BEFORE THE PUBLIC UTILITIES COMMISSION
OF THE STATE OF CALIFORNIA

Order Instituting Rulemaking to Examine the Commission's Post-2005 Energy Efficiency Policies, Programs, Evaluation, Measurement and Verification, and Related Issues.	R.06-04-010 (Issued April 13, 2006)

COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-M) ON ENERGY DIVISION'S DRAFT ENERGY EFFICIENCY 2006-2007 VERIFICATION REPORT

ROBERT B. MCLENNAN
LISE JORDAN
77 Beale Street
San Francisco, CA 94105
Telephone: (415) 973-2069
Facsimile: (415) 973-0516
E-Mail: rbm4@pge.com
Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

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Pacific Gas and Electric Company (PG&E) provides its comments on the Energy Division's review draft of its energy efficiency 2006-2007 verification report and its many appendices. As described in these comments and at the December 5, 2008, Energy Division draft Verification Report workshop, rigorous CPUC review of this process and the updates are needed. Many of the parts feeding into the draft Verification Report are incomplete or still characterized as draft and subject to change.

Furthermore, the workshop on the draft Verification Report clearly showcased that the draft Verification Report needs significant work and review before it can be considered final or used in the CPUC's analysis of utility energy saving accomplishments. At the workshop, Energy Division and their consultants reported a number of errors in the draft. They also stated that more corrections and changes were expected before the final Verification Report would be issued, and that under the current schedule, the IOUs would not become aware of those changes until the final Verification Report had been issued. The lack of review for these additional changes is unjustified and the process should be revised to allow stakeholders to comment on any additional Energy Division changes. Energy Division itself also expressed frustration with the process and timeline stating that "time had precluded quality control," "we would like to make IOU involvement available but the schedule won't allow it," and "had we had more time we would have corrected things." Energy Division stated that given the changes to the draft

Verification Report, a "re-release would be a good idea" to allow for additional stakeholder review and input.

Unfortunately, a re-release will not address stakeholder concerns as policy issues underlying the draft Verification Report cannot be addressed by the Energy Division. The CPUC will need to formally address policy issues resulting from these draft (and any additional) ex ante updates, including negative therm effects from energy efficiency measures, as they significantly affect both accomplishments and future portfolio design.

I. THE 2008 "FINAL" DEER UPDATE THAT IS THE MAIN DRIVER OF THE RESULTS OF THE VERIFICATION REPORT GOES FAR BEYOND THE LIMITED UPDATE ENVISIONED BY DECISION 08-01-042, CONTAINS MANY WRONG CONCLUSIONS UNSUPPORTED BY COMPLETED MEASUREMENT STUDIES AND, AT A MINIMUM, NEEDS A FULL REVIEW BEFORE IT CAN BE USED FOR ANYTHING.

In Decision 08-01-042, the Commission modified the shareholder incentive mechanism adopted in Decision 07-09-043. Among other things, the CPUC ordered Energy Division to update the *ex ante* assumptions for measures included in DEER, "based on the most recently completed studies." Decision 08-01-042, page 16. PG&E and others anticipated that the update would be limited to the results of completed studies available "in early 2008." Decision 08-01-042, page 17.

PG&E did not apply for rehearing of Decision 08-01-042 because of the expectation that the DEER update would be limited to the scope and time frame described in the decision. Instead, Energy Division went far beyond its mandate and attempted a complete overhaul of DEER. When there were no studies to substantiate changes, Energy Division's consultants' relied on mathematical modeling assumptions. Throughout the development of the DEER update, PG&E representatives participated in the webinars and submitted comments to Energy Division's blog, but the comments were largely ignored. When asked the basis for the Energy Division consultants' selection of a particular number, we were told they were trying to anticipate trends. In another instance, the consultant told us that because the utilities did not like having their net-to-gross numbers lowered, the consultants picked a low number for the DEER

update for the default net-to-gross ratio (which by definition are measures that had not been studied or measured) so everyone could be happy when the *ex post* results for the final claim came in higher.

There are numerous examples where the draft verification report relies on data from draft studies to make accomplishment reductions. For example, the draft verification report uses a draft Express Efficiency evaluation (2004-2005 Statewide Express Efficiency and Upstream HVAC Program Evaluation - DRAFT - Itron & KEMA, November 4 2008). The draft verification report made reductions based on the draft study which are still being revised in the final study. Any such draft studies should not be incorporated until they are final and have been vetted.

