



2111 Wilson Boulevard Suite 500 Arlington VA 22201-3001 USA
Phone 703 524 8800 | Fax 703 562 1942
www.ahrinet.org

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Ms. Brenda Edwards
U.S. Department of Energy
Building Technologies Program, Mailstop EE-5B
1000 Independence Avenue SW
Washington, DC 20585-0121

Re: Energy Conservation Standards for Commercial and Industrial Fans and Blowers:
Availability of Provisional Analysis Tools – Second Notice of Data Availability – EERE–
2013–BT–STD–0006

Dear Ms. Edwards:

These comments are submitted by the Air-Conditioning, Heating, and Refrigeration Institute (AHRI) in response to the U.S. Department of Energy's (DOE) notice of data availability (NODA) on energy conservation standards for commercial and industrial fans and blowers (CIFB) appearing in the *Federal Register* on May 1, 2015.

AHRI is the trade association representing manufacturers of heating, cooling, water heating, and commercial refrigeration equipment. More than 300 members strong, AHRI is an internationally recognized advocate for the industry, and develops standards for and certifies the performance of many of the products manufactured by our members. In North America, the annual output of the HVACR industry is worth more than \$20 billion. In the United States alone, our members employ approximately 130,000 people, and support some 800,000 dealers, contractors, and technicians.

COMMENTS

Over the course of three months, the Commercial and Industrial Fans and Blowers Appliance Standards and Rulemaking Federal Advisory Committee (ASRAC) Working Group has undertaken the task of drafting a term sheet that address the entire breadth of a DOE rulemaking for a product that has never before been regulated, complicating this undertaking is the issue that fans stand alone as a "product" but also are component of various diverse products, some of which are already regulated by the DOE, and many of which are outside of DOE's regulatory authority. The Department of Energy and the HVACR industry have little to no experience with the regulation of components in HVACR equipment—to date the only component regulation on the books is for motors, which present entirely different issues than fans in terms of supply chain structure and the manner in which motors operate when embedded in HVACR

equipment. The breadth of the assignment undertaken by working group is also unprecedented. Historically, ASRAC working groups have addressed issues with enforcement and certification or standards alone. The CIFB WG has attempted to build a complicated regulatory scheme from whole cloth. This working group has traversed scope, metric, test procedure, standards, labeling, certification, and enforcement, and each presents complicated considerations. Although a term sheet has been submitted to the ASRAC committee, it is AHRI's position that this term sheet and its recommendations are too ambitious and many of the details and logistics of how this regulation will affect stakeholders has not been adequately addressed and considered.

SCOPE

AHRI supports the tentative decision reached by the CIFB working group to limit the scope of the CIFB rulemaking to fans in excess of 1 brake horsepower at the fan shaft and less than 150 air horse power. A lower limit of 1 brake horsepower at the fan shaft is vital to ensure that the scope of the regulation does not dramatically encompass residential fans that are already regulated and have their own rules and metrics.

Regulated Products

AHRI is supportive of DOE's efforts to regulate fans and blowers to the extent that DOE adopts the structure that was initially described in its framework document, which stated that "DOE is not considering standards for fans that are a component in regulated commercial products."¹ Conversely, AHRI opposes any rulemaking that regulates components of regulated commercial HVACR components. It is of vital importance to the industry that covered equipment is excluded from the scope of a fans and blowers regulation.

AHRI has several reasons for insisting that fans as components of regulated products remain out of scope of the rulemaking: (1) AHRI, energy advocates, and DOE have already agreed on a term sheet that excludes from regulation fans that are components of DOE-regulated Commercial Package Air Conditioners and Warm Air Furnaces and that provides for a more effective method of energy savings than component regulation;² (2) Many regulated covered products that contain fans must currently meet an energy efficiency standard that captures some or all of the energy used by the fan—any additional regulation constitutes burden without energy savings; (3) to the extent that some of the fan energy is not presently captured, amending the efficiency metric to include ventilation energy is a more effective approach than regulating at the component level; (4) restriction of available components limits the product manufacturers' ability to innovate and create better more efficient products; and (5) EPCA does not provide DOE with the authority to double-regulate covered products.

¹ Energy Conservation Standards Rulemaking Framework for Commercial and Industrial Fans and Blowers (January 28, 2013) p. 2.

² Appliance Standards and Rulemaking Federal Advisory Committee – Commercial Package Air Conditioners and Commercial Warm Air Furnaces Working Group (June 15, 2015) Term Sheet, Recommendation #3.

