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January 13, 2014

Ms. Brenda Edwards, EE–41

Office of Energy Efficiency and Renewable Energy

Energy Conservation Program for Consumer Products

U.S. Department of Energy

1000 Independence Avenue, SW.

Washington, DC 20585–0121

Docket Number: EERE–2010–BT–STD–0011

RIN: 1904–AC22

Dear Ms. Edwards:

This letter comprises the comments of the Pacific Gas and Electric Company (PG&E), Southern California Gas Company (SCGC), San Diego Gas and Electric (SDG&E), and Southern California Edison (SCE) in response to the Department of Energy (DOE) Notice of Proposed Rule (NOPR) for Residential Furnace Fans.

The signatories of this letter, collectively referred to herein as the California Investor Owned Utilities (CA IOUs), represent some of the largest utility companies in the Western United States, serving over 35 million customers. As energy companies, we understand the potential of appliance efficiency standards to cut costs and reduce consumption while maintaining or increasing consumer utility of the products. We have a responsibility to our customers to advocate for standards that accurately reflect the climate and conditions of our respective service areas, so as to maximize these positive effects.

We commend DOE in its efforts to establish energy conservation standards for residential furnace fans, and for the thorough analysis and incorporation of stakeholder input throughout the course of this rulemaking. While we are generally supportive of DOE’s proposal outlined in the NOPR, we offer a number of recommendations to help improve the outcome of this rulemaking, maximizing cost-effective energy savings for consumers without undue burden to industry. We strongly urge DOE to consider the following comments:

1. **We encourage DOE to establish an expedited rulemaking for furnace fan motors in blower-coil Central Air Conditioners and Heat Pumps (CAC/HP), single package CAC/HP, and hydronic air handlers in order to include 100% of the market of furnace fans to avoid the market impacts due to the prevalence of unregulated products competing with regulated products. The associated test procedure for those furnace fan motors should reference ASHRAE 37-2009.**

During the DOE public meeting for residential furnace fans on December 3, 2013, DOE did not justify their exclusion of furnace fans in blower-coil CAC/HP, single package CAC/HP, and hydronic air handlers. According to DOE’s market assessment, the proposed scope of coverage comprises of only 63% of space-conditioning products that contain furnace fans. In the NOPR, DOE acknowledged that statutory provisions direct DOE to “consider and prescribe energy conservation standards or energy use standards for electricity used for purposes of circulating air through duct work.” [[1]](#footnote-1) Given this statutory language, we believe it is within DOE’s authority to regulate these products. Additionally, we do not believe that the test conditions for measuring seasonal energy efficiency ratio (SEER) and heating seasonal performance (HSPF) adequately capture fan energy use for these products. We recognize that incorporation of these products would warrant development of an adequate test procedure to measure the energy performance of these products. We suggest that DOE reference ASHRAE 37-2009 as the basis of the test method. Ultimately, we believe that the savings opportunity associated with their inclusion (i.e., the remaining 37% percent of the market of furnace fans) warrants a separate rulemaking, and would help to avoid the market impacts due to the prevelance of unregulated products.

1. **We recommend that DOE require manufacturers to report power consumption values for heating, cooling, and constant-circulation modes (Eheat, Emax, Ecool and Ecirc), most of which are are used to generate the composite FER calculation, in addition to FER and Qmax.**

In addition to reporting FER, which is the basis for the performance standard, we recommend that DOE require manufacturers to report separate values (i.e. Eheat, Emax, and Ecool and Ecirc) for each mode of operation. This would greatly facilitate the development of more targeted energy efficiency incentive programs, and manufacturers already have to measure and perform these calculations for the composite FER. We recognize that Ecool is not specifically outlined within the equation, and that Emax is intended to represent either Ecool or Eheat , whichever mode of operation is most energy-intenstive. Nonetheless, having Ecool as an additional data point could be useful for the development of utility programs across the country.

