David Garman Remarks

- ENERGY STAR is a priority for the Administration. DOE has spent a lot of effort branding, and wants to get the specification right.
- This is not a rulemaking process, but DOE wants a reasonable level of technical rigor and transparency.
- DOE opened up its analysis to stakeholders, and stakeholders have pointed out two errors along the way. This embarrasses and concerns DOE, but at the same time, confirms that the process has been open and transparent.
- It is important that the public knows why and how DOE makes decisions.
- There are no predetermined outcomes to this process. The final specification could be the same as what was originally proposed in October, or different. If it's different, it could be more or less stringent.
- Goal of today's meeting is a full and open discussion.

Rich Karney Presentation

- overview of ENERGY STAR
- overview of criteria that DOE and EPA consider in specification setting
- comparison to other ENERGY STAR products - not all included
- graph showing curve of product acceptance and different phases of DOE involvement (minimum codes, market transformation programs, research and development)
- question to group is where should DOE set ENERGY STAR specification along that continuum

Opening Discussion - How should ENERGY STAR spec be set relative to code?

Q - Cebulak: Is there an effort by DOE to increase use of insulation for existing homes?
A - Rachel Schmeltz (EPA): EPA does have a home sealing initiative which encompasses insulation, windows and the entire home envelope.

Q - Gore: In the original specification setting for ENERGY STAR windows, what consideration was given to new construction?
A - Karney: Goal was to make ENERGY STAR windows as simple as possible - therefore, one specification was set to cover both new and existing windows.

Q - Brookman to group: Have stakeholders generally bought in to the ENERGY STAR program philosophy as outlined by Karney in his presentation?
A - from group: basic agreement

Stone: It is important to understand where code is - if it's already high, it will be hard to exceed it by much - if it's low, DOE can go way beyond it. ENERGY STAR spec should also be consistent with the current specification - you don't want to lose current participants.

Farrar: Also need to examine what is commercially feasible - DOE should push the industry as far as possible.

Lamb: Building codes often consider new construction and not remodeling - there is a need to address replacement windows with ENERGY STAR [Stone later disagreed with this assessment of code, saying that the IECC does consider remodeling - with one version or another of IECC recognized by a majority of states, and replacement and new construction codes are now similar to each other.]

Zaremba: Codes have a different function than ENERGY STAR - ENERGY STAR shouldn't damage current code process

Phone comment: Industry reacts to code and adjusts product lines accordingly. The simple fact of having codes and ENERGY STAR specifications is itself a market transformation mechanism. The market itself will determine if ENERGY STAR has an impact.

Temple: When we set ENERGY STAR level, we should align changes with changes in the code cycle, so that codes don't then move ahead of ENERGY STAR.

Q - Karney: What are the impacts to manufacturers if DOE sets level too high?

Carlsen: Big boxes won't allow price increases from manufacturers - moving the bar too high will erode manufacturers' margins.

Krahn: Will slightly affect manufacturers but will have greater impact on consumers and on the ENERGY STAR program. Manufacturers will have only a few that qualify, so consumers won't have a wide choice and the ENERGY STAR brand will be hurt.

Mikkleson: If the spec is too high and manufacturers must redesign product to meet it, it will erode manufacturers' desire to want to use ENERGY STAR.

Nittler: There is a regional component to the impact on manufacturers. In the northen tier of the country, manufacturers are making a product that approaches maximum energy efficiency. In the South, aluminum predominates and a bigger efficiency shift is possible. Pushing the manufacturers to make changes in the areas of the country where it's possible is the right way to go.

Prindle: There is an SHGC challenge in the South. IECC is prescriptive on SHGC. Getting code adoption to happen is itself a market transformation challenge. There is a benefit in the South to keeping ENERGY STAR aligned with code - this will help encourage code adoption.

Lamb: If the bar is raised too high, it raises costs to manufacturer and consumer. If the cost is too high, the payback is too high.

Larsen: In looking at U-Factor, if we try to lower it, and we're already at the plateau for what can be achieved with two panes of glass, triple glazing is required, and technically more difficult and expensive to achieve.

Phone Question: Is there information available for consumers on the energy cost impacts for modesl at different specifications? [http://www.efficientwindows.org and the home improvement tools on http://www.energystar.gov were cited]

Nittler: There are split incentives for different areas of the market. New construction accounts for 50% of windows market, full remodels account for 25% and individual window replacement accounts for 25%. High efficiency products have the best market share where consumers themselves are making the purchasing decision (individual window replacements).