II. INTERACTIVE EFFECTS SHOULD NOT BE CONSIDERED AT LEAST UNTIL THE COMMISSION REVISITS THE ENERGY-SAVING GOALS

Page 56 of the draft verification report indicates that Energy Division will not be considering the interactive effects of more efficient electric appliances and lighting on gas heating in this update and verification report. However, at the December 5 informational session, Energy Division representatives reversed themselves and stated that they intended to include interactive effects in the final verification report. The most egregious example of the Energy Division's consultants' modeling results is the modeling of interactive effects between the installation of more efficient lighting and appliances and heating. The theory is that more efficient lighting, such as compact fluorescents, and appliances, such as the recycling of refrigerators, generate less heat than their more inefficient counterparts, so a successful electric efficiency program will harm a gas energy efficiency program. While PG&E agrees in theory that there may be some interactive effects, the "final" DEER update models interactive effects to guarantee that combined gas and electric utilities can never achieve their therm savings goals, and thus will always be in the penalty category. When the gas saving goals were established, interactive effects were not considered, so the DEER update modeling makes the gas goals that

much harder to achieve. It is a classic example of moving the goal posts in the middle of the game.

Second, PG&E understands that the modeling assumptions were not based on reported results from field studies or EM&V reports. This is particularly disturbing since DEER updates are supposed to be based on verified EM&V studies, not unchecked simulation models. The modeling results to the utility programs is devastating – it assumes that it increased gas heating in PG&E's service area by 40 million therms (nearly equivalent to PG&E's overall adopted gas savings goal for the entire 2006-2008 program cycle), it puts both PG&E and San Diego Gas & Electric Company into the penalty category, and would do so if Southern California Edison Company and Southern California Gas Company were considered together. The Draft Verification Report proposes no changes to the gas savings goals as a result of the addition of interactive effects to the DEER results. The DEER update utilizes a mathematical heat balance equation model only and does not take into account the reality of how homes actually behave, nor does it take into account the fact that many heating thermostats are in hallways which may be little affected by the presence of compact fluorescents or refrigerators in the building, and assumes all recycled refrigerators affect home heating regardless of whether the recycled refrigerator was in an unheated garage. The modeled unit savings have not been verified by field measurement. The change was not vetted to the public to discuss the merits and limitation generally of using mathematical models instead of measurement and evaluation studies to judge the performance of utility energy efficiency portfolios.

PG&E also believes that the calculation of the interactive effects is orders of magnitude too high. A good example of this is the DEER calculation of nonresidential interactive effects. Exhibit 3-14 (page 3-23) of the Impact Evaluation of PG&E's Commercial Energy Efficiency Incentive Program – PG&E study ID 349 – March 1, 1998, found that a typical office building has a therm impact of -0.39 therms/GWH saved. The "final" 2008 DEER update reports roughly -38 therms per GWH for a PG&E large office building (varies by building type and technology). This is an increase by a factor of 100. Until the output of this model is compared to field

monitoring results the simulated results are extremely questionable and should not be used in judging California's energy-saving accomplishments.

The draft verification report states that HVAC interactive effects are real and should be included, while using simulation models to come to this conclusion for residential installations. Real quantification of interactive effects should be based on actual field studies. Lacking verified data, the final verification report should not pre-judge the outcome of future study results and their application to savings accomplishments.

The use of interactive effects without making some adjustments also discriminates against combined electric and gas utilities.

III. SPECIFIC COMMENTS

1. Net-to-gross ratios have always been one of the most subjective aspects of energy efficiency measurement and evaluation. Essentially it asks the question: "What would a program participant have done if there was no program?" During the 2006-2008 program cycle, the utility is only allowed to take credit for energy savings that resulted from the utility's programs (excluding "free riders"), though Commission rules preclude the utility from claiming savings that were the result of the utility's programs, but achieved by nonparticipants in the utility's programs ("free drivers"). Beginning with the 2009-2011 program cycle, utility accomplishments will consider gross, not net goals. Virtually all of the net-to-gross studies to date have used the self-report method, which consists of asking the retailer, manufacturer or participant what they would have done without a utility incentive. In assessing the answers using the self-report method, it has to be expected that the reporter will tend to emphasize his or her own role in the decision-making process. Until this DEER update, a conservative upward adjustment of 0.15 has been applied to net-to-gross ratios that are net of free riders while excluding free drivers, to adjust for self-report bias. The 2008 DEER update inconsistently applied a self-report bias adjustment, occasionally taking it into account (*e.g.*, the residential retrofit direct install program) and often ignoring it, resulting in a biased result (*e.g.*, the Standard Performance Contract evaluation, which eliminated such an adjustment for its large customers

who participate in its Standard Performance Contracts program without explaining why the self-report bias was eliminated. The Evaluator who incorporated the bias correction stated that .05 was eliminated because it was for spill-over, yet did not explain why the remaining .1 correction for self-reporting bias was eliminated.) In other instances, *e.g.*, the Savings by Design programs, the net-to-gross ratio selected by the Energy Division cannot be ascertained from the studies used for the 2008 update.

