



ENERGY STAR®

Dehumidifiers Draft 1 Version 5.0

Stakeholder Webinar and Discussion

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2 p.m. ET

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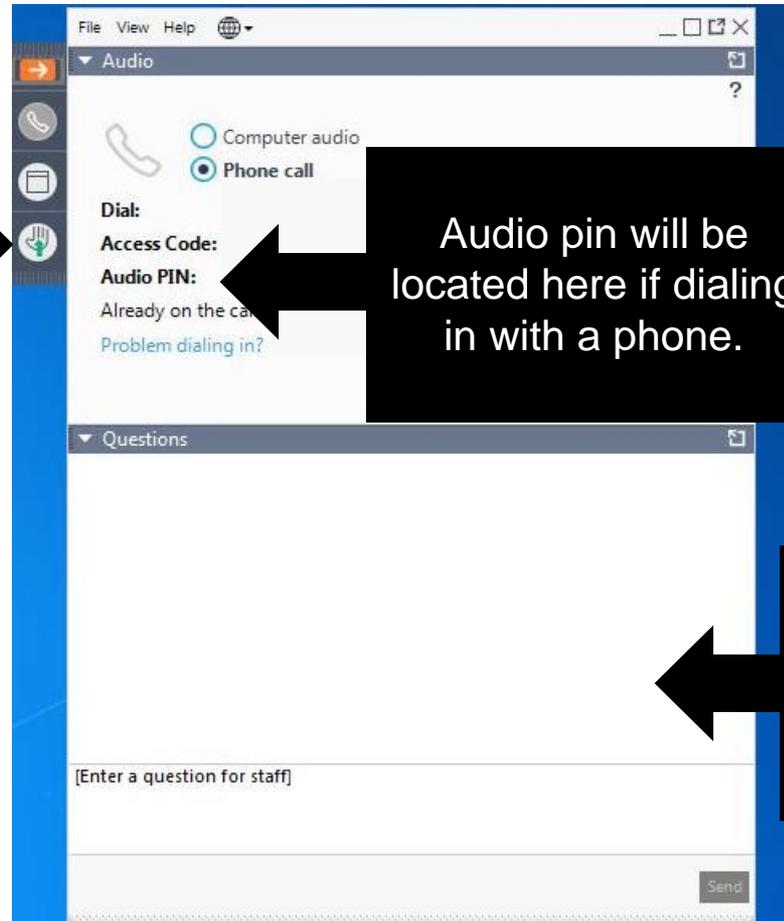
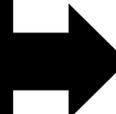
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Today's Webinar Slides

- This slide deck, along with all materials related to this revision process, will be posted to the [Version 5.0 product development webpage](#)



Agenda

- 1** Introduction
- 2** Definitions and Scope
- 3** Certification Criteria
- 4** Savings and Payback
- 5** Test Requirements
- 6** Discussion / Next Steps



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Drivers for Revision – Regulatory Action

- Version 4.0, which raised levels for units ≤ 75 pints/day, became effective in late 2016 → regular review due
- DOE final rule standards and test procedures (App. X1) require compliance on June 13, 2019
 - New test procedure at lower dry bulb temperatures and new efficiency metric
 - Product capacity and efficiency ratings lower compared to previous test procedure results
 - New metric also includes energy use in off-cycle and inactive modes
 - New product categories and size ranges
 - Stricter standards for all categories



DOE Energy Conservation Standards

Current Standards

- Applicable to all equipment types
- In terms of EF

Product Class (pints/day)	Energy Factor (L/kWh)
35.00 or less	1.35
35.01 to 45.00	1.50
45.01 to 54.00	1.60
54.01 to 75.00	1.70
75.01 or more	2.50

Portable Dehumidifier Product Capacity (pints/day)	Minimum Integrated Energy Factor (L/kWh)
25.00 or less	1.30
25.01 to 50.00	1.60
50.01 or more	2.80
Whole-home Dehumidifier Product Case Volume (ft ³)	
8.0 or less	1.77
More than 8.0	2.41

