

# GREENING MEASURES FOR HAWAII'S HERITAGE HOMES

## CLASS 3: ENERGY

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MASON ARCHITECTS

HAWAI'I ENERGY

PONO HOME



# HISTORIC HAWAI'I FOUNDATION

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A statewide non-profit advocacy organization, Historic Hawai'i Foundation encourages the preservation of historic buildings, sites and communities relating to the history of Hawai'i.

# Mahalo Sponsors

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**AIA Honolulu**

Architects Hawai'i, Ltd.

Alan Shintani, Inc.

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Technology

**Hawai'i Energy**

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**Historic Preservation  
Education Foundation**

**Pono Home**

**Mason Architects**

Roth Ecological Design  
International



**AIA**  
Honolulu

Each session qualifies for 1.5 AIA/CES (HSW).  
AIA Honolulu is the registered provider.

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# OUTLINE OF TODAY'S CLASS

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- ❑ Welcome, Overview & Project Drawdown (5 min.)
- ❑ Embodied Energy & Character-Defining Features (5 min.)
- ❑ State of Hawaii's Energy, Renewables (10 min.)
- ❑ Retrofits & Energy Audits (15 min.)
- ❑ Hawai'i Energy & Efficiency Unlocked (5 min.)
- ❑ Residential Incentives with Historic Examples (25 min.)
- ❑ Discussion (20 min.)

# PRESENTERS

**Joy Davidson**

**Mason Architects, Inc.**

Joy Davidson is an Associate with Mason Architects, Inc. and has worked with the firm since obtaining her Doctor in Architecture degree in 2002. She has 20 years of experience in historic preservation and has focused on preservation plans for historic buildings, both residential and non-residential. Her responsibilities have included research, measured drawings, and report writing as well as construction documents. Her experience and education meet Secretary of the Interior's Standards for Historical Architect.

# PRESENTERS

## **Tony Kawal** **Hawai'i Energy**

Tony Kawal is a program manager in Hawai'i Energy's residential programs. He specializes in market transformation initiatives with an emphasis on behavior based efforts in education and hard-to-reach communities. He manages the multifamily direct installation program to provide energy efficiency retrofits to residences in underserved markets. He has a background in environmental engineering and commercial property asset management.

# PRESENTERS

**Scott Cooney**

**Pono Home**

Scott Cooney is the founder and CEO of Pono Home, a home efficiency company that greens homes and small businesses. Under his leadership, the company has gone through the world's largest clean tech incubator, and has served customers in over 5,000 homes across 5 Hawaiian Islands since 2014, with a 100% customer satisfaction record. Cooney has been a serial eco-entrepreneur since 2003, having started and grown five mission-driven companies. He is a McGraw-Hill published author and former professor in the MBA program at the University of Hawaii at Manoa, where he taught the first sustainable business course in the University of Hawaii system. He serves as the Chairman of the Board for his previous startup, [Important Media](#), which is one of the top five sustainability media companies in the world, with over 4 million monthly readers, and owns the world's largest renewable energy news site (CleanTechnica).



# GOALS OF THE SERIES

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- ❑ To share measures homeowners can implement to save energy, conserve resources and integrate respectfully with local culture and natural geography in a way that is harmonious and compatible with a property's historic character and features.
- ❑ To help historic homeowners reduce their homes' carbon footprint while retaining the properties' historic integrity.
- ❑ To provide information and knowledge to help owners preserve the historic property; save energy, money and resources; and contribute to the natural health and vibrancy of their neighborhoods
- ❑ To encourage historic homeowners to approach maintenance of their properties through the lens of sustainability in order to provide affordable and accessible sustainability tools and techniques to incorporate into their preservation maintenance plans.

# MAINTENANCE PLANS

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Handout for developing a maintenance plan

- ☐ Green tips
- ☐ Inspection Checklist
- ☐ Template for creating lists of:
  - Character-defining features
  - Key actions
  - Timing
- ☐ References/Additional Resources

# DRAWDOWN

THE MOST COMPREHENSIVE  
PLAN EVER PROPOSED TO  
REVERSE GLOBAL WARMING  
EDITED BY PAUL HAWKEN



**“Project Drawdown is the most comprehensive plan ever proposed to reverse global warming.** Our organization did not make or devise the plan—we found the plan because it already exists.

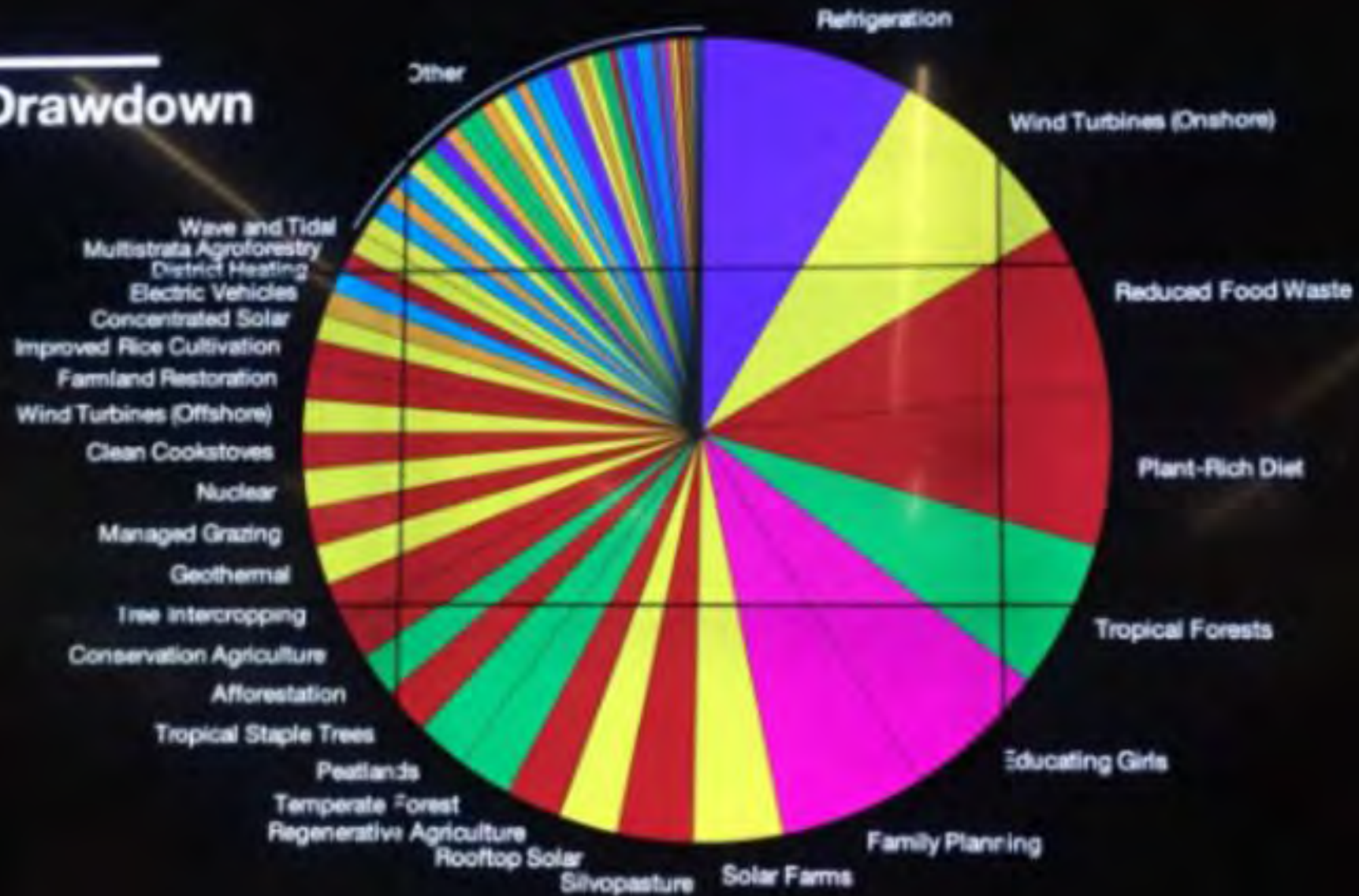
We gathered a qualified and diverse group of researchers from around the world to identify, research, and model the 100 most substantive, existing solutions to address climate change.

