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[6450-01-P]

DEPARTMENT OF ENERGY

10 CFR Part 431

[Docket No. EERE-2013–BT–STD–0006]

RIN: 1904-AC55

Energy Conservation Standards for Commercial and Industrial Fans and Blowers: Availability of Provisional Analysis Tools

AGENCY: Office of Energy Efficiency and Renewable Energy, Department of Energy.

ACTION: Notice of Data Availability.

SUMMARY: The U.S. Department of Energy (DOE) has completed a provisional analysis that estimates the potential economic impacts and energy savings that could result from promulgating a regulatory energy conservation standard for commercial and industrial fans and blowers. At this time, DOE is not proposing an energy conservation standard for commercial and industrial fans and blowers. DOE is publishing this analysis and the underlining assumptions and calculations, which may be used to ultimately support a proposed energy conservation standard, for stakeholder review. DOE

encourages stakeholders to provide any additional data or information that may improve the analysis. The analysis is now publically available at: http://www1.eere.energy.gov/buildings/appliance_standards/rulemaking.aspx/ruleid/25.

COMMENTS: DOE will accept comments, data, and information regarding this notice of data availability (NODA) no later than [**INSERT DATE 45 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER**]. Any comments submitted must identify the NODA for Energy Conservation Standards for commercial and industrial fans and blowers, and provide docket number EERE-2013–BT–STD–0006 and/or regulatory information number (RIN) number 1904-AC55. Comments may be submitted using any of the following methods:

1. Federal Rulemaking Portal: www.regulations.gov. Follow the instructions for submitting comments.
2. E-mail: CIFB2013STD0006@ee.doe.gov. Include the docket number and/or RIN in the subject line of the message.
3. Postal Mail: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, Mailstop EE-5B, 1000 Independence Avenue, SW., Washington, DC, 20585-0121. If possible, please submit all items on a compact disc (CD), in which case it is not necessary to include printed copies.
4. Hand Delivery/Courier: Ms. Brenda Edwards, U.S. Department of Energy, Building Technologies Office, 950 L'Enfant Plaza, SW., Suite 600, Washington,

DC, 20024. Telephone: (202) 586-2945. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

For detailed instructions on submitting comments and additional information on the rulemaking process, see section IV, "Public Participation."

DOCKET: The docket, which includes Federal Register notices, comments, and other supporting documents/materials, is available for review at www.regulations.gov. All documents in the docket are listed in the www.regulations.gov index. However, not all documents listed in the index may be publicly available, such as information that is exempt from public disclosure. A link to the docket webpage can be found at: http://www.regulations.gov/#!docketDetail;D=EERE-2013-BT-STD-0006. The www.regulations.gov webpage contains instructions on how to access all documents in the docket, including public comments. See section I**Error! Reference source not found.**, "Public Participation," for further information on how to submit comments through www.regulations.gov.

FOR FURTHER INFORMATION CONTACT: Mr. Ron Majette, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies, EE-2J, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-7935. E-mail: CIFansBlowers@ee.doe.gov

Mr. Peter Cochran, U.S. Department of Energy, Office of the General Counsel, GC-33, 1000 Independence Avenue, SW., Washington, DC 20585-0121. Telephone: (202) 586-9496. E-mail: peter.cochran@hq.doe.gov.

For further information on how to submit a comment and review other public comments and the docket, contact Ms. Brenda Edwards at (202) 586-2945 or by email: Brenda.Edwards@ee.doe.gov.

SUPPLEMENTARY INFORMATION:

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I. History of Energy Conservation Standards Rulemaking for Commercial and Industrial Fans and Blowers

Title III of the Energy Policy and Conservation Act of 1975 (42 U.S.C.6291, et seq; "EPCA"), Pub. L. 94-163, sets forth a variety of provisions designed to improve energy efficiency.[1] Part C of title III establishes the "Energy Conservation Program for Certain Industrial Equipment."[2]

EPCA specifies a list of equipment that constitutes covered commercial and industrial equipment. (42 U.S.C. 6311(1)(A)-(L)) The list includes 11 types of equipment and a catch-all provision for certain other types of industrial equipment classified as covered the Secretary of Energy (Secretary). EPCA also specifies the types of equipment that can be classified as covered in addition to the equipment enumerated in 42 U.S.C. 6311(1). This equipment includes fans and blowers. (42 U.S.C. 6311(2)(B))

