BOEING

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Chairman Barrasso
Ranking Member Carper
Committee on Environment and Public Works
United States Senate
410 Dirksen Senate Office Building
Washington, DC 20510

Dear Chairman Barrasso and Ranking Member Carper:

I am writing in regard to S.2754, the American Innovation and Manufacturing Act which has been referred to the jurisdiction of the Environment and Public Works Committee for consideration. The goal of this bill is to accelerate the phasedown of the use and manufacture of hydrofluorocarbons (HFCs). As you know, these compounds have many useful industrial applications for which substitutes may be readily available. However, there are some aerospace uses which do not have readily available substitutes, most notably for fire suppression agents on commercial and military aircraft. A unique challenge in securing substitutes for aerospace agents are the rigorous standards and certification requirements implemented by the Federal Aviation Administration and Department of Defense for their use. As the Senate considers this bill, we would appreciate the opportunity to work with both of you to ensure that important aerospace safety uses are preserved until viable alternatives can be identified and certified.

For example, HFC-125, HFC-227ea and HFC-236fa are currently used for fire extinguishing and suppression in aviation. Some HFC compounds have a number of unique properties that make them indispensable for this use. In relatively small quantities, they are highly effective at extinguishing a variety of fires, in extreme conditions including subfreezing temperatures as low as minus 40 degrees Fahrenheit. They are also "equipment safe" so they do not cause additional damage during an emergency situation and some are non-toxic so they are acceptable for use in occupied spaces. HFC-125 is currently used in engine nacelles and auxiliary power unit compartments on the F/A-18 E/F, KC-46 Tanker, P-8 Poseidon, and V-22 Osprey military aircraft that Boeing manufactures. HFC-125 also has potential for some applications in commercial aircraft as a replacement for substances currently in use that have far greater ozone depletion potential. HFC-227ea is currently used in lavatory waste bin fire extinguishers on all commercial airplane models, including military derivatives, and HFC-236fa is used in handheld fire extinguishers onboard the KC-46 aircraft.

A related state-level legislative action provides useful background for this request. In 2019, Washington State passed a bill that prohibits the sale or installation of certain equipment that uses HFCs. The goal of that bill was to achieve technology change by requiring transition away from HFCs for many types of equipment sold or used in the State. While that bill specifically exempted aerospace fire extinguishing systems (and several other states pursuing similar policies have followed suit), we later discovered that the bill still impacts other aerospace equipment, such as galley refrigerators and chillers that rely on HFC-134a, and could require their redesign in order to allow continued import, installation, and sale in Washington State. Currently, the equipment has no ready substitute for HFC-134a that would satisfy the FAA certification criteria, and in particular a substitute with the low flammability properties of HFC-134a. Therefore, we will need to pursue a state-specific exemption to ensure that the aircraft we have designed for safe world-wide operation and maintenance can continue to be built, maintained, and operated within Washington State.

Regarding the point of developing alternative compounds, our past experience has shown that identifying and, if identified, testing and certifying the use of compounds for onboard use with the effectiveness and unique specifications described above can take more than 15 years. After a process of approximately that length, in 2017 Boeing received final federal approvals for 2-bromo-3, 3, 3-trifluoropropene (2-BTP) to be used in handheld extinguishers on commercial aircraft. This is a notable achievement with great environmental benefit, as 2-BTP is now an option to replace Halon 1211 in handheld extinguishers.

We look forward to the opportunity to work through these issues with you to ensure the safest compounds remain readily available for these important uses. Thank you for your consideration of this request.

Sincerely,

Tim Keating
Executive Vice President
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