February 2018, imports were subject to a 30 percent tariff in the first year of the tariff's implementation that would decrease by 5 percent each year to 15 percent in the fourth year (beginning February 7, 2021).

## **Quotas and Exclusions**

The tariff included quotas and exemptions to account for market conditions. Imports from a list of countries characterized as developing have been exempted from the tariff. While the administration focused on the impact of Chinese imports in particular, the tariff rates apply globally unless such an exemption applies. As a result, imports from South Korea and Southeast Asia, which make up a majority of U.S. imports, are also subject to the tariff.

The tariff was also issued with a 2.5-gigawatt quota for tariff-free cell imports due to domestic manufacturers'

dependence on imports. As a result, in December 2019 the United States Trade Representative (USTR) requested that the ITC issue a report on “the probable economic effect on the domestic CSPV cell and module manufacturing industry of modifying the safeguard remedy imposed on imports of these products by the President.”<sup>[15]</sup> The report, issued in March 2020, found that increasing the quota “would likely result in a substantial increase in U.S. module producers’ production, capacity utilization, and employment. This is because U.S. module producers would gain expanded access to imported cells at lower prices.”

In June 2019, the USTR excluded bifacial solar panels from the tariff. The exemption was initially granted because bifacial panels have not been produced in the United States since 2016. Later, the USTR attempted to withdraw the exclusion in October 2019, but this withdrawal was brought before the United States Court of International Trade (CIT) by Invenergy Renewables LLC, the Solar Energy Industries Association, and others. On December 5, 2019 CIT found that the withdrawal failed to meet administrative requirements and ruled for the plaintiff.<sup>[16]</sup> In April 2020 the USTR again attempted to withdraw the bifacial exclusion because it was undermining the objectives of the safeguard measure. The CIT opposed the administration’s attempts to withdraw the exclusion a second time, and maintained the injunction enabling the bifacial module exclusion.<sup>[17]</sup>

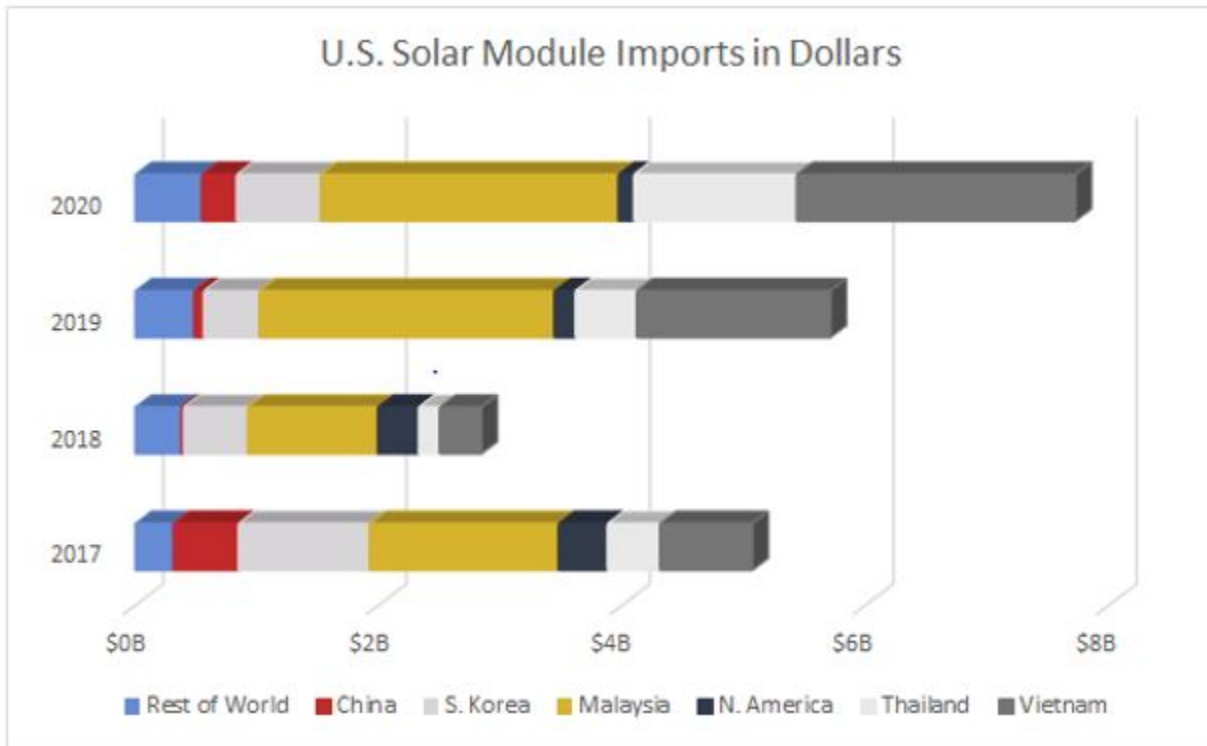
On October 10, 2020, the president issued a proclamation that increased the tariff rate from 15 to 18 percent in its fourth year, revoked the bifacial exclusion, and directed ITC to consider the extension of the tariffs set to expire in 2022.<sup>[18]</sup> In November 2020, the CIT issued its most recent decision in the case supporting the withdrawal of the exclusion due to the powers afforded to the president.<sup>[19]</sup> Thus, the tariff rate was effectively increased, and the exclusion for bifacial panels and the quota were not extended, effectively disrupting supply chains for the downstream U.S. industry and hindering their ability to plan for the future.

