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March 24, 2008

California's Investor Owned Utilities:

Pacific Gas and Electric Company (PG&E),

Southern California Edison Company (SCE),

San Diego Gas & Electric Company (SDG&E) and Southern California Gas Company (SoCalGas)

RE: California Energy Efficiency Strategic Plan

Dear California Investor Owned Utilities:

I am very grateful to have participated in the development of the California Energy Efficiency Strategic Plan (EESP) through participation in the Heating Ventilation and Air Conditioning (HVAC) working group. I respectfully submit the following comments on behalf of Ice Energy Inc. in support of our shared desire to achieve the goals of the plan.

Our comments are focused on two overarching recommendations to the HVAC report that we hope the authors will consider for the final EESP plan. The recommendations are:

1. Strategies to accelerate the adoption of new HVAC technologies should have higher priority than those promoting improvements to quality installation practices. While these two sets of strategies are not mutually exclusive, the application of limited resources dictates a need for prioritization.
2. Peak shifting storage technologies should be specifically mentioned as the most potent HVAC peak reduction strategy as they provide the largest potential peak savings contribution of all technologies and options contained in the report.

1. New Technologies Adoption vs. Quality Installation Practices.

The Strategic Plan's HVAC Strategies vision appropriately notes a dual goal "...to promote energy efficiency and peak load reduction in California's climate." Four strategies are proposed to achieve these goals and are addressed inside of two broad HVAC categories; (1) new technologies adoption and (2) Quality Installation Practices (QIP). Of the four stated strategies stated in the EESP, three are related to QIP and one is related to new technologies. Additionally the plan overwhelmingly addresses strategies and opportunities for energy efficiency and sparsely addresses peak reduction strategies. Moreover there are substantial, quantified potential peak savings described in the HVAC sector report.

The HVAC sector report, *Recommended Strategic Plan to Transform the Existing HVAC Industry and Achieve Additional Peak Savings, Sustainable Profitability, and Increased Customer Comfort*, and appendices clearly reveal that new technologies deployment strategies have a much greater potential opportunity for peak savings than do QIP strategies. (Potential energy efficiency savings are not comparatively stated in the HVAC sector report.) The EESP

HVAC strategies should share this peak savings potential finding and therefore make the accelerated deployment of new technologies the highest priority.

Chapter 1 of the HVAC Sector report describes opportunities for energy savings and peak reduction within the broad categories of QIP and new technologies adoption. The report estimates and compares the potential peak savings of these broad strategies. Table 1-1 below copied from page 6 of the report states Potential Peak Savings from both of these broad categories in the near and intermediate term. While the near term estimates of peak savings are mostly based upon QIP improvements, the longer term potential is much greater from the accelerated adoption of alternative cooling technologies. It is difficult to reasonably compare the near term (2012) cumulative savings from either broad strategy due to the different rates of adoption. The QIP analysis assumes moving from a current adoption rate of 10-15% to 90% saturation of all CAC installations by 2015 (a worthwhile but very ambitious assumption). Alternative technologies have increasing market adoption that, in the analysis, is capped in year 2020. Without a thorough analysis of each specific strategy's adoption rate rolled-up into the broader strategic categories, it is unreasonable to compare the near term potential savings. The longer term (2020) savings are more comparable and, in fact, provide clear evidence that new and alternative technologies should be of highest priority. The total potential peak savings due to alternative cooling technologies represents 77% of the total savings.

**Table 1-1
Potential Peak Savings by High Level Strategy**

Strategy	Potential Peak Savings (MW) by 2012	Potential Peak Savings (MW) by 2020
1. Increase quality installation practices from 10 to 90 percent	510	1100*
2. Accelerate the market penetrations of alternative cooling technologies	380	3,600

*This estimate assumes that quality installation practices becomes the accepted or baseline market practice by 2015 and thus no additional savings are estimated for this strategy beyond 2015. All estimates rounded to two significant figures. Source: Appendix B

2. The importance of peak shifting/storage technologies to the goals of the EESP

Table B-7 (from page 48 of the HVAC sector report, *Recommended Strategic Plan to Transform the Existing HVAC Industry and Achieve Additional Peak Savings, Sustainable Profitability, and Increased Customer Comfort* copied below) shows that nearly 3,600 MW of peak reduction is available by 2020 from alternative cooling technologies. The HVAC sector report calculations demonstrate that 2300 MW (64%) of these savings are expected from Thermal Storage Central Air Conditioning systems.¹

¹ HVAC sector report Appendix B Table B-7 *Potential Energy and Peak savings from High Level Strategies* column *Cumulative Savings from Accelerated Introduction of New Peak Shifting Cooling Technologies* values are taken directly from Table B-4 *Potential Peak savings from Accelerated Penetration of Thermal Storage CAC Systems in Residential and Small Commercial Markets* of the same appendix. The column headings are inexplicably different, Thermal Storage is the technology used in both tables

**Table B-7
Potential Energy and Peak Savings from High Level Strategies**

	Cumulative Savings from Quality Verification in Residential and Small Commercial Markets	Cumulative Savings from Quality Verification in Residential and Small Commercial Markets	Cumulative Savings from Accelerated Introduction of New More Efficient Cooling Technologies	Cumulative Savings from Accelerated Introduction of New Peak Shifting Cooling Technologies
Year	Energy GWH	Peak MW	Peak MW	Peak MW
2008	24	18	3	11
2009	84	73	18	43
2010	204	182	48	97
2011	363	325	87	183
2012	562	505	138	243
2013	770	693	202	341
2014	991	893	283	481
2015	1,216	1,096	382	607
2016	1,216	1,096	584	785
2017	1,216	1,096	696	1021
2018	1,216	1,096	857	1,336
2019	1,216	1,096	1,050	1,755
2020	1,216	1,096	1,272	2,299

N/A – No energy savings assumed because peak shifting technologies shift load into off peak period but have no annual energy savings.

Therefore, the Strategic Plan should specifically address storage or peak-shifting technologies due to their major role in achieving the HVAC Sector goals, as documented in the HVAC sector report.

Additionally, while not the product of the utilities, we would hope that the additional report to the Legislature, where peak savings strategies are specifically requested, will properly identify and emphasize the role that thermal storage will play in achieving peak energy reduction goals anticipated by the California Energy Efficiency Strategic Plan. Accordingly, we will be communicating directly on that matter with the CEC.

Thank you for considering our views. Please let me know if I may provide additional information.

Very best regards,

Paul Kuhlman AIA
LEED AP
Director