



UNITED STATES MANUFACTURING COUNCIL

December 16, 2015

The Honorable Penny Pritzker
Secretary of Commerce
U.S. Department of Commerce
Washington, DC 20230

Dear Madam Secretary:

The Manufacturing Council (Council) supports the critical need to establish and maintain a globally competitive U.S. manufacturing sector, with renewable energy manufacturing as a key focus for growth. As a catalyst to promoting U.S. Clean Energy Manufacturing, it is our studied view that the Department of Commerce (DOC), in collaboration with other Federal Government agencies and stakeholders, should increase trade missions and reverse trade missions focused on the renewable energy sector. The Council would like to see the DOC play a unique role along with the International Trade Administration (ITA) in collaborating with the Trade Promotion Coordinating Committee (TPCC) in the development of future trade missions in renewable energy. The Council also believes the DOC can develop guidance on the countries most aggressively adopting renewables and where needs in emerging markets create the greatest opportunities for new export growth. In order to enhance participation by small to medium enterprises (SMEs), the Council sees value in hosting reverse trade missions, as well as traditional trade missions, so other countries might be able to experience U.S. manufacturing with companies that would not otherwise have the means to explore those opportunities. The Council recommends that, with the guidance and participation of the TPCC, a working group comprised of the ITA, the DOE, the Office of EERE, and the Office of Energy and Environmental Industries (OEEI) identifies focus regions and technologies for trade missions each year which will include countries making notable progress, or that present unique opportunities for future growth, within the clean energy sector. In order to better promote finalized trade missions, the Council also recommends that the working group takes advantage of the Council's industry networks in order to assist with publicity and recruitment.

After careful research, the Council is pleased to recommend that the OEEI, in collaboration with the working group, evaluates which countries are ideal for trade missions in renewable energy and clean energy manufacturing. For example, as part of OEEI's 2016 Renewable Energy Top Markets Report, such countries could include: Belgium, India, Japan, New Zealand, Poland, Romania, and South Korea. While there are many countries with which the United States would benefit from, or currently benefits from, trade, like China, Brazil, and Germany, these countries can demonstrate more mature renewable energy adoption and thus present market environments more conducive to creating near-term opportunities for manufacturing partnerships. Each of the

countries in the top markets report show notable growth in renewable energy production and consumption, driven by a mix of advanced policy and incumbent baseline power generation costs. While the Council recognizes the many difficulties in penetrating markets and establishing trade with certain countries, it is the Council's expectation that through the OEEI's research, the 2016 Top Markets Reports might reveal tactics for turning these challenges into opportunities for U.S. manufacturers, ranging from SMEs to large corporations. Suggested focus areas within the renewable energy sector and manufacturing should align with ongoing taxpayer investment deployed through the DOE and other federal agencies.

Prioritized Trade Mission Sectors in Renewable Energy and Clean Energy Manufacturing

1. Solar, Wind, Storage, and Transmission and Distribution

Areas for Increasing Domestic Production and Export Activity:

- Photovoltaic technologies
- Advanced composites in renewable power generation
- Energy storage
- Transmission and distribution technologies

According to the ITA 2015 Top Markets Report, "the solar industry, particularly distributed photovoltaic technologies, will experience significant growth globally."¹ It is expected that the solar sector will account for "more U.S. exports than any other renewable energy technology" despite the fact that the United States' manufacturing capacity is only roughly 5 percent of the global market share.² Collaboration with the DOE Solar Energy Technologies Office SunShot Initiative program may be beneficial for fostering growth in domestic photovoltaic manufacturing, as the goal of the SunShot Initiative is to make solar energy faster, easier, and more affordable.³ A reverse trade mission in this sector may stimulate growth in manufacturing opportunities.

As the wind market expands and prices decline, the ITA anticipates the creation of opportunity for "more efficient, innovative turbines perhaps produced in the United States."⁴ Part of the efficiency and innovation stems from advanced fiber-reinforced polymer (FRP) composites used to manufacture the blades. For example, carbon FRP composites are highly durable, stronger, and lighter than other structural materials. According to the DOE EE&RE Advanced Manufacturing Office (AMO), the wind sector "could be the largest consumer of carbon FRP composites by 2018."⁵ As OEEI conducts its 2016 case studies and Top Market Reports, the Council recommends that the OEEI considers the AMO's research on carbon FRP composites and how trade missions in this sector may encourage U.S. production opportunities, specifically toward markets for carbon FRP composites used to manufacture longer wind turbine blades and niche markets like small wind turbines.