## **Section 201 Tariff Effects on U.S. Solar Imports**

President Trump’s tariffs have significantly affected U.S. trade levels. Prior research has found that tariffs in general make importers shift away from China and reorganize supply chains. More specifically, the president’s tariffs and a decade of anti-dumping duties have decreased solar imports, which raise prices for these products and reduce options for down-stream companies and end-use consumers in the United States.

The following charts examine how import levels have changed since the president first began imposing tariffs in 2017. Data was collected from the U.S. Census Bureau’s USA Online Trade Tool.<sup>[20]</sup> In 2017, the United States imported approximately \$5.1 billion worth of solar modules. When section 201 tariffs were imposed in 2018, import levels decreased sharply to \$2.8 billion. Those levels have since increased in 2019 and now sit at \$7.7 billion in 2020. Through those years, the portion of imports from China never exceeded 10.6 percent (in 2017). This figure dropped to a low of 0.7 percent in 2018 and now sits at 3.7 percent in 2020. The majority of imports came from U.S. strategic partners in Southeast Asia including Malaysia and Vietnam.

Chart 1: Import Figures and Composition by Country of Origin, Solar Modules



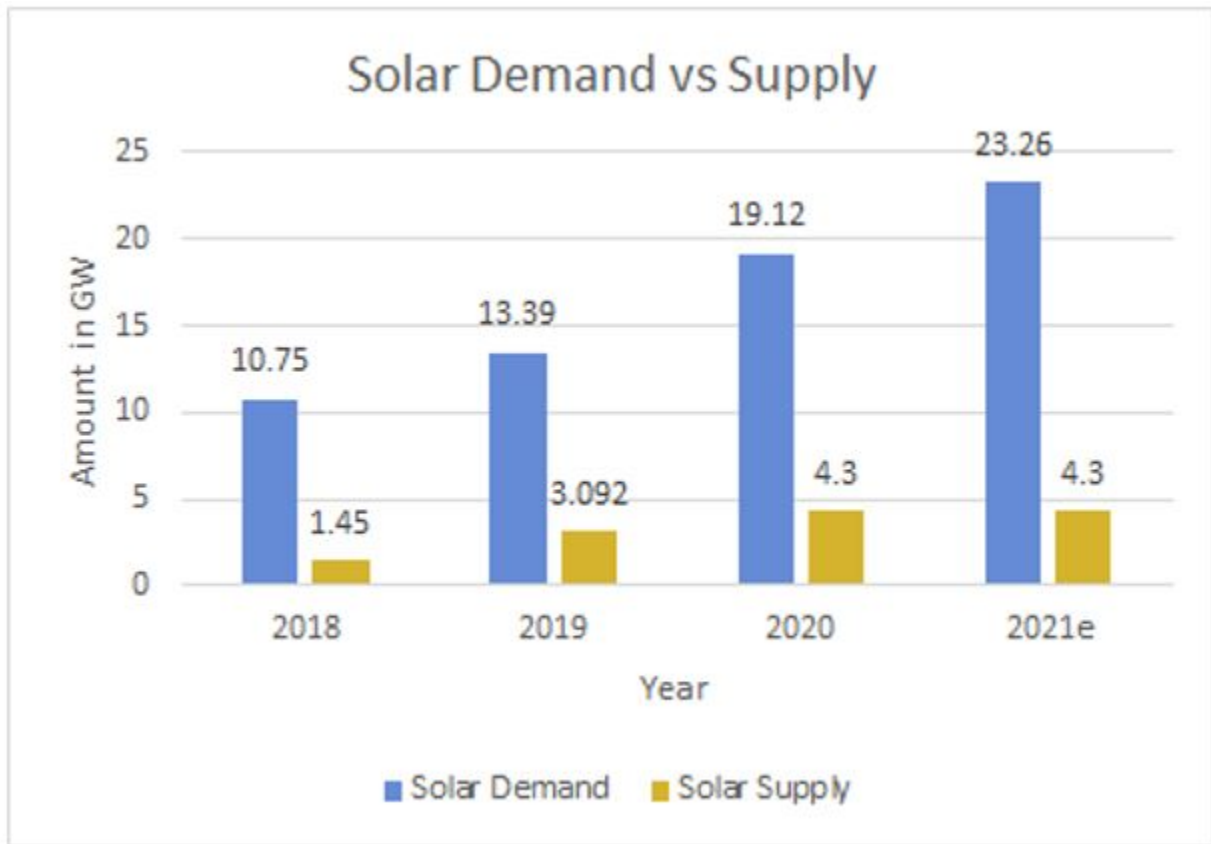
From 2018 to 2020, solar panel consumers in the United States paid an extra \$1.3 billion due to Section 201 tariffs. This dynamic is reflected in energy prices: Analysis of Bloomberg New Energy Finance data reveals that in 2020 the United States paid double the amount for solar module prices per watt compared to the world average.

