# Final Report: Weatherization and Energy Conservation Education and Home Energy and Safety Review in the Aleutian Islands

**August 30, 2011**


## Provided by the Aleutian Pribilof Islands Association
**Contract DE-EE0002524.000**
**Written by Bruce Wright, Senior Scientist**


**Introduction:** The Aleutian Pribilof Islands Association (APIA) has been working to provide a comprehensive energy program for the Aleut Region, the Aleutian and Pribilof Islands. The program consists of identifying and promoting the use of renewable energy, but energy conservation always is longest lasting and most economical way of reaching our goal of reducing fossil fuel usage in the region. This project resulted from a proposal submitted under the Funding Opportunity Number: DE-PS36-09GO99022, CFDA Number: 81.087, Issue Date: March 16, 2009. The project began January 2010 and ended 6/30/2011. This final report describes some of the project challenges, the project objectives and how APIA was successful in meeting and exceeding the project objectives.

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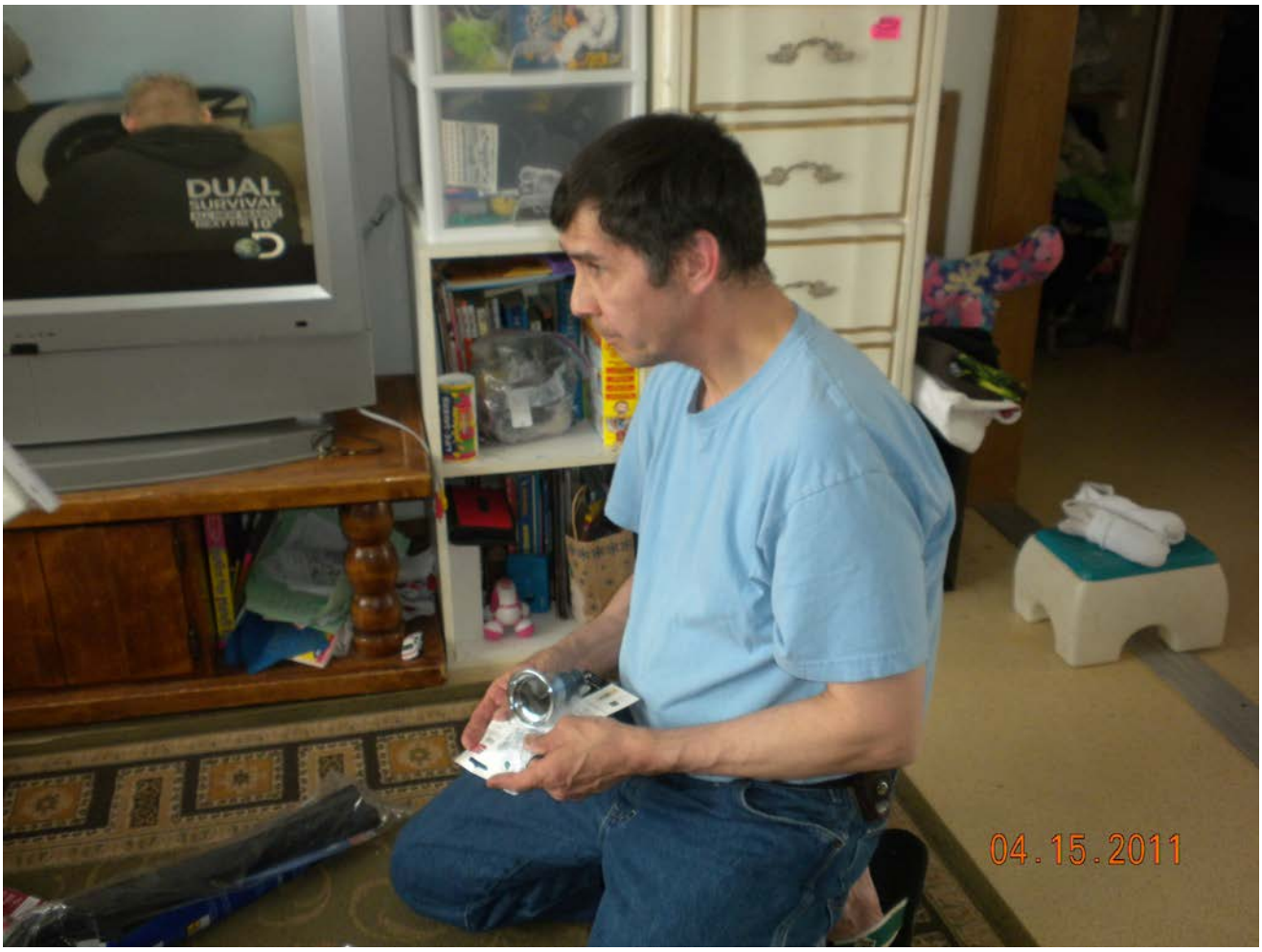


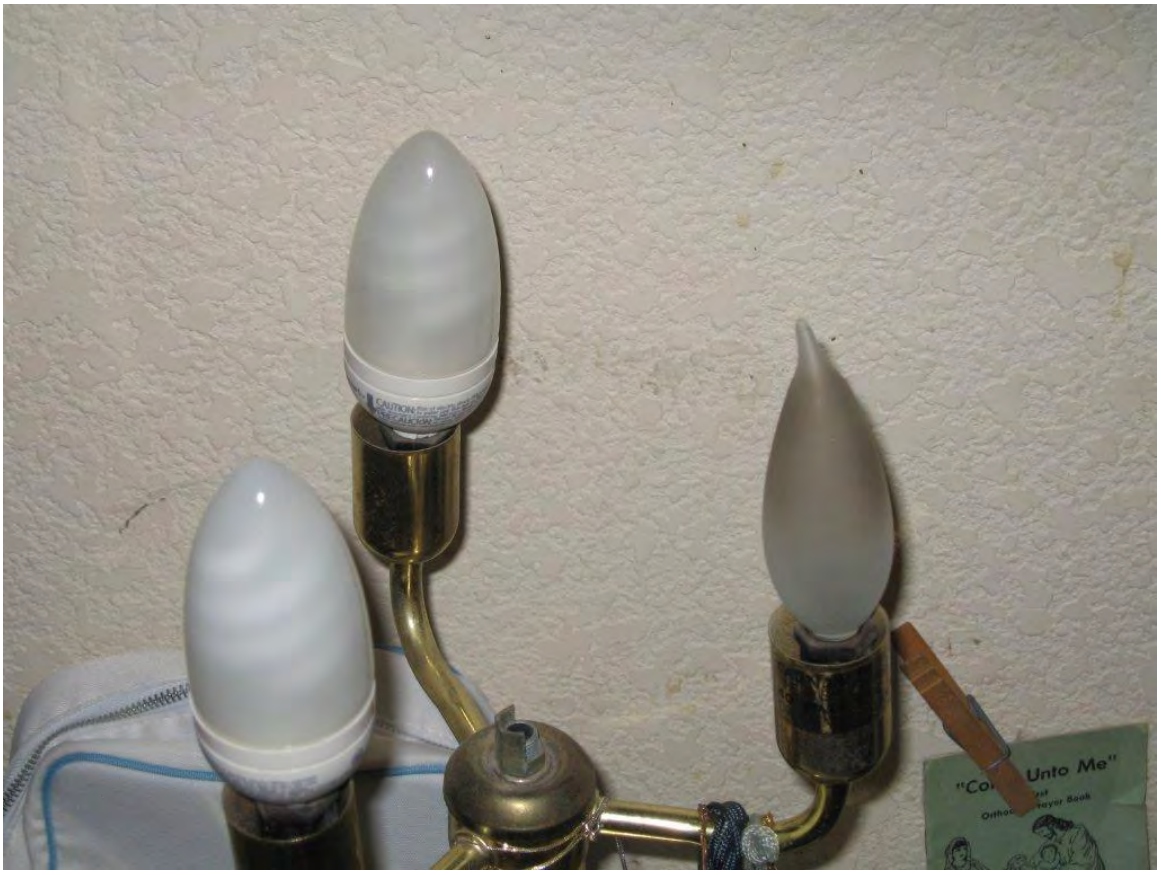
King Cove resident learning about the advantages of using a low-flow shower head.

