



**Testimony of Mark R. Widmar
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**Before the Senate Finance Committee Hearing on
*American Made: Growing U.S. Manufacturing Through the Tax Code***

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Good morning, Chair Wyden, Ranking Member Crapo, and distinguished members of the Committee. My name is Mark Widmar, and I am the Chief Executive Officer of First Solar, the largest solar manufacturer in the Western Hemisphere. I have been with First Solar for 13 years, serving as the CEO since 2016 and as the Chief Financial Officer before that.

Founded 25 years ago outside Toledo, Ohio, we operate the largest solar manufacturing footprint in the Western Hemisphere, with three existing factories in Ohio that produce thin film solar wafers, cells, and modules in a single process under one roof. We have two new manufacturing facilities under construction in Alabama and Louisiana that are expected to come online in 2024 and 2025, respectively. In addition, we are expanding our existing Ohio footprint and constructing a Research and Development (R&D) center as well as a technology development line intended to produce the next generation of thin film photovoltaic technology at our Ohio campus. Together, this represents over \$4 billion in investment capital.

First Solar is proud to be America's solar company: we are the only company out of the world's largest solar module manufacturers to be headquartered in the United States, and we are on track to have 14 gigawatts (GW) of vertically integrated capacity to produce American-made solar panels with the support of a uniquely domestic supply chain.

I am honored to represent First Solar today and thank the Committee for convening this hearing on how tax policy impacts domestic manufacturing in the United States. We believe the Inflation Reduction Act (IRA) represents America's first durable solar industrial strategy and, if implemented with a whole-of-government commitment to onshoring, together with strong and consistent enforcement of trade laws, it also has the potential to dismantle China's stranglehold of solar manufacturing value chains. Quite simply, the IRA paves a viable pathway for the U.S. to secure supply of critical clean energy technologies, enabling America's energy independence while capturing value for our economy and creating well-paying, enduring jobs.

It is difficult to overstate the economic potential that the IRA can deliver through job creation, labor income and overall economic output. As First Solar continues to scale domestic production, we are proud to share the tangible benefits of onshoring U.S. solar under the IRA. We believe that the data that follows defines, in real terms, the value that domestic solar manufacturing delivers to the U.S. economy and should provide a basis for bipartisan support to establish and maintain the policies and trade measures necessary to enable a domestic solar supply chain and a level playing field.



- **American solar manufacturing creates steady, good-paying jobs.** By 2026, we expect to have more than 4,100 direct employees in the U.S., making us one of the largest employers in the sector. Each of our new factories is expected to employ upwards of 700 people, with an average manufacturing salary of \$80,000 annually. We are transforming the role of the American solar factory worker – upleveling skills and focusing the scopes on systems and processes, with less focus on rote, routine steps.
- **American solar manufacturing delivers high value economic impact.** We recently commissioned an analysis conducted by the University of Louisiana at Lafayette that measured the real economic impact of First Solar’s domestic manufacturing.
 - The construction activity across our three expansions in Alabama, Louisiana, and Ohio supported an estimated 5,765 direct, indirect, and induced jobs in 2023; represented over \$600 million in labor income; and is estimated to have added over \$900 million in economic value to the country.
 - In 2026, when we expect to have 14 GW of annual U.S. capacity, the study projects that:
 - First Solar’s direct employment of 4,100 people would support an estimated 30,060 direct, indirect, and induced jobs across the country.
 - Every First Solar job would support 7.3 jobs across the U.S., together representing an estimated annual labor income of \$2.78 billion, including direct, indirect, and induced effects.
 - First Solar is estimated to add nearly \$5 billion in value and \$10.18 billion in economic output to the U.S. economy in 2026, based on its 14 GW of U.S. operations and the direct, indirect, and induced effects.

My testimony today will primarily focus on describing how the IRA is catalyzing First Solar’s efforts to scale high-value American solar manufacturing, which, in turn, creates a vast economic impact from coast to coast. However, it is imperative that we establish that the U.S. solar industry cannot be a one-horse race.

While we were not the only American solar manufacturer to come into existence at the end of the last century, the grim reality is that we are the only one of scale to remain today. For the IRA to spur U.S. manufacturing to the scale our country requires to support its energy independence we must ensure that more companies that are aligned with U.S. ambitions and are committed to fair competition and innovation can scale, compete, and prosper. There should be no doubt: we invite competition, and we invite free trade; all we ask is that this competition and trade are practiced on a level playing field.