Table 1: Average Monocrystalline Solar Module Prices per Watt in 2020

World	Australia	China	European Union	United States
\$0.20	\$0.24	\$0.20	\$0.21	\$0.40

Increased costs and prices lead to lost economic growth and output. In 2018, there was a 9.35 gigawatt difference in U.S. solar demand and supply as demonstrated in Chart 2 below. Demand for solar is projected to grow through the next decade but U.S. supply is expected to stagnate. The increased costs and prices due to Section 201 tariffs are certainly one of the main reasons for this stagnation. These developments ultimately lead to an economic opportunity cost. Downstream portions of the supply chain and end users of solar cells modules suffer the most due to increased input costs, which will in turn possibly force them to forgo new hires and projects simply to contain the increased costs due to these tariffs. According to the Solar Energy Industry Association, after only two years, the Section 201 tariffs resulted in the loss of 62,000 jobs, as well as the loss of 10.5 gigawatts of solar generation capacity and \$19 billion of private investment.<sup>[21]</sup>

Chart 2: Annual Domestic Solar Demand vs Supply



## Conclusion

The institution of tariff rates on solar panels and modules has had an outsized impact on the price of solar panels. The elimination of exemptions and failure to expand import quotas has further exacerbated the impact of the tariff. The tariff fails to address existing market conditions, such as domestic dependence on Southeast Asian imports and the increased demand for bifacial solar panels. All of these factors combined with increased costs and prices have hurt economic growth and investment. The repeal of the tariffs would allow domestic manufacturers to more effectively compete globally and would support U.S. solar growth to meet both climate and clean energy goals.

[1] <https://ustr.gov/sites/default/files/files/Press/fs/201%20Cases%20Fact%20Sheet.pdf>

[2] <https://www.eia.gov/todayinenergy/detail.php?id=38272>

[3] Ibid

[4] Ibid

[5] <https://www.eia.gov/outlooks/aeo/pdf/AEO2020%20Electricity.pdf>

[6] <https://www.eia.gov/outlooks/ieo/pdf/ieo2020.pdf>

[7] <https://www.usitc.gov/publications/other/pub5032.pdf>

[8] <https://www.solarpowerworldonline.com/2018/04/what-are-bifacial-solar-modules/>

[9] [https://www.seia.org/sites/default/files/2019-12/SEIA-Tariff-Analysis-Report-2019-12-3-Digital\\_0.pdf](https://www.seia.org/sites/default/files/2019-12/SEIA-Tariff-Analysis-Report-2019-12-3-Digital_0.pdf)

[10] [https://www.usitc.gov/trade\\_remedy/731\\_ad\\_701\\_cvd/investigations/2012/Crystalline%20Silicon%20Photovoltaic%20](https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/2012/Crystalline%20Silicon%20Photovoltaic%20)  
and <https://legacy.trade.gov/enforcement/operations/scope/country/china/index.asp>

[11] Ibid

[12] [https://www.usitc.gov/trade\\_remedy/731\\_ad\\_701\\_cvd/investigations/pub4739-vol\\_i\\_and\\_vol\\_ii\\_0.pdf](https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/pub4739-vol_i_and_vol_ii_0.pdf)

[13] <https://ustr.gov/sites/default/files/files/Press/fs/201%20Cases%20Fact%20Sheet.pdf>

[14] [https://www.usitc.gov/trade\\_remedy/731\\_ad\\_701\\_cvd/investigations/pub4739-vol\\_i\\_and\\_vol\\_ii\\_0.pdf](https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/pub4739-vol_i_and_vol_ii_0.pdf) ;  
[https://www.usitc.gov/trade\\_remedy/731\\_ad\\_701\\_cvd/investigations/2017/Solar%20Panels/Safeguard/2018-01592\\_1.pdf](https://www.usitc.gov/trade_remedy/731_ad_701_cvd/investigations/2017/Solar%20Panels/Safeguard/2018-01592_1.pdf)

[15] [https://www.usitc.gov/press\\_room/news\\_release/2020/er0306ll1451.htm](https://www.usitc.gov/press_room/news_release/2020/er0306ll1451.htm)

[16] <https://www.cit.uscourts.gov/sites/cit/files/19-153.pdf>

[17] <https://www.cit.uscourts.gov/sites/cit/files/20-144.pdf> and  
<https://subscriber.politicopro.com/f/?id=00000172-a3fc-dd0c-ab73-ef893e0000&source=email>

[18] <https://www.federalregister.gov/documents/2020/10/16/2020-23108/to-further-facilitate-positive-adjustment-to-competition-from-imports-of-certain-crystalline-silicon>

[19] <https://www.mintz.com/insights-center/viewpoints/2151/2020-11-30-uscit-ruling-permits-implementation-trump#:~:text=In%20a%20slip%20opinion%20issued,of%20foreign%2Dmade%20solar%20technologies.>

[20] <https://usatrade.census.gov/>

[21] <https://www.seia.org/news/solar-tariff-impacts>