

CA-IR-5

Ref: T-3, Page 7.

Mr. Pollock provides an example indicating that loss of a transmission line serving a large amount of load is more important than the loss of small residential load.

- a. Is reliability of the distribution system less important than the reliability of the transmission system? Explain.
- b. Is the loss of residential or other types of load considered to be less important than commercial loads simply for financial reasons? Explain.
- c. What is HECO's obligation to serve all types and sizes of load with equal reliability? Explain.

HECO Response:

- a. Reliability of the distribution system is the most basic goal of planning for both the transmission and distribution systems, since that is the level at which the customer is served. One component of distribution system reliability is the reliability of the transmission system supplying electricity to the distribution system. When evaluating the relative importance of reliability for system components (for example transmission lines, distribution lines, circuit breakers, transformers), the number of customers that may be out of service due to a component failure is of critical importance. Because a transmission system outage will almost always affect many more customers than a distribution system outage, the absolute reliability of the transmission system must be greater than that of the distribution system, in order to provide the highest overall reliability to the utilities customers. In this context, the reliability of the transmission system is more important than the distribution system.
- b. A power outage will result in greater impacts, than simply the utilities loss of revenue from unserved power. The financial cost and social impacts will vary with the magnitude and duration of the outage. During a power outage, the loss of commercial load has impacts,

both financial and social, that typically exceed the impacts for residential loads. As an illustration, if power is lost to a residential load during a storm, people will still have shelter and though they may be uncomfortable, their well-being will not generally be threatened. On the other hand, if power is lost to commercial loads such as service stations, stores, hotels and restaurants, people may no longer be able to obtain food, fuel, emergency shelter and other necessary items, and their well-being could be threatened as a result; or if power is lost to traffic signals or water and sewage utilities, then the well-being of people could be adversely effected. As noted in Mr. Pollock's testimony on page 7, an outage to a business can result in lost opportunities to conduct a transaction or in lost production, which are a direct cost to the business, and may also result in lost income to employees of the business. On the other hand, a residential outage may be inconvenient and require the rescheduling of activities, but overall economic impacts are much less. In this context, the loss of residential load may be considered to be not as critical than for other types of loads.

- c. In the context of Mr. Pollock's testimony with regard to the transmission system planning process, all types of loads are given equal consideration in the analysis. Most 138kV substation loads on the Oahu system are a mix of residential and commercial loads, and no differentiation is made as to the type of load in load flow studies. Thus, all types of load are given equal consideration from a transmission system reliability perspective. At the distribution level, sometimes there are relative differentiations made between types of load. For example, a particular distribution feeder with a hospital load may be considered more important than a residential load without a hospital or other critical load type.