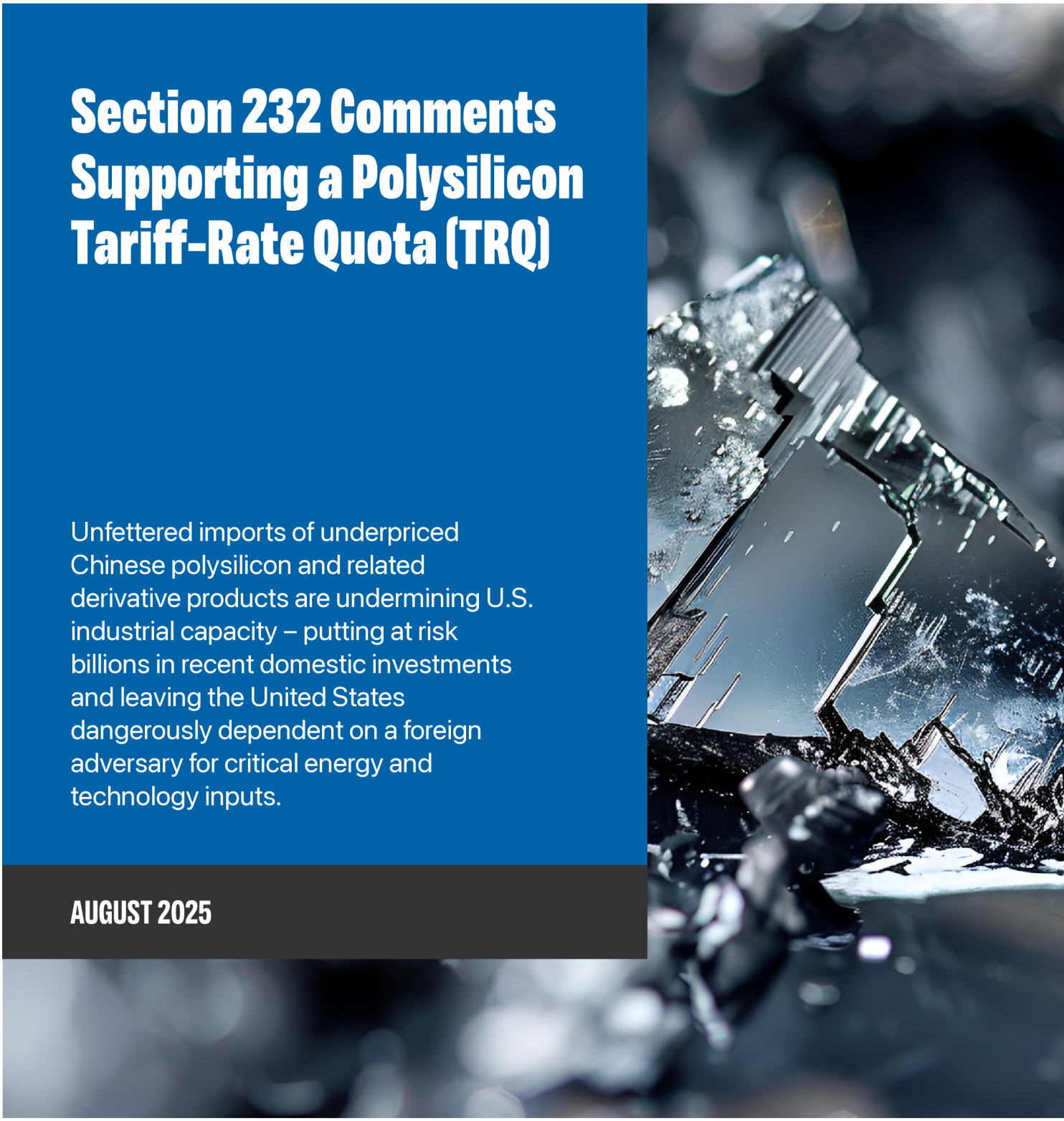
COALITION for a PROSPEROUS AMERICA

Section 232 Comments Supporting a Polysilicon Tariff-Rate Quota (TRQ)



Unfettered imports of underpriced Chinese polysilicon and related derivative products are undermining U.S. industrial capacity – putting at risk billions in recent domestic investments and leaving the United States dangerously dependent on a foreign adversary for critical energy and technology inputs.

AUGUST 2025

Section 232 Comments Supporting a Polysilicon Tariff-Rate Quota (TRQ)

Submitted by: Coalition for a Prosperous America (CPA)

Summary

We respectfully submit these comments in support of a Section 232 national security action to secure domestic polysilicon production while also giving tailored import relief for the solar-photovoltaic supply chain, which produces solar-grade polysilicon derivative products. This measure is urgently needed to protect and rebuild the domestic supply chain for polysilicon, a strategic material at the foundation of both clean energy (solar photovoltaics) and advanced electronics (semiconductors). Today, China dominates global polysilicon production (over 80% of world supply) through massive state subsidies, severe overcapacity, and often exploitative labor practices. Unfettered imports of underpriced Chinese polysilicon and related derivative products are undermining U.S. industrial capacity – putting at risk billions in recent domestic investments and leaving the United States dangerously dependent on a foreign adversary for critical energy and technology inputs.

To address this threat, relief stemming from this Section 232 investigation into polysilicon and derivative products should contemplate the following:

Solar Modules (HTSUS 8541.43)

- A protective tariff of $0.20 per watt against all solar module imports (encompassing all imports under HTSUS 8541.43). Domestic solar module producers have sufficient capacity (over 50 GW) to meet forecasted U.S. demand. A $3 per watt "specific tariff" guards against fraudulent invoicing and currency undervaluation.

Solar Cells (HTSUS 8541.42)

- While the U.S. has sufficient capacity at the module level, the same cannot be said of solar cells, solar wafers, or solar ingots. For these products, a Tariff Rate Quota system should be deployed on an extended (decade-long) time-frame to both secure domestic supply chains as well as immediately incentivizing further investment into domestic productive capacity.
- Over-quota rate: This $0.10 per watt tariff should apply to over-quota imports of solar cells (under HTSUS 8541.42);
- In-quota rate: Duty-free (or at least low-duty) quota allocation for existing solar PV inputs over the next decade, without regard to requiring qualifying originating material (e.g. U.S.-sourced polysilicon). The current estimate is 30 GW of in-quota solar cell imports, limited to PV module manufacturers holding a valid quota certificate;
- Limits quota benefits to qualified U.S. manufacturers, ensuring that quota allocation is not awarded to suppliers without a quota certificate.
- Dual-track Rule of Origin for quota-imports: Alongside the preservation of existing contractual quota allocations, we recommend a 'Poly-Forward' rule of origin that would authorize additional quota allocation for imports that sourced qualified originating material and would presumably be the only available quota after the ten-year period. The purpose of this is a defensive posture, given the Administration's priority of securing long-term domestic supply of polysilicon;

- **In-Quota Zero Tariff for Allied Supply Chain Countries:** A duty-free quota volume should be reserved for solar-grade polysilicon and downstream solar inputs (wafers, ingots, and cells), allocated via quota certificates issued to trusted allied countries such as South Korea and Germany. These countries may distribute quota rights to their domestic producers or affiliated manufacturers operating within their extended supply chains, regardless of country of origin—provided those operations are not under Chinese-government control. This approach ensures flexible and secure sourcing from verified non-Chinese supply chains, while preserving enforcement integrity through country-level oversight. It enables allies to allocate quota volumes in a way that reflects their industrial structure and supports U.S. manufacturers during the transition

period as domestic capacity scales up. This structure follows the precedent set by the U.S. sugar TRQ system, where in-quota access is allocated by country and administered through quota certificates.

