Proposed Rules

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This section of the FEDERAL REGISTER contains notices to the public of the proposed issuance of rules and regulations. The purpose of these notices is to give interested persons an opportunity to participate in the rule making prior to the adoption of the final rules.

DEPARTMENT OF ENERGY

10 CFR Parts 429 and 430

[EERE–2024–BT–TP–0011]

Energy Conservation Program: Notification of Petition for Rulemaking

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

ACTION: Notification of petition for rulemaking; request for comment.

SUMMARY: On September 11, 2024, the Department of Energy (''DOE'') received a petition from Dyson Inc. for DOE to revoke the procedures by which manufacturers must measure and represent to consumers the effective room size coverage and integrated energy factor of their air cleaner products. If the provisions are not revoked, Dyson Inc. requested that DOE stay enforcement of these provisions pending a new notice and comment period regarding potential amendments to these provisions. DOE is not revoking or staying enforcement of the test procedure and representations provisions raised in Dyson's petition at this time. Through this notification, DOE is seeking views on whether it should grant the petition and undertake a rulemaking to consider the proposal contained in the petition, as well as any data or information that could be used in DOE's determination whether to grant the petition.

DATES: Written comments and information are requested and will be accepted on or before May 30, 2025.

ADDRESSES: Interested persons are encouraged to submit comments using the Federal eRulemaking Portal at *www.regulations.gov* under docket number EERE–2024–BT–TP–0011. Follow the instructions for submitting comments. Alternatively, interested persons may submit comments, identified by docket number EERE–2024–BT–TP–0011, by any of the following methods:

Email: AirCleanersPetition2024TP0011@ee.doe.gov. Include the docket number and/or RIN in the subject line of the message.

Postal Mail: Appliance and Equipment Standards Program, 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.

Hand Delivery/Courier: Appliance and Equipment Standards Program, U.S. Department of Energy, Building Technologies Office, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (202) 287–1445. If possible, please submit all items on a CD, in which case it is not necessary to include printed copies.

No telefacsimiles (''faxes'') will be accepted. For detailed instructions on submitting comments and additional information on this process, see the **SUPPLEMENTARY INFORMATION** section of this document.

Docket: The docket for this activity, which includes **Federal Register** notices, public meeting attendee lists and transcripts (if a public meeting is held), 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.

The docket web page can be found at *www.regulations.gov/docket/EERE-2024-BT-TP-0011*. The docket web page contains instructions on how to access all documents, including public comments, in the docket.

FOR FURTHER INFORMATION CONTACT:

Dr. Carl Shapiro, U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy, Building Technologies Office, Mailstop EE–5B, 1000 Independence Avenue SW, Washington, DC 20585–0121. Telephone: (240) 315–4339. Email: *ApplianceStandardsQuestions@ee.doe.gov*.

Mr. Uchechukwu ''Emeka'' Eze, U.S. Department of Energy, Office of the General Counsel, Mail Stop GC–33, Forrestal Building, 1000 Independence Avenue SW, Washington, DC 20585–0103. Telephone: (202) 586–4798. Email: *uchechukwu.eze@hq.doe.gov*.

SUPPLEMENTARY INFORMATION: The Administrative Procedure Act (''APA''), 5 U.S.C. 551 *et seq.,* provides among other things, that ''[e]ach agency shall give an interested person the right to petition for the issuance, amendment, or repeal of a rule.'' (5 U.S.C. 553(e)) The Energy Policy and Conservation Act, as amended (''EPCA''), also specifically permits test procedures petitions. (See, 42 U.S.C. 6293(b)(2))[1] If the Secretary determines, on his own behalf or in response to a petition by any interested person, that a test procedure should be prescribed or amended, the Secretary shall promptly publish in the **Federal Register** proposed test procedures and afford interested persons an opportunity to present oral and written data, views, and arguments with respect to such procedures. The comment period shall not be less than 60 days and may be extended for good cause shown to not more than 270 days. In prescribing or amending a test procedure, the Secretary shall take into account such information as the Secretary determines relevant to such procedure, including technological developments relating to energy use or energy efficiency of the type (or class) of covered products involved. (42 U.S.C. 6293(b)(2)) When DOE determines that test procedure revisions are not appropriate, DOE's practice is to publish its determination not to amend the test procedures.

DOE received a petition from Dyson Inc. (''Dyson'') as described in this document and set forth verbatim below,[2] requesting that DOE amend its regulations to revoke the following regulatory text from the Code of Federal Regulations (''CFR''): (1) 10 CFR 429.68(a)(4), which specifies that any represented value of the effective room size of an air cleaner basic model must be calculated as the product of 1.55 and the represented smoke clean air delivery rate (''CADR'') value of the basic model; and, (2) 10 CFR 430.23(hh)(4), which specifies that the annual energy consumption and integrated energy factor (''IEF'') of a conventional room air

[1] All references to EPCA in this document refer to the statute as amended through the Energy Act of 2020, Public Law 116–260 (Dec. 27, 2020), which reflects the last statutory amendments that impact Parts A and A–1 of EPCA.

[2] Dyson's petition for rulemaking is available in the docket at *www.regulations.gov/document/EERE-2024-BT-TP-0011-0001*.

cleaner is measured in accordance with section 7 of 10 CFR part 430, subpart B, appendix FF (''appendix FF''). In its petition, Dyson also requests that if DOE does not revoke the provisions as requested in the petition, that DOE stay enforcement of those provisions pending a period of notice and comment to consider further changes to the test procedure.

In a final rule published on March 6, 2023 (88 FR 14014), DOE established the air cleaners test procedure at appendix FF and 10 CFR 430.23(hh) and sampling and representation requirements at 10 CFR 429.68. These test procedure requirements were established through a rulemaking process that included a notice of proposed rulemaking (''NOPR'') published on October 18, 2022. 87 FR 63324. Following publication of the NOPR, on August 23, 2022, DOE received a letter titled ''Joint Statement of Joint Stakeholder Proposal on Recommended Energy Conservation Standards and Test Procedure for Consumer Room Air Cleaners'' (hereafter referred to as the ''Joint Proposal'') [3] submitted by the American Council for an Energy-Efficient Economy, Appliance Standards Awareness Project, Association of Home Appliance Manufacturers (''AHAM''),[4] Consumer Federation of America, Natural Resources Defense Council, New York State Energy Research and Development Authority, and Pacific Gas and Electric Company, collectively, the ''Joint Stakeholders.'' In the Joint Proposal, the signatories recommended DOE adopt a Federal test procedure by incorporating by reference industry standards AHAM AC–7–2022 [5] and AHAM AC–1–2020.[6] In the March 2023 test procedure final rule, DOE considered comments received in response to the test procedure NOPR as well as the Joint Proposal in adopting the current air cleaners test procedures.

In announcing this petition for public comment, DOE is seeking views on whether it should grant the petition and undertake a rulemaking to consider the proposal contained in the petition. DOE welcomes comments on any aspect of the petition. By seeking comment on whether to grant this petition, DOE takes no position at this time regarding the merits of the suggested rulemaking or the assertions in Dyson's petition. Accordingly, DOE is not revoking or staying enforcement of the provisions referenced in Dyson's petition.

Submission of Comments

DOE will accept comments, data, and information regarding this petition no later than the date provided in the **DATES** section at the beginning of this document. Interested parties may submit comments, data, and other information using any of the methods described in the **ADDRESSES** section at the beginning of this document.

Submitting comments via www.regulations.gov. The *www.regulations.gov* web page 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 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. If this instruction is followed, 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.

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 postal mail. Comments and documents submitted via email, hand delivery/courier, or postal 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 on 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 postal 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. Faxes will not 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, written in English and 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. According 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 two well-

[3] Available at *www.regulations.gov/comment/EERE-2024-BT-TP-0011-0002*.

[4] Representing the following companies who manufacture consumer room air cleaners and are members of the Portable Appliance Division: 3M Co., ACCO Brands Corporation, Airgle Corporation, Alticor, Inc., Beijing Smartmi Electronic Technology Co., Ltd., BISSELL Inc., Blueair Inc., BSH Home Appliances Corporation, De'Longhi America, Inc., Dyson Limited, Essick Air Products, Fellowes Inc., Foxconn Technology Group, Gree Electric Appliances Inc., Groupe SEB, Haier Smart Home Co., Ltd., Helen of Troy-Health & Home, Lasko Products, Inc., Molekule Inc., Newell Brands Inc., Oransi LLC, Phillips Domestic Appliances NA Corporation, SharkNinja Operating, LLC, Vornado Air LLC, Winix Inc., and Zojirushi America Corporation.

[5] AHAM AC–7–2022, ''Energy Test Method for Consumer Room Air Cleaners,'' copyright 2022.

[6] ANSI/AHAM AC–1–2020, ''Method for Measuring Performance of Portable Household Electric Room Air Cleaners,'' ANSI-approved December 2020, including AHAM Standard Interpretation on September 19, 2022.

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. DOE will make its own determination about the confidential status of the information and treat it according to its determination.

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).

