ACEEE Supplementary Information Re Issues Discussed at June 11, 2013 Ex Parte Meeting

As supplementary information, to address a few questions raised by DOE in the ex parte meeting, ACEEE wishes to address three issues that were discussed – analysis of appropriate situations for a waiver, technical requirements, and procedures to minimize "leakage". We discuss each of these in turn.

Analysis of Appropriate Situations for a Waiver

For a waiver for a "grid-enabled" water heater to make sense to consumers, the lifetime economic cost of the water heater should be less than a water heater that meets the new 2015 DOE standards. DOE found that for water heaters greater than 55 gallons, an EF of 2.0 was economically justified. In our meeting we mentioned a preliminary analysis of ours which we have since somewhat refined. A copy is attached and should be considered a working estimate – DOE can and should refine this. Essentially this analysis seeks to find the point at which a consumer is life-cycle cost neutral between a heat pump water heater and a grid-enabled water heater. For a grid-enabled water heater to be competitive, either the consumer needs to receive a monthly payment for the grid-enabled features, or a discount on the price of off-peak power to heat hot water. The attached illustrates what types of payments or discounts are needed.

Technical Requirements

ACEEE provided suggestions on technical requirements in its previous written comments. ACEEE suggested:

1. A requirement that each 'waivered' water heater carry prominent labels on the unit, its box, and all marketing materials (web, etc). This would warn that the water heater was only for use in authorized utility demand response programs. Such a label would be required by NRECA's draft legislation. (Sec. 325(e)), which goes into no detail.
2. Standard control interfaces for the water heaters. In it's written comments ACEEE suggested use of a specific specification. However, based on discussions with others in the industry, we are now open to more than one interface and let them compete in the market.

In addition, as discussed below under leakage, an additional technical requirement could be an effective way to minimize leakage.

Procedures to Minimize Leakage

"Leakage" is a term to describe use of waived water heaters greater than 55 gallons in applications that do not participate in a demand response program that has received a waiver. Since only a minority of electric resistance water heaters participate in demand response programs, the potential for leakage into the majority of market is high unless adequate controls are in place. We can think of three approaches for managing leakage, in order from most to least effective.

1. A hardware insert that the utility would have that would need to be plugged into the water heater for it to operate. The utility would only provide these to customers in demand response programs that receive a waiver. Alternatively, it should also be possible to do this via software,

that requires a connection to the utility to activate the water heater. The analogy is a hardware 'dongle' used to control use of some expensive software programs. If the dongle isn't found when the program is launched, the program won't launch. With software, this is typically a device that plugs into a USB interface but with water heaters many approaches might be possible. If the customer drops out of the demand response program, the software interface could be deactivated (easier) or the hardware 'dongle' could be retrieved (harder).

2. A system by which the seller of a new waived water heater checks with the utility before selling the unit to ascertain whether the customer is in fact enrolled in an approved demand response program. The seller could be a plumber or a retail store who would likely need to enter into an agreement with the utility to sell waived water heaters as a representative of the utility. A utility could have many such sellers. The seller would check with the utility over the web or via the phone. We would expect multiple small coops to band together, such as thru "G&T" power providers, so that a single verification system could serve many utilities.

3. Allowing sales of waived water heaters only by retailers/wholesalers in the service area of a utility receiving a waiver. By excluding sales beyond the service territory, sales to ineligible customers would be reduced. On the other hand, in some rural areas, there may be no retailer or wholesaler in the utility service area. If this approach were used, we might need the installer to certify that the DR control was hooked up/enabled and/or that there is a time of use or smart meter to differentiate between peak and off-peak power.

Other options may also be viable – we suggest these three to illustrate the range of possibilities.