

Meeting Notes - 2004 HVAC Partner & Stakeholder Meeting
October 6, 2004
Chicago, IL

General Observations from the Discussions

- **Equipment Specification:** Many attendees – including utilities, contractors and manufacturers – want EPA to keep an ENERGY STAR specification on the “box.” People cited continuity, marketing platform, and avoiding confusion with customers as key reasons for this recommendation. Utilities are interested in promoting higher EER and SEER, but it appears this is being driven heavily by the peak savings (EER). Several utilities asserted that SEER 14/EER 12 units are cost-effective for them now, and they would like to keep promoting them using ENERGY STAR. While these system may provide direct avoided-cost benefits to utilities it is unclear what the benefits are to consumers. Cost-effectiveness in the future is even less clear, since we don’t yet know how systems will be priced once the new federal minimum standard goes into effect.
- **Quality Installation:** Everyone seemed unanimous that this is very important, and that there is a role for ENERGY STAR. People understand that it will take a while to get a national effort rolled out, but would like to see it happen as soon as is possible. Many utilities are already promoting quality installation, and a national platform/specification with support from national organizations like NATE, ACCA, etc. could really improve their efforts. All seemed to agree that real savings could be captured through installation. Manufacturers and contractors are supportive of efforts to promote best practices.
- **Verification:** Everyone agreed that this element is essential. While utilities do it now, some say they want to phase out of this role over time. Suggestions regarding how to accomplish this in the future were a little vague.
- **Question of the Day:** If the largest savings potential is from quality installation, why focus efforts only on SEER 14 units (potentially a small part of the market)?

Notes from Structured Discussion Part 1: Equipment Specifications

What value can ENERGY STAR qualified HVAC offer to market actors?

- Health and safety is a value to consumers, and promoting it is a value to contractors. (NYSERDA)
- Don’t forget about the groups behind the stakeholders – e.g., NATE, ACCA, BPI. (ACEEE)
- Consumers value simplicity and so do contractors. (Cape Light Compact)
- HVAC could replicate ENERGY STAR for New Homes with no “plug in” label, rather support a structured methodology. (Cape Light Compact)
- Unlike ENERGY STAR for New Homes, ENERGY STAR qualified HVAC equipment is lacking verification infrastructure (EPA)
- End product is determined at the contractor level. Bottom line/lowest cost secures the deal. ENERGY STAR can help level the playing field. (NEMI/SMACNA)

Should ENERGY STAR continue to have an equipment specification?

- Strong argument to continue a spec purely from the marketing standpoint. ENERGY STAR brand makes marketing to consumers easier across products.
 - SMUD provides incentives for 70% of installed units in its territory, 64% of installed systems are 13 SEER or higher.
 - One year is not enough of a lead-time to re-educate customers about buying an efficient system (vs. simply looking for the label).
 - SMUD may have additional information to help EPA understand the market impact of ENERGY STAR qualified HVAC equipment today. (SMUD)
- Cannot accurately determine now whether SEER 14 systems will be cost effective in 2006 or not, since we don't know what the prices will be once the new standard goes into effect. Competition for SEER 14 and higher will develop; manufacturers have not determined price points for such units yet. (ACEEE)
- Need to keep equipment spec because we cannot properly train an installation workforce in one year. Need to work through training communities to raise the bar. (NATE)
- Support for both equipment specs and training/proper sizing and installation measures because at this time cannot predict what the market will look like in 2006/2007. ENERGY STAR needs more insight into where manufacturer products lines will be at that time. Cannot stop labeling ENERGY STAR qualified HVAC equipment in the market only to re-label at a later date. (VEIC/NEEP)

Can ENERGY STAR label equipment along with an installation message?