DOE initiated the current rulemaking by publishing a proposed coverage determination for commercial and industrial fans and blowers. 76 FR 37678 (June 28, 2011). This was followed by the publication of a Notice of Public Meeting and Availability of the Framework Document for commercial and industrial fans and blowers in the Federal Register on February 1, 2013. 78 FR 7306. DOE held a public meeting on February 21, 2013 at which it described the various analyses DOE would conduct as part of the rulemaking, such as the engineering analysis, the manufacturer impact analysis (MIA), the life-cycle cost (LCC) and payback period (PBP) analyses, and the national

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[1] All references to EPCA in this document refer to the statute as amended through the American Manufacturing Technical Corrections Act (AEMTCA), Public Law 112-210 (Dec. 18, 2012).
[2] For editorial reasons, upon codification in the U.S. Code, Part C was re-designated Part A-1.

impact analysis (NIA). DOE also solicited feedback from stakeholders. Representatives for manufacturers, trade associations, environmental and energy efficiency advocates, and other interested parties attended the meeting.[3] Comments received since publication of the Framework Document have helped DOE in the development of the initial analyses presented in this NODA.

II. Current Status

The analyses described in this NODA were developed to support a potential energy conservation standard for commercial and industrial fans and blowers. Using these analyses, DOE intends to move forward with its traditional regulatory rulemaking activities and develop a notice of proposed rulemaking (NOPR) for an energy conservation standard for commercial and industrial fans and blowers. The NOPR will include a Technical Support Document (TSD), which will contain a detailed written account of the analyses performed in support of the NOPR, which will include updates to the analyses made available in this NODA.

In today’s NODA, DOE is not proposing any energy conservation standards for commercial and industrial fans and blowers. DOE may revise the analysis presented in today's NODA based on any new or updated information or data it obtains between now and the publication of any future NOPR proposing energy conservation standards for

[3] Supporting documents from this public meeting, including presentation slides and meeting transcript, are available at: http://www.regulations.gov/#!docketDetail;D=EERE-2013-BT-STD-0006

commercial and industrial fans and blowers. DOE encourages stakeholders to provide any additional data or information that may improve the analysis.

III. Summary of the Analyses Performed by DOE

As DOE has proposed to define blowers as a type of centrifugal fan,[4] the ensuing discussion uses fans to refer to both fans and blowers. DOE developed a fan energy performance metric and conducted provisional analyses of commercial and industrial fans in the following areas: (1) engineering; (2) manufacturer impacts; (3) LCC and PBP; and (4) national impacts. The fan energy perfomrance metric and the tools used in preparing these analyses and their respective results are available at: http://www.regulations.gov/#!docketDetail;D=EERE-2013-BT-STD-0006. Each individual spreadsheet includes an introduction that provides an overview of the contents of the spreadsheet. These spreadsheets present the various inputs and outputs to the analysis and, where necessary, instructions. Brief descriptions of the fan energy performance metric, of the provisional analyses, and of the supporting spreadsheet tools are provided below. If DOE proposes an energy conservation standard for commercial and industrial fans in a future NOPR, then DOE will publish a TSD, which will contain a detailed written account of the analyses performed in support of the NOPR, which will include updates to the analyses made available in this NODA.

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[4] 76 FR 37678, 37679 (June 28, 2011).

A. Energy Metric

Commercial and industrial fan energy performance is a critical input in the provisional analyses discussed in today's notice. For the purpose of this NODA, DOE developed a fan energy metric, the fan energy index (FEI), to represent fan performance and characterize the different efficiency levels analyzed. FEI is defined as the fan energy rating (FER_{STD}) of a fan that exactly meets the efficiency level being analyzed, divided by the fan energy rating (FER) of a given fan model. FER is defined as the weighted average electric input power of a fan over a specified load profile, in horsepower, and measured at a given speed. An FEI value less than 1.0 would indicate that the fan does not meet the efficiency level being analyzed, while a value greater than 1.0 would indicate that the fan is more efficient than the efficiency level being analyzed. The FEI is calculated as:

$$\boldsymbol{FEI = \frac{FER_{STD}}{FER}}$$

For this analysis, DOE used the following load profile: 100 percent of the flow at best efficiency point (BEP), 110 percent of the flow at BEP, and 115 percent of the flow at BEP. [5] DOE calculated the FER of a given fan model, using the maximum of the following speeds included in the operating range of a given fan model: 850 RPM, 1150

[5] The efficiency of a fan is defined as the ratio of air output power to mechanical input power. Fan efficiency varies depending on the output flow and pressure. The best efficiency point or BEP represents the flow and pressure values at which the fan efficiency is maximized when operating at a given speed.

