

KAUA‘I ISLAND UTILITY COOPERATIVE

Final Report Stimulus Programs (State of Hawaii Contract 59171)

**SUBMITTED TO
STRATEGIC INDUSTRIES DIVISION
STATE OF HAWAII DEPARTMENT OF BUSINESS, ECONOMIC, DEVELOPMENT, &
TOURISM (DBEDT)**

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KAUA‘I ISLAND UTILITY COOPERATIVE

KIUC’s Stimulus Programs Final Report (State of Hawaii Contract 59171)

I. INTRODUCTION

A. Purpose

The purpose of this report is to report the results, and accomplishments of Kauai Island Utility Cooperative’s (“KIUC”) stimulus programs. This report will cover program implementation process for each task defined in KIUC’s contract with the State of Hawaii’s Department of Business, Economic Development, and Tourism (“DBEDT”), contract number 59171, and program accomplishments.

B. Report Format

This report consists of four sections, Section I: “INTRODUCTION” states the purpose and explains the format of this report. Sections II, III, and IV cover, Task 1, 2, and 3, as defined in the State of Hawaii supplemental contract with KIUC number 59171. Sections II, III, IV, cover, Program Overview, and Program Outcomes & Accomplishments, of Task 1, 2, and 3. The Program Overview covers: (1) a brief overview of the project; (2) objectives; (3) budget; (4) timeline overview; (5) program implementation; (6) program partners; (7) program process and procedures; (8) eligibility rules and requirements; (9) recycling plan; (10) marketing and outreach; and (11) oversight plan for each task. The Accomplishments covers: (1) overall results; (2) outcomes; (3) challenges; (4) lessons learned; and (5) future plans for task 1, 2, and 3.

Table 1 below is a breakdown of the funding for contract 59171:

| Table 1. Funding Breakdown | | | |
|-----------------------------------|---|-----------------------|-----------------------|
| Task | Program | Funding Source | Funding Amount |
| Task 1 | State Energy Efficient Appliance Rebate Program | SEEARP | \$100,000 |
| Task 2 | State, Local Government, and Non-Profit Rebate Program | EECBG | \$200,000 |
| Task 3 | Residential Rental Solar Water Heating Program and State Building Retrofits | ARRA-SEP | \$200,000 |

Table 2 below breakdown of the estimated savings:

| Table 2. Savings Breakdown | | | | | | | | |
|----------------------------|-----------------------------|---------------------------------|--|--|--------------------------------|---------------------------------|--------------------------|------------------------------|
| Task | Annual Energy Savings (kWh) | Life Cycle Energy Savings (kWh) | Annual GHG Reduction (lb's CO ²) | Life Cycle GHG Reduction (lb's CO ²) | Annual Fuel Reduction (Gallon) | Annual Fuel Reduction (Gallons) | Annual Cost Savings (\$) | Life Cycle Cost Savings (\$) |
| Task 1 | 40,425 | 485,100 | 72,795 | 873,543 | 2,746 | 32,958 | 16,745 | 200,947 |
| Task 2 | 210,761 | 3,004,255 | 185,069 | 2,889,641 | 14,319 | 204,113 | 88,164 | 1,257,629 |
| Task 3 | 84,433 | 1,359,123 | 152,044 | 2,447,441 | 5,736 | 92,340 | 33,773 | 543,649 |
| Total | 335,619 | 4,848,478 | 409,908 | 6,210,625 | 22,801 | 329,411 | 138,682 | 2,002,225 |

II. Task 1: STATE ENERGY EFFICIENT APPLIANCE REBATE PROGRAM (SEEARP)

A. Program Overview

Task 1, the State Energy Efficient Appliance Rebate Program (SEEARP) targeted the replacement of less-efficient refrigerators and replaced them with energy efficient Energy Star rated refrigerators at 20% or more above current Federal Energy Standards. Program objectives were to replace aging less-efficient refrigerators, thereby reducing energy consumption, carbon or Green House Gas (GHG) emission, dependence on fossil fuel, and stimulating Hawaii’s weakening economy.

This program offered a \$250 rebate incentive. Rebates were tied to refrigerator efficiency levels based on Energy Star models that exceed Federal Energy Standards by 20% or greater. This program was designed to spread program availability to as many participants as possible and maximize kWh benefits. This program did not supplant any existing appliance programs and forecasts a maximum of 360 refrigerator rebates for the island of Kauai.

Program objectives and goals will have a positive affect statewide. Forecasted annual Energy Savings for the island of Kauai are 37,800 kWh, resulting in a 453,600 kWh aggregate savings over twelve years. This program will also help reduce Kauai’s fossil fuel dependence by 11,297 gallons of #2 diesel, and reduce Kauai’s GHG emissions by 816,820 lbs CO₂. over the course of twelve years. The \$100,000 program budget includes \$90,000 in direct incentives for residential customers.

a. Objectives

Program objectives are to replace aging less-efficient refrigerators, thereby reducing energy consumption, carbon dioxide emissions, dependence on fossil fuels, and stimulating Hawaii’s weakening economy.

b. Program Budget

| Table 3. Program Budget | |
|--------------------------------|------------------|
| Budget Item | Amount |
| Rebate Incentive Budget | \$90,000 |
| Marketing Budget | \$10,000 |
| Total SEEARP Funding Budget | \$100,000 |
| KIUC Cost Share (In-Kind) | \$5000 |
| Total Program Cost | \$105,000 |

c. Timeline Overview

| Table 4. Program Timeline and Milestones | |
|--|-------------------------|
| Program Milestones | Date/Date Range |
| Program Proposal Submittal Deadline | September 30, 2009 |
| Contract w/ DBEDT | March 30, 2010 |
| Prepare Marketing Materials | April, 2010 |
| Meetings with Trade Allies / Government | April, 2010 |
| Program Announcement / Implementation | Mid May 2010 |
| Monitor Progress, Adjust Marketing as needed until funds are depleted. | Report Monthly to DBEDT |
| Program Ends | March 07, 2011 |
| Program Proposal Submittal Deadline | September 30, 2009 |

d. Program Implementation

Program implementation and management resided with KIUC Energy Services Department. There were three participating retailers (*Sears, Home Depot, & Kapaa Electric and Appliance*), a delivery / hauling company (*Kauai Commercial*), and a recycling company (*Puhi Metals Recycling*).

KIUC provided retailers with a list of qualified Energy Star refrigerator models, In-store advertising, and Rebate Applications. Rebate Applications included pertinent customer data; Customer name, address, contact information, Electrical Account information, Refrigerator Model Number & Manufacturer, and Refrigerator Efficiency Level.

KIUC tracked and reported program progress by the number of rebates issued and by efficiency levels, in narrative and spreadsheet formats provided by USDOE. It tracked a monthly total number of rebates paid, total appliances recycled, total new jobs created, number of jobs retained, estimated kWh savings, estimated BTU savings, and an estimated GHG emissions reduction.