Chuck Anderson: Their national customers are selling 99% Low-E products because they have the chance for one-on-one meetings with customers, giving them the ability to show dollar savings at the point of sale.

Hazeldine: Pushing the spec too far could exclude aluminum manufacturers.

Gore: DOE needs to work on increasing consumer demand for ENERGY STAR. Most increase in market share can be attributed to manufacturer demand for ENERGY STAR rather than consumer demand. Demand is also higher on the replacement side than on new construction, and DOE should work on new construction side.

Krahn: Manufacturers are driving force rather than customers. It is sometimes hard for manufacturers to justify increased cost on an energy savings basis - other issues can be drivers.

Phone question: Why are people buying Low-E? Is energy savings the driver or are there other factors?

Lamb: Insulating properties are the driver. UV protection is a side benefit.

Stewart: Are there other ENERGY STAR programs that are not marketed based on energy savings?

Karney/McCabe: Clothes washers and dishwashers are also marketed based on water savings.

Nittler: Windows are unique compared to other ENERGY STAR products. Windows directly contribute to peak demand.

Stone: Peak demand pollution prevention and performance are other important aspects to be considered. ENERGY STAR is a brand, and if it's to be successful, labeled products should provide maximum benefits to consumers.

Prindle: Texas has adopted IECC in the context of an air pollution compliance bill. The SHGC standard in the IECC is a good way to reduce peak emissions.

Culp: Peak savings must be balanced with annual energy performance. You don't want to sacrifice long-term benefits for short-term gains.

Gore: Need to take advantage of free energy in as many climate zones as possible.

Farrar: There are peak demand issues as far north as Minnesota. Pollution comes from states with fossil fuel generation in the midwest.

Chuck Anderson: Energy savings are primary concern. Other benefits are incidental.

Stone: Air pollution concerns should be listed as a separate consideration.

Zaremba: Energy performance of the window must be listed separately as a substantive issue.

Phone comment: Pollution associated with production should be considered.

Questions, Answers and Comments During Ed Barbour's Presentation on Analytical Methodology

Stone: Where did the proposals come from?
Barbour: In addition to DOE's original proposals (Steps 1 and 2), some came from stakeholders (proposals 2,3 and 7), and the rest were developed by authors.

Stone: Other than the proposed ENERGY STAR and the single zone proposal, none of the other proposals have solar control above 3,500 HDD (.55 SHGC is clear glass)

Singel: Did authors look at impact of dropping SHGC above .55 in other proposals?
Barbour: Dropping to 0.40 changes the absolute savings but not the relative relationship between the proposals.

Zaremba: Is proposal 4 a net of all regions?
Barbour: Each of the regions were analyzed separately and then summed.

Stone: Does methodology give each city equal weight?
Barbour: Yes - population was not factored in.

Phone comment: In table 2 of the report, cooling savings overwhelm heating savings - do we need more emphasis on that?

Siegel: There are more Low-E windows in heating dominated climates - it's a reflection of the current market.

Barbour: the baseline does account for the market penetration of Low-E windows in the North.

Nittler: How did analysis account for site vs. source energy?
Barbour: Everything was converted back to source energy.

Chuck Anderson: Table A1 on p.21 of analysis speaks to how energy is consumed in the US. The comment that cooling energy is dominant is not accurate.

Phone comment: ENERGY STAR should be aimed at energy savings, so cooling savings are what ENERGY STAR should be focused on.

Culp: ENERGY STAR must balance cooling vs. heating savings.

Stone: The NFRC 900 database is DOE2 runs based on assumptions on a typical house (you could argue assumptions on HVAC sizing, thermostat set points and more)
Barbour: The only assumptions that could affect the relative ranking of proposals are the window/wall area and the size of the house.

Listing of Proposed Issues/Topics

Prindle: Analysis is helpful in looking at technical potential - we also need to look at the probability of reaching that technical potential - will consumers buy the products.

Farrar: Pollution issues should be on the list.

Siegel: What is the connection between pollution and peak load. ACEEE study says that peak load is only 1-3% of energy used/year.

Prindle: Pollution is disproportionately produced during peak power production.

Nittler: Question is how peak demand should be valued.

Block: Compatibility between climate zone proposals and IECC

Zaremba: Evaluate renewable energy sources vs. non renewable

Chuck Anderson: Complexity of four zone proposal isn't an issue - it's easy for manufacturers to adjust to any number of zones - one, three four or twelve. Manufacturers would rather offer regionally specific products rather than a one size fits all.