Signing Authority

This document of the Department of Energy was signed on April 21, 2025, by Louis Hrkman, Principal Deputy Assistant Secretary for Energy Efficiency and Renewable Energy, pursuant to delegated authority from the Secretary of Energy. That document with the original signature and date is maintained by DOE. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DOE Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of the Department of Energy. This administrative process in no way alters the legal effect of this document upon publication in the **Federal Register**.

Signed in Washington, DC, on April 24, 2025.

Treena V. Garrett,

Federal Register Liaison Officer, U.S. Department of Energy.

PETITION FOR AMENDMENT

Before the

UNITED STATES DEPARTMENT OF ENERGY

Office of Energy Efficiency and Renewable Energy

In the Matter of: Energy Conservation Program: Test Procedure for Air Cleaners
Docket No. EERE–2021–BT–TP–0036

Petition for Amendment

I. Executive Summary
II. Background
A. DOE Has Adopted A Test Procedure Poorly Suited To Determining Room Size Coverage And IEF Scores for Air Cleaners
B. In Reliance On DOE, FTC Has Proposed To Adopt The Same Poorly Suited Test Procedure
C. Dyson Has Confirmed That Room Size Coverage Claims And IEF Scores Based On The Test Procedure Are Inaccurate And Inconsistent
III. Grounds for Petition
A. The Room Size Coverage Rule And IEF Rule Require Manufacturers To Display Product Claims That Are Inaccurate And Inconsistent
B. The Room Size Coverage Rule And IEF Rule Mislead Consumers
C. The Room Size Coverage Rule And IEF Rule Stifle Innovation
D. The Room Size Coverage Rule And IEF Rule Result In Increased Energy Consumption
E. The Room Size Coverage Rule And IEF Rule Should Be, At Minimum, Stayed To Provide Time For Notice And Comment On Whether To Revoke Or Modify The Rules
IV. Conclusion

Dyson Inc. (''Dyson'') respectfully petitions the United States Department of Energy (''DOE'') pursuant to 5 U.S.C. 553(e) to:

1. amend part 429 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations to remove section 429.68(a)(4), a section which requires that ''[a]ny represented value of the effective room size, in square feet, of a[n air cleaner] must be calculated as the product of 1.55 and the represented smoke CADR value of the [air cleaner]'' (the ''Room Size Coverage Rule''); and,

2. amend part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations to remove section 430.23(hh)(4), a section which requires that ''[t]he annual energy consumption, expressed in kilowatt-hours per year, and the integrated energy factor, expressed in CADR per watts (CADR/W), for conventional room air cleaners, shall be measured in accordance with section 7 of appendix FF of this subpart'' (the ''IEF Rule'').

I. Executive Summary

DOE implemented the Room Size Coverage Rule and the IEF Rule on March 6, 2023 (effective December 31, 2023) to establish standard procedures by which manufacturers may measure and represent to consumers the effective room size coverage and integrated energy factor (''IEF'') scores of their air cleaner products. In enacting these rules, DOE stated that it ''considers room size [and IEF, which is a 'function of the room size that the unit is expected to operate in'] to be an important metric that must be represented accurately and consistently to provide meaningful information to consumers.'' [7] Dyson agrees. It is important for consumers to have accurate information about the efficacy and efficiency with which different air cleaners clean various sized rooms. Unfortunately, the Room Size Coverage Rule and the IEF Rule do exactly the opposite.

Dyson, therefore, petitions DOE to revoke the Room Size Coverage Rule and the IEF Rule because they: (1) obligate manufacturers to make frequently inaccurate and misleading claims about the efficacy and efficiency with which their products operate, (2) stifle innovation by manufacturers to develop products that operate better where it counts—in consumers' homes—rather than in a highly stylized test chamber, and (3) undermine energy efficient consumer purchasing decisions in violation of DOE's broader mandate to properly ''regulate the energy efficiency of [ ] consumer products . . . .'' [8]

More particularly, the Room Size Coverage Rule and the IEF Rule should be revoked because they obligate manufacturers to express air cleaner room size coverage and IEF scores using clean air delivery rates (''CADR'') measured in reliance on the test procedure AHAM–AC–1–2020 (the ''AHAM CADR Test''), incorporated by reference into Appendix FF to Subpart B of Part 430, Title 10. As explained herein, the AHAM CADR Test suffers from severe flaws that result in CADRs that do not have real-world validity and, when used to calculate room size coverage and IEF scores, result in misleading information reaching consumers about the absolute and relative capabilities of different air cleaners to effectively and efficiently clean various sized rooms.

These concerns are not new to DOE. Manufacturers, including Dyson, submitted comments during the notice and comment period in December 2022 urging DOE not to adopt mandates that would result in inaccurate and inconsistent measures of room size coverage and energy efficiency. DOE rejected these comments on the basis that, in summary, 'something is better than nothing.' Dyson disagrees when the 'something' results in misleading consumers, stifling innovation and wasteful energy consumption.

Dyson has subsequently developed test data and retained external experts to review Dyson's test data and perform a literature review. The expert report of Dr. Timothy Morse, Ph.D., and Dr. Khaled Hashad, Ph.D., of Exponent, is annexed hereto as Exhibit A (the ''Exponent Report''). Like Dyson,

[7] Energy Conservation Program: Test Procedures for Air Cleaners, 88 FR 14014 at 8 (Mar. 6, 2023), at 21.

[8] 42 U.S.C. 6291–6317.

experts Morse and Hashad conclude that the AHAM CADR Test does not produce reliable CADRs that can be used to measure the efficacy and efficiency with which air cleaners can clean various sized rooms.

Based upon this new and accumulating body of evidence, Dyson urges DOE to revoke the Room Size Coverage Rule and IEF Rule or, to the extent that DOE after full consideration of this Petition still wishes to impose a one-size-fits-all test for room size coverage claims and IEF scores, stay enforcement of the Room Size Coverage Rule and IEF Rule and open a period of notice and comment so the public can submit their views on how, if at all, DOE can mandate a test procedure with greater real-world validity.

The importance of this petition is underscored by the recent proposed rulemaking by the United States Federal Trade Commission (''FTC''), which has proposed to add room size coverage claims to its required EnergyGuide labels on air cleaners, and to mandate that room size coverage numbers must be calculated using the standard adopted by DOE—*i.e.,* the Room Size Coverage Rule.[9] Dyson has opposed the FTC's rulemaking in written comments [10] and will present its critiques during a hearing scheduled for September 19, 2024. FTC has not yet issued a final rule and DOE can take this opportunity to revoke the Room Size Coverage Rule and IEF Rule and avoid agencies like FTC ''doubling down'' on DOE's flawed approach.

[9] Energy Labeling Rule, 89 FR 7566, 7568 (Feb. 2, 2024).

[10] *Comment from Dyson, Inc., REGULATIONS.GOV* (Mar. 19, 2024), *https://www.regulations.gov/comment/FTC-2024-0008-0010; Comment from Dyson, Inc., REGULATIONS.GOV* (April 19, 2024), *https://www.regulations.gov/comment/FTC-2024-0008-0022.*

II. Background

A. DOE Has Adopted a Test Procedure Poorly Suited To Determining Room Size Coverage and IEF Scores for Air Cleaners

On March 6, 2023, DOE published a final rule entitled Energy Conservation Program: Test Procedure for Air Cleaners.[11] The final rule, incorporating the Room Size Coverage Rule and IEF Rule, mandated that all representations to consumers concerning the room size coverage capabilities of air cleaners and all IEF scores must be calculated using CADRs measured in reliance on the AHAM CADR Test.[12] DOE implemented the final rule over the objections of Dyson and other air cleaner manufacturers on the ground that it is important to require a standard method for substantiation of room size coverage claims and IEF scores. The final rule went into effect on December 31, 2023.

CADR is not a measure of room size coverage or energy consumption. Likewise, the AHAM CADR Test is not designed to measure the size of the room that an air cleaner is capable of cleaning or its energy consumption. CADR is a measure of the clean air volume that an air cleaner can provide in a fixed amount of time and space. It is the air cleaner equivalent of a vehicle's 0–60 mph acceleration test, as it measures an air cleaner's purification speed on the maximum fan mode within a 28 m^3 chamber. In practical terms, it measures how quickly an air cleaner can remove a pollutant from a room (*e.g.,* how quickly can it remove the smell of burnt toast from a kitchen). Consumers are not using air cleaners primarily, let alone exclusively, for such a narrow purpose.

[11] Energy Conservation Program: Test Procedures for Air Cleaners, 88 FR 14014 (Mar. 6, 2023).

[12] *Id.* at 8.

The AHAM CADR Test is a nearly 40-year-old test procedure (albeit updated from time to time) developed by the Association of Home Appliance Manufacturers (''AHAM''). The test is performed in a small chamber (28 m^3) equipped with a single sensor to monitor the particle count in the air and two fans to circulate the air: a ceiling fan and a powerful wall-mounted recirculation fan. Before the test begins, the test subject air cleaner is placed in the center of the chamber, manually set to maximum speed and both the ceiling and wall mounted recirculation fans are switched on. The air cleaner remains operating at full speed throughout the duration of the test; there is no provision made for automatic sensor-response or standby modes. A controlled amount of pollutant is then pumped into the room, allowing the fans in the chamber to mix and homogenize the pollutant concentration before pollutant levels in this ''well-mixed'' room are measured by the single sensor. At the start of the test, the ceiling fan is turned off, but the recirculation fan remains running. The test lasts for 20 minutes. Following the test, a 'CADR Score' is calculated by measuring how much faster the air cleaner removed particles from the air compared to how fast the particles would naturally have 'decayed' or dropped and settled on surfaces but for the air cleaner, which is then multiplied by the volume of the test chamber. The below image at Figure 1 illustrates the setup of a CADR test chamber.

