



Solar Energy and Resilience

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Hurricane Maria (2018)



Hurricane Dorian (2019)



Woolsey & Camp Fire (2019)





Kilauea Eruption (2018)

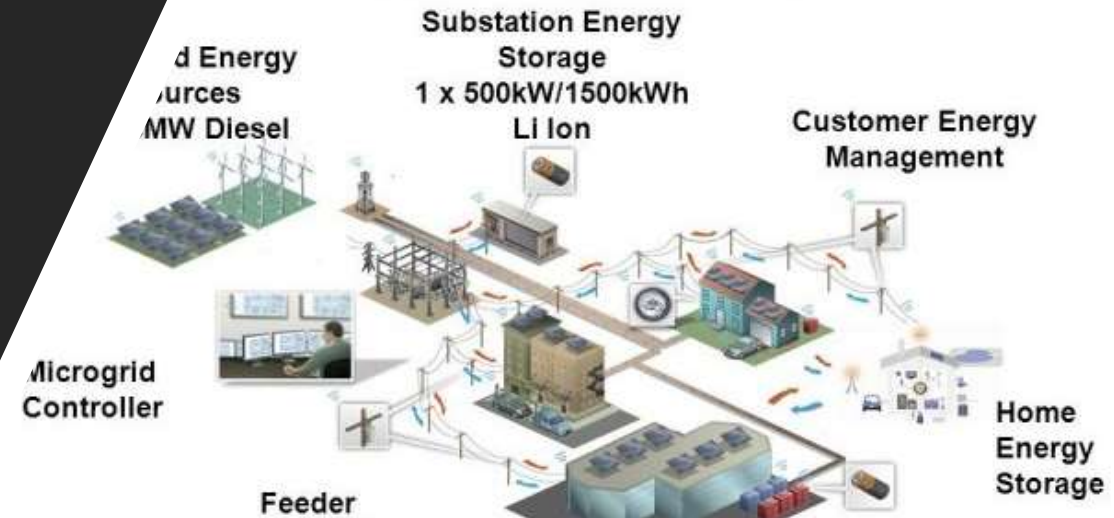


Where does renewable energy fit in?

- “It is clear that a positive energy future for island economies involves a significant shift away from fossil fuels and movement towards energy efficiency and renewable resources such as wind, biomass, hydro, solar, geothermal, and battery storage.” (RMI Island Energy Program)
- “Solar and storage systems...do not rely on a combustible fuel that must be transported over long distances from refinery to use. [A]ccess to sunlight is common throughout the city, even after an event that causes a utility power outage. On-site battery storage can extend the ability to use solar energy after sunset or during cloudy days. If combined with a diesel generator, solar and storage can ensure that the diesel fuel supply can be preserved for cloudy periods and nights, thereby extending the duration of outage that a facility can sustain.” (SF Resilient Solar storage Roadmap 2017)
- “Leaders of the SunSmart Schools and Emergency Shelters Program installed more than a megawatt of solar power at schools designated as emergency shelters throughout the Sunshine State. The 10-kilowatt solar arrays make electricity available when the power grid is compromised, making the shelters safer and more secure.” (Florida SunSmart Program, 2014)

Case Study – Borrego Springs Microgrid

- Sept 6, 2013 – Thunderstorms and high winds knock out power to 2,700 utility customers in SoCal.
- “Smart Grid” technology automatically began restoring power through local power generation within hours of power outage while utility crews assessed damage.
- “The Microgrid was really a crucial tool during this emergency situation,” said Linda Haddock, executive director of the Borrego Springs Chamber of Commerce. “It provided electricity to the essential areas of our town and kept vital air conditioners running during the extremely hot weather we saw that day.” (SD Union-Tribune)





Case Study – Nepal 2015

- 7.8 magnitude earthquake levels much of Kathmandu, Nepal in early 2015.
- Sunfarmer, a Nepalese non-profit that works to bring small scale power generators to disadvantaged communities, deploys solar generators to hospitals and critical infrastructure around Nepal.
- To date, Sunfarmer has installed thousands of kWh of solar + storage to provide power, water filtration, and clean energy to critical infrastructure around Nepal.

Table 1: Summary of building permits related to residential PV plus battery installation: 2008-2018

Year	Number of permits	Average permit value* (\$)	Median permit value* (\$)
2008	7	32,065	27,581
2009	5	32,203	34,000
2010	4	29,000	28,000
2011	1	34,000	34,000
2012	1	10,000	10,000
2013	10	23,961	24,000
2014	5	31,904	15,000
2015	5	54,480	45,000
2016	40	25,086	21,000
2017	731	29,475	27,552
2018	1,659	34,995	32,000

Source: Department of Planning and Permitting, City and County of Honolulu. Calculation by DBEDT.

*: The PV plus battery installation projects were excluded from calculating the average or median permit values if they were combined with other types of building work which were not related to PV or

Bringing it back to Hawaii

- Solar plus storage installations up almost 1700% since 2008.
- Resilience is becoming part of the regulatory framework of Hawaii with Microgrid, Integrated Grid Planning, and Performance Based Ratemaking functioning as key subject dockets.
- “In light of the inevitable risks facing the electric power system, heightened further by Hawaii's geographic isolation and risk of exposure to natural disasters, there is an increasing emphasis on the importance of resilience.” (Hawaii PUC, Docket No. 2018-0088 SR #1)



Hawaii Solar Energy Association

Serving Hawaii Since 1977

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