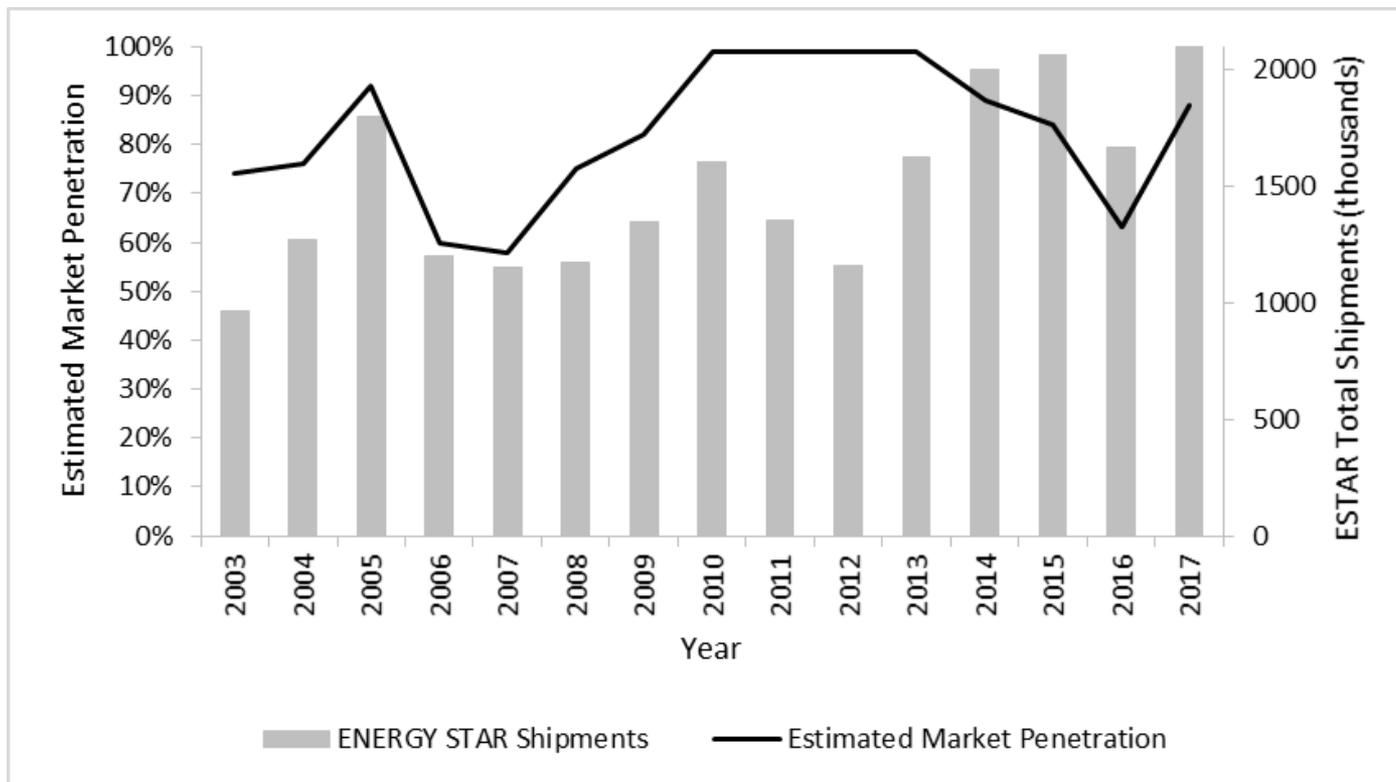
2019 Standards

- Separate levels for portable and whole-home
- In terms of IEF



Drivers for Revision – Market Penetration

- Market penetration came down recently (due to 2016 effective date for V4.0), but climbed quickly in 2017





Overview – Version 4.0 to 5.0

- Full revision – Partners will need to recertify products to Version 5.0 once finalized
- Test procedure updated to 10 CFR 430, Subpart B, Appendix X1
- Efficiency criteria more stringent, and in terms of integrated energy factor (IEF)
- Separate IEF requirements for Portable and Whole-home dehumidifiers based on product capacity and product case volume, respectively
- Definitions updated to align with DOE's



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Definitions

- **Portable:** A dehumidifier designed to operate within the dehumidified space without the attachment of additional ducting, although means may be provided for optional duct attachment.
- **Whole-home:** A dehumidifier designed to be installed with ducting to deliver return process air to its inlet and to supply dehumidified process air from its outlet to one or more locations in the dehumidified space.



Definitions Continued...

- Removed the definition for Energy Factor
- Align other definitions (i.e., Product Capacity, Integrated Energy Factor, and Basic Model) with DOE's definitions based on the Appendix X1 test procedure
- These definitions are not changing a lot, but the underlying meaning is very different given the new test procedure (different dry bulb temperature test point; ducting static pressure for whole-home now considered)



Scope

- Update product nomenclature (i.e., portable and whole-home) and maximum product capacity
- Maximum product capacities
 - Portable products > 50.00 pints/day newly excluded: no cost effective level
 - Whole-home > 155.00 pints/day excluded: commercial models
- Can we do better than product capacity to indicate non-residential products ?



