

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



Community Summary

18 community buildings and teacher housing units received energy efficient lighting, weatherization and heating upgrades as follows: City Office, City Shop, Clinic, Fire Hall, Water Pump House, Washeteria/Water Treatment Plant, IRA Community Hall, IRA Office, IRA Tannery, BSSD Teacher Housing Blue Tri-Plex, BSSD Metal Shop, BSSD Portable Classroom #1, BSSD Teacher Housing Trailer, BSSD Teacher Housing White House, BSSD Wood Shop, SNC Office, Lutheran Church, Parsonage

Retrofits Completed: December 2011

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

• Projected Annual Electrical Savings (kWh):	32,883
• Projected Annual Electrical Cost Savings:	\$19,470 ^{1,2}
• Projected Annual Heating Fuel Savings (gallons):	2,491
• Projected Annual Fuel Cost Savings:	\$14,323 ³
• Total Projected Annual Energy Cost Savings:	\$33,793
• Total village wide In-kind contribution:	\$11,200
• Total project cost including In-kind contribution:	\$161,200
• Simple Payback (including In-kind contributions):	4.77 years

Additional Energy Efficiency Measures:

¹ kWh Rate [used to calculate electrical cost savings] for Lighting Measures (State of AK - AEA PCE Program Report FY 2011 avg): \$0.59

² kWh Rate [used to calculate electrical cost savings] for Weatherization & Heating Measures (AkWarm Library): \$0.59

³ #2 Heating Fuel Rate [used to calculate heating fuel savings] (AkWarm Library): \$5.75/gal

CITY OF SHISHMAREF OWNED BUILDINGS

City Office

Weatherization/Heating Retrofit Summary:



- Installed four programmable thermostats, including village staff training.
- Adjusted and tuned downstairs furnace for optimum efficiency.

• Annual energy savings projection:	132 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$759

City Shop

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	14
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	2
Fluorescent 8 ft retro-kit, 4-Lamp electronic ballast, (4) 25 watt	15

• Pre-retrofit energy use:	5.152 Kilowatts
• Post-retrofit energy use:	2.624 Kilowatts
• Energy savings projection:	2.528 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	49%
• Estimated Annual Savings:	kWh Saved: 4,424

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$1,496.83	178.03	\$683.63
7 Hours/day	\$2,619.45	311.55	\$1,196.35
10 Hours/day	\$3,742.07	445.07	\$1,709.07
1200 Hours/year (Est.)	\$1,796.19	213.63	\$820.35

Clinic

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	27
CFL-19W	2
CFL-23 W	1

• Pre-retrofit energy use:	2.124 Kilowatts
• Post-retrofit energy use:	1.303 Kilowatts
• Energy savings projection:	0.821 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	39%
• Estimated Annual Savings:	kWh Saved: 1,437

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$486.11	57.82	\$222.02
7 Hours/day	\$850.70	101.18	\$388.53
10 Hours/day	\$1,215.29	144.54	\$555.04
2000 Hours/year (Est.)	\$972.23	115.63	\$444.03

Fire Hall

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	29
CFL-14 W	2

• Pre-retrofit energy use:	2.586 Kilowatts
• Post-retrofit energy use:	1.362 Kilowatts
• Energy savings projection:	1.224 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	47%
• Estimated Annual Savings:	kWh Saved: 2,142

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$724.73	86.20	\$331.00
7 Hours/day	\$1,268.28	150.85	\$579.25
10 Hours/day	\$1,811.83	215.49	\$827.49
1200 Hours/year (Est.)	\$869.68	103.44	\$397.20

Water Pump House

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps

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- Pre-retrofit energy use: 0.588 Kilowatts
 - Post-retrofit energy use: 0.322 Kilowatts
 - Energy savings projection: 0.266 Kilowatts
 - Pre-retrofit to post retrofit energy reduction: 45%
 - Estimated annual savings: kWh Saved: 466

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$157.50	18.73	\$71.93
7 Hours/day	\$275.62	32.78	\$125.88
10 Hours/day	\$393.75	46.83	\$179.83
500 Hours/year (Est.)	\$78.75	9.37	\$35.97

Washeteria/Water Treatment Plant

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	12
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	2
CFL-14 W	8

• Pre-retrofit energy use:	1.824 Kilowatts
• Post-retrofit energy use:	0.844 Kilowatts
• Energy savings projection:	0.980 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	54%
• Estimated Annual Savings:	kWh Saved: 1,715

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$580.26	69.01	\$265.01
7 Hours/day	\$1,015.45	120.77	\$463.77
10 Hours/day	\$1,450.65	172.54	\$662.54
2400 Hours/year (Est.)	\$1,392.62	165.63	\$636.03

SHISHMAREF IRA OWNED BUILDINGS

IRA Community Hall

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	3,129
• Projected Annual Electrical Cost Savings:	\$1,853
• Projected Annual Heating Fuel Savings (gallons):	741
• Projected Annual Fuel Cost Savings:	\$4,261
• Total Projected Annual Energy Cost Savings:	\$6,114

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	45
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	1

• Pre-retrofit energy use:	3.948 Kilowatts
• Post-retrofit energy use:	2.160 Kilowatts
• Energy savings projection:	1.788 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	45%
• Estimated Annual Savings:	kWh Saved: 3,129

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$1,058.67	125.92	\$483.52
7 Hours/day	\$1,852.68	220.35	\$846.15
10 Hours/day	\$2,646.69	314.79	\$1,208.79
2000 Hours/year (Est.)	\$2,117.35	251.83	\$967.03

IRA Community Hall

Weatherization/Heating Retrofit Summary:



- Replaced existing boiler with new energy efficient boiler.
- Installed four programmable thermostats, including village staff training.

