

# Better ways to foster solar innovation and save jobs

December 22 2017, by Edward Barbier And Terry Iverson

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Credit: AI-generated image ([disclaimer](#))

The U.S. solar industry is nervously awaiting President Donald Trump's decision whether to impose punitive duties on imported solar panels and related equipment or even restrict some of those imports altogether. It could come any day between now and [late January](#).

This is the final stage of a process that began when two U.S. subsidiaries of foreign solar panel makers filed a rarely used kind of [trade complaint](#) with the International Trade Commission. The independent U.S. agency has [recommended](#) a course of action officially intended to protect domestic manufacturers from unfair competition.

But far from protecting U.S. interests, the tariffs would stifle the current solar boom, destroying American jobs and dragging down clean energy innovation. As economists who research [climate and energy](#) policies that can foster a [greener North American economy](#), we argue the government should instead create targeted subsidies that support innovation and lower costs across the [supply chain](#). This approach would do a better job of helping the U.S. industry fend off foreign competition without harming the industry itself.

## **A booming industry**

The U.S. solar industry has enjoyed unprecedented growth in recent years, thanks to the rapidly declining cost to install solar systems and [tax breaks](#) for homeowners, businesses and utilities that have expanded demand but are being [phased out](#). Prices have plunged to roughly US\$1.50 per watt from around \$6 in 2010 due to both [innovation](#) that made it less expensive to make panels anywhere and [cheap imports](#).

In 2016, [87 percent](#) of U.S. solar installations used foreign-produced panels, also known as modules, primarily from China.

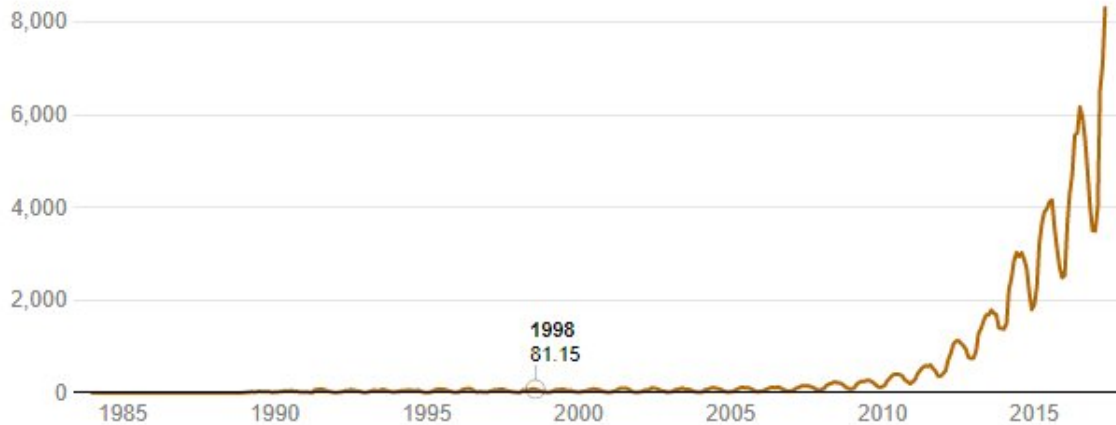
The [rapid decline](#) in solar panel costs has been driven by [policies](#) in [China](#) and elsewhere intended to expand domestic manufacturing of these products.

The problem is not unique. Other countries dependent on cheap solar imports, including Germany and Canada, are also grappling with how to

sustain the solar boom while [protecting](#) their own domestic manufacturers from unfair foreign competition.

## U.S. solar energy growth

The volume of electricity generated by solar energy has grown dramatically since 2010.



Energy encompasses residential, commercial and utility-scale solar systems and is measured in millions of kilowatt hours.

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Source: [U.S. Energy Information Administration](#) • [Get the data](#)

The trade commission sent Trump its recommendations on Nov. 13, giving him [until Jan. 13](#) to accept or reject its guidance. Later, U.S. Trade Representative [Robert Lighthizer](#) asked the agency to draft a "supplemental" report, effectively extending the president's deadline for setting the tariffs to Jan. 26.