The delivery and hauling company [Kauai Commercial] delivered new replacement refrigerators and hauled the existing less efficient units to the recycling center. Participants had the option of hauling their old inefficient refrigerators directly to the recycling company [Puhi Metals Recycling] where they obtained recycling receipts. Kauai Commercial and Puhi Metals Recycling supplied the customers with recycling and disposal receipts. Customers completed their rebate applications, attached copies of their sales and recycling receipt, and sent the rebate request to KIUC.

Rebates were issued on a first-come first-served basis.

e. **Program Process and Procedures**

- Mail-In Rebates Only.
- Participating retailers provided customers with KIUC rebate applications. Customer mailed their completed rebate applications along with copies of their sales and recycling receipts to KIUC.
- KIUC reviewed rebate applications, approved or denied based on eligibility. (*Please see Eligibility Rules*).
- Rebate checks were issued through KIUC's accounting department within 60 days after rebate approval.
- Customer inquiries were handled by KIUC Member Services personnel and the Energy Services department. Member Services personnel were briefed and trained prior to program implementation.
- All rebates were issued and mailed by KIUC's Accounting Department. Additional staff was not necessary to successfully implement this program.
- A Chart of Accounts was created to track available rebate funds to avoid oversubscription.
- An Excel spreadsheet was created and provided by United States Department of Energy to collect participant data. It tracked a monthly total number of rebates paid, total appliances recycled, estimated kWh and BTU savings, and an estimated GHG emissions reduction.

f. Program Partners

| Table 5. Program Partners | | | |
|-------------------------------------|-------------|-------------------------------------|----------------|
| Company | Type | Address | Contact |
| Kauai Commercial | Hauling | 1811 Leleiona Street Lihue HI 96766 | (808)246-1985 |
| Abe’s Auto Recyclers Puhi Metals | Recycling | 3951 Puhi Road Lihue HI 96766 | (808)632-0697 |
| Sears | Retailers | 3081 Peleke Street Lihue HI 96766 | (808)246-8322 |
| Home Depot | Retailers | 4320 Nuhou Street Lihue HI 96766 | (808)632-2740 |
| Kapaa Electric & Appliance | Retailers | 1396 Kuhio Hwy Kapaa HI 96746 | (808)823-6353 |

g. Eligibility Rules and Requirements

These rules remained constant without changes throughout the program.

- Rebates will be issued to the first 360 qualified participants or until program funds are depleted.
- Rebates are limited to Residential Rate Class Customers Rate Schedule D (*Def: Residential Rate accounts 4D1, non commercial account.*)
- Replacement Rebates Only
No New Construction (4G1)
- Limit 2 Rebates Per Active Residential Account Allowed
- **No landlords** Note: There were 4 rebates denied due to this requirement
- Qualified Energy Star Refrigerators required.
Qualified Energy Star Refrigerator List will be provided and distributed.
- Completed rebate applications
Completed rebate applications are required for program review.
- Proof of Purchase – Qualifying refrigerator must be purchased within the program availability period. *Customer provides a copy of the Sales receipt with the application.*
- Proof of Recycling
Provide a copy of the Recycling receipt from Kauai Commercial, or Abe’s Auto Recyclers Puhi Metals Recycling.

h. Recycling Plan

- Kauai Commercial delivers replacement (new) refrigerator to customer.
- Kauai Commercial hauls older working refrigerator and issues the customer a recycling receipt.
- Kauai Commercial ensures delivery to Puhi Metal (*Recycling Center*) for decommissioning.
- If the customer prefers to haul their older less efficient refrigerator directly to the Recycling Center, Puhi Metals Recycling staff will provide the customer with a Recycling Receipt.
- Customers are advised to send their completed rebate application, along with copies of their sales and recycling receipts to KIUC.

1. **Product Replacement**

- Residential Rate Class Customers Only, New construction or commercial rate accounts are ineligible.
- Eligibility Requirements limits Rebates for Qualified Energy Star Models Only Tier 1 – 20% or greater, above current Federal Energy Standards- \$250
- Disposal Receipt Required for Rebate approval ensuring proper disposal and replacement.

2. **Product Haul-Away**

- Refrigerator
- No additional Rebate

i. Marketing & Outreach

- Press Release and Program Information was made available through local News Paper Advertising, KIUC Bill Insert & Bimonthly Magazine, radio spots, and KIUC Website.
- Local News Papers, KIUC Bill Inserts & Bimonthly Magazine, Radio Spots
 - Press Release
 - Program Details and Incentive Levels
 - Retailer Information
 - KIUC Contact Information
 - Eligibility Rules & Requirements
 - Downloadable Rebate Application
- In-Store Promotions
 - Rebate Applications, Banners, miscellaneous in store promotional materials will be distributed to the retailers.
 - Eligibility Rules and Requirements
 - List of Qualified Energy Star Refrigerators (*Derived from the Energy Star list of qualified refrigerators.*)
- Updating the public on remaining rebate funds will be provided upon customer request.
 - Retailers will be updated weekly or more frequently if needed.
 - Subscription will be closed when \$1000 in incentive funds are remaining.
- Disclaimer:

Rebate applications will be accepted and processed on a first-come, first-served basis until all available funds are depleted. Kauai Island Utility Cooperative makes no claims to the total number of rebates available and is not obligated to pay a rebate. Kauai Island Utility Cooperative reserves the right to discontinue the program without notice and Kauai Island Utility Cooperative reserves the right to verify the installation of the appliance. Kauai Island Utility Cooperative does not warrant or guarantee that any specific energy savings will result from installation of energy efficient appliance. Neither Kauai Island Utility Cooperative nor any of their officers, agents, and employees' is responsible or liable for any claim, loss or damage arising from or connected with the equipment or installation whether in contract or tort, including negligence and strict liability. In

no event will Kauai Island Utility Cooperative's liability for property loss, damage or personal injury resulting from activities under the State Energy Efficient Appliance Rebate Program exceed the total value of the incentive amount available under the State Energy Efficient Appliance Rebate Program.

j. Oversight

- A thorough review of rebate applications, sales receipts, and recycling receipts were part of the rebate process. Sales receipt and recycling receipt were required to ensure replacement and proof of recycling.
- Account numbers were cross referenced with KIUC database to guarantee program participants were limited to the residential rate class.
- A separate spreadsheet was used to cross reference participation by electric account number and by name to prevent oversubscription.
- In the event that 50% of program funds have not been spent by the end of the 4th quarter of 2010, KIUC reserves the right to increase incentive levels.
- KIUC did not anticipate a delay in customer rebate submittals. The deadline to submit the rebate forms was July 30, 2010. There were 100 outstanding rebate forms pending. KIUC made the decision to extend the deadline to November 30, 2010. As of November 30, 2010 there were still 15 outstanding rebate forms. KIUC decided to re-issue 19 rebates forms which included replacement rebate forms for the 4 customers that were denied due to landlord ineligibility.
- The 19 re-issued forms were distributed among two of the participating retailers, Sears and Home Depot. Kapaa Electric & Appliance decided not to participate.
- As of February 28, 2011, KIUC received and issued 385 rebates.

