



Hawai'i

Sandia Efforts in RE

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Energy and Infrastructure Future
Sandia National Laboratories

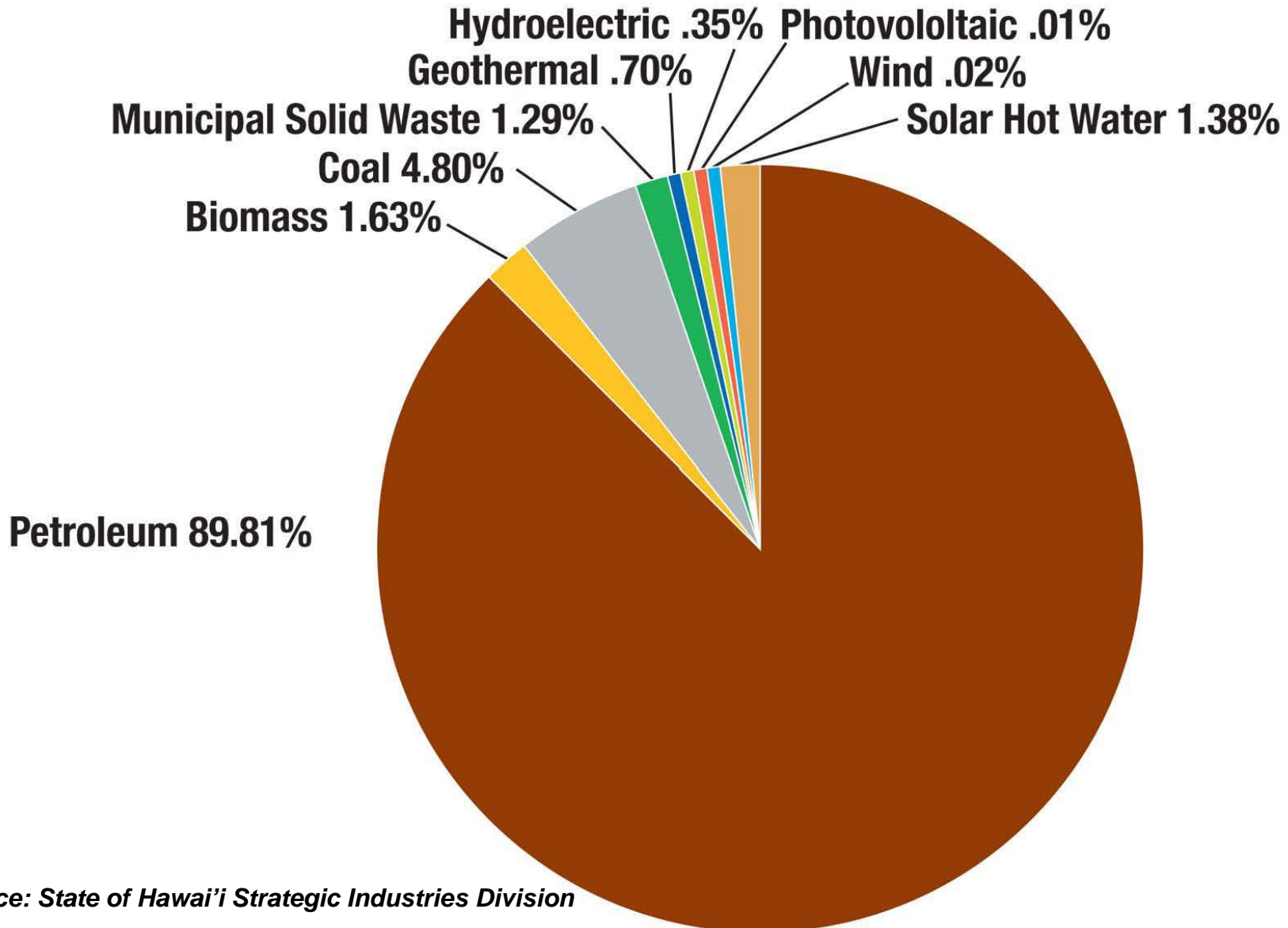


Sandia is a multiprogram laboratory operated by Sandia Corporation, a Lockheed Martin Company,
for the United States Department of Energy under contract DE-AC04-94AL85000.