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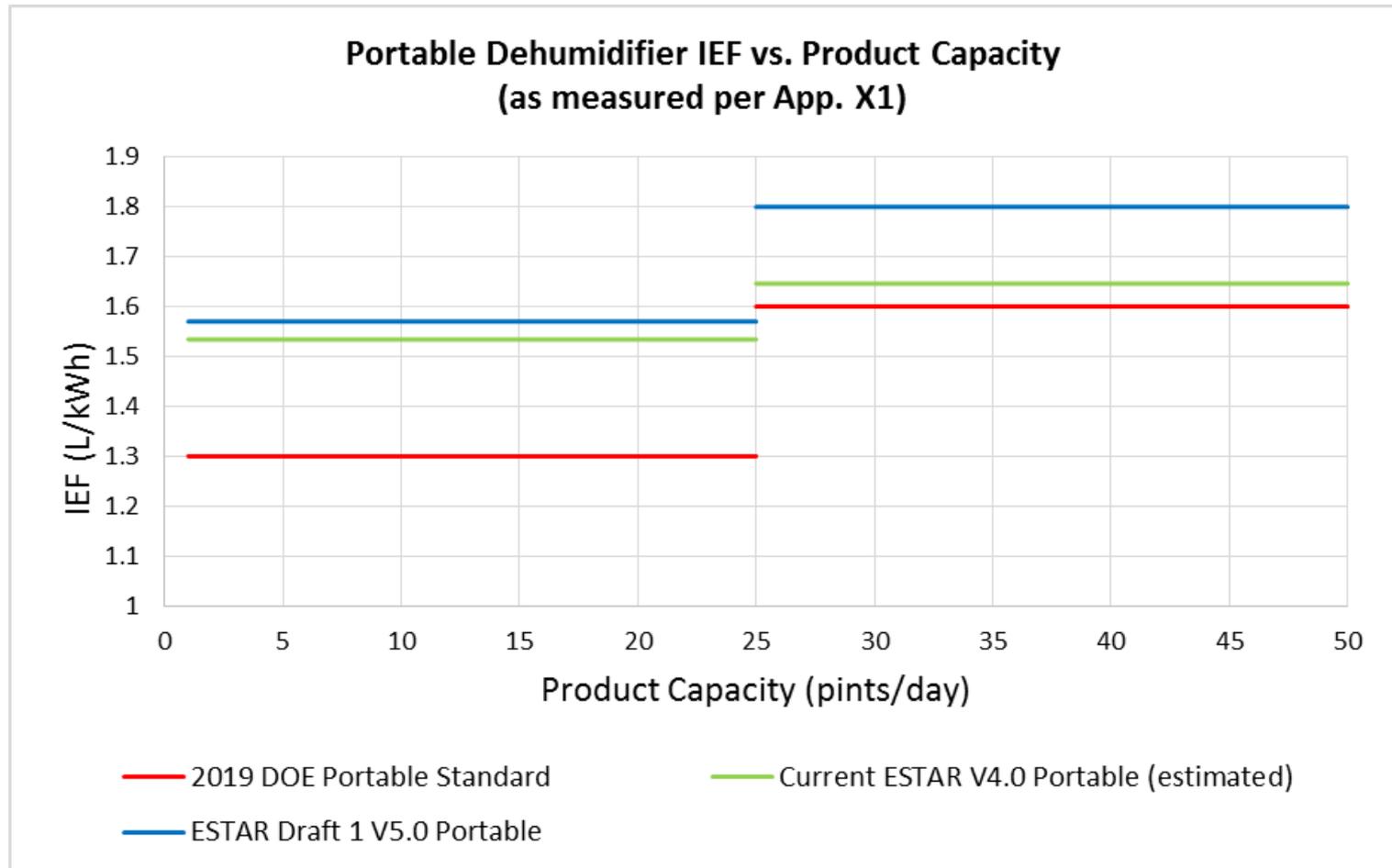
Certification Criteria

Portable Dehumidifier Product Capacity (pints/day)	Minimum Integrated Energy Factor (L/kWh)	% Greater than DOE 2019 Levels
25.00 or less	1.57	21%
25.01 to 50.00	1.80	13%

Whole-home Dehumidifier Product Case Volume (ft ³)	Minimum Integrated Energy Factor (L/kWh)	% Greater than DOE 2019 Levels
8.0 or less	2.09	18%
More than 8.0	3.52	46%