- **Quota Volume Tied to U.S. Production Capacity:** The in-quota volume is adjusted annually to reflect changes in U.S. polysilicon production capacity (both solar- and semiconductor-grade), as assessed by the Department of Energy. The quota should be administered quarterly, reflect shortfall estimates, and tighten as U.S. capacity grows—ensuring stable supply today while guaranteeing increasing market share for U.S. producers.
- **Exclusion of Chinese-Controlled Supply, Regardless of Location:** All Chinese state-owned or -influenced production—whether direct from China or rerouted through third countries—is categorically excluded from in-quota eligibility. This includes Chinese firms operating in Southeast Asia or other transshipment hubs.
- **National Security-Driven Structure:** This Section 232 policy is grounded in national security objectives—securing U.S. access to the raw materials needed for energy resilience and semiconductor integrity. The TRQ ensures that trusted imports support U.S. manufacturing through the transition, while hostile actors are excluded, and domestic industry is given the certainty needed to invest and expand.

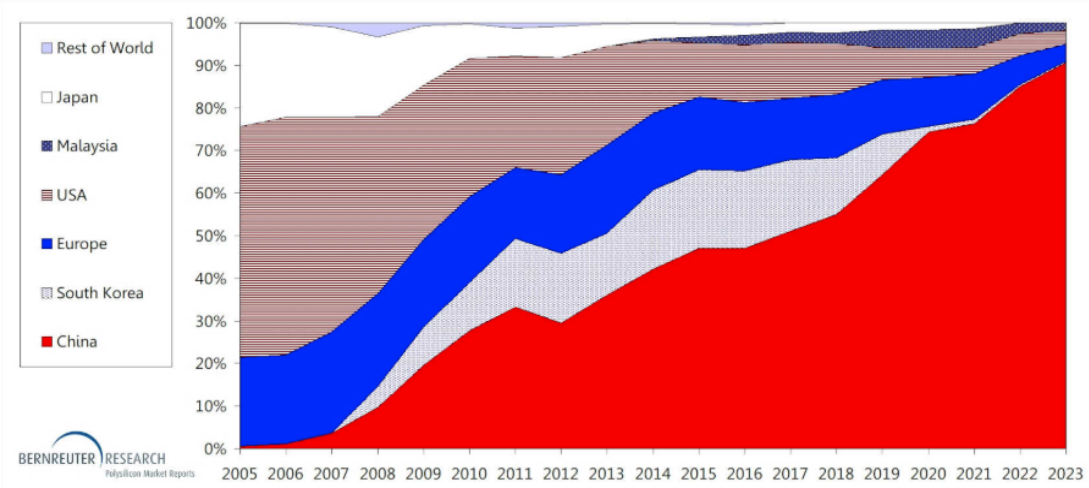
National Security Imperative for Securing Polysilicon Supply

Polysilicon is a strategic material for the United States. High-purity polysilicon is the fundamental input for two industries of immense national security importance: solar photovoltaics (which underpin our clean energy infrastructure) and semiconductor chips (the brains of modern defense, communications, and computing systems). Ensuring a robust domestic and allied supply of polysilicon is therefore essential to U.S. energy security and technological leadership. As the U.S. transitions to an electricity grid increasingly reliant on solar energy, and as semiconductor-based technologies become ever more critical for both economic and national security needs, it would be extremely dangerous and imprudent to remain dependent on a hostile foreign power for the raw material input of these systems.

Today, that danger is very real: China has effectively monopolized global polysilicon and solar manufacturing. Over the past decade, the Chinese government identified solar technology as a strategic sector and lavished it with subsidies, cheap financing, and other state support. The result has been a dramatic rise in Chinese market share across the entire photovoltaic supply chain – from polysilicon to wafers, cells, and finished panels.

Between 2004 and 2023, China's share of global polysilicon production rose exponentially—across electronic-grade, solar-grade, and upgraded metallurgical-grade. As shown in Figure 1, China's global production share increased from near zero to over 90% by 2023. China accounts for 210 million tons of the global 225.6 million tons of polysilicon production.

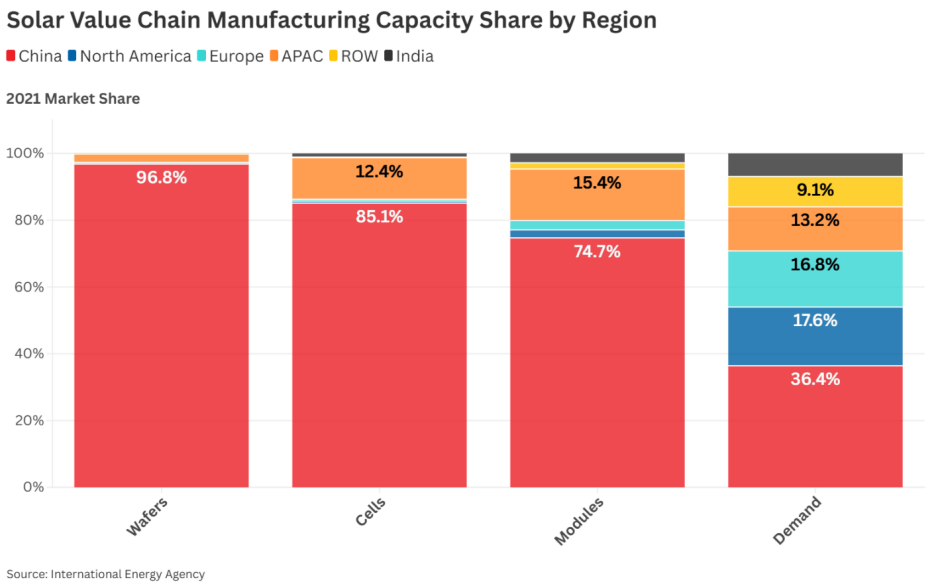
Figure 1:



**Graph from Bernreuter Research*

China has used its dominance in polysilicon production to cement control over downstream industries as well. China now controls over 75% of global production capacity in each of the solar panel production stages, far exceeding its share of end-use demand. As shown in Figure 2, China increasingly dominates global production higher up the supply chain, starting with polysilicon and flowing to wafers, cells, and then final products like solar panels.

