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SR 225
RELATING TO NATURAL HAZARD EVALUATION
AND EARTHQUAKE PREDICTION

Statement for
Senate Committee on
Economic Development
Public Hearing, 16 April 1979

By
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SR 225 requests that the Department of Planning and Economic Development make a study of natural hazard evaluation and earthquake prediction. This statement on the resolution does not reflect an institutional position of the University.

Few would disagree that the careful management of natural hazards is of great importance to the State of Hawaii. The SR 225 represents a step in a positive direction, that is, a step toward a more comprehensive management of potentially catastrophic perturbations of natural systems. In this statement on the resolution, we would like to offer seven points for consideration and conclude with a brief recommendation as to what a systematic study might cover.

1. First, natural hazards are products of interaction between unusual but natural physical processes and human uses of the environment. In view of this, one must realize hazards are a concern for reasons other than listed in the resolution. Most importantly, hazard losses are mounting because there is a trend towards increased human occupance and use of potentially hazardous areas including land subject to tsunami run-up, hurricane winds and storm-surges, volcanic flows, landsliding, flooding, and other hazardous events. In addition, natural hazards are of concern not only because of their frequency, but also because they are rare events. The infrequency of many of the events lulls society into complacency, and as a result, people are ill-prepared to deal with an extreme situation when it occurs. Such may well be the case for a future tropical hurricane on Oahu. The losses of human life and property should the large infrequent storm pass directly across Honolulu would be large, and will be exacerbated by a population and public officials who will be poorly prepared to handle the situation.

2. Studies alone, as demonstrated in many other arenas, will not necessarily reduce future losses from natural hazards. For example, large sums of money can be spent on studying the seismicity of a place and preparing seismic risk maps. Unless the findings are translated into building codes on land use regulations and such policies are implemented and enforced, little benefits will accrue from the study.

3. Hawaii is faced by a large range of geophysical and meteorological hazards in addition to earthquakes, tsunamis, and volcanoes. It should be recognized that each type of hazard can be described by a set of physical parameters including frequency-magnitude relationships, duration, areal extent, speed of onset, spatial dispersion and temporal spacing. On the basis of such parameters, both differences and similarities can be observed among hazards. It is important to note that these parameters will influence what can and can not be done in common management efforts.

4. Related to the last point is that each natural hazard has a set of human adjustments which usually attempt to reduce loss. Broad classes of adjustments can include engineering works, land use controls, warning systems, and insurance programs to name a few. Some adjustments, such as cloud-seeding relate to only a single hazard, such as that of hurricanes. Others, such as land use controls, may cut across hazard boundaries for flood, tsunami, volcano, hurricane, and etc.

5. Studies have shown that there is no necessary relationship between information dissemination and education programs about hazards and an increase in adaptive human response to a hazardous event. For example, flood plan maps disseminated to the residents of Topeka, Kansas did not discourage persons from building houses in vulnerable locations. An education program on tsunamis in Crescent City, California did not improve citizen response to a tsunami warning. Efforts by insurance agents to inform the public of earthquake and flood policies has not resulted in significantly increased sales. Or, the distribution of flood hazard information by the Denver Urban Drainage District did not stimulate homeowners to take precautionary actions except if they had previously experienced a flood. These examples point out the mere provision of information does not always achieve the desired public response. Other experiences and recent research are, however, pointing out ways to more effectively prepare the public to cope with disaster and take precautionary measures.

6. One newly emerging adjustment to earthquakes is the capability of offering advance predictions and warnings. This can be of a potentially great asset to society but only if the scientific advances are accompanied by the appropriate public planning and preparedness efforts. On the other hand, prediction is not a replacement for other activities which aim to mitigate earthquake losses.

7. The most effective and efficient hazard management policies, according to recent studies, are those which involve comprehensive strategies for managing a wide range of hazards and cross-cutting adjustments. Yet few places in the world have investigated the feasibility of combined multi-hazard programs. The State of Hawaii should certainly take this into account and perhaps, provide a model for hazard management for the remainder of the country.

In conclusion, we would like to suggest that a study, if carried out, include three provisions:

1. First, that the study define and delineate the extent of risks from natural hazard in the state in a systematic fashion.

2. Second, that it examine the existing policies and the range and extent of currently practiced hazard adjustments. In addition, the study should seek to define areas in which other loss-mitigation actions would be feasible and practicable.

3. Third, that the study identify ways of encouraging public and private efforts aimed at more effective methods to cope with the islands natural hazards.

We call attention to the fact that SR 225 would provide the Department of Planning and Economic Development with no special funds for the study requested. The Legislature should, therefore, expect from the study no more than a compilation of pertinent information on the hazard problem already available.