B. Accomplishments

a. Overall Results

The program rolled out May 24, 2010, by June 06, 2010 participating retailers issued all of the available rebate forms. Once all of the available forms were issued, KIUC continued to receive inquiries from member/customers regarding the program.

KIUC was able to offer 25 additional rebates due to unspent marketing funds and a \$5000 in-kind contribution. As a result, we were able to issue 385 rebates.

| Table 6. Rebate Detail | | | | |
|-------------------------------|--------------------------|------------------------------------|---|----------------------------------|
| Product | Criteria | Rebate Amount (\$ or %) | Number of Rebates Paid | Total Rebate Payments |
| Refrigerator | Energy Star Certified | \$250 | 385 | \$96,250 |
| Total | | | 385 | \$96,250 |

b. Program Outcomes

| Table 7. Program Outcomes | |
|---|--------------|
| Program Objective | Value |
| Total Number of Rebates Paid | 385 |
| Total Rebate Payments | \$96,250 |
| Total Program DOE Administrative Spending | N/A |
| Total State Administrative Spending* | N/A |
| Total In-Kind Administrative Spending | \$5000 |
| Total Number of Appliances Replaced | 385 |
| Total Number of Appliances Removed | 385 |
| Total Number of Appliances Recycled | 385 |
| Jobs Created** | N/A |

c. Success

This was a successful program in that it was able to offer additional rebates and exceed program objectives and goals which allowed for a larger economic and environmental impact. This program also raised awareness on energy efficiency and created a positive impact on a weakened county and state economy.

Our contract with the state required KIUC to issue 360 rebates. However, due to unspent marketing funds (\$6,304.78), along with a \$5000 in-kind contribution, we were able to issue 385 rebates, exceeding our contract requirement by 25 rebates. This program is forecasted to save 40,425 kWh annually, resulting in a 485,100 kWh savings over the course of 12 years. Program savings are listed in the table below:

| Table 8. Estimated Program Savings | | | | | | | | |
|---|------------------------------------|--|--|---|---|---|---------------------------------|-------------------------------------|
| Rebates | Annual Energy Savings (kWh) | Life Cycle Energy Savings (kWh) | Annual Fuel Reduction #2 Diesel (gallons) | Life Cycle Fuel Reduction # 2 Diesel (gallons) | Annual GHG Reduction (lb's CO²) | Life Cycle GHG Reduction (lb's CO²) | Annual Cost Savings (\$) | Life Cycle Cost Savings (\$) |
| 385 | 40,425 | 485,100 | 2,746.50 | 32,958 | 72,795.25 | 873,543 | 16,745 | 200,947 |

d. Challenges

Part of what made this program successful was the limited amount of challenges faced. We were faced with two challenges: (1) a budget surplus of \$6,304.78; and (2) un-submitted rebate forms. In an effort to resolve the problem with unspent marketing funds we simply re-allocated those funds to the rebate incentives which allowed for an additional 25 rebates. To resolve the problem with un-submitted rebate forms, we simply extended the submittal deadline from July 30, 2010 to November 30, 2010. Although we extended the final submittal deadline, by November 30, 2010, we were still left with \$4750 of unspent rebate funds (19 rebates). To resolve this problem, we simply re-issued 19 rebate forms and allowed the retailers to issue them to qualified members. We asked the retailers to document the names and contact numbers of the participants. This allowed us to follow up with the participants, thereby insuring rebate submittal.

e. Lessons Learned

The largest challenge we had to face in this program was how to deal with the un-submitted rebate forms. To resolve this problem we extended the rebate submittal deadline from July 30, 2010 to November 30, 2010. Even after the new deadline we were still left with 19 un-submitted rebate forms. We re-issued rebate form through the retailers. We requested that the retailer log the names and contacts of the participants so we could follow up to insure the submittal of the rebate forms. Lesson learned, if we had to implement another program like this one, we would develop a tracking system that the retailers could use to track the customer of record receiving the rebate form. This would enable KIUC to place reminder calls to customers who did not submit their forms on time. This would avoid additional marketing, and reprinting of forms.

The haul away and recycling requirements would remain the same. Haul away and recycling requirements are essential to these types of programs to avoid load building.

f. Future Plans

KIUC does not have any plans to implement a similar program at this time. Our plan is to continue offering our current appliance rebate program.

III. Task 2: STATE, LOCAL GOVERNMENT, AND NON-PROFIT REBATE PROGRAM

A. Program Overview

KIUC Commercial Demand Side Management (DSM) Program offers comprehensive audits for commercial facilities to identify cost-effective opportunities for energy efficient enhancements. KIUC had a backlog of completed audits for state facilities, county facilities and non-profits. Many of the facilities received recommendations for efficiency enhancements, and in some cases no action has been taken. This created an opportunity for the use of funds provided by the Energy Efficiency and Conservation Block Grant (EECBG).

Cost-effective measures were limited to those identified in KIUC’s most recently filed Integrated Resource Plan filed in December 2008. For the purpose of this program overview, we have broken them down into the following categories:

| Table 9. Potential Projects | | | | |
|-----------------------------|-----------------|------------------|---------------|------------------|
| Indoor Lighting | Street Lighting | Outdoor Lighting | Refrigeration | Space Cooling |
| T-8 Fluorescent | LED | LED | Refrigerators | Air Conditioning |
| LED | Induction | Induction | Freezers | |
| CFL | | | | |

KIUC took advantage of those projects that had the greatest potential for energy saving (low hanging fruit). Measures were bundled by facilities and into cost-effective projects. Block Grant funds were used to buy down the measure cost and installation. All projects were paid for by EECBG funds (no cost to the participant).

All projects conformed to KIUC Commercial DSM Requirements. Local trade allies were utilized to facilitate the installation of all measures.

a. Objectives

- Use federal grant money to install cost – effective energy efficient technologies in state, county, and non-profit facilities.
- Reduce KIUC’s fossil fuel consumption.
- Reduce electric consumption for participants.
- Stimulate local economy by engaging local suppliers and contractors
- Reduce GHG emissions

b. Program Budget

KIUC received \$200,000 in EECBG funds for this program. Funding for this program was allocated into three sectors: (1) State Government facilities; (2) Local Government facilities; and (3) Non-Profit facilities. A breakdown of the budget by sector is shown in the table below:

| Table 10. Program Budget | |
|---------------------------------|---------------------|
| Budget Item | Amount |
| State Government | \$100,000 |
| Local Government | \$65,000 |
| Non-Profit | \$35,000 |
| Total EECBG Budget | \$200,000 |
| KIUC Leverage Funds | \$633.51 |
| Total Program Budget | \$200,633.51 |

c. Timeline Overview

| Table 11. Program Timeline | |
|-----------------------------------|-----------------------------|
| Milestone | Date Achieved |
| Program Proposal Submittal | October 15, 2009 |
| DBEDT Contract Executed | May 03, 2010 |
| Facility Audits | April 2010 – September 2011 |
| Measure Installations | April 2010 – September 2011 |
| Final Inspections | April 2010 – September 2011 |
| Program Completion | January 2012 |

d. Program Implementation / Process and Procedures

- Program implementation resided in Energy Services. KIUC’s Commercial Energy Services Representative coordinated all of the projects with State, County and Non-Profits.
- The Commercial Energy Services Representative screened each chosen project to ensure total life cycle benefits are equal to or greater than the total project costs.
- KIUC’s Commercial Energy Services Representative provided representatives of the three sectors (State & local government and non-profit) a list of qualified Trade Allies.
- Participants were instructed to solicit bids from participating contractors and choose a participating supplier for their project.
- KIUC reviewed each bid to verify cost of the project and verified that the equipment met KIUC requirements.

