Impact of the Auxin Solar Tariff Petition

Solar Industry Impacts from U.S. Department of Commerce Investigation into Imports of Crystalline Silicon Photovoltaic Modules and Cells from Cambodia, Malaysia, Thailand and Vietnam

*Based on a survey of 200 companies*

April 5, 2022
Background: Solar is an Economic Engine

As of 2020, more than 230,000 Americans work in solar at more than 10,000 companies in every U.S. state.

In 2021, the solar industry generated nearly $33 billion of private investment in the American economy.

Source: National Solar Jobs Census 2020
Survey Results
If your company purchases or uses PV modules, have you received indication that your expected module supply has been delayed or cancelled?

Three-quarters of companies report cancelled or delayed module supply.

Current Module Supply Status

- Cancelled or Delayed: 74%
- Not Yet Notified: 11%
- Don't Know: 15%

Sample size as of 4/5/22 8:00 am ET: 200
How do you expect this investigation into imports from Cambodia, Malaysia, Thailand and Vietnam to impact your U.S. business in 2022?

- Companies expect damage across the value chain.
- 100% of domestic manufacturers responding to the survey expect severe or devastating impacts.

Sample size as of 4/5/22 8:00 am ET: 200
Most energy storage projects are paired with solar. Without the solar components, the energy storage components are likely to become uneconomical. Putting aside the economics, moving forward would require renegotiation of all project financing agreements.

Massive impact on solar and energy storage industries

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How do you expect this investigation into imports from Cambodia, Malaysia, Thailand and Vietnam to impact your U.S. business in 2022?

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

Solar Storage

Auxin Petition Impact on U.S. Solar and Storage Industries

Positive Impact
No Impact
Slight Negative Impact
Moderate Negative Impact
Severe Negative Impact
Devastating Negative Impact
What percent of your company's U.S. solar and storage workforce is at risk due to this tariff investigation?

- Two-thirds of respondents report that 50% of their solar and storage workforce is at risk.
- One-third of respondents report their entire workforce is at risk.

Sample size as of 4/5/22
8:00 am ET: 200
What percent of that business volume is now at risk?

- Half of respondents report 80% or more of their current-year solar pipeline at risk.

Sample size as of 4/5/22 8:00 am ET: 200
Additional Background
Supply Chain Constraints Lead to Price Increases

The petition by Auxin solar is not the only supply chain issue placing strain on the U.S. solar industry.

- Over the last 9 – 12 months, shipping constraints and other challenges stemming from the global pandemic and trade instability have led to price increases across the U.S. solar industry.
- For the first time since Wood Mackenzie began modeling solar system price data in 2014, year over year prices have increased across all market segments for three consecutive quarters, leaving utility-scale solar prices 18% higher than they were a year ago.
- Price increases have impacted deployment, with 1/3rd of Q4 2021 projects delayed a quarter or more, and 13% of expected 2022 projects delayed by a year or more or canceled outright.

**Year-Over-Year Changes in U.S. Solar PV Installed Price by Segment**

![Year-Over-Year Changes in U.S. Solar PV Installed Price by Segment](image-url)
Domestic Modules Account for <25% of Demand

Domestic wafer production has been zero since 2016
- No domestic customers for polysilicon
Domestic module production is the strongest
- To increase domestic content, the U.S. needs domestic glass and frame production
- 20 GW of new manufacturing capacity announced, depends on passage of reconciliation legislation, including SEMA

**Sources:** SEIA/Woodmac U.S. Solar Market Insight 2021 Year in Review
Trade Disputes Threaten Growth

- 84% of all U.S. solar module imports come from the four countries impacted by this investigation.
- There is insufficient non-Chinese capacity elsewhere to cost-effectively supply U.S. demand.
- Half of all cells imported for domestic module production are also impacted by this investigation.
- Some c-Si module imports from other countries also use impacted cells.

![U.S. Module Supply and Demand under Auxin Petition](chart).

- **Baseline Construction**
- **AD/CVD Disrupted Construction**
- **Domestic Thin Film Modules**
- **Domestic c-Si Module**
- **Imported Thin Film Modules**
- **Imported c-Si Module**
- **Baseline Construction**
- **AD/CVD Disrupted Construction**

**Powering the Solar+ Decade | 4/5/2022**
More Aggressive Growth Needed to Reach Climate Goals

The baseline forecast is now scrapped and the prospect of achieving climate goals grows dimmer each day this investigation continues.

