Welcome to the webinar. Is anyone having trouble viewing the slides? Great. Rather than go through lengthy introductions, you should be able to see who is connected to the webinar in the webinar window.

I’ve spoken to many of you in the past, and am looking forward to working with you to update this Furnace specification. ENERGY STAR has been labeling furnaces for a long time (since 1995!) and the industry has made tremendous strides in that time. As I look forward, I see opportunities for even more progress.
Webinar Goals

1. Present the drivers and goals for this revision process.
2. Highlight key changes in the Version 3.0.
3. Solicit stakeholder feedback on proposal and outstanding issues.
4. Address stakeholder questions about process and/or changes.
5. Identify next steps and timeline.
We’ll be pausing periodically for questions and comments, so except for clarifications, please try to hold your questions for the pauses. Our questions for you will be highlighted throughout the presentation.

We’ve kept the overview of the ENERGY STAR program very brief, with the assumption that most of you are quite familiar with it. If anyone would like to learn more, please give either myself or Sarah Medepalli at ICF International a call. Our contact information is at the end of the slide deck, and I am also easy to find through energystar.gov.

We’ll spend quite a bit of time going over what’s changed between the current furnace specification and this draft revision. As those of you who’ve had a chance to look at the draft know, there are some very substantial changes, and we’ll discuss them in detail.

We will also talk about the new, program-wide testing and verification requirements. These are incorporated into the current draft, but will also be in effect for the current furnace standard (as for all ENERGY STAR standards) in 2011.

So let’s get started!
ENERGY STAR Overview

• What is ENERGY STAR?

A voluntary climate protection partnership
A strategic approach to energy management
Recognized by over 75% of Americans
An internationally recognized brand
In writing our specifications and administering the program, we’re looking for situations where everyone can win – not just the environment, but also manufacturers, consumers, and utilities.

To find the multiple wins, we have some guidelines in writing specifications. They are:

- Cost-effective efficiency
- Performance maintained or enhanced
- Significant energy savings potential
- Efficiency improvements are achievable with non-proprietary technology
- Product differentiation and testing are feasible
- Labeling can be effective in the market
For a program with a relatively small budget, ENERGY STAR has delivered a lot.
When we have a product type that’s already labeled, how do we know it’s time to consider revising?

What Drives Specification Revisions?

- High or low market share of ENERGY STAR products
- Federal or state minimum efficiency standards
- Introduction of new technologies or changes in product design
- Performance or quality issues
- Availability of new (or changes to existing) test procedures
As you know, many of these drivers apply to furnaces.
As we develop this revision together, these are the goals that EPA will have in mind.

Next, we'll talk in detail about the energy efficiency requirements we've proposed for the revision. First, let’s take a minute and pause for questions and comments.
Great, so here are the key changes to the requirements. We are moving to a regional approach, which will allow us to raise AFUE in some regions. We are also adding requirements for furnace fan efficiency and furnace cabinet air leakage. Both are opportunities based on newly available test procedures.
I feel confident saying that there is broad recognition that it is not cost effective in some climates to raise furnace requirements from very efficient to super-efficient. However, in some climates there are still opportunities for cost-effective efficiency. Therefore, we propose using climate regions similar to those proposed in the recent DOE rulemaking. Since the ENERGY STAR program operates in Canada as well, we will also have a region for Canada.
Here are the actual states and territories in each of the US regions.

<table>
<thead>
<tr>
<th>U.S. Regions</th>
<th>U.S. States Per Region</th>
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<tbody>
<tr>
<td>U.S. South</td>
<td>Alabama, American Samoa, Arizona, Arkansas, California, Delaware, District of Columbia, Florida, Georgia, Guam, Hawaii, Kentucky, Louisiana, Maryland, Mississippi, Nevada, New Mexico, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas and Virginia.</td>
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Moving to a regional approach will require regional versions of the ENERGY STAR label. We've been doing this for years for windows, which have much more complex regions, though a simpler distribution chain. We anticipate the label will include a small map and a text listing of states by postal abbreviation. Keep in mind that these labels will only be relevant to furnaces between 90 and 94% AFUE, since the most efficient furnaces will qualify everywhere. The labeling requirements, when we finish developing them, will be in the identity guidelines.
We propose the following AFUE levels. As you see, we have a modest AFUE increase for gas furnaces in the U.S. North, and a more substantial one in Canada.
So let’s take a minute here and pause for comments and questions.
This draft went out with a reference to C823. We are aware that DOE is also planning to release a fan efficiency test metric, and will continue to follow that process. Our goal is to avoid unneeded test burdens, but we also would like to capture energy saving opportunities as soon as possible.
We had originally anticipated altering the heating and cooling hours used in calculating AECR, and asked Jim Lutz at LBL to come up with an initial proposal of reasonable numbers to get the discussion started. However, the average hours in the US are not very different from in Canada, and even a breakdown by region doesn’t change the picture a lot. (We are guessing this is because in colder climates, folks have larger capacity heating equipment, but don’t particularly run it more.) So, for simplicity, we propose using AECR as calculated in C823.
Let’s pause again for discussion.