Figure 2:



This domination extends even to U.S.-based manufacturing – by 2024 Chinese-owned companies accounted for 39% of U.S. solar panel assembly capacity (versus only 24% U.S.-owned), illustrating how deeply Chinese firms have infiltrated the supply chain.

Reliance on Chinese polysilicon and solar technology is not only an economic vulnerability but a strategic one. It gives Beijing potential leverage over the U.S. energy supply and critical defense-related industries. We have seen China in the past weaponize its control of important materials – for example, cutting off exports of rare earth minerals and magnets to the U.S. during 2025 trade disputes. If geopolitical tensions worsen, China could restrict exports of polysilicon or other critical components, crippling U.S. semiconductor fabrication and renewable energy manufacturing.

Even absent an overt cutoff, China's dominance allows it to dictate global prices, flood the market to kill off competitors, and then potentially raise prices or dictate terms once alternatives have disappeared. This is fundamentally a national security threat: an adversarial power should not hold the keys to our energy future or the building blocks of our advanced tech economy.

Link to Forced Labor and Human Rights Abuses

In China, polysilicon production is further concentrated in the Xinjiang-Uyghur region, which accounts for approximately 45% of the world's solar-grade polysilicon supply. There have been widespread, documented reports of Uyghur forced labor in polysilicon factories in this region. The U.S. Congress has responded with the Uyghur Forced Labor Prevention Act (UFLPA) to bar products made with forced labor, but enforcement is challenging and shifting Chinese production makes detection difficult to track. Continuing to import Chinese polysilicon thus raises ethical issues and legal risks. By contrast, non-Chinese sources (U.S., Germany, Korea, etc.) operate under higher labor and environmental standards. Ensuring polysilicon comes from trusted, ethical sources aligned with American values and laws, further underlining the need for a new import regime.

A domestic polysilicon manufacturing base is vital for both national defense and economic security. Section 232 of the Trade Expansion Act recognizes that certain imports can weaken our internal economy and industrial base to a degree that harms national security. We submit that polysilicon imports – in their current distorted, China-dominated state – clearly meet that criterion. U.S. policymakers must take decisive action to rebuild an independent supply chain for solar and semiconductor materials, ending the current dangerous dependence on China. The proposed TRQ and tariff framework is designed to do exactly that.

Massive Overcapacity & Price Undercutting

China's overproduction strategy (producing beyond their domestic demand) is well-documented in the polysilicon market. As previously noted, China has built a global polysilicon production share of over 90%, while Chinese demand for downstream products like solar panels is only about 36%. This deliberate glut has collapsed global polysilicon prices in a "race to the bottom."

According to leading industry analyst Johannes Bernreuter, Chinese polysilicon is selling for as low as $4–$5 per kilogram, whereas non-Chinese polysilicon fetches around $20 per kg – a four- to five-fold price differential. In other words, Western producers cannot compete at the artificial "China price." Today's market is totally bifurcated, with subsidized Chinese material essentially setting an unsustainably low global price floor.

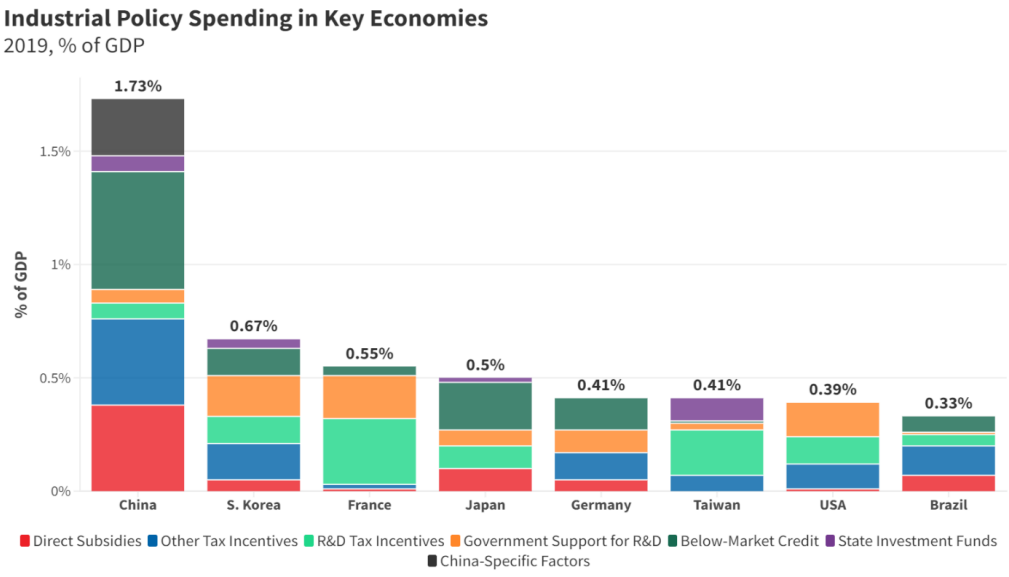
Chinese producers must export the majority of what they make, since their output far exceeds domestic installation needs – giving them every incentive to dump product abroad at cut-rate prices to keep factories running. If this dynamic continues, the International Energy Agency (IEA) projects that China will maintain 80–95% share of the global solar supply chain in 2024 as this dynamic continues.

The only way for the U.S. and like-minded nations to survive is to insulate our markets from China's overcapacity. The high tariff proposed under Section 232 is intended to do exactly this, by raising the effective cost of Chinese polysilicon back toward realistic levels, and allowing market space for domestic producers to develop and expand.

Heavily Subsidized Industry

The financial underpinnings of China's solar dominance are deeply problematic. Analyses show Chinese industrial subsidies tower over those of any other nation. One study by the Center for Strategic & International Studies (CSIS) found Chinese government support for industry amounted to 1.73% of GDP (as of 2019) – more than 4 times the level of U.S. support (0.39%). As shown in Figure 3, the various Chinese government industrial subsidy spending is 2.5-3 times higher than the next closest industrial rivals (South Korea, France, and Japan), and even farther above U.S., German, and Taiwanese spending.

Figure 3:



Source: CSIS data, CPA Graphics
Note: Estimates only include instruments with sufficient data for quantification. Consequently, China estimates are conservative.