Krahn: Did ADL model a representative product in each area?
Barbour: No.
Krahn: Would that have changed the relative ranking?
Barbour: Maybe.

Garries: Our current investment in maps for October 19th criteria is $250,000 - that should be considered. How do we make sure this doesn't happen again?

Phone comment: Should discuss how to recognize cooling degree days. In zeal to limit zones, we need to recognize that decisions are made locally.

Paul Gore: How ENERGY STAR is marketed should be issue for discussion.

Brookman: Which proposals should group focus on?
Temple: Proposed ENERGY STAR, and Proposal 5 were on top in conclusions of analysis

Stone: Add the following topics: Comfort, HVAC sizing, consumer cost difference in value of Btus

Lamb: Consumer driven marketing rather than manufacturer driven

Siegel: Evaluate possibility of performance based criteria rather than prescriptive

Agenda as proposed by Group and DOE

Which proposals can immediately be ruled out?
Discussion of broad issues

- should specification be better than or equal to code?
- how many climate zones should be included
- discussion of peak and annual energy savings

Discussion of specific criteria

- impact on manufacturers
- consumer cost
- marketing issues
- energy savings

Which proposals can be ruled out?

Temple: Proposals 3&4 - they have the highest number of disadvantages cited in the conclusions section of the ADL/LBNL analysis. Also would both preclude aluminum from participating in ENERGY STAR.

Stone: Proposal 4 is the only proposal that offers maximum SHGC in the north, which is a proposition worth discussing, even if it's in the context of other potential proposals - you could add it without excluding aluminum.

Culp: Proposes offering minimum SHGC instead of maximum.

Nittler: 1, 3 and 4 should not be considered because they eliminate aluminum. Need to capture SHGC in 3500-6000 HDD region.

Zaremba: Comments to DOE during 2001 showed that industry was overwhelmingly against Proposed ENERGY STAR and Proposal 4. Proposal 3 was only offered as an alternative to Proposal 4, and could be eliminated [Stone later contended that industry was overwhelmingly against Proposal 4 but not Proposed ENERGY STAR].

Mikkelson: Proposal 6 should be eliminated - .32 U factor is too hard to reach, and 4 zones are too complex.

Siegel: On complexity issue - the important thing is that manufacturers get labeling right - all consumers care about is “does it have a label or doesn’t it?”

Stone: Proposal 6 is problematic in the South and the North.

Prindle: New storm codes in Florida could conflict with proposals that exclude aluminum - therefore park Proposals 1 and 6

Discussion of Broad Issues

Prindle: All proposals have better savings than code - in some areas like the South, it might make sense to have level set at code

Stone: It’s easier to improve over code in the Central than in the North and South.

Siegel: Issue in Central is overall energy savings

Stone: On the annual energy savings vs. peak energy savings - what is the relative magnitude of the difference and how do we weigh?

Zaremba: DOE has ruled that IECC should be adopted by the states. DOE shouldn’t violate the code with this specification

Phone comment: ENERGY STAR is voluntary - the marketplace will punish those who don’t meet the specification.

Larsen: From consumers’ perspective, consumers in the central zone expect windows to provide comfort - DOE’s analysis proves that consumers won’t be able to differentiate between the two types of windows on energy savings, but will be able to on comfort.

Siegel: If the SHGC is too low, you won’t get the benefit of free energy.

Larsen: Comfort is the primary consumer benefit.

Zaremba: Data doesn’t suggest that comfort can be quantified.

Stone: In the winter - cold is the issue at night, and in the summer, heat is the issue during the day - both correlates to peak demand.

Culp: Mission of ENERGY STAR is to save energy.

Singel: Homeowner comfort drives behavior and behavior drives savings.

Temple: Going beyond code gives incentive to manufacturers. If spec is set equal to code, there is no incentive. Bar should be set higher than code.

Chuck Anderson: ENERGY STAR promotes the most energy efficient subset of products - manufacturers should be able to optimize.

Mewbourne: Competitive issues should be considered - companies should be able to offer a wide range of products that save energy. ENERGY STAR shouldn't be set in a way that diminishes product availability of energy saving products.

Number of Climate Zones

Siegel: Burden should be on manufacturers to get labeling right, so minimizing zones isn't important from consumer perspective.

Stone: The more zones you have, the more complicated it is for consumers. Products might be qualified in certain zones but shipped to other zones. Minimizing number of zones minimizes potential confusion. Consistency with current program is also important. Additionally, confusion is inevitable around borders of different climate zones. The more borders you have, the more confusion you have.

