

**Statement by State Representative Mina Morita
California Hydrogen Business Council ñ Fall Meeting
Friday, October 13, 2000, Sacramento, California**

This is a very untechnical, simple presentation - just my thoughts, experiences and observations. Keep in mind you are listening to someone who one year ago, had not a clue as to how electricity was generated or what it cost.

In May 1999 I finished my first term as Chair of the House Committee on Energy and Environmental Protection feeling defeated. Saving environmental programs in a down economy was not a priority in the State's budget. And, my only major bill that survived the Legislature was vetoed by the Governor.

Dejected, I felt my committee had no purpose.

Things changed, however, on September 30, 1999, when I read an editorial in the Honolulu Advertiser entitled, "Catastrophe is just right around our corner." It was my wake up call.

The article commented on three reports released by the United Nations Environmental Program.

The reports found that:

Scientists said global warming will cause severe hurricanes. And, a rise in sea levels could engulf thousands of oceanside communities.

Tourism run amok is not a long-term economic lifeline for small island nations. Rather, it actually threatens the island's environment if it generates too much solid waste, destroys environmental attractions or depletes natural resources.

Prior to this, I never identified the events I experienced personally as a pattern typical of other island nations.

I live in Hanalei Valley on the island of Kauai. You may know Kauai from movies such as South Pacific, Blue Hawaii, Jurassic Park or Six Days, Seven Nights. It is truly a picture of paradise.

But, many people know Kauai from its last disaster, Hurricane Iniki. I have been through two hurricanes within a ten-year period, Hurricane Iwa in 1982 and Hurricane Iniki in 1992. Hurricane Iniki destroyed my family's home. Our homeowner's insurance policy allowed my family the resources to rebuild and furnish a new home but it came with a sizable increase in premiums and high risk factor. In 1995, I watched three one-hundred year floods in a ninety-day period from my back porch. The first flood broke the banks of the Hanalei River and created a cut-off, which now flows through my backyard. Although I now have waterfront property I am sure it affects my flood insurance policy. The second flood caused me to abandon my car as a flash flood came across the road and stalled the car while driving home. That incident cost my insurance carrier over \$7,000 to repair the car.

I live in one of the major river valleys of Kauai, carved by rain water from Mount Waialeale, the wettest spot on earth averaging over 400 inches of rainfall per year. Several months ago, my husband actually had to get out the hose and sprinkler to water the lawn.

I no longer suggest to people the best time of the year to visit because I just don't know when the rainy or dry seasons are any more.

In the meantime, gasoline appears to be a bargain on Kauai at \$2.05 a gallon for regular because it is \$2.12 a gallon on Maui. My last utility bill averaged 23 ¢ cents per kilowatt hour, of which 3 cents was the energy cost adjustment charge, a direct pass through to the ratepayer for increased oil prices. With a population of about 55,000 people on Kauai, this pass through alone cost households over \$600,000 a month and businesses over several million dollars a month on our small island alone.

An environmental and economic disaster is staring not only small island nations but also the State of Hawaii in the face.

My approach to move from a petroleum-based economy to a hydrogen-based economy is for purely selfish reasons. I am Hawaiian and I cannot bear the thought that the Hawaii I know will be different for my grandchildren. I view this transformation as the only means to protect the natural and cultural heritage of my identity. I am convinced that this is the only answer to sustain Hawaii's fragile environment and to stabilize and diversify its economy.

As I proceed in my efforts to promote a hydrogen-based economy, the experiences and lessons Hawaii will learn in this transformation will be a model for the rest of the world. And, we must move forward because it is the only moral and ethical choice we have as the existence and survival of many islands and their people depend on this decision. In Hawaiian we say that this is "pono", that it is right and just.

There are several trends that make a hydrogen future attractive and timely:

First, rising oil prices are stimulating interest in this area.

Second, we are experiencing an electrical revolution that will be as dramatic as what we have seen in the telecommunications industry. How we make and distribute energy is changing thanks to advances and innovation in micropower generation. As you all know, this is the next technology boom area.

Third, to power the new economy, information technology demands reliable power that cannot be delivered through centralized power generation systems and overhead transmission lines. The need for an uninterruptable power source will create the market demand for on-site power generation.

Fourth, environmental and social concerns regarding climate change must be addressed.

Fifth, developing nations expect and deserve the same standard of living we have achieved. The only way to meet the demands of a growing world population and increased energy usage is the development of alternative sources of energy. While we may argue on the potential of future fossil fuel discoveries, we are dealing with finite resources as demand quickly exceeds supply.

And sixth, even if the United States were to develop new oil resources in a sensitive area like the Arctic National Wildlife Refuge, it may not be available for at least ten years and will not affect present oil prices. A recession caused by current rising oil prices will be the death of Hawaii's environment for the simple fact that these kinds of programs will be the first to be cut or reduced from the State's budget.

Hawaii can achieve greater control and immediate impact developing its own indigenous renewable resources.

As fuel cell technology progresses, the critical question is "how are we going to get the hydrogen?" While we can view gasoline and methanol as transitional fuels the desire is zero emissions. To achieve zero emissions, the hydrogen must come from a resource that by itself produces no emission, and that is a

renewable source.

Hawaii can play an important role and become the key in unlocking the potential in marrying fuel cell technology and renewable resources. And, hydrogen storage will end the debate of viewing some renewables as only intermittent, unfirm power.

Hawaii is blessed with a variety of renewable energy resources ñ lots of sunshine, strong, reliable tradewinds, fast-growing crops, flowing streams, geothermal heat, and both hot and cold ocean waters.

