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Senate Committee on Environment and Public Works  
410 Dirksen Senate Office Building  
Washington, DC 20510-6175

4/1/2020

RE: S. 2754, American Innovation and Manufacturing Act of 2019: Written Testimony

Senators,

Thank you for the opportunity to comment on S. 2754. The Act makes three economic development claims to justify its passage:

- 1) The Act will add \$12.5 billion per year to the U.S. balance of trade by promoting technological leadership thus increasing U.S global market share of fluorocarbon, and related refrigeration products and equipment from 7.2-percent to 9-percent
- 2) 33,000 new manufacturing jobs will be created to support that increased demand
- 3) The potential increase in sales will encourage \$5 billion of new research investment between 2015, and 2025 in fluorinated products and equipment

All three assumptions are demonstrably false.

Without these alleged benefits the Act has no basis for passage. The claims made in the Act are identical to a refrigerant industry financed study, “Economic Impacts of U.S. Ratification of the Kigali Amendment” by JMS Consulting, published in April, 2018. The Kigali Amendment to the Montreal Protocol phases out the use of HFC’s in favor of HFO’s in much the same fashion as this proposed Act.

The estimated U. S. increase in export sales, and jobs for the heating, ventilation, air conditioning, and refrigeration industry (HVACR), in the JMS Consulting report, is based on a single assumption; regulatory certainty will encourage industry R&D investment to create uniquely advanced products with a new refrigerant that will create a competitive advantage in foreign markets<sup>1</sup>. In fact, the refrigerant industry has regulatory certainty. The Kigali Amendment lies dormant as neither President Obama, nor President Trump has sent it to the Senate for advice, and consent. The industry can assume the U.S. will not be joining the treaty.

The Environmental Protection Agency (EPA) attempted an end run around the failed treaty. They used the Significant New Alternatives Policy (SNAP) regulatory policy to list HFC’s as not acceptable for use in stationary products, such as freezers, foam products, and air conditioners. The EPA lost a lawsuit that claimed the EPA had misused the Clean Air Act in their findings thus overturning the SNAP determination<sup>2</sup>. A request for rehearing to the U.S. Court of Appeals for the District of Columbia Circuit by the replacement HFO refrigerant suppliers Honeywell International, Inc., and Chemours Company, LLC, along with the National Resource Defense Council was denied, and resulted in the following comments by deciding Judge Brett Kavanaugh<sup>2</sup>:



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*“Industry intervenors are rent-seekers trying to use the government to foreclose their competitors’ products”, and intervenor “arguments mask their true interest in this case, which is to have government choose market winners and losers, thereby stifling competition”*

Honeywell and Chemours lobbied for the Kigali Amendment, lobbied for the SNAP regulation, and now lobby for this proposed Act to create a monopoly for their patent protected HFO product line that sells for up to ten to fifteen times the price of HFC’s. The prime sponsors of the Act are Senators from states where Honeywell and Chemours have production facilities, or corporate headquarters. Other than this proposed Act, the refrigerant industry has clear certainty HFO’s will have to be adopted in a competitive market, and can plan appropriately to invest in new products for the domestic, and global markets.

The JMS Consulting report states, “From the time of its creation, the U.S. HVACR industry has led global innovation.” We agree. Since 2000, when imports and exports of US HVACR equipment were in balance, U. S. manufacturers have led the world in improving equipment energy efficiency by 40 to 750 percent<sup>3</sup>! However, during that same period export share of the US market grew only 10-percent while imports share increased 240-percent with imports exceeding exports by \$10 billion a year as shown in Table 1 below.