Double Regulation

AHRI has several concerns with DOE's asserted authority to compose a regulation that imposes additional burden to manufacturers of currently-regulated HVACR equipment. AHRI takes no issue with the fact that DOE has the authority to regulate "fans and blowers" in a stand-alone capacity. Without questions, assuming that the Secretary has completed and publishes a legally valid and statutorily-required determination, "fans and blowers"—as properly defined by such determination—become products eligible for regulation. 42 U.S.C. § 6311(2)(A). Notably, the Secretary has not yet finalized the required determination, so as of the date of the NODA, DOE lacks the formal authority to promulgate any regulations for fans and blowers. DOE is required follow the mandated procedures set forth in EPCA in order to give all stakeholders sufficient information to participate in the rulemaking process. "All questions of government are ultimately questions of ends and means...Congress has established ... the means by which DOE could extend its regulatory authority." *Hearth, Patio & Barbecue Assoc. v. Dept. of Energy*, 706 F.3d 499, 507 (D.C. Cir. 2013). DOE must abide by the statutorily-required means and finalize its determination before it can legally regulate any products not currently specified as "covered equipment." As discussed above, the CIFB working group has undertaken a herculean effort to craft an entire regulation from scope to enforcement. A finalized determination would have assisted the working group with appropriately limiting the scope of that task and providing stakeholder necessary information from which to make decisions about regulations proposed by DOE. For all of the reasons discussed below, AHRI recommends that when DOE finalizes its determination, it excludes from the scope of regulation components of currently regulated covered equipment.

Once the determination is finalized, assuming that such determination is appropriately limited per EPCA's requirements, DOE will likely have the requisite authority to regulate some subset of fans and blowers. However, merely because equipment defined as "fans and blowers" falls within DOE's potential purview does not grant DOE unlimited authority to promulgate *any and all* regulation for *any and all* fans and blowers; rather there are important limitations on DOE's authority. These limits are all the more important in a rulemaking that contemplates the additional regulation of currently regulated equipment. First, no provision of EPCA permits double regulation of equipment. All currently regulated products have undergone statutorily-mandated and extensive cost benefit analysis measuring the cost of compliance with the energy saved. 42 U.S.C. § 6295(o). In order for DOE to pass a regulation imposing additional costs on OEMs of HVACR equipment, DOE must consider the costs to the manufacturer and compare that to the potential energy saved. Because the purported energy saved is already accounted for in an existing metric and governed by an existing regulation, DOE may not justify additional regulation on currently regulated equipment. As discussed in more detail below, the DOE has not yet conducted manufacturer interviews to assess the economic impact of a fans and blowers regulation on HVACR OEMs. To the extent that DOE intends to impact manufacturers of HVACR equipment with the CIFB regulation, AHRI requests that DOE conduct such interviews and delineate covered equipment as a separate product class for to assess the costs and relative benefits of a

second layer of regulation on currently regulated HVACR equipment. These interviews are vital because the NODA contains no detailed information on what a regulatory scheme may look like, such that downstream users of fans are not in a position to fairly assess the impact of such rulemaking and these costs must be considered before DOE can promulgate any rule. It DOE's perennial request that the stakeholders bear the burden of cost and impact analysis, but the stakeholders are without vital details and therefore cannot invent data to provide to DOE. Thus, AHRI requests that DOE conduct a second NODA specifically addressing the impact on HVACR manufacturer who were excluded from DOE's initial analysis in this rulemaking.

Second, EPCA does not permit two standards to be applied to a single product. ("EPCA authorizes DOE to establish a performance standard or a single design standard. As such, a standard that establishes both a performance standard and a design requirement is beyond the scope of DOE's legal authority[.]" (74 Fed. Reg. 12,004; 12,009). This is evident in the fact that EPCA had to be amended to permit DOE to double regulate residential furnaces—i.e. the furnace metric (AFUE) and the fan metric (FER). 42 U.S.C. § 6295(o)(5) (2005). No such amendment was made for commercial products. "[W]here Congress includes particular language in one section of a statute but omits it in another section of the same Act, it is generally presumed that Congress acts intentionally and purposely in the disparate inclusion or exclusion." *Russello v. United States*, 464 U.S. 16, 23 (1983) (quoting *United States v. Wong Kim Bo*, 472 F.2d 720, 722 (5th Cir. 1972); see *United States v. Wooten*, 688 F.2d 941, 950 (4th Cir. 1982); (refusing to conclude that differing language in two subsections of the RICO statute has the same meaning in each). Therefore DOE has no authority to double regulate currently regulated commercial products.