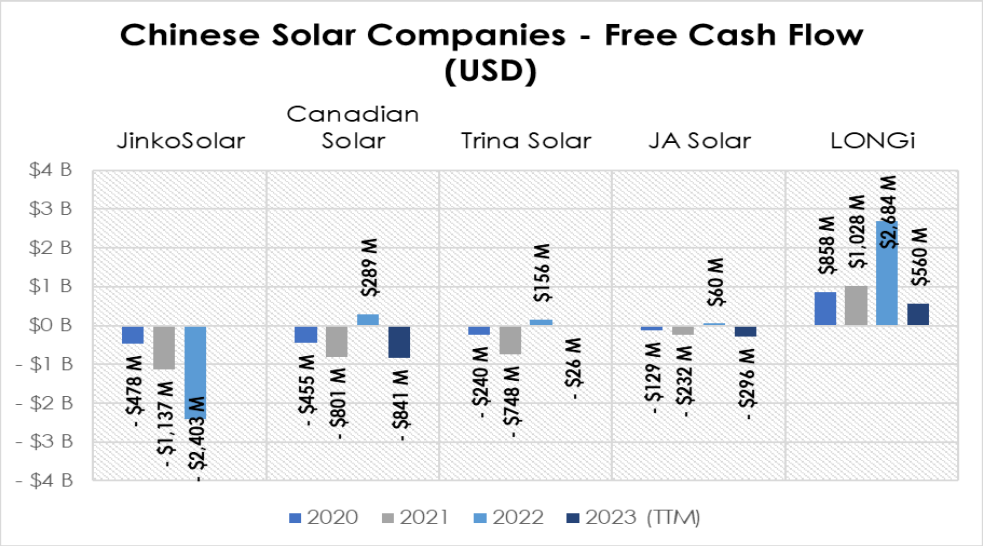
In the renewable energy sector specifically, China's subsidies are even more extreme, fueling a huge wave of capacity growth despite falling prices. In 2023 alone, China invested an estimated $220 billion in its solar industry, about half of all global solar investment that year. This state-enabled spending spree is projected to increase China's solar manufacturing capacity by another factor of 2.5 in 2024. In short, China is using state-backed industrial support to flood global markets with underpriced polysilicon and derivative products. Western and U.S. firms, playing by free-market rules, cannot match a competitor backed by the deep pockets of the Chinese state.

China's Solar Firms Are Surviving on Government Subsidies

China's overwhelming control of polysilicon and solar manufacturing did not arise from free-market competition, but from a state-driven strategy of market distortion. Chinese companies' ability to offer ultra-low prices is largely a product of heavy government subsidies, preferential policies, and gross overcapacity – not inherent cost advantages or superior efficiency.

In fact, most leading Chinese solar firms are in poor financial health. The leading Chinese solar manufacturers are carrying enormous debt loads. For example, Jinko Solar – one of the largest panel makers – saw its debt balloon to $4.38 billion by 2023, with negative $2.4 billion in cash flow in 2022. Others like Canadian Solar and Trina Solar similarly carry heavy debt and, as shown in Figure 4, have negative cash flows that would be unsustainable without state support.

Figure 4:



Source: Yahoo Finance

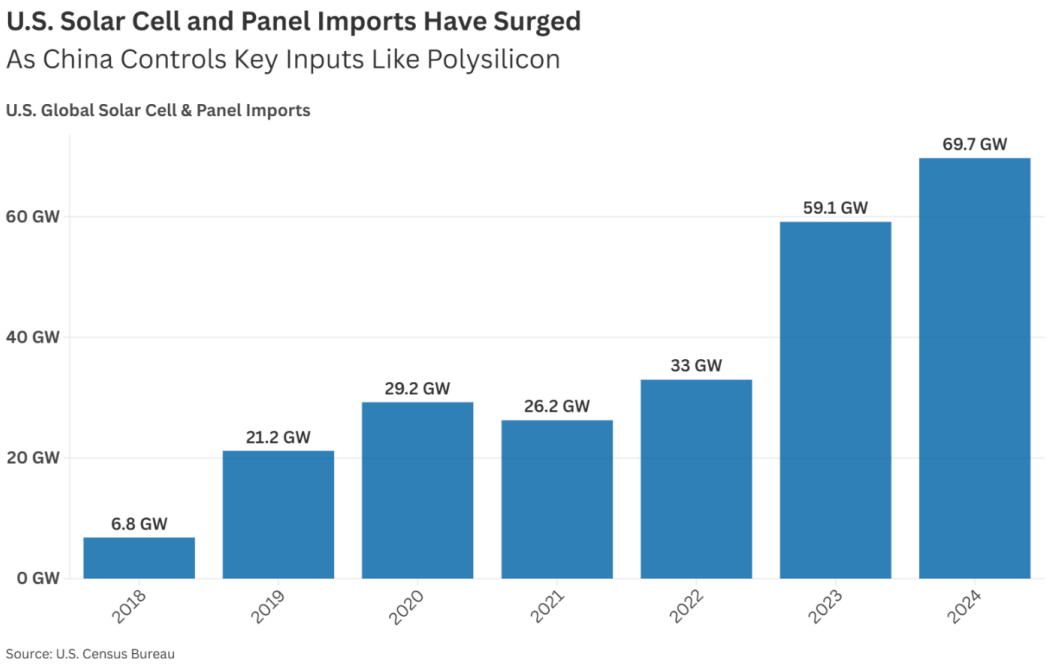
These firms are essentially kept afloat by continuous infusions of state-directed capital, allowing them to keep expanding capacity and selling at below true cost. From 2011 to 2023, Chinese solar manufacturers received more than $50 billion in government subsidies, enabling cost reductions of up to 30% and giving them a substantial advantage over global competitors.

The Chinese Communist Party has essentially been bankrolling its solar industry to achieve global dominance, outlasting foreign competitors by operating at a loss and driving prices down to levels that non-subsidized firms cannot survive.

Import Surges and Domestic Industry Harm

The impact on the United States has been devastating. Chinese-origin solar products (often funneled through third countries) have poured into the U.S. at record levels, displacing and suppressing domestic production. As shown in Figure 5, in 2024, U.S. solar panel imports reached nearly 70 GW (over 10 times 2018 levels).

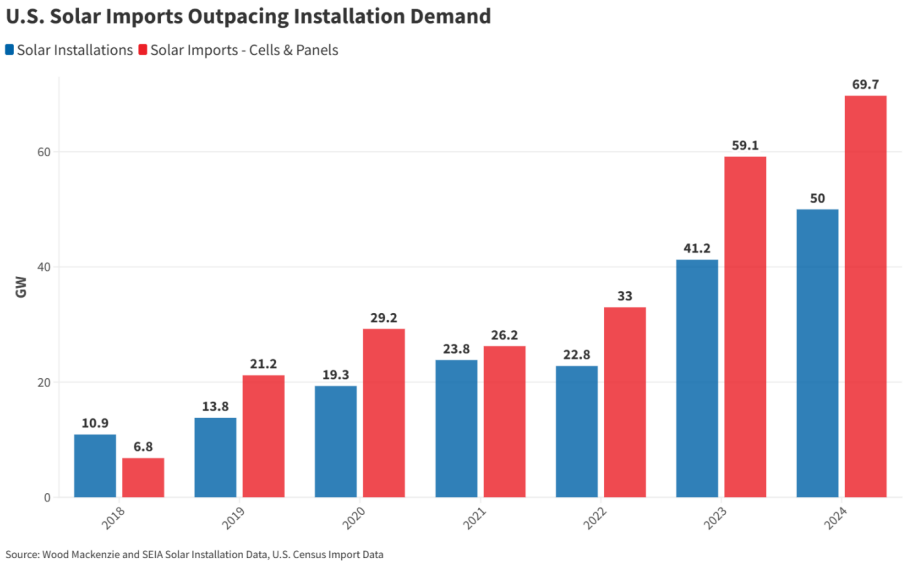
Figure 5:



In effect, imports not only flooded the market enough to undermine domestic producers but also oversupplied the market, leading to inventory gluts. Warehouses across the country are full to bursting with excess imported panels.