Siegel: Manufacturers should only sell products in areas that they are qualified in.

Carlsen: We will only label products that qualify in all three zones.

Zaremba: Danger in oversimplification is that it reduces equation to lowest common denominator. Manufacturers can understand four zones.

Temple: Having three zones is good. Velux warehouses products and once they get to the warehouse, they could be shipped anywhere in the country.

Nittler: Agrees with Carlsen's point. Proposals that make it impossible to make one product that qualify in all zones should be eliminated.
Mikkelson: Changing the label is a burden for all manufacturers who use pre-printed labels.

Stone: Consistency with other ENERGY STAR product areas is desirable - other product areas have only a yes/no decision on whether the product qualifies.

Hopwood: Canada is considering adopting ENERGY STAR for windows and would want to add zones to a North American map - this should be considered in making the decision. Canada will want to allow for solar gains.

Zaremba: There is no consensus on whether there should be four zones or not.

Gore: ENERGY STAR should be thought of as strictly voluntary since some utilities are using

the level as the basis for incentives and various Federal legislative proposals would also use it as the basis for incentives.

Krahn: Marvin had large bill in changing marketing materials in response to the 10/19/01 proposal. In order for manufacturers to do effective marketing - they need to create product lines that can be easily explained. Would like to be able to market ENERGY STAR across product lines.

Prindle: In evaluating proposals with regard to peak energy savings and emissions, it's helpful to look to cooling energy savings as a good indicator. All proposals are similar except for the Proposed ENERGY STAR and Proposal 4, which would do a better job of reducing NOX, SOX and Carbon.

McKeown: Carbon emissions tracks with overall energy performance.

Prindle: Carbon emissions per million Btus is higher for cooling (since source is mostly electricity).

Culp: It's misleading to look at cooling savings - the main issue is in the central and north - peak savings in these areas are small relative to heating benefits.

Stone: SOX caused by electric and not by natural gas generation. Emissions are thus keyed to cooling.

Barbour (clarification): Analysis didn't show difference in overall energy performance between .40/.40 and .40/.55 windows.

Chuck Anderson: New peaking electricity generating facilities are using natural gas.

Gore: Important to point out that Proposed ENERGY STAR proposal came in 7th in overall energy savings.

Cebulak: In some parts of the country, peaking plants are the older facilities that don't have the sophisticated pollution controls.

Zaremba: This group shouldn't try to address emission levels.

Siegel (question to Barbour): Compare the total performance in the 3500 - 6000 HDD zone between the Proposed ENERGY STAR and Proposal 5
Barbour: Energy performance is at the same level.

Nittler: Why does SHGC make sense? A) Most of US is summer peaking B) Reliability is a problem in many parts of the country - 100% of blackouts are cause by last 1% of demand for power. Windows can help address problems by reducing solar gains. Energy conversion from site to source is appropriate. In California, people are considering changing the conversion factor

to be peak dependent.

Culp: ACEEE report on strategies to improve reliability didn't address windows - not a cost effective peak demand strategy.

Stone: President's energy plan addresses reliability problems. The window industry's contribution should be that the choice of technology is important. The benefits in the central zone include 167 MW of peak demand reduction, adding up to $2 and 8 billion in avoided power capacity infrastructure costs.

Zaremba: Has never heard windows cited as responsible for peak demand problems. DOE should also be concerned about non-renewable resources.

Janet Anderson: There is a balance of utility and windows expertise in the room.

Chuck Anderson: Peak demand doesn't all hit at the same time - it's distributed across the country.

Barbour: Analysis averaged it out - clarification could be made offline.

Culp: Gross magnitude of peak issue is small relative to annual savings.

Gore: Important to consider that windows are long term purchase and therefore consider annual and lifetime performance.

Discussion on Proposed Energy Star Specification

Lamb: What was the source of the proposal?
Stone/Karney/Temple: DOE put together in response to changing codes and after soliciting input from industry stakeholders in the summer of 2001.

Zaremba: Proposal doesn't track code:

- imposes SHGC in 3500 - 6000 zone
- disproportionate impact on pyrolitics
- reduces overall efficiency in central zone
- map is doesn't make sense
- there was unanimous opposition from stakeholders

Stone: Opposition was on Proposal 4 - not Proposed ENERGY STAR. The debate between this and other proposals comes down to "do you have solar control in the middle of the country". Arguments in favor are:

- reduce peak demand/improve reliability
- reduce emissions
- improve comfort year-round

Miami and Bismark, ND have similar peak design temperature - the whole country gets hot in the

summer.