Elemental to the impact analysis on downstream HVAC original equipment manufacturers (OEMs) is the misalignment of the timing of the implementation of efficiency standards of OEM-made products. Currently, as regulations change, product-redesign is necessary, and if the timing of the implementation of the fan regulation is not aligned with the timing of product regulation implementation, then redesign costs will be unnecessarily increased with no benefit to energy savings. Such products that use fans include, but not are limited to commercial furnaces; datacom cooling equipment; packaged terminal air-conditioners and heat pumps; single packaged vertical units; unit coolers; unitary large equipment; and variable refrigerant flow multi-split air conditioning and heat pump equipment. This would result in catastrophic complications with regard to the redesign cycle of products. The introduction of fan efficiency standards for fans in these products will lead to exorbitant design and testing costs for development without real improvement efficiency.

Double regulation is counter-productive. Manufacturers optimize the efficiency of their products by making trade-offs between various options taking into consideration the energy conservations standards for the complete product and the performance required by consumers. Among the trade-offs, manufacturers can use specific fans subject to component regulation, but can also choose different options not subject to such regulations such as improved thermodynamic cycles. Imposing specific

components through double regulation narrows the manufacturer's choices to optimize complete and complex products. It will lead to an overall higher cost without providing any energy saving. This undermines the very principle of the life cycle cost analysis of complete products that DOE performs to prove that an efficiency standard is technologically feasible and economically justified.

Fans that are a component in original equipment manufacturer products have not been accounted for the analysis

As this proposed regulation currently stands, OEMs will be responsible for meeting fan efficiencies for fans that are components in HVAC equipment; however, DOE has not accounted for this in its analysis. Unless DOE is able to account for the technological feasibility and economic justification involved with considering fans in these products within the scope of the regulation, such as cost, testing, implementation time frame, spare part availability and other issues, DOE must not regulate these fans.

The cost associated with a fan design to meet a new efficiency standard is not limited to the fan manufacturer. Original equipment manufacturers will also incur costs to redesign products to incorporate new fan designs. As an example, when an integral component to an HVAC product, such as a fan, is changed the OEM manufacturer is required to conduct performance and safety testing for most, if not all, models in the equipment line.

Regulating fans incorporated into OEM products will represent a significant burden to OEM's as well as an enforcement burden as additional testing at component level would be required. Adding such testing obligations will hamper effective compliance and enforcement. For example, to test two options the fans integrated in HVAC products: option one is to remove the fan (motor, impeller and housing/nozzles) from the product and test. In most cases, for HVAC equipment this is practically impossible because the housing/nozzle of the fans is an integral part of the end product. Only in some limited cases when the fan has a separate housing, which is not part of the casing of the unit, the housing/nozzles can be extracted with the rest of the fan. Options two would be to test the efficiency of the fans inside the unit. For HVAC equipment, this requires removal of all the other components inside the equipment to mitigate the effect of additional external static pressure. The integration of controls in these products compounds the complexity as the fans and compressors may be controlled by the same printed circuit board. It is not likely that the product would be able to function after removing these other components. This option would not provide an effective way to either establish fan performance ratings, or to conduct certification and enforcement testing.

Regulation of return fans (RAF) and exhaust fans (EAF) requires special consideration. These fans are often required to properly control building pressure. Poor building pressure control causes many problems including wasted energy. RAFs and EAFs must handle approximately the same air flow as the supply fan (SAF) but at a much lower external static pressure. Therefore RAFs and EAFs cannot be selected at

the same efficiency as the SAF unless they are much larger diameter, or a more efficient type, which conflicts with the space constraints in the air handler. At the end of the day, RAFs and EAFs consume all the available space in the air handler such that any fan change likely requires a larger cabinet.