For the past six years, total solar cell and panel imports have exceeded total U.S. demand in the form of total installations. As shown in Figure 6, 2024 solar imports were nearly 20 GW higher than total solar installations.

Figure 6:



Source: Installations (Residential, non-Residential, & Utility): Wood Mackenzie & SEIA

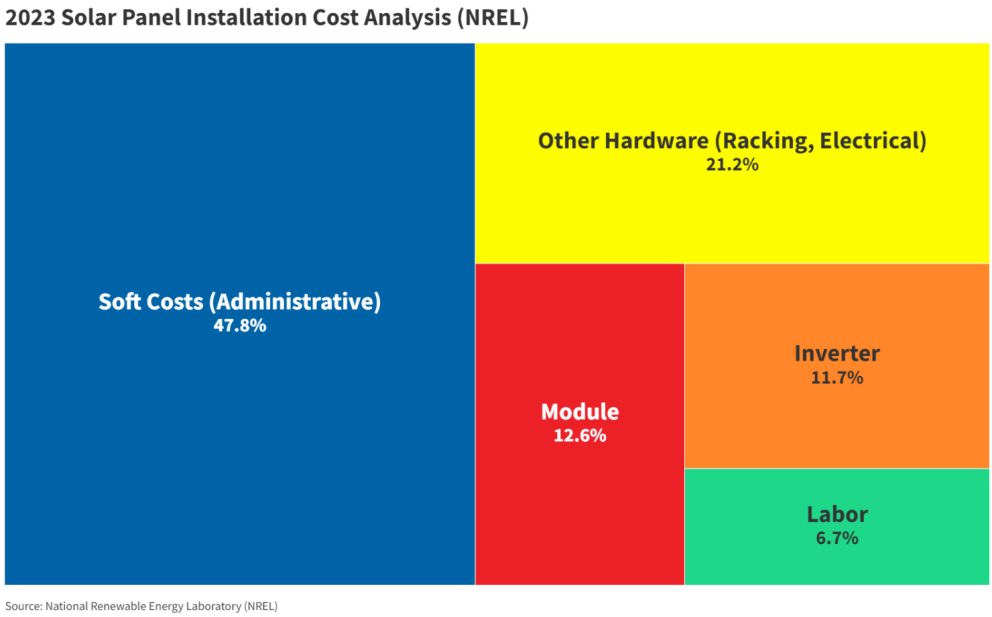
Such an imbalance is almost unheard of in a manufacturing sector; it is a clear sign of a distorted market. U.S. solar module makers, even with new investments spurred by the 2022 Inflation Reduction Act (IRA), cannot secure significant market share because foreign products (chiefly Chinese-made, either directly or via Southeast Asia) undercut them on price and volume. Indeed, many U.S. manufacturers have been forced to idle capacity or cancel planned facilities due to the import onslaught and falling prices. The U.S. Solar Supply Chain is struggling to survive in the face of this flood of subsidized imports.

Tariffs Do Not Inhibit Solar Deployment

Historical trends show that solar deployment in the United States has continued to grow—even during periods when tariffs on imported panels were in place. Installations increased following the imposition of AD/CVD duties in 2012 and again after the Section 201 safeguard tariffs began in 2018, as shown in Figure 6 above.

According to the National Renewable Energy Laboratory (NREL), solar modules made up just 12.6% of the total average installation cost in 2023, underscoring that even significant increases in panel prices have a minimal impact on overall project economics. As shown in Figure 7, other cost factors—such as racking, electrical connections, and administrative expenses—are far more influential.

Figure 7:



Source: National Renewable Energy Laboratory (NREL)

Solar deployment decisions are primarily driven by long-term factors such as state renewable portfolio standards, utility procurement targets, and power purchase agreements—not by short-term fluctuations in module pricing. Federal incentives under the Inflation Reduction Act remain in effect and further buffer any tariff-related cost impacts.

Tariffs also help stabilize pricing for U.S. manufacturers by deterring foreign producers—particularly Chinese-backed firms—from dumping below-cost panels into the market. A well-designed Section 232 tariff or TRQ framework would not hinder deployment; it would strengthen it by protecting U.S. manufacturing, reinforcing supply chain security, and allowing the solar industry to scale in a way that supports both national energy goals and domestic industrial resilience.

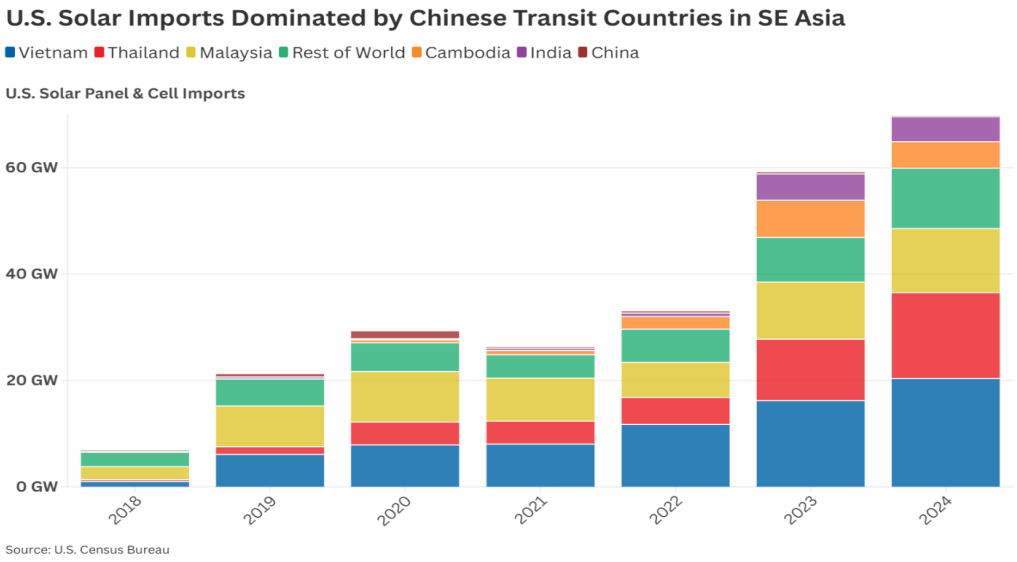
Tariff Evasion, High Inventories, and the Limits of U.S. Trade Remedies

Chinese solar manufacturers have spent over a decade evading U.S. trade enforcement through transshipment. Although the U.S. imposed antidumping and countervailing duties (AD/CVD) on Chinese solar panels and cells in 2012, Chinese companies quickly shifted final assembly to Vietnam, Malaysia, and Thailand, while continuing to produce wafers, cells, and polysilicon in China. As previously shown in Figures 1 and 2, China still controls 75% to 90% of global production across all stages of solar manufacturing–including polysilicon, wafers, cells, and modules.