**Project Description**

Aleutian/Pribilof Islands Association, Inc. (APIA) hired three part-time local community members that desired to be energy technicians. The energy technicians were trained in methods of weatherization assistance, energy conservation and home safety. They developed a listing of homes in the region that required weatherization, and conducted on-site weatherization and energy conservation education and home energy and safety reviews in the communities of Akutan, False Pass, King Cove and Nelson Lagoon. Priority was given to these smaller communities as they tend to have the residences most in need of weatherization and energy conservation measures. Local residents were trained to provide all three aspects of the project: weatherization, energy conservation education and a home energy and safety review.

**Background**
The Aleutian/Pribilof Islands Association, Inc. is the federally recognized tribal organization of the Aleut people in Alaska. APIA's mission is to promote the overall economic, social, and cultural development of its beneficiaries, and to provide the best health care and social services possible for the Aleut people and all Native residents of the Aleutian/Pribilof Islands region. *Unanga* territory in Alaska encompasses the Aleutian Islands, the Pribilof Islands, and the Alaska Peninsula west of Stepovak Bay, a region of over 100,000 square miles. Our communities are the most remote in Alaska, and are not linked by a central road system. They are between 570 and 1200 air miles from Anchorage, the closest transportation center.

This project was funded by the Department of Energy (DOE) to service at least three Aleut communities, but APIA serviced four traditional *Unanga* (Aleut) communities including Akutan, False Pass, King Cove and Nelson Lagoon. The community members served by this project included, but were not limited to all Unanga tribal members and American Indian and Alaska Native residents.



In Akutan, Antone installed two compact fluorescent lights in this chandelier. The third is a burned out incandescent light, which was also replaced.

**Project Objectives**
To increase the human capacity for implementation of a Tribal Weatherization Assistance Program, four project objectives were identified.

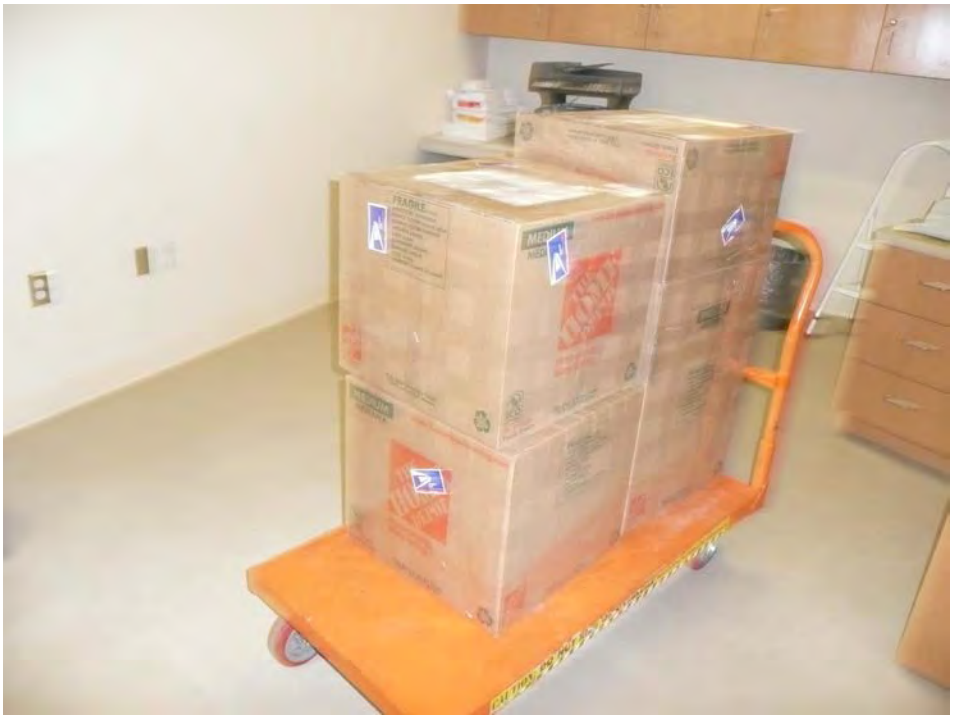
***Objective 1:*** Identify and hire three part-time local community members that desire to learn weatherization techniques as Energy Technicians.

***Objective 2:*** Train Energy Technicians in methods of weatherization assistance and energy conservation.

***Objective 3:*** Develop an active listing of regional residential homes that require weatherization.

***Objective 4:*** Energy Technicians will perform weatherization on identified regional residential homes.

Once achieved, these goals and objectives build capacity among the tribes in the area of weatherization. Trained energy technicians will be more employable by APIA or the local Tribal Administration to perform weatherization services for the LIHEAP (Federal) or AKHAP (State of Alaska) weatherization programs, as well as contract with the Aleutian Housing Authority (AHA) to perform energy audits for units located in the region.


Boxes of energy savings supplies readied for shipment to the Aleutians.