Fans that are components in central system auxiliary equipment (heat rejection products such as condensers and cooling towers) should be excluded from the scope of this rulemaking

Based on a DOE-funded study, the contributions of fans in central system auxiliary equipment (cooling towers, air-cooled chillers, and a portion of the condenser fans) are relatively modest because (1) their power input per ton of cooling is very low and (2) central systems represent less than one third of commercial building floor space. Some of this equipment also has very low utilization values due to its operating characteristics – it is used at full power very infrequently.³ It is inappropriate to include fans in products that lack the potential for energy savings in the scope of this rulemaking. More relevant energy efficiency metrics, such as kW/ton, are widely used to express the energy use for much of this equipment. Additionally, there exists the potential for unintended increases in system energy use to accommodate a fan efficiency standard that drives fans to be larger and operate at slower speeds. The design challenges and costs associated with accommodating larger, slower, or different types of fans have not been included in DOE's analysis. The utility burdens of imposing separate fan efficiency regulations are likely extreme for these heat rejection devices.

Separate regulation of fans as a component will likely introduce utility issues for heat rejection equipment. Heat rejection products are frequently installed outdoors and subjected to severe service conditions including heat; humidity; solar impacts such as thermal expansion of fan and housing materials; and material degradation from UV radiation; wind impacts; and in some cases seismic impacts. These installation factors frequently require fans to be installed with a high tip clearance which reduces peak efficiency potential, but is necessary for proper and safe operation. Fans used for these applications are often custom designed for the application and are limited in peak efficiency in order to meet the physical demands for severe service application.

Heat rejection products are space constrained, especially for shipment. Accommodating larger, slower, compliant fans in the same equipment footprint will lead to a reduction in heat transfer surface and could increase actual net energy consumption, negating the intent of the rulemaking.

Heat rejection equipment faces similar fan-testing issues as most fan housings are built into the cabinet. Based on preliminary analysis, very few existing condenser fans comply with proposed efficiency levels (EL) 1 or EL2.

³ Energy Consumption Characteristics of Commercial Building HVAC Systems Volume II: Thermal Distribution, Auxiliary Equipment, and Ventilation, Arthur D. Little Reference No. 33745-00, October 1999, http://apps1.eere.energy.gov/buildings/publications/pdfs/commercial_initiative/hvac_volume2_final_report.pdf

AHRI urges DOE to exclude all fans used in all heat rejection products, including air-cooled products, evaporatively-cooled products, and hybrid products from the DOE fan efficiency rulemaking.

Other Scope Considerations

In addition to the issues described above, other products and applications present complications and are not a good fit, technically or legally, for fan regulation. Replacement fans for equipment manufactured before the effective date of fans regulation should be exempted because the life of a given product outlasts the life of the fan it is not practicable to discard a functioning product because a fan component breaks. Most replacement fan parts are sold by the parts department of HCAVR OEMs, and are generally not sold in a “testable configuration,” therefore the exemption of replacement fans and replacement fan parts will not likely create enforcement issues or loopholes.

As described above, it is vital to HVACR OEMs that residential furnace fans that are tested in accordance with Appendix AA to Subpart B of 10 CFR Part 430, and subject to the energy conservation standards in 10 CFR Part 430.32(y) are exempted from the regulation. Not only are the products specifically regulated, the components are already regulated and it would be wasteful and fruitless to require additional time or money spent on compliance for these components.

Because the Commercial and Industrial Fans and Blowers regulation is targeted at commercial and industrial products, AHRI suggests that components of single-phase air conditioners and heat pumps less than 65,000 Btu/h are specifically excluded from the scope of the CIFB regulation, because the application of these products is residential, not commercial or industrial.

Fans in non-stationary (mobile) equipment should be excluded from the CIFB rulemaking because mobile equipment does not rely on the “grid” for energy. Although many of these products are grid-enabled, i.e. have an ability to “plug-in” for backup power, they are largely run on fossil fuels from either the ship or truck onto which they are loaded. Because the contemplated test procedure focuses on electric fans connected to the grid, mobile equipment should be excluded.

AHRI is aware that DOE has a concern with an enforcement loophole for fans on the open market in a testable configuration that are allegedly intended for use in a regulated product. One way to resolve this loophole is to specify that fans in regulated applications are excluded from scope, and therefore fans for sale on the open market /distributed in commerce that do not have the characteristics of being embedded in regulated products are not exempt. In the alternative, AHRI is open to other considerations for closing the potential loophole that may involve labeling, but primary to AHRI’s concern is that regulated products are excluded from the CIFB regulation. Based on the CIFB framework document and the discussions from the working group,

AHRI recognizes that DOE is prepared to exempt certain other fans from the CIFB rulemaking, including safety fans. Safety fans come in different shapes and types, therefore some products will have an application-based characteristic, and AHRI suggests that the loophole for fans in regulated products be addressed in a similar manner as those for safety fans or other fans may not be regulated because they are beyond the scope of DOE's authority, such as fans for exercise equipment that do not consume "energy" as that term is defined by EPCA. 42 U.S.C. § 6291(3).