Primary Energy

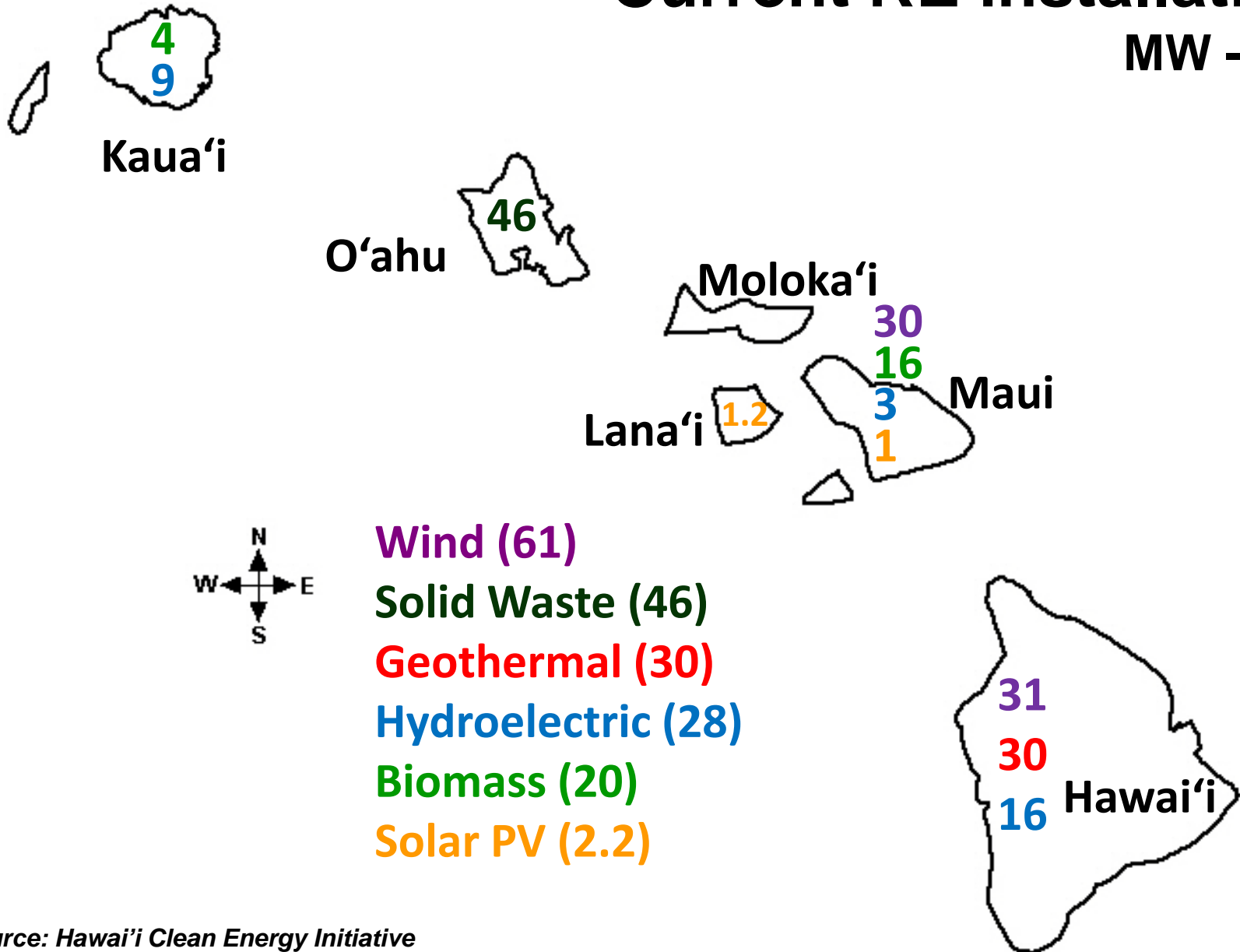
HI - 2005



source: State of Hawai'i Strategic Industries Division

Current RE installations

MW - 2010





Sandia Projects in Hawai'i

- **Kaua'i Solar Integration Study**
- ***Lana'i La Ola PV Project***
- **PV for State Airports**
 - 15 sites
- **Solar Fields**
 - **Collaboration with Forest Cities**
 - **Maui and O'ahu**
 - **PV and CSP**
 - **2200 homes / 2 schools**
- **Storage for RE**