**Project Approach**
This project will be administered from the Aleutian/Pribilof Islands Association's central office in Anchorage, where the Community Services and Administration departments are located. The APIA energy program manager, Bruce Wright, directed this project from the APIA central office in Anchorage. Travel consisted of Wright doing site visits and requiring energy technicians to secure training in Anchorage and Wasilla or to hold training sessions in their communities. Project success was measured by reports, communications from the energy technicians and site inspections.

**Impact Indicators**
1. Increase in partnerships established.
2. Increase in leveraged resources.
3. Increase in number of regional persons possessing core competencies for the Weatherization Assistance Program.

1 and 2. Increase in partnerships established and leverage resources: The Aleutian Housing Authority (AHA) learned of this project and submitted protest letters to the APIA CEO who followed up with a conciliatory letter and resulted in no further protests from AHA. Ultimately, AHA provided names of people who had some experience with the Housing Authority and construction savvy, and some were already trained in energy conservation. APIA hired three technicians with some AHA construction experience, but two energy technicians needed additional energy conservation training which was provided by this project.

Regional Tribes, and especially in the smaller communities, were contacted to determine if anyone was interested in becoming an energy technician for this project. A notice of employment was distributed to the Tribes and communities in the Aleut Region (see APPENDIX A). The communities of Nikolski and Atka did not have anyone available to work on the project; even the high school kids were predisposed with school and summer fishing jobs. A few people living in Anchorage were interested until the job requirements, salary, relocation parameters were discussed. Finally, five qualified people replied with interest in the energy technician position one each in the communities of Akutan, False Pass and Nelson Lagoon and two people from King Cove, one from each of the two Tribes. Based on meeting physical requirements (lifting and installations) and experience, three technicians were hired one from each Akutan, False Pass and King Cove. The Nelson Lagoon applicant was too busy to make a commitment to work for pay, but agreed to make installation of energy efficient supplies and accomplish the energy conservation education and safety review in his free time on weekends without pay.

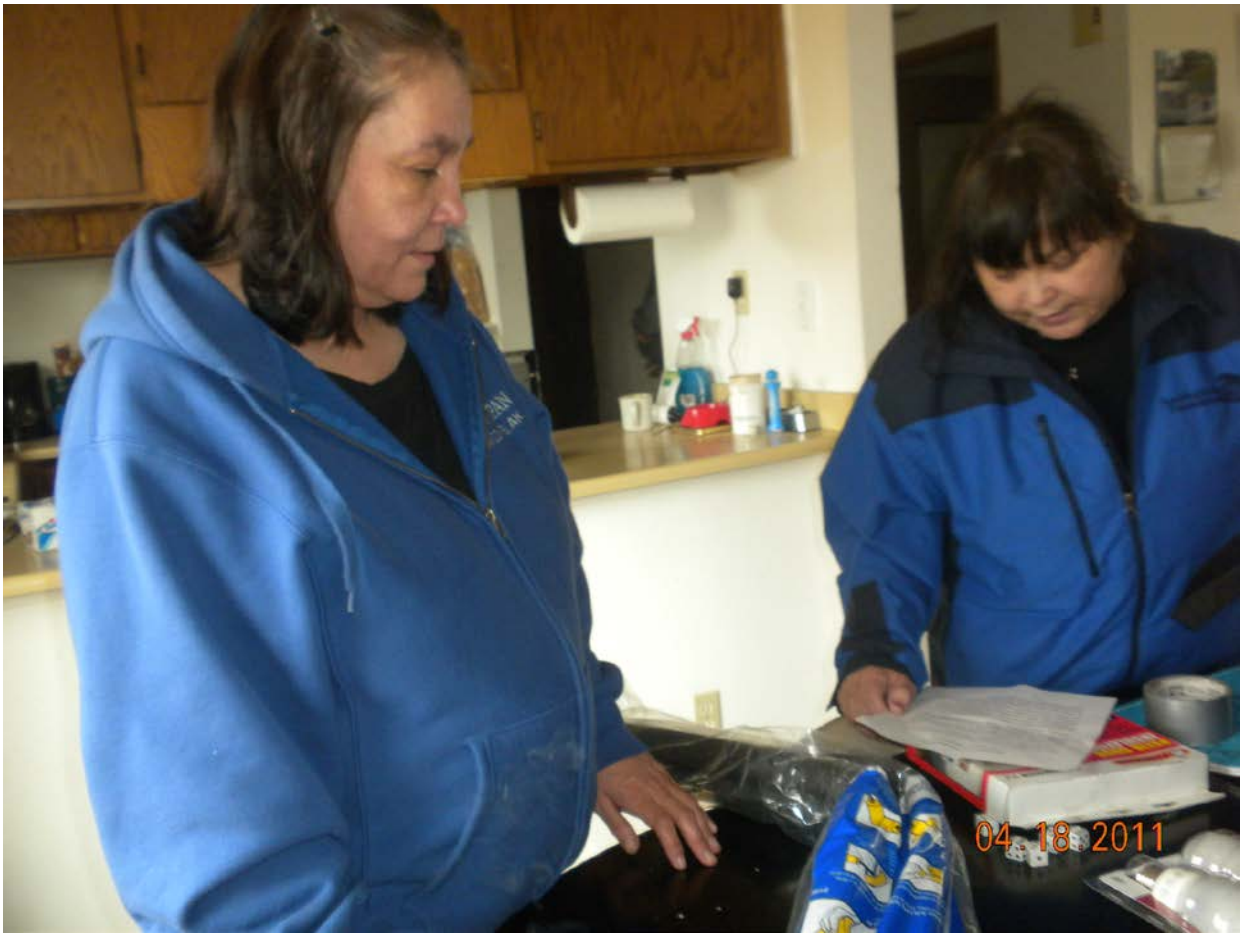
The Belkofski Village Council of King Cove agreed to assist in arranging a home energy conservation meeting entitled Energy Efficiency Workshop (see APPENDIX D). The meeting was attended by a dozen people who attended the two day course. The topics covered were Building Science Basics, Airtightness, Ice Dams, Lighting and Appliances, Heating and Hot Water, Doors and Windows, Insulation and Ventilation. Air tightness and ventilation were especially of interest because people in the wet Aleutians have problems with windy damp weather and mold. The meeting was set up as a regional meeting, but only one person from outside King Cove attended; they were from Cold Bay. The meeting training was provided at no

charge from the Alaska Craftsman Home Program, Inc, including the trainer. The funding for this was provided by the Alaska Housing Finance Corporation.

