November 30, 2022

SUBMITTED ELECTRONICALLY

The Honorable Jennifer Granholm
Secretary, U.S. Department of Energy
1000 Independence Ave., S.W.
Washington, D.C. 20585

Re: Request for Information (RFI): Defense Production Act

Dear Secretary Granholm:

Thank you for providing the Solar Energy Manufacturers for America (SEMA) Coalition[1] the opportunity to provide comment pursuant to the request for information (RFI) on the Defense Production Act (DPA).

I. INTRODUCTION

Our members are a diverse group of solar manufacturers – those who make panels and related components – throughout the entire solar supply chain. SEMA Coalition members either have a significant manufacturing presence in the United States, or intend to start or shift significant portions of their manufacturing operations to the U.S., in many cases as a result of the policies contained in the Inflation Reduction Act (IRA) and additional pro solar manufacturing policy signals from Congress and the Biden-Harris Administration. This includes the Biden-Harris Administration's efforts to support domestic solar manufacturing by leveraging the federal government's DPA authority.

Given solar is poised to be the world's leading source of energy by 2040, we must ensure the U.S. government is taking the necessary steps to reduce the country's reliance on overseas supply chains to meet our future clean energy needs – and using all the tools at its disposal to do so. Solar manufacturing is a critical technology and diversifying the supply chain will be significant for U.S. national defense and energy security. DOE action leveraging DPA to support this critical industry will help U.S. solar manufacturers reestablish the solar supply chain, quickly expand domestic production capabilities substantially, at a scale necessary to lead innovation for the next generation of solar components. A comprehensive approach to the supply chain in

[1] https://semacoalition.org/about

partnership with substantial investments from domestic solar manufacturers in critical areas – including polysilicon, ingot, wafer, cell, module, and glass manufacturing – to meet our current and future deployment needs in the U.S. and globally while creating good-paying manufacturing jobs.

With an approach that appropriately considers the important role current and future domestic solar manufacturers will play in building out the U.S. solar energy sector, we believe that we can have a secure, sustainable, and resilient U.S.-based solar manufacturing supply chain in the very near future – and DPA will have an important role to play. Keeping this perspective in mind, we have responded to the RFI questions in Area 1 that will have the greatest impact on SEMA Coalition members and the future of the U.S. solar manufacturing industry.

II. AREA 1: TECHNOLOGY SUPPLY CHAIN CHALLENGES AND OPPORTUNITIES

1. **For which of the technology areas covered in this RFI, or products therein, do you think most urgently require support from DPA tools** and why? Please fill out chart below for the technology(ies) for which you are providing input (among transformers and grid components; solar; insulation; and/or hydrogen components).

Technology	What are the decision criteria for your answer?
Solar photovoltaics (PV), with a specific emphasis on supporting domestic manufacturing for polysilicon, ingot, wafer, cell, module, and solar glass.	As noted by DOE in this RFI, solar PV is the largest source of U.S. clean electricity generation capacity and the cheapest new source of electricity in many parts of the country. It will likely be the world's leading source of energy by 2040. However, over the last decade, U.S. manufacturing of key components of the solar supply chain has been crowded out due to overseas monopolies and choke points, presenting a threat to our long-term economic and energy security. While enacting the IRA will help efforts to reshore the solar supply chain and address existing gaps and vulnerabilities in the solar value chain, the U.S. government must take a whole-of-government approach, working in partnership with solar manufacturers and leveraging tools such as the DPA, to establish a strong, secure, and resilient American solar manufacturing supply chain – from polysilicon through module assembly. As the SEMA Coalition previously noted in response to the DOE Supply Chain RFI,[2] China's near global monopoly on solar ingot and wafer manufacturing in particular has undermined existing