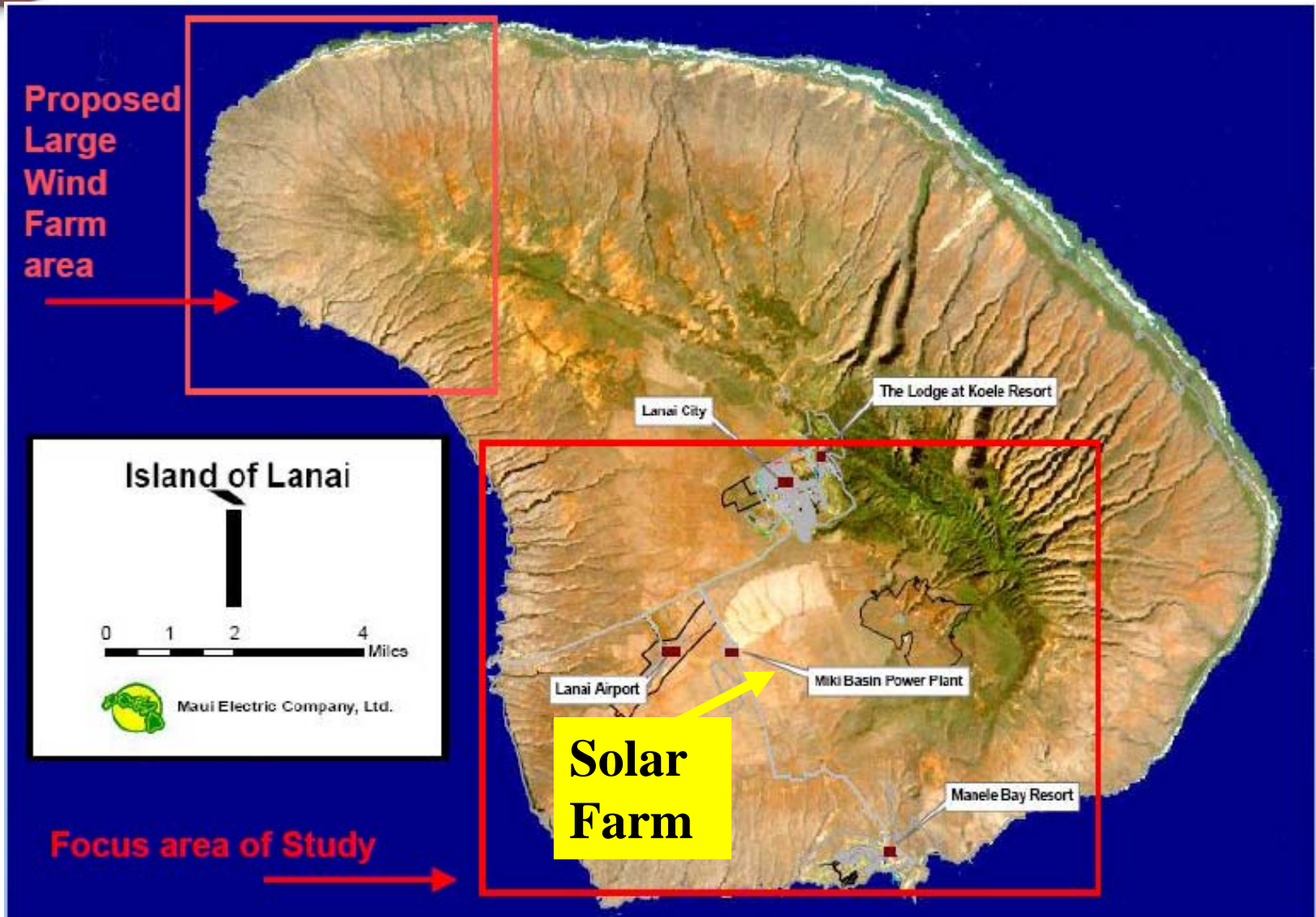


Lana'i La Ola PV Project

- **Hawai'i Clean Energy Initiative Goal:**
70% penetration of renewable energy for all energy use by 2030
- **Lana'i Island Goal:**
100% renewable electricity generation and transportation services by 2012
- **Lana'i La Ola PV Goal:**
Fully utilize La Ola 1.2MW PV Plant