Although Hawaii has a good energy policy, the policy lacks a strategy on how to lessen Hawaii's dependence on fossil fuels. In the next legislative session it is imperative that short and long term strategies are laid out to meet these policy goals with specific benchmarks.

One of the first steps that will need to be done is restructuring our electrical regulatory regime to allow for innovation, efficiency and conservation, technological advances and competition in electrical generation. As I mentioned before this is a very important step to meet the reliability needs of information technology, an economic base that Hawaii is trying to attract to diversify its economy.

Second, is to implement a renewable portfolio standard to help create a market for renewable energy that will foster competition in this area to help drive prices down. Hawaii's renewable potential must be maximized to open the door for a hydrogen-based economy.

Third, is to set up a long term strategy to move from a petroleum based economy to a hydrogen-based economy where the goal is for Hawaii to become an exporter of energy rather than an importer.

Last year's Legislature adopted Senate Concurrent Resolution No. 183, requesting the Department of Business, Economic Development and Tourism to conduct a study of the use of hydrogen as a fuel for transportation and power generation. This preliminary feasibility assessment must be submitted to the Legislature by January 2001. I hope to have the input of this prestigious board in this study. This initial study will be a critical document to develop the political will to move forward in this process. As Dr. Alan Lloyd indicated this morning, "We must educate our Legislators."

How vulnerable is Hawaii's economy to rising oil prices? The 1993 oil price spike cost Hawaii residents over \$1.18 billion and over 15,000 jobs for that year alone. Assuming, wrongly of course, that there is no further spiking, it would take Hawaii over twenty years to recover from that episode. These numbers may seem small by California standards but we only have a population of 1.2 million people.

I am here today to expound on Hawaii's advantages as the premier location for a model hydrogen-based economy.

Hawaii is overly dependent on imported fossil fuels. Over 93% of our fuel requirements are imported to meet transportation and electrical generation needs.

One of the biggest consumers of energy in Hawaii is the military. A stable source of power is essential for national security. Partnerships with the Department of Defense can range from base operations to research and development for application in the field.

Hawaii has an uncomplicated electrical grid. Each island is served by its own grid, owned and operated by a single entity. There are no interstate commerce issues.

The Hawaii Natural Energy Institute within the University of Hawaii and the Department of Business,

Economic Development and Tourism are valuable and talented research and business development resources ready to assist potential projects.

We have many opportunities in Hawaii, much too many for me to describe today, however, several people have joined me on this trip as they too believe in Hawaii's potential. Jack Dean is the former Vice President and Chief Operating Officer of Puna Geothermal Venture power plant near Hilo on the Big Island. Jack is currently President of Hydrogen Renewable Energy Enterprise. Michael Edwards of Sustainable Kauai is actively investigating the purchase of Kauai Electric, the island's power provider by either the County of Kauai or a cooperative. He is also developing a demonstration project based on sustainability concepts. Michael Vieth, is the former President and Chief Operating Officer of the National Tropical Botanic Gardens and current President of H2 Power Systems. Mike is developing a hydrogen fuel cell project for the visitors center at the NTBG's Kahanu Garden at Hana, Maui, which is within my district. We will be happy to answer questions on Hawaii's potential after my presentation.

Yogi Berra said, "if you don't know where you are going any road will get you there." Hawaii is at a crossroad. One path is business as usual; our continued dependence on imported fossil fuel, vulnerable to outside forces beyond our control. The other path involves political will, risk taking, commitment, planning, partnerships and diligent effort for at least the next twenty years moving Hawaii towards a hydrogen-based economy.

Foremost, as a Hawaiian and secondly, as the Chair of the House Committee on Energy and Environmental Protection, this is the path I am committed to take. At this stage I am not sure how to get there but I am more hopeful today than I was one year ago when I received my wake up call.

A little boy asked his father, "Daddy, do all fairy tales begin with once upon a time?" The father said, "No son, some start with if you elect me." Well, at times we do rely on elected officials like me to help connect the dots, plant an idea, to describe a project so everyone can understand, or to create a shared dream.

Hawaii futurist James Dator said, "to predict the future you must create the future." This is what I would like to create as Hawaii's future:

In the year 2020 Hawaii and her sister Pacific Islands are powerful world exporters of energy known as HOPEC, Hydrogen of Pacific Exporting Communities, controlling the hydrogen commodity trading prices as active participants in a hydrogen economy based on renewable resources such as solar, geothermal, wave and wind. Biomass and stored hydrogen aid in making 100% uninterruptable power generation attracting information technology firms to these Pacific islands because of their quality of life.

HECO, formerly known as Hawaiian Electric Company, now stands for Hydrogen Energy Company, responsible for an extensive net metering program manufacturing hydrogen for excessive renewable energy output. Kauai Electric is now a municipal owned utility. So successful is the operation that qualified homeowners do not pay any property taxes.

The question "do you want a power plant in your backyard?" is now met with a resounding YES as renewable energy resources and fuel cell development has made every home, school and business a power generator and participant in HECO's net metering program. Roof tops are a valuable asset.

The bundling of underground wiring systems and services with superconductivity wires puts to the grave the debate over high voltage transmission and other above ground lines improving the viewplanes throughout Hawaii.

The hydrogen economy brings a new prosperity to these Pacific islands based on sustainability and environmental stewardship improving the quality of life and increasing the standard of living of its residents as the rest of the world moves forward to model that success.

Hawaii's state motto now truly lives up to its meaning. Ua mau keia au o ka aina I ka pono. The life of the land is perpetuated in righteousness.

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