**Furnace Fan Efficiency cont.**

We intend to propose a level for the fan efficiency requirement in the next draft, based on any data stakeholders share with us by September 30, 2010.

- **Q 1:** Are there any concerns with standard C823 with regards to the test procedure or calculation?
- **Q 2:** Are there any concerns using the same standard and conditions for US?
- **Q 3:** If so, what approaches might be better for the U.S. regions?
While there had never been a DOE or EPA requirement for air leakage, the Florida residential building code did give a credit for furnaces with 2% or less leakage. Several manufacturers sent letters to Florida listing a substantial number of furnace models with low leakage. Furthermore, in recent research, some furnaces were found to leak very little, while others leaked much more. There did not seem to be a strong correlation with between cabinet tightness and furnace cost, though it’s difficult to say since only a few models were tested.
ASHRAE recently released a standard test method for determining furnace cabinet tightness. It assumes that the furnace is installed according to the manufacturer’s instructions.
Let’s pause here for discussion again. Are there any questions or comments from folks on the phone?

This concludes our discussion of the efficiency requirements in this draft revision. Now let’s talk a little about enhanced testing and verification.
Just a note here, that we expect to have at least one CB for furnaces up and running when the requirement takes effect. We hope and expect that AHRI will be the main CB for furnaces, though there may well be others.
Like all the specifications, the furnace specification changed a bit to support the ET&V program. These changes are made to this draft revision. Mostly, we needed to be more clear in order for CBs to have clear guidance.
This is how we expect the program-wide ET&V requirements to unfold.

Keep in mind that the performance requirements are NOT changing – just how the program is administered.

By the time the Version 3 furnace specification comes into effect, this will all be old hat to you!

Are there any questions about this?
Looking into future

- Technical features to address installations and maintenance? → Diagnostics and Communications
  - Monitor operating state, diagnose efficiency loss and other problems, notify homeowners or contractors
  - Digital communication enhances the utility of diagnostics.
  - EPA looking at including self diagnostics as part of Tier 2 requirements, or in the future.

Q 8: How are energy savings provided by self diagnostics captured?
Q 9: Are there any industry standards on diagnostics?

It was clear to us in thinking about revising the furnace specification that straight efficiency requirements will be of limited utility in guaranteeing energy savings. That’s partly because, as I mentioned earlier, the payback from changing from a very efficient furnace to a super-efficient one just isn’t very high, either in dollars or in energy use.

One area that does provide opportunity for improvement is maintaining that efficiency through installation and over time. The ENERGY STAR homes team has worked with ACCA to release a Quality Installation specification, and is building the capacity in the installer base to do a great job with high efficiency equipment. I know that many of our manufacturing partners have put a lot of effort into that as well.

Meanwhile, though, as product folks, we are looking for technical features that can help make quality installation and appropriate maintenance easier and more likely to occur. We’ve identified two areas that may aid this: self-diagnostics, and communications. I know that the large manufacturers have high-end product lines that can detect problems and communicate them to a thermostat, for instance. Also, they can automatically configure the thermostat properly for the equipment its connected to. We think these kinds of features are likely the future backbone of the most energy efficient systems. We are building this kind of capability into the ongoing Climate Controls specification development, and expect to include it in future furnace specifications.

So, we are interested in what kinds of diagnostics and advanced control features you see as garnering the largest energy savings, and how that energy savings can be quantified.
This is our anticipated schedule for the rest of the furnace specification revision. As you can see, we expect to finish early in the new year.

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
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<tbody>
<tr>
<td>8-30-2010</td>
<td>Draft 1 Version 3.0 Furnace specification released</td>
</tr>
<tr>
<td>9-21-2010</td>
<td>Draft 1 Stakeholder webinar</td>
</tr>
<tr>
<td>9-30-2010</td>
<td>Deadline for comments/data</td>
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<tr>
<td>Mid Oct 2010</td>
<td>Draft 2 specification released</td>
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<tr>
<td>Early Nov 2010</td>
<td>Draft 2 Stakeholder webinar</td>
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<tr>
<td>Mid Nov 2010</td>
<td>Deadline for comments/data</td>
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<tr>
<td>Early Dec 2010</td>
<td>Final draft specification</td>
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<tr>
<td>Mid Dec 2010</td>
<td>Deadline for comments/data</td>
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<tr>
<td>Early Jan 2011</td>
<td>Final specification released</td>
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<tr>
<td>Sept 2011</td>
<td>Version 3.0 takes effect</td>
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Contact Information

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Please address questions and comments to furnaces@energystar.gov
Visit the ENERGY STAR Furnace Web page at www.energystar.gov/revisedspecs
This concludes our presentation, and it looks like we have some additional time for discussion, so the floor is open.

Thanks for your time and attention, and I look forward to working with you on this revision.