2. The Draft Verification Report concludes that 33% of compact fluorescent lights (CFLs) do not get installed by customers and reduces utility accomplishments by that amount (Appendix A1, Table 8, page 16). However the study used in the Draft Verification Report includes customers surveyed too soon after purchasing the CFLs. Appendix A1 uses an overall in service rate of 67%, which factors in a 51% in service rate for those lamps installed within 2 months of purchase and the 72% rate for lamps installed after 2 months. It is inaccurate to survey customers so soon after lamp purchase. To carry this to the extreme, a survey done on the same day as lamp purchase would find a zero install rate! The EM&V contractor recommends a 72% in-service rate, which can be compared to the 76% in service rate in the 2004/2005 Statewide Residential Retrofit Single-Family Energy Efficiency Rebate Evaluation and the 73-85% install rate verified by KEMA for PG&E's CFL give-away program. Unfortunately, even the recommended 72% does not address PG&E's concerns that customers are being surveyed too soon after their CFL purchase. PG&E recommends that the CPUC return to the ex ante in-service rates until additional data is presented addressing the too-soon-after-purchase customer data.

3. The Draft Verification Report is silent on how utilities are to claim the energy savings resulting from CFLs purchased and stored for later use. The energy savings need to be considered as increasing the expected useful live of installed CFLs or counted as replacing incandescents as they burn out.

4. The Draft Verification Report cites a low verification rate (46-58%) for wall and ceiling insulation installations based on small sample sizes (Appendix A1, tables 24 and 25,

pages 32 and 33). Because phone surveys were used, it is highly likely some customers could not accurately report on the insulation work done in the home. The data is partially based on a home inspection of only 14 homes (wall insulation) and 27 homes (ceiling insulation) of the 11,300 participants in PG&E's insulation program. PG&E field inspected 3,261 homes (some are dual participants) and found pass rates in the 70-97% range, depending on year and type of installation. PG&E then only claimed the adjusted energy savings from those customers in its accomplishments. The evaluation used too small of a field sample to be accurate and needs to examine a larger sample before being applied.

5. The Draft Verification Report contains survey methods that should be corrected. For example, the Draft Verification report, in Appendix A4, includes net-to-gross data from various years for the Savings by Design program that has been averaged but not weighted. This is mathematically incorrect. Correcting for this error, net-to-gross values for industrial participants in the Savings by Design program will significantly increase.

6. The draft verification report contains data from a building simulation model that has not been verified by either EM&V or field studies. The draft verification report states that its engineering algorithms are based on American Society of Heating, Refrigerating and Air Conditioning Engineers (ASHRAE) or other professional societies (p.22 of the Report). While the inputs to the model may have been based on field studies, the resulting output has not been verified with field studies. This is concerning in that the building simulation model in the draft verification report has been used to adjust savings data for duct heat transfer and leakage, refrigeration, and refrigerant charge and may be used for applying interactive effects in the future.

7. The draft verification report pulls data from a very large pool of sources but is inconsistent in reporting confidence levels for the results. Page 28 of Appendix A1 states that sample sizes were picked to achieve a 90% confidence level, but these figures were not published with each analysis. With a 90% confidence interval, the interval itself can be small or very wide, yet the draft verification report uses a "point estimate" value in every case. The

actual confidence intervals should be published for each of the programs listed in the draft verification report.

8. Page 55 of the draft verification report discusses the Residential/Nonresidential split assumptions for CFLs. While the Draft Report cites some of the studies done on this issue, none of them conclude that a 95/5 split is correct. The range in current CFL studies range from 78 to 98% residential (2- 22% nonresidential). The range is mainly due to the survey instruments used, but it is clear that not enough data exists to select a 95/5 split with any level of confidence. Kema is currently finalizing a study designed to answer this question for PG&E and SCE's Upstream Lighting Program. The preliminary results of this study indicate the split is 78/14 residential/nonresidential with 8% purchased by builders. Since these could conceivably end up in residences, a conservative estimate is 86/14. There is no convincing evidence to change the existing 90/10 split and it should be left "as is" until studies are finalized.

9. The draft verification report employs inconsistent data for the Low Income Energy Efficiency (LIEE) program saving for the 2004-2007. The energy savings values for 2004, 2006 and 2007 are taken from PG&E's LIEE Annual Report, but the 2005 savings values are not. To be consistent with the 2004-2007 period savings values during the four year period, the 2005 savings values from the 2005 LIEE Annual Report should be used. This correction results in 5.34MW, 25GWh, and 1.11MM therms for 2005 or an increase of 16% in MW, 2% in GWh, and 8% in MM therms for 2005.