The Akutan technician, Antone Shelikoff and the Program Manager, Bruce Wright, traveled to Wasilla to attend the Energy Efficiency Workshop and earn energy efficiency certifications. The training was free of charge with funding from Alaska Housing Finance Corporation.

3. Increase in number of regional persons possessing core competencies for the Weatherization Assistance Program.

The energy technician from False Pass, Siri Goulette, already had certifications and was trained by the Alaska Housing Finance Corporation and worked for the Aleutian Housing Authority during the summer; she already had the core competencies. The technicians from King Cove, Raymond Dushkin, and Akutan and the 11 residents from Cold Bay and King Cove who attended the Energy Efficiency Workshop and received certifications increased their core competencies for the Weatherization Assistance Program. They also learned about the energy conservation weatherization programs operated by the state of Alaska.



**Tasks Performed**

***Objective 1:*** Identify and hire three local community members that desire to learn weatherization techniques.

*Activities:*

1. Advertised available positions in appropriate venues.
2. Interviewed and hired individuals in Akutan, False Pass and King Cove. The Akutan energy technician traveled to Wasilla for a week training session. The King Cove energy technician was trained in King Cove at a workshop sponsored by this project and the Alaska Housing Finance Corporation. The False Pass energy technician had received all the training and energy certificates from previous work/training sponsored by the Aleutian Housing Authority.

The local energy technicians are community members from each of the villages, and they are now the local energy conservation expert with the capacity and expertise to better understand how local homes can be weatherized and people can conserve energy.

*Recommendations:*

The initial effort was to prioritize service to the smaller communities in the region. Additional funding is needed to provide these services to the remaining Aleutian and Pribilof Island communities.

***Objective 2:*** Train Energy Technicians in methods of weatherization assistance.

*Activities:*

Trained the energy technicians; they attended an Energy Efficiency Workshop (see APPENDIX D). The topics covered were Building Science Basics, Airtightness, Ice Dams, Lighting and Appliances, Heating and Hot Water, Doors and Windows, Insulation and Ventilation. The meeting training was provided at no charge from the Alaska Craftsman Home Program, Inc, including the trainer. The funding for this was provided by the Alaska Housing Finance Corporation. The training included information on skills, safety precautions, and competencies needed to carry out the tasks, and this information was very useful in completing the home safety reviews accomplished by the energy technicians.

***Objective 3:*** Develop an active listing of regional residential homes that require weatherization.

*Activities:*

1. A variety of techniques were used to contact home owners and the Akutan energy technician was particularly shy is making these contacts. With some coaching, he was finally comfortable with making contacts with all the Akutan residents and only one resident was a little gruff. All the residences in Akutan and False Pass were served, and about 80% of the residences were served in King Cove. Some of the homes needed levels of work beyond this project's capabilities and these residences were referred to the Aleutian Housing Authority and some were directed to

apply for state of Alaska funding through the Alaska Housing Finance Corporation energy conservation programs (see http://www.ahfc.state.ak.us/energy/weatherization_rebates.cfm.

APIA has worked closely with the Aleutian Housing Authority lately to get home energy raters trained to rate homes in the Aleutian and Pribilof Islands. A home energy rating is a great educational tool that informs residents how to save energy and money and it's a requirement for some weatherization rebate programs (see http://www.ahfc.state.ak.us/energy/home_rebate.cfm).

*Recommendations*: Try to establish a cooperative working relationship with the local housing authority early in the project if not involve them in the project planning. This may help resolve territorial concerns and leverage resources.

***Objective 4:*** Energy Technicians will perform weatherization on identified regional residential homes.

*Activities:*
1. The energy technicians were co-managed by the Tribal authority, usually the Tribe's IGAP coordinator and the APIA project manager. This allowed for buy-in by the local Tribes and in some cases allowed for use of local resources such as the space for training sessions.

2. All the residences in Akutan and False Pass were served, and about 80% of the residences were served in King Cove. Some of the homes needed levels of work beyond this project's capabilities and these residences were referred to the Aleutian Housing Authority and some were directed to apply for state of Alaska funding through the Alaska Housing Finance Corporation energy conservation programs (see http://www.ahfc.state.ak.us/energy/weatherization_rebates.cfm.

3. Compile data on all of the homes and public facilities in the service communities in order to determine further needed efforts.

*Activities:* All the residences in Akutan and False Pass were served, and about 80% of the residences were served in King Cove. Some of the homes needed levels of work beyond this project's capabilities and these residences were referred to the Aleutian Housing Authority and some were directed to apply for state of Alaska funding through the Alaska Housing Finance Corporation energy conservation programs (see http://www.ahfc.state.ak.us/energy/weatherization_rebates.cfm.

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The project manager was required to travel to the communities to do some on-the-job training of the appropriate methods of implementation and safety.

**Energy Savings, Cost Savings and $CO_2$ Reduction**

A total of 66 homes were served by this project. The below table lists the supplies installed in the homes and estimates of energy saved broken into groupings; water and hot water conservation, lights (CFLs and LEDs) and weather-stripping and other air infiltration control supplies:

| Purchased Weatherization Product | Number | Energy Used |
|---|---|---|
| Water-saver shower heads | 45 | 30% less |
| Toilet valve replacement kits | 55 | |
| Water pipe insulation kits (4 each) | 73 | |
| Toilet tank insulation liners | 14 | |
| Hot water tank insulation kits | 36 | |

(together these save 200-1,400 KwH/yr/home) 200 KwH/yr x 66 homes = 13,200KwH/yr

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| Purchased Weatherization Product | Number | Energy Used | Kilowatt Hour Saved | |
|---|---|---|---|---|
| | | | Each | Total |
| CFLs and LEDs | 882 | 81% less | 61 watts | 53.8kW |

(Replacing a 100 watt incandescent light with a 23 watt CFL saves $65/yr.)
53.8kW x 24 hrs. x 365 days = 471.3 KwH/yr

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| | |
|---|---|
| Window shrink kits | 48 |
| Cans spray foam | 299 |
| Door draft stoppers | 62 |
| Duct and weatherproof tapes | 88 |
| Plastic vapor barrier rolls | 32 |
| Door thresholds | 18 |
| Foam tape weather-stripping | 116 |
| Caulking tubes (silicone and paintable) | 356 |
| Electric foam outlet sealers | 820 |

These items can save 10-25% of heating costs (use 18%)
.18 x 66 homes x 10,896 kWh* X 8760= 11,345 KwH/yr

*average annual electricity consumption for a U.S. residential utility customer was 10,896 kWh

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No data was available to reasonably estimate savings from power strip and LED task light

| | |
|---|---|
| Power strips** | 72 |
| LED task lights (rechargeable) | 51 |

(**Alaskans spend more on powering home entertainment systems when they are off than when they are in use. This phantom power can be controlled by using power strips that are turned off when the equipment is not in use.)