The request, observers surmise, could signal that the administration is

concerned about the this case's potential to spiral into a broader [trade dispute](#) with China and other major U.S. trading partners.

## Solar job growth

Solar job growth took off in 2010. By 2016, [more than 260,000 Americans](#) worked in the industry, up from fewer than 95,000 seven years earlier.

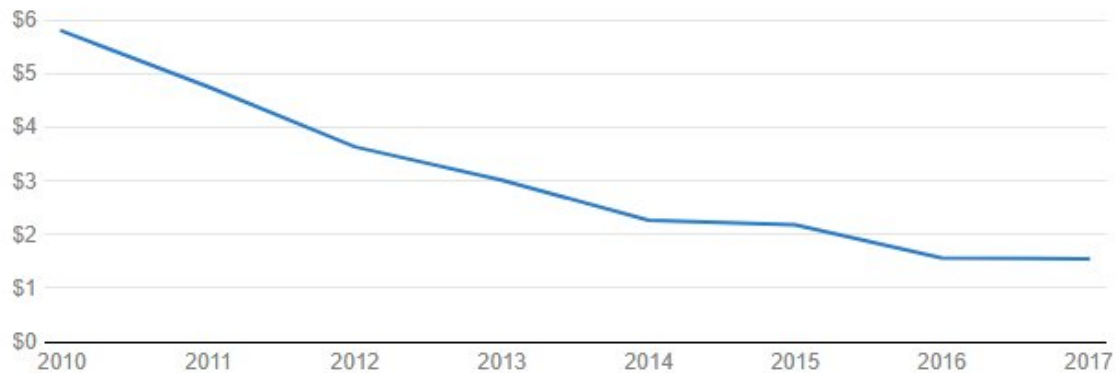
An uninterrupted solar boom would create even more jobs. The number of solar panel installers, for example, would more than double from [11,300 to 23,000](#) within 10 years at the current pace of growth, which would make it the fastest-growing profession, according to the Bureau of Labor Statistics. Another renewable energy mainstay, [wind turbine technician](#), came in a close second.

Imposing tariffs on imported panels would cloud that outlook, largely because [manufacturing](#) accounts for [less than 15 percent of U.S. solar jobs](#) while installation amounts to more than half of them, according to the Solar Foundation's annual census. If panels get more expensive, the cost to go solar will rise and demand will fall – along with the impetus to employ so many installers.

The Solar Energy Industries Association, a trade group that represents many companies in the industry and opposes the duties, [estimates](#) that imposing them could double solar prices and [cost the industry 88,000 jobs](#).

## The cost of going solar in the U.S.

The average price to install a residential, commercial or utility-scale solar system fell sharply between 2010 and June 2017, dropping from \$ 5.79 per watt to \$1.54 per watt.



Prices are in \$ per watt and the 2017 figure is as of June 30. SEIA changed its methodology in 2014, switching from using the reported price to the modeled price to more accurately reflect market conditions. Utility-scale pricing represents a 50/50 blend of fixed-tilt pricing and single-axis tracker. All prices are capacity-weighted.

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Source: [Solar Energy Industries Association](#)

## Smarter subsidies

Despite the robust growth in wind and solar employment and its official support for an "[all of the above](#)" energy policy that combines fossil fuels, nuclear power, biofuels and renewable energy alternatives like wind and solar, the Trump administration has sought to slash support for alternative energy through the [federal budget](#).

We agree that the government should encourage solar panel manufacturing within the nation's borders. But there are better ways to support this important priority than by raising prices on imported equipment through punitive tariffs.



[China's edge](#) in solar panel manufacturing – apart from low wages – is driven by scale and supply-chain development, spurred by cost inducements like low-interest loans, technology development assistance and cheap land. Other newly industrialized countries like [South Korea and Taiwan](#) have followed China's lead by fostering their own solar manufacturing bases with targeted subsidies.