**What was uncovered is a path forward that can roll back global warming within thirty years.**

It shows that humanity has the means at hand. Nothing new needs to be invented. The solutions are in place and in action.

**Our work is to accelerate the knowledge and growth of what is possible.** We chose the name Drawdown because if we do not name the goal, we are unlikely to achieve it.”

# Drawdown





# Solutions by Rank

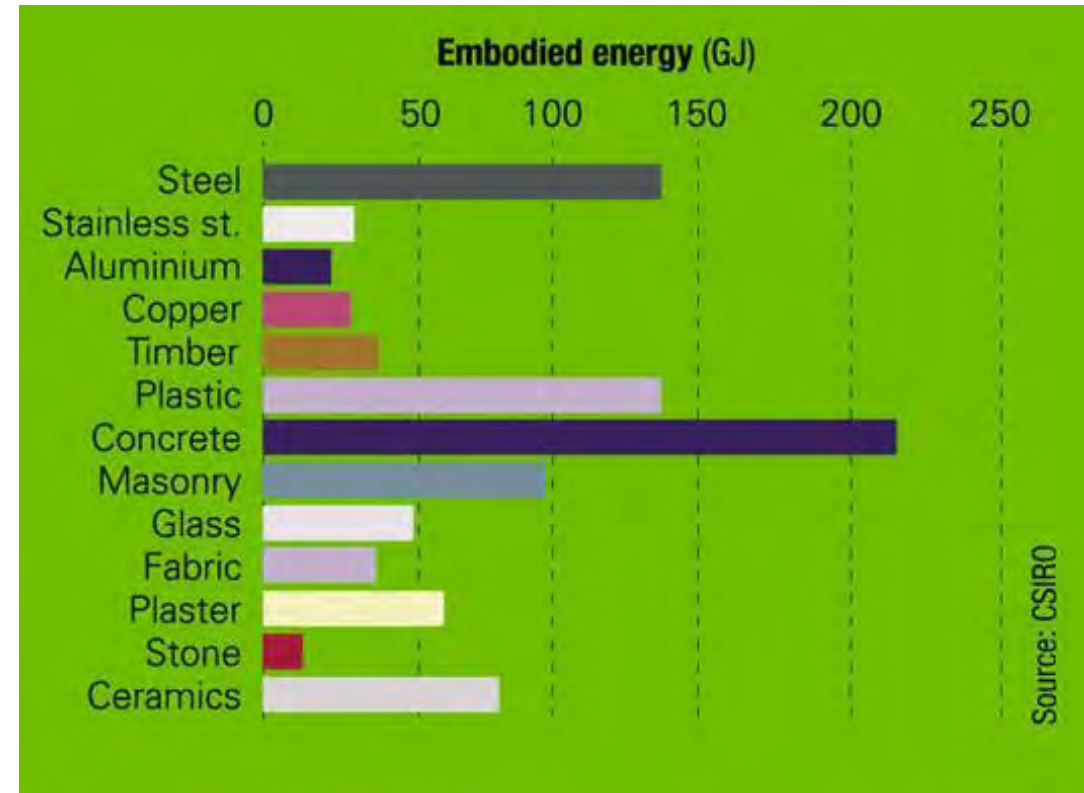
Rank	Solution	Sector	TOTAL ATMOSPHERIC CO <sub>2</sub> -EQ REDUCTION (GT)	NET COST (BILLIONS US \$)	SAVINGS (BILLIONS US \$)
1	<b>Refrigerant Management</b>	Materials	89.74	N/A	\$-902.77
2	<b>Wind Turbines (Onshore)</b>	Electricity Generation	84.60	\$1,225.37	\$7,425.00
3	<b>Reduced Food Waste</b>	Food	70.53	N/A	N/A
4	<b>Plant-Rich Diet</b>	Food	66.11	N/A	N/A
5	<b>Tropical Forests</b>	Land Use	61.23	N/A	N/A
6	<b>Educating Girls</b>	Women and Girls	59.60	N/A	N/A
7	<b>Family Planning</b>	Women and Girls	59.60	N/A	N/A
8	<b>Solar Farms</b>	Electricity Generation	36.90	\$-80.60	\$5,023.84
9	<b>Silvopasture</b>	Food	31.19	\$41.59	\$699.37
10	<b>Rooftop Solar</b>	Electricity Generation	24.60	\$453.14	\$3,457.63

# Embodied Energy

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**Embodied energy** is the energy consumed by all of the processes associated with the production of a building, from the mining and processing of natural resources to manufacturing, transport and product delivery.

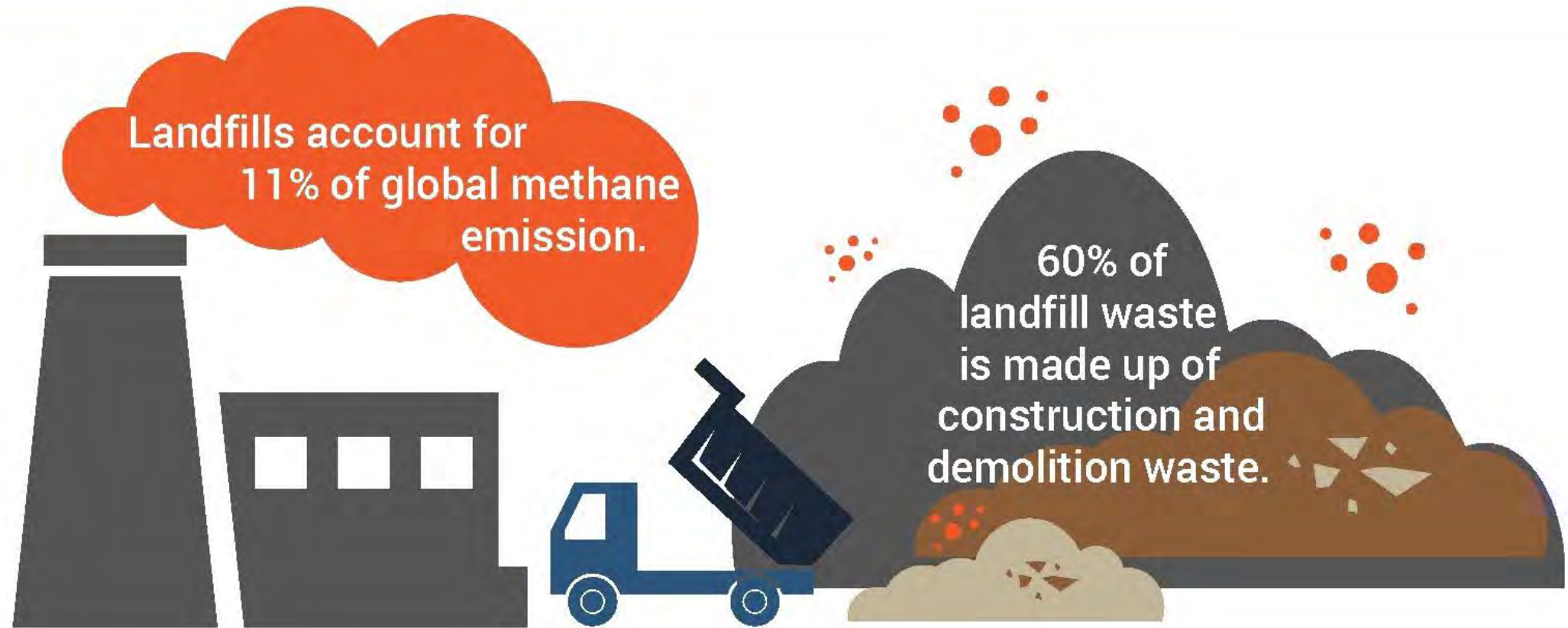
# Existing buildings are a fossil fuel repository





# Preservation is Conservation

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# The Secretary of the Interior's Standards for the Treatment of Historic Properties

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Embody two important goals:

- 1) the preservation of historic materials and,
- 2) the preservation of a building's distinguishing character.

