May 15, 2003

To: Richard Karney
From: Duane Larson
Re: Comments on ENERGY STAR Water Heaters

Pacific Gas and Electric Company respectively submits comments to the April 16th request concerning ENERGY STAR water heaters. Based on the option presented, PG&E supports option 4: " Best-Performing Gas/Oil and Advanced Electric Water Heating Technology Criteria (excluding conventional electric storage water heaters) is introduced on January 20, 2004 or later"

The following are our comments:

- PG&E's experience in setting standards for products has been that incremental increases in energy efficiency requirements make it possible for manufacturers to respond in a relatively timely manner. Stepping up the Energy Factor (EF) for storage water heaters to 0.63 for gas storage water heaters would begin the process of energy efficient improvements. This does not mean that future increases in efficiency thresholds should be delayed indefinitely. Instead, eventual increasing of both gas and electric standards consistent with instantaneous gas water heaters and condensing gas water heaters and increasing the electric energy factor should be planned.

- Granting ENERGY STAR status to conventional electric resistance storage tank systems would reward yesterday's technology and dilute the market effects of shifting toward emerging approaches.

- California Title 24 Building standards, started in 1978, purposefully penalized electric resistance in order to try to reduce its prevalence. California uses "source energy" instead of "site energy" which means that generation and transmission losses are calculated into the energy comparison such that electric site BTU's are multiplied by three before being compared to gas BTU's. Using such a methodology would mean that a 0.93 EF for electric resistance storage tank systems would be reduced to 0.31 EF before being compared to gas at 0.60 EF. Based on this state policy, it would be an inconsistent signal to grant an ENERGY STAR label to both electric resistance and natural gas storage units.

- The side-by-side comparison of EnergyGuide labels (both would show ENERGY STAR labels) adjusted to our rates would show Electric at $708 per year and Natural Gas at $237. Granting ENERGY STAR for electric resistance storage tank units would not be credible when the operating costs is nearly 3 times as much.

- Granting ENERGY STAR to electric resistance storage water heaters would enable the additional danger of encouraging fuel switching to electric.

- ENERGY STAR has set a precedent that electric resistance space heating is not applicable since heat pumps are available and at least comparable to condensing gas furnaces, the same comparison holds for water heating.

- Option 4 approves comparable systems on a cost to operate basis: Natural Gas $237, Electric Heat Pump or Solar $244. This recognizes the exorbitant cost and undesirable thermodynamics of fossil fuel generated electric resistance.

- Supports resource acquisition and procurement plans for electricity by moving the market toward options that impose a fraction of the kW demand. This recognizes what Amory Lovins has analogized about electric resistance water heating that burns natural gas at

two thousand degrees to make electricity then use the electricity to make 140 degree water: "...its like cutting butter with a chainsaw."