LEG 2008-0347
August 25, 2008

Helen Lam
California Energy Commission
Buildings and Appliances Office
1516 9th Street, MS-25
Sacramento, CA 95814-5512

Re: Docket 08-HERS-1, SMUD Comments on "Revision 1 of Draft Technical Manual" for HERS II Proceeding, Dated August 25, 2008

Dear Ms. Lam:

SMUD has followed the HERS II proceeding with great interest. The proposed regulations, rating scale and rating guidelines will provide a means for homeowners and homebuyers to consider the relative energy use of a home, discover what improvements can be made cost-effectively, and take advantage of the opportunity to finance the improvements in their mortgage. These will be critical tools to improve the efficiency of California's existing housing stock, and SMUD will rely heavily on HERS II to help us achieve our ambitious new energy efficiency goals.

We offer the following suggestions for improving the effectiveness of the proposed rating scale and accompanying guidelines and regulations.

SMUD Supports the Proposed Rating Scale Design Provided that it is Tested for Consumer Comprehension Using Market Research

SMUD supports, with some adjustments, the "less is better" scoring system as proposed in the HERS II Draft Technical Manual and Revision 1 regulations. The proposed system is consistent with the system used in other states by RESNET in its redesigned home energy rating system for existing homes. The proposed system is useful because it 1) is a much more accurate means of communicating the relative efficiency and operating cost of different homes than "more is better" scoring alternatives, 2) has a sufficiently wide range of usable scores to clearly delineate homes of widely varying levels of efficiency, and 3) accommodates a net zero energy home.

Many parties to this proceeding have expressed concern that a "less is better" scoring system will be counter-intuitive to homebuyers and homeowners, arguing that Americans are more accustomed to "more is better" ratings such as those used for

automobile fuel economy ratings. While this may be true, there are inherent flaws with a "less is better" system:

1. It does not easily accommodate a zero net energy situation when on-site generation is included.

2. If a zero to 100 scale is used, most homes fall into a narrow range, making it more difficult to distinguish exceptionally good- or poor-performing homes from average homes.

3. If calculated as a straight ratio, the score is not proportional to the degree of improvement in efficiency.

The third point is illustrated by the example of the miles per gallon measure of fuel efficiency used in the U.S. A recent article in the journal *Science* focused on how the "miles per gallon" measure leads people to undervalue the benefits of replacing the most inefficient automobiles because the scale is not linear and its measure of improvement is not proportional to the benefit.[1]

For example, suppose a family wishing to reduce their monthly gas bill is evaluating whether they are better off replacing their 13 mpg SUV with a crossover that gets 20 mpg or their 33 mpg compact car with a hybrid that gets 50 mpg, both of which are driven about 10,000 miles per year. Seeing that replacing the compact would yield a 17 mpg gain in mileage versus only 7 mpg if they replace the SUV, most of us would opt for replacing the compact with the hybrid, all other factors being equal.

However, we would be making the wrong choice. Replacing the compact car would yield only 100 gallons of savings per year versus 270 gallons saved for the SUV—nearly three times the fuel and dollar savings ($3,400 greater fuel savings over 5 years at $4.00 per gallon). Even more sophisticated car shoppers who go as far as calculating the percent improvement in mpg rating would still be misled in this example: replacing either car yields the same 50% improvement in nominal miles per gallon.

Europeans, on the other hand, are accustomed to a "less is more" metric for fuel efficiency: liters/per 100 kilometers. This scale communicates true relative savings at either end of the scale—an improvement of 1 liter/100km saves just that: one liter for every 100 km driven. For this reason, the *Science* article recommends that automobile fuel efficiency in the U.S. be labeled in terms of gal/100 miles.

While SMUD supports the proposed rating scale, we agree with the comments of several stakeholders that it is critical that the Commission test any proposed scoring system with consumers to ensure that it will be intuitive and clearly

1 "ECONOMICS: The MPG Illusion", Richard P. Larrick and Jack B. Soll, Science, 20 June, 2008.

and effectively communicate the desired information. The Commission should conduct basic market research to ensure that the scoring design will be easily and correctly interpreted by homebuyers. A review of available secondary research may be sufficient, as it is likely that RESNET conducted such research prior to moving to a "less is better" scoring system in 2006. If secondary research is unavailable, the Commission should hold focus groups of homeowners, homebuyers, real estate agents and other market players or conduct similar research to assess how well people will understand the scoring tool. This will ensure that the adopted system will not be subject to widespread misinterpretation, and the Commission will receive valuable feedback to improve the design of the system to maximize consumer acceptance and comprehension.

The Commission should also ensure that the scoring system is not overly negative in how it communicates the relative efficiency of existing homes. Of particular concern is the selection of the upper end point for the scale. SMUD supports the concept of setting an end point on the high end of the scale, where homes with scores higher then this level will be categorized as "off scale." This would send a powerful message that homes with excessive energy waste will need improvements to simply get on the scale, let alone be one of the most efficient homes. However, if too many homes are "off the scale" it would dilute this message and risk alienating a large number of potential participants. The Commission should set the high end-point so that no more than 25% of existing homes fall above it (preferably 10-15 percent). This could be determined by test-scoring a representative sample of existing homes against the proposed scale to determine what percentage of homes fall above the proposed high end-point of 150, and adjusting the end-point if too many homes fall above it. Build-It-Green has submitted comments that indicate the high end-point should be at least 180.

The Custom Approach Should Include an Option Accommodating Measure Packages Designed to Achieve Certain Non-Energy Benefits

The current description of the Custom Approach in the Draft Technical Manual allows for "Customer Identified Measures" to be included regardless of cost-effectiveness. The guidelines for design of software tools for generating energy efficiency recommendations and calculating cost-effectiveness should also accommodate situations in which a building performance contractor has identified a package of measures that are necessary to address non-energy problems or hazards in the home.

Please consider adding the following paragraph after the third bullet of Section 6.2.2 of the HERS technical manual as an acceptable strategy under the Customer Approach:

- *Measures required to meet non-energy performance targets.* With this strategy, a home performance contractor may recommend a minimum package of measures that are necessary to solve comfort, indoor air quality, noise, or moisture problems or provide other non-energy benefits regardless of cost-effectiveness.

This approach allows the contractor to ensure that all such measures are included in the upgrade package and then layer additional energy efficiency improvements on top based on cost-effectiveness. The model will evaluate the cost-effectiveness of each additional measure in terms of its incremental cost and energy savings beyond the measures providing the non-energy benefits.

An appropriate summary of the above text would also be required in the first row of Table 17.

Conclusion

SMUD applauds the excellent work of Commission staff and the consultant team in developing a sound framework for evaluating the energy performance of existing homes and communicating this information to homeowners, homebuyers and other stakeholders. With input from additional market research and the minor adjustments suggested here and by other stakeholders in this proceeding, the HERS II regulations and supporting guidelines will be an important tool in capturing the enormous energy efficiency potential in California's existing residential building stock.

Thank you for the opportunity to comment within this important proceeding.

Respectfully submitted

/s/

WILLIAM W. WESTERFIELD
Senior Attorney
Sacramento Municipal Utility District
P.O. Box 15830, M.S. B406
Sacramento, CA 95852-1830
Phone: 916-732-7107
FAX: 916-732-6581

/am
cc: Corporate Files