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*Comment Received From: Michael Parr  
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**Ultra Low-Carbon Solar Alliance Comments**

*Additional submitted attachment is included below.*



September 9, 2021

California Energy Commission  
Docket No. 21-IEPR-06  
1516 Ninth Street  
Sacramento, CA 95814

**RE: Docket 21-IEPR-06 – IEPR Commissioner Workshop on Building Decarbonization: Embodied Carbon and Refrigerants – Embodied Carbon**

On behalf of the Ultra Low-Carbon Solar Alliance, I welcome the opportunity to submit these comments in response to the California Energy Commission’s (CEC) August 26, 2021 IEPR Commissioner Workshop on Building Decarbonization: Embodied Carbon.

The Alliance consists of companies across the solar PV value chain who, through decarbonized grids, technology innovation and energy efficient manufacturing, are producing solar components from polysilicon through finished modules with markedly lower embodied supply chain carbon emissions than modules from other participants in the solar supply chain. Our members believe that expanded market awareness and deployment of ultra low-carbon solar create a virtuous circle in which near term solar supply chain carbon emissions are reduced while sending an important market demand signal to incentivize more sustainable and resilient solar manufacturing. This can help to ensure that the substantial new manufacturing capacity needed to meet global solar goals follows a lower carbon trajectory.

We are pleased to see the Energy Commission begin conversations to address embodied carbon in building materials in the next IEPR. We believe that Scope 3 emissions should be taken into consideration as part of the state’s plan to decarbonize its economy. During the first session of the August 26 workshop, we observed that solar was largely omitted from the conversation. Among other applications, solar will play a large role in the overall building decarbonization conversations going forward and faces many of the same embodied carbon supply chain challenges as other building materials. As a newly required component of all new home construction, solar is increasingly becoming a basic construction product. Therefore, the Alliance recommends expanding the scope to include the embodied carbon of solar.

The solar supply chain has become heavily concentrated in China, and many of the vital components of that supply chain are made with heavy use of coal-fired electricity <sup>1</sup>, such that the resulting solar modules have roughly twice the embodied carbon emissions as modules from more decarbonized elements of the global solar supply chain. Because CO<sub>2</sub> is a long-lived gas in the atmosphere, these manufacturing related

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<sup>1</sup> <https://www.wsj.com/articles/behind-the-rise-of-u-s-solar-power-a-mountain-of-chinese-coal-11627734770>

carbon emissions needlessly degrade the long-term zero-carbon generating benefits of solar energy. In addition, that concentration in solar manufacturing means that the global supply of solar modules could be readily disrupted through market or political actions. For example, more than 98% of the world's manufacturing capacity for polysilicon wafers, a critical component in the majority of solar panels, is located in China.<sup>2,3</sup> These supply risks are highlighted by recent actions by the U.S. Customs and Border Protection issuing a Withhold Release Order against a broad range of Chinese produced solar materials and modules, essentially banning them from import into the U.S. over alleged forced labor practices.<sup>4</sup>

There is growing awareness that an important element of creating a more resilient and sustainable solar supply chain is to expand manufacturing across that supply chain in a more distributed fashion, with more manufacturing capacity in relatively decarbonized economies such as our own. The U.S. Congress and the Biden Administration are seeking to incentivize greater solar manufacturing in the U.S., with an emphasis on elements of the supply chain that we currently lack at scale, including silicon ingots, wafers and cells. For example, the Solar Energy Manufacturing for America Act has been introduced in the U.S. Senate.<sup>5</sup> Similar efforts are underway in Europe. In addition to these production incentives, **we believe market demand signals, such as preferred purchasing of solar modules with lower levels of embodied carbon, can be a powerful incentive to investing in US solar manufacturing.** The U.S. already has significant manufacturing capacity at the front end of the solar supply chain, solar grade polysilicon, and at the back end, solar modules (both thin film and crystalline silicon) but lacks the critical components in the middle of the supply chain that would make for a far more resilient domestic solar manufacturing sector.

The Global Electronics Council (GEC), stewards of the EPEAT eco-label for sustainable electronics products, is engaged in a broad multi-stakeholder process to produce an ultra low-carbon solar eco-label to facilitate such preferred purchasing. Participating stakeholders include solar manufacturers, solar buyers, research institutes, and government representatives from the U.S. Environmental Protection Agency and the Department of Energy National Renewable Energy Laboratory. The GEC anticipates the completion of the eco-label development by mid-2022, and multiple solar panel producers are preparing to seek certification for the use of the label. Such Tier I ecolabels can facilitate better solar procurements by public entities and energy providers to improve sourcing and ESG transparency in solar by their inclusion as value-added criteria or as a specification. The GEC process is drawing on existing the methodologies from existing programs in France and South Korea that favor lower

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<sup>2</sup> <https://www.berneuter.com/solar-industry/value-chain/>

<sup>3</sup> <https://www.forbes.com/sites/kenrapoza/2021/03/14/how-chinas-solar-industry-is-set-up-to-be-the-new-green-opec/?sh=42c7673c1446>

<sup>4</sup> <https://www.cbp.gov/newsroom/national-media-release/department-homeland-security-issues-withhold-release-order-silica>

<sup>5</sup> <https://www.congress.gov/bill/117th-congress/senate-bill/2140?q=%7B%22search%22%3A%5B%22solar+energy+manufacturing+for+america%22%5D%7D&s=1&r=1>

embodied carbon solar in public procurement as well as solar environmental product declarations developed in the European Union.

Given these developments and the leadership role of the CEC on energy policy in California, the Alliance strongly encourages that the CEC acknowledge and examine the importance of addressing embodied carbon in the solar supply chain.

We thank you for the consideration of our comments and would be happy to talk with staff and provide more information on this topic.

Sincerely,

Michael Parr  
Executive Director  
The Ultra Low-Carbon Solar Alliance