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ESTIMATED TOTAL ENERGY SAVED: 13,200KwH/yr + 471.3 KwH/yr + 11,345 KwH/yr = 25,016 KwH/yr.

Eventually these savings may evaporate as more and more electrical appliances and equipment get used in homes. This is referred to as Energy Efficiency and the Rebound Effect, where installing energy-efficient appliances leads to an increase in energy use, because being energy-efficient makes energy cheaper, or makes consumers feel less guilty about using energy.

Sources: http://en.wikipedia.org/wiki/Efficient_energy_use, http://www.davidsuzuki.org/issues/climate-change/science/energy/energy-conservation-and-efficiency/index.php, http://www.energysavers.gov/, http://www.hvackey.com/green-heating/home-heat-loss-learn-how-to-fight-back.html, http://ncseonline.org/nle/crsreports/energy/eng-80.cfm, http://www.nytimes.com/2011/03/08/science/08tier.html?_r=3&hp, http://www.stewartmarion.com/carbon-footprint/html/carbon-footprint-kilowatt-hour.html


**Cost Savings and $CO_2$ Reduction**

Some of the residents have said their monthly bills have decreased by 25% or more since the installation of CFLs and other weatherization measures were undertaken. These are not empirical

data and may simply reflect the timing of the project; most of the work was accomplished in spring when ambient light levels and temperatures increase in spring and summer.

If the total energy saved by installing these products is a 25% reduction (electrical and heating, both of which are usually produced by combustion of diesel fuel), and the average Alaska home produces 32,000 pounds of $CO_2$ each year, so we have saved about: 66 homes x 16 tons of $CO_2$ each year x .25 = 264 tons of $CO_2$ each year.

**Conclusions:**
Progress and financial reports were completed and submitted, and the project results are in this comprehensive final report. The results from this project will be presented at the annual Tribal Energy Program Review to be held in fall in Denver, Colorado.

We would like to thank the US Department of Energy, Tribal Energy for the opportunity to complete this energy conservation and energy education project and to the energy technicians for all their hard work and dedication to this project. On many occasions they exceeded expectations and made this project a success.

The initial effort was to prioritize service to the smaller communities in the region. Additional funding is needed to provide these services to the remaining Aleutian and Pribilof Island communities.

**APPENDIX A: Energy Technician Job Announcement**

**Title:** Need to hire energy technician for residential weatherization, energy and home safety review and training project in the Aleutian and Pribilof Islands

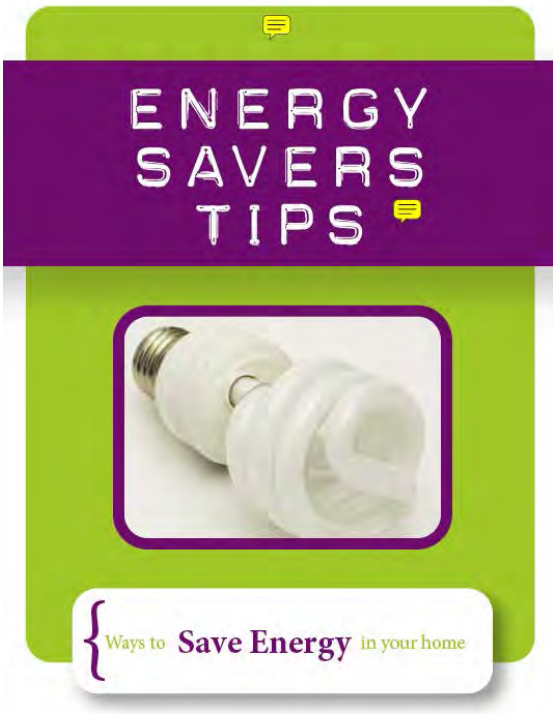
**Period of Performance:** FY 2009-2011

**Conduction Organizations:** Aleutian Pribilof Islands Association, Salary around $20/hr.

**Project Description:** APIA is doing on-site energy conservation and weatherization education in the communities of Akutan, Atka, False Pass, King Cove, Nelson Lagoon, Nikolski, Sand Point, St. George, St. Paul and Unalaska. Priority will be given to the residence most in need of weatherization and energy conservation measures. A local resident (energy conservation technician) will be taught about weatherization, energy conservation, the Alaska home energy audits and weatherization programs available for Alaskans. Assistance will be provided for applying for weatherization programs including completing application forms.

**Energy Technician:** The energy conservation technician will complete the Home owners Retrofit/Energy Conservation Class provided by the Alaska Craftsman Home Program and show competence in performing independent weatherization and energy conservation information to local home owners.

**Contact:** Bruce Wright, APIA, 907-222-4260 or brucew@apiai.org




The Energy Savers Tips booklet will be used as a guide and given to the home owners as an educational tool. You can request a copy of this booklet from APIA or you can find it at http://www.swamc.org/files/alaska_tips_final.pdf



