BUILDING TECHNOLOGIES PROGRAM

U.S. DEPARTMENT OF ENERGY | Energy Efficiency & Renewable Energy

Public Service of Colorado Ponnequin Wind Farm

Test Procedures for Residential Furnaces and Boilers Incorporation of Second Edition of IEC 62301 Standard Addressing Energy Use in Standby Mode and Off Mode Notice of Proposed Rulemaking (NOPR) Public Meeting

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Welcome and Introduction

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- Introductions
- Role of the Facilitator
- Ground Rules (norms)
  - Listen as an ally
  - Use short, succinct statements/keep to the point
  - Hold sidebar conversations outside the room
  - Focus on issues, not personalities
  - One person speak at a time (raise hand to be recognized; state your name for the record)
  - Set cell phones to silent/vibrate
- Housekeeping Items

Agenda

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9:00 - 9:05 am Welcome

9:05 - 9:15 am Introduction and Agenda Review (slides 2-4)

Doug Brookman

9:15 - 9:25 am Rulemaking Overview (slide 5)

Mohammed Khan

9:25 - 10:00 am Brief Opening Remarks (as applicable) (slide 6)

Doug Brookman

10:00 – 10:15 am Rulemaking Steps and History (slides 7-10)

Mohammed Khan

10:15 – 11:30 am Proposed Amendments (slides 11- 15)

John Talbott

11:30 – 11:45 pm Discussion from Interested Parties (slide 16)

11:45 -12:00noon Next Steps and Closing (slide 17)

Mohammed Khan

Purpose of the Public Meeting

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- Present and seek comment on the Department's proposed test procedure amendments.
- Discuss specific issues or questions related to the proposed amendments.
- Describe the next steps.

Steps in Test Procedure Rulemaking

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- Final Rule published in the *Federal Register* by DOE on October 20, 2010
- NOPR published in the *Federal Register* by DOE on September 13, 2011
- NOPR Public Meeting, October 3, 2011
- Comments on NOPR from interested parties
  - Transcript of oral comments from today's public meeting.
  - Written comments (comment **period** closes 75 days after publication in the Federal Register, *i.e., on* November 28, 2011)
- DOE reviews and considers all comments
- Final Rule Publication
  - Final Rule will be issued as soon as possible after the close of the comment period.

Opening Remarks and Comments from Interested Parties

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- Opening Remarks
  - At this time, DOE welcomes opening remarks from interested parties on the test procedure NOPR for Residential Furnaces and Boilers**.**
- Comments from Participants
  - Participants are invited to provide summary comments or statements;
  - Participants are invited to raise additional issues for discussion today; and
  - Participants are invited to submit comments during the NOPR comment period, which is open through November 28, 2011.

Regulatory History

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- **Test Procedures**:

  DOE's current test procedures for the subject products are found at 10 CFR part 430, subpart B, appendix N, for residential furnaces and boilers. These procedures include measures of energy efficiency (*e.g.*, annual fuel utilization efficiency (AFUE)), energy use descriptors, annual fuel and electric energy consumption, and annual operating cost. And, by virtue of recent amendments, the test procedure also includes provisions to measure and incorporate electrical standby mode and off mode energy consumption.

- **Energy Conservation Standards**:

  DOE set standards for these products in its recent Direct Final Rule published in the *Federal Register* on June 27, 2011. This Direct Final Rule sets minimum requirements for standby mode and off mode energy use in terms of measured wattages. (For example: 10 watts for most furnaces and boilers effective May 1, 2013)

Regulatory History -continued

- The Energy Independence and Security Act of 2007 (EISA 2007) Directs DOE to incorporate a measure of standby mode and off-mode energy consumption into its test procedures.

- EISA 2007 also directs DOE to integrate such energy consumption into the energy efficiency, energy consumption, or other energy descri ptor unless the Secretary determines that current test procedures already fully account and incorporate the standby mode and off mode energy consumption or such an integrated test procedure is technically infeasible.

- In developing an amended test procedure, DOE must consider the most current versions of International Electrotechnical Commission (IEC) Standards 62301, *"Household electrical appliances–Measurement of standby power,"* and IEC Standard 62087, "Methods of measurement for the power consumption of audio, video and related equipment."