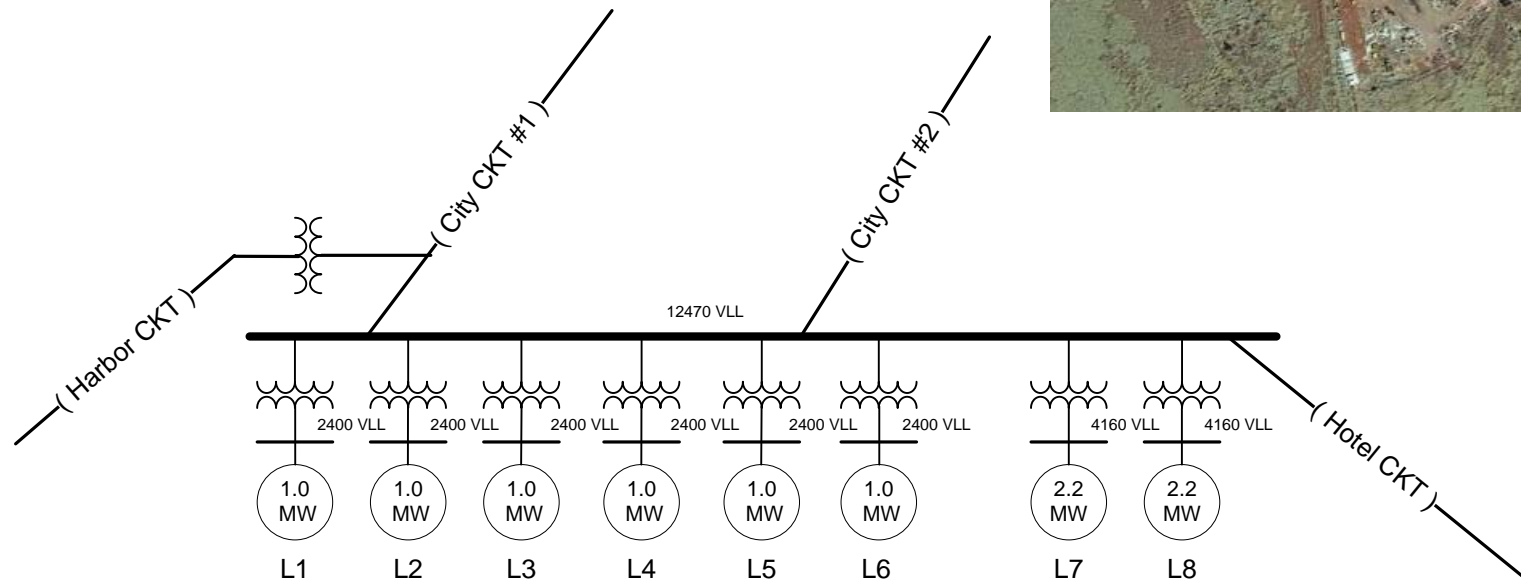
Sandia Lead: Jennifer Stinebaugh

Project Site



Miki Basin Power Station

Six 1.0 MW EMD Diesel Generators
Two 2.2 MW Caterpillar Diesel Generators





1.2MW Hawaii's largest Solar Farm in service December 2008

10 acres, 12 separate arrays, 7,000+ panels, tracker system

3,000MWhour production = 30% of Lanai's daytime peak demand, 10% of Lanai's annual demand

2,300 tons of carbon dioxide emissions eliminated annually = 5,000 barrels of oil or 237,000 gallons of gasoline





Lana'i Irradiance Network Experiment (LINE)

- **First-of-its-kind experiment to investigate effect of cloud patterns over large PV array**
- **Correlate cloud movement over array to instantaneous PV power output**
- **Derive predictive system operation strategy to mitigate effect of cloud cover**

L.I.N.E Site Plan

(Lanai Irradiance Network Experiment)

