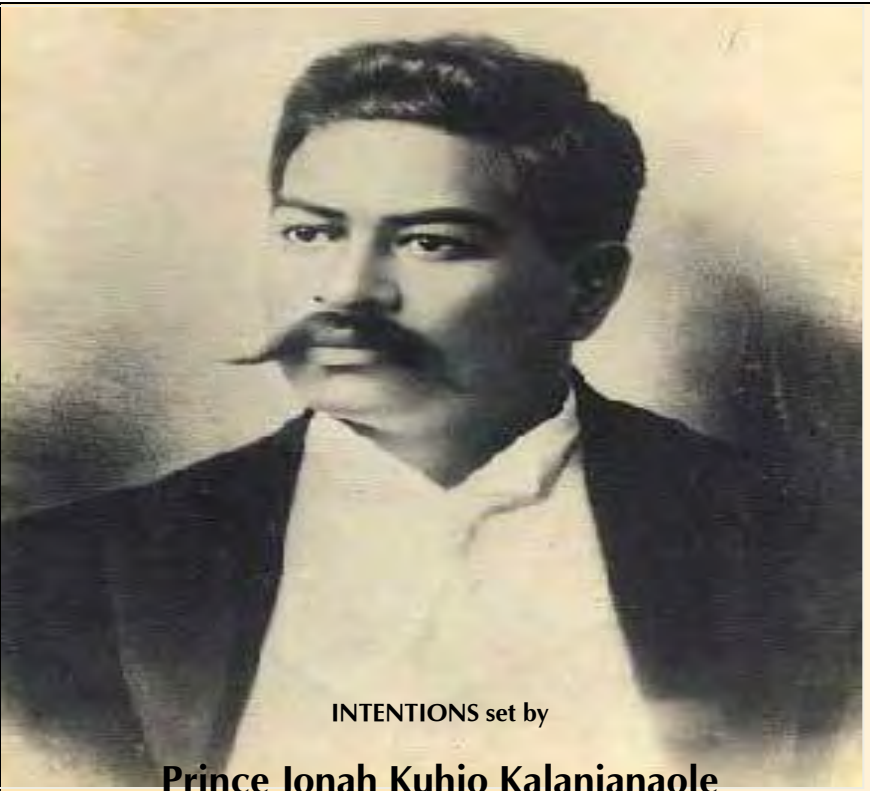
Designing Hawaii's first LEED Platinum Net Zero Community

Kaupuni Village

Department of Hawaiian Home Lands

Hawaiian Commission Act 1920



INTENTIONS set by

Prince Jonah Kuhio Kalanianaole

Enable Native Hawaiians to return to their lands in order to fully support self-sufficiency

GUIDING PRINCIPALS

- ***Pihapono***

  Establish a permanent land base for the benefit and use of native Hawaiians, upon which they may live, farm, ranch, and otherwise engage in commercial or industrial or any other activities as authorized in this Act

- ***Hoa ʻĀina***

  Placing native Hawaiians on the lands set aside under this Act in a prompt and efficient manner and assuring long-term tenancy to beneficiaries of this Act and their successors

  Preventing alienation of the fee title to the lands set aside under this Act so that these lands will always be held in trust for continued use by native Hawaiians in perpetuity

- ***Mālama ʻĀina***

  Providing adequate amounts of water and supporting infrastructure, so that homestead lands will always be usable and accessible. Providing financial support and technical assistance to native Hawaiian beneficiaries of this Act so that by pursuing strategies to enhance economic self-sufficiency and promote community based development, the traditions, culture, and quality of life of native Hawaiians shall be forever self-sustaining

DEPARTMENT OF HAWAIIAN HOME LANDS

HOʻOMALUŌ

ENERGY POLICY

To enable native Hawaiians and the broader community working together to lead Hawai'i's effort to achieve energy self-sufficiency and sustainability.

"If you don't fail at something,
you weren't trying
hard enough."