[2] SEMA Coalition DRAFT Comment: DOE RFI Energy Sector Supply Chain Review

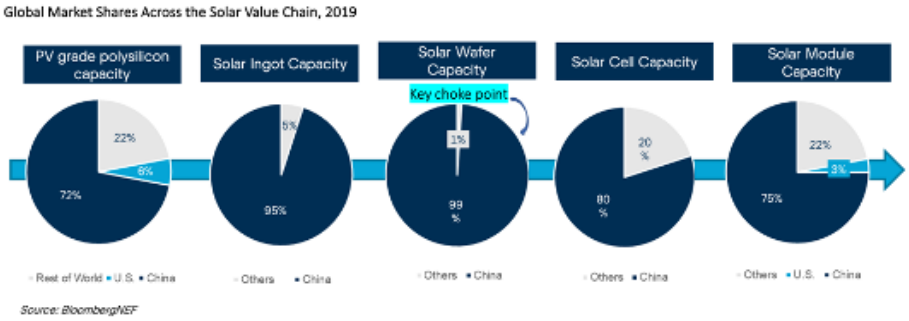
	domestic manufacturers (polysilicon and module) and created a more difficult investment environment for new market entrants. This is exactly why the DPA is essential for this industry – it can not only help address the lack of domestic ingot, wafer, cell, and solar glass production as we work to rebuild the solar supply chain, but it can also be leveraged to support and expand existing manufacturing presence to support even more expansion. Restoring this critical industry should be a top priority for DOE as it will benefit the nation's economic, energy, and national security goals while creating good-paying jobs throughout the country. By making solar components across the value chain in the U.S., we will reduce our dependence on overseas supply chains and help the country meet its climate targets. Leveraging DPA to supercharge policies such as the advanced manufacturing production tax credit (Section 45X) in the IRA, including filling in gaps in support from the credit, will only help us reach these goals more quickly, and help increase the odds of success in reshoring the solar supply chain. The IRA was an important first step, but more needs to be done due to the difficulties in accessing rapidly deployable upfront capital, including debt financing, or equipment for more upstream manufacturers (starting with polysilicon), or ensuring demand certainty for some of the downstream manufacturers. Lastly, though DOE notes manufacturers may be able to access 48C to support the build out of domestic solar manufacturing, it is important to note that manufacturers cannot access 45X for production resulting from a facility if they use 48C to build such facility that manufactures a component that is eligible under 45X, per the requirements of the IRA. As a result, there is less availability of government support for upfront capital for manufacturers of polysilicon, ingots, wafers, cells, modules, and backsheet. DOE should take this important exclusion into account when determining which industries to support with DPA funds, especially given the capital intensive nature of some of the upstream portions of the solar value chain.
Transformers	The SEMA Coalition supports DOE using some DPA resources to support the manufacturing of transformers. Our members need access to transformers as they look to site and bring online new

	facilities throughout the country. If there is a transformer shortage, or if the currently long wait times to obtain transformers persist for new manufacturing facilities, it could severely slow down the buildout of solar manufacturing facilities throughout the country and undermine the goals of the IRA, and in particular, Section 45X.

2. What are the **greatest barriers (e.g., financing or market constraints)** to U.S. manufacturing, development, and deployment that the DPA tools described in the background can help address? Please respond for one or more technology areas below:

b. Solar photovoltaics:

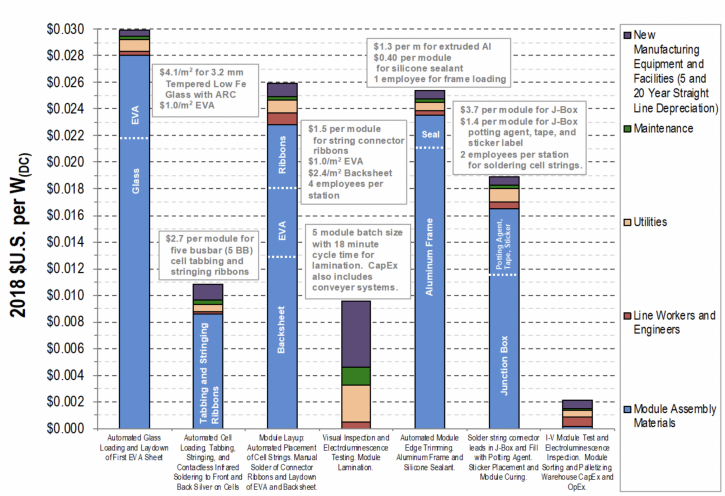
One of the largest barriers to domestic solar manufacturers are the critical supply chain gaps and vulnerabilities around China's domination of key elements of the solar PV supply chain. China has developed a near global monopoly on the solar ingot and wafer segment, with a corresponding dominance of cell manufacturing.



The lack of domestic manufacturing of ingots, wafers, and cells is a significant challenge for both ends of the solar PV supply chain. U.S. polysilicon producers have no direct customers for solar-grade polysilicon production and U.S. solar PV module manufacturers have no choice but to import key components and are thus unable to produce panels entirely made in America.

