CEE691 Seminars in Civil and Environmental Engineering

Engineering Considerations to Build Capacity for Rooftop Rainwater Harvesting on Moku-o-Loʻe (Coconut Island)

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Location: Bilger Hall 335, Date: Wednesday, March 9, 2016, Time: 1:30 – 2:20 pm

Speaker: Lelemia is currently a PhD student in Civil and Environmental Engineering at the University of Hawaiʻi at Mānoa. He is a graduate of Kamehameha Schools, Kapālama Campus. He earned his Bachelors and Masters of Science degrees in Biological Engineering at the UH Mānoa. He is a student of Dr. Oceana Francis.

Abstract

Rooftop rainwater harvesting (RHWS) is an example of the shift worldwide from centralized infrastructure to decentralized technologies to create sustainable self-reliant communities. RWHS is a cheap and simple technology for "self-supply" for water stressed communities. This presentation examines how water independence and sustainability for a population can be achieved for island communities with decreasing precipitation and groundwater resources using RHWS. Moku-o-Loʻe is a 28-acre island off the coast of Kāneʻohe Bay, Oahu that houses the premier Hawaiʻi Institute for Marine Biology (HIMB). Engineering considerations will be presented on R&D of how to implement RWHS on the island, in particular: (1) water demand calculations; (2) rainwater harvesting potential calculations; (3) optimal tank storage calculations; and (4) cost/benefit analysis to assess the feasibility of RWHS adaptations for the small island community. The work and subsequent results will be part of a broader context of ongoing research and outreach efforts that are focused on energy sustainability, water sustainability and the energy/water nexus by HIMB. The presented information on RWHS could be replicated by other island communities as a design tool for engineers, architects, and planners.

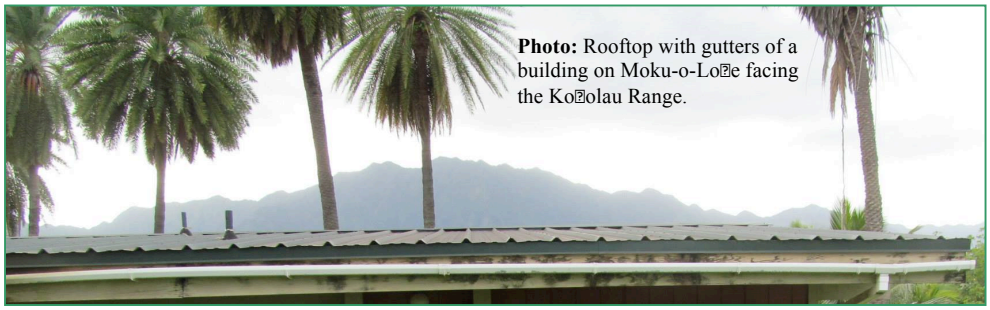

Photo: Rooftop with gutters of a building on Moku-o-Loʻe facing the Koʻolau Range.