

Village Energy Efficiency Program
AEA VEEP Grant # 7520001 Administered by Alaska Building Science Network
Teller Final Report
Grant Amount: \$150,000



Community Summary

9 community buildings and teacher housing units received energy efficient lighting, weatherization, and heating upgrades as follows: Community Hall, Traditional Council Office, Storage Building, New Clinic, Maintenance/BIA Teacher Housing Duplex, Teacher Housing 4-Plex, New Garage, School Bus Garage, Teacher Housing Duplex

Retrofits Completed: November 2011

Village-Wide Energy Efficient Lighting, Weatherization and Heating Retrofit Summary:

• Projected Annual Electrical Savings (kWh):	18,566
• Projected Annual Electrical Cost Savings:	\$11,435 ^{1,2}
• Projected Annual Heating Fuel Savings (gallons):	3,326
• Projected Annual Fuel Cost Savings:	\$15,898 ³
• Total Projected Annual Energy Cost Savings:	\$27,333
• Total village wide In-kind contribution:	\$15,349
• Total project cost including In-kind contribution:	\$165,349
• Simple Payback (including In-kind contributions):	6.05 years

¹ kWh Rate [used to calculate electrical cost savings] for Lighting Measures (State of AK - AEA PCE Program Report FY 2011 avg): \$0.62

² kWh Rate [used to calculate electrical cost savings] for Weatherization & Heating Measures (AkWarm Library): \$0.62

³ #2 Heating Fuel Rate [used to calculate heating fuel savings] (AkWarm Library): \$4.78/gal

TELLER TRADITIONAL COUNCIL OWNED BUILDINGS

Traditional Council Office

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	1,339
• Projected Annual Electrical Cost Savings:	\$825
• Projected Annual Heating Fuel Savings (gallons):	118
• Projected Annual Fuel Cost Savings:	\$564
• Total Projected Annual Energy Cost Savings:	\$1,389

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	26
CFL-11 W	1

• Pre-retrofit energy use:	1.972 Kilowatts
• Post-retrofit energy use:	1.207 Kilowatts
• Energy savings projection:	0.765 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	39%
• Estimated Annual Savings:	kWh Saved: 1,339

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$471.16	69.67	\$222.25
7 Hours/day	\$824.54	121.93	\$388.94
10 Hours/day	\$1,177.91	174.18	\$555.64
1750 Hours/year (Est.)	\$824.54	121.93	\$388.94

Traditional Council Office

Weatherization Retrofit Summary:



- Air sealed building to reduce air leakage.

- Annual energy savings projection: 118 gallons
- Estimated Annual Heating Fuel Cost Savings: **\$564**

Storage Building

Lighting Retrofit Summary:



<u>Materials Installed</u>	<u>Quantity</u>
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	2
CFL-14 W	1

- Pre-retrofit energy use: 0.243 Kilowatts
- Post-retrofit energy use: 0.106 Kilowatts
- Energy savings projection: 0.137 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 56%
- Estimated Annual Savings: kWh Saved: 240

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$84.38	12.48	\$39.80
7 Hours/day	\$147.66	21.84	\$69.65
10 Hours/day	\$210.95	31.19	\$99.51
500 Hours/year (Est.)	\$42.19	6.24	\$19.90

New Clinic

Lighting Retrofit Summary:



Materials Installed

Fluorescent 2-lamp existing electronic ballast, re-lamped with (2) 25 watt T8 lamps

Quantity

31

- Pre-retrofit energy use: 3.720 Kilowatts
- Post-retrofit energy use: 1.426 Kilowatts
- Energy savings projection: 2.294 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 62%
- Estimated Annual Savings: kWh Saved: 4,015

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$1,412.87	208.93	\$666.47
7 Hours/day	\$2,472.53	365.62	\$1,166.33
10 Hours/day	\$3,532.19	522.31	\$1,666.18
2000 Hours/year (Est.)	\$2,825.75	417.85	\$1,332.94

CITY OF TELLER OWNED BUILDINGS

Community Hall

Weatherization/Heating Retrofit Summary:



- Installed R-21 batts to include Tyvek support and insulation protection to existing un-insulated floor.
 - Installed new energy efficient boiler, energy efficient boiler controls, and programmable thermostats.
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- Annual energy savings projection: 1,244 gallons
- Estimated Annual Heating Fuel Cost Savings: **\$5,946**

