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RE: Comments on ENERGY STAR for Ventilating Fans Version 4.0

Thank you for the opportunity to comment on ENERGY STAR for Ventilating Fans version 4.0. During the stakeholder meeting on July 10th you mentioned that the objective of the proposed changes were to assure that ENERGY STAR qualifies the top tier products and provides meaningful differentiation for consumers. While I agree with the intent I suspect you may be fighting an uphill battle using the "percent of available products" methodology, as a result of the success of the program.

In the California Code of regulations Title 24, Part 11 (Cal Green) under Residential Mandatory Measures, the state opted to make ENERGY STAR bathroom exhaust fans mandatory.

INDOOR AIR QUALITY AND EXHAUST

4.506.1 Bathroom exhaust fans. Mechanical exhaust fans which exhaust directly from bathrooms shall comply with the following:

1. Fans shall be ENERGY STAR compliant and be ducted to terminate outside the building.
2. Unless functioning as a component of a whole house ventilation system, fans must be controlled by a humidistat which shall be readily accessible.

Humidistat controls shall be capable of adjustment between a relative humidity range of 50 to 80 percent.

Note: For the purposes of this section, a bathroom is a room which contains a bathtub, shower or tub/shower combination.

California was the 10th largest economy in the world in 2012, so manufacturers interested in selling in California and will need to provide a full array of ENERGY STAR products to support this market.

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Likewise the 2012 Energy Conservation Code does not specify ENERGY STAR fans but lists current ENERGY STAR Efficacy values as the minimum requirement and signals the intent of the committee.

**TABLE R403.5.1
MECHANICAL VENTILATION SYSTEM FAN EFFICACY**

FAN LOCATION	AIR FLOW RATE MINIMUM (CFM)	MINIMUM EFFICACY (CFM/WATT)	AIR FLOW RATE MAXIMUM (CFM)
Range hoods	Any	2.8 cfm/watt	Any
In-line fan	Any	2.8 cfm/watt	Any
Bathroom, utility room	10	1.4 cfm/watt	< 90
Bathroom, utility room	90	2.8 cfm/watt	Any

For SI: 1 cfm = 28.3 L/min.

R-34

2012 INTERNATIONAL ENERGY CONSERVATION CODE*

Other programs such as LEED, ENERGY STAR for Homes, etc. all call for ENERGY STAR rated products. As a result I believe market forces are pushing manufacturers to design ENERGY STAR products, and that has led to the large number of products available. I think it is inevitable that the number of ENERGY STAR qualified products will remain high, unless the requirements become impractical. I would argue that the higher than industry growth rate comes from code requirements. Where ENERGY STAR is required by code or program, people have moved to better ENERGY STAR products. Where it is optional people are moving more slowly. From a market penetration standpoint there may be more ENERGY STAR qualified models available to this section of the market but there are still far more entry level and direct replacement products sold every year overall.

That being said I would like to make some comments and point out that there may be some unintended consequences of the current proposal. I looked at specific application requirements starting with 50 cfm bath fans. This is a product that is typically entry level in affordable homes. The change in efficacy from 1.4 to 2.8 CFM/Watt and the increase in installed performance ratio from 0.6 to 0.7 will disqualify many of the inexpensive models, leaving products that are significantly more expensive to fill this application. The products that get disqualified sell for around \$40 in the market. Many of the products that stay sell for well over \$100. I believe the combination of these two criteria will cause the cost of fans available for this application to rise to the point that builders will opt to go back to entry level fans (currently less than \$15 retail) where possible. This will increase overall energy consumption and hurt people who need the benefit most. I would suggest that an additional category of fans rated 50 cfm or less be established with a minimum efficacy of 1.8-2.0 CFM/Watt. This would be a significant increase from the current requirement and still be achievable without significant added cost. The higher efficacy rating for fans rated from 51 – 89 cfm (2.8 CFM/Watt) does appear to be manageable.

I would also like to propose that the installed performance ratio be changed to account for fans with larger than average duct connections and multiple or variable speeds. The change from 0.6 to 0.7 will be especially difficult to achieve for low cost, low airflow (less than 80 cfm), and quiet fans. Specifically I would propose that the installed performance ratio be eliminated for multiple and variable capacity fans, as well as single speed fans rated:

- a.) 50 cfm or less with duct connections 4" in diameter or greater
- b.) 80 cfm or less with duct connections 5" in diameter or greater
- c.) 130 cfm or less with duct connections 6" in diameter or greater
- d.) 200 cfm or less with duct connections 7" in diameter or greater

For variable/multiple speed fans I believe the existing and proposed program, limits design choices available and innovation. Many high efficiency DC fan motors are readily available from motor manufacturers that can easily deliver 6.0 cfm/watt or greater; however these motors are designed for other applications to provide constant rpm or constant torque in such a way that they do not meet the installed performance ratio in the current program. These motors are often adjustable to dial in the required airflow but the fan doesn't achieve the specified installed performance ratio. The net effect is that available and affordable, high efficiency DC motors are more or less eliminated from the program (except the costly constant cfm versions from fan companies with vast engineering resources).

Regarding Inline Fans I agree that there are fans that already achieve the efficacy of 3.8 cfm/Watt that is proposed, but by my count changing the efficacy requirement from 2.8 to 3.8 cfm/watt will disqualify 65% of the current offering. If the efficacy requirement increased from 2.8 to 3.4 cfm/watt you would still disqualify 40% of the currently listed products, and still allow for a variety different price points and design approaches. I would prefer that manufacturers not all be offering more or less the same thing for every product application. It doesn't always fit the requirement.

Regarding lighting all I can say is: Thank you! Thank you! Thank you! I fully support the proposed change. Though I will point out that in version 3.2, requiring compliance to the luminaire spec was an example of something impractical that resulted in a handful of less than adequate product offerings and really stagnated product development. While it was well intended, the unintended consequence was more or less exactly the opposite of the desired effect. I would strongly support simplification of the lighting requirements to the greatest extent possible as all the information provided does not help consumers as they seldom ask me about the 7-step Mac Adam Ellipse for Target CCT.

Thank you for the opportunity to provide input. If you would like further clarification on any of the topics please contact me as I would be more than happy to discuss.

Best regards,

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Chief Executive Officer