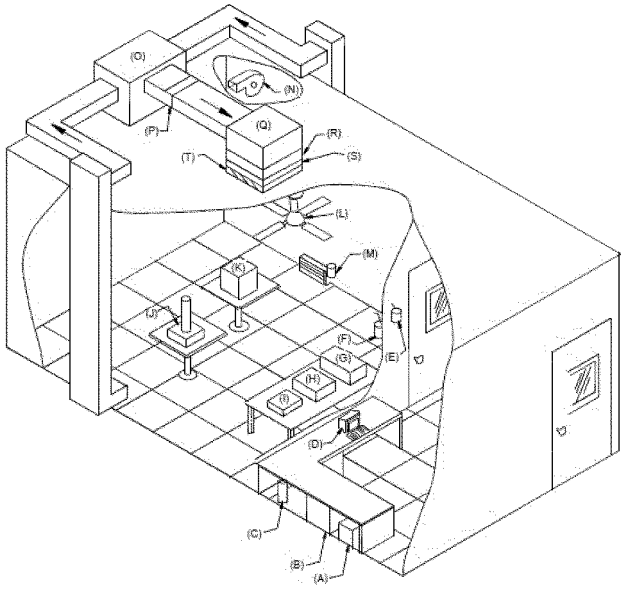


Figure 1.[13]

There are a number of problems with the design of the AHAM CADR Test which render it inapt to measure CADRs used for determining room size coverage or energy consumption. For example, the AHAM CADR Test:

• *Measures short-term performance only.* The AHAM CADR Test measures how quickly an air cleaner can clean the air in a standardized room (*e.g.,* how quickly it can remove the smell of burnt toast from a kitchen) when the contaminated air is pressurized by the recirculation fan and 'fed' to the air cleaner. The test does not measure *whether* an air cleaner can clean a room of a given size and keep it clean over a sustained period under real-world conditions, which is the typical application of an air cleaner.

• *Uses a high-powered fan to homogenize the air and move it toward the air cleaner.* The AHAM CADR Test uses an active system (a high-powered recirculation fan), which homogenizes and pushes the air toward the air cleaner. The active system obscures important distinctions between air cleaners that do and do not have lateral whole-room air distribution technology (their own powerful, built-in fans), giving air cleaners without consumer-benefiting lateral air distribution artificial boosts in performance relative to those that do.

• *Places the air cleaner in the center of the test chamber.* The AHAM CADR Test requires that the tester place the air cleaner in the center of the test chamber with only one sensor in the chamber testing how well the air cleaner has cleaned the chamber, rather than placing the air cleaner against a wall or in a corner—where consumers typically place air cleaners—and using multiple sensors to evaluate how well the air cleaner is cleaning the whole test chamber. These aspects of the test procedure obscure material differences in technology like lateral whole-room air distribution, which help to ensure wider coverage of a room by an air cleaner even when placed (as is typical) against a wall or in a corner.

• *Uses a small test chamber.* The AHAM CADR Test chamber is considerably smaller than most rooms in consumers' homes. This is significant since the AHAM CADR Test is highly sensitive to different size chambers, resulting in arbitrary room size coverage claims when results are extrapolated to larger size rooms.

• *Operates air cleaners in maximum power mode.* The AHAM CADR Test requires that air cleaners remain at maximum fan speed during the entirety of the test, which ignores air cleaner sensor technologies in many but not all modern air cleaners that match the speed of the internal fan to the level of pollutants in the air. This test requirement undermines energy efficient purchasing decisions by consumers, who in the real world will run their air cleaners on ''normal'' or ''automatic'' modes both as a matter of energy efficiency and comfort (maximum power modes are loud), which modes are not reflected in room size coverage claims made based on CADR.

On October 18, 2022, DOE published a Notice of Proposed Rulemaking (''NOPR'') [14] and opened a comment period which ended on December 19, 2022. In the NOPR, DOE requested, among other things, comments on a proposal to use CADR to calculate the effective room size that can be serviced by an air cleaner and ''whether it is appropriate to use smoke CADR as the metric to calculate effective room size or if it should be based on $PM_{2.5}$ CADR instead [which includes smoke and other pollutants].'' [15] DOE presented the choice as binary (smoke vs. a mix of

[13] ANSI/AHAM AC–1–2020, p.1 (pdf p. 26).

[14] *2022–10–18 Energy Conservation Program: Test Procedure for Air Cleaners; Notice of proposed rulemaking and request for comment, REGULATIONS.GOV* (Oct. 18, 2022), at 19, *https://www.regulations.gov/document/EERE-2021-BT-TP-0036-0018.*

[15] *2022–11–09 Presentation: Air Cleaners Test Procedure: Notice of Proposed Rulemaking Public Meeting—REGULATIONS.GOV* (Nov. 9, 2022), at 49, *https://www.regulations.gov/document/EERE-2021-BT-TP-0036-0024.*

smoke and other pollutants) and did not ask whether CADR itself is suitable for calculating effective room size or IEF score or whether the AHAM CADR Test was an appropriate procedure to calculate CADR for these purposes.

Dyson opposed DOE's adoption of CADR, stating in a comment that the range of air cleaner technologies and home environments precludes a one-size-fits-all room size calculation—particularly in a mandatory regulatory context.[16] Dyson cautioned DOE not to base room size coverage determinations on CADR, as the metric and performance output from the AHAM CADR Test methodology does not accurately reflect real-life performance.[17] In particular, Dyson urged that CADR is unsuitable for calculating room size coverage because:

1. Manufacturers already offer nuanced estimates of room size coverage customized for different environments and technologies, and collapsing the measurement of room size coverage claims to a single methodology withholds consumer relevant information tailored to consumers' differing needs and manufacturers' differing offerings.

2. The AHAM CADR Test uses a recirculation fan that is not present in real-world spaces and gives air cleaners with poor or no lateral whole-room air circulation an artificial boost in room size coverage.

3. The AHAM CADR Test runs all models on maximum and does not account for automatic sensor-response modes, which are common in today's marketplace and impact real-world room size coverage capabilities.

4. Room size coverage claims calculated using CADR do not scale properly and are inaccurate.

Similarly, Synexis LLC submitted a comment asserting that ''CADR ratings do not reflect actual usage under real-world conditions.'' [18] Synexis' criticism focused on the size of the test chambers, which ''are not representative of actual room sizes.'' [19] Synexis instead advocated for ''[t]esting in large chambers,'' as such chambers are ''more appropriate . . . [and] more representative of real world conditions.'' [20] Synexis expressed concern that ''using CADR[] alone . . . might be misleading with regard to overall energy consumption required to achieve maximum effectiveness.'' [21] Likewise, Molekule, Inc. criticized CADR for failing to account for the benefits of different technologies offered with different air cleaners.[22] Molekule expressed concern that using a standard test method would be bad for consumers and for achieving energy efficiency, asserting that ''energy standards based solely on traditional [AHAM CADR Test]-based testing methods that only focus on particulate capture are likely to hinder the development and distribution of innovative devices . . . .'' [23]

DOE acknowledged in its final rulemaking that the AHAM CADR Test does not reflect real-world spaces (in particular, the use of a powerful recirculation fan) and does not account for commonplace modern air cleaner technologies (for example, automatic sensor-response mode and built-in lateral whole-room air circulation). Further, DOE admitted that there is no current test procedure for air cleaners in automatic mode that measures energy efficiency.[24] Nevertheless, DOE adopted the final rule as DOE initially proposed.

B. In Reliance on DOE, FTC Has Proposed To Adopt the Same Poorly Suited Test Procedure

On February 2, 2024, FTC published a Notice of Proposed Rulemaking (89 FR 7566),[25] proposing to adopt the Room Size Coverage Rule for room size coverage claims on EnergyGuide Labels,[26] which manufacturers are *required* to include on air cleaner product packaging. The proposed rule has the potential to magnify the harm to consumers and innovators already being caused by DOE's Room Size Coverage Rule and—to the extent DOE determines that it should revoke the Room Size Coverage Rule—to create administrative headaches across multiple agencies and impose otherwise unnecessary economic burdens on manufacturers.

Dyson submitted two comments to FTC on March 18, 2024,[27] and April 19, 2024.[28] In its comments, Dyson emphasized its concerns that adoption of the Room Size Coverage Rule would lead to consumer confusion and stifle innovation in the market for air cleaners. Dyson urged FTC not to ''double down'' on a flawed approach to substantiation of room size coverage claims until DOE has had an opportunity to consider this petition. Fortunately, FTC has not acted on its proposal and has granted Dyson's request for a hearing, scheduled for September 19, 2024. The potential for agency action resulting in additional consumer, manufacturer and regulatory harm stemming from the Room Size Coverage Rule and IEF Rule nevertheless underscores the need for DOE to take a second look at the Rules now.