10. The draft verification report employs incorrect data for the 2004-2005 period savings. It uses Energy Efficiency Groupware Application data for its calculations, which did not reflect PG&E (including third-party vendors) final energy efficiency and LIEE accomplishments for that period, instead of the Annual Reports which reflect the most accurate accomplishments. This correction results in 357MW, 1,741GWh, and 45MM therms for that period or an increase of 7% in MW, 0.3% in GWh, and 2% in therms for that period.

11. The data supporting the draft verification report, from Appendix G in the RRIM VRT database, has unexplainable adjustments for the unit energy savings for some of the

measures. Specifically, residential refrigerator recycling and residential ceiling insulation R-30 measures had various adjustments, but no known factors between them that would create a need for multiple adjustment levels. The measure name, measure unit, and climate zone are all the same, yet the database adjusts the same measure by varying percentages for the unit energy savings. The residential refrigerator recycling measure unit energy savings adjustment varies between 0%, 50%, and 67% and the residential ceiling insulation R-30 measure unit energy savings adjustment varies between -12%, -38%, 79%, and 91%.

12. The VRT incorrectly applied the draft verification report results to PG&E's 2006 – 2007 upstream compact fluorescent lighting (CFL) program accomplishments. Table 7 of Appendix A1, Residential Program Verification Report, at page 14, determined the verified residential and C&I screw-in measure installation rate to be 67 percent. The table also correctly identifies that PG&E assumed a 76% in-service rate (ISR) in its 2006 – 2007 accomplishments. However, when the installation rate was applied to PG&E's upstream CFL program, the VRT incorrectly applied the 67 percent installation rate to PG&E's upstream CFL program accomplishments. Since PG&E's upstream CFL program accomplishments already incorporates an ISR of 76 percent, the VRT should have applied an adjustment factor of 88 percent (67 percent / 76 percent) to the upstream CFL program accomplishments to simulate an installation rate of 67 percent.

13. The draft verification report underestimates the 2004–2005 program accomplishments by not accounting for committed energy savings from PG&E's Residential New Construction (RNC) and Savings By Design (SBD) programs paid after 2005. Section 5.2.3 of the draft verification report, on pages 27 and 28, describes how energy savings from 2004–2005 commitments paid after 2005 are accounted for. Table 9 lists programs that were included as part of this analysis. For PG&E, the RNC and SBD programs are two programs that have significant commitments and they were omitted from this analysis. In order to account for the correct energy savings from the 2004– 2005 program accomplishments, the energy savings

from the commitments paid after 2005 for the RNC and SBD programs need to be included in the final verification report.

IV. CONCLUSION

By any objective measure, PG&E was very successful in implementing its energy efficiency programs in 2006 and 2007. Using the metrics that were in place when the programs were designed, implemented, and approved by the CPUC, PG&E achieved 147% of the Commission's electric energy-saving goals, 114% of the Commission's electric capacity goal, and 120% of the Commission's therm goals. Yet, Energy Division's draft verification report, through the use of modeling assumptions and "judgment," would slash energy savings to the point where PG&E would be entitled to no earnings, and proposes to set up a system that guarantees that a combined gas and electric utility will always end up in the penalty level. The system is broken and needs to be fixed.

Respectfully submitted,

/s/

ROBERT B. MCLENNAN
LISE JORDAN
77 Beale Street
San Francisco, CA 94105
Telephone: (415) 973-2069
Facsimile: (415) 973-0516
E-Mail: rbm4@pge.com

Attorneys for
PACIFIC GAS AND ELECTRIC COMPANY

December 15, 2008

CERTIFICATE OF SERVICE BY ELECTRONIC MAIL

I, the undersigned, state that I am a citizen of the United States and am employed in the City and County of San Francisco; that I am over the age of eighteen (18) years and not a party to the within cause; and that my business address is Pacific Gas and Electric Company, Law Department B30A, 77 Beale Street, San Francisco, CA 94105.

On the 15th day of December, 2008, I caused to be served a true copy of:

COMMENTS OF PACIFIC GAS AND ELECTRIC COMPANY (U 39-M) ON ENERGY DIVISION'S DRAFT ENERGY EFFICIENCY 2006-2007 VERIFICATION REPORT

[X] By Electronic Mail – serving the enclosed via e-mail transmission to each of the parties listed on the official service list for R.06-04-010 with an e-mail address.

I certify and declare under penalty of perjury under the laws of the State of California that the foregoing is true and correct.

Executed on this 15th day of December, 2008, at San Francisco, California.

/s/

Linda S. Dannewitz