Table 1: HVACR Historic Trade Balance – 2016\$

Year	Domestic Demand \$ millions	Imports \$ millions	Imports %	Approximate Trade Balance \$ millions	Approximate Exports \$ millions	Exports %
1997	28,300	\$3,388	12.0 %	\$3,400	-	-
2000	34,232	\$5,071	14.8 %	\$0	\$5,000	14.8%
2010	39,269	\$11,775	30.0%	- \$5,000	\$6,800	17.3%
2016	52,137	\$18,523	35.5%	- \$10,000	\$8,500	16.3%

Source: First 4 columns “Economic Impacts of U.S. Ratification of the Kigali Amendment”, Table 4.1, page 28, fifth column Appendix A-4 question 1 from “Questionnaire for Industry Experts”, columns 6-7 author calculation

A big reason for the increase in imports is equipment manufacturers themselves moved production to other countries along with technology advances. Almost half our imports are now coming from NAFTA allies Mexico and Canada, with China and South Korea supplying another 37 percent. Clearly, our competitive technology advantage did not save American jobs in the past, and is unlikely to do so in the future. U.S companies have demonstrated their propensity to move manufacturing to lower manpower cost countries like Mexico. The first large scale HFO refrigerant manufacturing plant was built in China in 2010, with U.S. manufacturing not starting until 2017. The JMS Consulting study expects domestic HVACR demand to remain unchanged with, or without S. 2754.

HFO has been under development for over a decade, and the EPA delisted HFC refrigerants for new mobile air conditioning uses in 2011. Auto makers have already switched over half of new light duty



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vehicles to HFO<sup>4</sup>. With the rest of the world planning to switch to HFO regardless of what the U.S. does, the industry will have to react and build compatible equipment for the export market with, or without S. 2754, and is likely already far along in the design process. It is likely imports will continue to grow, and exports will not grow significantly with, or without S. 2754.

There will likely be a major cost impact of switching from HFC to HFO. HFC can be purchased for \$3 to \$4 a pound, while HFO sells for \$60 to \$65 a pound. Grand View Research<sup>5</sup> estimated US fluorocarbon refrigerant use at 116,000 tons in 2016. The current price premium for HFO's is over \$55 per pound. That cost differential between HFC and HFO yields \$12.8 billion a year in added cost to U.S. households, motorists, and businesses that rely on air conditioning and refrigeration. For example, higher refrigerant cost will add about \$100 per new car, and for new air conditioning equipment, or repair. That higher cost wipes out the forecasted \$12.5 billion improvement in the U. S. balance of trade used to justify S. 2754.

### Conclusion

The forecasted \$12.5 billion in improved U.S. balance of trade used to justify S. 2754, the American Innovation and Manufacturing Act of 2019, will be wiped out by the higher cost of the replacement refrigerant. Also, the forecast of increased exports is highly suspect based on the established historical pattern of U.S. Manufacturers of both refrigerants, and HVACR equipment to move manufacturing to lower labor cost countries. No increase in manufacturing means no increase in jobs. The reliance of the forecast on the assumption regulatory certainty will encourage research on improved products that provide a competitive advantage is simply specious. The industry already has regulatory certainty, but doesn't like the result – a competitive market for an over-priced new product whose manufacturers want a monopoly market position.

Sincerely,

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### Notes:

- 1) JMS Consulting, "Economic Impacts of U.S. Ratification of the Kigali Amendment", [http://ahrinet.org/App\\_Content/ahri/files/RESOURCES/Kigali\\_JMS\\_04-19-18.pdf](http://ahrinet.org/App_Content/ahri/files/RESOURCES/Kigali_JMS_04-19-18.pdf), Page 5 Industry Trends, and Impact of Kigali Ratification
- 2) On August 8, 2017 the US District Court of Appeals for the District of Columbia overturned the regulation on this basis in case 15-1328 (Mexichem Fluor Inc. v. Environmental Protection Agency). Intervenors request for a re-hearing or an en banc review of the decision was denied on 10/18/2017 with several comments,
- 3) US Department of Energy, Energy Efficiency and Renewable Energy, "Appliance and Equipment Standards", [https://www1.eere.energy.gov/buildings/appliance\\_standards/standards.aspx?productid=48&action=viewlive](https://www1.eere.energy.gov/buildings/appliance_standards/standards.aspx?productid=48&action=viewlive)
- 4) Refrigerant Headquarters, R1234YF and top selling cars for 2019, <https://refrigeranthq.com/r-1234yf-top-selling-cars-of-2019/>
- 5) Grandview Research, "Refrigerant Industry Insights", <https://www.grandviewresearch.com/industry-analysis/refrigerant-market>