C. Dyson Has Confirmed That Room Size Coverage Claims and IEF Scores Based on CADR are Inaccurate

After DOE's issuance of the Room Size Coverage Rule, Dyson has performed additional testing on a range of air cleaner models sold by manufacturers in the US (1) using the AHAM CADR Test, (2) using the AHAM CADR Test with corrections for certain of its flaws, and (3) under simulated real-world conditions. The data from testing performed by Dyson demonstrate that the Room Size Coverage Rule and IEF Rule obligate manufacturers who make room size coverage and IEF claims to publish inaccurate and inconsistent representations about their products that inevitably result in misleading consumers, stifling innovation and increasing energy inefficiency. Dyson retained Dr. Tim Morse, Ph.D., and Dr. Khaled Hashad, Ph.D., of Exponent to perform an evaluation of Dyson's data and the relevant literature. Drs. Morse

[16] *2022–12–16 Dyson Comment response to the published Notice of proposed rulemaking and request for comment, REGULATIONS.GOV* (Dec. 16, 2022), at 1–2, *https://www.regulations.gov/comment/EERE-2021-BT-TP0036-0027*.

[17] At various points during the DOE's rulemaking, other commenters expressed concerns about the validity or usefulness of CADR as well. *See, e.g., 2024–02–24 Synexis Comment response to the published Reopening of Comment Period; Request for information, REGULATIONS.GOV* (Apr. 11, 2022), at 4, *https://www.regulations.gov/comment/EERE-2021-BT-TP-0036-0009* (noting that ''CADR test chambers are not representative of actual room sizes, and therefore CADR ratings do not reflect actual usage under real-world conditions.'').

[18] *2024–02–24 Synexis Comment response to the published Reopening of Comment Period; Request for information, REGULATIONS.GOV* (Apr. 11, 2022) at 4, *https://www.regulations.gov/comment/EERE-2021-BT-TP0036-0009*.

[19] *Id.*

[20] *Id.* at 5

[21] Synexis discussed other test methods which may be alternatives to CADR, including AHAM–AC–5–2022 (2022), the Research Triangle Institute test method, and the National Research Council Canada rest method. (*See Id.,* at 3–4).

[22] *2022–04–09 Molekule Comment response to the published Reopening of Comment Period; Request for information, REGULATIONS.GOV* (Apr. 11, 2022), *https://www.regulations.gov/comment/EERE-2021-BT-TP-00360012*.

[23] *2024–02–24 Synexis Comment response to the published Reopening of Comment Period; Request for information, REGULATIONS.GOV* (Apr. 11, 2022) at 2, *https://www.regulations.gov/comment/EERE-2021-BT-TP0036-0009*.

[24] Energy Conservation Program: Test Procedures for Air Cleaners, 88 FR 14014 at 8 (Mar. 6, 2023).

[25] Energy Labeling Rule, 89 FR 7566, 7568 (Feb. 2, 2024). *https://www.regulations.gov/document/FTC2024-0008-0001*.

[26] *See* Energy Labelling Rule, 16 CFR part 305.

[27] *Comment from Dyson, Inc., REGULATIONS.GOV* (Mar. 18, 2024), *https://www.regulations.gov/comment/FTC-20240008-0010* (containing initial comments and requesting a hearing).

[28] *Comment from Dyson, Inc., REGULATIONS.GOV* (April 19, 2024), *https://www.regulations.gov/comment/FTC2024-0008-0022* (providing further comments and re-iterating request for a hearing).

and Hashad came to the same conclusions, as discussed herein and in the attached Exponent Report.

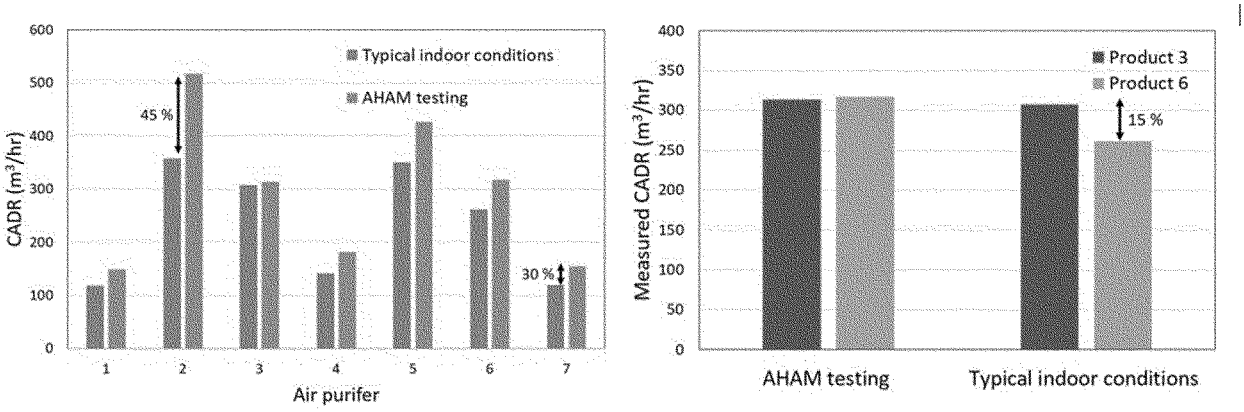
III. Grounds for Petition

For the reasons highlighted below and in the Exponent Report, Dyson petitions DOE to amend 29 CFR 429 and 430 to revoke the Room Size Coverage Rule and IEF Rule. DOE intended to provide consumers with benchmarks to select the most effective and efficient air cleaner for their rooms. However, room size coverage claims and IEF scores calculated with CADR measured using the AHAM CADR Test are inaccurate and inconsistent, and result in consumer confusion, stifled innovation and increased energy consumption.

If, however, DOE believes that these claims must be standardized via regulation, Dyson respectfully submits that the Room Size Coverage Rule and IEF Rule should be stayed pending a new notice and comment period concerning proposed substitutions for, or modifications to, the AHAM CADR Test that would allow CADRs used in determining room size coverage claims and IEF scores to have greater real world validity, and thus, give consumers more relevant and less deceptive information about the energy efficacy and efficiency of air cleaners.

A. The Room Size Coverage Rule and IEF Rule Require Manufacturers To Display Product Claims That are Inaccurate and Inconsistent, Thereby Misleading Consumers About the Right Air Cleaners for Their Homes

Dyson tested seven name-brand air cleaner units with varying features using the chamber prescribed by the AHAM CADR Test and using chambers better reflecting real-world conditions (*e.g.,* larger chambers, air cleaners in the corners of the chambers, and no high-powered recirculation fans in the chambers). As shown in the data and summarized in Figure 2(a), below and to the left, for most air cleaners (5 out of 7 that were tested), the AHAM CADR Test artificially inflates the CADR scores by as much as 45%. Moreover, there is no consistency across tested units in terms of inflation (or deflation for 1 out of 7). Thus, AHAM CADR Test-based CADR scores are not only inaccurate, but also inconsistent and cannot serve as a basis to discern relative performance. This is problematic for consumers as the energy efficiency and efficacy of an air cleaner may be significantly lower than the efficiency and efficacy purportedly measured using the AHAM CADR Test and advertised on the product pursuant to the Room Size Coverage Rule and IEF Rule.



Figures 2(a) and (b).[29]

The inaccuracy and lack of consistency among CADR scores is because the AHAM CADR Test is an inappropriate test method for determining room size coverage (and, therefore, IEF scores, which DOE has said are ''inherently a function of the room size that the unit is expected to operate in'' [30]). The AHAM CADR Test was designed to enable scientific, repeatable testing of an air cleaner's speed of cleaning in isolated laboratory conditions. It was not designed to provide an accurate representation of how these products perform in larger rooms under real-world conditions—*i.e.,* in consumers' homes. This is evident from the prescribed test environment, which is not relevant to, or reflective of, real-world environments in which consumers will use the tested air cleaners, as follows:

1. The Test Chamber Contains a High-Powered Fan [31]

The AHAM CADR Test chamber contains a powerful, wall-mounted recirculation fan which operates continuously during testing to achieve artificial mixing. The fan circulates and mixes particles introduced into the test chamber, evenly spreading the particles to create a homogeneous environment so that readings taken by the single sensor approximate particle concentrations across the chamber. This is highly stylized and unrealistic. Many consumer homes do not have any fans at all [32] and are unlikely to have an 'even spread' of pollutants. Moreover, fans used in real-world spaces are not comparable to the recirculation fan used in a CADR test—as the latter is extremely powerful, requires a substantial amount of energy to operate and essentially 'feeds' the polluted air to the air cleaner, which may have limited ability to circulate and push the air itself. Figure 3, below, illustrates the significant power of the recirculation fan recommended in the AHAM CADR Test standard.