DHHL Chairman Micah Kane

Pilot Project

the Team

Owner
Department of Hawaiian Home Lands

Architect
Group 70 International

Contractor
Hunt Companies

key Partners

National Renewable Energy Laboratory

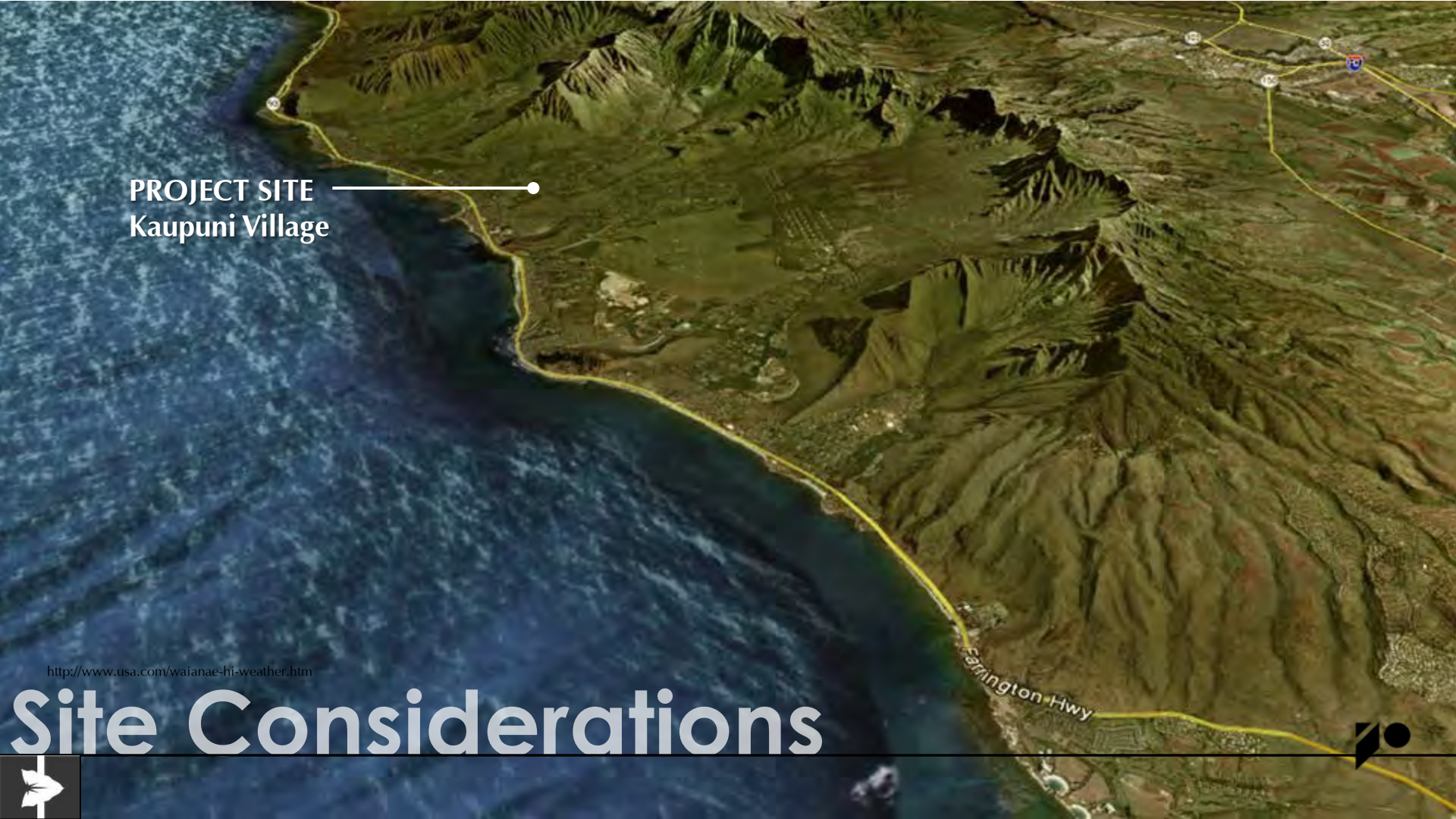
Hawaiian Electric Company

State of Hawaii Department of Business Economic Development and Tourism

Ka'ala Farms

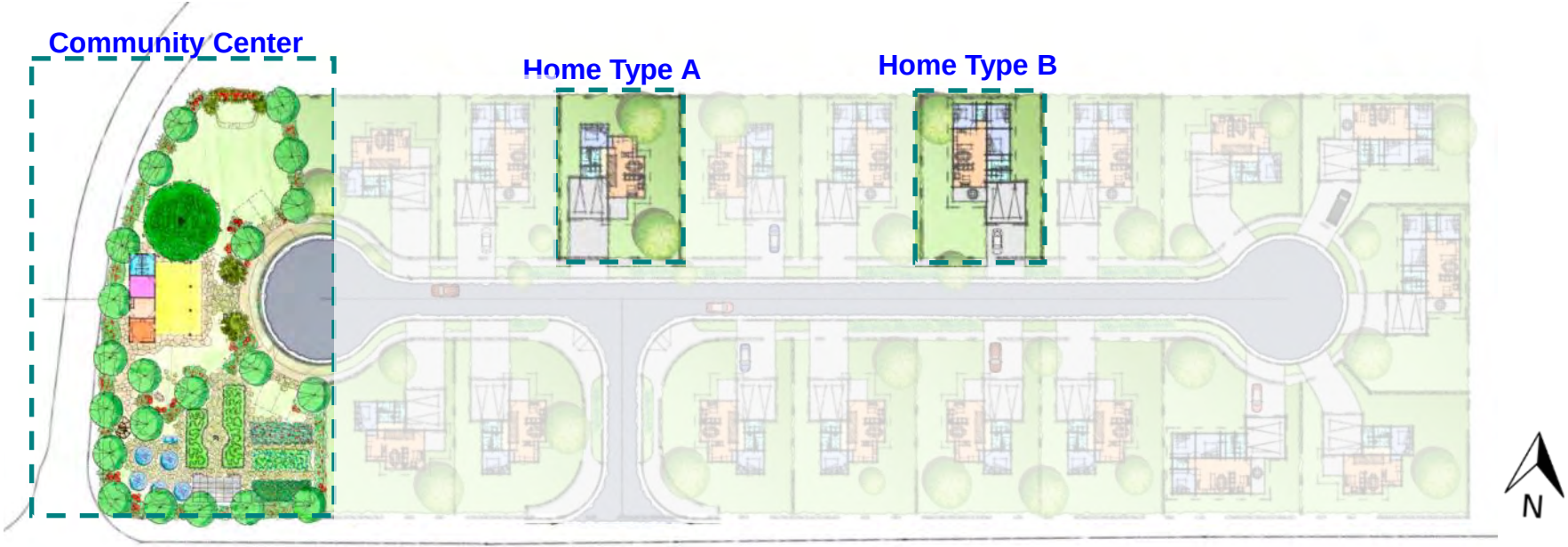
Awards

AIA, Mayor's Choice Award, 2011
USGBC, Outstanding Green Project Team Award, 2011
APA, Innovation in Planning: Best Practices for Sustainability Award, 2010



http://www.usa.com/waianae-hi-weather.htm

Site Considerations



PROJECT SCOPE

(19) single family homes

2-7 occupants

(1) community center

Home Type A

- 1 story 3 bedroom
- 1306 sf living
- 501 sf carport
- 112 sf lanai
- 1919 sf total
- ~$265,000

Home Type B

- 2 story 4 bedroom
- 1616 sf living
- 451 sf carport
- 140 sf lanai
- 2207 sf total
- ~$305,000