- If KIUC determined that the total life cycle benefits are equal to or greater than the total project costs, then the participants were instructed to arrange measure installation with their contractor.
- KIUC was notified once measures were completed and conducted post – installation inspection.
- KIUC and Participant signed off on the completed project.
- KIUC issued payments to suppliers and contractors.

e. Program Partners

| Table 12. Program Partners | | | |
|-----------------------------------|----------------------------|---|----------------|
| Company | Type | Address | Contact |
| Lords Electric | Contractor | 4672 Kuli Road Kalaheo HI 96741 | (808)3328562 |
| Smith’s Electric | Contractor | 4965 Hekili Rd. Kapa’a Hawaii 96746 | (808) 645-6458 |
| Wheatley Electric | Contractor | PO Box 1228 Kalaheo, Hawaii 96741 | (808) 335-3777 |
| Rutan Refrigeration | Contractor | PO Box 889 Lawai Hawaii 96765 | (808) 332-7012 |
| Train Pacific | Contractor | 330 Sand Island Access Rd. Honolulu, Hawaii 96819 | (808) 845-6061 |
| Abe’s Auto Recyclers Puhi Metals | Waste Disposal & Recycling | 3951 Puhi Road Lihue HI 96766 | (808)632-0697 |
| HAZTECH Environmental | Waste Disposal & Recycling | 94-110 A Leokane St. Waipahu HI 96797 | (808)671-1985 |
| Home Depot | Material Suppliers | 4320 Nuhou ST. Lihue, HI 96766 | (808)632-2740 |
| RASCO Supply | Material Suppliers | PO Box 25 Lihue, HI 96766 | (808)245-5356 |
| Ichikawa Lighting | Material Suppliers | 156 Kolekona Pl. Kapa’a, HI 96746 | (808) 822-3989 |
| 1 st Source Lighting | Material Suppliers | 1730 Industrial Dr. Auburn, CA 95603 | (530) 887-1110 |
| Energy Saving Lighting | Material Suppliers | 12100 Onion Hollow Run Austin, TX 78739 | (512)789-5037 |
| | Material Suppliers | 935 Dillingham Blvd. Honolulu, HI 96817 | (800)634-4533 |

f. Eligibility Rules and Requirements

- Selected project sites were previously evaluated by KIUC. KIUC identified and recommended cost-effective energy efficient measures in these facilities. The selection process for this program was made within the limits of allocated contract funding and cost effectiveness of the measures to be installed.
- Program participation was limited to State government, Local county government, and non-profit facilities as defined by State of Hawaii DBEDT official and the EECBG grant.
- Projects were required to meet KIUC’s DSM criteria with a TRC of 1 or greater.
- All measure installations must conform to state and local codes and be installed by KIUC Energy Wise Program Participating Trade Allies.

- Since efficiency opportunities in government facilities vary, KIUC coordinated with the state, and county to prioritize projects.
- In the non-profit sector, KIUC contacted individual non-profit organizations to help facilitate project implementation.

g. Waste Disposal and Recycling Plan

- All metal waste from old refrigerators, air condition units, magnetic ballast, and street lights were recycled through Abe’s Auto Recyclers. Abe’s Auto Recyclers collected all of the Freon from the old refrigerators and Air Condition units and sent it to Island Distributors on Oahu for proper recycling and or disposal.
- KIUC’s Commercial Energy Representative collected all lighting retrofit waste from the project sites on monthly bases or as each project was completed. KIUC’s Commercial Energy Representative boxed all fluorescent tubes (T-12) in shipping boxes provided by HAZTECH Environmental Services Inc. All hazardous PCB Ballasts (*if any*) were placed in barrels also provided by HAZTECH Environmental Services Inc. Once all of the fluorescent tubes and hazardous PCB ballasts were collected, they were sent to HAZTECH Environmental Services Inc. on Oahu for proper recycling and disposal.
- All wooden waste from shipping pallets were retained and reused by the participating contractors.
- High Pressure Sodium street lights and aluminum waste were sent to Abe’s Auto Recyclers for proper recycling.
- All of the packing materials and cardboard boxes were sent to the County of Kauai Lihue Recycling & Redemption Center for proper recycling and disposal.

h. Marketing & Outreach

Direct Contact: KIUC marketed this program directly to key individuals in the non-profit, State, and local county government sectors. KIUC has a well developed relationship with state and county representatives. KIUC Commercial Energy Services Representative coordinated with the County Energy Coordinator and key State representatives to inform them of the availability of program and to identify and prioritize projects and arrange for the installation of measures.

i. Oversight

Energy audits were conducted before KIUC offered any recommendations and or funding for any project. Project approval was based on life cycle cost effectiveness and or KIUC’s DSM criteria of TRC of 1 or greater. If project cost did not meet KIUC’s DSM criteria the project was denied.

A post inspection was conducted to ensure compliance with KIUC standards, and EECEBG grant requirements.

j. Compliance with National Policy Requirements

The EECEBG funding required KIUC to comply with National Policy Requirements. We were required to comply with the National Historical Preservation Act (NHPA), Davis Bacon Act (DBA), Buy America Act, and the National Environmental Policy Act (NEPA).

- **National Historic Preservation Act (NHPA)** – No Action Required.
The projects under this program did not require any action under the NHPA because the project scope did not include historical building sites.
- **Davis-Bacon Act (DBA)**
Compliance with DBA required KIUC to collect on a weekly basis, Davis Bacon Certified Payroll forms from participating contractors. In an effort to comply with this requirement, KIUC collected Davis Bacon Certified Payroll forms on a weekly basis. Most projects took less than a week so the majority of the forms collected were collected after the completion of the projects.
- **Buy America Act**
Compliance with Buy America Act required KIUC to ensure all materials used under this grant were made in America. To ensure compliance with this requirement, KIUC collected manufacturers information on the products and materials used on every project. In addition, KIUC conducted site visits to ensure compliance with this requirement. As a result of the site visits we found that two of the refrigerators installed in one of the non-profit facilities were not made in America. In lieu of replacing the refrigerators, KIUC decided to replace the project with another non-profit facility.
- **National Environmental Policy Act (NEPA)**—Categorical Exclusion Granted

B. Accomplishments

a. Overall Results

KIUC began offering this program from April 2010 to September 2011 to State and local government, and non-profit facilities. During that time KIUC and its program partners managed to complete 6 State of Hawaii projects, 4 local county government projects, and 6 non-profit projects. State projects included Kapaa high school, Quest Human Services office, and State of Hawaii highway street lighting. County government projects included 3 fire stations, and the county civic center. Non-profit sector projects included Island school, and offices for the following; Easter Seals, Boys and Girls club, Habitat for Humanity, Salvation Army, and Malama Pono.