SWAMC Southwest Alaska Municipal Conference ALASKA ENERGY AUTHORITY

## APPENDIX B: Planning Estimated Energy Supplies Spreadsheet

**Nelson Lagoon Weathe ######**

Excel Spreadsheet

| Name | LED Lights | | Fluorescent Lights (Tubes x 2) | | Doors Need Weather-strip | Windows Need Covering | | | | Spray Foam | Water Heater Jackets | | Rechargeable Drop lights | Outlets Need Insulation | | Light Switches Need Insulation | | | Water Pipe Insulation | | Power Strips | Saver Shower Heads | Under Door Weather Seal |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 60w | 200w | 8' | 4' | | 8'x 5' | 6'x 6' | 5'x 5' | 4'x 4' | | 30 Gal | 50 Gal | | Single | Doubl | Single | Double | Triple | 1/2"x Ft | 3/4"x Ft | 6 Out + | | |
| ine Gunde | 44 | 1 | | 3 | 7 | 4 | | | 16 | | 1 | | 2 | 30 | 10 | 5 | 4 | 4 | 25 | 25 | 5 | 1 | 7 |
| hard John | 20 | 1 | | 4 | 4 | 5 | 2 | 1 | 13 | | 1 | | 2 | 50 | 6 | 6 | 3 | | 25 | 25 | 2 | 1 | 4 |
| rman Joh | 10 | 2 | | 10 | 4 | | 10 | | 10 | | 1 | | 2 | 40 | 5 | 6 | | | 100 | 100 | 10 | 1 | 4 |
| ian Johnsc | 16 | 1 | | | 4 | | 2 | | 4 | | 1 | | 2 | 30 | 5 | 5 | 5 | | 25 | 25 | 3 | 1 | 4 |
| :en Brand | 30 | 2 | | | 13 | | | | | | 1 | | 2 | 50 | 10 | 10 | 10 | | 25 | 25 | 4 | 1 | 7 |
| aig Rysew | 16 | 1 | | 2 | 4 | | | | 2 | | 1 | | 2 | 20 | 6 | 4 | 4 | | 50 | | 4 | 1 | 4 |
| eslie Carv | 16 | 1 | | | 3 | | | | | | 1 | | 2 | | | | | | 25 | 25 | 2 | 1 | 3 |
| hn Nelsor | 10 | 1 | | 4 | | | | | | | 1 | | 2 | | | | | | 25 | 25 | 4 | 1 | 0 |
| hn Nelson | 30 | 1 | | 10 | 4 | | 2 | | 10 | | 1 | | 2 | 40 | 10 | 5 | 5 | | 100 | 100 | 4 | 1 | 4 |
| olly Jacks | 14 | 1 | | | 2 | | | 2 | 3 | | 1 | | 2 | | | | | | 25 | 25 | 2 | 1 | 2 |
| rbert Johr | 14 | 1 | | | 3 | | | 2 | 3 | | 1 | | 2 | 10 | | | 1 | | 25 | 25 | 3 | 1 | 3 |
| ian Hartn | 14 | 1 | | 10 | 2 | | | 2 | 8 | | 1 | | 2 | 20 | 10 | 5 | 5 | | 25 | 25 | 5 | 1 | 2 |
| ark McNe | 20 | 5 | | | 2 | | | 2 | | | | 1 | 2 | 20 | 10 | 5 | 5 | | 50 | 50 | 4 | 1 | 2 |
| like Neme | 14 | 1 | | | 1 | | | 1 | 4 | | 1 | | 2 | 10 | | | 1 | | 25 | 25 | 2 | 1 | 1 |
| lay Johnsc | 18 | 1 | | | 4 | | | | | | 1 | | 2 | | | | | | 25 | 25 | 4 | 1 | 4 |
| heo Chesl | 20 | 1 | | | 3 | | | 6 | 8 | | 1 | | 2 | 10 | 5 | 5 | 5 | | 25 | 25 | 2 | 1 | 3 |
| m Snodgr | 15 | 1 | | | 3 | | | | 7 | | 1 | | | 20 | | 2 | 1 | | 25 | 25 | 2 | 1 | 3 |
| le Gunder | 20 | 1 | | 10 | 3 | | 4 | | 10 | | 1 | | 2 | 50 | 10 | 5 | 3 | 2 | 50 | 50 | 2 | 1 | 3 |
| Bob Caho | 14 | 1 | | | 2 | | | | 10 | | 1 | | 2 | | | | | | 50 | 50 | 3 | 1 | 2 |
| ch Gunde | 20 | 1 | | | 2 | | 4 | | 7 | | 1 | | 2 | 30 | 10 | | | | 25 | 25 | 3 | 1 | 2 |
| aul Schaa | 20 | 1 | | | 2 | | 2 | | 12 | | 1 | | 2 | 15 | 4 | 4 | 3 | | 25 | 25 | 4 | 1 | 2 |
| eona Nels | 20 | 1 | | | 3 | | | 3 | 6 | | 1 | | 2 | 20 | 4 | 4 | 4 | | 25 | 25 | 2 | 1 | 3 |
| rlene Nels | 40 | 1 | | 6 | 2 | | | 5 | 10 | | 1 | | 2 | 40 | 4 | 4 | 4 | | 25 | 25 | 3 | 1 | 2 |
| rold John | 30 | 2 | | | 2 | | | 6 | 8 | | 1 | 1 | 2 | 30 | 10 | | 3 | | 50 | 50 | 7 | 1 | 2 |
| asha (CH | 7 | 1 | | | | | | | | | 1 | | 2 | | | | | | 25 | 25 | 2 | 1 | 0 |
| Chip Shar | 25 | 1 | | 5 | 5 | | | 6 | 6 | | 1 | | 2 | | | 10 | 10 | | 25 | 25 | 4 | 1 | 5 |

## APPENDIX C: Energy Supplies – Estimated and Actual

**Summary of Estimated Weatherization Items to be purchased and insta**

| | |
|---|---|
| 666 | 60 watt LED Lights $17.99 ea for 40w + $39.97 for 60w equivalent |
| 44 | 200 watt LED Lights w/Exterior fixtures 75w @ $44.97 ea |
| 115 | 36" Exterior Doors needing weather-stripping 17' for 3.88 |
| 9 | 8'x 5' Window Shrink Wrap Coverings 6.98 |
| 33 | 6'x 6' Window Shrink Wrap Coverings 6.98 |
| 47 | 5'x 5' Window Shrink Wrap Coverings 6.98 |
| 231 | 4'x 4' Window Shrink Wrap Coverings 10.98 for 9 |
| 29 | 30 Gallon Water Heater Blankets ~25.37 |
| 3 | 50 Gallon Water Heater Blankets ~25.37 |
| 66 | Rechargeable Drop Lights ~ 24.95 |
| 732 | Foam Outlet Cover Insulators (single) |
| 161 | Foam Outlet Cover Insulators (double) |
| 109 | Foam Light Switch Cover Insulators (single) |
| 115 | Foam Light Switch Cover Insulators (double) |
| 9 | Foam Light Switch Cover Insulators (triple) |
| 1200 | 1/2" Foam Water Pipe Insulation (feet) 12' for $1.98 |
| 1100 | 3/4" Foam Water Pipe Insulation (feet) 12' for $1.98 |
| 137 | Power Strips (6 Outlets or more) $8 ea |
| 34 | Water Saver Shower Heads 12.75 |
| 107 | Bottom of Door Weather Seal (fastened to internal side bottom of door) 12.30 |
| 2000 | 9/16" Arrow Staples |
| 2000 | 1/2" Arrow Staples |
| 312 | Great Stuff Foam Sealant Cans 7.98 ea |
| 20 | Toilet Flapper Valve Replacement Kits 19.98 |
| 40 | Indoor/Outdoor Weather Seal Tape (roll) 7.98 |
| 37 | Foil Tape (roll) 6.58 |
| 10 | Duct Tape (roll) 3.38 |
| 220 | Durable Indoor/Outdoor Silicon Sealant (tube) $6.57 ea |
| 5000 | Sq. Feet Husky Plastic Sheeting Vapor Barrier 3.5 mil, 10' x 25', $12.98 each |

| | | |
|---|---|---|
| Actual purchases: | Water-saver shower heads | 45 |
| | CFLs and LEDs | 882 |
| | Window shrink kits | 48 |
| | Cans spray foam | 299 |
| | Water pipe insulation kits (4 each) | 73 |
| | Power strips | 72 |
| | Toilet valve replacement kits | 55 |
| | Toilet tank insulation liners | 14 |
| | Hot water tank insulation kits | 36 |
| | Door draft stoppers | 62 |
| | Duct and weatherproof tapes | 88 |
| | Plastic vapor barrier rolls | 32 |
| | Door thresholds | 18 |
| | Foam tape weather-stripping | 116 |
| | LED task lights (rechargeable) | 51 |
| | Caulking tubes (silicone and paintable) | 356 |
| | Electric foam outlet sealers | 820 |