Site Plan

Insulation & Energy Star

Design for natural ventilation

Awnings over every window

High performance Low-e glazing

Awnings & Windows

AC System

Change from 4 ton split system to 2 ton central ducted system

Moved insulation line to underside of roof sheathing

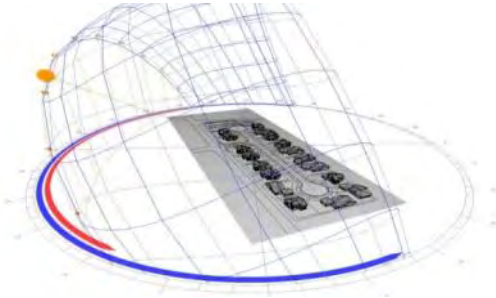
Fresh air intake system

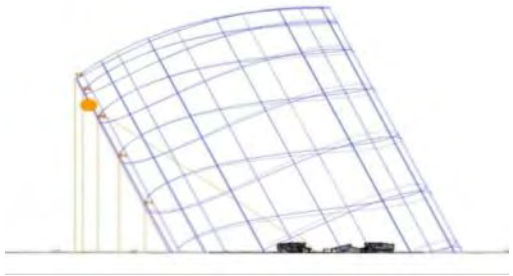
Solar Systems

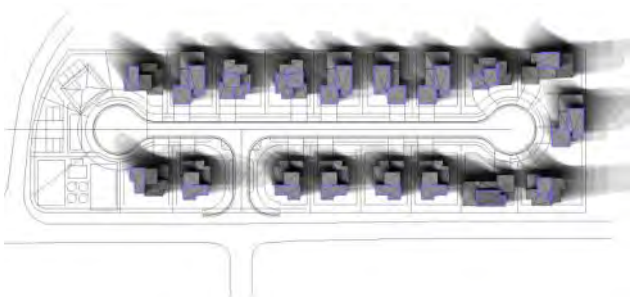
Solar Hot Water System Required

PV System Designed with NREL based on estimated family size

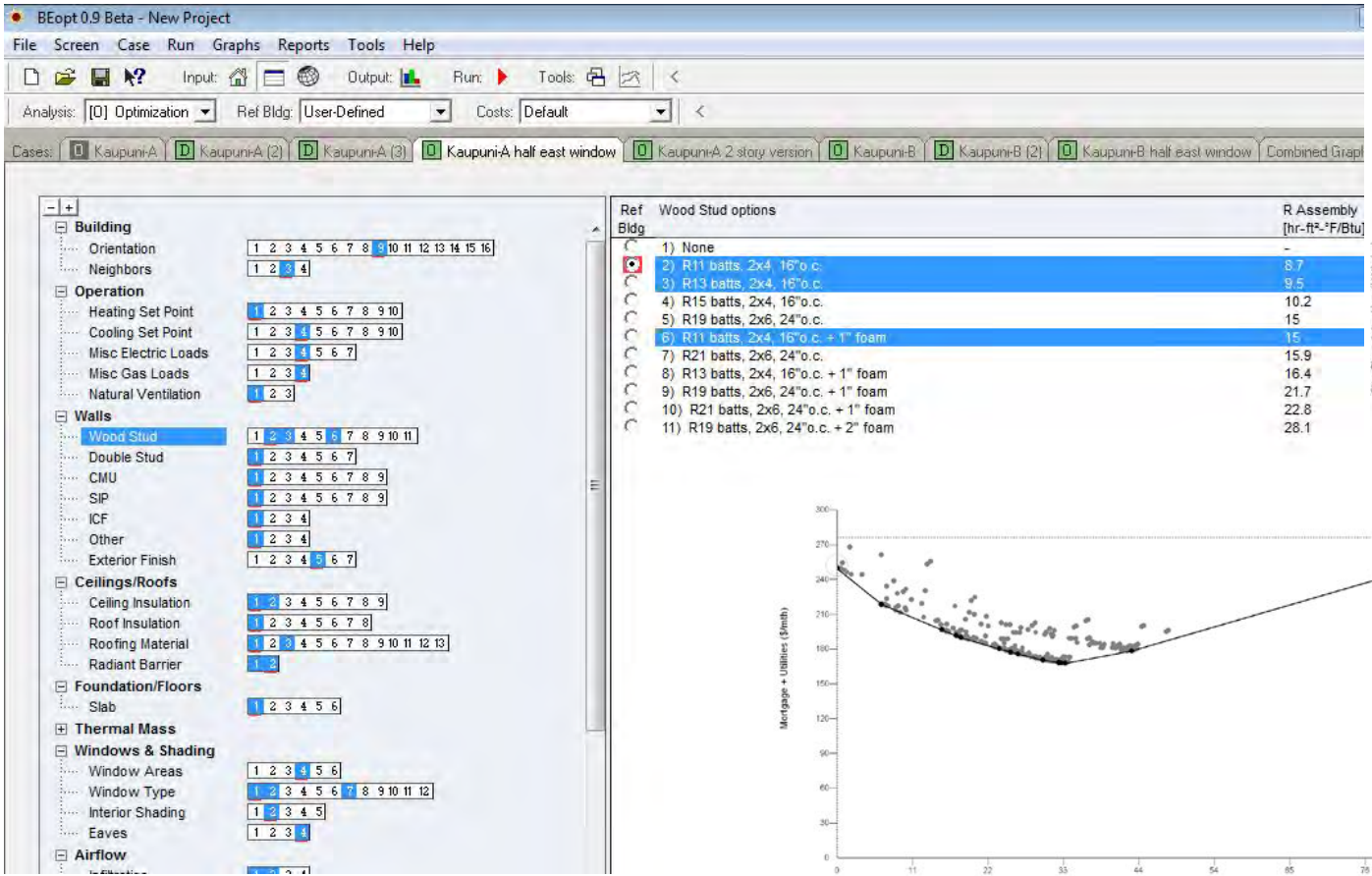
