



ENERGY STAR®
Residential Ceiling Fans
Draft 2 Version 4.0

Stakeholder Webinar and Discussion

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July 19, 2017



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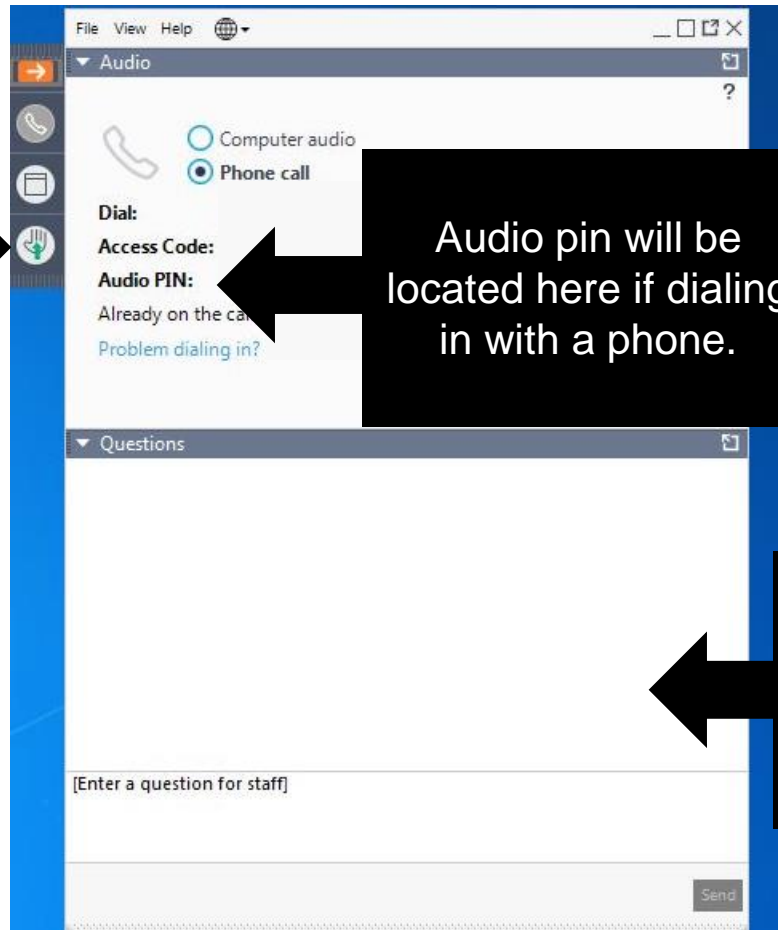
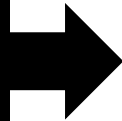
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Agenda

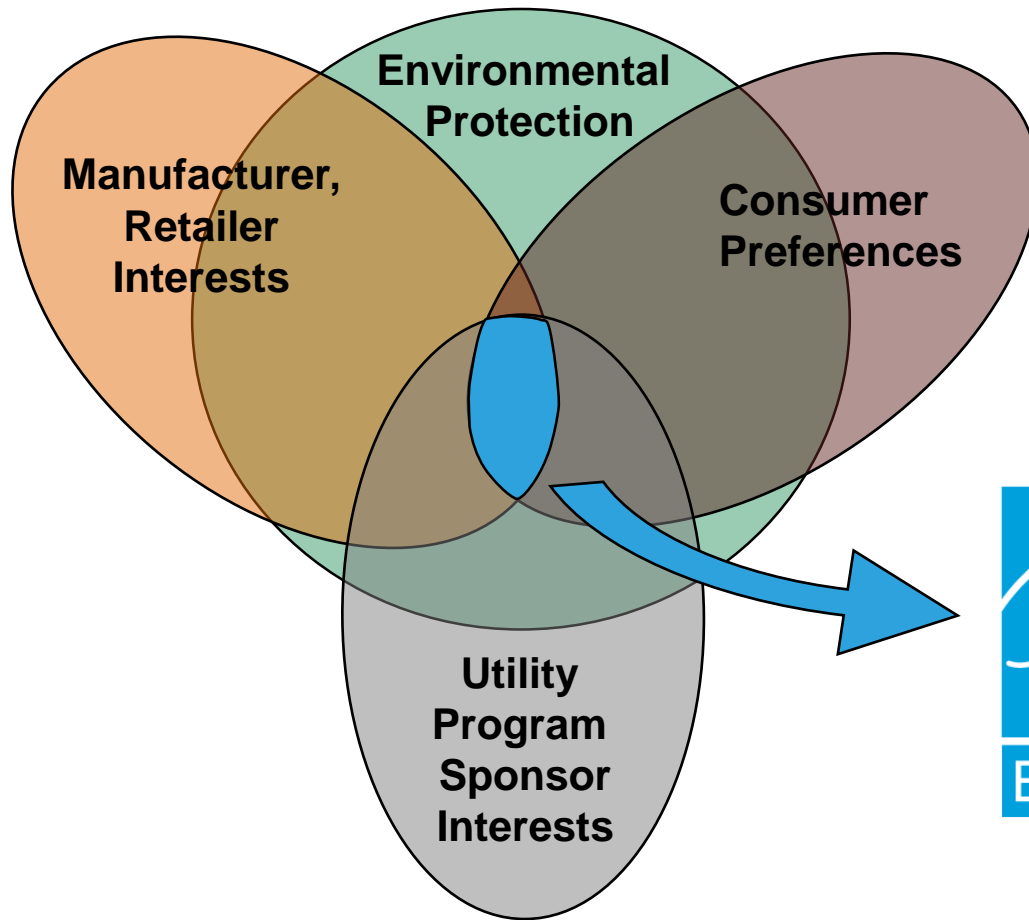
- 1** Introduction
- 2** Definitions and Scope
- 3** Certification Criteria
- 4** Next Steps
- 5** Discussion