**APPENDIX D: Energy Efficiency Workshop Announcement (King Cove)**

# ***Attention Residents of King Cove***

Would you like to save money on your utility bill?

Is your home in need of some weatherization?

Would you like to learn how to conserve energy?

The ATC, Environmental Department is working with A.P.I.A. to help conserve energy in your home!! We have supplies and tips on how you can make your home more energy efficient!

**And it's FREE!!!**

If you would like more information about this project, you can call the ATC office at (907) 497-2648 and ask for AnnDee or Nadezda and we can make an appointment to provide you with assistance.

# Tired of high heating bills?
# Questions about the rebate program?

## Learn how to do, or direct, your own energy efficient improvements!

## Attend these 8 informative workshops
## FREE to the public

**MUST Register**
**Class size is limited**

**Continuing Education Credits Available!**

| **Thursday, January 20** | |
|---|---|
| 8:00am: | Building Science Basics |
| 10:00am: | Airtightness |
| 1:00pm: | Ice Dams |
| 3:00pm: | Lighting & Appliances |

| **Friday, January 21** | |
|---|---|
| 8:00am: | Heating & Hot Water |
| 10:00am: | Doors & Windows |
| 1:00pm: | Insulation |
| 3:00pm: | Ventilation |


**Classes Held in King Cove**
**907-258-2247**
**www.achpalaska.com**


Brought to you by:
Alaska Craftsman Home Program
Alaska Housing Finance Corporation

Alaska Housing
FINANCE CORPORATION

## APPENDIX E: Basic Home Energy Audits

The below self home energy audit will be reviewed with and given to the home owners and used as an educational tool.

### Basic Home Energy Audits

You can easily conduct a home energy audit yourself. With a simple but diligent walk-through, you can spot many problems in any type of house. When auditing your home, keep a checklist of areas you have inspected and problems you found. This list will help you prioritize your energy efficiency upgrades.

**Locating Air Leaks**

First, make a list of obvious air leaks (drafts). The potential energy savings from reducing drafts in a home may range from 5% to 30% per year, and the home is generally much more comfortable afterward. Check for indoor air leaks, such as gaps along the baseboard or edge of the flooring and at junctures of the walls and ceiling. Check to see if air can flow through these places:

- Electrical outlets
- Switch plates
- Window frames
- Baseboards
- Weather stripping around doors
- Fireplace dampers
- Attic hatches

Also look for gaps around pipes and wires, electrical outlets, foundation seals and mail slots. Check to see if the caulking and weather stripping are applied properly, leaving no gaps or cracks, and are in good condition.

Inspect windows and doors for air leaks. See if you can rattle them, since movement means possible air leaks. If you can see daylight around a door or window frame, then the door or window leaks. You can usually seal these leaks by caulking or weather stripping them. Check the storm windows to see if they fit and are not broken. You may also wish to consider replacing your old windows and doors with newer, high-performance ones. If new factory-made doors or windows are too costly, you can install low-cost plastic sheets over the windows.

If you are having difficulty locating leaks, you may want to conduct a basic building pressurization test:

1. First, close all exterior doors, windows, and fireplace flues.
2. Turn off all combustion appliances such as gas burning furnaces and water heaters.
3. Then turn on all exhaust fans (generally located in the kitchen and bathrooms) or use a large window fan to suck the air out of the rooms.

This test increases infiltration through cracks and leaks, making them easier to detect. You can use incense sticks or your damp hand to locate these leaks. If you use incense sticks, moving air

will cause the smoke to waver, and if you use your damp hand, any drafts will feel cool to your hand.

On the outside of your house, inspect all areas where two different building materials meet, including:

- All exterior corners
- Where siding and chimneys meet
- Areas where the foundation and the bottom of exterior brick or siding meet.

You should plug and caulk holes or penetrations for faucets, pipes, electric outlets and wiring. Look for cracks and holes in the mortar, foundation and siding, and seal them with the appropriate material. Check the exterior caulking around doors and windows, and see whether exterior storm doors and primary doors seal tightly.

When sealing any home, you must always be aware of the danger of indoor air pollution and combustion appliance "backdrafts." Backdrafting is when the various combustion appliances and exhaust fans in the home compete for air. An exhaust fan may pull the combustion gases back into the living space. This can obviously create a very dangerous and unhealthy situation in the home.

In homes where a fuel is burned (i.e., natural gas, fuel oil, propane or wood) for heating, be certain the appliance has an adequate air supply. Generally, one square inch of vent opening is required for each 1,000 Btu of appliance input heat. When in doubt, contact your local utility company, energy professional or ventilation contractor.

**Insulation**

Heat loss through the ceiling and walls in your home could be very large if the insulation levels are less than the recommended minimum. When your house was built, the builder likely installed the amount of insulation recommended at that time. Given today's energy prices (and future prices that will probably be higher), the level of insulation might be inadequate, especially if you have an older home.

If the attic hatch is located above a conditioned (heated) space, check to see if it is at least as heavily insulated as the attic, is weather stripped, and closes tightly. In the attic, determine whether openings for items such as pipes, ductwork, and chimneys are sealed. Seal any gaps with expanding foam, caulk or some other permanent sealant.

While you are inspecting the attic, check to see if there is a vapor barrier under the attic insulation. The vapor barrier might be tarpaper, Kraft paper attached to fiberglass batts or a plastic sheet. If there does not appear to be a vapor barrier, you might consider painting the interior ceilings with vapor barrier paint. This reduces the amount of water vapor that can pass through the ceiling. Large amounts of moisture can reduce the effectiveness of insulation and promote structural damage.