- Do not confuse ENERGY STAR labeled equipment with systems that actually operate at the specified level (SEER 14 or higher). Do not misrepresent what actually gets installed. Need to integrate marketing on a box with installation messaging. (NEMI/SMACNA)
- Long-term solution is not to end labeling of equipment. (SMUD)
- ENERGY STAR cannot withdraw from the market. (PG&E)
- Need combination of equipment labeling and installation practices. (Buderus Hydronic Systems)
- ENERGY STAR has significant value to manufacturers and it will lose publicity of its brand if it cannot be associated with a product. (Lennox)
- Possibility of for an "ENERGY STAR Eligible" label indicating the equipment qualification is subject to proper installation as a compromise. (The Cadmus Group)
- Nordyne endorses the "Eligible" option, but ENERGY STAR would need to differentiate between tiers of eligible equipment. (Nordyne)
- Technically, all equipment can qualify under the "Eligible" option
 - Can make nearly any SEER box perform at a SEER 14 with appropriate air handler.
 - 80% of units today cannot be shipped as of 1/06.
 - Trane does not support the "Eligible" approach. (Trane)

What is the real value of an equipment spec?

- Worth repeating that SEER 13 units can perform as a SEER 14 with the right variable speed motor. Not sure that SEER 14 is sensible for ENERGY STAR. (ACEEE)
- ENERGY STAR spec alone will not have enough "teeth." Support multiple layers such as ENERGY STAR and ENERGY STAR Plus. (PG&E)

- In favor of labeling equipment, but not supportive of the “Eligible” option. Utilities are concerned with fraud liabilities. Need a “yes” or “no” for consumers. Stay simple and concise. (Xcel Energy)
- Today, SEER 14 is rated through the ARI directory, but can have SEER 13 equipment operating as a SEER 14. “Eligible” option will cause confusion. (Carrier)
- Latent heat /cooling
 - Be aware that as products become more efficient (with higher SEERs), addressing latent heat cooling will become challenging and can cause over sizing of equipment. (Lux Products)
 - Based on last 2 years of data, no evidence that higher SEER raises latent heat issues. (ARI)
- Against “Eligible” option because if matched with the right coil, any system would be eligible. Must be simple for consumers. Likely manufacturers will end up “policing” this effort since consumers contact manufacturers with concerns. (Trane)
- Cannot have installation guidelines without a spec for the equipment. Utilities should police installation practices. (ACCA)
- The options presented here are too restrictive, should look at next CEE tier. (VEIC/NEEP)

If ENERGY STAR developed a spec, what should that spec include?

- Increasing the EER would remove variable speed issues from the equation, coupled with a SEER 14 for retrofit. (Nordyne)
- May offer value by associating the spec with tonnage. (ARI)
- Need to look at what is being sold in the market to make sure product is available. Utilities cannot promote product that is not readily available. Need to better understand what is being manufactured and shipped. (PG&E)
- EPA should stay consistent with labeling of other products rather than changing the paradigm to best practices. Has EPA asked consumers what they want? (Trane)
- ENERGY STAR was established to reduce kWh usage in the U.S. If the “finished” product, the box, does not achieve the highest energy savings, what is the point? (NEMI/SMACNA)
- Strong desire to see HVAC spec decisions impact total building performance with insulation, windows, etc. (NYSERDA)
- A minimum EER is essential; Utilities can support EER because it’s based on peak savings. In NEEP, NJ, and NY territories, SEER 14/EER 12 is cost effective (did not analyze SEER 14 alone). (VEIC/NEEP)
- Need to overcome refrigerant charge and airflow. ENERGY STAR should require an indicator on the equipment to demonstrate when the system is not installed or designed well. (WECC)
- Reminder to audience that 2 definitions of cost effectiveness are being used: (Navigant Consulting)
 - Cost effectiveness based on utility avoided costs (see VEIC’s comment)
 - Cost effectiveness to consumer (Trane’s definition)
- Can ENERGY STAR partner with industry-recognized organizations (such as BPI) to deal with the science of installation at a national level? (PG&E)
- No one can answer cost effectiveness question at this time because manufacturers do not yet know the pricing of SEER 14 units in 2006. The levels EPA sets through this process will become cost effective because it will become the goals for manufacturers. (ACEEE)

What is the value of additional spec elements – evaporator access, TXVs, on-board diagnostics?