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[29] *See* Exponent Report at 26–27. CADR obtained for various air cleaner products tested using the AHAM standard and tested under typical indoor conditions (larger chamber (81 m³), air cleaner at the corner, and no external mixing). (a) For most air cleaners the AHAM standard test resulted in an increase in CADR that can reach up to 45%, (b) products 3 and 7 had similar CADR in the AHAM test but product 7 had a 15% decrease in CADR compared to product 6 when tested in typical indoor conditions.

[30] Energy Conservation Program: Test Procedures for Air Cleaners, 88 FR 14014 at 8 (Mar. 6, 2023), at 21.

[31] *See* Exponent Report at Section 4.1 at 19–20.

[32] A 2020 Residential Energy Consumption Survey by the U.S. Energy Information Administration found that most U.S. apartments did not have any ceiling fan, and of 123.53m U.S. homes surveyed (of all sizes) 34.08m had no ceiling fans. Source: *https://www.eia.gov/consumption/residential/data/2020/hc/pdf/HC%207.1.pdf.*

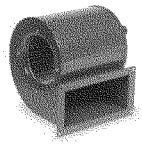
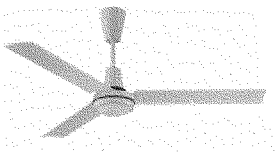
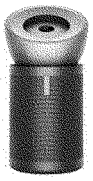
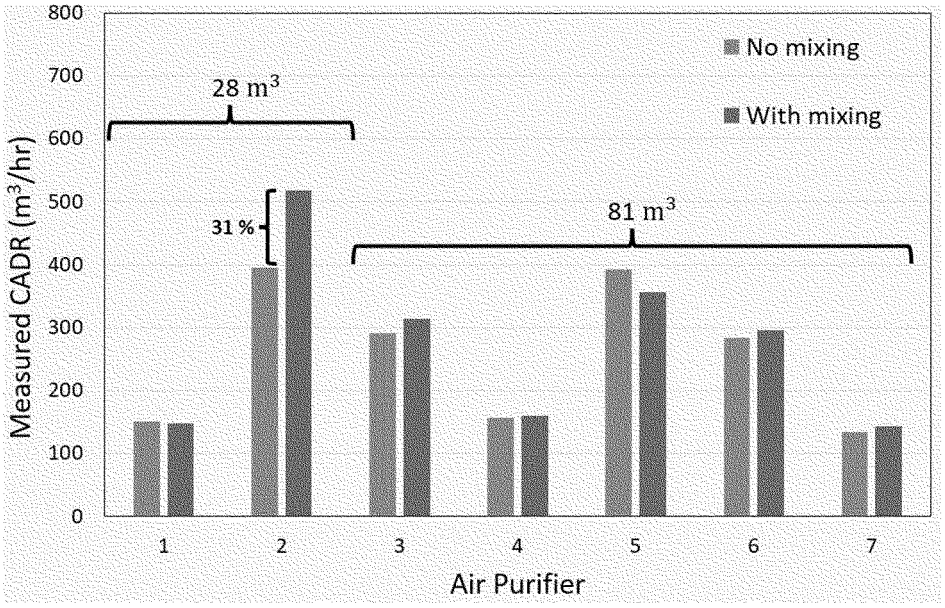
			
	CADR Recirculation Fan	**Ceiling Fan**	**Dyson Big + Quiet Air Cleaner**
Power (Watts).	147W (Model recommended in AHAM CADR Test standard)	33.2W (Model recommended in AHAM CADR Test standard)	36W (Dyson's most powerful air cleaner)
Estimated annual energy cost.[33]	$64.43	$14.55	$15.78

Figure 3.

Figure 4 below displays the CADR for various air cleaners tested with and without artificial mixing and in two different chamber sizes (28 m^3 and 81 m^3). The test data indicate that for air cleaners with builtin lateral whole-room air circulation technology (that ensures whole-room air circulation in the real world in consumers' homes) the artificial mixing has no impact on the CADR score (1 and 3). However, for air cleaners that do not have technology sufficient to circulate the air in consumers' homes (2, 5–7),[34] the artificial mixing can erroneously increase the CADR by up to 32%, rendering room size coverage claims and IEF scores calculated using CADR absolutely and relatively inaccurate.[35]



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[33] Assumed 8 hours daily use on maximum power at $0.15 per kWh.

[34] Air cleaner 4 performed near-equally well on both tests, despite not being equipped with lateral whole-room air circulation technology. Why that model performed differently than similarly situated models 2, 5, 6 and 7 is beyond the scope of this petition, but the disparity further illustrates the unreliability of CADR for predicting realworld performance.

[35] *See* Exponent Report at 8. Moreover, an air cleaner can only clean air that passes through its filter. Without the presence of a powerful recirculation fan to circulate air (and the pollutants), natural air movement may never be powerful enough to move pollutants from the far side of a room to an air cleaner unless the air cleaner has builtin air circulation and mixing technology.

Figure 4.[36]

This flaw results in a perverse outcome where the more effective and technologically advanced air cleaners score worse relative to other air cleaners. The high-powered recirculation fan is essentially giving all air cleaners ''credit'' for having lateral whole-room air circulation technology that enables more effective cleaning of the room. The fan is doing the work for the air cleaners that do not do it themselves.

2. The Air Cleaner is Placed in the Center of the Test Chamber[37]

The AHAM CADR Test places the air cleaner in the center of the testing chamber. However, consumers are much more likely to place an air cleaner in the corner of a room or against a wall than in the center of a room. Placement against a wall or in a corner is not only logical from a practical and common sense perspective (as this is where outlets are usually located and consumers will generally not want an air cleaner 'getting in the way' by placing it in the center of a room), but Dyson has undertaken owner surveys which found that only a small minority (17%) of users placed an air cleaner in the center of their room, whereas 43% placed it in the corner and 40% placed it up against a wall, as reflected in Figure 5, below.

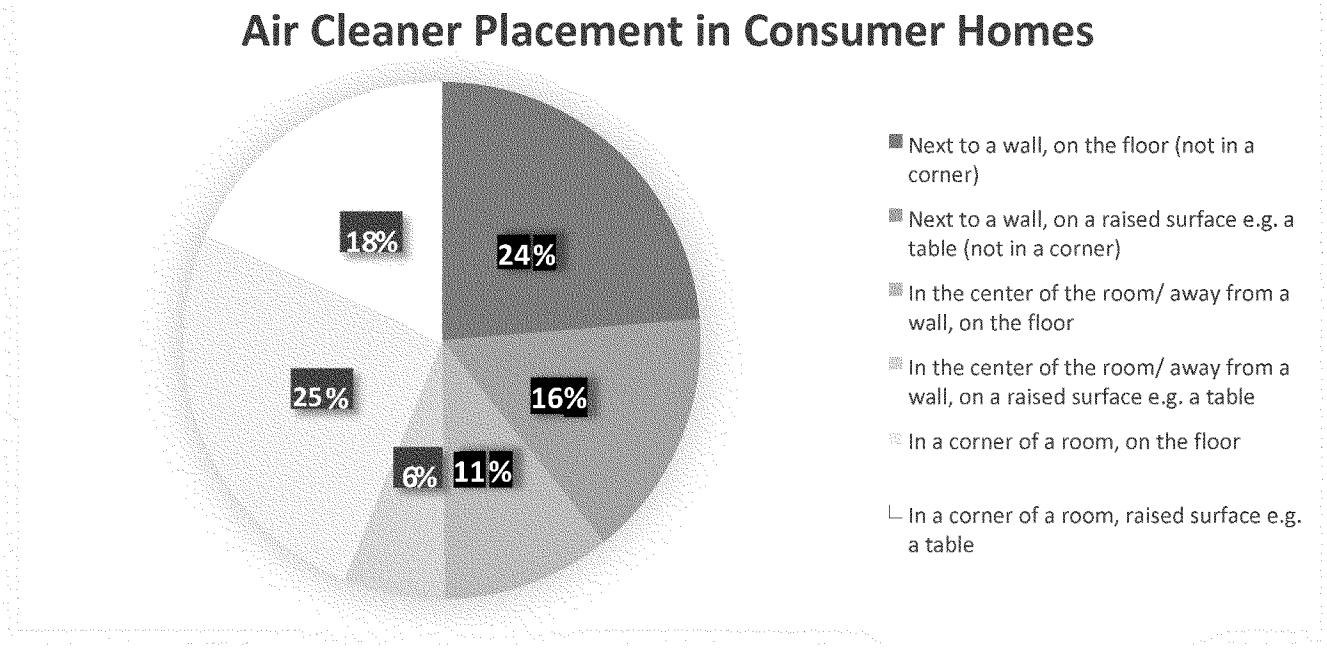

Figure 5.[38]

Location matters. Indeed, a study that investigated the CADR of an air cleaner located at four different locations in an office space showed that the CADR can vary by up to 27% (compared to the average) depending on its location in the room.[39] Thus, testing with an air cleaner in the center of the room is not reflective of likely usage conditions and could materially skew results.

Dyson tested air cleaners in both 81 m^3 and 169 m^3 test chambers with no mixing and different cleaner locations (center or corner). As shown in Figure 6, below, placing an air cleaner in the corner of the chamber instead of the center can result in a significantly lower CADR. In the most extreme case, placing the air cleaner in the center, instead of the corner, resulted in a 34% increase in CADR.