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ENERGY STAR's Focus



- Cost-effective
- No sacrifice in performance
- Government-backed
- Consumer is Key**

Specification Development Cycle





Important Process Elements

- Consistency
- Transparency
- Inclusiveness
- Responsiveness
- Clarity



Guiding Principles for Specification Development

1. Significant energy savings can be realized on a national scale
2. Product performance can be maintained or enhanced with increased energy efficiency
3. Purchasers recover their investment in increased energy efficiency within a reasonable period of time
4. Energy efficiency can be achieved through several technologies
5. Product energy consumption and performance can be measured and verified with testing
6. Labeling would effectively differentiate products and be visible for purchasers



Drivers for Draft 2

- Ceiling fan performance requirements
 - High-speed airflow based on air speed
 - Ceiling fan efficiency equations not to overlap DOE's efficiency equations
- Light output and flicker requirement for CFLs
- Warranty requirements and hard-wired backup control requirement

Unless otherwise mentioned in this presentation, criteria from Draft 1 has been carried into Draft 2



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Definitions

- Controls definition updated to include a mobile device application
- Standby Mode Power changed to Standby Mode to align with DOE



Scope

- Included Products
 - Unchanged from Draft 1
- Excluded Products
 - VSD Ceiling Fans: EPA is not considering very-small-diameter ceiling fans in scope – limited market at this time



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Certification Criteria: Ceiling Fan Overview