We believe the U.S. should follow suit. In addition to directing subsidies to reduce the costs of the [solar supply chain](#), the government should also increase subsidies for private research and development for green innovation. Currently, [federal](#) financing for private solar R&D lags far behind levels seen in China and the European Union.

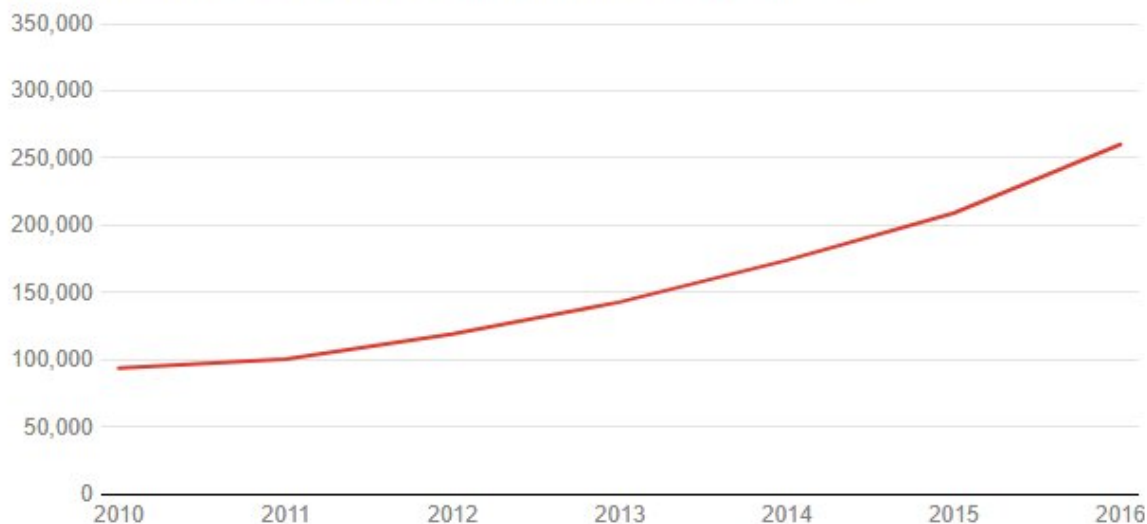
These subsidies could be [funded by](#) the tariffs the government is already collecting on solar panels imported from China and elsewhere.

If the U.S. government deems that additional restrictions are required, then it makes sense to follow a [separate recommendation](#) to freeze solar panel imports at 2016 market share levels. The government should then auction off the rights to import foreign solar panels to U.S. installers.

The government could spend the proceeds from these auctioned import licenses on domestic innovation and other efforts to cut supply chain costs for U.S. manufacturers of [solar panels](#) and related equipment.

## U.S. solar jobs

The number of Americans working in the solar power industry has soared since 2010.



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Source: [The Solar Foundation](#) • [Get the data](#)

While World Trade Organization rules limit the use of [subsidies](#) that explicitly promote a country's exports in global markets, the ones we are proposing would likely be WTO-compliant.

This is because their aim is to make the U.S. solar industry more competitive within the domestic market, given the government's earlier findings that cheap imported panels are [being dumped](#) – sold too cheaply – here.

## Why make an exception

Like most economists, we believe that [subsidies should be avoided](#) except in special circumstances. Here are three reasons why this industry is an exception.

First, when one nation subsidizes solar panel production and exports those panels, it makes it cheaper to go solar in other countries, effectively cutting the cost of implementing climate policies abroad.

Second, when solar energy replaces fossil fuels in one place, the declining carbon emissions benefit people around the globe. Climate change, after all, affects the entire world.

Third, [R&D investments](#) made in any one economy eventually add to the global knowledge base. Improving solar technology will ultimately benefit the entire industry worldwide.

The proposed tariffs the Trump administration is considering will yield none of these benefits. In fact, they could instigate a trade war over clean energy products with our trading partners globally.

That is why we believe that the smarter subsidies we are proposing are a better way to sustain the U.S. solar [industry](#) and protect jobs.

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