# Character Defining Features

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# Character Defining and Energy Conservation

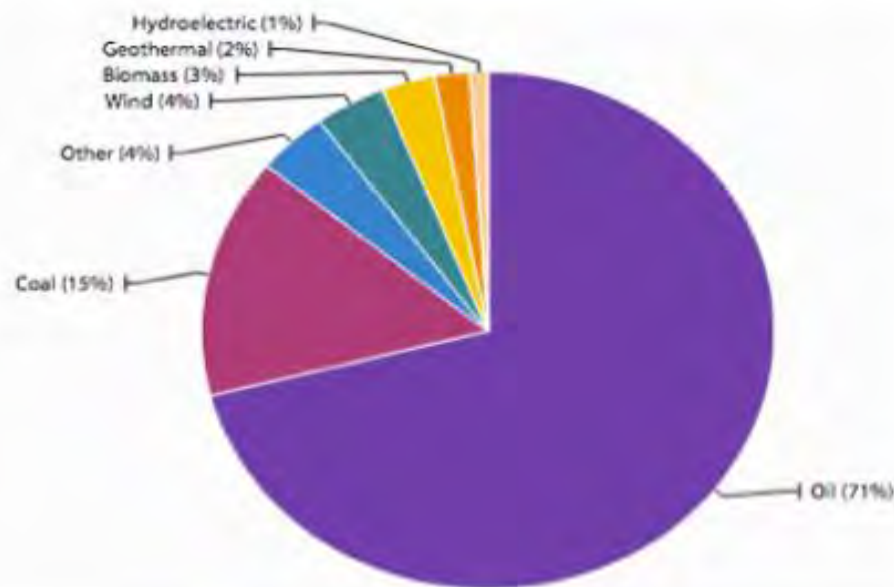
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# Renewables

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# Hawaii Today



**~90% of our energy money  
leaves the state**

# Hawaii 2045



100% renewable energy is not a fantasy  
for someday, but a reality today.

