

**Responses to DMQC review of the IOU 2010-2012 Prescriptive Whole House Retrofit Program**  
**Energy savings estimates work papers: 19 March 2010**

PG&E's responses are presented in the order they were addressed in the reviewer's comments.

Concern #1: KEMA RASS study (2004) data for the building modeled in EnergyPro (i.e., a detached, single-family, owner-occupied home with central A/C, gas furnace, and gas hot water heater) shows good overall agreement with the Energy Pro results. For example, the RASS data for this housing demographic shows that electricity use attributable to A/C use is within 3% than predicted by EnergyPro overall. The table provided in the reviewer's analysis appears to be IOU territory-wide and thus averages across climate zones, and should not constitute a standard for modeling retrofit packages, when climate zone-specific data is available (see excel attachment).

Concern #2: The EnergyPro models created for the PG&E analysis have been updated to correctly represent the effects of hot water system insulation, air sealing, duct sealing, and attic insulation. Attic insulation levels used in the simulation model reflect the level that would be associated with a likely participant in the program. The model will also be run for insulation levels reported in RASS for this demographic, by climate zone.

Concern #3: Older homes with energy waste problems should be encouraged to participate in this program over those that will not receive a significant energy benefit from this program. PG&E can add simulation runs for both pre-78 and 1980's-era homes, but newer homes that are already relatively energy efficient (post-1991) are not likely to meet the 20% threshold in general, are less likely to need or want an energy efficiency retrofit, thus shouldn't be targeted for this program. A typical home configuration was used to be representative of expected participants.

Concern #4:

- a) As indicated in responses to Concern #2 and #3, the expected and targeted program participants are those that have poorly performing houses, including poorly performing insulation. In addition to the no-insulation simulation already completed, PG&E will also model the homes using the RASS data for insulation levels, which typically perform at a level lower than R-11 for pre-1991 homes.
- b) Duct leakage is consistent with DEER measure (DEER 2005 Measure ID D03-418) of 40% reduced to 12%. Also Table R3-50 in the California 2008 Residential Alternative Calculation Method (ACM) Manual specifies that the default assumption for total duct leakage in vintage (pre-2001) homes is 28%. The EnergyPro models will be adjusted to 28% total.

March 26, 2010

- c) For the DHW measure, the EnergyPro model has been adjusted to consider only water heater insulation. Pipe insulation will be modeled using the hand calculation approach used by SoCal Edison.
- d) Infiltration is for the entire conditioned space. The corrected EnergyPro model includes infiltration improvements.

Recommendations:

- 1) Simulations are generally consistent with RASS data for the housing demographic modeled in EnergyPro.
- 2) Models have been corrected in to include effects from all measures
- 3) Model already provides a measure-by-measure results as suggested.
- 4) Models run are designed to be representative of typical program participants.
- 5) Simulations are generally consistent with RASS data for the housing demographic modeled in EnergyPro. DHW will be address as indicated under Concern #4d.

March 26, 2010