



# KA HEI

Newsletter

## CONTENTS

### ▶ PROJECT PROGRESS

- // A Bright Future
- // Ka Hei Energy By the Numbers
- // Timeline and Progress
- // Report Card
- // REACH Action Plan

### ▶ EDUCATION

- // Hana Hou Professional Development:
  - 9/19 + 9/26 on Maui
  - 10/5-6 on Hawai'i Island
  - 10/8-9 on O'ahu

### ▶ COMMUNITY PARTNERS

- // Mālama Honua Wa'a Talk
- // Schools of the Future Conference on 11/3-4

### ▶ KA HEI PIONEERS

- // Educator Josette Kaleolani Hanohano



Iliahi Elementary School's parking lot has been transformed as the three solar PV canopy systems near construction completion.

On Track  
to Meeting  
Phase 1  
Goals

**THE POWER OF KA HEI LIES IN THE PROGRESS IT'S PIONEERING** across all of its program elements – with numerous ground breakings and ongoing educational initiatives – major milestones have been met in the first year alone. Campus installations began in July and will continue with an aggressive schedule to commence construction for 100% of the **solar PV installations** at Phase 1 schools by December 2015. In addition, Kapālama and Kauluwela Elementary Schools are piloting **campus-wide LED lighting programs** to create improved interior learning environments, with installations completed by the end of this month. These physical upgrades are reflected in the **continued professional development program for teachers** who will learn how to integrate STEM and sustainability concepts in the classroom. In sum, Ka Hei's impact continues to scale – making progress towards the more than \$18 million expected annual energy savings over 20 years for the above PV and LED projects, and growing the pool of 232 teachers and their 1,736 students who have already benefitted from this powerful program.

Ka Hei Energy  
BY THE  
NUMBERS

28

PV installations across 24 campuses will begin work by 2015

3.3 megawatts

the aggregate size of PV from the 28 installations

78

net-energy meter applications approved by Hawaiian Electric

75

schools with completed lighting audits

27

schools with completed campus-wide energy audits

# A Bright Future:

## Pilot Lighting Project to be Completed at Two Elementary Schools

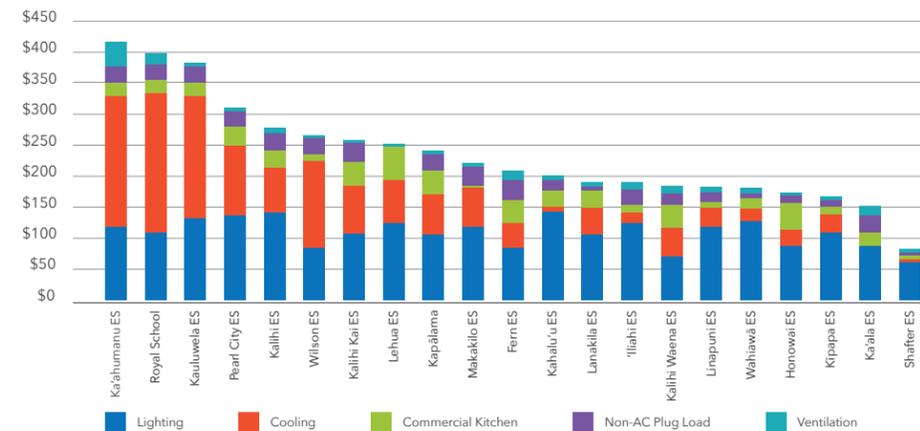
**C**LASSROOMS AT KAULUWELA AND KAPĀLAMA ELEMENTARY SCHOOLS have been upgraded from outmoded fluorescent lighting to fully dimmable LED fixtures, paired with new occupancy and daylight sensors, as part of the Ka Hei lighting pilot program. While over a 50% energy efficiency boost provides significant savings in the largest category of energy expenditure for most schools, the pilot's greater impact is in its long-term improvements to the learning environment.

Preliminary feedback confirms the

enhanced comfort and productivity in the classroom. Planned post-installation data logging will corroborate the quantitative energy load reduction projecting 247,000 kWh per year. **The two schools' electricity reduction from LEDs is equivalent to eliminating the entire amount of electricity for 33 average Hawai'i homes for a year.** Unlocking the power of these lighting upgrades at scale will generate operational savings, allow educators to enhance their classroom conditions, and support student success across DOE schools.



Electricity Cost Per Student at Audited O'ahu Elementary Schools



## Report Card on Energy Usage: Audits for 27 Schools Wrapped Up

**C**OMPREHENSIVE ENERGY AUDITS HAVE BEEN COMPLETED at 27 schools on O'ahu, Maui and Hawai'i Island, marking a milestone in understanding electrical load profiles for each campus. Engineers conducted spot energy measurements, installed data loggers on select AC equipment, and measured the total school load to understand factors impacting each schools' energy consumption. Primary factors affecting these usage levels include student body size, concentration of AC on campus, use of the commercial kitchen and geographical location. After several additional audits are completed for O'ahu high schools in the fall of this year, a representative sample of typical campus energy profiles will be established. **As this detailed audit phase of Ka Hei concludes, focus will continue to shift towards identification and implementation of energy and resource conservation measures.**

## REACH Action Plan to Start

**REACH (REDUCE ENERGY AND CHANGE HABITS)** is an energy-saving program tailored to DOE schools and based on the 27 completed audits. Through this program, which will start this year and impact all 255 campuses, **OpTerra Energy Services will systematically go through each school to begin implementing high-impact, low-cost load reduction strategies.** REACH will also utilize behavioral tools to help students, faculty and staff join in the cause to eliminate energy waste and bring their school closer to the goal of a Net-Zero Energy Campus.