Projects consisted of: (1) lighting retrofits; (2) street and parking light retrofits; (3) Air condition upgrades; and (4) air condition controls. Majority of the projects were fluorescent lighting retrofits from T-12 to T-8. There was a single LED project, a street light and parking lot lighting project, a single air condition upgrade, and an air condition controls project.

b. Project Timeline

| Table 13. Timeline Program Accomplishments | | | |
|---|--|---------------------------------------|------------------------|
| Sector | Project Type | Facility | Completion Date |
| Non-Profit | AC Replacement | Island School | June 12, 2010 |
| Non-Profit | Fluorescent Lighting | Malama Pono | December 09, 2010 |
| Non-Profit | Fluorescent Lighting | Habitat for Humanity | December 13, 2010 |
| Non-Profit | Fluorescent Lighting | Boys & Girls Club Kapaa | December 14, 2010 |
| Non-Profit | Fluorescent Lighting | Easter Seals | April 10, 2011 |
| Non-Profit | Fluorescent Lighting | Salvation Army | December 07, 2011 |
| State | Fluorescent Lighting | Dept. of Human Services (First Works) | January 30, 2011 |
| State | Fluorescent Lighting | Dept. of Human Services (Med Quest) | January 30, 2011 |
| State | Sample Street Lighting LED & Induction | State Hwy Nawiliwili Road Lihue | March 29, 2011 |
| State | LED Lighting | Kapaa High School | June 16, 2011 |
| State | Induction Street Lighting | Island Wide | September 10, 2011 |
| State | Parking Lot Induction Lighting | Nawiliwili Harbor | October 02, 2011 |
| County | Fluorescent Lighting | Lihue Fire Station | June 09, 2011 |
| County | HVAC Controls | County Civic Center | August 14, 2011 |
| County | Fluorescent Lighting | Koloa Fire Station | July 30, 2011 |
| County | Fluorescent Lighting | Hanapepe Fire Station | September 24, 2011 |

ery successful in that it achieved all its objectives. Program objectives were: (1) use federal grant money to install cost-effective energy efficient technologies in state, county, and non-profit facilities; (2) reduce KIUC’s fossil fuel consumption; (3) reduce participants electric consumption; (4) stimulate the local economy by engaging local suppliers and contractor; (5) reduce CO2 emissions.

We spent the entire EECBG grant funds allotted for cost-effective energy efficient technologies in state, county, and non-profit facilities. Energy efficient technologies installed through this program are: (1) T-8 fluorescent lighting; (2) LED tube lighting; (3) Induction Street and parking lot lighting; (4) efficient air

conditioning; and (5) HVAC controls. We reduced KIUC’s annual fossil fuel consumption by 14,319 gallons of #2 diesel fuel, the islands annual energy consumption by 210,761 kWh, and Kauai’s GHG annual emissions by 185,069 lbs CO₂. Finally, this program helped to stimulate the local economy by partnering with local contractors, recyclers, waste disposal companies, and suppliers.

Table 14. Estimated Program Savings

| Number of Projects | Annual Energy Savings (kWh) | Life Cycle Energy Savings (kWh) | Annual Fuel Reduction #2 Diesel (gallons) | Life Cycle Fuel Reduction # 2 Diesel (gallons) | Annual GHG Reduction (lb’s CO²) | Life Cycle GHG Reduction (lb’s CO²) | Annual Cost Savings (\$) | Life Cycle Cost Savings (\$) |
|---------------------------|------------------------------------|--|--|---|---|---|---------------------------------|-------------------------------------|
| 16 | 210,761 | 3,004,255 | 14,319 | 204,113 | 185,069 | 2,889,641 | 88,164 | 1,257,629 |

d. Challenges

This program faced a few challenges: (1) endangered birds; (2) possible tariff revision; and (3) compliance with grant requirements.

We planned to install LED street lighting in state highways, however, due to the sensitivity of an endangered bird species to a specific light color (Kelvin Rating) of the LED street light (which mimics the color of the moon), we opted to use Induction street lighting instead. This change in technology from LED to Induction street lighting, allowed for a larger energy savings due to the lower cost of the induction lighting. We were able to install twice the as may induction street lights and save twice the energy.

We initially planned to retrofit unmetered street lights; however, this would have required a tariff revision. KIUC’s street light rates under tariff are based on the current street light technology and wattage ratings. The cost and time involved to conduct a tariff revision would have resulted in an un-cost-effective project. To avoid a tariff revision we decided to retrofit “metered” street lights in lieu of “unmetered” street lights. As a result we were able to retrofit 35 metered street lights island wide and 18 metered parking lot lights for the Nawilwili Small Boat Harbor.

In an effort to comply with EECBG “Buy America” requirement, KIUC conducted post inspections for every project. We found two non-profit projects in which KIUC purchased refrigeration units that were not made in America. In an effort to comply with the “Buy America” grant requirement and to avoid added labor cost associated with replacing the units, KIUC opted to use leverage funds to pay for the non-compliant refrigeration units. The remaining grant funds were used for a replacement project.

e. Lessons Learned

A lesson learned in program implementation is that a well designed program is not without challenges. Although we believed this program was well designed, we faced a few challenges as stated above in section *iv*, the “Challenges” section of this report.

As a result of the challenges, we learned that a backup plan is essential to have in place. A backup plan should include a list of replacement projects, corrective action procedures for non-compliance, and other unforeseen challenges.

f. Future Plans

KIUC plans to continue its current Commercial DSM program with the same objectives and goals as this program. KIUC’s Commercial DSM program provides incentives for the installation energy efficient cost-effective technologies in commercial facilities.

IV. Task 3: RESIDENTIAL RENTAL SOLAR HOT WATER HEATING PROGRAM AND STATE BUILDINGS RETROFITS

A. Program Overview

Funding for this program allowed KIUC to offer 2 separate programs: (1) State Energy Efficiency program; and (2) KIUC’s Rental Solar Water Heating (SWH) Program. The State Energy Efficiency program focused on state facilities and the KIUC’s Residential Rental Solar Water Heating Program focused on full time residential single family rental units.

The State Energy Efficiency program provided 100% of the cost to install any energy efficient technology in State of Hawaii facilities. An energy audit determined the measure type and its cost effectiveness.