In 2018, the Trump administration imposed a Section 201 global safeguard tariff on solar panels, starting at 30%. But a key exemption for bifacial panels, introduced in mid-2019 and reaffirmed by the Biden administration in 2022, allowed most utility-scale imports to bypass the tariff entirely. That same year, Section 301 tariffs were imposed on a broad range of Chinese goods, including inverters, frames, and glass.

However, Chinese firms continued to dominate U.S. panel imports indirectly by operating large-scale assembly facilities in Southeast Asia. These modules are legally labeled as "Vietnamese" or "Thai" origin, despite being vertically integrated with Chinese inputs, control, subsidies, and capital. As shown in Figure 8, Vietnam, Thailand, Malaysia, and Cambodia are now the leading sources of U.S. panel imports–but the supply chain remains deeply rooted in China. And now India, Indonesia, and Laos are emerging as major surge and transshipment countries as the current Southeast Asian countries come under more trade scrutiny.

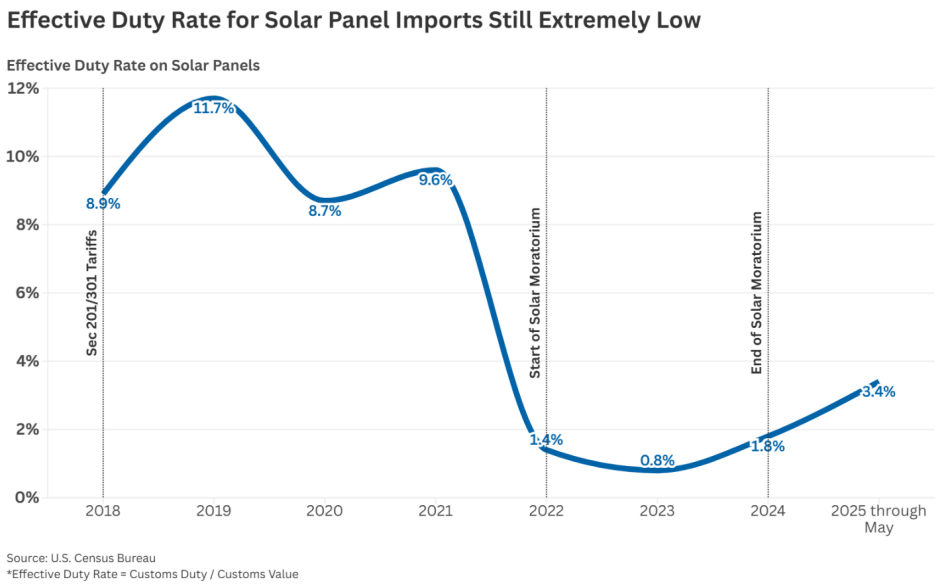
Figure 8:



In 2022, the Commerce Department launched a circumvention investigation and confirmed that Chinese firms were using Southeast Asia to avoid AD/CVD duties. However, before the findings could be enforced, the Biden administration imposed a two-year moratorium, delaying any new duties until June 2024. During that period, solar panel imports surged by nearly 100%, and by 2023, Southeast Asia accounted for 77% of all U.S. solar panel imports–much of it from Chinese-controlled firms like LONGi, Trina, and Jinko. The backlash was so strong that Congress passed a resolution in 2023 to overturn the moratorium, citing national security and trade law concerns–but President Biden vetoed the measure, allowing the surge of tariff-free Chinese-linked imports to continue.

The impact on tariff enforcement was severe. As shown in Figure 9, the effective tariff rate on solar panels–i.e., duties collected as a share of import value–collapsed from 9.6% in 2021 to just 1.4% in 2022, and fell further to 0.8% in 2023. The moratorium blocked enforcement against the main transshipment hubs, giving importers a green light to flood the U.S. market. Although the moratorium formally ended in June 2024, the administration granted a grace period through December 2024 for duty-free installation of already-imported panels.

Figure 9:



The effect is clear: even by May 2025, the effective tariff rate has only modestly rebounded to 3.4%. During the moratorium window, importers stockpiled over 50 GW of panels, and as of mid-2025, U.S. warehouses remain full of low-cost Chinese-linked inventory. This glut continues to depress U.S. prices and squeeze domestic producers, despite nominal tariff enforcement.

The structure of past trade actions—AD/CVD, Section 201, and Section 301—has proven easy to circumvent and slow to enforce, while China still dominates global production across all stages. The result is a fragmented trade framework that has, in practice, failed to protect the U.S. solar manufacturing base.

Why Section 232 Is Now Essential

Despite multiple tariffs—AD/CVD, Section 201, and Section 301—U.S. solar trade policy remains fragmented, reactive, and porous. Narrow product scopes, country-based targeting, and enforcement delays have allowed Chinese firms to dominate U.S. solar imports via Southeast Asia, even after being found guilty of circumvention.

This is the predictable "whack-a-mole" pattern: each time a tariff is imposed, Chinese firms shift operations, relabel products, or re-register subsidiaries. Without a structural overhaul, new transshipment hub countries will emerge next, backed by the same Chinese capital and state-linked supply chains.

