

	Type	MW	% of Sales
<b>Active In Use</b>			
KIUC, Kōloa	Solar	12.0	5.0
KIUC, Anahola	Solar	12.0	5.0
Green Energy Team	Biomass	7.0	11.4
McBryde, Port Allen	Solar	6.0	2.7
McBryde, Wainiha	Hydro	4.0	3.6
KIUC, Waiahi	Hydro	1.5	2.0
McBryde, Kalāheo	Hydro	2.0	1.0
Gay & Robinson, Olokele	Hydro	1.3	0.9
KAA, Waimea/Kekaha	Hydro	1.5	0.9
Pioneer, Waimea	Solar	0.3	0.1
Kapa'a Solar	Solar	1.0	0.4
Tesla Solar Storage	Solar	13.0	5.0
MP2, 'Ōma'o	Solar	0.3	0.1
Customer Solar	Solar	22.0	4.5
<b>Under Construction/Permitting</b>			
Gay & Robinson, Olokele	Hydro	6.0	4.2
AES Lāwa'i Solar Storage	Solar	20.0	11.0
Customer Solar	Solar	5.0	1.0
<b>Under Consideration</b>			
Westside Pumped Hydro Storage	Hydro	25.0	14.0
Solar plus Storage	Solar	12.0	7.0

**Total Renewable Energy in Service 2017**  
**83.9 MW/42.6%**

**Potential Renewable Energy in Service 2025**  
**151.9 MW/79.8%**

# HYDRO BIOMASS SOLAR

KAUA'I'S CLEAN ENERGY REPORT  
 September 2017



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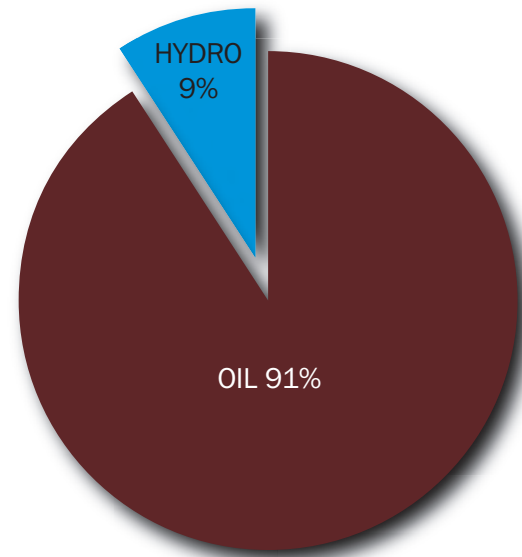


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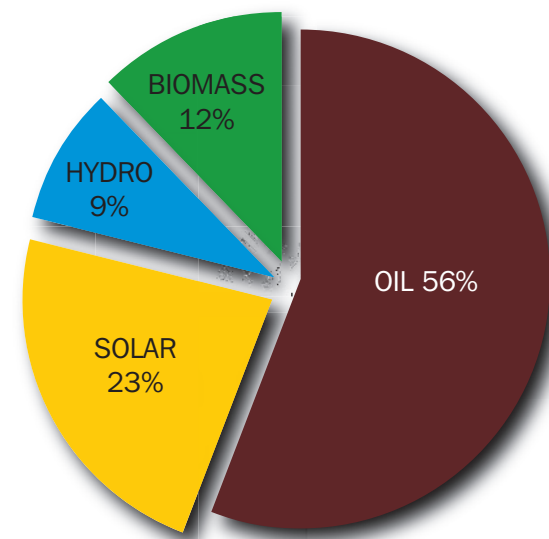


# What Powers Kaua'i?

**Fuel Mix 2010**



**Fuel Mix 2017**



## Challenges Transitioning to Renewable Power

- ❖ More than 50 percent exposed to volatile oil prices
- ❖ All projects have long developmental lead time
  - ◆ Deal negotiations, PUC approval process, permitting and construction
- ❖ Solar/PV saturation leaves little to no room for incremental daytime energy
- ❖ Limited renewable technology options due to factors such as endangered species protection (see box below)

## What does the Future Hold?

- ❖ Reach 70 percent renewable by 2030 (10 years ahead of state mandates)
  - ◆ Additional Solar plus Battery Storage
  - ◆ Pumped Storage Hydropower
- ❖ Maintain fair and stable rates for our members
- ❖ Maintain system reliability of 99.96 percent

## Renewable Progress from 2011-2016

- ❖ Successful integration of solar/photovoltaic sources
  - ◆ 31 megawatts of utility scale photovoltaic
  - ◆ 20 megawatts of distributed photovoltaic
- ❖ Re-establishment of biomass generation post-plantation era
  - ◆ Green Energy Team biomass plant providing 6.7 megawatts
- ❖ Dramatic reduction of fossil fuel use by 10 million gallons a year; a full one-third of our 2008 usage
- ❖ Regularly achieving 90 percent or more renewable generation during daylight hours on most sunny days
- ❖ Increase in reliability by 50 percent, mostly due to solar/PV integration

## Renewable Focus 2017 and Beyond

- ❖ Leading the world in dispatchable PV at prices comparable to or lower than the present cost of oil
  - ◆ Tesla project: First utility scale dispatchable PV system in the nation, serving customers during peak evening hours with 13 megawatts
  - ◆ AES Distributed Energy, Inc. project: Currently in permitting and expected to come on line in 2018, the project will provide an additional 20 megawatts of power during peak evening hours
- ❖ Exploring the use of innovative hydro pump-storage technology, utilizing daytime solar on Kaua'i's sunny west side to power a nighttime hydro generation system

## Our Shared Kuleana -- Environmental Stewardship



We all know converting from fossil-fuels to renewables is good for the environment. KIUC has aggressively pursued solar, hydroelectricity and biomass projects, but is constrained from using wind power for equally important environmental considerations.

For nearly two decades, KIUC has worked closely with federal and state agencies to address the potential impact of utility structures and lights on Kaua'i's protected and endangered seabirds. KIUC has implemented numerous measures to reduce these potential impacts while assisting seabird survival and recovery. Early exploration of Kaua'i wind generation projects was abandoned in light of the potential impact on birds.

In 2011, KIUC was granted federal approval of a short-term, utility-funded Habitat Conservation Plan to protect seabirds, along with a permit that shields the utility from penalties for birds that are impacted by utility structures. KIUC takes these responsibilities seriously, and has spent more than \$18 million in minimization and mitigation projects in partnership with the Kaua'i Endangered Seabird Recovery Project, Kaua'i Humane Society, and other governmental, non-profit and community groups.