[36] *See* Exponent Report at 20. The CADR for various air cleaner products tested in two different test chamber sizes, 28 m^3 and 81 m^3, with and without mixing. For some products the use of a recirculation fan (mixing) resulted in minimal changes in CADR, while for other products it resulted in an increase of CADR by up to 32%.

[37] See Exponent Report, Section 4.3 at 23–25.

[38] Survey data from 584 Dyson air cleaner owners across Canada, France, and Australia relating to air cleaner placement in consumer homes. Conducted in 2016.

[39] Küpper, M., Asbach, C., Schneiderwind, U., Finger, H., Spiegelhoff, D., & Schumacher, S. (2019). *Testing of an indoor air cleaner for particulate pollutants under realistic conditions in an office room.* Aerosol and Air Quality Research, 19(8), 1655–1665.

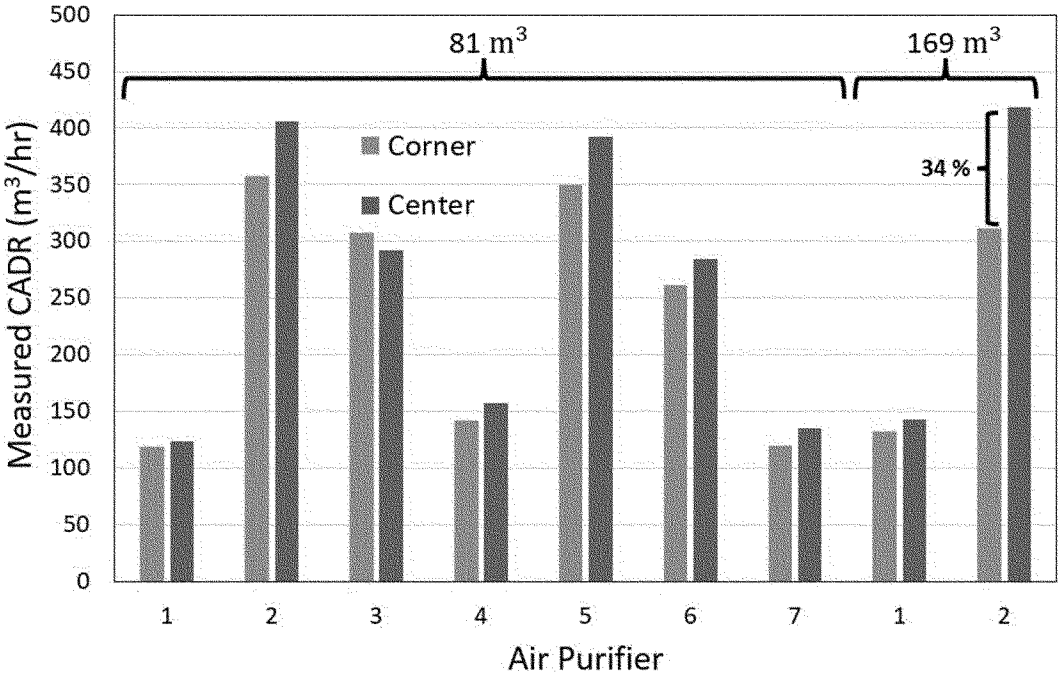

Figure 6.[40]

Thus, placement of the air cleaner in the center of the test chamber is both misleading (because it artificially increases the CADR) and unfair (because it benefits some air cleaners that do not have lateral whole-room air circulation more than air cleaners that do).

3. The Test Chamber is Smaller Than Consumers' Average Rooms and Relies on a Single Sensor[41]

Consumer survey data obtained by Dyson found that, in the U.S., 52% of homes had a family room larger than 360 square feet (19 m^2).[42] In addition, it is generally accepted that an 'average' family room in the U.S. is approximately 400 square feet (20 m^2).[43] The AHAM CADR Test chamber is considerably smaller; it is the equivalent of only 125 square feet (12 m^2). Furthermore, houses (and rooms in houses) have become larger over the last 30–40 years, compared to when the AHAM CADR Test was first developed in the 1980s. According to data from the Census Bureau, family homes built in 1990 were 2,080 ft^2 (193 m^2) on average. By 2015, family homes had increased to an average of 2,687 ft^2 (250 m^2) and for 2022 the average family home was 2,383 ft^2 (221 m^2).[44]

It is easier for an air cleaner to clean and remove pollutants contained in a smaller space than a larger one. In a CADR chamber-sized space (125 square feet), even with pollutants at the furthest distance from an air cleaner, this will be a relatively short distance and relatively easy to clean.

The larger a room, the further away pollution events (*e.g.,* fumes from cooking or pollen or pollution from outside) may be. Without the aid of a powerful recirculation fan (as discussed above), an air cleaner will need to bring these pollutants to it via its own means, in addition to natural circulation, to filter them.

Figure 7, below, demonstrates that CADR for different air cleaners in test chambers 28 m^3 and 81 m^3 with ''mixing'' (aka a powerful recirculation fan) can vary by up to 16%. These differences are likely to lead to misidentification of the air cleaner with the best CADR performance.[45]

[40] *See* Exponent Report at 25. The CADR for various air cleaner products tested by Dyson in two different test chamber sizes, 81 and 169 m^3, without mixing, with the air cleaner placed in the corner and center of the test chamber. For some products the placement of the air cleaner resulted in minimal changes in CADR, while for other products it resulted in an increase of CADR by up to 34% when the air cleaner was moved from the corner to center of the room.

[41] *See* Exponent Report, Section 4.2 at 20–23.

[42] Survey of Dyson product owners based in the US conducted in 2016, with 361 respondents.

[43] Jessica Walrack, How Much Square Footage Do You Need? Updated on December 14, 2021, *https://www.thebalancemoney.com/how-much-square-footage-do-you-need-5201264.*

[44] Highlights of 2023 Characteristics of New Housing, 2023 *https://www.census.gov/construction/chars/highlights.html.*

[45] See Exponent Report at 22.

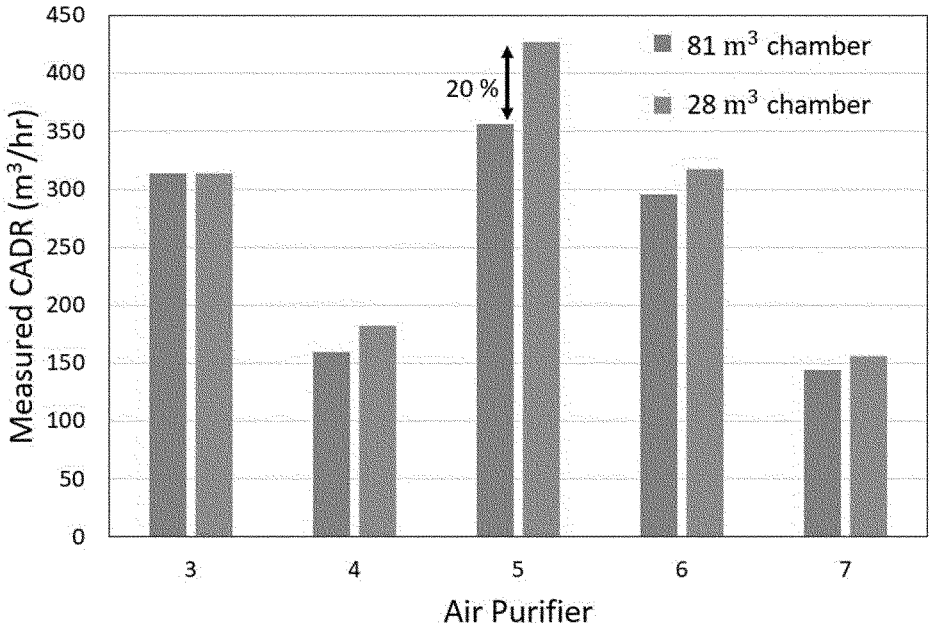

Figure 7.[46]

For example, for the 28 m^3 size test chamber (the size prescribed by the AHAM CADR Test), air cleaner #6 performs better, *i.e.,* has a higher CADR than air cleaner #3. However, when the test chamber size is closer to real room sizes (81 m^3), air cleaner #3 performs better, *i.e.,* has the higher CADR. Thus, with respect to CADR in a real-world room, air cleaner #3 is the better appliance but the AHAM standard would identify air cleaner #6 as the higher-performing appliance—and, pursuant to the Room Size Coverage Rule and IEF Rule—air cleaner #6 also would be identified to consumers as covering a larger-sized room than air cleaner #3 and with a potentially higher IEF score.

As discussed above, to achieve more effective large room cleaning, certain air cleaners have builtin lateral whole-room air circulation and mixing technology to ensure that pollutants on one side of a large room are moved around the room and towards the air cleaner. An air cleaner without such technology will not be able to do this effectively. Built-in air circulation and mixing technology are not standard in air cleaners, and products with such technology widely range in terms of their strength and capacity. Testing in a small 28 m^3 chamber does not enable such capability or technology to be properly tested, as even an air cleaner without built-in air circulation and mixing technology will be able to more easily clean the chamber at that size. This makes the small AHAM CADR Test chamber unsuitable for measuring an air cleaner's ability to clean larger spaces. In some scenarios, an air cleaner simply will be unable to clean a room greater than a certain size (regardless of CADR score) because it has insufficient lateral air circulation to push faroff pollutants into its filter.