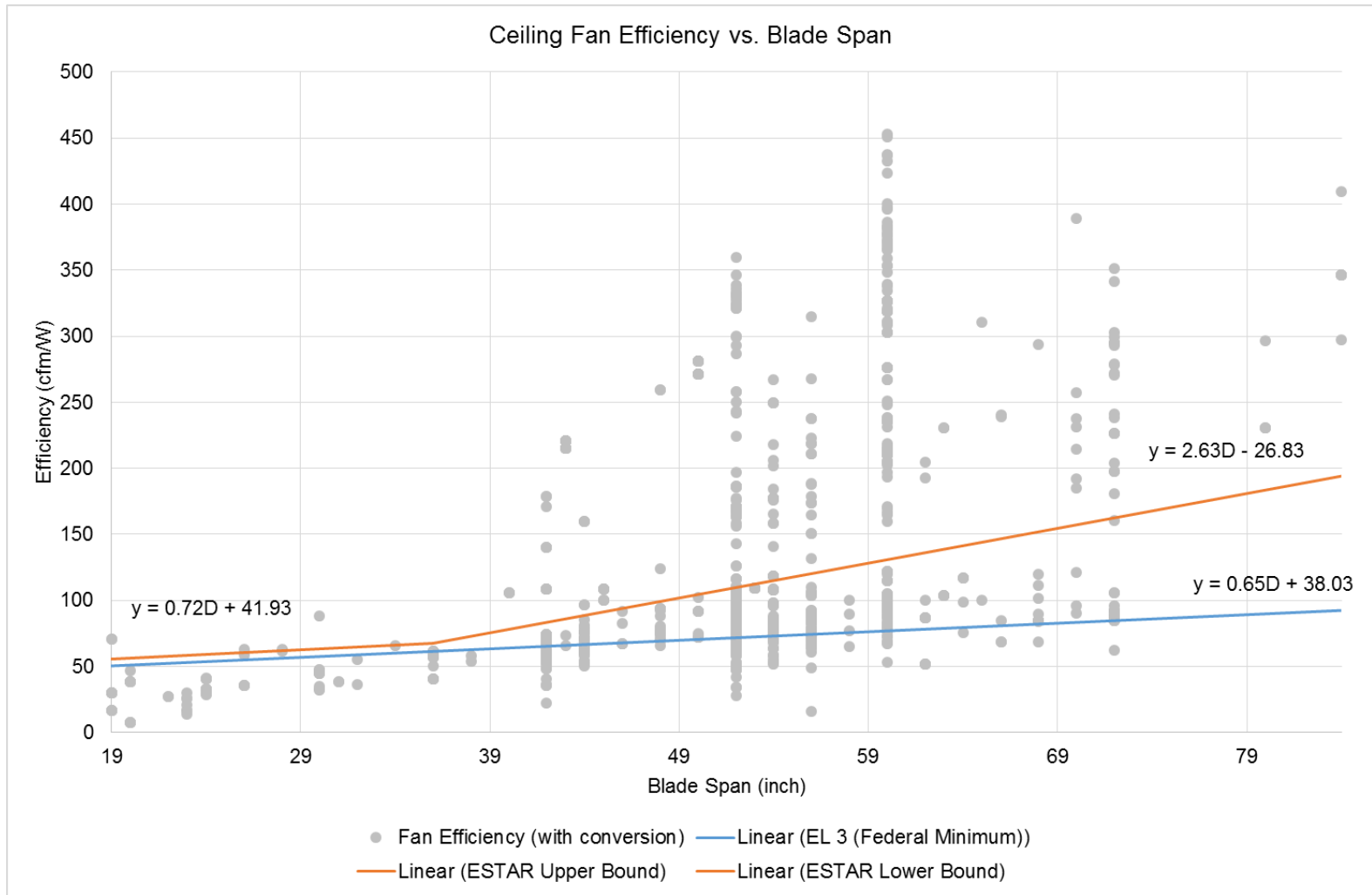
- Added language:
 - “...for a ceiling fan sold with a light kit, both the applicable ceiling fan and ceiling fan light kit requirements shall be met”
- Updated Ceiling Fan Minimum Efficiency
 - More strict than DOE for all blade spans
- Updated Minimum High-Speed Airflow
 - Based on airspeed so as to better reflect consumer experience
 - Also will allow smaller fans to participate

Efficiency and Airflow Criteria

Ceiling Fan Type	Blade Span [†] (inch)	Minimum Efficiency [†] (cfm/W)	Minimum High Speed Airflow [†] (cfm)
Standard Ceiling Fan, Low-Mount HSSD Ceiling Fan	$D \leq 36$ inches	$\geq 0.72 \cdot D + 41.93$	≥ 1767
	$36 \text{ inches} < D < 78$ inches	$\geq 2.63 \cdot D - 26.83$	$\geq 250 \cdot \pi \cdot (D/24)^2$
	$D \geq 78$ inches		≥ 8296
Hugger Ceiling Fan	$D \leq 36$ inches	$\geq 0.31 \cdot D + 36.84$	≥ 1414
	$36 \text{ inches} < D < 78$ inches	$\geq 1.75 \cdot D - 15$	$\geq 200 \cdot \pi \cdot (D/24)^2$
	$D \geq 78$ inches		≥ 6637