The intermittent nature of renewable energy creates the potential for mismatches between power generation and load, which can lead to grid stability challenges. However, storage and transmission technologies can provide stability and accessibility. According to the Edison Electric Institute, there are 150 identified U.S. transmission projects planned by 2023, roughly 76 percent of which support the integration of renewables.⁶ One of the largest transmission projects

expected to begin operation in 2023, the North Sea Grid, is planned to carry “100 GW of offshore wind into Germany, Denmark, Norway, Sweden, Belgium, France, Netherlands, Luxembourg and the United Kingdom.”⁷ The Council recommends that the OEEI considers renewable energy storage and transmission technologies in the 2016 Top Markets Reports as a possible avenue for regional trade missions in this sector.

The Organization of Economic Cooperation and Development (OECD) countries currently account for the majority of production and growth in wind and solar.⁸ Of the recommended countries for trade missions, New Zealand, Belgium, Poland, Japan, and South Korea are OECD countries. New Zealand has been one of the top three countries in share of wind and solar in electricity production since 2000, reaching 21.7 percent in 2014.⁹ New Zealand’s reliance on hydroelectric generation can lead to volatile spot prices, so diversification of resources used for electricity generation is essential for market competitiveness and stabilization. Belgium’s share of wind and solar in electricity production reached 10 percent in 2014.¹⁰ Belgium’s renewable energy growth is well rounded, but wind and solar are primary areas of opportunity. The EU Directive 2009/28/EC states that Belgium has an overall target to increase their share of energy generated from renewable sources in gross final energy consumption to 13 percent by 2020 – a 5.6 percent increase from 2013.^{11,12} Poland’s share of wind and solar in electricity production reached 5.3 percent in 2014. According to Poland’s GAIN report, the wind energy sector shows the most potential for rapid growth.¹³ Japan, at 1.6 percent, and South Korea, at 0.9%, both show promising areas of opportunity for growth in wind and solar as Japan strives to balance its power supply and Korea is integrating infrastructure for a Smart Power Grid system bringing renewable energy sources to the grid.¹⁴

India and Romania, both non-OECD countries, nevertheless show promising growth and development in wind and solar. India’s wind and solar production has grown 88 percent in six years but still remains a fertile country for development at only 3 percent share of electricity production in 2014.¹⁵ India has also established a Solar Cities Development program designed to promote all types of renewable energy usage with the goal of achieving a minimum 10 percent reduction in conventional energy demand at the end of five years.¹⁶ Romania has demonstrated remarkable growth in wind and solar, progressing from being one of the bottom ten countries at zero percent in 2008 to one of the top ten countries at 9.6 percent share of wind and solar in electricity production in 2014.¹⁷

2. Buildings

Areas of activity in manufacturing Research and Development (R&D):¹⁸

- R&D to cut carbon emissions
- R&D to reduce energy consumption and energy waste
- R&D to reduce manufacturing costs

Research and development in the buildings sector is twofold: in the manufacture of building materials and in efficient operation once the building is in use. The EERE has invested in the development of cost-effective, energy-efficient solutions for both residential and commercial buildings ranging from the manufacturing of materials, to solar panels, to light bulbs. These developments are beneficial for countries like New Zealand, who recently led an initiative to

insulate residential buildings in order to increase energy efficiency, and India, where there is an effort to create solar cities across the country. The application of building energy efficiency is far reaching, encompassing any country with a growing population or desire to increase energy efficiency in existing infrastructures. Currently, trade missions to the UAE and Saudi Arabia, focusing on architectural and engineering design opportunities, and India, focusing on Smart Cities Infrastructure, took place in October 2015 and is scheduled for February 2016 respectively. It is the Council's recommendation that the OEEI considers the inclusion of renewables and sustainable building development in future trade missions in this sector.

3. Automotive

Areas for Increasing Domestic Production and Export Activity:


- Advanced fiber composites to construct lightweight vehicles
- Lithium-ion batteries

In order to promote energy efficiency in the automotive sector, the EERE has invested in research and development in carbon FRP composites that can drastically reduce the weight of a vehicle, thereby increasing fuel efficiency, and lithium-ion batteries used in plug-in electric vehicles.¹⁹ The Council recommends that the OEEI considers the addition of a specific focus in the 2016 Top Market Reports for Advanced Automotive Components.