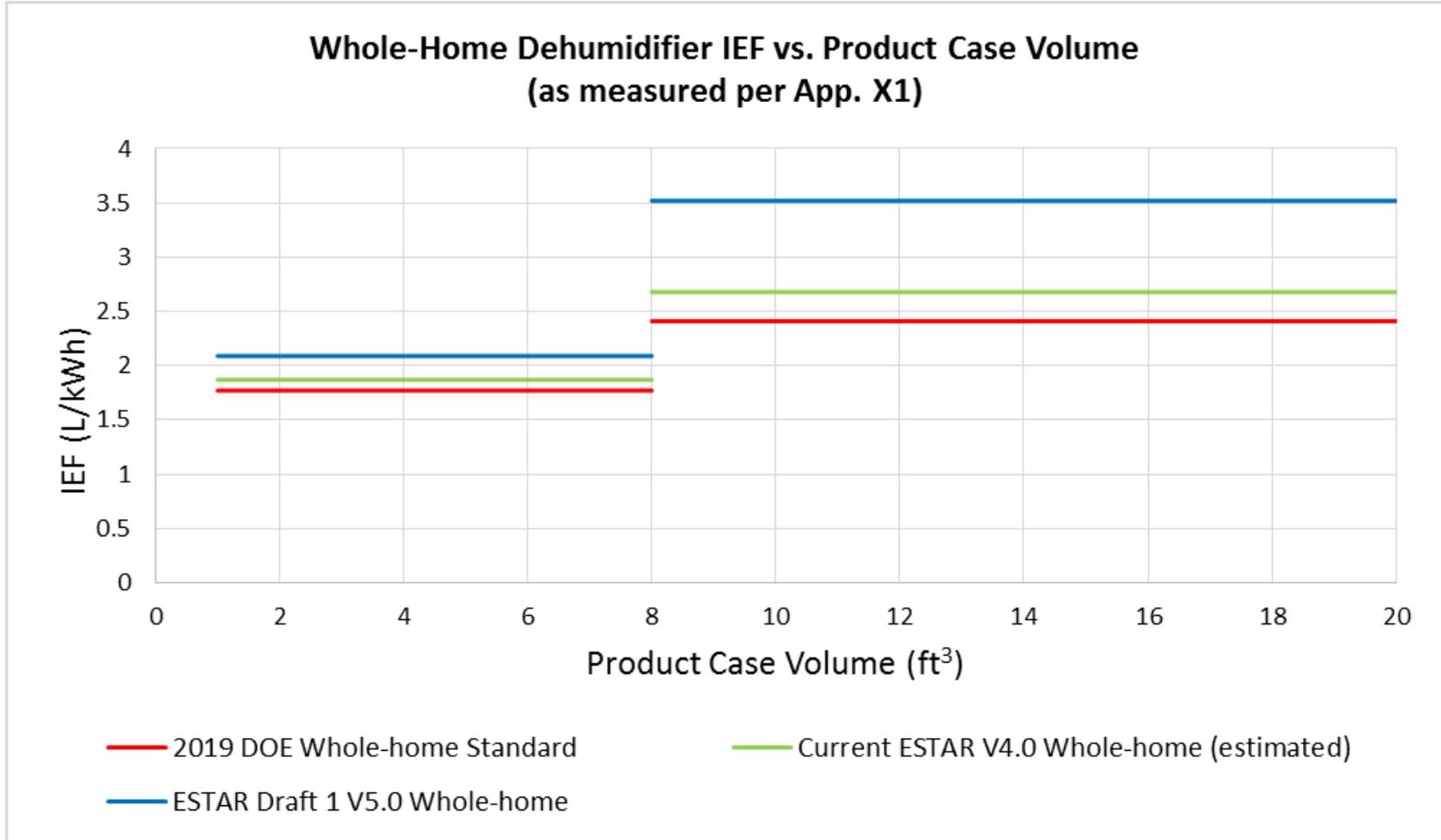


Portable





Whole-home





2019 DOE close to or above Current ESTAR

	IEF		EF	
Portable Dehumidifier Product Capacity (pints/day)	Minimum Integrated Energy Factor (L/kWh) – DOE 2019 Levels	ESTAR Proposed V5.0 IEF Levels	Comparable EF for DOE 2019 Levels	Current ESTAR Levels (in terms of EF – approximated capacities)
25.00 or less	1.30	1.57	1.88	2.00
25.01 to 50.00	1.60	1.80	1.96	
50.01 or more	2.80	3.66	3.53	2.80
Whole-home Dehumidifier Product Case Volume (ft ³)				
8.0 or less	1.77	2.09	1.90	2.00
More than 8.0	2.41	3.52	2.50	2.80



