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Solar Supply Chains

Rick Umoff

Sr. Director and Counsel, CA

SEIA Solar Energy Industries Association®

Powering the Solar+ Decade

Trade Cases

- The solar and energy storage industries have faced trade cases over the past decade
- Affects virtually all goods
- Need to maintain a balanced trade policy as domestic manufacturing scales across the supply chain

Auxin Investigation

- Preliminary determination:
  - All countries affirmative but four companies excluded;
  - Wafer plus exclusion; and
  - Anti-stockpiling provision
- President’s moratorium until June 2024
- Congressional Review Act (CRA)
- Final determination due August 17

Forced Labor / UFLPA

Summer 2020

First awareness of potential connection between forced labor and polysilicon

October 2020

SEIA begins to call on industry to move out of Xinjiang

April 2021

SEIA releases the Traceability Protocol, Buyer’s Guide and updated Solar Commitment

Summer 2021

CBP issues Hoshine WRO. Auditors begin testing conformance with Traceability Protocol

December 2021

President signs the Uyghur Forced Labor Prevention Act (UFLPA)

June 2022

UFLPA goes into effect and creates a rebuttable presumption of forced labor for Xinjiang

Late 2022 / Early 2023

Begin seeing products released from detention under UFLPA

Spring 2023

SEIA starts process to establish the Traceability Protocol as an official standard

Section 201 Tariffs

- Global tariffs for modules and cells until February 2026
- Exclusions for bifacial modules and products from certain developing nations
- 5 GW/year of tariff-free cells
- Next steps: Mid-term review at the International Trade Commission

Section 301 Exclusion Request

OFFICE *of the* UNITED STATES TRADE REPRESENTATIVE
EXECUTIVE OFFICE OF THE PRESIDENT

FINDINGS OF THE INVESTIGATION INTO CHINA'S ACTS, POLICIES, AND PRACTICES RELATED TO TECHNOLOGY TRANSFER, INTELLECTUAL PROPERTY, AND INNOVATION UNDER SECTION 301 OF THE TRADE ACT OF 1974

March 22, 2018

- Section 301 tariffs response to China's intellectual property violations
- SEIA requested exclusions for machine tools and select inputs used by manufacturers
- Collaborating with U.S. manufacturers

Catalyzing American Solar Manufacturing

- Importance of domestic manufacturing to energy security and climate goals
- Demand certainty is essential
- Investments will take time:
  - 2-3 years for modules, trackers, inverters, backsheet, and solar glass
  - 3-5 years for metallurgical grade silicon and polysilicon upgrades plus new ingot/wafer and cell capacity
- Incentives helping drive manufacturing

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IRA Manufacturing Incentives

Demand

- Long-term extension of the Investment Tax Credit (30%)
- Domestic Content Bonus Credit (10%)

• CapEx

- Manufacturing Tax Credit (30%)
- Covers new facilities and equipment

Scale

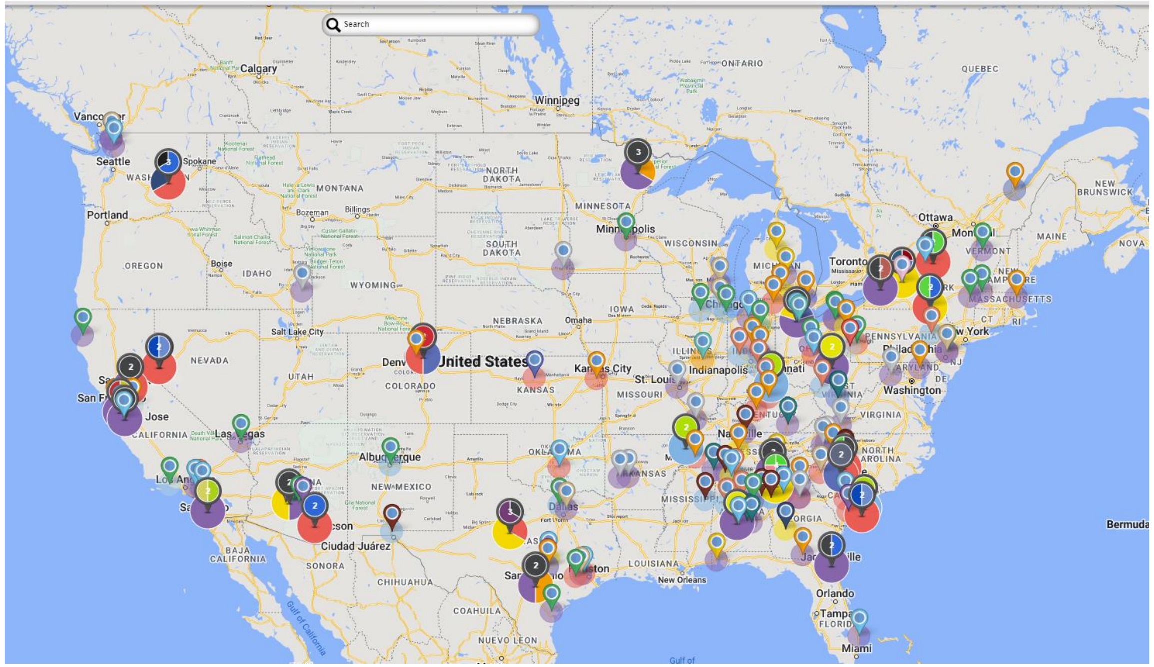
- Advanced Production Manufacturing Credit
- Targets module value chain, trackers, inverters, and battery value chain