KIUC’s Rental Solar Water Heating Program provided 100% of the cost to install solar water heaters for homeowners of single-family residences that are used as fulltime rentals. Owner occupied dwellings; multifamily dwellings including apartment buildings and “stack housing”, and single-family homes with less than a month-to-month lease were ineligible.

Program objectives and goals will have a positive affect statewide. Program objectives and goals are to raise awareness, reduce fossil fuel dependence, reduce energy consumption, reduce carbon emissions, and stimulate the economy.

KIUC and other utilities in Hawaii have established Residential Solar Water Heating System Standards and Specifications that are used for systems installed through their DSM programs. These systems must supply a minimum of 90% of yearly hot water needs. KIUC budgeted \$165,000 for the cost of installing 22 solar water heating systems under this program. System pricing was based on a number of factors; (a) Household

Size: Pricing could not be predetermined as system sizes were customized based on number of occupants (*80 gallon system for a household of 4 occupants or less, 120 gallon system for a household of 5 to 6 occupants. For households larger than 6, systems are customized to provide 20 gallons of hot water per person per day.*) The larger the system the higher the price. (b) Solar Isolation Zones dictated panel size and count which factored into the total cost of the system. (c) Building Type affected pricing and cost depending on the level of work and labor required to install a system in a particular building. Final system sizing and price was determined during step 10 of the rebate application process.

The estimated price per water heater system used in the proposal was \$7,500, which is the average Total Participant Cost for systems installed through the KIUC solar incentive programs in 2009; however, the average system price under this program was \$6,730 per unit. KIUC inspected 100% of systems installed to assure compliance with KIUC solar water heating standards and specifications and grant requirements. Since all KIUC Participating Contractors must adhere to a set of Solar Standards all systems installed through this program are qualified. Program participants are encouraged to acquire multiple bids and choose a contractor based on a number of factors, including installation cost. Landlords participating in this program were required to choose a KIUC participating solar water heating contractor to install their system on their rental property.

Program participation was limited to the first 22 qualified landlords. KIUC's participating solar water heating contractor installed all of the systems under this program. Payments for these projects were disbursed upon final verification of the projects.

a. Objectives

- Reduce Kauai's fossil fuel dependency by an estimated 56,430 barrels of #2 diesel in 15 years.
- Help reduce Kauai's CO2 emissions by an estimated 1,178,480.16 lb's of CO2 in 15 years.
- Help reduce Kauai's energy consumption by an estimated 0.84 mW or 732,395 kW in 15 years.
- Reduce the average electric bill by an estimated \$806 a year.
- Stimulate Kauai's weakened economy.
- Penetrate a historically hard to reach market.

Electric water heating on Kauai is the single highest expense for the residential rate class. 40% to 50% of the average monthly bill is dedicated to electric water heating. 41% of the single-family homes on Kauai are not owner occupied. Past and current efforts by KIUC have not been successful at attracting landlords to install solar water heaters in rental properties. Between 1998 and 2003 KIUC offered 70% rebates to landlords who installed solar water heating in full time single-family rentals. Only 33 landlords took advantage of this opportunity. Between 2006 and 2009 KIUC has offered no interest loans towards the installation of solar water heaters in single family homes. Only a handful of landlords have taken advantage of this opportunity. KIUC believes that it will take 100% rebate levels to reach this market as landlords have no incentive to install solar water heating on homes that they do not live in or pay the electric bill

for. Due to the size of the potential market and the high cost of solar water heating, KIUC is unable to fund 100% of the cost of solar water heating for this market even in small increments.

| Table 14. Program Objectives | |
|---|-----------------------|
| Program Objectives | Target / Goals |
| Expected Total Number of Rebates | 22 |
| Expected Number of Systems Installed | 22 |
| Total Capacity of Solar Thermal Systems Installed (sq. ft) | TBD |
| Average kW Load Reduction For Expected Number of Systems Installed | 9.23 |
| Expected Lifetime Energy Savings (kWh) For Expected Number of Systems Installed | 832,395 |
| Expected Lifetime Fuel Reduction (# Barrels # 2 Diesel) | 56,837 |
| Expected Lifetime Reduction (Tons of CO2 equivalent) | |
| <i>(Note: Aggregate value of GHG emissions include: CO2, CH4, N2O)</i> | 589.24 |
| Expected Lifetime Reduction (lb's of CO2 equivalent) | |
| <i>(Note: Aggregate value of GHG emissions include: CO2, CH4, N2O)</i> | 1,178,480.16 |

b. Program Budget

| Table 15. Program Budget | |
|--|---------------------|
| Budget Item | Amount |
| State Government Energy Efficiency Program | \$25,000 |
| Residential Rental Solar Water Heating Program | \$165,000 |
| Marketing | \$10,000 |
| Total Budget | \$200,000 |
| KIUC Leverage Funds | \$633.51 |
| Total Program Cost | \$200,633.51 |

c. Timeline Overview

| Table 16. Program Timeline | |
|-----------------------------------|-----------------------------|
| Mile Stone | Date Achieved |
| Program Proposal Submittal | October 15, 2009 |
| DBEDT Contract Executed | May 03, 2010 |
| Facility Audits | April 2010 – September 2011 |
| Measure Installations | April 2010 – January 2012 |
| Final Inspections | April 2010 – January 2012 |
| Program Completion | January 2012 |

d. Program Implementation

- Program implementation for the State Energy Efficiency Program resided in the Energy Services Department. KIUC’s Commercial Energy Services Representative coordinated with the state on all projects.
 - The Commercial Energy Services Representative screened projects to ensure total life cycle benefits are equal to or greater than the total project costs.
 - KIUC’s Commercial Energy Services Representative provided state facilities representatives with a list of qualified Trade Allies that will be used to install measures.
 - Participants were instructed to solicit bids from participating contractors and choose a participating supplier for their project.
 - KIUC reviewed each bid to verify cost of the project and verify that the equipment meet KIUC requirements.
 - If KIUC determines that the total life cycle benefits are equal to or greater than the total project costs, then the participant were instructed to arrange installation with their contractor.
 - KIUC was notified once measures were completed and conducted post – installation inspection.
 - KIUC and Participant signed off on the completed project.
 - KIUC paid the suppliers and contractors directly.

- Program implementation and management for the Residential Rental Solar Water Heating Program resided with KIUC Energy Services Department.
 - 100% rebates were awarded to the first 22 qualified applicants.
 - Participation was based on a first-come, first-served basis and compliance with eligibility rules and requirements.
 - A review of the application was part of the program processes for quality assurance, consistency, and program integrity.