Solar is already the lowest cost form of new electricity generation capacity. However, less than a third of the 35 GW of new solar panels installed in 2023 in the U.S. were produced in America. Moreover, not even one of the crystalline silicon panels installed was assembled with American-made solar cells. There is no question, the U.S. solar manufacturing industry remains in a precarious position, despite the passage of the IRA.

For context, the U.S. exited 2023 with an estimated 30 to 40 GW of imported oversupply, the vast majority of which came into the country free of safeguard and anti-dumping and countervailing duty tariffs. Nearly all this capacity was produced by China-headquartered companies.

Market conditions show no sign of slowing imports to the U.S. unless policy and trade law enforcement changes. The relentlessness of the Chinese subsidization and dumping strategy has caused a significant



collapse in cell and module pricing and threatens the viability of many manufacturers who may never be able to get off the ground or have the ability to finance the start-up or growth of their operations.

This is true for those manufacturers serving the domestic utility-scale sector, as well as those exposed to the residential solar sector, which operates on a shorter sales cycle. At the same time, questions remain on how and when the IRA's regulations, particularly those related to the domestic content bonus, will be finalized. These factors contribute to painting a challenging investment thesis for new U.S. manufacturing capacity.

China's dominance of solar energy is well-known and intentional. The country's strategy to dominate solar supply chains dates to 1985, when photovoltaic (PV) solar was first mentioned in a Chinese Five-Year Plan, the recurring outline of its industrial strategy. Unchallenged, Chinese control of the solar supply chain arms an adversarial nation with significant geopolitical leverage. We need urgency, tax policy clarity, and strong and consistent trade enforcement to ensure the U.S. solar manufacturing sector can scale as Congress intended when drafting the IRA.

First Solar stands apart from most of the industry in a few important ways. Our proprietary – and uniquely American – thin film solar technology was invented and developed in the U.S. and has since evolved in labs across the country. This technology is a significant enabler of the operational U.S. utility-scale solar fleet. We manufacture our panels from start to finish in their entirety within our factory's walls. Each panel is produced in approximately four hours: from semiconductor to wafer to cell to completed, deployable module – fully vertically integrated and ready for installation in the field.

Crucially, our U.S. manufacturing capacity has no dependencies on Chinese crystalline silicon supply chains and is instead enabled by an American value chain. Our U.S. panels are produced with American-made glass and steel. The steel value chain that serves our 7 GW of Ohio production is located within a 100-mile radius of our factories; our glass is made from Michigan silica and Wyoming-mined soda ash.

By 2026, we expect to have 14 GW of fully vertically integrated U.S. solar manufacturing capacity capable of serving more than 40% of the country's projected utility-scale solar demand with American made solar, and a total of 25 GW globally.

We began investing in an American supply chain long before the IRA – our onshoring began shortly after we announced our second Ohio factory in 2018 in the wake of the solar safeguard measures introduced by the Trump administration. The safeguard measures, though weakened substantially over time, gave a brief vision of what a level playing field can look like, and created a window for growth investment.

But trade tools alone are not enough to deliver clean energy independence: it is the anticipated durability and scale of the IRA that has the potential to truly deliver the re-shoring of a resilient U.S. solar supply chain and the creation of an enduring American solar manufacturing job base. More simply stated: the U.S. tax code has the power to incentivize domestic investment in significantly growing this industry, but the ability of those investments to endure is enabled by a corresponding trade policy.

I would like to draw your attention to two specific sections within the IRA that set the legislation apart from all previous energy-focused efforts in a manner that, together, drive the policy punch that has the power to reshore manufacturing, create well-paying, lasting American jobs, and build the independent energy infrastructure we seek.



1. The Section 45X Advanced Manufacturing Tax Credit

As a tax tool, manufacturing incentives have often focused on the capital expenditure side of setting up manufacturing, not the operational side of running manufacturing resiliently. This is the case with the 2009 American Recovery and Reinvestment Act, which invested \$2 billion in clean energy manufacturing in the form of capital expenditure-based tax credits and loans, via the original Section 48C and Department of Energy (DOE) Loan Program, respectively. Manufacturing is a capital-intensive sector, and capex-based tax credits certainly play a role in lowering the cost of entry for starting up a new facility.

Not only did the IRA resurrect Section 48C with a larger \$10 billion fund, but it took on the more complex challenge of incentivizing the operational side of manufacturing in strategic clean energy sectors like solar, wind, and battery storage. By focusing on the ongoing production, 45X creates a scaffolding of support that provides manufacturers the momentum needed to scale, to drive down costs and to push innovation. For solar manufacturing, the more watts produced, the greater the overall tax credit. As designed, the law encourages competitiveness at scale.

