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May 26, 2016

Mr. Richard Corey
Executive Officer
California Air Resources Board
1001 I Street
Sacramento, CA 95814

Submitted via: www.arb.ca.gov/board/comments

Re: Lennox Comments on California Air Resources Board Proposed Short-Lived Climate Pollutant Reduction Strategy.

Lennox International Inc. (Lennox) hereby submits comments regarding the, *Proposed Short-Lived Climate Pollutant Reduction Strategy* that was published by the California Air Resources Board (CARB) in April, 2016.

Lennox is a leading provider of climate control solutions for the heating, air-conditioning, and refrigeration equipment markets. Lennox is a publicly-traded company focused on the HVACR industry and has thousands of employees. Lennox manufactures Residential and Commercial Air Conditioning and Commercial Refrigeration products that will be impacted by California regulations as an outcome of the proposed strategy.

Lennox supports California and national efforts to reduce climate pollutants to improve human health, help to preserve natural resources and protect our environment. This is exemplified by Lennox's tradition of innovation and product efficiency leadership in the HVACR industry. Lennox appreciates the opportunity to work with CARB to develop reasonable, practical regulations that help to further California's climate improvement initiatives.

Comments on the Proposed Short-Lived Climate Pollutant Reduction Strategy.

Lennox reviewed the Short Live Climate Pollutant (SCLP) Strategy and attended the CARB April 26, 2016 Public Workshop and May 19, 2016 Public Board Meeting. Lennox understands reductions in SLCP emissions are part of an overarching goal for California to reduce Green House Gas emissions by 40% in 2030. From the discussion at these meeting, it is obvious CARB has several challenges regarding the black carbon and methane emission reduction targets in addition to the issues related to the proposed reductions for high global warming potential (GWP) refrigerants by reducing HFC emissions.

In support of these goals, Lennox is actively providing leadership and working within several industry forums to research and support development that will enable widespread use of low GWP options in the future. Lennox is also active in the national and international safety development through working groups charged with this development. Lennox intends through these comments to bring to the forefront the pertinent issues and timing concerns as CARB proceeds from a strategy to regulatory action.

As CARB moves forward with potential regulations, Lennox recommends an approach with direct stakeholder involvement that allows discussion toward mutual understanding of the issues from the various stakeholder perspectives, is based on consensus wherever possible and results in effective and efficient implementation of a plan to successfully achieve the stated goal. This approach is consistent with the direction the CARB Board of Directors asked CARB Staff to follow at the May 19, 2016 Public Board Meeting.

National Approach

Lennox is supportive of efforts to reduce the climate impact of HFCs, but suggests the approach must move toward an effective national approach that is consistent with global efforts. Further, all actions must be done in an orderly fashion which allows companies to continue to fulfill consumers need for products which are vital to public health, safety, energy conservation and comfort. Lennox finds that federal requirements through the US EPA and international agreements through the Montreal Protocol provide the most effective way to reduce emissions of high global warming potential (GWP) refrigerants. Lennox strongly supports a uniform federal mandate connected to a global approach as opposed to a patchwork of state-by-state efforts. A federal and global solution avoids a patchwork of policies which will lead to inconsistent requirements between regions and added costs of compliance being passed to consumers.

Development of Low GWP Alternatives

Testing and research on low GWP alternative refrigerants has been ongoing for the last several years. The AHRI Low-GWP Alterative Refrigerants Evaluation Program (Low-GWP AREP) began in 2011 and tested over 55 HFC refrigerant alternatives in various end uses. The program demonstrated that while low-GWP alternatives exist, the viable alternatives are flammable and require significant changes in equipment design, safety standards and building codes as well as field handling practices. These complex issues must be resolved prior to implementation. Additionally, several organizations including ASHRAE, AHRI and DOE are investing in research to accelerate this process.

As stated above the HVACR industry and the federal government recently mobilized to accelerate the research and code development. Lennox and others within the industry are dedicating personnel and significant funding for research to ensure these standards are updated in an efficient and thorough manner. Third party research that provides risk assessment and mitigation methods to allow these refrigerants to be used safely in air conditioning and refrigeration equipment is a critical path item toward use of low GWP refrigerants. Even with this unprecedented effort, the anticipated timeline for safety standards does not currently align with the proposed CARB timeframe with the earliest probably date being the 2021 code cycle.

EPA SNAP Approval

The GWP limits proposed by CARB require the use of alternative refrigerants that are not yet approved under the EPA SNAP program for several of the air conditioning and refrigeration sectors. EPA's approval of these refrigerants is contingent upon the availability of safety codes and standards that properly address their use. With the expected delivery of the necessary safety codes and standards beginning with the 2021 code cycle at the earliest, it is unclear that SNAP

approval will be in place to support the current CARB plan. Additionally, the safety requirements are also needed by manufacturers to design compliant products indicating that manufacturers will not be transitioning product lines to low GWP alternatives until after the codes and SNAP approval is in place.