Make sure that the attic vents are not blocked by insulation. You also should seal any electrical boxes in the ceiling with flexible caulk (from the living room side or attic side) and cover the entire attic floor with at least the current recommended amount of insulation.

Checking a wall's insulation level is more difficult. Select an exterior wall and turn off the circuit breaker or unscrew the fuse for any outlets in the wall. Be sure to test the outlets to make certain that they are not "hot." Check the outlet by plugging in a functioning lamp or portable radio. Once you are sure your outlets are not getting any electricity, remove the cover plate from one of the outlets and gently probe into the wall with a thin, long stick or screwdriver. If you encounter a slight resistance, you have some insulation there. You could also make a small hole in a closet, behind a couch, or in some other unobtrusive place to see what, if anything, the wall cavity is filled with. Ideally, the wall cavity should be totally filled with some form of insulation material. Unfortunately, this method cannot tell you if the entire wall is insulated, or if the insulation has settled. Only a thermographic inspection can do this.

If your basement is unheated, determine whether there is insulation under the living area flooring. In most areas of the country, an R-value of 25 is the recommended minimum level of insulation. The insulation at the top of the foundation wall and first floor perimeter should have an R-value of 19 or greater. If the basement is heated, the foundation walls should be insulated to at least R-19. Your water heater, hot water pipes, and furnace ducts should all be insulated. For more information, see the insulation section (above).

**Heating Equipment**
Inspect heating equipment annually or as recommended by the manufacturer. If you have a forced-air furnace, check your filters and replace them as needed. Generally, you should change them about once every month or two, especially during periods of high usage. Have a professional check and clean your equipment once a year. Does the furnace appear old? Does it need to be replaced?

If the unit is more than 15 years old, you should consider replacing your system with one of the newer, energy-efficient units. A new unit would greatly reduce your energy consumption, especially if the existing equipment is in poor condition. Check your ductwork for dirt streaks, especially near seams. These indicate air leaks, and they should be sealed with duct mastic. Insulate any ducts or pipes that travel through unheated spaces. An insulation R-Value of 6 is the recommended minimum.

**Oil Tank Survey**
Inspect the oil tank and oil tank holder for rest, leaking and other problems. Make sure a filter is in place and operable.

**Lighting**
Energy for lighting accounts for about 10% of your electric bill. Examine the wattage size of the light bulbs in your house. You may have 100-watt (or larger) bulbs where 60 or 75 watts would do. You should also consider compact fluorescent lamps for areas where lights are on for hours at a time. Your electric utility may offer rebates or other incentives for purchasing energy-efficient lamps.

**APPENDIX F: Akutan Log**

Antone's Log:

Church:
Eleven CFLs Light blubs after installing bulbs four were uninstalled. The priest said the CFLs were too bright.

Home 1:
Nine CFL Light bulbs didn't need a vapor barrier. Update

Home 2:
Three CFL Light bulbs didn't need a vapor barrier, cleaned under the refrigerator the coils removed dust.

Home 3:
Eight CFLs Light bulbs didn't need a vapor barrier, one heater blanket, one low flow shower head, two power strips, one double draft stopper.

Home 4:
Seven CFL Light bulbs didn't need a vapor barrier, low flow shower head, heater blanket, one flash light City of Akutan snow removal person and repair man.

Home 5:
One CFL bulb didn't need a vapor barrier but the vapor was half done and I volunteered to install the other half, two window insulation kits, one heater blanket one flash light City of Akutan vehicle repair person.

Home 6:
Eleven CFL bulbs didn't need a vapor barrier, one heater blanket, one flashlight home owner is a carpenter and did not need to much help installing any of the energy efficient upgrades.

Home 7:
Five CFLs light bulbs didn't need a vapor barrier, one double draft stopper. Updated.

Home 8:
No CFLs didn't need a vapor barrier, one flash light home of a carpenter.

Home 9:
Five CFLs didn't need a vapor barrier, one double draft stopper a flash light. Updated

Home 10:
Six CFLs light bulbs didn't need a vapor barrier, one flash light City of Akutan's garbage collector.

Home 11:
One CFL bulb didn't need a vapor barrier, two power strips one double draft stopper a flash light Home owner has a broken blub in the outside light socket didn't know how to remove broken bulb.

Home 12:
Twenty six CFL bulbs used one insect CFL all together 27 CFLs no vapor barrier needed home owner was very happy with the CFLs one power strip also one flash light.

Home 13:
21 CFL's used no vapor barrier needed One insect bulb altogether 22 CFL's one flash light.

Home 14:
16 CFL light bulbs installed one flash light. Made an appointment to clean refrigerator coils.

Home 15:
Two CFL light bulb one flash light. Needs a new outside light fixture.

Home 16:
18 CFL's light bulbs two power serge strips one flash light. 4-4-2011

Home 17:
19 CFL's two power strips one flashlight forgot the photos. 4-11-2011

Home 18;
17 CFL's 3 power strips one flash light took before and after photos. 4-12-2011.

Home 19:
7 CFL's 1 flashlight 1 power strip.

Home 17:
Air leaks fixed used expanding foam one hole in the middle of the house, did some work under home.

Home 20:
6 CFL's one flash light one power strip.

Home 21:
One flashlight.

Home 22:
One flash light one power strip 8 CFL's.

Home 23:
One flash light one power strip 8 CFL's.

Home 24: Apartment 3
One power strip one flash light 6 CFL'S.

Home 25:
One flash light 17 CFLs bulbs.

Home 26:
One flash light 12 CFL's.

Home 27:
One flash light home has upgraded lights from this store.

**APPENDIX G: False Pass Final**

-----Original Message-----
From: siri goulette [mailto:sirielsa@yahoo.com]
Sent: Wednesday, June 22, 2011 11:34 AM
To: Cara Bethe
Subject: Re: Energy

Hello,

I have been working with members of the False Pass community informing and educating households of the importance of conserving energy. Over the last month I have been into houses, asking questions, and aiding in keeping the warmth in! I have had alot of questions asked of how to cut down costs. Some are as simple as just turning the lights off when not in use, or to keep the heater on a lower setting during the day.

When I arrive at a house and I tell the head of the house what I have, I am asked to perform thermal inspections around the windows and doors. You could see the surprise on their faces when they see how much heat is lost through doors and windows. They are even more surprised when I show up and have insulation, caulking, and strips for their houses.

With False Pass being a smaller community it was nice for me to spend as much time within the house showing and fixing the different heating problems.

There are 12 homes in False Pass. I informed the residents of all 12 houses, and gave out all necessary materials to those who needed and/or wanted to save in energy.

Siri Goulette