6.3 kW - 26 panel 2 inverter system



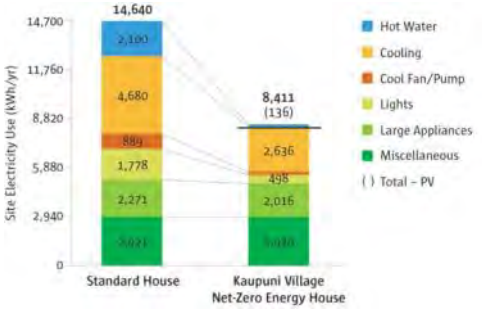




PV Orientation



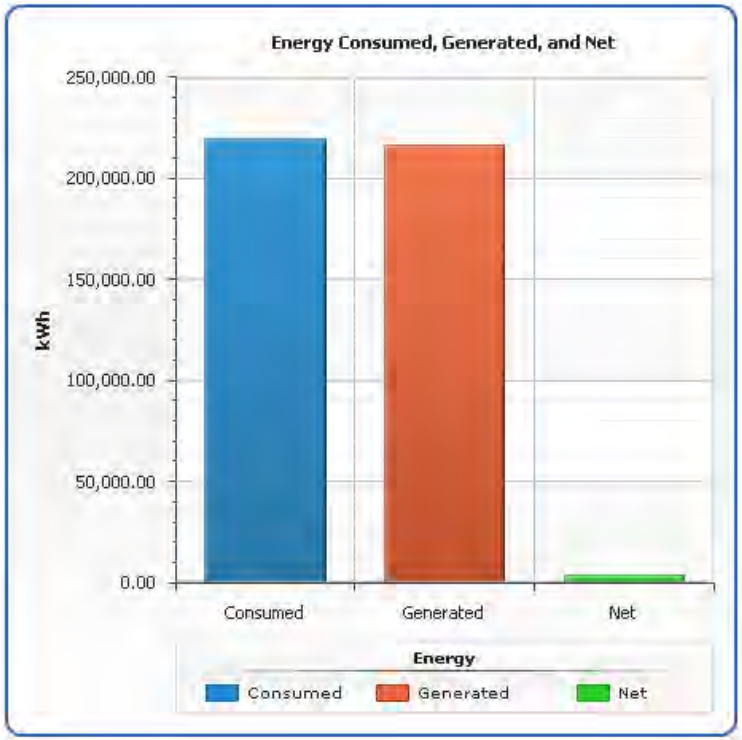
Ref Bldg	Wood Stud options	R Assembly [hr-ft²-°F/Btu]
○	1) None	-
●	2) R11 batts, 2x4, 16"o.c.	8.7
○	3) R13 batts, 2x4, 16"o.c.	9.5
○	4) R15 batts, 2x4, 16"o.c.	10.2
○	5) R19 batts, 2x6, 24"o.c.	15
○	6) R11 batts, 2x4, 16"o.c. + 1" foam	15
○	7) R21 batts, 2x6, 24"o.c.	15.9
○	8) R13 batts, 2x4, 16"o.c. + 1" foam	16.4
○	9) R19 batts, 2x6, 24"o.c. + 1" foam	21.7
○	10) R21 batts, 2x6, 24"o.c. + 1" foam	22.8
○	11) R19 batts, 2x6, 24"o.c. + 2" foam	28.1