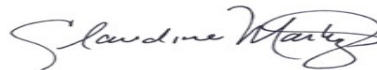
Summary

It is the Council's determination that a collaborative interdepartmental working group between the ITA, DOE, the office of EERE, and the OEEI, will effectively develop focus regions for trade missions in the renewables sector. The Council is pleased to recommend that the DOC increases the number of trade missions focused explicitly on the export of U.S. manufactured renewable energy products and services. The Council also recommends that the OEEI, in collaboration with the working group, evaluates countries for trade missions in renewable energy to promote U.S. Clean Energy Manufacturing. Lastly, the Council also recommends that the working group takes advantage of the Council's industry networks in order to assist with publicity and recruitment for finalized trade missions. Whether it is through innovative technologies, or advanced manufacturing techniques, the Council is confident that more frequent and expanded trade missions in the solar, wind, building, and automotive sectors will provide increased export opportunities for U.S. manufacturers.

Respectfully submitted,



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¹ U.S. Department of Commerce International Trade Administration, *2015 Top Markets Report: Renewable Energy and Smart Grid*, (2015), 5, http://export.gov/build/groups/public/@eg_main/@reee/documents/webcontent/eg_main_087975.pdf (accessed October 9, 2015).

² U.S. Department of Commerce and International Trade Administration, *2015 Renewable Energy Top Markets Report, Sector Snapshot: Solar Energy*, (2015), 47, http://trade.gov/topmarkets/pdf/Renewable_Energy_Solar.pdf (accessed October 16, 2015).

³ Office of Energy Efficiency and Renewable Energy, “Sunshot Initiative,” <http://www.energy.gov/eere/sunshot/sunshot-initiative> (accessed October 16, 2015).

⁴ U.S. Department of Commerce International Trade Administration, *2015 Top Markets Report, Sector Snapshot: Wind Energy*, (2015), 50, http://trade.gov/topmarkets/pdf/Renewable_Energy_Wind.pdf (accessed October 16, 2015).

⁵ U.S. Department of Energy Office of Energy Efficiency and Renewable Energy Advanced Manufacturing Office, “Fiber-Reinforced Polymer Composites: Pursuing the Promise,” DOE/EE-1046 (2014), 2, http://energy.gov/sites/prod/files/2015/04/f21/fiber_reinforced_composites_factsheet.pdf (accessed October 16, 2015).

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⁶ Elisa Wood, “Transmission and Energy Storage: The Macro and Micro Transformation of Electric Grids,” *Renewable Energy World Magazine* (Jan/Feb 2014): 54-60.

⁷ Wood, “Transmission and Energy Storage,” 60.

⁸ International Energy Agency, “Key Renewables Trends Excerpt from: Renewables Information,” (2015), <http://www.iea.org/publications/freepublications/publication/renewables-information---2015-edition---excerpt.html> (accessed September 16, 2015).

⁹ “Share of Wind and Solar in Electricity Production,” *Global Energy Statistical Yearbook*, <https://yearbook.enerdata.net/wind-solar-share-electricity-production.html> (accessed September 16, 2015).

¹⁰ Ibid.

¹¹ International Energy Agency, “National Renewable Energy Action Plan,” www.iea.org/policiesandmeasures/pams/belgium (accessed September 16, 2015).

¹² “Share of Renewable Energy in Gross Final Energy Consumption,” *Eurostat*, <http://ec.europa.eu/eurostat/tgm/> (accessed on September 17, 2015).

¹³ USDA Foreign Agricultural Service, “Renewable Energy and Bio-fuel Situation in Poland,” (2012), <http://gain.fas.usda.gov/> (accessed October 18, 2015).

¹⁴ International Energy Agency, “Energy Policy Highlights,” (2013), https://www.iea.org/publications/freepublications/publication/Energy_Policy_Highlights_2013.pdf (accessed September 16, 2015).

¹⁵ “Share of Wind and Solar in Electricity Production,” *Global Energy Statistical Yearbook*.

¹⁶ Government of India: Ministry of New and Renewable Energy, “Solar/Green Cities,” (2015), <http://www.mnre.gov.in/schemes/decentralized-systems/solar-cities/> (accessed September 16, 2015).

¹⁷ “Share of Wind and Solar in Electricity Production,” *Global Energy Statistical Yearbook*.

¹⁸ Office of Energy Efficiency & Renewable Energy, “Buildings,” <http://www.energy.gov/eere/efficiency/buildings> (accessed September 17, 2015).

¹⁹ Office of Energy Efficiency & Renewable Energy, “Energy 101: Clean Energy Manufacturing,” <http://energy.gov/eere/videos/energy-101-clean-energy-manufacturing> (accessed September 16, 2015).