The problems with using a small test chamber are compounded by using only one sensor to test purification and having the cleaner in the center of the room. Again, these components of the AHAM CADR Test fail to give the resulting CADR relevance to consumers in real world spaces. In real world spaces, most consumers will place cleaners in the corner of (larger) rooms, and will want to know not how clean the room is right next to the air cleaner (as tested by the single sensor in the AHAM CADR Test chamber), but rather, how clean the room is in various locations, including most importantly where people are located in the room. Studies have shown that the CADR can change up to 35.7% based on the test chamber volume.[47] Notably, other international standards [48] specify a test chamber size based on the air cleaners' CADR, which better accounts for the impact of chamber volume on CADR measurement.

4. The Test Fails To Account for Automatic Sensor-Response Technology [49]

The AHAM CADR Test requires the tested air cleaner to operate at maximum fan speed throughout the duration of the test and, therefore, does not account for increasingly prevalent automatic sensor-response mode technology, which adjusts fan speed based on the level of pollution in the room in order to conserve energy and increase consumer comfort.

In the same way that a thermostat regulates a home's heating system depending on the temperature, an air cleaner with automatic sensor-response technology monitors and senses the air quality in a room and intelligently adjusts fan speed to respond to 'pollution events' (for example: fumes from cooking or using cleaning products). This technology is now widely adopted by modern air cleaners and is a driver of consumer purchasing decisions. Of the top 50 selling air cleaners in the U.S. by revenue share, over 56% of this revenue is from products with some form of automatic response technology.[50] The consumer benefits from automatic sensor-response technology because the air cleaner uses no more energy than necessary to clean the room. There also is an acoustic benefit offered by the lower fan speeds of ''smart'' air cleaners using this technology, which reduces noise pollution.

[46] See id. CADR for various air cleaners tested in a 28 and 81 m3 chamber. Testing in different test chamber sizes can result in a 16% difference in CADR.

[47] Fan, Y., Liu, J., Zhao, L., Wang, C., Moon, D., & Song, S. (2024). Study on the test accuracy of the high-air-volume cleaner under different test chamber volumes. Journal of Cleaner Production, 448, 141684.

[48] E.g., (GB/T18801–2022) and (SPS–KACA002–132:2021).

[49] Exponent Report, Section 6 at 34–35.

[50] Based on air cleaner sales data in the United Sates for the 12 months between January 2023 and December 2023.

If an air cleaner is always run at the maximum fan speed it will inevitably 'overclean' the space, as it will keep running even once a pollution event has been cleaned, thereby wasting energy. It is also not reflective of how many air cleaner products available on the market today operate, and thus not reflective of what a large proportion of consumers owning air cleaners will experience.

The Room Size Coverage Rule and IEF Rule are intended to measure and encourage more energy efficient choices by consumers, ensuring that consumers have an accurate representation of how large a space an air cleaner can effectively clean and how energy efficient it is in doing the cleaning. However, by running all tested air cleaners at maximum fan speed, the AHAM CADR Test fails to account for the energy-saving and other consumer benefits of air cleaners with this technology.

B. The Room Size Coverage Rule and IEF Rule Mislead Consumers

In its response to Dyson's previous comments, DOE acknowledged that it was willing to accept inaccurate and inconsistent data because it was nevertheless important to have a test that DOE considered scientific, repeatable and easy to administer. DOE's decision, born of expedience at the cost of accuracy and consumer welfare, does not achieve DOE's goal of giving consumers relevant information about the energy efficacy and efficiency with which different air cleaners can clean various size rooms. To the contrary, it promotes consumer confusion by ignoring material differences in product features like active versus passive systems and systems that promote efficiency of use versus those that do not, as demonstrated by the new data highlighted by Dyson above and by Drs. Morse and Hashad in the Exponent Report.

While Dyson sympathizes with DOE's desire to have a test that all industry participants can be held to that is repeatable, objective and capable of being implemented to ensure that manufacturers are not making claims lacking in scientific substantiation, the test must nevertheless provide relevant and accurate information to inform consumer purchasing decisions. A bad standardized test is worse than no standardized test. Consumers should be given accurate and reliable information that helps them answer two questions: (1) how effectively will the air cleaner clean the room where I will be using it, and (2) how efficiently will the air cleaner do that cleaning and at what cost in terms of its energy consumption? Room size coverage claims and IEF scores calculated using CADRs measured by the AHAM CADR Test—as mandated by the Room Size Coverage Rule and IEF Rule—fail to accurately answer either question.

As is evident from Figure 8, below, as flaws in the AHAM CADR Test are corrected, the CADR scores for different products (and, therefore, room size coverage claims and IEF scores) vary dramatically. The significant variance (and drop in CADR scores for many products without features such as lateral whole-room air circulation technology) as real-world conditions are introduced into the test chamber, demonstrates that the gap between what consumers experience in 'real life' vs. performance in the AHAM CADR Test chamber can be substantial. The Room Size Coverage Rule and IEF Rule inhibit a consumers' ability to identify an air cleaner that is the right size for their space in the real world, and to consider the energy consumption, cost and environmental impact of one air cleaner versus another.

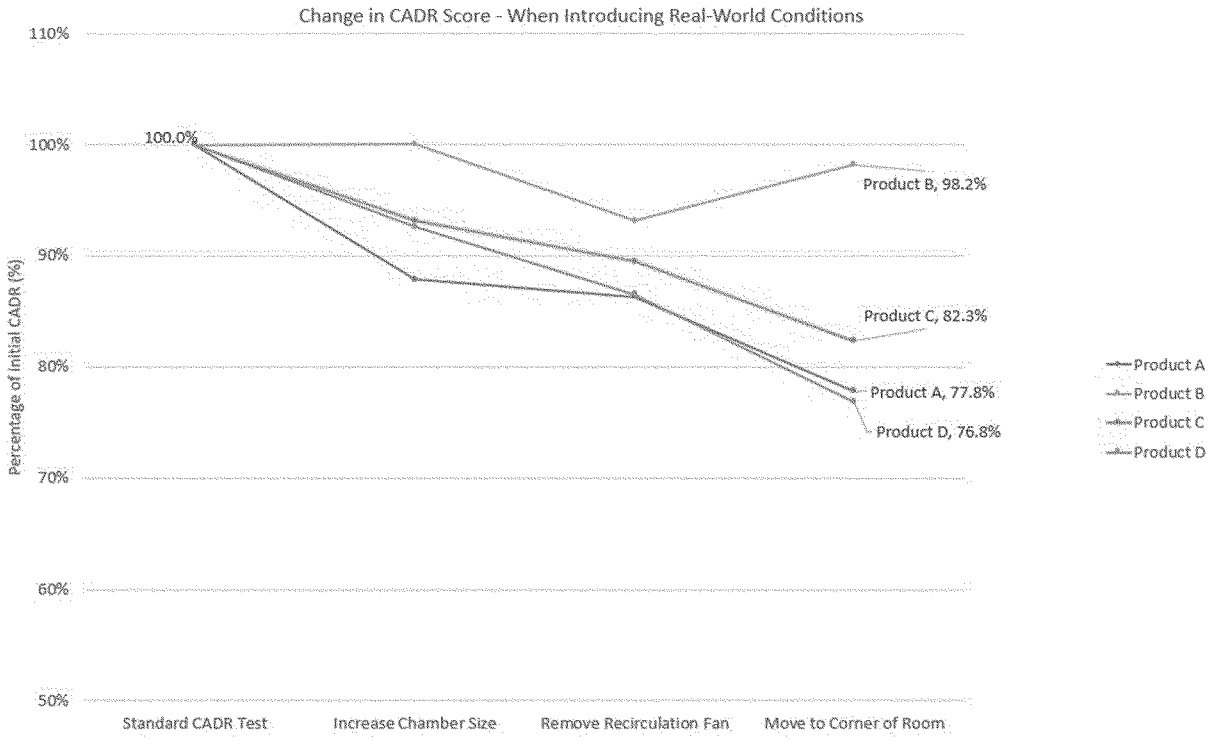

Figure 8.

	Room size capability (AHAM CADR TEST method) ft²	Room size capability when real world conditions are introduced ft²
Product A ..	166	129
Product B ..	285	281
Product C ..	290	234
Product D ..	142	109

For example, if a consumer wishes to purchase an air cleaner for his 280 ft² living room, he would be influenced by Product C's claimed room size figure of 290 ft² and perhaps purchase this product. However, when this consumer uses Product C in his home, he will not be using the product in the same conditions as found in the AHAM CADR Test chamber: he will not have a powerful recirculation fan and will likely place the product in the corner of an average-sized room—introducing simple real-world conditions that are not accounted for by the AHAM CADR Test and not reflected in room size coverage claims and IEF scores calculated using CADR.

