

Mitch Ewan



Mr. Ewan is a graduate of the Royal Military College of Canada where he earned a degree in Applied Science. After a successful naval career that included command of submarines and a destroyer, Mr. Ewan entered private industry where he has served in a variety of senior executive positions including senior management (Board Member, VP & GM) of publicly traded companies. His hydrogen and fuel cell career spans over 28 years. He led the team that designed and built the “Green Car”, the world’s first PEM fuel cell powered automobile. The Green Car’s fuel cell was developed from the ground up by Mr. Ewan’s team and was the world’s most powerful PEM fuel cell at the time. Mr. Ewan is the former Co-Chair of the United States National Hydrogen Association and served on the Business Advisory Board of the Florida Solar Energy Center. He was awarded a patent for an electrochemical load management system for transportation systems that has been referenced in several Ford and Daimler Benz patents.

In 2001, Mr. Ewan joined the staff of the University of Hawaii’s Hawaii Natural Energy Institute (“HNEI”) as the Hydrogen Systems Program Manager where he is helping to develop HNEI’s hydrogen infrastructure and fuel cell programs. Mr. Ewan’s projects and activities at HNEI have included the following:

- Assisted in the design of the Hawaii Fuel Cell Test Facility;
- Project Manager of the Hawaii Hydrogen Power Park - a partnership involving US DOE, US DOT, and US DOI, industry, and the state of Hawaii to establish clean hydrogen transportation systems at Hawaii Volcanoes National Park (HAVO);
- Managed a project to develop a Geothermal-to-Hydrogen Roadmap for the State of Hawaii;
- Developed a Wind-PV-Hydrogen microgrid system at Kahua Ranch on the Big Island of Hawaii. This is a totally autonomous system that can be operated remotely using the Internet;
- Project development support for the Hawaii Volcanoes National Park’s hydrogen fuel cell bus project. Co-authored the winning proposal with HAVO’s project manager to secure \$1 million in funding to purchase and convert 2 shuttle buses to operate on hydrogen;
- HNEI project manager for HNEI’s participation in the Hawaii Hydrogen Capital Investment Fund, an \$8.7 million Hydrogen Capital Investment Fund to accelerate implementation of hydrogen systems in Hawaii:
 - Co-authored the winning proposal with Kolohala’s project manager;
 - Authored two (2) Renewables-to-Hydrogen plans for the State of Hawaii;
 - Member of the Hawaii Hydrogen Fund Investment Committee;
 - Member of the Hawaii Hydrogen Fund Technical Advisory Committee;
 - Managed a \$1.2 million cost share contract from the fund in support of the Power Park project.
- Project manager for HNEI’s participation in the Hawaii Renewable Energy Development Venture (HREDV);
- Represented HNEI as a member of the Hawaii Energy Policy Forum;

