ATTACHMENT 3
Fact Sheet

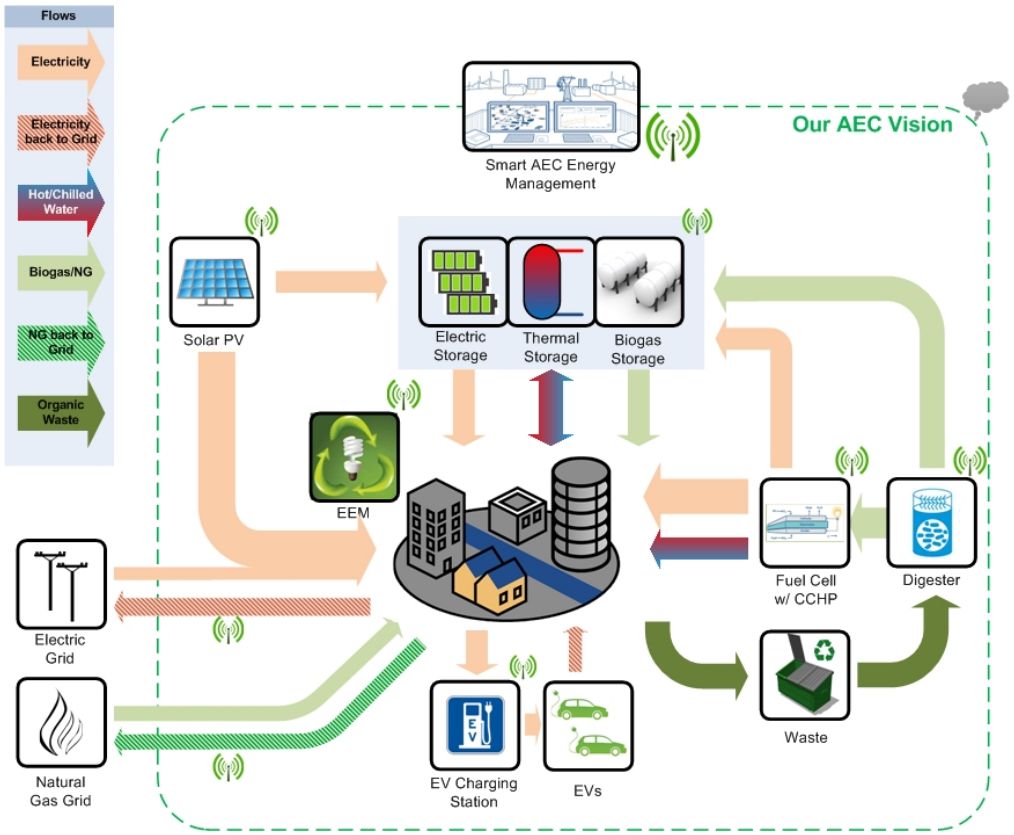
Huntington Beach Advanced Energy Community Blueprint
A Scalable, Replicable, and Cost-Effective Model for the Future

The Issue

The state of California is required by law to meet 33% of its electricity demand by renewable resources by 2020, and towards the goal of 50% in 2030. Many of the renewable resources that will be used and add to the communities (solar, wind, biogas, etc.) are intermittent and uncontrollable, which requires increased various-scales of energy storage system, energy technologies and proper integration designs and strategies. More importantly, there is lack of optimal integration approaches of smart grid technologies, combined cooling heating and power generation with high temperature fuel cells, energy storage technologies, and renewable energy utilization, for greater electricity reliability, lower costs, increased safety and Zero Net Energy (ZNE) future in the community level.

Project Description

The Advanced Power and Energy Program (APEP) at the University of California, Irvine, is collaboratively teamed with a local government (City of Huntington Beach), a built environment technology developer (Altura Associates, Inc.), utilities (Southern California Edison and Southern California Gas), and national laboratory (National Renewable Energy Laboratory) to address the EPIC Challenge of accelerating the deployment of Advanced Energy Communities (AEC).



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The goal of the proposed project is to develop extensible tools and to plan and design (Phase I) the integrated set of energy infrastructure and advanced energy technology approaches to convert the disadvantaged Oak View community of Huntington Beach into an Advanced Energy Community. The proposed project will design and evaluate integrated sets of advanced energy technologies and solutions at a pilot/community scale and to validate its benefits to California Investor-Owned-Utilities ratepayers and California Independent System Operator in various case studies and designs.

Scalable and replicable, the combination of proven clean energy technologies and systems that we propose to evaluate for transforming the Oak View Community will include, but not be limited to: 1) energy efficiency measures, 2) solar and wind energy sources inside the community, 3) use of the natural gas and electric utility grid infrastructure, 4) renewable gas resources, 5) energy storage systems for electric, thermal and chemical energy storage, 6) Electric Vehicles (EV) and EV charging infrastructure, 7) zero emissions backup generators, 8) local zero emissions combined heating, cooling and power generation, 9) smart energy management, and 10) smart-grid technologies.

To accelerate the deployment of AEC, applied research is needed to integrate the promising new energy innovations into a unified system to efficiently interact with the existing community electrical grid/infrastructures/buildings and to serve various end-uses, obtain performance data for scale-up, and perform cost-benefit analysis for demonstrating the economic feasibility. The proposed master community design approaches and the integration of the innovative energy technologies in this project will advance development and establish technical and economic readiness for accelerating the deployment of AEC throughout the State. The design will be replicable to other communities throughout California with transferable knowledge and technologies.

Anticipated Benefits for California

With our replicable AEC vision and design, the California IOU ratepayers benefit from higher reliability and the reliability is increased by 1) local renewable energy resources are being utilized in the AEC and could serve the critical loads inside the community without interruption, 2) providing mobility in case of an emergency through electric vehicle charging stations in adjacent communities, 3) the AEC could provide ancillary services to the grid during normal operations, and 4) the AEC could provide black-start capability. Our AEC design will provide lower costs and economic benefit to the ratepayers by 1) reducing the transmission/distribution losses, 2) reducing the need for new transmission infrastructure and 3) providing a less expensive method in achieving state's 50% renewable goal and environmental goals. The AEC with our design, will maximize the utilization of the local available renewable sources, and will tremendously help the State to reach the 50% renewable goal in a distributed fashion.

Project Specifics

Contractor: Advanced Power and Energy Program, University of California, Irvine
Partners: City of Huntington Beach, Altura Associates, Inc., National Renewable Energy Laboratory, Southern California Edison, Southern California Gas Company
Amount: $1,500,000
Co-funding: $810,998
Term: July 2016 to March 2018