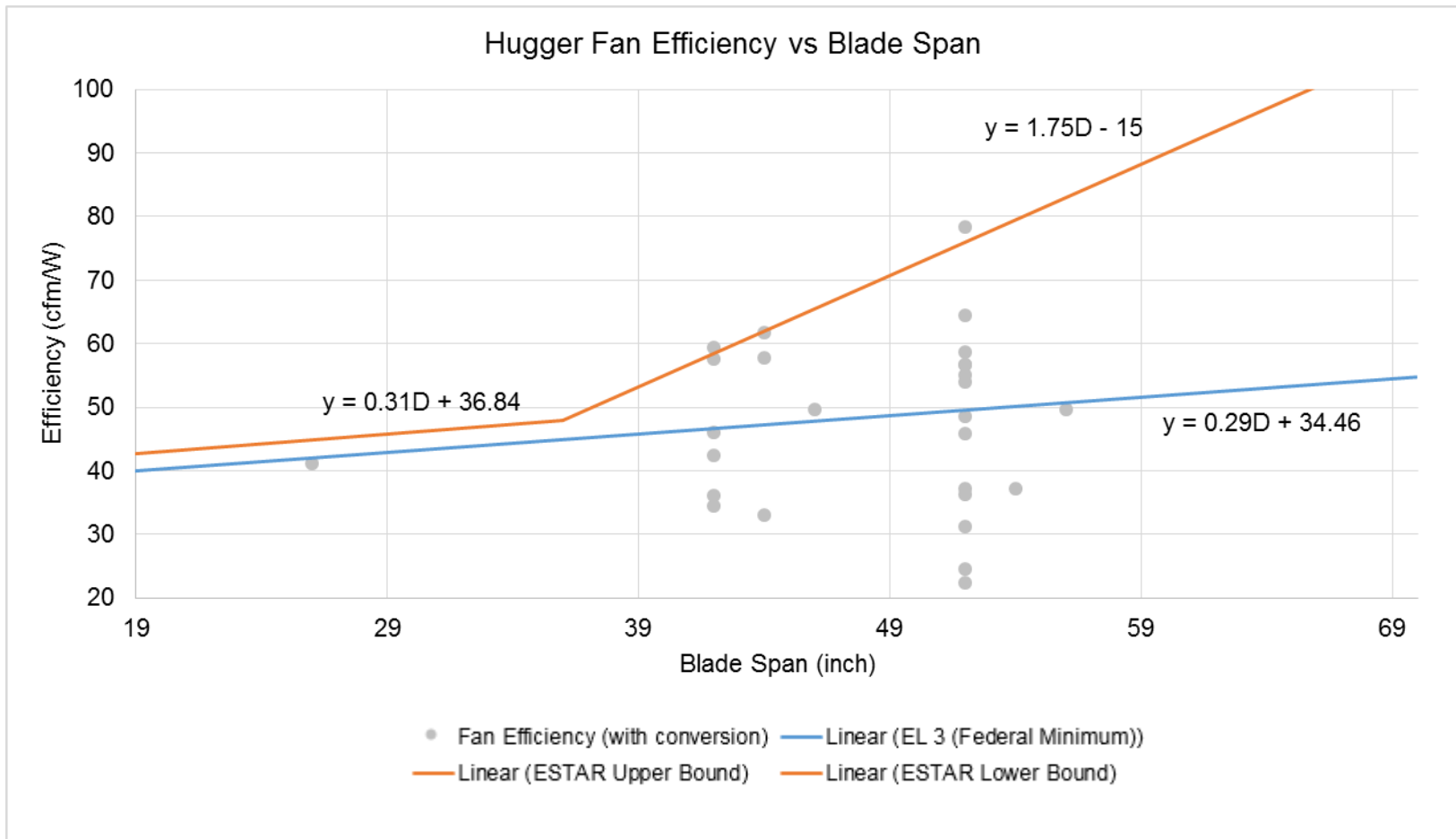


ENERGY STAR vs. DOE Efficiency



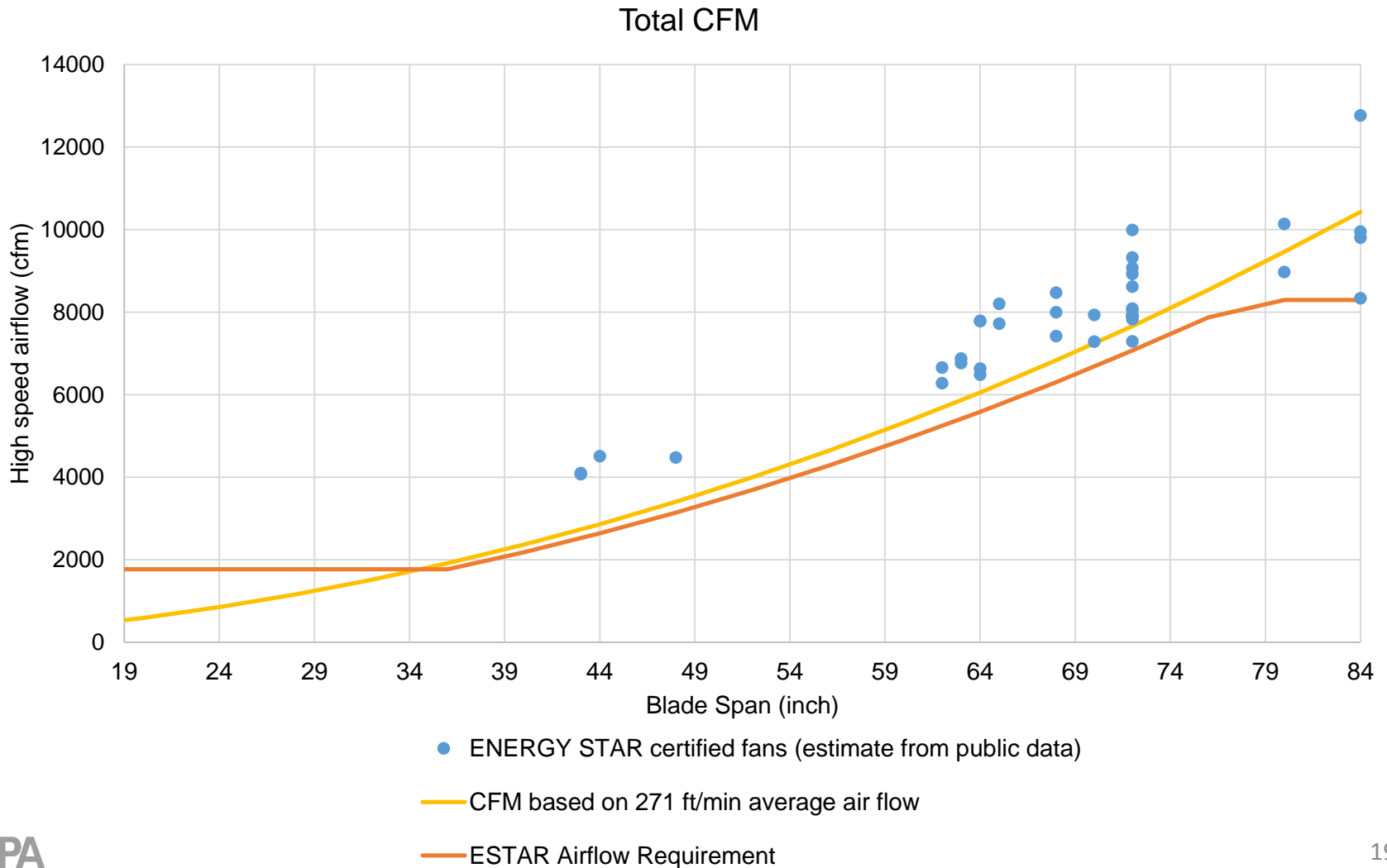


ENERGY STAR vs. DOE Efficiency





Performance Criteria: Minimum Airflow





Efficiency and Airflow Criteria in Summary

- Newly proposed efficiency equations for fans less than or equal to 36 inches in blade span (around 10% more strict than DOE for standard fans and 7% more strict for hugger fans)
- High-speed airflow requirements (cfm) based on air speed of the fan (250 ft/min for standard fans and 200 ft/min for hugger fans)
 - Limited for smaller and larger blade spans
- EPA maintains that low-mount HSSD fans meet the same efficiency criteria as standard fans



Certification Criteria: CFLK Overview

- Exempted CFLKs shipping with ENERGY STAR certified lamps from the minimum light output requirement
 - 800 lumens otherwise
- Adopted NEMA 77-2017 as the test method for measuring flicker
- Updated packaging requirements to **exclude** CFLKs using solid-state lighting from outdoor CFLK minimum starting temperature



Certification Criteria: General/Miscellaneous Overview

- Eliminated the hard-wired backup control requirement from Draft 1
 - Not necessary and not feasible for DC motor ceiling fans
 - Consumers are not asking for this
- Wi-Fi-based controls must provide one alternative control path using a different protocol as backup
 - In case of Wi-Fi connectivity failure



Certification Criteria: General/Miscellaneous Overview

- Reporting interval for energy consumption increased to 30 minutes from 15 minutes
 - Should suffice given the relatively low energy consumption of ceiling fans
- Warranty requirement updated
 - Removed 10 year motor warranty requirement as it does not increase the reliability of fan motors, which are unlikely to fail
 - 3 year warranty requirement for all other non-lighting components (including the motor driver electronics)



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Next Steps

- Written comments are due **August 2, 2017**
- EPA hopes to finalize Version 4.0 in September 2017
 - Delayed from original expectation due to necessity for updating high-speed airflow requirements
- Once finalized, products may be certified to Version 4.0 immediately
- Approximately 9 months from finalization, the product finder will **only** include product certified to Version 4.0



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Discussion

- Open to comments and questions
- Please raise your hand in the webinar control panel or write in a question
- The slides will be posted online
 - Slides, draft specifications, and all other related materials can be found on EPA's Residential Ceiling Fans [product development webpage](#)



Written Comments

- In addition to making verbal comments during today's meeting, stakeholders are strongly encouraged to submit written comments and data
 - *Comments will be displayed for public viewing unless otherwise specified by the commenter*
- Please send all comments to: CeilingFans@energystar.gov

Comment Deadline

August 2, 2017



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