RPM, 1750 RPM, and 3550 RPM.[6] In order to calculate the FER of a fan, DOE assumed default motor full load and part load efficiency values, as well as default belt losses[7] (where appropriate):

$$FER = \sum_i \omega_i \left(\frac{P_{out,i}}{\eta_{fan,i} * \eta_{T,i}} + L_{M,i} \right)$$

Where:

ω_i = weighting at each load point (equal weighting);

$P_{out,i}$ = the output air power of the fan at load point i;

$\eta_{fan,i}$ = the total fan efficiency at each load point i;

$\eta_{T,i}$ = the default transmission losses at each load point i;

$L_{M,i}$ = the default motor losses at each load point i; and

i = the flow points of the load profile (100, 110, and 115 percent of the flow at BEP at the considered speed: 850 RPM, 1150 RPM, 1750 RPM, or 3550 RPM)

For the FER_{STD} calculation of a fan that exactly meets the efficiency level being analyzed, DOE used the same FER equation, except it used a default fan total efficiency

[6] Initially, DOE considered calculating the FEI at the maximum recommended speed of the fan. However, because the calculation of the FER requires fan performance to be combined with default motor performance data, which depend on the motor's synchronous speed (or pole configuration), DOE calculated the FER of a given fan at the speed corresponding to the highest electric motor synchronous speed configuration that exists within the fan's operational speed range. DOE subtracted 50 RPM from the synchronous speeds in order to reflect the motor's slip.

[7] These default losses assumptions are presented in the LCC spreadsheet, in the "Default Losses" worksheet.

unique to each fan model, expressed as a function of each fan model's flow and total pressure at BEP,[8] as well as a specified C-Value[9]:

$$\eta_{fans,STD} = [C + 10.2205 * \ln(Q) + 2.8085 * \ln(P) - 0.3932 * \ln(Q)^2 + 0.8530 * \ln(Q) * \ln(P) - 2.1379 * \ln(P)^2]/100$$

Where:

Q = flow at BEP adjusted to 85 percent maximum recommended speed[10] in cubic feet per minute at 60Hz,

P = total pressure at BEP adjusted to 85 percent maximum recommended speed in inches of water gauge at 60 Hz, and

C = an intercept that is set for the surface, which is set based on the fan group of the applicable fan model.

[8] Fan efficiency is defined as the ratio of air output power to mechanical input power. Fan efficiency varies depending on the output flow and pressure. The best efficiency point or BEP represents the flow and pressure values at which the fan efficiency is maximized when operating a given speed.

[9] A C-Value is the translational component of a two-variable, second degree polynomial equation that describes fan efficiency as a function of flow and total pressure at BEP. Defining the proper C-Value for the two-variable polynomial of second degree order allows the FEI to be set at a level that removes a percentage of the lowest performing models from the market, and does so equivalently across the full range of operating flow and pressures of fan considered in this analysis.

[10] In order to simplify the calculation process, and still account for the different speeds at which the FER of a fan can be calculated (850, 1550, 1750 and 3550 RPM), DOE proposes to use a single equation for calculating the fan total efficiency of a minimally compliant fan at BEP as a function of flow and total pressure and to allow manufacturers to use the fan laws to adjust the total pressure and flow at BEP to a speed equal to 85 percent of the fan's maximum recommended speed.

DOE considered different C-Values to establish efficiency levels that target the removal of 5 to 70 percent of existing fan models for different equipment groups. For reference, the two-variable polynomial of second degree equation, the percent of models removed from the market and the associated C-Values are presented in the engineering spreadsheet. [11] A detailed explanation of how the FEI is calculated is also available in the "FEI Calculator" worksheet of the engineering spreadsheet.

