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Pacific Gas and Electric Company®

October 13, 2008

Ms. Jackalyne Pfannenstiel
Chairman and Associate Member, Efficiency Committee

Mr. Arthur Rosenfeld
Commissioner and Presiding Member, Efficiency Committee

California Energy Commission
Buildings and Appliances Office
1516 Ninth Street, MS-25
Sacramento, CA 95814-5512

Subject: PG&E Comments on Title 20 45-Day Language for Test Procedure for Battery Charger Systems; RE: 2008 Rulemaking on Appliance Efficiency Regulations; Docket No. 08-AAER-1B;

Dear Ms. Pfannenstiel and Mr. Rosenfeld:

In addition to the presentation and comments provided by PG&E at the September 17, 2008 public hearing, PG&E provides the following comments for consideration with respect to the Test Procedure for Battery Charger Systems.

Test procedure references update

Version 2.1.4, August 1, 2008 of the test procedure references the old version of the IEEE standard which has since been revised. The correct designation follows:

IEEE Std 1625(tm) - 2008, revision of IEEE 1625-2004, IEEE Standard for Rechargeable Batteries for Multi-cell Mobile Computing Devices. The Institute of Electrical and Electronics Engineers, Inc. New York, NY, USA.

We recommend that CEC update this citation in the test procedure references list.

Clarification of Source Impedance for the CEC

PTI has repeatedly pointed out that power quality measurements should only be measured with a source impedance typical of the impedance expected in actual field use. We disagree for the following reasons:

- The effect of power source impedance is small, typically in the third of fourth decimal digit of the measured efficiency.

- The purpose of the test procedure is to create reliable, repeatable laboratory measurements, not to precisely duplicate expected field conditions. The test procedure already requires many conditions, such as input voltage stability and ambient temperature control that may never be encountered in actual product use.
- Using a low-impedance source (such as we have done for our testing), is required by other power quality test methods, such as the IEC procedure for measuring harmonics.

Clarification of power factor for CEC

At the Energy Commission hearing on September 17, 2008, AHAM and PTI suggested altering the test method to either:

- omit the measurement of power factor entirely
- account for power factor measurement in the test procedure in a non-traditional manner

We estimate that improving the power factor of battery charger systems in California could cost-effectively save 50 to 140 GWh per year currently lost as heat in building distribution wiring. Omitting the power quality measurements at this early stage would disable the Commission from considering this savings to the rate-payers of California.

AHAM/PTI's alternate proposal to account for distribution wiring losses by placing a ½ ohm resistor in line with the AC test measurement setup severely underestimates the distribution wiring losses. Their proposal models a single battery charger system operating in a house with no other battery chargers or plug loads connected to any wall plug. A more accurate model is to consider a house filled with multiple battery charger systems and numerous other electronic plug loads. Creating a test setup that accurately creates this house model is possible, but makes cost per unit tested unacceptably high. Fortunately, this complicated test setup is unnecessary because this multi-device house model can be created mathematically with data from the current test procedure. It is possible to simply compute the incremental increase in energy consumption when the specific unit under test is added to the house. The test procedure's current measurement of power factor and current crest factor, widely used by power quality experts, affords the Commission the most flexibility as it considers power quality in a future battery charger standard.

We appreciate your consideration.

Sincerely,

Patrick Eilert
Program Manager, Codes and Standards
Pacific Gas & Electric Company