- Landlords were instructed to solicit bids from Participating Solar Water Heating Contractors.
- Once the landlord selected a participating solar water heating contractor, KIUC conducted pre-installation verifications.
- Upon completion of the solar water heating installation, a post verification of the installed system was conducted in an effort to ensure system integrity, consistency, and compliance with KIUC's Solar Water Heating Standards and Specifications and grant requirements.

e. Program Process and Procedures

- Participation was based on first-come, first-served basis. Participation was limited to the first 22 qualified landlords.
- Landlord contacted KIUC to request program information.
- KIUC sent program information, serialized program application, and a request for proof of full time rental (rental agreement) for the specific account.
- Landlord completed Serialized Application and mailed it with a copy of their Long Term Rental Agreement to KIUC.
- KIUC reviewed program applications, and Long Term Rental Agreement.
- KIUC personnel cross references specific account information with KIUC database to ensure the specific electric account is under the current tenants' name.
- Cross-reference Tenants name on Rental agreement and KIUC program application with electric account for account billing history.
- If the landlord did not qualify.
- Denial Letter was sent to the landlord explaining disqualification factors.
- If the landlord qualified.
- Pre-Approval Letter was sent to the applicant.
- Landlord solicited bids from KIUC Participating Solar Contractors.
- Landlord selected a KIUC Participating Solar Water Heating Contractor.
- Participating Solar Water Heating Contractor forwarded incentive applications, sizing calculations, and payback worksheets, to KIUC.
- KIUC's Energy Specialist reviewed, sizing calculations, and payback worksheets.
- KIUC Energy Specialist scheduled and conducted pre-verification with landlord, and tenant.
- Authorization Letters were sent to landlords and solar contractors committing program funds for the installation of solar water heater.
- Participating Solar Water Heating Contractor installed SWH's.
- Upon project completion, Participating Solar Water Heating Contractors alerted KIUC by submitting a post verification sheet.
- KIUC scheduled and conducted post verification with landlord and tenant.
- If SWH complied with KIUC's Solar Water Heating Standards & Specifications and grant requirements.
 - Landlord signed Verification of Solar Water Heater Installation Form.
 - KIUC Energy Specialist signed Verification of Solar Water Heater Installation Form.
 - KIUC sends payment directly to the Participating Solar Water Heater Contractor.

f. Program Partners

| Table 17. Program Partners | | | |
|---|-------------------------------|--|----------------|
| Company | Type | Address | Contact |
| 808 Plumbing | Contractor | 4254 Kailewa Street Lihue HI 96766 | (808)635-0501 |
| Arroyo's Plumbing | Contractor | 3082B Peleke Street Lihue HI 96766 | (808) 634-5635 |
| Divan Plumbing | Contractor | 5721 Kaehulua Road Kapaa HI 96746 | (808) 822-6925 |
| Peyton's Plumbing | Contractor | Po Box 787 Hanapepe HI 96716 | (808) 335-3859 |
| Sun King | Contractor | Po Box 330879 Kahului HI 96733 | (808) 245-6570 |
| Tome's Plumbing | Contractor | Po Box 308 Eleele HI 96705 | (808) 335-3550 |
| Abe's Auto Recyclers Puhi Metals | Waste Disposal & Recycling | 3951 Puhi Road Lihue HI 96766 | (808)632-0697 |
| HAZTECH Environmental | Waste Disposal & Recycling | 94-110 A Leokane St. Waipahu HI 96797 | (808)671-1985 |
| Energy Saving Lighting, LLC (Vendor for State Energy Efficiency Program) | Material Suppliers | 12100 Onion Hollow Run Austin TX 78739 | (808)205-1799 |

g. Eligibility Rules

Eligibility rules and requirements for the State Energy Efficiency Program follows the same procedure as Task 2 section III State, Local Government, and Non-profit Program page 13 “f” of this document. Listed below are the Eligibility rules and requirements for the Residential Rental Solar Water Heating Program:

- First-Come, First-Served
- Completed applications are reviewed based on first-come, first-served policy.
- Limited to Full time / long-term rental.
 - Renter occupied single-family dwellings only; multifamily dwellings including apartment buildings and “stack housing” are ineligible. Landlord cannot live in the home receiving solar system.
 - Electric account must be in the tenants' name.
 - Rental unit must have separate electric account from the main dwelling.
 - Rental unit must be occupied by applying tenant for a minimum of 6 months prior to submittal of application.
 - Rental unit must be detached, no ADU's.
 - Minimum 2 household members at the time of application.
 - Minimum 2 bedroom rental units.
 - Minimum month-to-month written rental agreement.
 - Vacation rentals do not qualify.
- Electric water heater retrofits only.
 - Rental unit must have an existing operational electric resistance water heater.
 - Rentals with existing gas / propane water heaters do not qualify.
 - Existing non-functional solar water heaters do not qualify.

- Solar Water Heaters must meet all state and local codes and conform to Hawaii Residential Water Heating Standards, which require a minimum solar fraction of 90%.
- Solar panels must conform to OG-300 certification.
- Program will spread the benefits as widely as possible
 - One solar system per qualified landlord.

h. Recycling and Waste Disposal Plan

Recycling and waste disposal plan for the State Energy Efficiency Program follows is as described in Task 2 section III State, Local Government, and Non-profit Program page 14 “g” of this document.

Recycling and waste disposal plan for the Residential Rental Solar Water Heating Program was handled through the participating contractors. All metal waste (copper, and aluminum,) were recycled through the recycling company. Packing materials (boxes, packing foam, and wooden pallets) were recycled and or retained and reused by the contractors and or the program participants.

i. Marketing & Outreach

- Marketing were by way of collateral materials, print advertising, bill messages and inserts, and KIUC Participating Contractors.
- Program announcement were by way of press release.
- Implementation date and depletion of program funds.
- KIUC provided status of available funding upon customer request.
- KIUC relied on a first-come, first-serve, policy for application consideration.
- Disclaimer:

Rebate applications will be accepted and processed on the first-come, first-served basis until all available funds have been depleted. Kauai Island Utility Cooperative makes no claims to the total number of rebates available and is not obligated to pay a rebate. Kauai Island Utility Cooperative reserves the right to discontinue the program without notice and Kauai Island Utility Cooperative does not warrant or guarantee that any specific energy savings will result from the installation of energy efficient appliances. Neither Kauai Island Utility Cooperative nor any of their officers, agents, and employees is responsible or liable for any claims, loss, or damage arising from or connected with the equipment of installation whether in contract or tort, including negligence and strict liability. In no event will Kauai Island Utility Cooperative’s liability for property loss, damage or personal injury resulting from activities under the State Energy Efficiency Program exceed the total value of the incentive amount available.

j. Oversight

To ensure compliance with KIUC’s Solar Water Heating Standards and Specifications and grant requirements, KIUC inspected 100% of the systems installed through this program. KIUC withheld payments for systems that were not compliant with KIUC’s Solar Water Heating Standards & Specifications and

EECBG grant requirements. KIUC also provided training for tenants and landlords on proper system operation and preventive maintenance practices to ensure maximum benefits can be achieved.

k. Compliance with National Policy Requirements

The ARRA_SEP funding required KIUC to comply with National Policy Requirements. We were required to comply with the National Historical Preservation Act (NHPA), Davis Bacon Act (DBA), Buy America Act, and the National Environmental Policy Act (NEPA).