In October 2014 several representatives of fan manufacturers and energy efficiency advocates[12] presented an energy metric approach called "Performance Based Efficiency Requirement" (PBER) to DOE. [13] The PBER approach sets efficiency targets expressed as a function of pressure and flow. The combination of the PBER and default values for motors and transmissions allows the calculation of the electric input power of a fan that exactly meets the efficient target set by the PBER, similar to the calculation of the FER_{STD}. The PBER equation is as follows:

$$\eta_{fan,total} \geq \alpha \times \frac{Q}{(Q+\beta)} \times \frac{P}{(P+\gamma)}$$

Where:

[11] A detailed explanation of how the two-variable, second degree polynomial equation was obtained is available in the "Database Methodology" worksheet. The C-values associated with different market cut offs are presented in the "FEI Calculator Assumptions" worksheet.

[12] The Air Movement and Control Association (AMCA), New York Blower Company, Natural Resources Defence Council (NRDC), the Appliance Standards Awareness Project (ASAP), and the Northwest Energy Efficiency Alliance (NEEA).

[13] Supporting documents from this meeting, including presentation slides are available at: http://www.regulations.gov/#!documentDetail;D=EERE-2013-BT-STD-0006-0029

Q = flow ;

P = pressure; and

α, β, γ = constants

AMCA presented two possible approaches: (1) use of the PBER equation to establish a minimum efficiency requirement at the BEP pressure and flow; (2) use of the PBER equation to establish minimum efficiency requirements across all operating points (pressure and flow points) specified by the manufacturer. Both the FEI approach presented by DOE and the PBER approaches provide an equation to determine the fan efficiency as a function of flow and pressure, with lower efficiency requirements at lower flows and pressures.

There are two main differences between the PBER and FEI approaches. First, the two approaches use different forms for the fan efficiency equation. Second, unlike the FEI approach, the PBER approach does not prescribe particular operating conditions at which the PBER is to be evaluated in order to calculate the energy metric. In the FEI approach, DOE calculates the FEI at the maximum of the following speeds included in the operating range of a given fan model: 850 RPM, 1150 RPM, 1750 RPM, and 3550 RPM. For example, if a given fan model can operate between 1000 and 2500 RPM, its FEI would be calculated at 1750 RPM. The input power is then calculated for three specific load points: at BEP flow, 110% of BEP flow, and 115% of BEP flow. The

PBER approach, on the other hand, does not prescribe particular operating conditions. In the case where the PBER is used at BEP, the maximum operating speed of the fan (initially established by the fan's structural rigidity) would be reduced (if necessary) to a speed for which the BEP efficiency, flow, and pressure meet the PBER equation. And, in the case where the PBER is required to be met at all operating points, the operating range of a given fan (characterized by pressure and flow points) would be reduced (if necessary) to ensure that all operating points meet the PBER equation.

In contrast with DOE's FEI approach, DOE understands that neither of the two PBER approaches are likely to require redesign of a fan model that does not meet the PBER. Instead, the operating range of the fan model would be restricted to meet the PBER requirements.

To compare the form of the equation used to express fan efficiency as a function of flow and pressure, DOE conducted a comparative investigation of the impacts of setting a fan efficiency standard using either the PBER equation or the two variable polynomial equation to express fan efficiency. DOE found that using the two variable polynomial equation to eliminate a given percentage of models leads to a distribution of eliminated models that is uniform across all ranges of air flow and pressure while using the PBER equation did not.

B. Engineering Analysis

The engineering analysis establishes the relationship between the manufacturer production cost (MPC) and efficiency levels of commercial and industrial fans. This relationship serves as the basis for cost-benefit calculations performed in the other analysis tools for individual consumers, manufacturers, and the Nation.

As a first step in the engineering analysis, DOE established 7 provisional fan groups based on characteristics such as the direction of airflow through the fan andthe presence of a housing. For each of these groupings, DOE identified existing technology options that could affect the efficiency of commercial industrial fans and conducted a screening analysis to review each technology option and decide whether it: (1) was technologically feasible; (2) was practicable to manufacture, install, and service; (3) would adversely affect product utility or product availability; or (4) would have adverse impacts on health and safety. The technology options remaining after the screening analysis consisted of a variety of impeller types and guide vanes. DOE used these technology options to divide the fan groups into subgroups and conducted a market-based assessment of the prevalence of each subgroup at the different efficiency levels analyzed. Six efficiency levels were analyzed, targeting the removal of 0-70% of fan models. The baseline level, removing no fan models, is referred to as FEI 0, and the higher efficiency levels are FEI 5, 10, 15, 20, 50, and 70. These levels were set independently for each fan group.