U.S. Solar Market Forecasts Under Various Policy Scenarios & Goals

SEIA/Wood Mackenzie Power & Renewables U.S. Solar Market Insight 2021 Year in Review, SEIA 30x30 Analysis
Bringing Supply Chain to the U.S. Would Take Years

- Even siting and permitting a U.S. plant could take a year or more
  - Construction and production ramp could take an additional 1-3 years

- Interim devastation to the downstream industry would reduce the domestic customer base for prospective domestic manufactures
  - As experienced workforce leaves the industry, recovery could take years

- Without support from smart industrial policy, these tariffs (like tariffs before them) are not enough to draw billions of investment in new domestic manufacturing. It is simply still too risky for many manufacturers
Based on Chinese and SE Asian public filings, we believe project construction times are approximately:

<table>
<thead>
<tr>
<th></th>
<th>Most typical construction period (months)</th>
<th>Common range of construction periods (months)</th>
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</thead>
<tbody>
<tr>
<td>Polysilicon</td>
<td>18</td>
<td>12-24</td>
</tr>
<tr>
<td>Ingot/Wafer</td>
<td>12-18</td>
<td>12-36</td>
</tr>
<tr>
<td>Wafer Only</td>
<td>9-12</td>
<td>9-18</td>
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<tr>
<td>Cell</td>
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<td>6-24</td>
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<tr>
<td>Module</td>
<td>9-12</td>
<td>6-24</td>
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- These ranges include some very large multi-phase projects. Construction periods for single-phase projects may be at the shorter end of any range, although individual project timescales will be highly dependent on the specifics of site selection, permitting, required infrastructure, etc.
- These timelines do not cover some prerequisite stages such as siting (and likely some permitting)

Source: Exawatt
Take SEIA’s market impact survey:

seia.org/AuxinImpacts
Submit Data on Impacts from the Auxin Tariff Petition

For anyone engaged in the U.S. solar or storage industries

Companies of all sizes, including those that work on everything from residential to utility-scale projects, should complete this form to provide a holistic and qualitative sense of how they expect the anti-circumvention investigation to impact their businesses and workforce.

For those with project-level impact data

Project-level data for large projects will be extremely valuable to show policymakers detailed and concrete impacts of the anti-circumvention investigation. In addition to completing the general survey above, those with information about specific large-scale solar projects can use a map tool to find their projects and submit basic information about the impacts from the Auxin petition.

Large projects

For impacts to solar projects 1 megawatt (MW) and above:
1. Find your projects on the map
2. Confirm it’s the right project by looking at details in popup window

3. Click on link to open a survey with details shown prefilled
<table>
<thead>
<tr>
<th>Project Name and project ID (if applicable).</th>
<th>Prefilled data allows alignment with other databases</th>
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<tr>
<td>Angel Fire Energy Facility (64695)</td>
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<table>
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<tr>
<th>Project State</th>
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<td>NM</td>
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<th>Project County</th>
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<td>Colfax</td>
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</table>
For impacts to solar projects 1 megawatt (MW) and above:

Project-level data for large projects will be extremely valuable to show policymakers detailed and concrete impacts of the anti-circumvention investigation. All these projects must report delays and cancellations to the Energy Information Administration (EIA) via monthly Form 860m filings. While the data becomes public 2+ months after the forms are filed, we need the data ASAP to fight this existential threat. In addition to completing the general survey above, we have two asks for you:

1. Submit data on impacts to the large solar projects in your portfolio
Ensure EIA Receives Accurate Project Updates

- The Energy Information Administration (EIA) is the source of official government statistics on energy.
- Projects larger than 1 MWac submit EIA form 860 annually and EIA form 860m monthly if they are within 12 months of beginning construction.
- Find the person responsible for submitting these forms for your projects (often developer or owner).
  - Make sure the person is fully aware of supply chain challenges ASAP.
  - Forms typically submitted within two weeks of the close of a month.
- This data is on a two-month delay so make sure March 2022 submissions reflect the current situation.
- Still complete the SEIA survey so we can get the data faster!