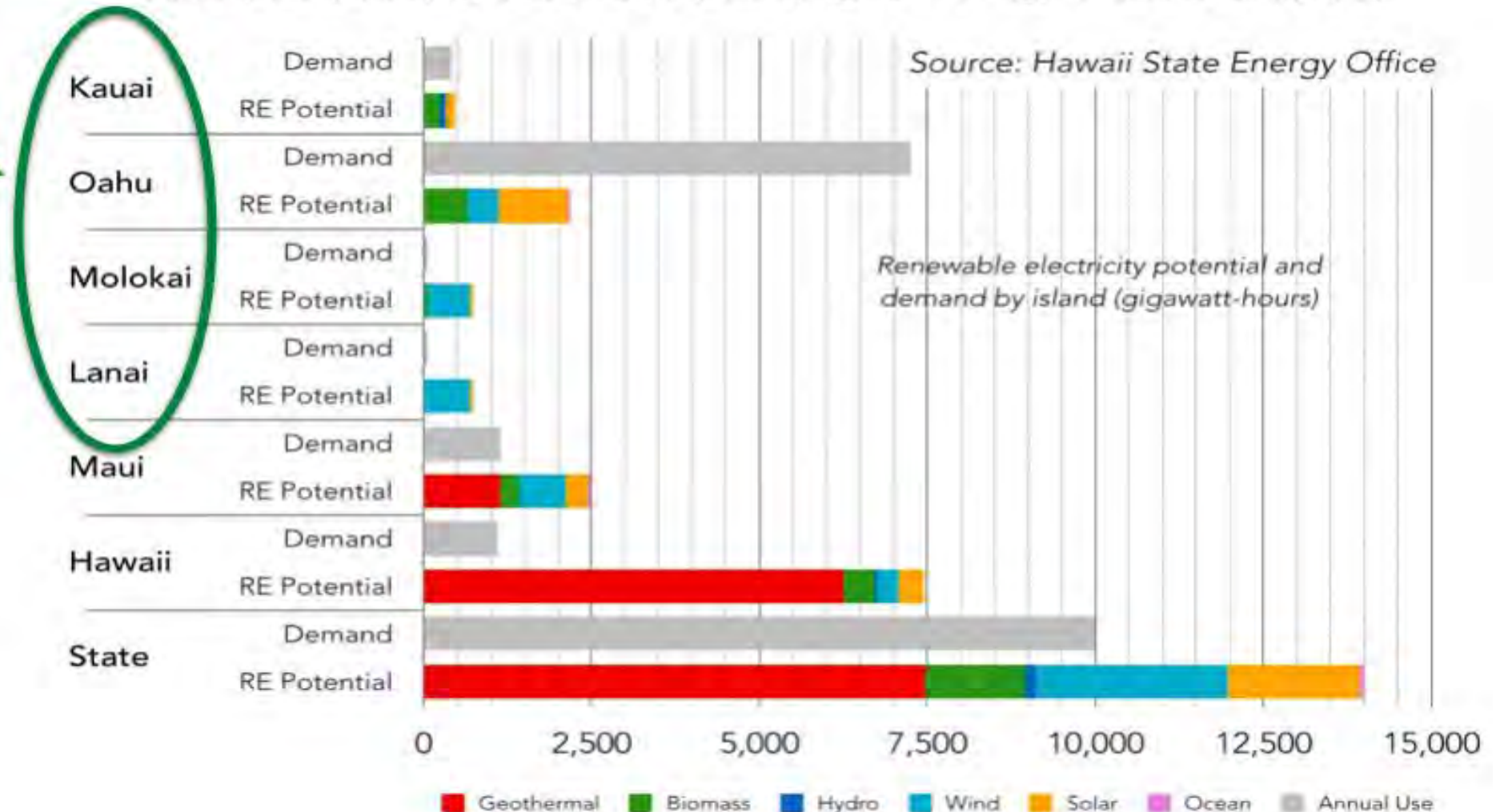


# RENEWABLE ENERGY POTENTIAL

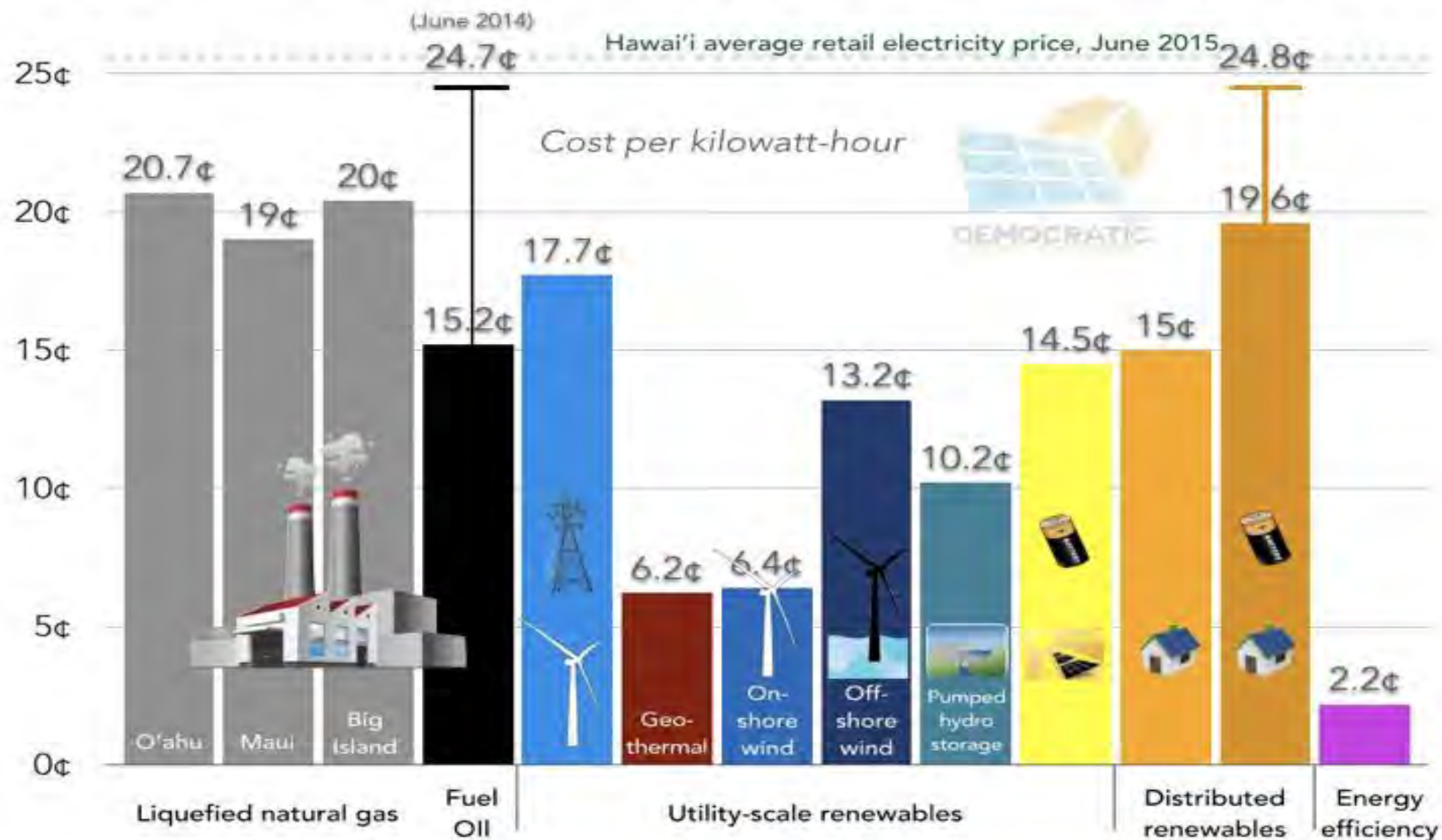
**No baseload  
renewables**

Options to get to  
100% clean energy:

1. Interisland cable
2. Reduce demand



# COST OF HAWAIIAN ENERGY SOURCES





# Why is this important?

Hawai'i has the **nation's highest electricity rates** – 2x the national average

Long-term focus on Hawai'i's residents, economy and environment

A more resilient island infrastructure





Attitude vs Behavior

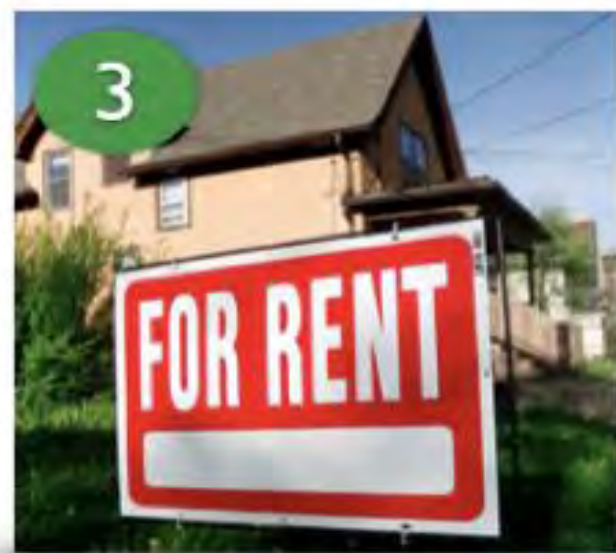


2

Know-how



3

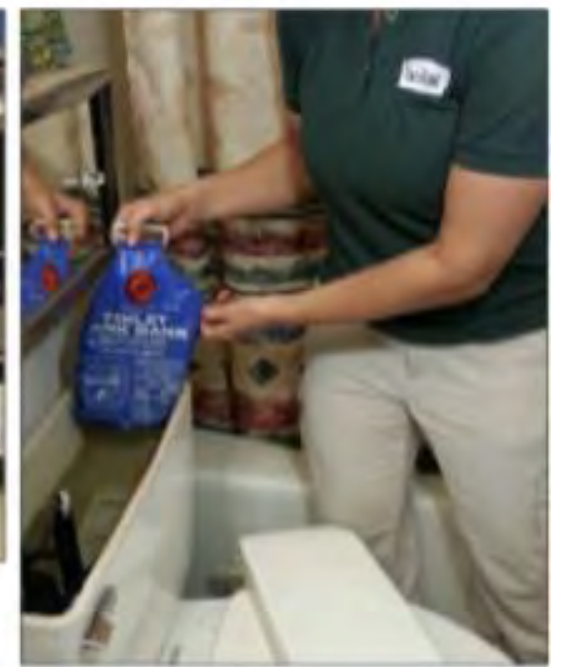


Motivation





# SOLUTION: JUST DO IT FOR PEOPLE





**Since 2014**

~6000 HOMES RETROFITTED

~100,000 PRODUCTS INSTALLED

100% CUSTOMER SATISFACTION

FUN JOBS CREATED







## **Free Audit**

EDUCATION

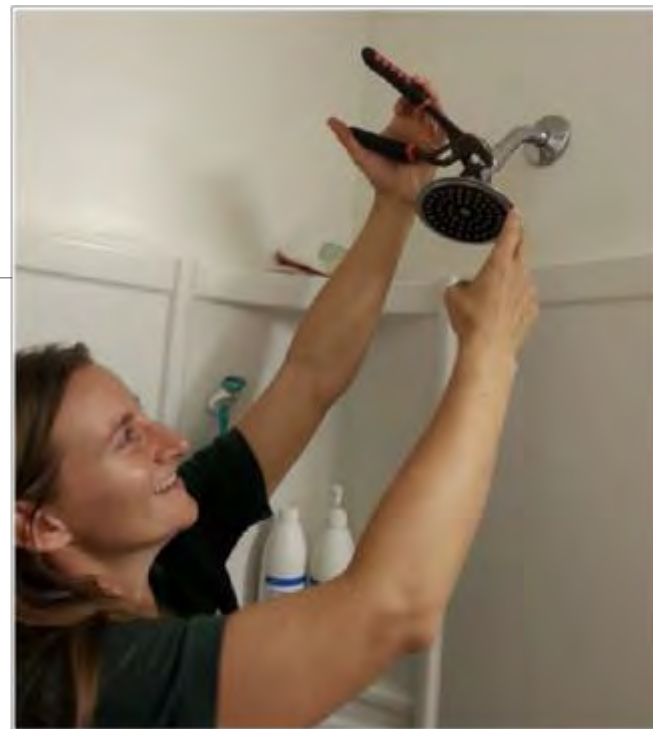
POTENTIAL UPGRADES

REBATES & INCENTIVES

POTENTIAL MAINTENANCE

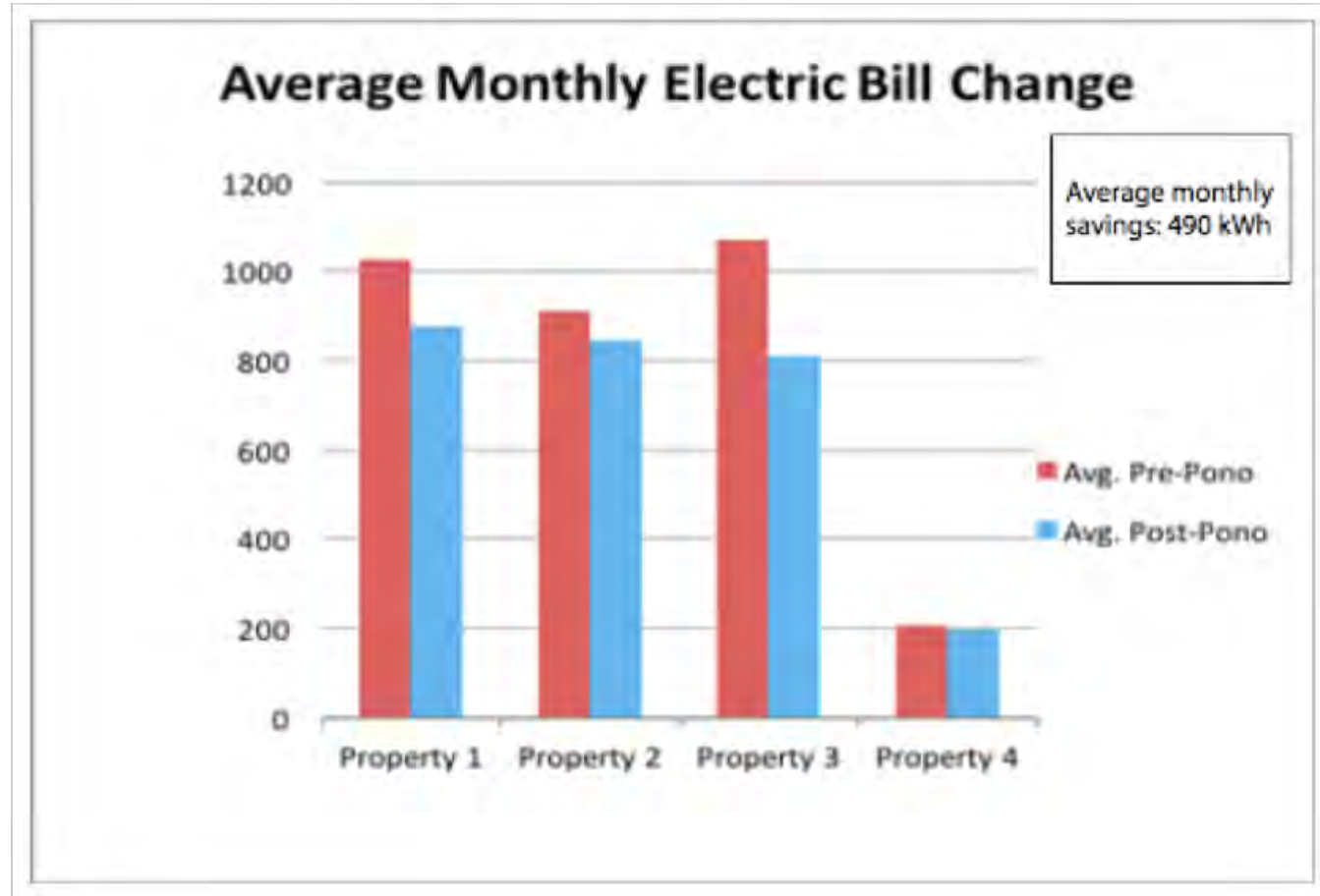


# PONO HOME Service



Tangible, achievable savings with no utility involvement,  
and no challenge to best practices for historic homes

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## EXPANSION: FRANCHISING

People Want Turnkey Opportunities and Have Few Good Choices

Without better choices, people may commit their careers to selling fossil fuels or fast food.





a business...  
the world?

PONO HOME

Sustainability. At Home.

green home services  
and help people  
save on their utility  
bills and live greener  
healthier - for the

energy efficiency

water efficiency

food and  
personal care  
ingredient education

clothing indoor air

vehicle efficiency  
and fuel saving  
strategies

appliance  
optimization

all in one service

(844) GO-PONO-1  
PonoHome.com/franchise  
info@PonoHome.com

Pono Home

PONO HOME



www.ponohome.com

# Choices



- \* Money stays in Hawaii
- \* Locally owned
- \* Helps achieve 2045 goals
- \* Reduces cost of living
- \* Reduces brain drain



- \* Money leaves Hawaii
- \* More imported food
- \* Minimum wage jobs
- \* More illness and disease
- \* More public health costs



Home  
Efficiency  
.com

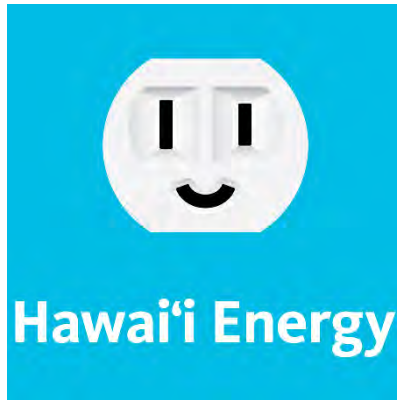
# Residential Solutions

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**Hawai'i Energy**

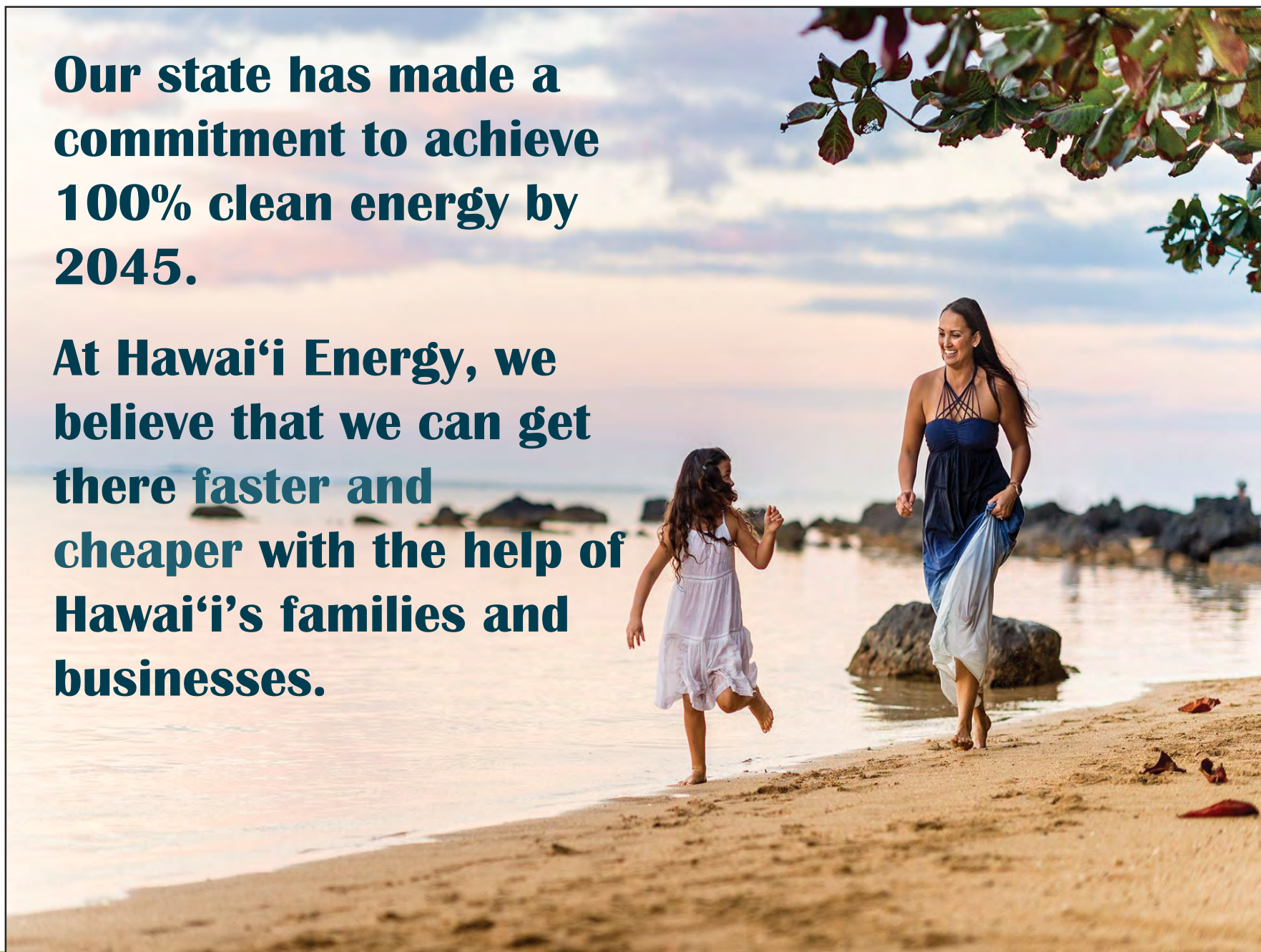


Hawai'i Energy's mission is to  
empower island families and  
businesses to make smart energy  
choices.



**Our state has made a  
commitment to achieve  
100% clean energy by  
2045.**

**At Hawai'i Energy, we  
believe that we can get  
there faster and  
cheaper with the help of  
Hawai'i's families and  
businesses.**





HAWAII 2016

## ENERGY REPORT CARD

Blue Planet Foundation's fourth annual energy report card presents a big-picture assessment of Hawaii's progress toward energy independence with 100 percent clean energy. By evaluating five key components—transportation, energy efficiency, renewables, smart grid, and economics—and tracking specific factors that influence them, we can identify bright spots and opportunities to improve. These grades reflect our clean energy progress through the end of 2015.

