

Subcommittee on Environment and Climate Change
Hearing on
“Building a 100 Percent Clean Economy: Pathways to Net Zero Industrial Emissions”
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The Honorable Paul Tonko (D-NY)

1. What lessons should be learned from the development and implementation of California’s Buy Clean law?

RESPONSE: In crafting a policy of this kind, it is essential to work together with agencies, business, labor, and other key stakeholders to develop a strong solution and policy framework. We should also be aware that there are significant differences between California and other states with regards to industry, energy mix, manufacturing investment, and existing climate frameworks when developing this policy.

In California, it was helpful for the Department of General Services that the policy implementation schedule was phased in over several years. A longer timeline for mandated compliance allowed the State to educate contractors and manufacturers about the requirements. The timeline for Buy Clean California implementation is copied below:

January 1, 2019 – EPDs will be requested by the state.

January 1, 2020 – EPDs will be required by the state.

January 1, 2021 – DGS publishes the maximum acceptable GWP for eligible materials.

July 1, 2021 – EPDs will be required and used to gauge GWP compliance of eligible materials.

- a. What product types should be covered under a federal Buy Clean program?

RESPONSE: Under Buy Clean California, structural steel, carbon steel rebar, flat glass, and mineral wool board insulation were covered. There are a few criteria the federal government could consider to determine which products to include.

It would be helpful to first know what products the federal government procures by agency, above a certain de minimus threshold in order to craft a policy that is impactful. Then, the policy could be structured to include one of the following scopes:

- Procurement of all construction materials for public building and infrastructure projects;

- Procurement of products within a material type, rather than between material types;
- Create a selected list of “eligible materials” determined by domestic manufacturing, current emissions levels, and potentially considering trade exposed products.

b. What other policy design decisions should be considered by Congress?

RESPONSE: One key design consideration should be the impact of this policy on the U.S. industrial sector and the competitiveness of our manufacturers. This policy must result in a strengthening of U.S. manufacturing and ensure quality manufacturing jobs here in the U.S. Without careful attention to the trade exposed nature of these industries, unintended consequences could occur. This consideration should inform policy design, including structure and application of the standard.

Congress could also consider incorporating high labor standards and land, air, and water pollution into procurement determinations. We believe this could work in tandem with Buy Clean, where the federal government would set emissions, pollution and labor standards for an “eligible entity” to be able to be considered for federal public projects.

The federal government would have to set a list of criteria that a relevant agency could use to certify a manufacturer or contractor as a “responsible/eligible entity.” This concept is not entirely new at the federal level. In 2015, President Obama signed [EO 13693, Planning for Federal Sustainability in the Next Decade](#). Although the EO was revoked by the Trump Administration, it directed federal agencies to promote sustainable acquisition and procurement, with a preference for recycled content, energy/water efficient products and bio based products. EO 13693 established a “strategy to reduce GHG emissions across federal operations and the supply chain, including specific actions to better understand and manage the implications of supply chain emissions,” and required the seven largest procuring agencies to implement procurements that take contractor GHG emissions into consideration.

In 2016, the DoD, GSA, and NASA issued a [proposed rule](#) to further these objectives, revising the Federal Acquisition Regulations (FAR) to add annual representation within the System for Award Management (SAM) for offerors to indicate if and where they publicly disclose GHG emissions and reduction goals. The proposed rule is intended to make “data available in a standardized format to enhance the Federal Government’s ability to track GHG management trends with the Federal supply chain and help to inform agency procurement strategies to reduce supply chain emissions” and would be mandatory for vendors receiving \$7.5 million or more in federal contract awards and voluntary for all other vendors. It would be informative to look into how far these efforts went, what

work was done by individual agencies to comply with this EO, and what insights, if any, were gleaned from the efforts.

Finally, any Buy Clean policy must go hand in hand with complementary policies that invest in U.S. manufacturing. Ultimately, Buy Clean policy should make U.S. industry stronger and more competitive. These investments should include funding and financing for investments to reduce emissions in the industrial sector, technical assistance, and increased funding for research, development, demonstration, and deployment of the transformative technologies that will be required to decarbonize the industrial sector.