45X is equally innovative in its approach across the full value chain of each strategic sector, looking upstream of the final product. Thus, the tax policy incentivizes the onshoring of each critical stage of the solar manufacturing process: critical minerals, polysilicon, wafer, cell, and module assembly. As designed, 45X recognizes the criticality of onshoring upstream and downstream components, benefiting suppliers and OEMs alike.

2. The Sections 45 and 48 Domestic Content Bonus

While 45X represents a critical supply-side driver, the IRA also created a crucial parallel demand-side driver by introducing a bonus to the investment or production tax credit accessed by solar generation asset owners if projects procure domestically made content, including solar panels. While regulations to implement this aspect of the IRA remain pending, the expectations are great that the domestic content bonus will create a durable market pull for solar produced via high-value domestic manufacturing.

I firmly believe the best form of American manufacturing is one in which the maximum value is captured and retained in the U.S., reinvested to spur cycles of innovation to maintain American technological leadership, and used to attract and retain a durable workforce.

It must be noted, however, that without a fix, there is great risk that the largest beneficiary of the IRA's solar energy tax credits may be China. While well-intended to incentivize every step of the solar panel value chain, there are no restrictions in place preventing companies controlled by, owned by, or subject to the jurisdiction of the Chinese government from benefitting from, and receiving, significant amounts of American taxpayer dollars.

Moreover, Chinese solar companies already have come to dominate the solar supply chain in part through an opaque system of subsidies that is believed to include low-cost financing, highly subsidized coal electricity, free land and buildings, and, horrifyingly, access to forced labor in provinces like Xinjiang, an abomination Congress sought to address with its passage of the Uyghur Forced Labor Prevention Act (UFLPA). We must ensure that the IRA's 45X Advanced Manufacturing Tax Credits are not added to the



list of benefits that enable China's mission to fully eviscerate American solar manufacturing. Put simply: we cannot line China's pockets with U.S. taxpayer dollars.

When the tax code is structured to address such an unintended potential outcome and paired with proper trade enforcement, they can serve as a powerfully effective set of tools to achieve the twin aims of rebuilding American manufacturing able to compete on its own merits, and counter China's unfair dominance of critical supply chains.

First Solar is enabled by thousands of hardworking people across the country: soda ash miners in Wyoming; silica miners in Michigan; copper miners in Utah; steelworkers in Alabama, Louisiana, and Ohio; glassworkers in Illinois, Ohio, and Pennsylvania; woodworkers in Indiana; and a nation-wide network of truckers, railroad workers, and many more. These are jobs that, in turn, are enabled by the tax incentives I noted earlier. We believe this demonstrates that the tax code can and is growing U.S. manufacturing, which in turn benefits American workers and helps catalyze our country's prosperity.

However, industrial-sized scaling of the solar industry in America remains at risk without guardrails applied to the tax code. As a recent article in *The New York Times* titled '*How China Came to Dominate the World in Solar Energy*' noted, "Chinese companies increasingly do the initial, high-value stages of solar panel manufacturing in China, and then ship the components to overseas factories for final assembly."

In recent years, these overseas factories have been located in 'Belt and Road' member countries, primarily in Southeast Asia, some of which have recently been determined to be circumventing U.S. trade laws. As things stand, we are at risk of adding Ohio, Texas, Arizona, and other U.S. states to the list of locations that host China's overseas final assembly facilities, in many cases set to use imported components to assemble into modules in potentially temporary, leased facilities. It's not unrealistic that these facilities, and their associated jobs, will disappear once the 45X tax credits expire and American taxpayer dollars are extracted.

Congress must ensure that the U.S. does not become a de facto extension of China's Belt and Road initiative, serving as a mere assembly outpost for China's state-subsidized solar manufacturing industry, while paying for the privilege with U.S. taxpayer dollars.

We must respond to the challenge China poses with legislative solutions and final regulations aligned with our values and designed to shore up the commitment to creating a robust, resilient American solar manufacturing base across the supply chain. These solutions must account for the fact that China is a nimble rival that is quick to exploit opportunities, loopholes, and vulnerabilities.

With the right guardrails, the IRA can help ensure that our manufacturing sectors grow in a resilient and durable manner while allowing the United States to capture the economic value and expand American manufacturing jobs in the process.

I, on behalf of First Solar, am pleased to be here today to participate in these important discussions. We are proud of our American manufacturing capabilities and our past, current and future contributions to



the U.S. economy. We believe that the IRA will significantly advance efforts to grow our country's economy, create enduring jobs, and contribute to our nation's energy security.

Thank you, and I would be happy to answer any questions you may have.

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