Section 232 offers the comprehensive remedy that existing tools lack. It allows:

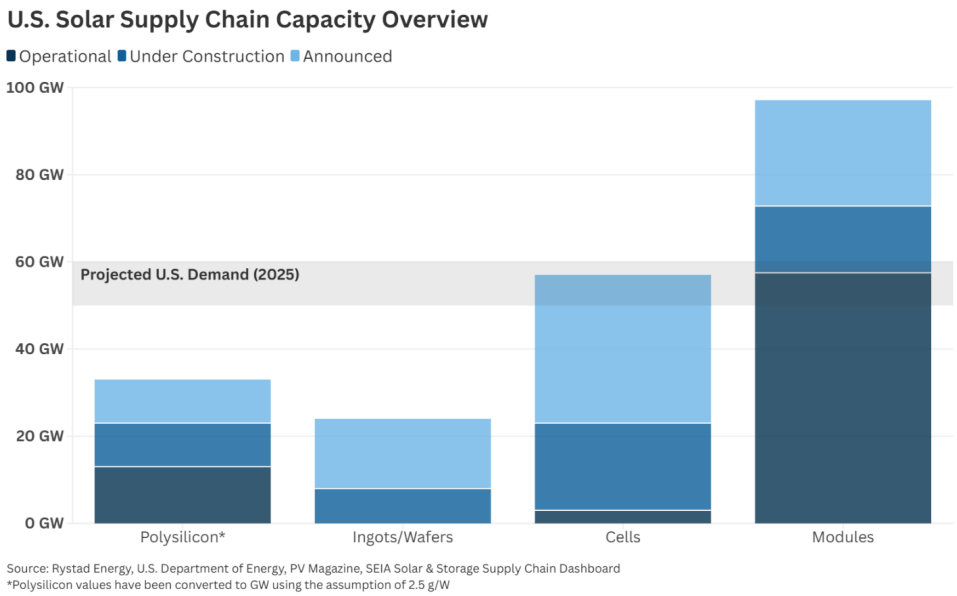
- A universal high tariff on finished solar panels, regardless of country of assembly.
- A Tariff Rate Quota (TRQ) on upstream materials (polysilicon, ingots, wafers, and cells), with in-quota access strictly limited to suppliers issued a quota certificate by a trusted supply chain partner country (such as South Korea).
- Enforcement based on ownership and control, not just country of origin—ensuring that Chinese-controlled entities are excluded, no matter where they operate.
- A global framework that preempts future circumvention by separating trusted allied supply from adversarial networks.

The failure of past trade measures makes the case clear: only Section 232 can restore a secure, enforceable, and U.S.-aligned solar supply chain. Without it, Chinese state-linked firms will continue to dominate U.S. market conditions through proxies, exemptions, and stockpiled inventory—while domestic producers face margin collapse and plant closures.

U.S. Solar Manufacturing Capacity Estimates to Support TRQ Design

We fully support a comprehensive Department of Energy (DoE) evaluation to determine the appropriate annual quota levels under a Section 232 Tariff Rate Quota (TRQ) system. However, to guide the initial structure of that system, we present the following estimates of current and projected U.S. manufacturing capacity across the crystalline silicon solar supply chain—including polysilicon, ingots/wafers, cells, and modules. These estimates underscore the urgent need to differentiate between supply chain segments when designing trade relief: while domestic module capacity is sufficient and should be fully protected with a universal tariff, upstream segments remain capacity-constrained and require carefully managed in-quota access from in-quota suppliers.

Figure 10:



Source: Rystad Energy, U.S. Department of Energy, PV Magazine, SEIA Solar & Storage Supply Chain Dashboard
*Polysilicon values have been converted to GW using the assumption of 2.5 g/W

Polysilicon

Polysilicon production remains a key constraint in the U.S. solar supply chain. As of early 2025, Hemlock Semiconductor and Wacker Chemie operate the only two major polysilicon facilities in the U.S. While total domestic polysilicon production capacity is estimated at up to 50,000 metric tons per year, only a portion of this is suitable for solar applications, as Wacker primarily focuses on semiconductor-grade output, and Hemlock splits its capacity between solar and electronic uses.

As such, effective solar-grade polysilicon capacity is estimated at approximately 33,000 metric tons—enough to support only approximately 13 GW of solar module production, assuming a standard 2.5 grams of polysilicon per watt of generation capacity. However, with ongoing improvements in cell design and manufacturing efficiency—particularly thinner cells and reduced material loss—next-generation modules may require as little as 2 grams per watt or less. Even under those improved assumptions, domestic supply remains well below current U.S. demand, which exceeds 50 GW per year.

New solar-grade capacity is expected from Highland Materials (6–10 GW worth by 2026–2028) and a dedicated Hemlock facility also planned for 2028, but domestic supply will remain insufficient in the near term. Moreover, increasing semiconductor-sector demand (fueled by CHIPS Act investments) will place additional pressure on available polysilicon feedstock. A Section 232 TRQ must therefore allow in-quota, duty-free imports of solar-grade polysilicon from quota certificate suppliers—including producers in South Korea and Germany's supply chain—while strictly excluding Chinese-controlled entities or any transshipped material.

U.S. wafer production capacity is projected to reach approximately 8 GW by the end of 2026, and domestic solar-grade polysilicon currently supports no more than 13 GW of module production. However, we recommend a conservative total **in-quota allocation of 40,000 metric tons of polysilicon** imports.

While this exceeds near-term wafer demand, a higher polysilicon quota is warranted to account for additional domestic uses beyond wafer production, including semiconductor-grade demand and buffering material for future expansion. Out-of-quota imports should be subject to a $10 per kilogram tariff rate. Given its storability and role as the foundational input, a forward-leaning quota for polysilicon will ensure a stable and secure base supply as upstream capacity scales.

Ingots and Wafers

U.S. ingot and wafer manufacturing remains at an early stage, with only one operational facility to date—Qcells' Cartersville, Georgia plant, which is expected to reach 3.3 GW of annual ingot and wafer capacity by late 2025. This facility marks the only confirmed commercial-scale wafer production in the U.S. as of mid-2025. According to the Clean Investment Monitor, total planned and under-construction wafer capacity across the U.S. amounts to 24 GW, but most of this is not yet operational and is unlikely to close the supply gap in the next one to two years. Roughly one-third of this U.S. wafer capacity is currently under construction, while the remaining two-thirds consists of announced projects that have yet to begin development. Based on project timelines and delivery expectations, a conservative projection is that wafer capacity will reach approximately 8 GW by 2026.

Given that U.S. module demand exceeds 50 GW annually, and current wafer output covers less than 10% of that need, a Section 232 TRQ should provide in-quota access for wafer and ingot imports from suppliers issued quota certificates, while excluding Chinese-controlled production entirely—including operations routed through Southeast Asia—to prevent continued circumvention and protect current and future U.S. investment in upstream manufacturing.

With domestic cell capacity projected to reach approximately 20 GW by 2026 and wafer capacity still limited to 3.3 GW operational and up to 8 GW under construction, we recommend a conservative TRQ in-quota allocation of **at least 30 GW for wafer and ingot imports.** This volume would allow U.S. cell producers to operate near full capacity while U.S. wafer manufacturing continues to scale. Out-of-quota imports should be subject to a $0.07 per watt tariff.

Solar Cells

Solar cell production in the U.S.—previously nonexistent—has begun to scale, but remains well behind domestic module demand. As of early 2025, approximately 3 GW of U.S. solar cell manufacturing capacity is operational, including restarted production at Suniva (Georgia) and new lines from Silfab (South Carolina). While the pipeline of announced projects is significant—up to 42 GW of cell capacity is in development—only a fraction of that is expected to come online in the next 1–2 years. Projections suggest 10 GW could be operational by the end of 2025, with potential to reach 19–20 GW by 2026 if construction and supply chain timelines hold. However, many of these projects are in early stages or dependent on wafer availability and downstream integration.