The performance experienced by the consumer using Product C in his home will be materially worse than what the consumer has been led to believe would be the performance by the air cleaner. Product C may only be able to effectively clean a space of 234 ft²—far smaller than what the consumer believed would be the effective room size coverage when purchasing the air cleaner in reliance on DOEmandated product performance claims. This mismatch between claims and reality will result in Product C taking a longer time to effectively clean the room it was advertised as being suited for, leading to increased energy consumption and energy costs when compared to what the consumer will have anticipated, as well as poorer performance. In some scenarios, the undersized air cleaner may not be able to clean the room at all.

Product B (which scored slightly worse than Product C under AHAM CADR Test conditions and yet maintained the same score despite introduction of real-world conditions (dropping only from 285 ft² to 281 ft²)), will perform as well in the consumers' home as advertised pursuant to the Room Size Coverage Rule and IEF Rule. However, this does not help the consumer who has already purchased Product C, erroneously believing it will perform as well, or better than, Product B (and may have been sold at a lower price than Product B because it did not need to incorporate built-in air mixing and circulating technologies used by Product B in order to score comparatively well on the AHAM CADR Test).

This is a problem. As DOE has acknowledged, the inability of consumers to select the right-sized air cleaners for their homes results in, among other things, energy inefficiency and increased energy consumption, in violation of DOE's remit to establish standards for energy efficiency:

Room size would strongly impact the capacity of the air cleaner that would be required to clean the air in the desired room. For instance, if the air cleaner is too small compared to the size of the room it is being used in, it will be ineffective, thus providing low efficiency. Conversely, if an air cleaner is too big for the room that it is operated in, it will clean the air very quickly and continue operating, leading to increased energy use. Therefore, it is important that an air cleaner be selected such that its capacity (expressed in terms of its CADR) is appropriate for the size of the room that it is intended to be used in.[51]

C. The Room Size Coverage Rule And IEF Rule Stifle Innovation

By failing to account for real-world conditions and, in particular, providing undeserved ''extra credit'' to air cleaners without lateral whole-room air circulation fans, room size coverage claims and IEF scores calculated using CADRs measured by the AHAM CADR Test provide insufficient and inaccurate differentiation between the performance of air cleaners that do have such technology and the performance of air cleaners that do not have such technology. Likewise, by not accounting for features like automatic sensor-response technologies that enable certain air cleaners to be more energy efficient, room size coverage claims and IEF scores calculated using the AHAM CADR Test prevent brands from competing for consumers based on those consumer- and environmentally-friendly technologies. This perverse situation not only leads to frustration of a consumers' ability to choose the right air cleaner for their homes, but also reduces manufacturers' incentive to continue to innovate to create better products that enhance consumer welfare. Why invest in innovation if, under the Room Size Coverage Rule and IEF Rule, air cleaners without performance and energy efficiency-improving technologies appear to consumers to be equally effective and efficient as those products whose manufacturers have invested in researching and developing improved technologies?

D. The Room Size Coverage Rule and IEF Rule Result in Increased Energy Consumption

The Energy Policy and Conservation Act of 1975 (''EPCA'') requires that any test procedures prescribed or amended by DOE shall be reasonably designed to produce test results which measure energy efficiency, energy use or estimated annual operating cost of a covered product, including air cleaners. (*See* 42 U.S.C. 6293(b)(3)). The Room Size Coverage Rule and IEF Rule fail to comply with the EPCA.

Room size coverage claims and IEF scores compliant with the Room Size Coverage Rule and IEF Rule do not provide accurate information to consumers concerning the efficiency and efficacy of different air cleaners due to the multiple flaws in the AHAM CADR Test discussed above. As a result, consumers will unknowingly choose the wrong products for their rooms, resulting in increased energy consumption, as DOE itself acknowledged in the final rule.[52]

Likewise, the Room Size Coverage Rule and IEF Rule perversely encourage rather than prevent greenwashing (*i.e.,* false, deceptive or exaggerated claims about the environmental *bona fides* of a product that are apt to mislead consumers). The purported rationale for the Room Size Coverage Rule and IEF Rule is energy efficiency: ensuring that accurate room size claims and energy efficiency metrics are available to consumers so that they can make more informed purchasing decision and have clarity around expected energy consumption. This information inevitably also influences a consumer's perception of how 'green' a particular product is, an important factor for many consumers today. As long as the Room Size Coverage Rule and IEF Rule rely on CADRs measured using the AHAM CADR Test, certain manufacturers and distributors of air cleaners will have an easy route to promote their products as 'greener' than they are and claim that their products will achieve a level of performance that they will, in fact,

[51] Energy Conservation Program: Test Procedures for Air Cleaners, 88 FR 14014 at 21 (Mar. 6, 2023).

[52] *Id.* (''Room size would strongly impact the capacity of the air cleaner that would be required to clean the air in the desired room. For instance, if the air cleaner is too small compared to the size of the room it is being used in, it will be ineffective, thus providing low efficiency. Conversely, if an air cleaner is too big for the room that it is operated in, it will clean the air very quickly and continue operating, leading to increased energy use. Therefore, it is important that an air cleaner be selected such that its capacity (expressed in terms of its CADR) is appropriate for the size of the room that it is intended to be used in.'').

never achieve in a larger space (absent the purchase of a second air cleaner)—to the detriment of consumer welfare and DOE's remit to promote energy efficiency.

E. The Room Size Coverage Rule and IEF Rule Should Be, at Minimum, Stayed To Provide Time for Notice and Comment on Whether To Revoke or Modify the Rules

Dyson recognizes that it is not possible to 'exactly' replicate consumer conditions in every given scenario when designing a laboratory-based test method which is reliable, repeatable, and scalable for mass testing. To the extent DOE wants to maintain a standard rule for substantiation of room size coverage claims that is repeatable and scalable for mass testing yet more reliable in terms of giving consumers meaningful information about the efficacy and energy efficiency with which different air cleaners will clean various sized rooms, Dyson urges DOE to revoke the Room Size Coverage Rule and IEF Rule and open a period of notice and comment concerning alternative approaches to testing CADR. If, however, DOE is not inclined to revoke the Rules before opening a new period of notice and comment, DOE should, at minimum, stay enforcement of the Room Size Coverage Rule and IEF Rule.

As discussed in detail in the Exponent Report, there may be relatively simple alterations to CADR testing that would narrow the gap between lab-based testing that is repeatable yet lacking in real-world relevancy, and testing which is more reflective of consumer environments, without compromising the ability to have a test that is repeatable and scalable. The Exponent Report discusses in Section 4.5 the following types of modifications that would improve its real-world validity, among others:

- Adjustable chamber sizing.[53]
- Elimination of the recirculation fan and installation of multiple sensors.[54]
- Placement of the air cleaner in a corner of the chamber.[55]

Dyson has concerns that the desire to provide a one-size-fits-all test for room size coverage claims and IEF scores will always create more harm than good, and that any calculation relying on the AHAM CADR Test as its methodological foundation will fail to generate accurate and meaningful information that helps consumers discern which air cleaners on the market will most effectively and efficiently clean rooms of various sizes. Nevertheless, if DOE is inclined to require a standard test for room size coverage claims (if something truly is better than nothing in this context), Dyson respectfully submits that DOE revoke or, failing that, stay the Room Size Coverage Rule and IEF Rule and open a period of notice and comment so that interested parties can provide inputs to DOE concerning changes or substitutions that can be made to give room size coverage claims and IEF scores greater real-world validity.

IV. Conclusion

The Room Size Coverage Rule and IEF Rule require air cleaner manufacturers to make product claims that are neither accurate nor consistent, and that do not support energy efficiency. The Rules rely upon a test methodology that has significant shortcomings which result in inflated, inaccurate performance and energy efficiency claims, frustrating consumers' ability to make informed purchasing decisions and choose an air cleaner which is suitable for their homes. Further, the difference between the inflated performance and energy efficiency claims communicated to consumers under the Room Size Coverage Rule and IEF Rule, and the actual performance of air cleaners in real world conditions, results in consumers using more energy, and incurring more costs, to clean their spaces than they were led to believe.

DOE needs to act now to reverse course on the Room Size Coverage Rule and IEF Rule and avoid continued misleading of consumers, stifling of innovation and wasteful energy consumption, as well as avoid the Rules' adoption by other regulators, including FTC, which would amplify the negative impact of the mandates and make them more difficult to unwind in the future.

Accordingly, Dyson respectfully requests that DOE:

1. Amend part 429 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations to remove section 429.68(a)(4), and,

2. Amend part 430 of chapter II, subchapter D, of title 10 of the Code of Federal Regulations to remove section 430.23(hh)(4), or in the alternative,

3. Stay enforcement of 429.68(a)(4) and 430.23(hh)(4), and open a period of notice and comment to receive public comments on potential substitutions for room size coverage claims and IEF scores based on CADRs calculated using the AHAM CADR Test, or potential revisions that can be made to the AHAM CADR Test to better approximate real-world performance of air cleaners and to promote greater energy efficiency.

Sincerely,

Elena Stein,

General Counsel Dyson, Inc.

CC: United States Federal Trade Commission

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[53] *See* Exponent Report at p. 28.

[54] *Id.*

[55] *Id.*