Village Energy Efficiency Program

AEA VEEP Grant # 7520001 Administered by Alaska Building Science Network

King Cove Final Report

Grant Amount: $150,000



Center Photo: ©State of AK Division of Community and Regional Affairs

Community Summary

3 community buildings and 1 public facility received energy efficient lighting and weatherization upgrades as follows: Agdaagux Tribe of King Cove Office, King Cove Bible Chapel Church, The King Cove Corporation Hotel, City of King Cove Street Lights

Retrofits Completed: November 2011
Street Light Retrofits Completed: June 2012

Village-Wide Energy Efficient Lighting and Weatherization Retrofit Summary:

- Projected Annual Electrical Savings (kWh): 55,386
- Projected Annual Electrical Cost Savings: $14,400[1]
- Projected Annual Heating Fuel Savings (gallons): 2,241
- Projected Annual Fuel Cost Savings: $10,465[2]
- Total Projected Annual Energy Cost Savings: **$24,866**
- Total village wide In-kind contribution: $17,870
- Total project cost including In-kind contribution: $167,870
- Simple Payback (including In-kind contributions): **6.75 years**

[1] kWh Rate [used to calculate electrical cost savings] for Lighting Measures (State of AK - AEA PCE Program Report FY 2011 avg): $0.26

[2] #2 Heating Fuel Rate [used to calculate heating fuel savings] (AkWarm Library): $4.67/gal

AGDAAGUX TRIBE OWNED BUILDINGS AND FACILITIES

Agdaagux Tribal Council Office

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	1,127
• Projected Annual Electrical Cost Savings:	$293
• Projected Annual Heating Fuel Savings (gallons):	2,241
• Projected Annual Fuel Cost Savings:	$10,465
• Total Projected Annual Energy Cost Savings:	$10,758

Lighting Retrofit Summary:

Materials Installed	Quantity
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	7
Fluorescent 3-lamp electronic ballast, (3) 25 watt T8 lamps	2
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	1
CFL-20 W	1
CFL-23 W	2
Occupancy Sensors	2

• Pre-retrofit energy use for all lighting:	1.270	Kilowatts
• Post-retrofit energy use for all lighting:	0.626	Kilowatts
• Energy savings projection:	0.644	Kilowatts
• Pre-retrofit to post retrofit energy reduction:	51%	
• Estimated Annual Savings:	kWh Saved: 1,127	

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	$167.44	58.28	$180.67
7 Hours/day	**$293.02**	101.99	$316.17
10 Hours/day	$418.60	145.70	$451.67
2000 Hours/year (Est.)	$334.88	116.56	$361.34

Agdaagux Tribal Council Office

Weatherization Retrofit Summary:

• Added R-31 loose-fill blow-in fiberglass insulation in attic.

• Added R-19 fiberglass batt insulation and sheathing to damaged original floor; also, installed insulated skirting with protective metal flashing.

• Air sealed building to reduce air leakage.

• Annual energy savings projection: 2,241 gallons

• Estimated Annual Heating Fuel Cost Savings: **$10,465**

BIBLE CHAPEL CHURCH OWNED BUILDINGS AND FACILITIES

King Cove Bible Chapel Church

Lighting Retrofit Summary:

Materials Installed	Quantity
Fluorescent 2 ft fixture, 4-lamp electronic ballast, (4) 17 watt T8 lamps	1
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	8
CFL-11 W	3
CFL-15 W	26
CFL-27 W	2

- Pre-retrofit energy use for all lighting: 3.693 Kilowatts
- Post-retrofit energy use for all lighting: 1.257 Kilowatts
- Energy savings projection: 2.436 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 66%
- Estimated Annual Savings: kWh Saved: 4,263

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	$633.36	220.45	$683.40
7 Hours/day	**$1,108.38**	385.79	$1,195.95
10 Hours/day	$1,583.40	551.13	$1,708.51
Hours/year (Est.)			

***Note:** The community of **King Cove** opted to purchase materials and provide labor In-kind to complete energy efficiency retrofits for the **Bible Chapel Church**. To further maximize the value of the VEEP & EECBG, Alaska Building Science Network provided energy audits of various community buildings not included under VEEP/EECBG funding upon local request, while providing technical support and training as needed to complete upgrades.