### 2015 MAR

- 3 Professional Dev't sessions on O'ahu
- Defined STEM pilot

### APR

- PPA negotiations completed for PV Package 1 (10 systems)
- Plug load audit completed

### MAY

- 78 net-energy meter application approvals from Hawaiian Electric
- 21 O'ahu school energy audits completed
- 6 NZEC audits completed
- Wa'a Talk presentation in partnership with Mālama Honua Worldwide Voyage

### JUN

- 75 campus-wide lighting audits completed
- NZEC preliminary design completed

### JUL

- PV construction commences at:
  - 'Iliahi ES
  - Ka'ala ES
  - Pearl City ES
- PPA negotiations completed for PV Package 2 (10 systems)
- 21 O'ahu school energy audits presented to DOE
- NZEC final designs commence

### AUG

- PV construction commences at:
  - Leilehua HS
- PPA negotiations completed for PV Package 3 (8 systems)
- Released distributor RFP for large-scale LED project

### SEP

- PV construction commences at:
  - Central MS
  - Kahalu'u ES
  - Kalihi ES
  - Waipahu HS
- Release installer RFP for large-scale LED project
- 2 Professional Dev't sessions on Maui
- USBC's Green Apple Day of Service partnership activities

### OCT

- PV construction commences at:
  - Farrington HS
  - Kapālama ES
  - Makakilo ES
  - Kauluwela ES
  - Kipapa ES
  - Lanakila ES
  - Linapuni ES
- Release financier RFP for large-scale LED project
- 2 Professional Dev't sessions on O'ahu & Hawai'i

### NOV

- PV construction commences at:
  - Kaimuki MS
  - Makakilo ES
  - McKinley HS
  - Shafter ES
- Presenting at Schools of the Future Conference
- Large-scale LED project analysis
- Additional O'ahu HS Energy Audits Completed

### DEC

- PV construction commences at:
  - Ka'ahumanu ES
  - Lehua ES
  - McKinley CSA
- Launch Reduce Energy and Change Habits (REACH) program

### 2016 JAN

- PV construction commences at:
  - Royal ES
- NZEC final designs completed

### FEB

- PV construction commences at:
  - Honowai ES
  - Wahiawa ES

### MAR

- Commence NZEC construction upon receiving proper permits and approvals

#### LEGEND

- PV assessments and construction
- Lighting audits and construction
- Non-Lighting ECMs (Energy Conservation Measures)
- NZEC (Net-Zero Energy Campus) audits and design
- Education

»  
EDUCATION

Hands-on solar thermal and solar PV training brings STEM concepts to life for educators (left to right) Marirose Daproza, Bao Ying Chen, Justin Kanemoto and Melissa Montoya, all from Waipahu HS.



# Hana Hou:

## Year Two of Professional Development

**P**ROFESSIONAL DEVELOPMENT (PD) SESSIONS are designed to create real and engaging connections between school upgrades and learning opportunities for students and teachers. Educators are provided with a comprehensive STEM energy curricula that is standards-correlated and inquiry-based, with hands-on lessons. Year two PD training will differ from the first with a K-5 specific workshop, which will include lesson plans that have been correlated to elementary standards. In the elementary PD, there will be extensive lab sessions, in-depth discussions of Ka Hei educational offerings, as well as a thorough explanation of the Defined STEM platform, which is available to all 255 DOE schools. OpTerra Energy Services will host three two-day PD workshops across the state:

**Maui:** Sept. 19th and 26th  
**Hawai'i Island:** Oct. 5th - 6th  
**O'ahu:** Oct. 8th - 9th

To sign up, visit [www.surveymonkey.com/r/KaHei\\_Oct15](http://www.surveymonkey.com/r/KaHei_Oct15)

## Ka Hei Outreach Charging Ahead: Spreading the Word

### Schools of The Future Conference

» **ON NOV. 3-4TH**, Educators and administrators from Hawai'i's public, charter and private schools will be attending the 4th annual Schools of the Future (SOTF) conference at the Hawai'i Convention Center. Presenting on behalf of Ka Hei will be Lauren Kaupp of the DOE's Office of Curriculum, Instruction and Student Support; OpTerra Energy Services; and teachers who have participated in the professional development series. The conference focuses on the idea of transforming existing learning environments within schools to meet 21st century intellect, highlighting the best practices currently taking place in the classroom, and those being planned for the future. To sign up for SOTF, visit <http://sotfconf.org/attend/registration>.

### Mālama Honua

» **ON MAY 21ST**, Ka Hei education project manager, Tori Suarez, met with educators at Kailua Intermediate to provide an overview of Ka Hei and to share Mālama Honua extension lesson plans. Attendees were able to experience some of the games included in the plans, such as Mālama Honua bingo, energy knockdown, energy pursuit, energy bumper stickers and bingo. If you're interested in obtaining a copy of the lesson plans and games, please email [KaHei@opterraenergy.com](mailto:KaHei@opterraenergy.com).

»  
COMMUNITY  
PARTNERS

“The Ka Hei and Island Energy Inquiry curriculum reestablished in me an excitement that was buried. The hope of teaching Hawaiian studies with a content rich in science made tears well up. At this point, Island Energy Inquiry became my new game changer.”

—Educator Josette Kaleolani Hanohano, Kaimukī Middle School

»  
KA HEI  
PIONEERS