Energy efficiency incentive programs typically require a rigorous level of review and justification for implementation. Gaps in performance data of commercially available equipment is one of the main limiting factors in program development, contributing to the lengthy and resource-intensive data collection and verification processes. In the case of this rulemaking, manufacturers will already be required to test their products in heating, cooling, and constant circulation modes. We believe that the minimal extra effort required by manufacturers to report these values would be outweighed by the opportunity for utilities and other public agencies to develop incentive programs using these performance metrics, which in turn would positively impact manufacturers of high performing products. For these reasons we strongly urge DOE to require manufacturers to report tested and calculated metrics that feed into a composite metric for the standard. These are identified below:

1. Eheat
2. Emax
3. Ecool
4. Ecirc
5. Qmax
6. **We are supportive of DOE’s proposed trial standard level (TSL 4) for the product classes in this rulemaking given the limited impact on furnace fan OEMs, and positive benefits to consumers, and substantial energy savings.**

We believe DOE should not select a TSL less stringent than TSL 4 because doing so would forgo cost-effective energy savings to consumers in the coming decades. As described in the Technical Support Document (TSD), the engineering analysis and resulting standards proposal are benchmarked against the use of constant-torque brushless permanent magnet (BPM) motors with multi-stage/modulating controls. Not only is the technology currently available in the market, it is a component purchased by furnace fan manufacturers and as such wouldn’t require furnace fan manufacturers to retool their facilities. DOE estimates that BPM motor market share will reach 35% by 2019 in the National Impact Analysis (Chapter 10) of the TSD.[[2]](#footnote-2) Thus we anticipate little negative impact to manufacturers from retooling and supply constraints. TSLs 3 and 2 present significant reductions in cost-effective energy savings when compared to TSL 4. We are supportive of DOE’s justification for TSL 4.

1. **THD and PF are important factors, and standards for these metrics should be incorporated into future rulemakings; however, we do not think their effects warrant adopting a less stringent TSL or delaying adoption of this rule.**

DOE should collect data and conduct analyses on total harmonic distortion (THD) and power factor (PF) for equipment with motors in order to develop standards for these metrics in future rulemakings. These factors influence the power quality of distribution systems by affecting power regulation and consumption, which create costs to the utilities and their customers. In the case of this rulemaking, the savings associated with electrically commutated motors (ECMs) outweigh the negative effect on power quality from lower PF and higher THD, and thus would not warrant selecting a lower TSL. Nonetheless, these are important metrics and standards for PF and THD should be considered in future rulemakings.

1. **DOE should select a lead time between the publication of the Final Rule and the compliance date of three years instead of five years for effective date since industry is already accustomed to manufacturing these fan motors, and they are commercially available.**

As stated in the TSD, constant-torque BPM motors with multi-stage/modulating controls is the design option associated with the proposed standard level. Constant-torque BPM motors are built by motor manufacturers and are widely available for purchase by HVAC manufacturers as a component. As such, we think there will be limited burden to manufacturers in terms of retooling and sourcing. Thus, we recommend that DOE consider a compliance date of three years from the Final Rule publication, so as not to delay the realization of significant energy savings and other societal benefits associated with this rulemaking.

1. **We recommend that DOE verify that the FER standard level equations reflect passing products associated with the assumed design option for Trial Standard Level 4 (i.e., constant-torque BPM motors with multi-stage/modulating controls).**

DOE should verify that the proposed standard level equations for TSL 4, which are intended to be benchmarked against the market of constant-torque BPM motors with multi-stage/modulating controls meeting the standard level, do in fact allow these products to pass. At the DOE public meeting, some manufacturers claimed that their products with BPM motors did not meet the FER threshold. We recommend that DOE conduct additional testing of furnace fans through independent laboratories with constant-torque BPM motors with multi-staging/ modulating controls to verify the accuracy of the performance levels, to ensure that the majority of products containing these motors and controls will meet the standard.

**8) We observed a potential error in the calculation of airflow in the final Test Procedure, and advise DOE to reconsider this calculation to correctly account for humidity.**

Calculation of airflow in the final rule:

Proposed Modification to calculation of Airflow:

The addition of the humidity ratio in pounds water vapor per pounds dry air (W) will increase the accuracy of the calculation of specific volume of test room air in cubic feet per pound of dry air to calculate airflow.

In conclusion, we would like to reiterate our support to DOE for establishing energy conservation standards for residential furnace fans. We thank DOE for the opportunity to be involved in this process and encourage DOE to carefully consider the recommendations outlined in this letter.

Sincerely,

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| Patrick Eilert  Pacific Gas and Electric Company | Lance DeLaura  Southern California Gas Company |
| Steve Galanter Manager, DSM Engineering  Southern California Edison | Chip Fox Residential Programs and Codes & Standards Manager  San Diego Gas and Electric Company |

1. 78 Fed. Reg. 64067 (Notice of Proposed Rulemaking, October 25, 2013) [↑](#footnote-ref-1)
2. Technical Support Document supporting Residential Furnace Fans NOPR (78 Fed. Reg. 64067, October 25, 2013) [↑](#footnote-ref-2)