



American Council for an Energy-Efficient Economy

March 28, 2003

Richard H. Karney, P.E.
Manager, Energy Star Program
U.S. Department of Energy
1000 Independence Ave., SW
Washington, DC 20585

Dear Rich:

ACEEE supports the Department of Energy's three-zone proposal for revision of the Energy Star Windows program criteria. We support the three-zone proposal because it goes furthest in serving the statutory purpose of the Energy Star program, which is to prevent pollution through energy efficiency. Our review of DOE's analysis indicates that the three-zone proposal is more likely to prevent more emissions of air pollutants and greenhouse gases than the four-zone approach.

Given the pollution prevention mission of the Energy Star program, we are frankly surprised that DOE did not calculate emissions impacts of the alternative proposals. Our limited resources do not permit a thorough analysis of the emissions impacts of these alternatives. However, our initial assessment is that the three-zone proposal, because it saves substantially more electricity than the four-zone proposal, and because electricity generation generally emits more air pollutants and greenhouse gases than residential heating fuels, is more effective in preventing pollution.

We note that of the 48.5% of U.S. sulfur dioxide emissions attributed to buildings energy use, 45.5% comes from electricity use and only 3% from on-site fossil fuel use. Similarly, of the 21.5% of nitrogen oxide emissions attributed to energy use in buildings, 17% comes from electricity use and 4.5% from on-site fossil fuel use.¹ And of course electricity used in residential cooling is on a national basis much more carbon-intensive than the natural gas which accounts for 62% of residential heating usage. We recommend DOE consider the emissions impacts of the two proposals in terms of carbon, oxides of nitrogen, and sulfur dioxide in making its final decision.

Reducing demand during peak summer cooling hours also has a uniquely strong effect on air pollutant emissions. These emissions are especially harmful during peak summer cooling periods, when ground-level ozone problems are at their worst. The three-zone proposal, because it cuts cooling loads and electricity use during these key summer hours, has a disproportionate effect on reducing ozone precursor emissions. DOE should take this factor into account in its deliberations.

¹ U.S. Environmental Protection Agency. *National Air Pollutant Emission Trends*. Washington, DC, 2000.

Another reason for supporting the three-zone proposal is that it has a greater effect on reducing peak electricity demand, both at the individual home level and at the electricity system level. At the individual home level, lower heat gain through windows reduces peak cooling loads. This reduces the size requirements for air conditioning systems, which reduces the capital cost of the home to the buyer. At the electricity system level, residential cooling loads are typically highly coincident with peak system demand, and can account for more than 30% of the system peak.

Every kW of electricity demand that is kept off regional power grids during peak hours reduces the price of electricity in two ways. In the short term, by reducing peak demands during the highest-cost hours of the year, it reduces the market clearing price in the wholesale power market, which produces energy price savings throughout the regional system during those peak hours. In the longer term, it reduces the need for new peaking power plants, which in turn reduces the amount of capital outlay that must be recovered through power prices.

We also suggest that creating four zones goes too far in the direction of making the Energy Star program complex. Original proposals discussed in the 1997 timeframe included five or more zones, and the feedback was that the market and manufacturers needed more simplicity. For some, three zones are too many, but we support some regional variation in criteria on technical grounds. However, the fourth zone would create a new class of Energy Star products, covering a relatively small geographic area, and would require additional labeling and other administrative burdens for some manufacturers. We thus recommend the three-zone proposal on the basis of simplicity as well as pollution prevention.

These additional factors supporting the three-zone proposal reinforce our original finding that the three-zone proposal is superior in serving the core goal of the Energy Star program—pollution prevention. This gives us confidence in recommending the three-zone proposal as the superior of the two choices as currently presented.

However, we understand that the Department is also trying to balance the interests of manufacturers and keep the program consistent with energy codes. One possible way to do this would be to keep the three-zone approach, but move the northern boundary of the middle zone down from 5,999 HDD to 5,499 HDD. This might serve to balance several of these considerations. We have not done quantitative analysis in support of this option, but based on our experience it would likely increase heating energy savings over the current three-zone proposal and would likely increase cooling savings over the current four-zone proposal, while somewhat balancing competing manufacturer interests.

I am happy to answer any questions or participate in further discussions on this issue. I recognize the complexity of this decision and the many factors that must be balanced, and I wish you well in arriving at a final decision.

Sincerely,



William R. Prindle
Deputy Director