- Much uncertainty surrounding cost-effectiveness tests because tests do not factor in “bells and whistles.” (Navigant Consulting)
- Question the value of evaporator access for coils in furnaces. (WECC)
- In CA, TXVs have been a requirement and there are no barriers. (PG&E)
- Draft spec as is does not adequately level the playing field.
- 62% of units in PG&E territory are insufficiently charged; need to make TXVs a requirement. (PG&E)
- Need to recognize that TXVs do not fix charge problems; TXVs only meter refrigerant. (NYSERDA)
- Could include staged compressor qualifiers in spec? TXVs and fixed orifices have the same results; TXVs allows system to maintain capacity to meet load. (NEMI/SMACNA)
- TXVs are a viable resource although doesn’t solve entire problem. They do monitor the system and allow more refrigerant through the system. (PG&E)
- On-board diagnostics cannot hurt. CA utilities have a white paper on TXVs. (SMUD)
- Support on-board diagnostics. Helps standardize verification. (VEIC/NEEP)
- Need common diagnostic tool and same metric for all equipment. (ACCA)
- Support on-board diagnostics. ENERGY STAR’s strength is building on what’s in the market. Need to look at replace filter signals, perhaps include on thermostats, and include in thermostat spec. (ACEEE)
- Dirty filter indicators should include technologies beyond what is available today. (WECC)

Notes from Structured Discussion Part 2: Quality Installation

What is the value to key stakeholders?

- Consumers: Already think that they are getting value. The challenge is how to tell them that there is something better.
- For contractors, half will hate it and fight it, the other half will want it and push for it to level the playing field. (ACCA)
- There’s enormous turnover (around 25% annually) on the lower-quality contractors, so a training system won’t work for them. For the good guys, the question is “will they do it?” Third-party validation is needed, and consumers would have to pay to make it work. (ACEEE)
- What is the estimated cost to verify, charge, air flow, fill out forms, audit, etc.? (Lennox)
- For a good contractor, it should take them no more than an hour, so the cost is \$50-75. Contractors should be doing most of the steps already. Much higher cost if another person needs to come verify. Works for HERS now, though unclear on the model. For example, the airflow test could be simple or not. (The Cadmus Group)
- It’s a cost vs. a price issue. If installed properly, it will generate utility savings. I hear the utilities talk about their “customers.” It’s really their “clients.” Customers buy sodas and gas. Clients you have a long-term relationship with. EPA has the opportunity to be the light at the end of the tunnel in this market. The pieces already exist in the market; EPA can help align them. Rather than focus on the cost we should sell the benefit. Consumers want value. (NEMI/SMACNA)

- We are doing audits in NY; contractors want more third-party brand recognition to help them sell. And they want leveling of the playing field through standards and enforcement. (BPI)
- Maintenance is key too, not just installation. There are some “tune-up” programs with EEPS that might be a good model. (Buderus Hydronic)
- Such programs have pushed leave-behind materials regarding maintenance. About half of the contractors already sell maintenance. (The Cadmus Group)
- What’s the cost to do it wrong? Contractor evaluation is limited. If a customer doesn’t call back, then there’s no change in behavior and no reason to change. (NYSERDA)
- Customer expectations now are for “a box that makes cold.” Need to create demand for more than just a box. (VEIC)
- Manufacturer wants correct installation, but there are issues with validation of third party installation vs. equipment. Hard to verify which is at fault, the installation or the equipment. The verification is measuring capacity not efficiency. Capacity can’t be part of the verification process. (Norayne)
- Tennessee Valley Authority and ARI have established verification models. Need EER for verification in the field (Gary Andis to forward a copy of the models to EPA). (NEMI/SMACNA)
- In past geothermal heat pump experiences, multiple call-backs were a major issue. They did an audit, which showed awful ducts and installation. 7 out of 10 failed. This resulted in a major cost for all – mfr, utility, contractor. Mfrs were often blamed when poor installation is at fault. (ACEEE)
- Who polices, how and who funds? (Rheem)
- There are already models for verification, with no cost to the mfr. (NEMI/SMACNA)
- Consumers will ultimately pay. (ACCA)
- Quality installation will help with mfr warranty issues. (The Cadmus Group)
- Mfrs work with NATE and others, so already have this part done. (Carrier)
- Industry supports quality installations, helped found NATE. (ARI)
- ACCA and SMACNA are training organizations and will support certification as part of their missions. (NYSERDA)
- NATE by itself is not enough. Their training only tells you if your contractor knows concepts, not if they are applying the knowledge. (VEIC)
- We need a common platform that can be leveraged by existing programs that see energy savings waning. We need to justify kW and kWh savings. ENERGY STAR has a role here. (Cape Light Compact)
- Current programs proved that they can sell the equipment but can’t confirm that it’s installed correctly – this is embarrassing. Need contributions from all parts of the market with different areas of expertise. Suggest that we take a phased approach, for instance messaging and training first and then diagnostics, etc. (SMUD)