KING COVE CORPORATION OWNED BUILDINGS AND FACILITIES

King Cove Corporation Hotel

Lighting Retrofit Summary:

Materials Installed	Quantity
Fluorescent 2-lamp electronic ballast, (1) 25 watt T8 lamp	1
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	24
Fluorescent 3-lamp electronic ballast, (2) 25 watt T8 lamps	5
Fluorescent 3-lamp electronic ballast, (3) 25 watt T8 lamps	4
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	3
CFL-14 W	1
CFL-16 W	38
CFL-19W	5
CFL-27 W	4
Occupancy Sensors	3

- Pre-retrofit energy use for all lighting: 8.204 Kilowatts
- Post-retrofit energy use for all lighting: 2.781 Kilowatts
- Energy savings projection: 5.423 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 66%
- Estimated Annual Savings: kWh Saved: 9,490

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	$1,409.98	490.77	$1,521.38
7 Hours/day	**$2,467.47**	858.85	$2,662.42
10 Hours/day	$3,524.95	1226.92	$3,803.46
1500 Hours/year (Est.)	$2,114.97	736.15	$2,282.08

***Note: King Cove Corporation** opted to purchase materials and provide labor In-kind to complete energy efficiency retrofits for the **Corporation Hotel**. To further maximize the value of the VEEP & EECBG, Alaska Building Science Network provided energy audits of various community buildings not included under VEEP/EECBG funding upon local request, while providing technical support and training as needed to complete upgrades.

CITY OF KING COVE OWNED BUILDINGS AND FACILITIES

City of King Cove Street Lights

Lighting Retrofit Summary:



- Retrofitted 68 HPS (High-Pressure Sodium) street light fixtures with energy efficient LED (Light-Emitting Diode) street light fixtures – to include 20-year photo sensors.

- Pre-retrofit energy use for all street lighting: 55,994 kWh
- Post-retrofit energy use for all street lighting: 15,488 kWh
- Energy savings projection: 40,506 kWh
- Pre-retrofit to post-retrofit energy reduction: 72%
- Estimated Annual Savings: $10,532


King Cove, In-Kind Contribution Tracking Record - ABSN Energy Efficiency Projects:

In-Kind Item	Dates	Hours Contri-buted	Hourly Wage	$Value / Amount	Notes
Staff time for project contact, introduction & review of intro materials		3	$ 20.00	$ 60.00	Number of entities x 1 hour each
Staff time for Attending teleconference	10/28/2010	1	$ 20.00	$ 20.00	City time
Staff time for Attending teleconference	10/28/2010	1	$ 20.00	$ 20.00	TC/IRA time
Staff time for Attending teleconference	10/28/2010	1	$ 20.00	$ 20.00	Village Corp time
Maint. Staff time to accompany Field Manager on building assessment	November '10	7	$20.00	$ 140.00	City: Pick-up @ airport (1 hr), Open up hydro plant and water treatment facilities (3 hrs), Provide ladder and public works access (1 hr); Corp: Open up doors in the hotel (2 hrs) - 1st assessment site visit
Conservative village office administrative and other project support - percentage of total project cost less ABSN Admin %. Total project cost = $150000 - (our admin percentage, (around 14%) Approx: $21,000) = $129,000 x 4% = $5,160 (this 4% village admin cost estimate is spread across all entities we work with for the course of the grant for completing all energy efficiency measures). These are for cumulative, otherwise unaccounted time expense for village - based project support.	Feb, '09 through Completion			$ 5,160.00	Each time we call, email, or fax a village entity, someone receives the communication, reviews and/or forwards the information, follows-up on requests, etc. Whether it is to set-up a teleconference, verify maintenance staff participation in lighting or boiler trainings, set-up in-kind lodging and transportation, lighting trainings, track a shipment, ship lamps and ballasts out of the village for recycling, request a labor reimbursement agreement, or invoice etc, send additional photos of completed work, etc. Village expenses for phone charges, copying and fax costs, office supplies, etc. are part of this amount.
Lodging for ABSN Field Managers	11/2/10 - 11/8/10	4	$50.00	$ 200.00	City: Lodging for 2 people in multipurpose bldg (Elders room) - 1st assessment site visit
Transportation and fuel costs	11/2/10 - 11/8/10			$ 400.00	City: Use of vehicle 24/7, plus fuel - 1st assessment site visit
Lodging for ABSN Field Managers	November '11	7	$110.00	$ 770.00	Tribe: Fleets Inn Hotel - Weatherization/Lighting Upgrades
Employer share of payroll contributions	November '11			$ 380.28	Tribe: Payroll Taxes Employer (Fica 6.2 Med 1.45 ESC 2.92 = .1057 x 3597.75) - Weatherization/Lighting Upgrades
Labor for street light retrofits	June - July '12	68	$150.00	$ 10,200.00	City: Installation - Street Lighting Upgrades
Office Manager / Staff time for street light retrofits	February - July '12	20	$25.00	$ 500.00	City: Coordination - Street Lighting Upgrades
	TOTAL			**$17,870.28**	