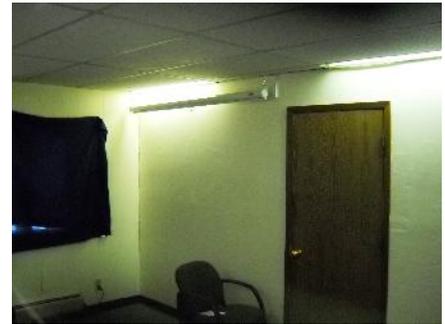
BERING STRAITS SCHOOL DISTRICT OWNED BUILDINGS

Maintenance/BIA Teacher Housing Duplex

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	3,444
• Projected Annual Electrical Cost Savings:	\$2,121
• Projected Annual Heating Fuel Savings (gallons):	1,018
• Projected Annual Fuel Cost Savings:	\$4,866
• Total Projected Annual Energy Cost Savings:	\$6,987

Lighting Retrofit Summary:



Materials Installed

	<u>Quantity</u>
Fluorescent 2 ft fixture, 2-lamp electronic ballast, (2) 17 watt T8 lamps	1
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	18
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	4
CFL-14 W	6
CFL-19W	13
CFL-23 W	2
CFL-9 W	3

• Pre-retrofit energy use:	3.577 Kilowatts
• Post-retrofit energy use:	1.609 Kilowatts
• Energy savings projection:	1.968 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	55%
• Estimated Annual Savings:	kWh Saved: 3,444

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$1,212.09	179.23	\$571.76
7 Hours/day	\$2,121.16	313.66	\$1,000.58
10 Hours/day	\$3,030.23	448.09	\$1,429.40
1375 Hours/year (Est.)	\$1,666.63	246.45	\$786.17

Maintenance/BIA Teacher Housing Duplex

Weatherization Retrofit Summary:



- Air sealed building to reduce air leakage.
- Insulate and seal rim joist with low expanding foam.

- Annual energy savings projection: 1,018 gallons
- Estimated Annual Heating Fuel Cost Savings: **\$4,866**

Teacher Housing 4-Plex

Lighting Retrofit Summary:



Materials Installed

<u>Materials Installed</u>	<u>Quantity</u>
Fluorescent 2-lamp electronic ballast, (1) 25 watt T8 lamp	35
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	45
Fluorescent 3-lamp electronic ballast, (3) 25 watt T8 lamps	1
CFL-14 W	8
CFL-19W	2
CFL-9 W	19

- Pre-retrofit energy use: 7.713 Kilowatts
- Post-retrofit energy use: 3.375 Kilowatts
- Energy savings projection: 4.338 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 56%
- Estimated Annual Savings: kWh Saved: 7,592

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$2,671.77	395.08	\$1,260.31
7 Hours/day	\$4,675.60	691.39	\$2,205.55
10 Hours/day	\$6,679.44	987.70	\$3,150.78
1375 Hours/year (Est.)	\$3,673.69	543.24	\$1,732.93

Teacher Housing Duplex

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	1,055
• Projected Annual Electrical Cost Savings:	\$650
• Projected Annual Heating Fuel Savings (gallons):	905
• Projected Annual Fuel Cost Savings:	\$4,326
• Total Projected Annual Energy Cost Savings:	\$4,976

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	2
CFL-14 W	8
CFL-19W	3
CFL-23 W	2
CFL-9 W	1

• Pre-retrofit energy use:	0.919 Kilowatts
• Post-retrofit energy use:	0.316 Kilowatts
• Energy savings projection:	0.603 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	66%
• Estimated Annual Savings:	kWh Saved: 1,055

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$371.39	54.92	\$175.19
7 Hours/day	\$649.93	96.11	\$306.58
10 Hours/day	\$928.47	137.30	\$437.97
1375 Hours/year (Est.)	\$510.66	75.51	\$240.88

Teacher Housing Duplex

Weatherization/Heating Retrofit Summary:



- Installed new, low-mass, sealed combustion, modulating boiler and programmable thermostat controls only.
- Air sealed building to reduce air leakage.