The Honorable John Shimkus (R-IL)

1. Raising energy and production costs in energy intensive or trade exposed industries can be harmful for communities in terms of lost jobs and economic output, especially if the developing world is unable to make the same changes to their energy and manufacturing systems.
 - a. What are the risks of leakage of U.S. industrial jobs to other nations if cost of energy or processing is increased compared to international competitors?

RESPONSE: Many U.S. manufacturers are in “energy-intensive, trade-exposed” (EITE) industries and are very vulnerable to global competition. Steel, glass, metal casting, pulp and paper, aluminum, and chemicals are all traded globally and purchased predominantly based on price in a global marketplace.^{i, ii, iii} Policies intended to reduce emissions could unintentionally—through increased costs to U.S. manufacturers—result in a phenomenon known as “carbon leakage.” Rising costs could push production to manufacturers in countries with less stringent standards, which could ultimately result in an increase in global greenhouse gas emissions in the long term.^{iv}

Any approach to industrial emissions reduction must therefore consider the unique challenge the industrial sector faces related to global competitiveness. Any federal effort to tackle industrial sector emissions and grow U.S. manufacturing therefore must include:

- Common sense tax, procurement, trade enforcement, and border adjustments policies to stop offshoring and the leakage of jobs—and pollution—overseas; and
- Ensuring that trade agreements are enforceable, fair for all workers, and benefit the environment and the climate.

- b. What are the impacts on technical skills, supply chains, R&D and innovative capacity in U.S. manufacturing and industries exposed to relatively high energy or production costs?

RESPONSE: We do not have data to answer this question.

- c. What policy options have been proposed to prevent leakage, to what extent have they been examined for impacts on specific industries, and to what extent will this require international cooperation? Please elaborate.

RESPONSE: One policy option proposed to specifically address leakage is the Carbon Border Adjustment Tax (CBAT); also called Border Carbon Adjustments (BCA). Several initiatives have been launched in the EU, including the 2005 EUTS, which initiated debate on options at the border. Most recently, Emmanuel Macron, President of France, proposed a carbon border tax for the EU in spring 2019 and the EU recently began seriously investigating the feasibility of implementing a tax. This tax would be EU-wide and would be a fee assessed on imports from non-EU countries that do not have a carbon tax or another form of carbon pricing.^v In the U.S., several legislative proposals have included a BCA, including the 2009 American Clean Energy and Security Act, and several recent bills have been introduced with BCA as a part of a larger carbon tax program, most recently American Opportunity Carbon Fee Act of 2018 (S.2368/H.R.4926) in 2018.^{vi}

2. What work has been published to your knowledge of the economic costs, the impacts on prices and supply, or employment impacts from reducing emissions in the industrial sectors? What work has been done to evaluate the legal, economic, and socio-economic impacts of deep decarbonization of the industrial sector?

RESPONSE: Several studies have been executed to evaluate the economic costs, the impacts on prices and supply, or employment impacts from reducing emissions in the industrial sectors as well as the legal, economic, and socio-economic impacts of deep decarbonization of the industrial sector. Please see the following question for a list of pertinent studies.

- a. Would you please list pertinent studies?

RESPONSE:

- Carbon Disclosure Project, “Melting Point”, July 2019.
<https://www.cdp.net/en/investor/sector-research/melting-point>
- McKinsey & Company, “Decarbonization of industrial sectors: the next frontier”, June 2018.
<https://www.mckinsey.com/~media/mckinsey/business%20functions/sustainability/our%20insights/how%20industry%20can%20move%20toward%20a%20low%20carbon%20future/decarbonization-of-industrial-sectors-the-next-frontier.ashx>
- Olle Olsson, “Low-emission steel production: decarbonizing heavy industry”, SEI, 4/11/2018. <https://www.sei.org/perspectives/low-emission-steel-production-hybrid/>

- Rebecca Duff and Michael J. Lenox, “PATH TO 2060: Decarbonizing the Industrial Sector”, Batten Institute for Entrepreneurship and Innovation, UVA Darden School of Business, December 2018, https://www.darden.virginia.edu/sites/default/files/inline-files/industrialsector-report-8_FINAL.pdf
- “The transition of energy intensive processing industries towards deep decarbonization: Characteristics and implications for future research”, Renewable and Sustainable Energy Reviews, Volume 79, November 2017, Pages 1303-1313 <https://www.sciencedirect.com/science/article/pii/S1364032117307906>

3. According to a recent report by the Energy Futures Initiative, many “subnational decarbonization strategy and road-map reports contain insufficient detail for establishing effective and efficient implementation policies and programs.”
 - a. What should be done to develop a more in depth understanding of the cost and economic impacts of state and regional (subnational) decarbonization policies, particularly in the industrial sector?