DOE estimated the MPCs for each technology option for each fan group as a function of blade or impeller diameter, independent of efficiency level. The MPCs were derived from product teardowns and publically-available product literature and informed by interviews with manufacturers. DOE then calculated MPCs for each fan group at each efficiency level analyzed by weighting the MPCs of each technology option within a group by its prevalence at the efficiency level being analyzed.

DOE's preliminary MPC estimates indicate that the changes in MPC as efficiency level increases are small or, in some fan groups, zero. However, DOE is aware that aerodynamic redesigns are a primary method by which manufacturers improve fan performance. These redesigns require manufacturers to make large upfront investments for R&D, testing and prototyping, and purchasing new production equipment. DOE's preliminary findings indicate that the magnitude of these upfront costs are more significant than the difference in MPC of a fan redesigned for efficiency compared to its precursor. For this NODA, DOE included a conversion cost markup in its calculation of the manufacturer selling price (MSP) to account for these conversion costs. These markups and associated MSPs were developed and applied in downstream analyses. They are discussed in section C and presented in the conversion cost spreadsheet.

The main outputs of the commercial and industrial fans engineering analysis are the MPCs of each fan group (including material, labor, and overhead) and technology option distributions at each efficiency level analyzed.

C. Manufacturer Impact Analysis

For the MIA, DOE used the Government Regulatory Impact Model (GRIM) to assess the economic impact of potential standards on commercial and industrial fan manufacturers. DOE developed key industry average financial parameters for the GRIM using publicly available data from corporate annual reports along with information received through confidential interviews with manufacturers. These values include average industry tax rate; working capital rate; net property, plant, and equipment rate; selling, general, and administrative expense rate; research and development expense rate; depreciation rate; capital expenditure rate; and manufacturer discount rate. Additionally, DOE calculated total industry capital and product conversion costs associated with meeting all analyzed efficiency levels. DOE first estimated the average industry capital and product conversion costs associated with redesigning a single fan model to meet a specific efficiency level using a proprietary cost model and feedback from manufacturers during interviews. DOE estimated these costs for all fan subgroups. DOE then multiplied the per model conversion costs by the number of models that would be required to be redesigned at each potential standard level to arrive at the total industry conversion costs.

The GRIM uses these estimated values in conjunction with inputs from other analyses including the MPCs from the engineering analysis and LCC analysis, the annual shipments by fan group from the NIA, and the manufacturer markups for the cost recovery markup scenario from the LCC analysis to model industry annual cash flows from the base year through the end of the analysis period. The primary quantitative output of this model is the industry net present value (INPV), which DOE calculates as the sum of industry annual cash flows, discounted to the present day using the industry specific weighted average cost of capital, or manufacturer discount rate.

Standards can affect INPV in several ways including requiring upfront investments in manufacturing capital as well as research and development expenses, which increase the cost of production and potentially alter manufacturer markups. Under potential standards for commercial and industrial fans, DOE expects that manufacturers may lose a portion of INPV due to standards. The potential loss in INPV due to standards is calculated as the difference between INPV in the base-case (absent new energy conservation standards) and the INPV in the standards case (with new energy conservation standards in effect). DOE examines a range of possible impacts on industry by modeling various pricing strategies commercial and industrial fan manufacturers may adopt following the adoption of new energy conservations standards for commercial and industrial fans.

In addition to INPV, the MIA also calculates the manufacturer markups, which are applied to the MPCs, derived in the engineering analysis and the LCC analysis, to arrive at the manufacturer selling price. For efficiency levels that require manufacturers to redesign models that do not meet the potential standards, DOE calibrated the manufacturer markups to allow manufacturers to recover their upfront conversion costs by amortizing those investment over the units shipped that were redesigned to meet the efficiency level being analyzed throughout the analysis period.

D. Life-Cycle Cost and Payback Period Analyses

The LCC and PBP analyses determine the economic impact of potential standards on individual consumers, in the compliance year. The LCC is the total cost of purchasing, installing and operating a commercial or industrial fan over the course of its lifetime.