• Annual energy savings projection:	905 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$4,326

New Garage

Lighting Retrofit Summary:



Materials Installed

CFL-14 W

Quantity

6

- Pre-retrofit energy use: 0.360 Kilowatts
- Post-retrofit energy use: 0.084 Kilowatts
- Energy savings projection: 0.276 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 77%
- Estimated Annual Savings: kWh Saved: 483

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$169.99	25.14	\$80.19
7 Hours/day	\$297.48	43.99	\$140.33
10 Hours/day	\$424.97	62.84	\$200.46
500 Hours/year (Est.)	\$84.99	12.57	\$40.09

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

In-Kind Item	Dates	Hours Contributed	Hourly Wage	Value / Amount	Notes
Staff time for project contact, introduction & review of intro materials		4	\$20.00	\$80.00	Number of entities x 1 hour each
Staff time for Attending teleconference		1	\$20.00	\$20.00	TC/IRA
Staff time for Attending teleconference		1	\$20.00	\$20.00	City time
Staff time for Attending teleconference		1	\$20.00	\$20.00	Village Corp time
Staff time for Attending teleconference		2	\$20.00	\$40.00	School time
Maint. Staff time to accompany Field Manager on building assessment	10/18 - 10/21/10	3	\$20.00	\$60.00	City staff time during 1st site visit
Maint. Staff time to accompany Field Manager on building assessment	10/18 - 10/21/10	1	\$20.00	\$20.00	Tribal staff time during 1st site visit
Maint. Staff time to accompany Field Manager on building assessment	10/18 - 10/21/10	4	\$20.00	\$80.00	School staff time during 1st site visit
Conservative village office administrative percentage of total project cost less ABSN Admin %. Total project cost = \$180,300/village - (our admin percentage, (around 14%) Approx: \$25,242) = \$155,058 x 4% = \$6,202.32 (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.	Aug '10 through '12			\$6,202.32	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, verify completion of lighting in a given building, ship lamps and ballasts out of the village for recycling, request a labor reimbursement agreement, or invoice etc. Village expenses for phone charges, copying and fax costs, office supplies, etc. are part of this amount.
Lodging for ABSN Field Managers	10/18-10/21/10			\$420.00	Lodging for Matt & Dan at BSSD school - 3 nights x 2 people x \$70 each
Transportation and fuel costs	10/19-10/21/10			\$100.00	4-wheeler rental from Teller Traditional Council - 2 days @ \$50/day
Lodging for ABSN Field Managers				\$560.00	2nd site visit, Lodging at BSSD school - 4 nights x 2 people x \$70 each
Transportation and fuel costs				\$250.00	2nd site visit, 4-wheeler from City of Teller - 5 days x \$50
Transportation and fuel costs	3/28-4/1/11			\$200.00	Use of BSSD school truck - 5 days
Jerry Okbaok - Taxes, Workers Comp. Etc.	July 2011			\$40.00	Teller Traditional Council, Wx Upgrades
John Okleasik - Taxes, Workers Comp. Etc.	July 2011			\$45.01	Teller Traditional Council, Wx Upgrades
Reuben Topkok - Taxes, Workers Comp. Etc.	July 2011			\$61.20	City Of Teller, Wx Upgrades
Carlson Tingook - Taxes, Workers Comp. Etc.	July 2011			\$51.64	City Of Teller, Wx Upgrades
Jerry Okbaok - Taxes, Workers Comp. Etc.	July 2011			\$22.95	City Of Teller, Wx Upgrades
John Okleasik - Taxes, Workers Comp. Etc.	July 2011			\$22.95	City Of Teller, Wx Upgrades
Rany Olanna - Taxes, Workers Comp. Etc.	July 2011			\$60.25	City Of Teller, Wx Upgrades
Reggie Ongtawasruk - Labor Wages (incl payroll expenses)	July 2011	30	\$25.35	\$760.50	Teller School, Wx Upgrades
Jonathan Kakaruk - Labor Wages (incl payroll expenses)	July 2011	30	\$37.43	\$1,122.90	Teller School, Wx Upgrades
Jerry Okbaok - Taxes, Workers Comp. Etc.	3/29-4/1/11			\$60.00	Teller Traditional Council, Lighting Upgrades
John Okleasik - Taxes, Workers Comp. Etc.	3/29-4/1/11			\$60.00	Teller Traditional Council, Lighting Upgrades
JN Neavuk A Ahvakana - Labor Wages	3/29-4/1/11	32	\$17.61	\$563.52	Teller School, Lighting Upgrades
Reggie Ongtawasruk - Labor Wages	3/29-4/1/11	31	\$35.73	\$1,107.63	Teller School, Lighting Upgrades
Jonathan Kakaruk - Labor Wages	3/29-4/1/11	32	\$24.18	\$773.76	Teller School, Lighting Upgrades
Additional In-kind Estimated	Aug '10 through '12			\$2,525.00	All entities - estimated additional in-kind valuation
	TOTAL			\$15,349.63	