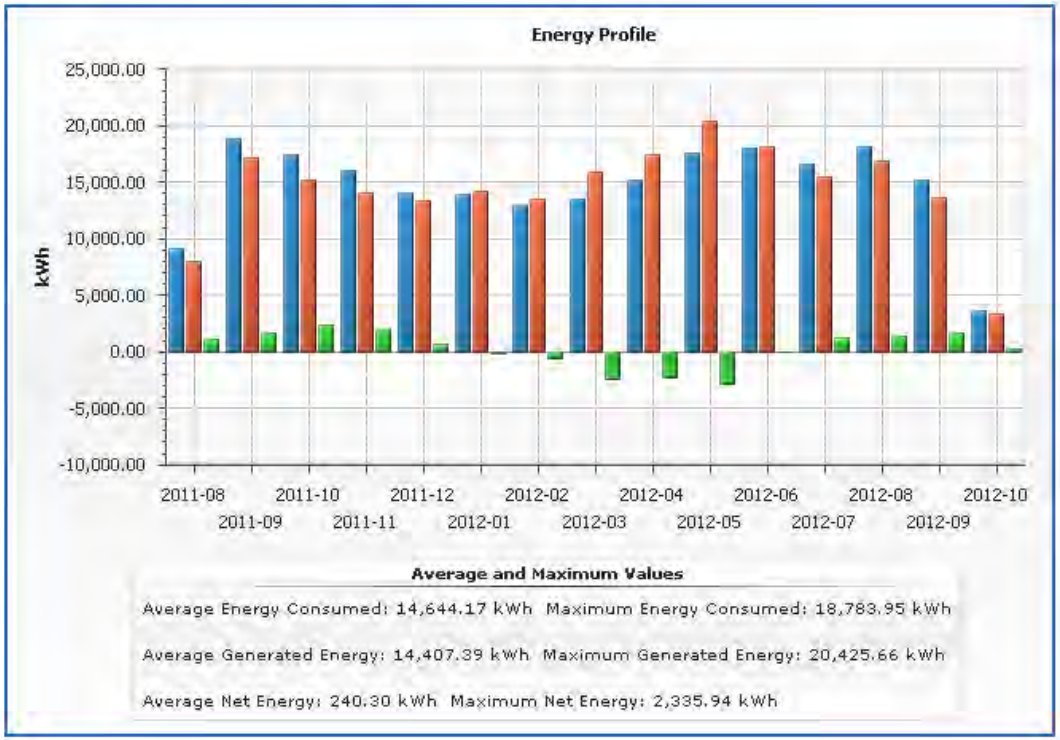


Beopt

Select Date Range: Last 12 Months (Starts August 18, 2011) View Graph

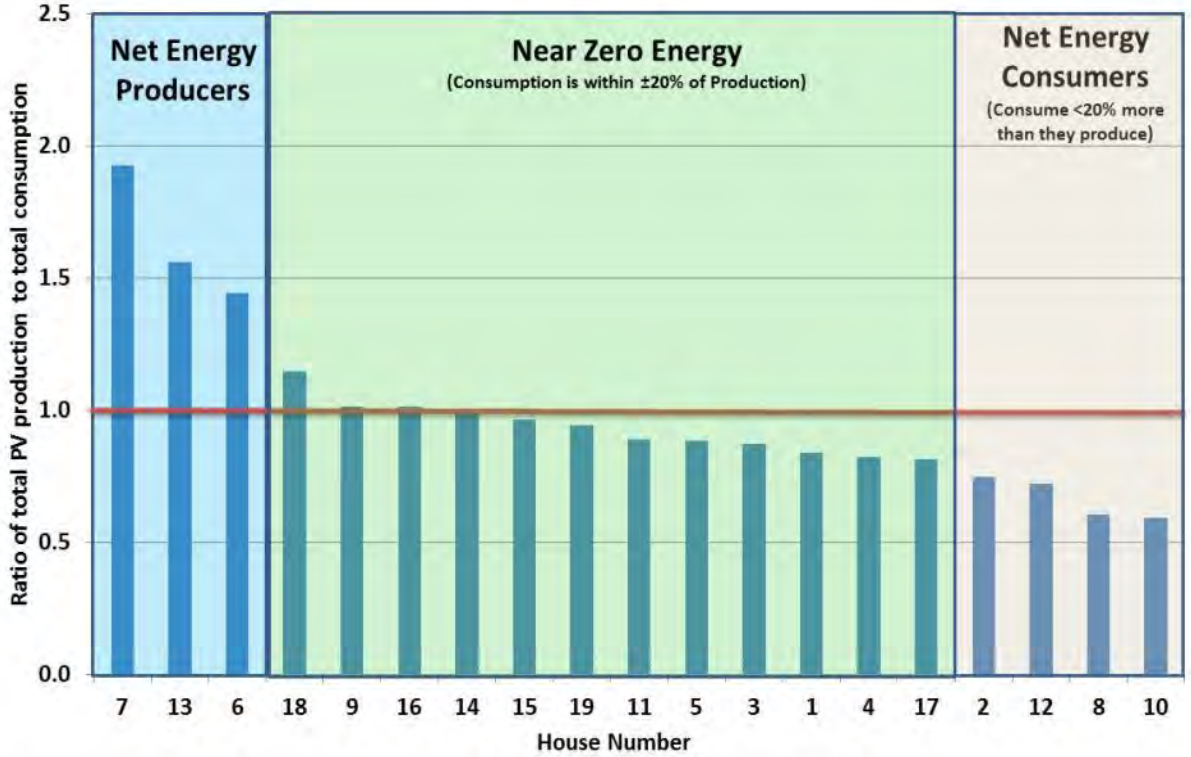
Hawaiian Electric Company



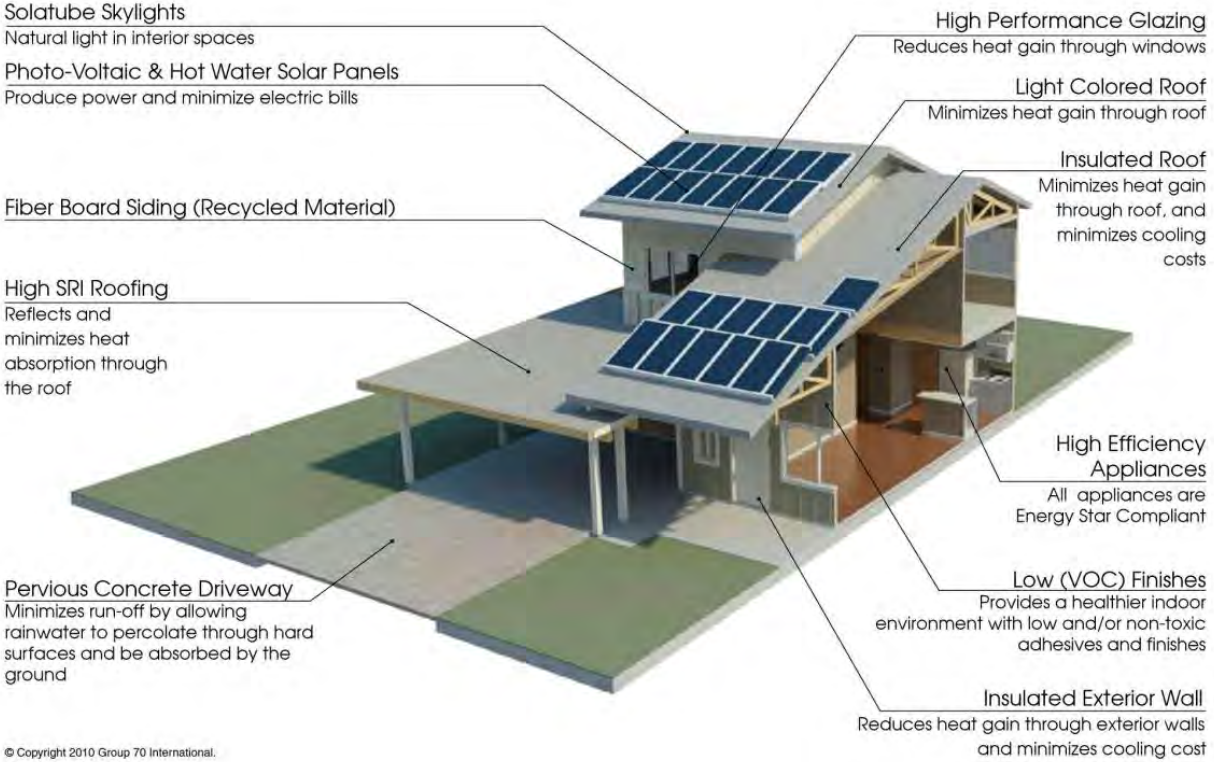


Kaupuni.net

Measurement, Verification & Education


Net Energy Producers
Near Zero Energy
(Consumption is within ±20% of Production)
Net Energy Consumers
(Consume <20% more than they produce)
Ratio of total PV production to total consumption
2.5
2.0
1.5
1.0
0.5
0.0
7 13 6 18 9 16 14 15 19 11 5 3 1 4 17 2 12 8 10
House Number

NREL Report



Lessons Learned

DEPARTMENT OF HAWAIIAN HOME LANDS

GROUP 70 INTERNATIONAL

NREL NATIONAL RENEWABLE ENERGY LABORATORY

Hawaiian Electric Company

HUNT

Mahalo

For more information go to
www.group70int.com/commRE