Another barrier is that domestic solar PV manufacturers must regularly procure costly components and materials, which is why policies designed to support and/or offset OpEx are more effective in supporting the growth of the domestic industry against heavily subsidized foreign competition. For example, National Renewable Energy Laboratory (NREL) data illustrates how materials and components are the biggest costs to solar module manufacturers. These costs, spread out over several years, makes operating solar PV manufacturing facilities

more expensive compared to foreign competitors. NREL writes that in the case of module manufacturing, "[m]aterials constitute more than 80% of costs…."[3]



The challenge faced by solar PV module manufacturers proves to be true throughout the supply chain. However, with the recently passed tax incentives under the IRA, several companies are planning to make significant investments to domestically produce solar components across the supply chain. While this is a significant step towards building a resilient domestic solar supply chain, there are gaps the IRA does not cover that can prevent the realization of a domestic solar supply chain in a timeline that meets the Administration's climate goals and targets. For example, manufacturers need consistent demand and uptake of domestically produced solar components, especially during the early stages of production. In addition, DOE should understand the importance of driving more polysilicon expansion, as that will be necessary to support wafer production and reshore the entire solar value chain. Tools such as the DPA can be used to cover gaps, as well as support key portions of the supply chain, by providing market certainty for developing technologies that can help domestic manufacturers leapfrog existing technologies and further help establish a well rooted and resilient domestic solar supply chain.

3. Which **DPA tool(s) and contracting vehicles would best help address the barriers** identified in Question #2, to strengthen U.S supply chains: purchases, purchase commitments, financial assistance, subsidy payments, or other (e.g. use of Other Transactions Authority or a Partnership Intermediary Agreement)? Please respond for one or more technology areas below:

   b. Solar photovoltaics:

   The SEMA Coalition believes DOE should leverage all tools at its disposal under the DPA to address the barriers identified in Question #2. This includes using DPA funds to support purchases of manufacturing equipment, or establishment of

[3] NREL | Crystalline Silicon Modules

new domestic equipment manufacturing capacity, for solar manufacturers – throughout the supply chain – who are looking to invest in new factories and expanding existing footprints, purchase commitments, and financial assistance.

DOE should think creatively about how to leverage funding and other DPA tools to support domestic solar manufacturers. For example, DOE should consider using DPA authority to prioritize loan applications from domestic solar manufacturers, support accelerated permitting or environmental analysis, or help reduce the subsidy cost burden for borrowers for any government loans.

DOE could also facilitate the purchase of transformers for companies building factories and needing quick access to transformers to expedite their ability to come online.

With respect to purchase commitments, DOE should consider prioritizing procurement of solar modules assembled in the U.S., and consider a phased- in approach where they prioritize the purchase of modules using U.S. solar components, such as polysilicon, ingots, wafers, and cells. By prioritizing the purchase of U.S.--assembled modules with U.S.-manufactured solar components, DPA could further incentivize the buildout of the entire value chain. DOE could then use these modules to help the U.S. government transition to procuring solar from U.S.-made panels, and require their use in projects supplying the U.S. government solar energy, or in projects being built on public lands.

Furthermore, given the lack of access to 48C for many members of the SEMA Coalition, DOE should consider providing financial assistance and upfront capital for new facilities throughout the supply chain, with a special emphasis on technologies not available in the U.S. today.

DOE should also consider using DPA authority to require the use of domestic solar panels, with increasing domestic content requirements as other parts of the solar value chain come online, as part of any grants and other awards from the federal government for solar deployment.

DOE should prioritize leveraging DPA tools to support parts of the supply chain that are not existent today, such as ingots, wafers, cells and solar glass, and also critical pieces of the solar value chain, such as polysilicon and modules. As noted above, many of the upstream components are extremely capital intensive.

4. For the eligible technology areas covered in this RFI, **which segments in the supply chain do you think DPA tools should prioritize and why?** Please fill out the chart below for

technology(ies) for which you are providing input and add rows for multiple entries per technology as needed.

Technology	**Upstream** (Critical raw materials production)	**Manufacturing** (Critical processed materials, subcomponents/ components, end products)	**End of life** (Recycling)	**Deployment** (Installation, infrastructure)
Solar PV		<u>Polysilicon</u> Starting the production of polysilicon is extremely capital intensive, more so than other solar components, and takes anywhere between 3 and 5 years to establish a facility. To meet future demand, there will need to be rapid and significant investments in domestic polysilicon capacity, which will be difficult to meet without the assistance of federal tools such as the DPA. While we have some existing polysilicon capacity, it is limited. In order to fully reshore the value chain and drive wafer production, which is critical to achieving all of our goals, DPA support will be extremely helpful.		
Solar PV		<u>Ingot / Wafer</u> Currently there is no domestic ingot/wafer production. To ensure that ingot/wafer investments are able to establish a strong domestic supply chain and compete with foreign manufacturers, there must be a demand signal for domestic ingot/wafers. Tools such as the DPA can assist in establishing domestic		

