



FILED
6-24-16
04:59 PM

Order Instituting Rulemaking
Concerning Energy Efficiency Rolling
Portfolios, Policies, Programs, Evaluation,
and Related Issues

Rulemaking 13-11-005
(Filed November 14, 2013)

**COMMENTS OF HOME ENERGY ANALYTICS IN RESPONSE TO
ADMINISTRATIVE LAW JUDGE’S RULING “SEEKING COMMENT ON EVALUATION,
MEASUREMENT, AND VERIFICATION AND ENERGY SAVINGS PERFORMANCE
INCENTIVE ISSUES”**

June 24, 2016

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Home Energy Analytics welcomes the opportunity to provide comments. HEA provides web-based residential smart meter analysis software to help individuals reduce their energy consumption through cost-effective actions. Our software has been used to analyze over 5,000 residences in California and helps users reduce their energy consumption (both natural gas and electricity) by an average of 12%.

HEA has actively participated in the Residential Sector Subcommittee attending Stage 1 and 2 meetings, and providing written comments on the business plans. These comments expand on those provided to the Coordinating Committee concerning the business plans.

We believe the whitepaper fails to identify a significant opportunity to improve “market assessments and dedicated market studies” as called out starting on page 4. Market assessments have traditionally focused on tying demographic factors to a propensity to participate in EE programs and/or likelihood of achieving a certain level of energy savings. We question the value of these studies because they are based on an erroneous assumption: that demographic factors are strongly correlated to energy consumption patterns. In our detailed analysis of energy usage patterns across thousands of California homes we have found that homes have unique energy consumption profiles that cannot be accurately predicted based on location, home size, construction date, number of occupants or any other demographic. We disaggregate energy consumption into eight energy usage categories: heating (gas and electric), cooling (electric), always on (gas and electric), recurring (electric) and variable (gas and electric). The attached chart demonstrates the variation in HVAC efficiency across homes of different ages; just one analysis that has led us to this conclusion.

To successfully reduce energy waste requires focusing on the condition causing the waste in each specific home, in areas such high base load, poor cooling efficiency, inefficient lighting, etc. Attempting to reduce energy waste by addressing cooling efficiency in a home that has a very efficient HVAC system is counterproductive. Instead of looking for correlations between demographics and the likelihood of participating in energy efficiency we should be categorizing homes by the reduction they could potentially achieve if they implemented the most cost-effective energy reduction measures for their specific home. Once we establish which homes would benefit from which measures, matching demographic trends to propensity to participate in programs becomes much more meaningful.

The concept of a “typical” home is valuable for projecting broad trends but it does not work well when used to determine appropriate energy saving measures for individual homes. An analogy is useful. Heart disease is the highest cause of death in the US, with cancer being second. Advancements in treating heart disease and cancer could significantly lower the death rate in the US. But prescribing treatments for heart disease or cancer – diseases which account for over 50% of deaths – to everyone who visits a doctor would be absurd. Likewise, assuming that energy efficiency measures should be applied to homes based on statewide averages is counterproductive. HVAC¹ may indeed account for 33% of the energy used in the average California home but that doesn’t mean every home should participate in an expensive and time-consuming energy upgrade. It’s far better to look at the energy profile specific to the home before prescribing a treatment.

The technology exists to profile large numbers of individual homes, including every residence in California, as long as interval data exists for the residence. Establishing correlations between energy profiles and effective energy reduction measures will provide

¹ EIA 2009 Household Energy Use in California <http://www.eia.gov/consumption/residential/>

far greater insight into market barriers and potential for energy efficiency than demographic correlations have so far demonstrated.

We recommend the Commission explore using individual residential home energy profiles based on our smart meter infrastructure to characterize market barriers and potential for the energy efficiency market as identified as the third consideration (pages 4 – 5 of the whitepaper) under Response to Legislation.

Respectfully submitted,

June 24, 2016

By _____/s/_____

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HVAC Energy Cost per 1,000 sf vs Year Built for Mountain View Homes (n=750)