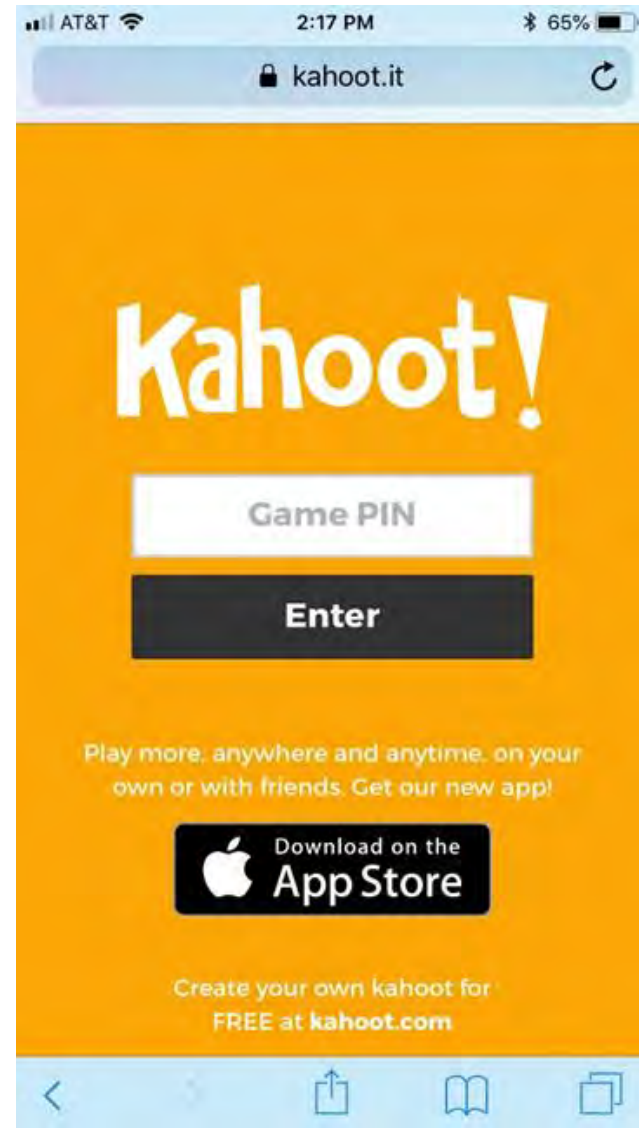


It starts with a nudge...so let's  
take a tour of the possibilities  
in your home



# LET'S KAHOOT!!

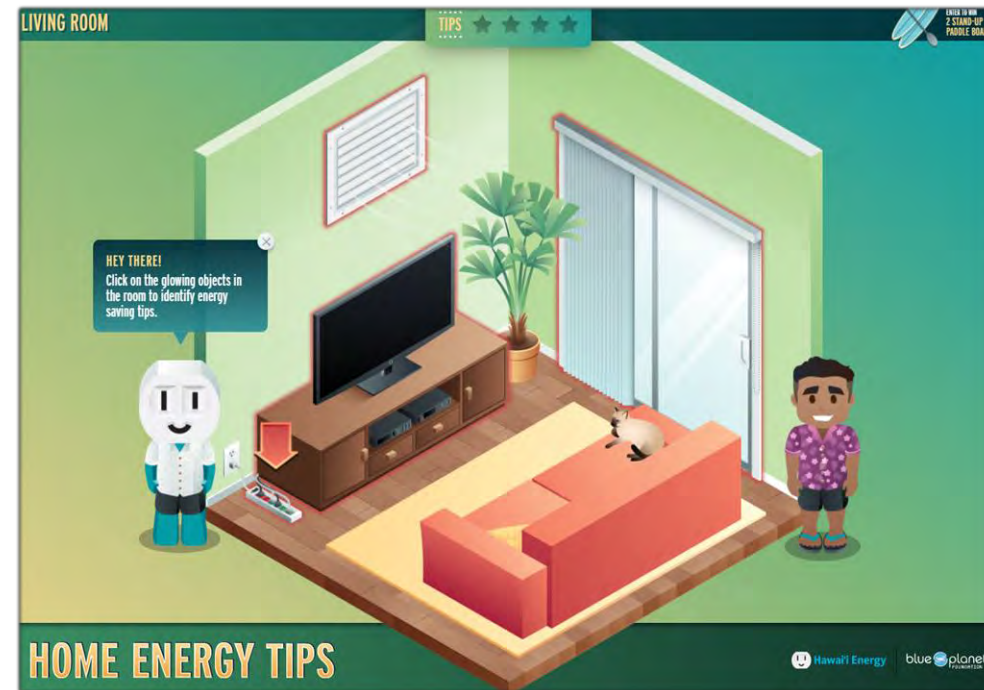
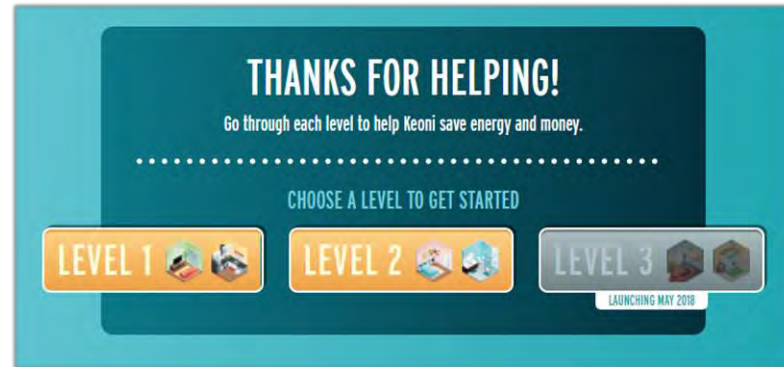
Go to **kahoot.it** on your  
phone



Go to [efficiencyunlocked.org](https://efficiencyunlocked.org)



# efficiencyunlocked.org





# Residential Offerings

## QUICK FIXES: SHOP SMARTER AND SAVE MONEY WITH THESE PRODUCTS

Make sure to look for ENERGY STAR® certified products to get the most bang for your buck! Need help finding a retailer? We got your back.



### LED Light Bulbs

Not all LEDs are created equal, ENERGY STAR certified bulbs last longer and **save you up to 90% on energy costs.**



### Electronics Offer

Purchase ENERGY STAR sound bars and TVs that'll boost your home's energy efficiency, protect the environment, and save you money!



### Heat Pump

Heat pump water heaters can be 2-3 **times more efficient** than conventional electric water heaters, saving you money!



### Clothes Washers & Dryers

You can save loads of money and energy by upgrading to an ENERGY STAR-certified washer and dryer. Get even more savings with Hawai'i Energy rebates on qualifying models.



### Window AC Trade-Up

Trade an old, working window AC unit for a qualifying ENERGY STAR one for a **\$50 rebate.**



### Smart Thermostats

Save on your home's cooling costs by replacing your old thermostat with a new smart thermostat. You can "set it and forget it" for ease of use, convenience and energy efficiency.



### Refrigerator Trade-Up

Get a **\$150 rebate** when you trade in your old, working, energy-draining refrigerator for a qualifying ENERGY STAR model.

Or, if you just want to get rid of that old, working fridge or freezer, we'll recycle it for you. We'll even **pay you up to \$65** for each one through the Rid-A-Fridge program.

GO SHOPPING AND GET  
MONEY BACK! SAY WHAT?



## PRO UPGRADES: LET US HELP YOU FIND A CONTRACTOR FOR THESE ENERGY-SMART INSTALLATIONS

### WATER HEATING UPGRADES

#### Solar Water Heater

Switching from an electric water heater to a solar water heater can **save you up to 40% on your electric bill per year.** Plus, you'll earn state and federal tax credits!

#### Solar Water Heater Tune-Up

**Save \$100 instantly** when you have your solar water heater tuned up by a participating contractor. Hawai'i Energy recommends maintenance every 3-5 years.