DOE determines LCCs by considering: (1) total installed cost to the consumer (which consists of manufacturer selling price, distribution channel markups, and sales taxes); (2) the range of annual energy consumption of commercial and industrial fans as they are used in the field; (3) the operating cost of commercial and industrial fans (e.g., energy cost); (4) equipment lifetime; and (5) a discount rate that reflects the real consumer cost of capital and puts the LCC in present-value terms. The PBP represents the number of years needed to recover the increase in purchase price of higher-efficiency commercial and industrial fans through savings in the operating cost. PBP is calculated by dividing the incremental increase in installed cost of the higher efficiency product, compared to the baseline product, by the annual savings in operating costs.

For each standards case corresponding to each efficiency level, DOE measures the change in LCC relative to the base case. The base case is characterized by the distribution of equipment efficiencies in the absence of new standards (*i.e.*, what consumers would have purchased in the compliance year in the absence of new standards. In the standards cases, equipment with efficiency below the standard levels "roll-up" to the standard level in the compliance year.

For commercial and industrial fans, DOE established statistical distributions of consumers of each fan group across sectors (industry or commercial) and applications (clean air ventilation, exhaust, combustion, drying, process air, process heating/cooling, and others), which in turn determined the fan's operating conditions (flow and pressure points and operating speed), annual operating hours, and fan load. The load is defined as the fan's air flow divided by the flow at BEP when operating at a given speed.[14] Recognizing that several inputs to the determination of consumer LCC and PBP are either variable or uncertain (e.g., annual energy consumption, lifetime, discount rate), DOE conducts the LCC and PBP analysis by modeling both the uncertainty and variability in the inputs using Monte Carlo simulations and probability distributions.

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[14] The efficiency of a fan is defined as the ratio of air output power to mechanical input power. Fan efficiency varies depending on the output flow and pressure. The BEP represents the flow and pressure values at which the fan efficiency is maximized when operating a given speed.

The primary outputs of the LCC and PBP analyses are: (1) average LCC in each standards case; (2) average PBPs; (3) average LCC savings at each standards case relative to the base case; and (4) the percentage of consumers that experience a net benefit, have no impact, or have a net cost for each fan group and efficiency level. The average annual energy consumption derived in the LCC analysis is used as an input in the NIA.

E. National Impact Analysis

The NIA estimates the national energy savings (NES) and the net present value (NPV) of total consumer costs and savings expected to result from potential new standards at each EL. DOE calculated NES and NPV for each EL as the difference between a base case forecast (without new standards) and the standards case forecast (with standards). Cumulative energy savings are the sum of the annual NES determined for the lifetime of a commercial or industrial fan shipped during a 30 year analysis period assumed to start in 2018. Energy savings include the full-fuel cycle energy savings (i.e., the energy needed to extract, process, and deliver primary fuel sources such as coal and natural gas, and the conversion and distribution losses of generating electricity from those fuel sources). The NPV is the sum over time of the discounted net savings each year, which consists of the difference between total energy cost savings and increases in total equipment costs. NPV results are reported for discount rates of 3 and 7 percent.

To calculate the NES and NPV, DOE projected future shipments[15] and efficiency distributions (for each EL) for each potential commercial and industrial fan group. DOE recognizes the uncertainty in projecting shipments and electricity prices; as a result the NIA includes several different scenarios for each. Other inputs to the NIA include the estimated commercial and industrial fan lifetime used in the LCC analysis, manufacturer selling prices from the MIA, average annual energy consumption, and efficiency distributions from the LCC.

The purpose of this NODA is to notify industry, manufacturers, consumer groups, efficiency advocates, government agencies, and other stakeholders of the publication of the initial analysis of potential energy conservation standards for commercial and industrial fans. Stakeholders should contact DOE for any additional information pertaining to the analyses performed for this NODA.

IV. Public Participation

A. Submission of Comments

DOE welcomes comments on all aspects of this NODA and on other issues relevant to potential test procedures and energy conservation standards for commercial and industrial fans and blowers, but no later than the date provided in the **DATES** section at the beginning of this notice. Interested parties may submit comments, data, and other

[15] The "shipments" worksheet of the NIA spreadsheet presents the scope of the analysis and the total shipments value in units for the fans in scope.

information using any of the methods described in the **COMMENTS** section at the beginning of this notice.

Submitting comments via www.regulations.gov. The www.regulations.gov webpage will require you to provide your name and contact information. Your contact information will be viewable to DOE Building Technologies staff only. Your contact information will not be publicly viewable except for your first and last names, organization name (if any), and submitter representative name (if any). If your comment is not processed properly because of technical difficulties, DOE will use this information to contact you. If DOE cannot read your comment due to technical difficulties and cannot contact you for clarification, DOE may not be able to consider your comment.

