FEEDER Foundations for Engineering Education for Distributed Energy Resources

Spring 2019 Seminar Series

Assessing how Residential Utility Customers are Incentivized to Purchase Residential PV and Battery Energy Storage Systems Under Different Energy Policy Incentives in Hawaii

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Abstract: Achieving Hawaii's renewable portfolio standard of 100% renewable generation by 2045 will require more renewable generation and storage at the residential level of the electrical grid. Currently, there are federal and state policy measures in place to encourage the adoption of generation technologies such as such as photovoltaic solar cells ("PV") and storage technologies such as battery energy storage ("BES") systems. As policymakers consider or implement changes to those measures, it is important to understand the implications on customers' economic incentive to purchase those technologies. This presentation describes the development of a modeling tool that determines the size of PV or PV + BES that customers in Hawaii are incentivized to purchase considering a customer's minimum acceptable rate of return ("MARR") and federal and state policy measures including tax incentives and utility interconnection agreements. The model's results are used to provide insight into helping answer policy questions such as: are customers in Hawaii incentivized to switch from PV only systems to PV + BES and how likely is it that customers will defect from the grid entirely?

Mr. Michael Angelo

University of Hawaii

Bio: Michael Angelo is currently a PhD student in the Dept. of Mechanical Engineering at the University of Hawaii where his work focuses on increasing integration of renewables into the electrical grid. He is also a Research Analyst with the Division of Consumer Advocacy. The Division of Consumer Advocacy (DCA) protects and advances the interests of Hawaii's consumers of regulated public utilities and transportation services. Previously, Michael was research faculty with the Hawaii Natural Energy Institute at the University of Hawaii at Manoa where he studied hydrogen fuel cells and developed a novel technique for separating hydrogen from helium that was demonstrated at NASA's Stennis Space Center. Prior to that, he was a researcher at the Institute of Energy Conversion at the University of Delaware where he developed a low-cost diagnostic technique using contact angle measurements to assess the effects of post-deposition processing treatments on CdTe solar cells. Michael's talk today will focus on a part of his dissertation work.