### COOLING UPGRADES

#### AC Tune-Up Offer

Keep your home's central or split air conditioning system running in tip-top shape by booking a maintenance tune-up. When you do, you'll receive a **\$75 instant rebate.**

#### Mini-Split Air Conditioner

Mini-Split Air Conditioner (also known as Variable Refrigerant Flow or VRF) is a great cooling solution for multiple rooms while saving energy. **Get a \$150 or \$250 rebate based on system size.**

#### Solar Attic Fans

Cool your home and give your AC a break! Get a fan and **receive a \$50 rebate.**

#### Whole House Fan

Draw in cooler, outside air through your home by pushing the hot air out of the attic vents. **Install today and get a \$75 rebate.** That's cool.

WHAT'S AS EXCITING AS GREEN ENERGY? GREEN MONEY. KEEP MORE OF IT IN YOUR POCKET.

[HAWAIIENERGY.COM/SAVINGS](http://HAWAIIENERGY.COM/SAVINGS)

# Residential Offerings



## High Efficiency Appliances and Devices

- \* Refrigerator Trade-up - \$150 per unit
- \* Refrigerator/Freezer Rid-A-Fridge - \$50/\$65 per unit
- \* Pool VFD Controller Pumps - \$125 per unit
- \* Online Marketplace – Purchase EE products on our Website



## Lighting

- \* LEDs – Upstream retail

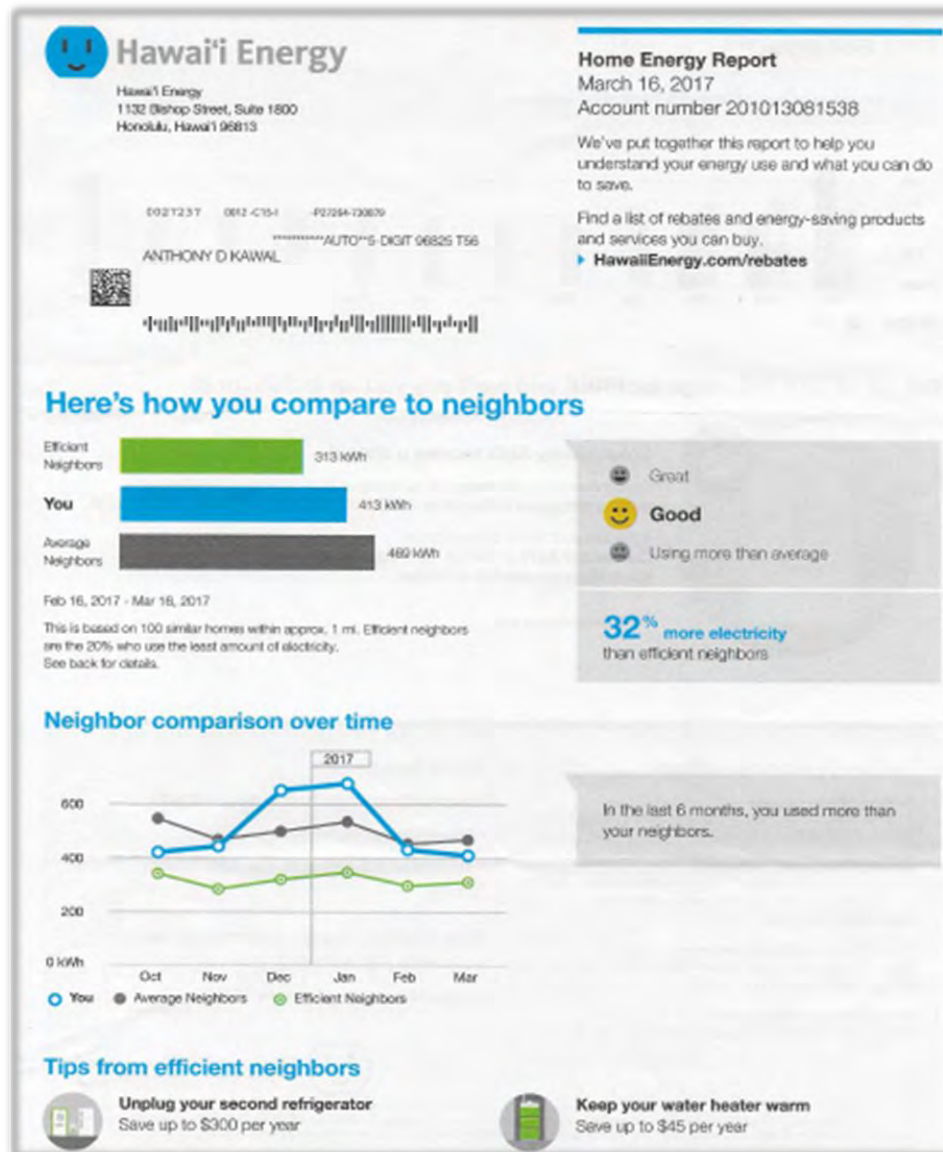


## Energy Awareness

- \* Home Energy Report – 237,000 Residential participants
- \* Energy Unplugged – Energy Efficiency Training



# HOW DO WE REACH HAWAII RESIDENTS?



## Home Energy Reports

### Track your progress

So far this year, you've used 5% more than last year.



Get rid of your old fridge for FREE and we'll pay you up to \$65 for it!



### Save money AND receive a check!

Save money on your energy bill by letting us pick up and recycle that old, working refrigerator or freezer for FREE. And we'll also give you up to \$65 for it!

Schedule your FREE pick-up today  
Call 808.537.5577 or toll free 1.877.231.8222  
[HawaiiEnergy.com/Rid-A-Fridge](http://HawaiiEnergy.com/Rid-A-Fridge)

Size and other restrictions apply.

### Frequently asked questions

#### What's a kWh?

A kilowatt hour (kWh) is a way to measure electricity use. A 100-watt lightbulb uses 1 kWh every 10 hours.

#### How is my comparison calculated?

Your electricity use is compared to homes with a similar size, building type, and heating system. You can view your home information at <https://haw.opower.com>.

#### Why does Hawai'i Energy send these reports?

When customers save energy, we get closer to meeting our state energy efficiency goals. It's good for everyone.

#### How do I stop receiving reports?

Call On O'ahu 808-537-5577, Neighbor Island: 877-231-8222.

### We're here to help

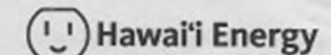
▶ [HawaiiEnergy.com/HomeEnergyReport](http://HawaiiEnergy.com/HomeEnergyReport)

▶ [HawaiiEnergy@Leidos.com](mailto:HawaiiEnergy@Leidos.com)

▶ On O'ahu: 808-537-5577, Neighbor Island: 877-231-8222

Find a list of rebates and energy-saving products and services you can buy

▶ [HawaiiEnergy.com/rebates](http://HawaiiEnergy.com/rebates)



# Energy Star Appliances

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# LED Light Fixtures

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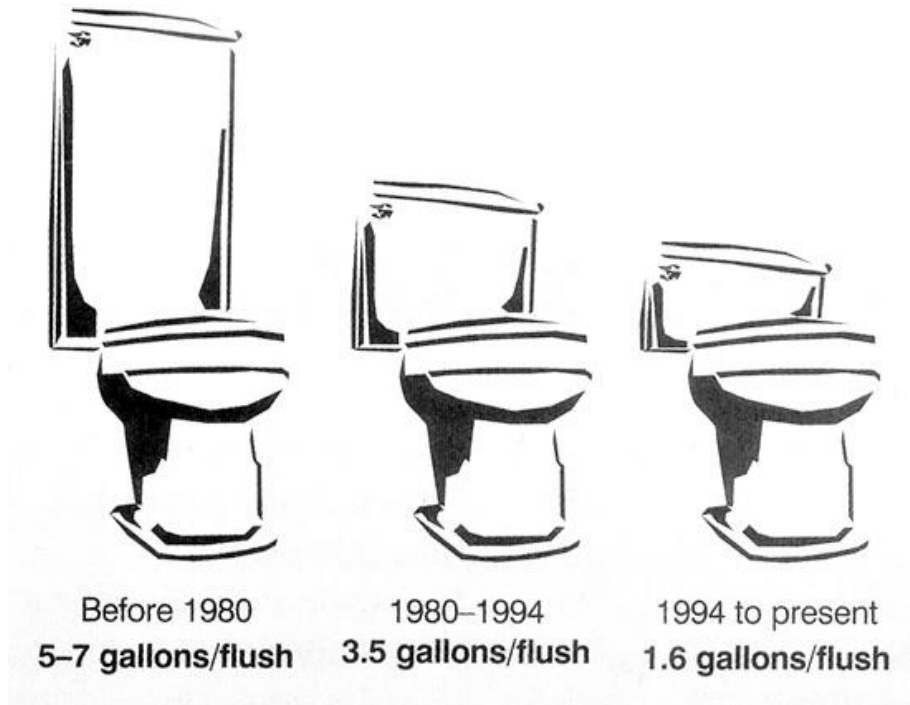