TEST PROCEDURE

Both of the industry standards being considered by DOE as a basis for the fan test procedure—AMCA 210 and AMCA 207—are currently in draft form and are still being revised. As has previously been discussed in several other rulemakings, the timing of finalizing a test procedure and standard levels is pivotal, particular in this case where the test procedure at issue is still in draft form. AHRI requests that DOE finalize its test procedure for any CIFB rulemaking before a NOPR introducing standards is published so that stakeholders have an opportunity to comment on the effect of the test procedure for the purposes of the standards rulemaking. Regardless of the test procedure eventually adopted by the DOE, the Process Rule and common sense requires that the test procedure is first finalized before a NOPR is published to allow all relevant parties to adequately assess the proposed standards as applied. 10 C.F.R. 430 Subpt. C App'x A (7).

REGULATORY REGIME – Fans Embedded in HVACR Equipment

Unregulated Fans

To the extent that DOE requires unregulated HVACR equipment to comply with the CIFB regulation, AHRI recommends that the DOE look to the motors regulation as a model for how fans should be regulated in otherwise non-covered equipment such as air handlers. The motors-model is apt because the improved efficiency of the motor is not reliant on the end-use of that component. From a policy perspective, it is AHRI's position that components should not be regulated because a product-level approach permits the highest level of innovation while saving the most energy; however, to the extent that DOE is insistent upon regulating components, it must do so in a way that is self-contained and does not de-facto regulate currently unregulated equipment that is outside of DOE's authority. It is AHRI's recommendation that fans in testable configuration are tested and certified to DOE, by the fan supplier, but that the product's application is not limited by the inclusion of a certified fan. There are technical and legal reasons for this suggestion. First, it is cost prohibitive to test each individual fan in each individual unit to ensure compliance. Second, DOE should be mindful of its statutory authority and not seek to regulate those products that are outside of its legal jurisdiction. EPCA is clear that DOE's authority to regulate commercial and industrial products is limited to those specific products listed at 42 U.S.C. § 6311. AHRI cautions the DOE that any fan regulation is limited to just that—fans. It is axiomatic that products

such as air handlers, cooling towers, and grain dryers are all products that use fans as a major component, but are industrial and commercial products that are outside of OE's regulatory authority because they have not been included in the list of items at 42 U.S.C. § 6311. To the extent that any fan regulation of the fan is dependent on the application of the product, or the application of the product is limited by a fan regulation, DOE has de facto regulated the finished product, rather than the component, contrary to its legal authority. Third, important questions regarding test procedure, certification and enforcement of fans in unregulated products have arisen, and the CIBF WG has been unable to resolve the following complexities: how will fans that are intrinsically embedded in HVACR products be certified and tested? If a HVACR OEM buys a certified fan from a fan supplier and that fan fails a test, is the OEM required to pull its finished products off the market? AHRI comments that to the extent that a regulated fan is used in a finished product, the supplier is the certifier of the fan, not the OEM who is the purchaser and user of the component.

Timing is also an important consideration. If the CIBF regulation affects the market availability of currently used fans in unregulated product applications, OEMs will be forced to buy and use different fans. This shift in a vital component will require redesign time and revalidation time for products that use those products. AHRI requests that to the extent that the CIBF regulation will affect the availability of fans on the market for HVACR OEMs, that a phase-in of the regulation is adopted. Once the regulation takes effect over fan suppliers, component fans that were once available, may no longer be, but OEMs will not have the information about market availability until well after the regulation has gone into effect. After assessing the availability on the market, OEMs may have to redesign equipment to accommodate for a different fan type or fan size. This redesign takes years and the information requires for this equipment assessment will not be available until after fan manufacturers are actually complying with the rule. Therefore, OEMs request that the regulation is phased-in to allow for redesign time of existing products that will be affected by the shift of fans available on the market. AHRI requests that OEMS are not required to exclusively use certified fans in unregulated equipment until five years after fan manufacturers begin certifying their fans.

Conclusion

AHRI appreciates the opportunity to provide these comments. If you have any questions regarding this submission, please do not hesitate to contact me.

Sincerely,



Laura Petrillo-Groh, PE

Engineering Manager, Regulatory Affairs
Direct: (703) 600-0335
Email: LPetrillo-Groh@ahrinet.org