**MEMORANDUM** April 4, 2010

To: San Diego Gas & Electric Company, Southern California Edison Company, Southern California Gas Company, Pacific Gas & Electric Company

From: Yanda Zhang, Marian Goebes (HMG)

**Subject: 2009 IOU Codes & Standards Advocacy Verified Net Benefits**

This document presents the method, data sources, and assumptions that Heschong Mahone Group (HMG) used to estimate the net benefits realized in 2009 from the Codes & Standards (C&S) programs.

## C&S Programs

The IOUs are allowed to claim 50% of verified savings from C&S pre-2006 C&S advocacy work. Such savings include those from Title 20 and Title 24 standards that were advocated through the following IOU C&S programs:

* 2005 Title 24 C&S Programs
* 2005 Title 20 C&S Programs

Energy savings parameters and program attributions for 2005 Title 24 and Title 20 standards were obtained from the CPUC 2006-2008 C&S program evaluation report.[[1]](#footnote-1)

The IOUs are also allowed to claim 100% of verified savings and net benefits from post-2005 C&S advocacy work. Such savings and net benefits include those from the 2006 Title 20 C&S Programs. The 2006 Title 20 C&S program includes the following standards:

* Residential Pool Pumps, 2-speed Motors, Tier 2
* General Service Incandescent Lamps, Tier 2
* BR, ER and R20 Incandescent Reflector Lamps: Residential
* BR, ER and R20 Incandescent Reflector Lamps: Commercial

The first two standards have been evaluated by the CPUC 2006-2008 C&S program evaluation. Since they were advocated through post-2005 program efforts and took effect on January 1, 2008, they are not considered part of the pre-2006 C&S program. Their energy savings in 2008 were not included for the 2006-2008 program cycle. HMG used the evaluated energy savings parameters and program attributions for savings estimation in 2009.

The latter two standards were not evaluated by the CPUC 2006-2008 C&S program evaluation. HMG’s assumptions for energy savings calculation are discussed in the following section.

## 2009 Codes & Standards Verified Savings

In October 2010, HMG provided a C&S savings estimation spreadsheet[[2]](#footnote-2) to the CPUC and its program evaluation consultant, The Cadmus Group Inc., to support the 2009 C&S program evaluation. Cadmus commented on the methodology, data input, and assumptions used the in the spreadsheet (documented as the Appendix Q of CPUC 2009 Energy Efficiency Evaluation Report[[3]](#footnote-3)) and provided the verified 2009 C&S net savings to the CPUC based on this spreadsheet. HMG accepted all comments and changes proposed by Cadmus and accordingly produced a revised C&S program savings spreadsheet.[[4]](#footnote-4) They key program attribution assumptions in the revised spreadsheet include:

1. For all evaluated standards, including 2005 Title 20, Title 24, Tier 2 Residential Pool Pumps, and Tier 2 General Service Incandescent Lamps standards, energy savings parameters and program attributions are based on the 2006-2008 C&S program evaluation results;
2. For the two BR, ER and R20 Incandescent Reflector Lamps standards, unit energy savings and market baselines are based on the corresponding CASE studies. Compliance rates and program attribution scores are assumed to be the same as the average values (weighted by potential energy savings) for 2005 title 20 standards;
3. A 50% adjustment is applied to estimated savings of all 2005 Title 20 and Title 24 standards. No adjustment is applied to the four 2006 Title 20 standards.
4. The 2005 Title 24 hardwired lighting measure is not included in the savings calculation. Instead, the corresponding savings were captured by including the whole house measure in the analysis to ensure that there was no double counting.
5. Savings for the 2005 Title 20 pre-rinse spray valves standard are not included, consistent with the 2006-2008 CPUC program evaluation.
6. The measure life for each standard was obtained from its corresponding CASE study report. In the case of the residential and nonresidential BR, ER and R20 Incandescent Reflector Lamps standards, the measure lives were updated to four years and one year, respectively, based on the rated lamp life and duty cycles provided in the CASE study report.

The revised 2009 net savings estimates are consistent with those in the CPUC 2009 Energy Efficiency Evaluation Report. HMG utilized this consistent approach to determine the net benefits attributed to the post-2005 C&S advocacy work in 2009.

Note: Some savings values in the CPUC report have only one significant digit, especially for natural gas savings, which can lead to large round-off errors.

## 2009 Codes & Standards Verified Net Benefits

In order to determine the 2009 verified net benefits associated with post-2005 C&S, HMG generated E3 Calculator input data each of the IOUs. (Because the verified savings associated with 2005 Title 20 and Title 24 C&S programs are not eligible for performance earning basis, they were not included in the E3 input tables). HMG provided the following inputs:

KWh / kW Savings: Based on the gross and net program savings estimates.

Net-to-Gross Ratio (NTG): Determined as the product of corresponding NOMAD and program attribution values.

Incremental Measure Costs (IMCs): Based on cost data provided in the corresponding CASE study reports for cost-effectiveness analysis.

Effective Useful Life (EUL): For the Tier 2 Residential Pool Pumps and Tier 2 General Service Incandescent Lamps, EULs were obtained from the 2006-2008 C&S evaluation results. For the EUL associated with the residential and nonresidential BR, ER and R20 Incandescent Reflector Lamps standards, they were derived from the CASE study report.

Load Shapes: Used the appropriate load shapes contained in each IOU E3 Calculator.

1. Final Evaluation Report, Codes & Standards (C&S) Programs Impact Evaluation, California Investor Owned Utilities’ Codes and Standards Program Evaluation for Program Years 2006‐2008 Prepared by KEMA, Inc., The Cadmus Group, Inc., Itron, Inc., and Nexus Market Research, Inc. [↑](#footnote-ref-1)
2. Total C&S Savings HMG - V5 19Oct 2010 - for 2009 estimate.xlsm [↑](#footnote-ref-2)
3. [http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency /EM+and+V/2009\_Energy\_Efficiency\_Evaluation\_Report.htm](http://www.cpuc.ca.gov/PUC/energy/Energy+Efficiency%20/EM+and+V/2009_Energy_Efficiency_Evaluation_Report.htm) [↑](#footnote-ref-3)
4. Total C&S Savings HMG - V5 24Mar 2011 - for 2009 estimate.xlsm [↑](#footnote-ref-4)