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Lisa Vest  
Public Hearing Officer  
State of Delaware – DNREC  
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4/14/20

Dear Ms. Vest;

I am submitting comments regarding DNREC's **1151 Prohibitions on Use of Certain Hydrofluorocarbons in Specific End-Uses** printed in the Delaware Register 4/1/20, regarding the banning of HFC refrigerants in new refrigeration equipment, air conditioners, foam, or aerosol after a specified date.

The regulation, and accompanying Regulatory Impact Statement (RIS) are deeply flawed, and the regulation should be withdrawn. The justifications for the regulation fail review:

- 1) The language of the regulation is based on an Environmental Protection Agency (EPA) Significant New Alternatives Policy (SNAP) regulation from 2015 that has been overturned by the U.S. Court of Appeals for the District of Columbia<sup>1</sup>, and was repealed in 2018. The regulation is not in force, and cannot serve as a basis for the Delaware regulation.
- 2) The RIS provides additional support for the regulation from the Kigali Amendment of the Montreal Protocol. The Kigali Amendment has never been sent to the U.S. Senate for Advice & Consent and has no force of law as the United States is not a participating country.
- 3) The RIS also states the regulation aligns with the State of Delaware Greenhouse Gas emissions reduction goals of 26-28% by 2025, from 2005 levels. As shown in detail below, Delaware has already exceeded the goal in 2019, and compliance requires no further action.

The underlying concept behind the regulation is a new type of refrigerant, hydrofluoroolefins (HFO), with a lower global warming potential, will replace hydrofluorocarbon (HFC) refrigerants. Two companies share the patent rights on HFO, Honeywell International, Inc., and Chemours Company, LLC. These companies lobbied for the Kigali Amendment, lobbied for the SNAP regulation, and now lobby for this proposed regulation 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. But don't take my word for it. In declining an appeal for reconsideration of the decision overturning the EPA regulation, Court of Appeals Judge Brett Kavanaugh wrote of the appellants, Honeywell International, Inc., and Chemours Company, LLC:

*“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”*

The RIS states there will be no significant compliance cost. We will show that is not true. The RIS also overstates the importance of emissions savings from the regulation. By any measure the proposed



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regulation has no justification, is an unnecessary burden on homeowners, and businesses, and even if carried through, will have no significant impact on global warming.

### **Cost burden**

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 based on an internet search, and a U.S. Department of Energy report, “Refrigerants: Market Trends and Supply Chain Assessment”<sup>2</sup>. Grand View Research<sup>3</sup> estimated US fluorocarbon refrigerant use at 123,000 tons in 2019. The current price premium for HFO’s is over \$55 per pound, or \$110,000/ton. That cost differential between HFC and HFO yields \$13.5 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. As stated in the RIS, Delaware’s population is 0.3-percent of the U.S. population, so the scaled cost of just the higher refrigerant cost is \$40.5 million a year. Even at higher volumes, the U.S. DOE price differential forecast remains at \$35/pound, a potential annual cost to Delawareans of \$26 million a year.

Because HFO refrigerants are flammable while HFC is not, refrigeration and air conditioning repair mechanics will need new required refrigerant recycling equipment. According to the US Bureau of Labor Statistics<sup>4</sup> there were 332,900 air conditioning and refrigeration mechanics and installers in 2016. Car dealers I have talked to are reporting recycling equipment cost is ranging from \$5,000 to \$9,000 each. So, otherwise un-needed recycling equipment cost may place a one-time \$2.3 billion burden on the economy. Using the same scaling factor as above, the one-time cost for recycling equipment in Delaware may be about \$7 million.

The development of refrigeration equipment compatible with alternative refrigerants is likely to add cost to the equipment procurement. The cost differential may fade with time as economies of scale kick in. However, DNREC recognizes the cost of equipment in its “Coolswitch” program. The program offers up to 50-percent of new, or retrofit system costs for commercial refrigeration systems. Equipment costs will rise for air conditioning, and residential systems as well that will not receive subsidies.

### **Greenhouse Gas Savings**

The RIS estimates 120,000 metric tons of equivalent carbon dioxide savings in 2030. The Coolswitch program values savings at \$25/ton, so the value of the savings is \$3 million a year compared to a potential \$26 million a year in higher refrigerant cost. Calculations have been made that eliminating all carbon dioxide emissions in the United States would reduce global temperatures 0.2 degrees C in 2100<sup>5</sup>. The prorated savings of the proposed regulation would therefore amount to 4 one-hundred thousandths of a degree, essentially zero. The savings are likely exaggerated as most of the HFC refrigerant in refrigeration and cooling equipment is recycled, and does not reach the atmosphere. In addition, equipment manufacturers are moving to lower global warming potential refrigerants anyway<sup>6</sup>.



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### **Delaware carbon dioxide emission goals have already been met**

The U. S. Energy Information Agency data for CO<sub>2</sub> emissions by sector from DE<sup>7</sup> from 2005 to 2017, shows emissions fell from 16.7 million metric tons from 2005, to 12.3 in 2017. Most of the reduction was in the electricity sector falling from 6.5 million metric tons to 2.9. The transportation sector fell from 5.2 million metric tons to 4.7. The EPA just released the 2019 Auto industry emission report showing MPG improved from 24.9 MPG in 2017 to an estimated 25.5 in 2019, or a 2.4% improvement<sup>8</sup>. RGGI COATS<sup>9</sup> shows Delaware emissions fell to just 2.0 million tons in 2019. So total CO<sub>2</sub> emissions were likely about 11.3 million metric tons in 2019, a 32% reduction from 2005.

### **Conclusion**

This regulation fails on every count, and should be withdrawn. DNREC claims the basis for the regulation in a treaty that has never been approved, an EPA regulation that has been repealed, and a carbon dioxide emission reduction goal from the Governor that has already been met. Potential annual costs exceed benefits by nine times. The goals in the regulation will likely be met by competitive market forces without the regulation. Finally, even if the regulation works as DNREC expects, it will have essentially zero impact on global warming.

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### Notes:

- 1) On August 8, 2017 the US District Court of Appeals for the District of Columbia 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, [https://www.cadc.uscourts.gov/internet/opinions.nsf/3EDC3D4817D618CF8525817600508EF4/\\$file/15-1328-1687707.pdf](https://www.cadc.uscourts.gov/internet/opinions.nsf/3EDC3D4817D618CF8525817600508EF4/$file/15-1328-1687707.pdf)
- 2) U.S Department of Energy report, “Refrigerants: Market Trends and Supply Chain Assessment”, page 43, <https://www.nrel.gov/docs/fy20osti/70207.pdf>
- 3) Grandview Research, “Refrigerant Industry Insights”, <https://www.grandviewresearch.com/industry-analysis/refrigerant-market>
- 4) 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)
- 5) Heritage Foundation, “Methods and Parameters Used to Establish the Social Cost of Carbon”, Kevin D. Dayaratna, PhD, Feb. 24,2017, <https://docs.house.gov/meetings/SY/SY18/20170228/105632/HHRG-115-SY18-Wstate-DayaratnaK-20170228.pdf>
- 6) Clean Energy Manufacturing Analysis Center, “Refrigerants: Market Trends and Supply Chain Assessment”, Feb., 2020, <https://www.nrel.gov/docs/fy20osti/70207.pdf>
- 7) U.S. Energy Information Agency, Carbon dioxide emissions by year by state, <https://www.eia.gov/environment/emissions/state/>
- 8) U.S. Environmental Protection Agency, Automotive Trends Report 2019, <https://www.epa.gov/automotive-trends>
- 9) RGGI COATS, <https://www.rggi.org/allowance-tracking/rggi-coats>