Mewbourne: the ENERGY STAR concept is to save energy. In the central part of the country where most new homes are being built, heat pumps predominate. His experience with heat pumps in central Virginia is that heating costs far outweighed cooling costs.

Lamb: In north, it is common for new construction to design to allow passive solar heating in the winter and provide architectural shading in the summer.

Gore: Proposed ENERGY STAR came in 7th worst from a savings standpoint and most of the comments posted on the web were negative. Annual energy performance is most important to customers.

Farrar: Guardian is in favor of Proposed ENERGY STAR.

Zaremba: Consequences of going with this proposal would be that consumers would be shown products that are less efficient but are labeled.

Stone: Savings in Proposal 5 come from dropping U factor in central zone. This proposal could do that as well and come out higher in overall energy savings.

McKeown: In comparison between Proposed ENERGY STAR and Proposal 2, the only difference is the SHGC between 3500 - 6000, and Proposal 2 saves more energy.

Zaremba: If it's too close to call, one technology shouldn't be removed.

Single: But are you discounting other factors?

Discussion on Proposal 5

Genesis of this proposal was an effort by Barbour and Arasteh to find ways to combine Proposal 1 and the Proposed ENERGY STAR in a three zone proposal.

Krahn: In the 3500 - 6000 HDD area, a large percentage of the product is sold with a SHGC of around 0.33. The modeling was done at 0.55 - would this affect the savings?

Culp: The real impact would be to reduce saving by 1/3.

Stone: With a lower SHGC, you get a better U Factor.

Krahn: The potential difference might be more in the model numbers than in actual product - the product mix that manufacturers make might not change that much. The same product would satisfy both.

Larsen: The graph on p. 9 of the analysis shows that 4000 HDD is the break even point for

energy savings between the two product types. But if you have to turn down the thermostat for a product that doesn't control solar gains, that could effect the energy savings.

Zaremba: All assumptions for proposal 5 are the same as the Proposed ENERGY STAR. Can't change assumptions for one without changing assumptions for the other.

Hazeldine: Proposed ENERGY STAR would hurt aluminum in the central region (map has been redrawn from current ENERGY STAR specification) [Stone points out that IECC has done the same shift, so it's a code problem for aluminum as well].

Chuck Anderson: Aluminum should be able to play in the south. If you look at the appendix, the energy consumption in the south is 1/5 of the consumption in the north.

Gore: Electricity consumption in the production of sputtered glass is 3 - 9 times higher than for pyrolitics.

Hopwood: How does .35 U factor for Alaska compare to code [Stone - it's equal to code].

Stone: If DOE decides that SHGC is beneficial in central, it should consider extending it to the Northern zone too.

Gore: DOE should evaluate technology and cost of conversion.

Lamb: Switching to soft coat Low E would require them to handle each piece of glass 16 times - would restrict their product offerings.

Temple: SHGC is major factor in skylights. NFRC is changing rating procedure which will change the achievable levels. DOE should take this into consideration in setting specification and account for this by aligning changes in ENERGY STAR spec with NFRC test procedure change.

O'Connell: Compliments to DOE for trying to accommodate aluminum. Keeping the U-Factor at 0.4 in the central region in the Proposed ENERGY STAR would hurt aluminum.

Nittler: Recommends a .4/.4 specification as a reasonable product for 2000 - 3500 HDD region

Stone: Maximizing SHGC allows for reduction of HVAC size.

Zaremba: Proposal 7 maintains advantages for aluminum industry.

Discussion of Next Steps in Process

Ginsberg outlines next steps, asking whether one month for comments on the next DOE proposal is sufficient time for comments. Consensus is that it is. The discussion moves on to a reasonable

schedule for implementing a new spec once the final is announced in mid-May.

Garries: Criticial that industry has a sense of the schedule and that it doesn't change. The technical aspects of switching over a label aren't big but the costs are high for marketing and training sales staff.

Krahn: Industry would ideally need nine months to make change. Suggest 1/1/03 as good implementation date.

Cebulak: Need to account for distribution - when do retailers need to have materials in place for 2003 selling season.

Gore: Could have a phase in/phase out period beginning on 9/1 and lasting six months.

Temple: 1/1/03 would work for skylights.

Stone: DOE should factor in investments that industry made in responding to the 10/19/01 spec when it is making the next decision.