Supply Chain Timelines

<table>
<tr><td></td><td colspan="24">AD/CDV SE Asia Anticircumvention Pause</td><td colspan="25"></td></tr>
<tr><td>Component</td><td>Jun-22</td><td>Jul-22</td><td>Aug-22</td><td>Sep-22</td><td>Oct-22</td><td>Nov-22</td><td>Dec-22</td><td>Jan-23</td><td>Feb-23</td><td>Mar-23</td><td>Apr-23</td><td>May-23</td><td>Jun-23</td><td>Jul-23</td><td>Aug-23</td><td>Sep-23</td><td>Oct-23</td><td>Nov-23</td><td>Dec-23</td><td>Jan-24</td><td>Feb-24</td><td>Mar-24</td><td>Apr-24</td><td>May-24</td><td>Jun-24</td><td>Jul-24</td><td>Aug-24</td><td>Sep-24</td><td>Oct-24</td><td>Nov-24</td><td>Dec-24</td><td>Jan-25</td><td>Feb-25</td><td>Mar-25</td><td>Apr-25</td><td>May-25</td><td>Jun-25</td><td>Jul-25</td><td>Aug-25</td><td>Sep-25</td><td>Oct-25</td><td>Nov-25</td><td>Dec-25</td><td>Jan-26</td><td>Feb-26</td><td>Mar-26</td><td>Apr-26</td><td>May-26</td><td>Jun-26</td></tr>
<tr><td>Metalurgical Grade Silicon</td><td rowspan="7">Declaration</td><td rowspan="7" colspan="3">DPA (and SEMA?) Regs Development</td><td colspan="45"></td></tr>
<tr><td>Polysilicon</td><td colspan="12">Restart Existing Polysilicon Faclilties</td><td colspan="25">Export Poly to SE Asia Ingot/Wafer Production</td><td colspan="7">Sell Poly to Domestic Ingot/Wafer</td><td>---></td></tr>
<tr><td>Ingot/Wafer</td><td colspan="37">Site, Permit, Construct and Commission Ingot and Wafer</td><td colspan="7">Wafer Production w/Domestic Poly</td><td>---></td></tr>
<tr><td>Cell</td><td colspan="30">Site, Permit, Construct and Commission New Cell Capacity (Likely HJT and TOPCon)</td><td colspan="7">Cell Production w/Imported Wafers</td><td colspan="7">Cells w/Domestic Wafers</td><td>---></td></tr>
<tr><td>Glass, Frame, Backsheet, Encapsulant and Junction Box</td><td colspan="12">Initial Expansion</td><td colspan="32">Production and Continual Capacity Expansion</td><td>---></td></tr>
<tr><td>Module</td><td colspan="19">Site, Permit, Construct and Commission New Module Capacity</td><td colspan="11">Module Production Using Imported Cells</td><td colspan="14">Module Production w/Domestic Cells</td><td>---></td></tr>
<tr><td>Domestic Demand/Installations</td><td colspan="12">Buy From Existing U.S. Module and Backfill with Imports</td><td colspan="18">Buy Domestic and Imported Modules that Use Cells Containing U.S. Poly</td><td colspan="14">Expand U.S. Module Procurment</td><td>---></td></tr>
</table>

Post IRA

- Announcements across the solar and storage supply chain
    - Modules
    - Cells
    - Inverters
    - Batteries
    - Trackers/racking, and more



- Domestic content guidance released

- Waiting on 45X (production incentives) guidance

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Links

- https://www.seia.org/research-resources/solar-market-insight-report-2022-year-review
- https://www.seia.org/research-resources/solar-storage-supply-chain-dashboard
- https://www.seia.org//sites/default/files/2022-08/SEIA%20Manufacturing%20Roadmap%202022_4.pdf
- https://www.seia.org/sites/default/files/2023-03/Manufacturing%20Reniassance%20Report%203-8-2023.pdf

Thank You

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