Reactions to Potential Installation Guidelines

- Design/proper sizing: yes, it’s needed!
- We have guidelines in Manual J, Title 24, 91.4 ASHRAE, etc. Contractor is responsible for proper installation, and the customer is the verifier. Customers can hold 50% of payment on a job until a third party verifies. Contractor does benchmark, provides check-list at the end of the job, homeowner pays for verification, utility verifies, and the incentive is a rebate and/or ENERGY STAR label. (NEMI/SMACNA)

- A new NATE HVAC Efficiency Analyst certification is another resource. This new test was just designed over the past couple of days of meetings. When this is final, it will be distributed by NATE. (NYSERDA)
- Groups will want to be accreditors. Once we have an ENERGY STAR umbrella, the market will respond. (ACCA)

Is there anything missing from the guidelines list?

- Should be pulled from NATE stuff. (NYSERDA)
- Depends on area. (WECC)
- Only vapor compression? Need to add combustion and hydronics. (Nordyne)
- They have an \$11M grant from DOE and EPA, working with UNLV and U of Chicago. The project could go into verification. Most focus is on design – LEED has nothing on verification. (NEMI/SMACNA)

How important is verification?

- Utility and good contractors say it's essential.
- We do utility verification now, but want to transition out of this role eventually. (SMUD)
- The issue is that it is one more house call, which is inconvenient for the customer. We want to reduce the number of calls. (Mid American Energy)
- Once there's a critical mass, others will jump on board. (CSG)
- Verification is building value, which can support additional fees, which the market likes. (NYSERDA)
- ENERGY STAR can provide value proposition, so earlier that a model is available, the better. (VEIC)
- Where verification exists with EEPS, include it in the process, then roll it out elsewhere, as available. (ACEEE)
- Clarifying questions: is it only ENERGY STAR if there's verification, or can it be phased qualification? (Cape Light Compact)
- We're done on equipment, so installation is where savings are. It's up to ENERGY STAR on whether it's local or national. We recommend multiple paths. (ACEEE)
- It's a gradual process, but do it right from the start. (NYSERDA)
- Roll out an ENERGY STAR Installation program as soon as possible, but don't serve a half-baked cake. (ACCA)

Accreditation vs. Third Party Certification

- We had a verification process, but the inspection costs hurt the overall cost effectiveness of the program. Would prefer third party (if good). (PG&E)
- They have done spot verification in Oregon, which is performed by the State rather than the utilities. (Energy Trust of Oregon)
- Long Island Power Authority pays for spot inspection. They want consumer to pay ultimately. (VEIC)
- If we have accredited/certified contractors, the ability to pull certification from poor performing contractors is key. Will need NATE and BPI support for this. (NEMI/SMACNA)
- In transition now. Currently, the contractor signs an agreement w/BPI on business practices. There will need to be third-party funding to create the market. Costly to get

- accredited and oversight by others is added, so a tough sell to contractors. But they do see value. (BPI)
- We can't have an unhappy customer. (SMUD)

A final question posed by Nordyne:

Why not promote ENERGY STAR quality installation for all products, not just SEER 14? If we focus all this effort on only SEER 14 units, we would miss a huge percentage of the market for savings.

Abbreviations used in this document

ACCA – Air Conditioning Contractors of America

ACEEE – American Council for an Energy Efficient Economy

ARI – Air-conditioning and Refrigeration Institute

BPI – Building Performance Institute

CSG – Conservation Services Group

NATE – North American Technician Excellence

NEEP – Northeast Energy Efficiency Partnerships

NEMI/SMACNA – National Energy Management Institute / Sheet Metal and Air-conditioning Contractors' National Association

NYSERDA – New York State Energy Research and Development Authority

PG&E – Pacific Gas & Electric Company

SMUD – Sacramento Municipal Utility District

VEIC – Vermont Energy Investment Corporation

WECC – Wisconsin Energy Conservation Corporation