- **National Historic Preservation Act (NHPA) – No Action Required.**
The projects under this program did not require any action under the NHPA because the project scope did not include historical building sites.
- **Davis-Bacon Act (DBA)**
Compliance with DBA required KIUC to collect Davis Bacon Certified Payroll forms from participating contractors. In an effort to comply with this requirement, KIUC collected Davis Bacon Certified Payroll forms on a weekly basis. Most projects took less than a week so the majority of the forms collected were collected after the completion of the projects.
- **Buy America Act**
Compliance with Buy America Act required KIUC to ensure all materials used under this grant were made in America. To ensure compliance with this requirement, KIUC collected manufacturers information on the products and materials used on every project. In addition, KIUC conducted site visits to ensure compliance with this requirement.
- **National Environmental Policy Act (NEPA)—Categorical Exclusion Granted**

B. Accomplishments

a. Overall Results and Success

Overall this program was very successful in that it exceeded all of its program objectives. Our contract (State of Hawaii contract No. 59171) with the State of Hawaii, committed KIUC to 22 SWH units.

This program forecasts an energy savings of 832,395 kWh, a fuel reduction of 56,430 barrels of #2 fuel oil, and GHG emissions reduction by 1,178,480.16 lb's of CO2.

Under the Residential Rental SWH there were 26 units installed, exceeding our goal by 4 units. The State Energy Efficiency Programs life cycle savings is estimated to save 370,473 kWh, and the Residential Rental SWH Program has an estimated life cycle savings of 988,650 kWh. The aggregate life cycle energy savings is estimated to save 1,359,123 kWh, exceeding our initial goal by 526,728 kWh. The estimated life cycle GHG or carbon reduction is 2,447,441 lb's of CO2

exceeding our goal by 1,268,960.84 lb's of CO2. Finally, as a result of the efficient measures installed through this program, we will be able to reduce Kauai's oil dependency by 92,340.53 gallons of #2 fuel oil, exceeding program goals by 35,910.53 gallons of fuel.

Table 18. Estimated Program Savings

| Program | Annual Energy Savings (kWh) | Life Cycle Energy Savings (kWh) | Annual GHG Reduction (lb's CO²) | Life Cycle GHG Reduction (lb's CO²) | Annual Fuel Reduction (Gallon) | Annual Fuel Reduction (Gallons) | Annual Cost Savings (\$) | Life Cycle Cost Savings (\$) |
|--|------------------------------------|--|---|---|---------------------------------------|--|---------------------------------|-------------------------------------|
| State Energy Efficiency Program | 18,523.65 | 370,473 | 33,356.46 | 667,129.25 | 1,258 | 25,170 | \$7,409 | 148,189 |
| Residential Rental Solar Water Heating Program | 65,910 | 988,650 | 118,687.43 | 1,780,311 | 4,478 | 67,170 | 26,364 | 395,460 |
| Total Estimated Savings | 84,433 | 1,359,123 | 152,044 | 2,447,441 | 5,736.03 | 92,340.53 | 33,773 | 543,649 |

b. Projects Timeline

Table 19. Timeline Projects Accomplishments

| Sector | Project Type | Facility | Completion Date |
|---------------|---------------------|---|------------------------|
| State | LED Lighting | State Hwy Division Office | September 22, 2011 |
| Residential | Solar Water Heating | 4831 Ohu Road Kapaa HI 96746 | August 23, 2010 |
| Residential | Solar Water Heating | 3855A Uakea Pl. Lawai HI 96765 | September 14, 2010 |
| Residential | Solar Water Heating | 5431 Kaehulua Road Frnt. Kapaa HI 96746 | September 20, 2010 |
| Residential | Solar Water Heating | 304 Molo Street Kapaa HI 96746 | September 22, 2010 |
| Residential | Solar Water Heating | 800 Akalei Street Eleele HI 96705 | September 25, 2010 |
| Residential | Solar Water Heating | 2740A Wawae Road Kalaheo HI 96741 | October 07, 2010 |
| Residential | Solar Water Heating | 2-3070A Kaunualii Hwy Kalaheo HI 96741 | October 21, 2010 |
| Residential | Solar Water Heating | 5455B Kaehulua Road Kapaa HI 96746 | November 07, 2010 |
| Residential | Solar Water Heating | 2576B Pua Road Kalaheo HI 96741 | November 17, 2010 |
| Residential | Solar Water Heating | 8906A Kekaha Road Kekaha HI 96752 | November 19, 2010 |
| Residential | Solar Water Heating | 6458 Ahele Drive Kapaa HI 96746 | December 10, 2010 |
| Residential | Solar Water Heating | 5106 Kawaihau Road Kapaa HI 96746 | January 7, 2011 |
| Residential | Solar Water Heating | 8459 Elepaio Road Kekaha HI 96752 | January 01, 2011 |
| Residential | Solar Water Heating | 5605 Honua Road Kapaa HI 96746 | December 15, 2010 |
| Residential | Solar Water Heating | 5715 Tapa Street Koloa HI 96756 | January 28, 2011 |
| Residential | Solar Water Heating | 3370 Iwipoo Road Kalaheo HI 96741 | December 10, 2010 |

| | | | |
|-------------|---------------------|------------------------------------|-------------------|
| Residential | Solar Water Heating | 5070 Nonou St. Frnt Kapaa HI 96746 | December 6, 2010 |
| Residential | Solar Water Heating | 4441 Iona Place Hanapepe HI 96716 | May 03, 2011 |
| Residential | Solar Water Heating | 6226 Helena Place Kapaa HI 96746 | May 03, 2011 |
| Residential | Solar Water Heating | 2299 Peleleu St. Kapaa HI 96746 | May 31, 2011 |
| Residential | Solar Water Heating | 5023D Moa Street Kapaa HI 96746 | July 05, 2011 |
| Residential | Solar Water Heating | 4-633 Kuhio Hwy Kapaa HI 96746 | October 14, 2011 |
| Residential | Solar Water Heating | 327 Kaulana Road Kapaa HI 96746 | January 04, 2012 |
| Residential | Solar Water Heating | 5350 Malino Road Koloa HI 96756 | January 14, 2012 |
| Residential | Solar Water Heating | 8529 Elepio Street Kekaha HI 96752 | January 13, 2012 |
| Residential | Solar Water Heating | 1936 Hokulei Street Lihue HI 96766 | February 03, 2012 |

c. Challenges

This program presented challenges as it progressed. There were issues with scheduling due to material availability. This resulted in delayed installations and unhappy customers. The best KIUC could do was not to resolve the problem but to accommodate both customer and contract by extending the allowable installation time from 45 days to 60 days. In some instances, we issued more than 60 days extension.

d. Lessons Learned

Due to the challenges faced in this program we experienced delays in installation which resulted in unhappy customers and contractors. We learned that scheduling and material delays are out of our control. So in lieu of attempting to resolve the problem we simply accommodated the customers and the contractors which at the very least made for happy customers.

e. Future Plans

We plan on continuing to offer our current SWH programs. We are considering other loan options and program changes that will enhance our program and increase program participation.