# LED Bulbs





# High Efficiency Plumbing

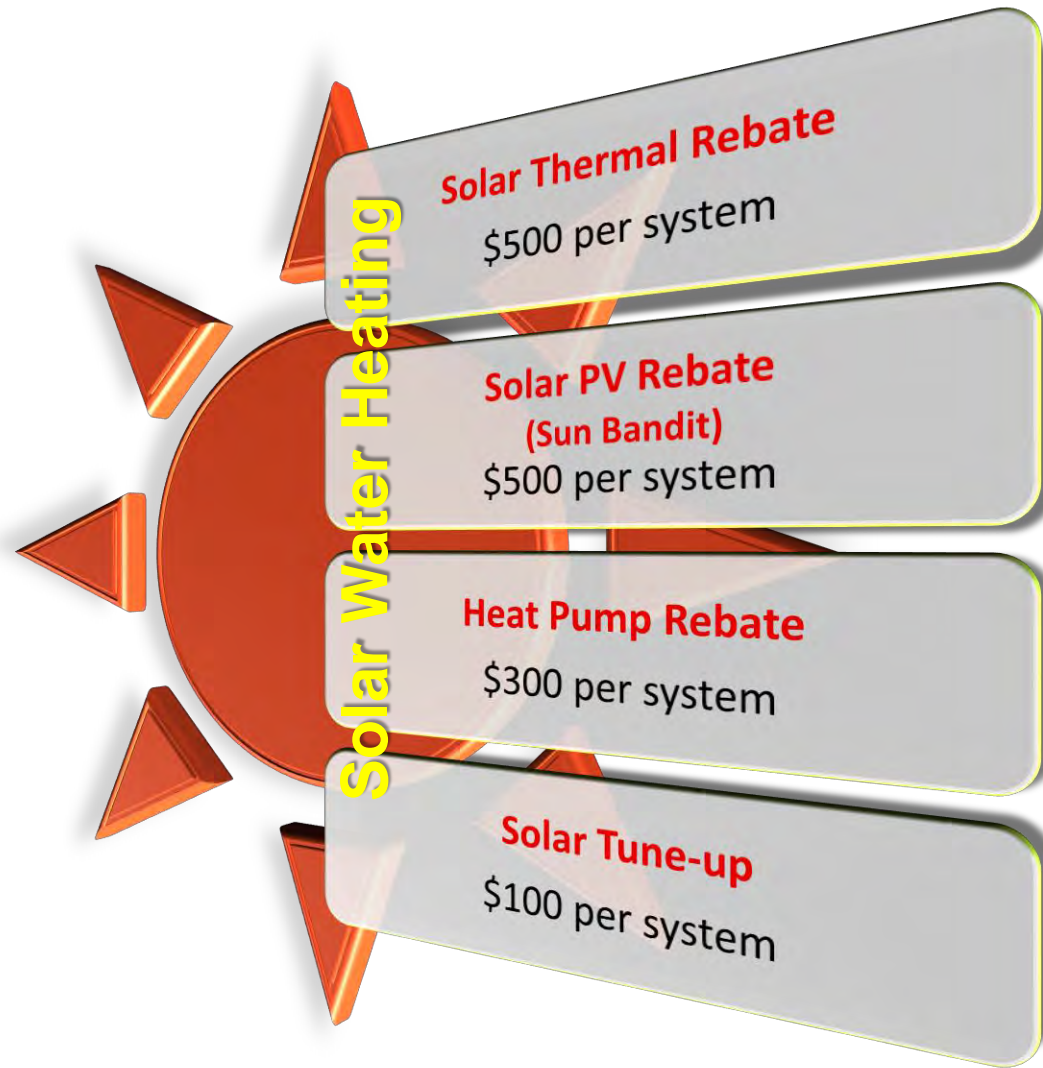


# High efficiency period-appropriate modern fixtures

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# Residential Offerings





# Solar Panels - Does this look right?

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www.shutterstock.com · 488537821



www.shutterstock.com · 56553526



# Solar Panels- How about this?



# Solar Panels - yes!

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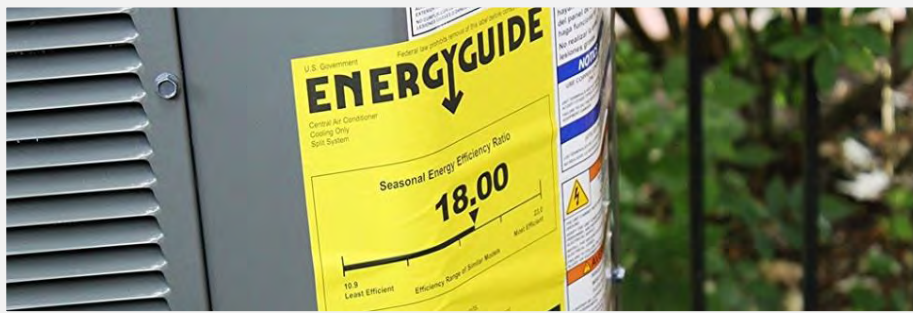


# EXPANDED OFFERINGS in 2018

## *Smart Thermostats - \$50*



## *Central Air Conditioning Retrofit*



## *Washers & Dryers*



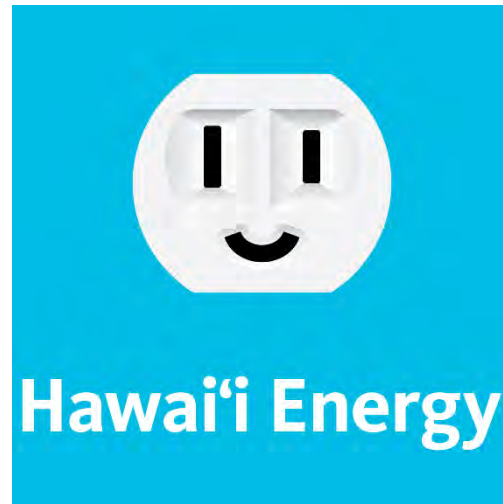


# What about A/C?

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# Mahalo!

**Stay Connected:**

Oahu: **537-5577** (Residential) **839-8880** (Business)

Neighbor Islands: **1-877-231-8222 toll-free**

[www.hawaiienergy.com](http://www.hawaiienergy.com)

[facebook.com/hawaiienergy](https://facebook.com/hawaiienergy)

[@myhawaiienergy](https://twitter.com/myhawaiienergy)

## ADDITIONAL RESOURCES

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Project Drawdown website: <http://www.drawdown.org/>

Paul Hawken presentation on Project Drawdown:

<https://youtu.be/KYvKv0IM-A>

DIY Home Efficiency Audit: <http://homeefficiency.com/>

Pono Home Newsletter: <https://greenlivingideas.com/green-living-ideas-newsletter/>

Green Living Ideas *for your* Pono Home – Book

Home Energy Tips: <https://efficiencyunlocked.org/>



# DISCUSSION

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# GREENING MEASURES FOR HERITAGE HOME SERIES 2018

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- ❑ April 9: SIGNIFICANCE & SUSTAINABILITY: What makes your historic home unique & sustainable measures to green it
- ❑ April 23: WATER: Water conservation, storm-water management and on-site water reuse
- ❑ May 7: ENERGY: Renewable energy & conservation: solar, wind, lighting, appliances, energy incentives
- ❑ MAY 21: WINDOWS: Sustainability measures to maintain/restore your historic windows
- ❑ JUNE 4: LANDSCAPE: Creating a sustainable & culturally-sensitive landscape