However, your contact information will be publicly viewable if you include it in the comment itself or in any documents attached to your comment. Any information that you do not want to be publicly viewable should not be included in your comment, nor in any document attached to your comment. Otherwise, persons viewing comments will see only first and last names, organization names, correspondence containing comments, and any documents submitted with the comments.

Do not submit to www.regulations.gov information for which disclosure is restricted by statute, such as trade secrets and commercial or financial information (hereinafter referred to as Confidential Business Information (CBI)). Comments submitted through www.regulations.gov cannot be claimed as CBI. Comments received through the website will waive any CBI claims for the information submitted. For information on submitting CBI, see the Confidential Business Information section below.

DOE processes submissions made through www.regulations.gov before posting. Normally, comments will be posted within a few days of being submitted. However, if large volumes of comments are being processed simultaneously, your comment may not be viewable for up to several weeks. Please keep the comment tracking number that www.regulations.gov provides after you have successfully uploaded your comment.

Submitting comments via email, hand delivery/courier, or mail. Comments and documents submitted via email, hand delivery, or mail also will be posted to www.regulations.gov. If you do not want your personal contact information to be publicly viewable, do not include it in your comment or any accompanying documents. Instead, provide your contact information in a cover letter. Include your first and last names, email address, telephone number, and optional mailing address. The cover letter will not be publicly viewable as long as it does not include any comments

Include contact information each time you submit comments, data, documents, and other information to DOE. If you submit via mail or hand delivery/courier, please provide all items on a CD, if feasible, in which case it is not necessary to submit printed copies. No facsimiles (faxes) will be accepted.

Comments, data, and other information submitted to DOE electronically should be provided in PDF (preferred), Microsoft Word or Excel, WordPerfect, or text (ASCII) file format. Provide documents that are not secured, that are written in English, and that are free of any defects or viruses. Documents should not contain special characters or any form of encryption and, if possible, they should carry the electronic signature of the author.

Campaign form letters. Please submit campaign form letters by the originating organization in batches of between 50 to 500 form letters per PDF or as one form letter with a list of supporters' names compiled into one or more PDFs. This reduces comment processing and posting time.

Confidential Business Information. Pursuant to 10 CFR 1004.11, any person submitting information that he or she believes to be confidential and exempt by law from public disclosure should submit via email, postal mail, or hand delivery/courier two well-marked copies: one copy of the document marked "confidential" including all the information believed to be confidential, and one copy of the document marked "non-confidential" with the information believed to be confidential deleted. Submit these documents via email or on a CD, if feasible. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

Factors of interest to DOE when evaluating requests to treat submitted information as confidential include: (1) A description of the items; (2) whether and why such items are customarily treated as confidential within the industry; (3) whether the information is generally known or available from other sources; (4) whether the information has previously been made available to others without obligation concerning its confidentiality; (5) an explanation of the competitive injury to the submitting person which would result from public disclosure; (6) when such information might lose its confidential character due to the passage of time; and (7) why disclosure of the information would be contrary to the public interest.

It is DOE's policy that all comments may be included in the public docket, without change and as received, including any personal information provided in the comments (except information deemed to be exempt from public disclosure).

V. Issues on Which Doe Seeks Public Comment

DOE is interested in receiving comment on all aspects of this analysis. DOE is particularly interested in receiving comments and views of interested parties concerning the following issues:

1. DOE generated formulae for manufacturer production cost (MPC) as a function of subgroup and diameter (which DOE believes can be used as a general proxy for airflow). DOE requests comments on whether there are any other parameters, such as pressure, construction class, rating RPM,

etc., which DOE should use as inputs in calculating the MPC, in addition to or instead of diameter. If so, DOE encourages stakeholders to submit data illustrating the relationship of MPC with these parameters.

2. DOE assumed that the cost to redesign multiple fan models was equal to the number of models times an estimated cost to redesign one fan model. DOE recognizes that manufacturers may be able to share resources between redesigns in the same company, or in the same product line (i.e. different diameters). If this is current practice or possible, DOE requests comments on the scenarios in which resource sharing can occur and to what extent.