Review of EISA Amendments for Furnace and Boilers Test Procedures

- DOE met its test procedure obligations under EISA 2007requirements for residential furnaces and boilers through publication of a Final Rule on October 20, 2010. (75_FR 64621)
  - In completing this final rule, DOE determined that the test procedures required measurement and calculation provisions in order to account for electrical standby mode and off mode energy use. Fossil-fuel standby mode and off mode energy use was already integrated into the furnace and boiler test procedure.
- For measurement of electrical standby mode and off mode wattages, DOE's amended test procedure utilizes IEC Standard 62301with clarifications. A key clarification is that the existing test procedure specifications for ambient temperature and voltage shall apply in lieu of IEC Standard 62301's provisions for these parameters.
- It is noted that these amendments referenced the **first edition** of IEC Standard 62301 for the electrical standby mode and off mode measurements. The **first edition** of IEC 62301was the most current version of this industry standard at the time the final rule was issued.

Second Edition of IEC 62301

- Since the time of the October 2010 final rule for furnaces and boilers, IEC has finalized a second edition to the 62301 standard.

- DOE has reviewed the second edition of the IEC 62301and has found it to be superior to the first edition in a number of ways. (Details of this review are outlined in the following slides)

- Consequently, DOE is proposing to incorporate IEC Standard 62301 (Second Edition) in its entirety into the overall list of incorporated references in DOE's regulations at 10 CFR 430.3 and to call out the applicable provisions of that standard in DOE's test procedure regulations for residential furnaces and boilers.

Details of DOE's review of the Second Edition IEC 62301 Standard

DOE identified two areas of improvement:

- Accuracy provisions, and
- Specifications for stability

Details of DOE's review of the Second Edition IEC 62301 Standard

Accuracy provision:

- A more comprehensive specification of required accuracy is provided in IEC Standard 62301 (Second Edition) that depends upon the characteristics of the power being measured. DOE believes that this revision provides more realistic accuracy provisions for a range of electricity consumption patterns, thereby making the test method appropriate for the variety of electricity-consuming devices present in furnaces and boilers.

- The new specification can be met by commercially-available test equipment, whereas requirements in the first version may have required specialized instrumentation that is not readily available.

Details of DOE's review of the Second Edition IEC 62301 Standard

ACCURACY PROVISION:

- Explaining further, the second edition specifies instrument accuracy based on the expected uncertainty. The uncertainty depends upon a value termed the Maximum Current Ratio (MCR), which is the ratio of the Crest Factor to the Power Factor of the signal. e.g. *For signals with MCR's less than 10, the allowed instrument uncertainty would be 2 % at the 95 % confidence interval for power values greater than 1.0 W. For measured power values less than 1.0 W, the maximum permitted absolute uncertainty would be less than or equal to 0.02 W at the 95 % confidence interval.*

- DOE believes both levels of uncertainty are sufficient to assess the standby mode and off mode energy consumption of furnaces and boilers.

Details of DOE review of Second Edition IEC 62301 Standard (continued)

Stability:

- IEC Standard 62301 (Second Edition) contains more detailed techniques to evaluate the stability of the power consumption and to measure the power consumption for loads with different stability characteristics. A longer observation period is prescribed in the second edition. For constant power modes, the test method specified in the second edition matches that specified in the first edition. These techniques will result in more accurate measures of standby energy consumption over a variety of operational characteristics that could be associated with the electrical components of furnaces and boilers.

- The user is given a choice of measurement procedures, including less burdensome methods such as direct meter reading methods if certain clearly-described stability conditions are met.

Details of DOE review of Second Edition IEC 62301 Standard (continued)

Summary:

- DOE believes that the changes incorporated in IEC Standard 62301 (Second Edition) would allow for use of less burdensome methods when appropriate and would ensure accurate measures of standby energy consumption over a range of operating conditions that may be observed in residential furnaces and boilers.

- In addition, DOE has examined some common commercially-available instrumentation for making these measurements, and DOE has determined that the specifications in the second edition are more in line with the performance specifications of commercially-available equipment.

Closing Remarks and Comments

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At this time, DOE welcomes any additional remarks or questions from interested parties on the NOPR including the following:

- **Use of the IEC Standard 62301**
- **Any other issues or concerns**

How to Submit Written Comments

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- **In all correspondence related to this rulemaking, please identify the Residential Furnaces and Boilers Test Procedure Rulemaking by providing the following information :**
  - Residential Furnaces and Boilers Test Procedure Rulemaking,
  - Docket Number EERE–2011–BT–TP–0007, and
  - Regulatory Identification Number (RIN) 1904-AC44

- **Email:** FurnaceBoiler-IEC-2011-TP@ee.doe.gov

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- **Comment period closes: November 28, 2011**