		manufacturing and creating a demand signal.		
		<u>Cell</u> Currently there is no domestic solar PV cell manufacturing capacity. Tools such as the DPA can be used to ensure that there is demand and uptake of domestically produced PV cells rather than foreign PV cells.		
		<u>Module</u> Currently there is limited domestic solar module manufacturing capacity, but we anticipate some increased investments to expand manufacturing capacity. Tools such as the DPA can be used to ensure that there is demand and uptake of domestically produced modules that utilize other domestic solar components rather than completely foreign solar modules.		
		<u>Glass</u> To meet future solar demand with domestically manufactured solar panels there will need to be drastic increases in domestic solar glass production. The IRA did not include tax incentives supporting domestic solar glass manufacturing. The DPA, however, could help provide the necessary assistance to spur domestic solar glass manufacturing.		

5. **Appendix I** provides two **illustrative example scenarios for how DPA authority could be used for each clean energy technology covered in this RFI.** These are not official proposals, but rather concepts for discussion. Which are the most promising approaches for spurring domestic production? Respond only for the technology(ies) for which you are interested in providing input. If there are additional project ideas you have that DPA tools can support, please provide those ideas in response to Question #6.

   The SEMA Coalition is supportive of both examples 2A and 2B for solar PV provided in Appendix I and believes both options can spur domestic production of solar components. However, the SEMA Coalition strongly encourages the DOE to include polysilicon as it is a critical component of the solar supply chain that has significant capex requirements. Specifically, DOE should include polysilicon in the 2A example, if it were to pursue that option. Given the increasing demand for polysilicon in both semiconductor and solar manufacturing, DOE must ensure that it is considering how to support the entire solar value chain, starting with polysilicon. In order to drive significant U.S. wafer production, support for polysilicon manufacturing is critical.

   The SEMA Coalition also supports DOE using DPA authorities to issue purchase commitments for domestic module manufacturers that also incorporate domestic components to provide the necessary demand certainty. This will also help establish manufacturing capacity for solar components such as ingots, wafers, and cells, which currently are not made in the U.S. DOE could not only resell the modules or deploy them at federal facilities, but also ensure that these modules are required for any projects providing solar energy to the federal government via power purchase agreements or similar agreements.

8. **What criteria/requirements/procedures should the government consider for selecting qualifying projects for DPA support?** Please fill out technology(ies) for which you are interested in providing input.

   b. Solar photovoltaics:

   In order to determine which projects receive DPA funding and support, the overall impact of a project regarding the ability to create good-paying jobs, reduce greenhouse gas emissions and embodied carbon in manufactured products, the opportunity to onshore and secure a supply chain for a critical industry to ensure the country's national defense and security, and ensure the increase in the utilization of the domestic products, all should be taken into consideration. DOE should also consider which components do not currently exist in the U.S. or are necessary to substantially increase production across the

solar value chain. This will help ensure DPA funds and efforts result in the greatest long term impacts.

As previously mentioned, China has a near global monopoly on the entire solar supply chain and has created a more difficult investment environment for new market entrants. Utilizing DPA in partnership with the IRA will help strengthen and establish a domestic polysilicon, ingot, wafer, cell, module and solar glass production industry. In turn this will have large economic, energy, and national security benefits by weaning off China's grip of the solar supply chain and utilizing and supporting domestic solar supply chains. However, these benefits will only be realized if projects selected for DPA funding and support focus on establishing and building domestic supply chains.

9. Is there **anything else** that government should be aware of as DOE designs potential implementation of DPA tools to support U.S manufacturers, developers, and installers?

   The government needs to take a whole-of-government approach when implementing DPA tools to support U.S. solar manufacturers. DPA can help supercharge policies such as Section 45X of the IRA, as well as actions to leverage federal procurement to support domestic solar manufacturing. We encourage DOE to take an outside the box approach and use both financial and non-financial incentives to support U.S. solar manufacturing (such as prioritizing LPO or grant applications for solar manufacturing). The U.S. is on the precipice of a solar manufacturing renaissance, with the appropriate policy environment. While we have made some progress with the IRA, much more needs to be done to support this critical industry and ensure a resilient supply chain.

III. AREA 2: DOMESTIC MANUFACTURING, INCLUDING SMALL AND MEDIUM-SIZED SCALE MANUFACTURERS (SMM)

The SEMA Coalition is made up of small, medium-sized, and larger manufacturers. The responses above apply to the needs of all of our members.