Manufacturer Impacts

The HVACR industry is a highly regulated industry and the impacts of several recent DOE rulemakings should be considered in the conversion process to low GWP alternatives. Many of the products that will be impacted by the CARB plan are burdened with layers of regulation and multiple regulated metrics. For example Residential Central Air Conditioning (CAC) equipment currently has 3 regulated metrics i.e. SEER, EER and Off Cycle Power. In addition, these products as well as Commercial Unitary Air Conditioners (CUAC) are scheduled for an increase in their required efficiency levels in both 2018 and 2023. Layering a potential refrigerant transition prior to the transition to the new efficiency standards dramatically increases the burden on manufacturers.

In addition to the DOE 2023 efficiency standard changes, the test procedure for Residential Central Air Conditioners (CAC) will also be changing at this same time. Since the new test procedure impacts equipment efficiency, the new test procedure will greatly impact manufacturer resources since testing or re-testing of all products in a manufacturer's portfolio is required. In a "normal" efficiency standard change, typically the products below the standard levels are removed from the market and manufacturers redesign new products to meet the new minimum energy conservation standards. Products that are above the minimum standard do not require retesting as they are not impacted by the standard change.

Lennox strongly recommends that transitions to low GWP refrigerants for CAC and CUAC products be aligned with federal efficiency standards to streamline the development process and reduce the associated burdens that ultimately impact consumers and end-users. As the implementation dates for these standards start in 2023, Lennox recommends CARB plan for low GWP refrigerant regulations on these products to start no sooner than the new standard dates. These dates were negotiated within the federally promoted negotiated rulemaking process sponsored the DOE Appliance Standards and Rulemaking Advisory Committee and were part of a consensus term sheet agreed to by key stakeholders. Lennox participated in this negotiation along with representatives from California regulators and utilities. A key factor in the discussion during these negotiations was the coordination of the new efficiency standard to the transition to low GWP alternatives for these products. It was the consensus of the stakeholder group that this alignment is critical to a successful transition.

While Lennox has focused our comments on CAC and CAUC products, all HVACR products we produce are in transition to higher efficiency standards. CARB should review all these actions closely, including direct dialogue with manufacturers in an effort to refine CARB's strategy to reduce the overwhelming burden of the federal regulatory actions already in place.

Safety training and upgrades of manufacturing facilities.

As discussed before, most viable low GWP alternatives are flammable. Since the refrigerants used today are nonflammable, major modifications will be required to existing manufacturing plants to ensure safe handling, storage, and use of alternative refrigerants. Additionally, handling procedures and processes will need to be developed and tested prior to the commercialization of the new products. The transition requires capital investments that must be planned well in advance and accelerating the compliance timing increases the risk of manufacturers not being able to complete the necessary upgrades in time.

Installers and service technicians for air-conditioning and refrigeration equipment in the United States are not trained to service equipment with flammable refrigerants. Prior to distributing, transporting and installing equipment with flammable refrigerants, a comprehensive training program must be developed and implemented to ensure the transition is executed in a safe manner. Additionally, service trucks must be modified and equipped to transport flammable refrigerants and include the necessary tools and equipment to ensure safe charging, recovery, and recycling.

Accelerating the transition to lower GWP refrigerants will increase product cost

The currently available refrigerants which meet the GWP limits proposed by CARB result in system efficiencies that are lower than existing refrigerants used today. Additionally, some of the viable alternatives operate at significantly higher operating pressures. In each of these scenarios, manufacturers will be required to invest in product development to compensate for less efficient refrigerants and/or withstand higher operating pressures. The result of these product design changes will result in increased product costs that are ultimately borne by consumers and end-users.

Purchase Incentives

Lennox supports incentives to promote the adoption of new equipment. As mentioned previously, it is very likely that the cost of Low GWP equipment will increase significantly and helping end users offset the cost will drive adoption of the newer technologies. Additionally, purchase rebate incentives might increase early adoption of the low GWP refrigerant system prior to any compliance deadlines further helping meet California's SLCP and greenhouse emission targets sooner. Lennox is not in favor of CARB implementing measures, such as fines, mitigations fees, etc. to penalize consumers and end-users for not complying with refrigerant regulations as this de-incentivizes end use adoption.

In summary, Lennox appreciates the opportunity to provide these comments and looks forward to continued discussions with CARB on the further development of the SLCP strategy. While Lennox supports CARB's intent to reduce SLCP emissions, we recommend proceeding with a plan aligned with National and global efforts to streamline the process and maximize the environmental benefits while reducing potential negative consumer, end-user and manufacturer impacts. If you have questions regarding this submission, please do not hesitate to contact me.

Sincerely,

Dave Winningham,
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