3. DOE estimated the cost to redesign a fan as a function of the subgroup of fan resulting from the redesign. There may be other parameters, such as the fan's diameter, RPM properties, FEI or efficiency, construction class, or the properties of the fan before it was redesigned, that DOE should take into consideration. If so, DOE requests information on which parameters should be taken into consideration and how each affects the cost to redesign a fan.

4. DOE used a redesign time of 6 months per fan model in its calculation of redesign costs. DOE requests comment on this assumption and whether this time period is sufficient for prototyping and revising marketing materials.

5. DOE did not explicitly consider fan noise performance in its analyses. DOE requests comment on whether noise considerations provide barriers to increased fan efficiency.

6. DOE requests information on the number of models and number of shipments of forward curved fans.

7. DOE requests comment on its use of a database of over 2500 fan models as approximately representing all fan models in the scope of this rulemaking currently available in the United States today.

8. DOE used current subgroup distributions of fan models within each fan group at each efficiency level analyzed to weight the total conversion cost per model regardless of the efficiency level or the subclass of the fan model before redesign. In other words, DOE assumed that fan model impeller distributions at a given efficiency level would not change as a result of standards. DOE requests comment on this assumption.

9. DOE requests comment on the inclusion of tubeaxial and vaneaxial fans into a single fan group separate from centrifugal inline and mixed flow fans. DOE requests information regarding whether these two groups of fans provide distinct utility that justifies the separation and resulting different FEIs for the same rated flow and pressure.

10. DOE requests comment on the cost drivers included in the engineering analysis (e.g. aerodynamic redesign, impeller type, and presence of guidevanes).

11. DOE requests information on the design and manufacturing differences between commercial and industrial fans.

12. DOE requests information on how forward curved impeller manufacturing differs from the manufacturing of other impeller types. DOE also requests comment on how other fan components differ between forward curved models and non-forward curved models, such as component materials and material gauges.

13. DOE requests comment on its MPC calculation as a function of diameter equation and multipliers.

14. DOE did not consider variable pitch blades in its analysis. DOE requests information on the effect variable-pitch blades have on efficiency in the field, the mechanism of that effect, and how testing can be conducted to capture any benefit from variable-pitch blades.

15. DOE requests comment on any of the industry financials (working capital rate; net property, plant, and equipment rate; selling, general, and administrative expense rate; research and development rate; depreciation rate; capital expenditure rate, and tax rate) used in the GRIM (located in the “Financials” tab of the GRIM spreadsheet).

16. DOE requests comment on the use of 11.4 percent as the real industry manufacturer discount rate (also referred to as the weighted average cost of capital) for commercial and industrial fan manufacturers (located in the "Financials" tab of the GRIM spreadsheet).

17. DOE requests comment on the use of 1.45 as a manufacturer markup (this corresponds to a 31 percent gross margin) for all fan groups and efficiency levels in the base case (located in the "Markups" tab of the GRIM spreadsheet). DOE requests information regarding manufacturer markups and whether they vary by fan efficiency, fan group, fan subgroup, or any other attribute.

18. DOE requests comment on both its methodology of calculating total industry capital and product conversion costs and the specific industry average per model capital and product conversion cost estimates for each fan subgroup (located in the Conversion Cost spreadsheet).

19. DOE assumed that every fan model that did not meet a candidate standard level being analyzed would be redesigned to meet that level. DOE requests comment on this assumption and on what portion of fan models that do not meet a standard level would be redesigned to meet the level as opposed to being eliminated from the American market.

20. DOE seeks inputs on its characterization of market channels for the considered fan groups, particularly whether the channels include all intermediate steps, and estimated market shares of each channel.

21. DOE seeks inputs and comments on the estimates of flow operating points used in the energy use analysis (expressed as a function of the flow at best efficiency point).

22. DOE seeks inputs and comments on the estimates of annual operating hours by sector and application and on the estimated distributions of fans across sectors and applications.

23. DOE seeks comments on its proposal to use a constant price trend for projecting future commercial and industrial fan prices.

24. DOE requests comment on whether any of the efficiency levels considered in this analysis might lead to an increase in installation, repair, and

maintenance costs, and if so, data regarding the magnitude of the increased cost for each relevant efficiency level.

25. DOE seeks comments on the proposal to use a compliance year of three years after the publication of the final rule.

26. DOE seeks comments on the use of constant efficiency trends in the base-case and in the standards-cases.

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