



**Post-10/15/06 major action steps to improve operations and external communications
in an island-wide outage or other major system emergency**

Among the many actions taken to improve Hawaiian Electric's emergency response capabilities, here are a few examples:

External communications:

- A dedicated phone line has been installed from Hawaiian Electric's emergency operations center to the primary emergency broadcast radio station to increase the ability to get through to the station early and regularly to share information during a major emergency.
- The telecom lines that serve Hawaiian Electric's emergency operations center and other company facilities have been diversified with two different service providers to help ensure some phone service can be retained should one provider experience problems.
- As part of the completion of HECO's new emergency operations center, the Company had initiated a project in 2006 to install an amplifier to improve the signal strength of wireless communications within the facility. This was in progress on October 15 and has since been completed.
- Hawaiian Electric's primary cellular provider is securing a portable generator for the cell site that serves HECO's emergency operations center.
- The Company's list of unpublished emergency contact phone numbers for media has been expanded, including contacts for KZOO and KNDI foreign language radio stations.
- Although Internet service may not be accessible by those impacted by an outage, this remains an important communication link to the outside world. Hawaiian Electric's Internet provider has since installed additional batteries to extend their back up power operations. Hawaiian Electric is also exploring a cost effective way to bypass its existing Internet provider as a back-up plan.

Operations:

- Modified the two largest generating units on the Hawaiian Electric system to prevent safety relays from falsely locking out during earthquake vibrations. On October 15, 2006, the lock-out of these relays resulted in these generating units losing the ability to maintain power output and eventually to trip offline.
- Completed an evaluation of the primary safety and operational issues and work required to modify the electrical connection to an independent power producer, Kalaeloa Partners, to provide an additional source of start-up power to the grid in the unlikely event of an island-wide outage. This would supplement the black-start capability already available at HECO's Kahe and Waiau plants and planned for its new generating station in Campbell Industrial Park expected to be completed in 2009. HECO's new generating station will employ combustion turbine technology which has a faster start-up time when compared to HECO's existing steam units at Kahe and Waiau. Generation at Kalaeloa Partners also uses combustion turbine technology.
- Developed supplemental blackstart training, increasing frequency of full-scale blackstart drills to several times a year and revising testing procedures for blackstart generators to better simulate total outage conditions.
- Conducting a comprehensive review of the customer restoration process to consider additional options such as possible restart from HECO's new generating station (expected to be completed in 2009) or from the Kalaeloa plant, and restoring larger increments of customers once the grid is sufficiently stabilized.