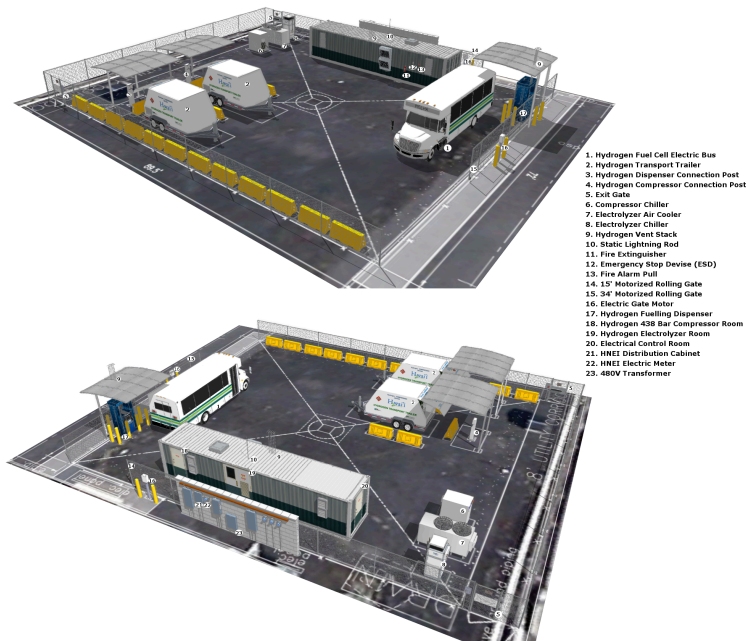
- Initiated the legislation that established the Hawaii Biofuels Master Plan - a \$600,000 State and US DOE funded effort to develop a comprehensive master plan for the growth, conversion and use of biofuels in the state.
 - Served as the Co-Chair of the Renewable Energy working group.
 - Currently Co-Chair of the Transportation Working Group;
 - Hosts a Think Tech Hawaii weekly television show called “Hawaii: The State of Clean Energy” that is sponsored by the Forum and funded by HNEI.
- Project manager to investigate the interaction of large PV arrays on grid stability;
- Project manager to conduct side-by-side performance of different PV technologies in different climatic and weather conditions in the state of Hawaii.
- Project manager for the installation of a hydrogen fueling station at Marine Corps Base Hawaii in support of a GM Equinox Fuel Cell Electric Vehicle deployment project;
- Project manager for the US DOE/Naval Research Laboratory project: “Hydrogen Energy Systems as a Grid Management Tool” that is investigating the use of an electrolyzer to provide grid ancillary services and increase the amount of intermittent renewable energy sources that can be introduced to the grid. The system is installed on the Big Island at the Natural Energy Laboratory Hawaii Authority (NELHA). The hydrogen produced by the electrolyzer is being used to fuel 3 hydrogen buses operated by the County of Hawaii Mass Transit;
- Member of the US DOE Hydrogen Market Transformation Working Group;
- Member of the US DOE Interagency Working Group;
- Member of the General Motors Hawaii Hydrogen Infrastructure Modeling Working Group;
- Reviewer at the US DOE Annual Merit Review reviewing hydrogen production and hydrogen storage projects;
- Member of the Natural Power Concepts Business Advisory Board. NPC is a Hawaii-based company that has developed novel designs for wind turbines and marine hydro kinetic energy systems.

REPRESENTATIVE PUBLICATIONS

- U.S. Patent #5,346,778 - Clean Energy Transportation System
- Rocheleau, R.E., J. Ewan and M. Staackmann. 2003. The Hawaii Hydrogen Mission. Report to the Hawaii Department of Business, Economic Development and Tourism. Hawaii Natural Energy Institute.
- Rocheleau, R.E., J. Ewan and M. Staackmann. 2004. Hydrogen Production in Hawaii - Assessing the Potential for Large-Scale Production using Renewable Energy Sources in Hawaii. Report to the Hawaii Department of Business, Economic Development and Tourism. Hawaii Natural Energy Institute.
- J. Ewan, M. Johnson. 2005. Hawaii Gateway Energy Center at NELHA Business Development Plan - Report to the Natural Energy Laboratory of Hawaii Authority by Hawaii Natural Energy Institute.
- Busquet, M. Ewan, R. Rocheleau, “Description and First Results of a Wind-PV-Hydrogen System at Kahua Ranch on The Big Island of Hawaii”, “*National Hydrogen Association Conference & Expo*”, Sacramento, California. March 2008.
- S. Busquet, M. Ewan, R. Rocheleau, “Hawaii Hydrogen Power Park: Experimental Results of a Stand-Alone Power System Coupling Renewable Energy Generators, Battery Storage and Hydrogen Storage System”, *214th meeting of the Electrochemical Society*, Honolulu, Hawaii, USA, October 12-17, 2008.

- M. Ewan and R. Rocheleau, “The Hawaii Renewable Hydrogen Program”, “*National Hydrogen Association Conference & Expo*”, Columbia, South Carolina. March 2009

**NATURAL ENERGY LABORATORY HAWAII AUTHORITY
HYDROGEN PRODUCTION & FUELING STATION**



**MCBH Hydrogen Production
& Fueling Station**