Model Percentage for Draft 1 Proposed IEF Levels

- Estimated, given that all data currently available is in terms of EF
- Single digit model percentages estimated for all new categories at the proposed Draft 1 levels
 - Based on ENERGY STAR QPL (April 2018) and DOE Compliance Certification Database (6/7/2018)
- 80% of models meet current Version 4 criteria
- Manufacturers have shown a commitment to and ability to deliver energy efficiency for consumers – typically model percentages rise quickly



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Simple Payback Period

- Payback is great for all categories, except portable 50.01 pints/day or more

Product Type	Product Size	Annual Savings (\$)	Simple Payback Period (yr)*
Portable (11 yr lifetime)	25.00 or less	10	2.4
	25.01 to 50.00	10	2.2
	50.01 or more	23	10.4
Whole-home (19 year lifetime)	8.0 or less	19	1.9
	More than 8.0	45	2.0

*Payback period calculated against 2019 Federal Standard as baseline. Based on data from DOE's final rule TSD.



Portable 50.01 pints/day or more

- EPA considered 3.66 IEF for portable >50.00 pints/day (TSL 4 in DOE analysis)
 - An IEF less than this does not offer much better payback
 - This product type only makes up 1% of the market
- As such, EPA is proposing not to include this product type in scope of Version 5.0
- If manufacturers have cost data to support lower IEF level, EPA would consider it



Preliminary National Savings Assessment*

Dehumidifier Type	Size	Percent of Market (%)	Lifetime Energy Savings (GWh)	Lifetime CO2 Savings (million metric tons)	Lifetime Cost Savings (million \$)
Portable	25.00 or less	54%	1,700	1.19	110
	25.01 to 50.00	44%	1,300	0.92	84
Whole-home	8.0 or less	0.7%	33	0.02	2
	More than 8.0	0.3%	35	0.02	2
Totals		99%	3,000	2.2	199

*Assumes all dehumidifiers in the U.S. are ENERGY STAR at the proposed Version 5.0 criteria over the lifetime of the longest lived product class (19 years). Projected shipments of dehumidifiers estimated per DOE's Final Rule Technical Support Document.



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Test Requirements

- Test Procedure
 - 10 CFR 430, Subpart B, Appendix X1
 - or*
 - DOE-approved test procedure waiver pursuant to 10 CFR 430.27
 - Variable speed dehumidifiers will need to first submit a test procedure waiver to DOE before certifying as ENERGY STAR (steps to take laid out in the [Draft 1 specification](#))



Test Requirements

- Sampling Plans
 - Updated to better harmonize with DOE
 - Intent of sampling plans are essentially the same as in Version 4.0
 - Additional testing required for compliance with Federal Standards if the ENERGY STAR single unit plan (Section 4.A.a in the specification) is used for certification to ENERGY STAR



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Version 5 vs. ENERGY STAR Most Efficient 2019

- Proposed criteria for ENERGY STAR Most Efficient 2019 Dehumidifiers are equal to V5 proposed levels
- **ESME** is point of sale only – labeling depends on the *sales date*
- **ENERGY STAR** certification is by *manufacture date*
- Summer 2019 sales: manufactured before effective date of version 5 → these levels will remain a significant step up
- Expect higher levels for ENERGY STAR Most Efficient 2020



Discussion / Questions

- We will pause here for discussion and/or questions
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 - *6 to unmute yourself locally if dialing in
 - Send questions in through the Questions tab on your control panel



Questions for Stakeholders

- Do manufacturers have cost and IEF data available for Portable dehumidifiers with product capacities 50.01 pints/day or greater they could share with EPA to support inclusion?
- Do stakeholders have access to data regarding the effects of cycling on dehumidifier performance in the real world?
- Is there any current interest from consumers for Wi-Fi dehumidifiers?
- Are there way to indicate if a product is non-residential, other than product capacity?



Submitting Comments

- Stakeholders are encouraged to submit formal comments to Dehumidifiers@energystar.gov by **September 7, 2018**
 - All comments will be posted to the [ENERGY STAR Dehumidifier product development webpage](#) unless the submitter requests otherwise.



Next Steps / Timeline

- Comments due **September 7, 2018**
- Based on comments, EPA will proceed with either a Draft 2 or Final Draft
- Final – EPA hopes for late 2018 or early 2019
- Specification likely effective in Fall 2019



Contact Information

- Specific questions regarding this revision:
 - Abigail Daken, Daken.Abigail@epa.gov or (202) 343-9375
 - Jacob Bayus, Jacob.Bayus@icf.com or (202) 791-8871
- Questions about the test procedure and/or variable speed waiver process:
 - Ashley Armstrong, Ashley.Armstrong@ee.doe.gov or (202) 586-6590