RESPONSE: We have extensive information about the growing threat of industrial emissions, both in the U.S. and globally. We also have a growing list of reports and models at the national and sub-national level to inform our efforts to tackle industrial sector emissions. And yet, more information and data would certainly be useful in our efforts to craft appropriate policy, including modeling the impact of particular policy pathways on the competitiveness of U.S. industrial sectors. Several states, including Washington, have moved forward with studies along these lines and others, like Minnesota, are in the process of developing them.

4. Given its potential regional flexibility, do you support looking at the deployment of advanced non-light-water SMRs?

RESPONSE: We do not have a position on this as a coalition. Given the challenges in this sector, we do support looking at the deployment of a wide range of technologies. Several studies have pointed to light water small modular reactors (SMRs) as showing particularly strong promise as a supplier of industrial process heat, given that those in development can produce thermal heat at temperatures high enough to conduct some industrial activities. However, these would likely not be adequate solutions for sub-sectors that require direct heat at the highest temperatures, like the 1,700°C needed for iron and steel manufacturing or 1,500°C for cement.^{vii}

- a. How much work has been done to identify the industrial processes that could benefit from switching to electricity as a heat source?

RESPONSE: Fuel switching to clean sources can also help reduce greenhouse

gas emissions from the industrial sector, particularly with respect to process heat, which is the biggest source of energy use and related emissions in the sector. This could include switching to dispatchable renewable sources, such as solar thermal or sustainable biomass, and the electrification of certain processes.

Only 1% of conventional boilers and 10% of process heat applications in the industrial sector are electrified, and it's technically feasible to scale up the deployment of electric boilers and electric heating technologies, including resistive, induction and infrared heating. However, there are barriers to electrification, including the high cost of using electricity compared to direct fossil fuel use to generate process heat.

Therefore, a critical R&D challenge will be to focus on industrial applications where electrification, relative to fossil fuels, can make more efficient use of thermal energy. More fundamentally, however, we need new technological and economic analysis to develop a better understanding of which industrial sector technologies would be the most promising and cost-effective to electrify.^{viii}

- b. I assume it is feasible to convert fuel to electricity, but is it economically feasible?

RESPONSE: As was noted in the previous answer, the cost of using electricity compared to direct fossil fuel use to generate process heat is currently higher. Reducing this comparative cost and identifying the industrial applications where electrification can make more efficient use of thermal energy must be a focus of federal R&D efforts.

The U.S. Department of Energy's National Renewable Energy Laboratory (NREL) is spearheading the Electrification Futures Study, a research collaboration to explore the impacts of widespread electrification in all U.S. economic sectors.^{ix}

ⁱ American Council for an Energy-Efficient Economy, "Energy-Intensive, Trade-Exposed Industries." Available online: <http://aceee.org/topics/energy-intensive-trade-exposed-industries>.

ⁱⁱ *Ibid.*

ⁱⁱⁱ *Ibid.*

^{iv} *Ibid.*

^v <https://www.climatechangenews.com/2019/07/22/von-der-leyen-make-carbon-border-tax-work/>

^{vi} https://www.taxpolicycenter.org/sites/default/files/publication/155511/policy_brief_making_border_carbon_adjustments_work_in_law_and_practice.pdf

^{vii} <https://aflcio.org/sites/default/files/2018-10/Industry-MattersSmarter-Energy-Use-Key-for-US-Competitiveness-Jobs-and-Climate-Efforts.pdf>

^{viii} <https://aflcio.org/sites/default/files/2018-10/Industry-MattersSmarter-Energy-Use-Key-for-US-Competitiveness-Jobs-and-Climate-Efforts.pdf>

^{ix} <https://www.nrel.gov/news/press/2018/nrel-launches-electrification-futures-study-series.html>