With U.S. module demand (and consequently cell demand) estimated at 57.5 GW and First Solar expected to supply approximately 14 GW of that total through thin-film modules that do not require conventional solar cells, the remaining 43.5 GW will rely on crystalline silicon cell inputs. Domestic cell production is projected to reach 20 GW by 2026, leaving a shortfall of roughly 15 GW.

To address this gap while upstream integration continues to ramp, we recommend that the Section 232 TRQ include an **initial in-quota allocation of 30 GW for solar cell imports** from in-quota suppliers. This volume would maintain supply chain continuity for U.S. module manufacturers, while ensuring that imports do not crowd out emerging domestic cell production. Out-of-quota imports should be subject to a $0.10 per watt tariff. A well-calibrated TRQ would bridge the near-term deficit without undermining long-term industrial capacity growth.

Solar Panels (Modules)

In contrast, solar panel (module) production is now well-developed in the U.S. and does not require any tariff exemptions or in-quota rates. U.S. module production capacity currently stands at 57.5 GW per year, which is sufficient to meet or even exceed annual U.S. installation levels of around 50 GW.

Much of this capacity comes from non-Chinese producers, including Qcells and First Solar, which have made significant investments based on the assumption of a stable U.S. market. Continuing to allow ultra-cheap panel imports—especially from Chinese-owned Southeast Asian operations—would jeopardize these investments and further undermine domestic producers. Therefore, we recommend all imported finished panels be subject to the full Section 232 tariff rate of $0.20 per watt without any in-quota relief.

A well-structured TRQ should reserve in-quota, duty-free access only for upstream materials—polysilicon, ingots, wafers, and cells—from in-quota producers, with volumes tied to verified U.S. capacity shortfalls. All finished panels should face a universal, high tariff. Enforcement must be ownership- and control-based, not just country-based, to prevent circumvention through Chinese-controlled subsidiaries in Southeast Asia or elsewhere. The TRQ system

should be adjusted annually based on transparent DoE capacity assessments, ensuring that trusted imports supplement—rather than displace—U.S. solar manufacturing as it continues to expand.

Section 232 Tariff-Rate Quota (TRQ) Proposal for the Solar Supply Chain

We propose a Section 232-based Tariff-Rate Quota (TRQ) system covering imports of polysilicon, wafers/ingots, and solar cells, while applying a universal high tariff on finished solar panels. The TRQ is designed to secure the U.S. solar and semiconductor supply chains, support industrial growth, and end reliance on Chinese-controlled inputs.

I. TRQ Structure by Manufacturing Stage

- **Polysilicon, Wafers/Ingots, and Cells:**
    - Covered by a flexible TRQ system.
    - In-quota imports allowed duty-free only from suppliers with quota certificates issued by trusted supply chain partner countries such as South Korea and Germany.
    - The Department of Energy (DoE) determines annual quota volumes and certificate allocations, based on the difference between U.S. demand and domestic production capacity for each manufacturing stage and product (polysilicon, ingots/wafers, and cells).
- **Finished Modules (Panels):**
    - Subject to a universal, above-quota tariff, with no in-quota exemption, as domestic panel capacity (57+ GW) already exceeds current U.S. demand (~50–60 GW/year).

II. Quota Certificate Allocation and Enforcement

- Eligibility for in-quota access will be determined through country-level quota certificates, issued by the United States to trusted allied countries with secure, non-Chinese-controlled supply chains (e.g., South Korea, Germany).
- Allied governments will have discretion to allocate their quota volumes across their domestic producers and affiliated supply chains, including subsidiaries or facilities located in third countries, provided they are not subject to Chinese ownership or influence.
- The United States will retain sole authority to determine which countries are eligible for quota certificates, based on national security considerations, trade reliability, and supply chain transparency. Countries with significant exposure to Chinese state-owned or controlled firms will be excluded.
- Total annual quota volumes and quota certificate allocations will be determined annually by the Department of Energy (DoE), based on the difference between U.S. demand and domestic production capacity at each manufacturing stage—polysilicon, ingots/wafers, and cells. This ensures a dynamic quota system that tightens over time as domestic capacity increases.
- U.S. Customs and Border Protection (CBP) will administer the quota on a quarterly basis, verifying that imported shipments are accompanied by valid quota certificates issued through the approved allied country mechanism. Any imports not supported by such certificates will be subject to the full above-quota tariff.
- This enforcement structure follows the model used in the U.S. sugar TRQ system, where quota rights are allocated by country and managed through certificate-based import validation.

III. Tariff Rate and Quota Adjustment

- The above-quota tariff should be high enough (potentially 100%+) to fully price Chinese polysilicon out of the U.S. market.
- The tariff should be reviewed annually with input from U.S. manufacturers and adjusted based on dumping trends, global pricing distortions, and subsidy impacts.
- Quotas should tighten gradually as U.S. manufacturing capacity increases, ensuring that domestic producers gain market share over time.

IV. Semiconductor-Grade Polysilicon

- The TRQ must apply to both solar- and semiconductor-grade polysilicon, to prevent loopholes and protect national security.
- Semiconductor-grade polysilicon is essential to U.S. national security and economic sovereignty, given its role in defense systems, critical infrastructure, and high-tech manufacturing.
- Allied suppliers will be eligible for in-quota access or domestic production, preserving supply chain stability for the defense and electronics sectors.

V. National Security and Economic Resilience

- China retains 75–90% control of the global solar supply chain. Chinese subsidies and state-backed overcapacity continue to undercut U.S. manufacturers.
- Without a TRQ, production incentives will be negated by price suppression, as already seen in the panel market.
- This TRQ would create a stable, predictable, and enforceable market structure that encourages U.S. and allied investment while excluding coercive actors.

VI. Solar Deployment and Cost Impact

- Solar deployment has continued to grow even under past tariff regimes. Solar modules represent a relatively small share of total project costs, and federal tax credits further offset any price impacts.
- A TRQ will not limit deployment—it will secure it by supporting price stability, supply chain reliability, and long-term domestic capacity.

Conclusion

A Section 232 TRQ system is urgently needed to protect U.S. national security, industrial capacity, and energy independence. It should:

- Impose high universal tariffs on finished solar panels.
- Establish a flexible TRQ for upstream inputs, calibrated to annual U.S. production capacity and limited to in-quota trusted suppliers.
- Cover both solar- and semiconductor-grade polysilicon, as well as all key downstream solar inputs (ingots, wafers, and cells) and finished modules.
- Exclude Chinese-controlled entities and transshipped goods.

This policy will safeguard American workers and manufacturers and ensure that the future of U.S. energy and advanced manufacturing is shaped by the United States and its allies—not by adversarial regimes.

We respectfully urge the administration to act swiftly to implement this targeted and enforceable TRQ framework under Section 232.