• Annual energy savings projection:	741 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$4,261

IRA Office

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	417
• Projected Annual Electrical Cost Savings:	\$247
• Projected Annual Heating Fuel Savings (gallons):	104
• Projected Annual Fuel Cost Savings:	\$598
• Total Projected Annual Energy Cost Savings:	\$845

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (1) 25 watt T8 lamp	2
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	8

• Pre-retrofit energy use:	0.658 Kilowatts
• Post-retrofit energy use:	0.420 Kilowatts
• Energy savings projection:	0.238 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	36%
• Estimated Annual Savings:	kWh Saved: 417

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$140.92	16.76	\$64.36
7 Hours/day	\$246.61	29.33	\$112.63
10 Hours/day	\$352.30	41.90	\$160.90
2000 Hours/year (Est.)	\$281.84	33.52	\$128.72

IRA Office

Weatherization Retrofit Summary:



- Air sealed building to reduce air leakage.
- Added R-25 loose-fill blow-in fiberglass insulation in attic.

• Annual energy savings projection:	104 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$845

IRA Tannery

Weatherization Retrofit Summary:



- Air sealed building to reduce air leakage.
- Added R-30 loose-fill blow-in fiberglass insulation in attic.

• Annual energy savings projection:	306 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$1,760

BERING STRAITS SCHOOL DISTRICT OWNED BUILDINGS

Teacher Housing Blue Tri-Plex

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	3,367
• Projected Annual Electrical Cost Savings:	\$1,994
• Projected Annual Heating Fuel Savings (gallons):	918
• Projected Annual Fuel Cost Savings:	\$5,279
• Total Projected Annual Energy Cost Savings:	\$7,273

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	7
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	1
CFL-14 W	15
CFL-19W	13
CFL-23 W	5
CFL-9 W	2

• Pre-retrofit energy use:	2.926 Kilowatts
• Post-retrofit energy use:	1.002 Kilowatts
• Energy savings projection:	1.924 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	66%
• Estimated Annual Savings:	kWh Saved: 3,367

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$1,139.20	135.49	\$520.29
7 Hours/day	\$1,993.60	237.11	\$910.51
10 Hours/day	\$2,848.00	338.73	\$1,300.73
1375 Hours/year (Est.)	\$1,566.40	186.30	\$715.40

Teacher Housing Blue Tri-Plex

Weatherization Retrofit Summary:

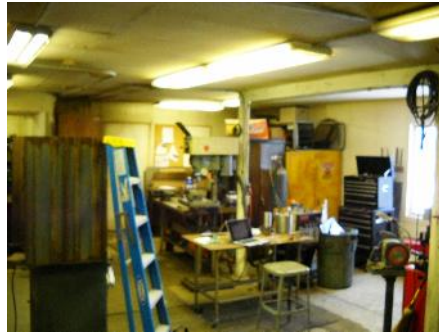


- Air sealed building to reduce air leakage.
- Added R-38 loose-fill insulation in attic with standard truss.

• Annual energy savings projection:	918 gallons
• Estimated Annual Heating Fuel Cost Savings:	\$5,279

Metal Shop

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	8
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	4

- Pre-retrofit energy use: 1.344 Kilowatts
- Post-retrofit energy use: 0.728 Kilowatts
- Energy savings projection: 0.616 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 46%
- Estimated Annual Savings: kWh Saved: 1,078

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$364.73	43.38	\$166.58
7 Hours/day	\$638.28	75.92	\$291.52
10 Hours/day	\$911.83	108.45	\$416.45
500 Hours/year (Est.)	\$182.37	21.69	\$83.29

Portable Classroom #1

Lighting Retrofit Summary:

Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	2
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	14
CFL-19W	1

- Pre-retrofit energy use: 2.580 Kilowatts
- Post-retrofit energy use: 1.371 Kilowatts
- Energy savings projection: 1.209 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 47%
- Estimated Annual Savings: kWh Saved: 2,116

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$715.85	85.14	\$326.94
7 Hours/day	\$1,252.74	149.00	\$572.15
10 Hours/day	\$1,789.62	212.85	\$817.35
1800 Hours/year (Est.)	\$1,288.53	153.25	\$588.49

Teacher Housing Trailer

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	1,230
• Projected Annual Electrical Cost Savings:	\$728
• Projected Annual Heating Fuel Savings (gallons):	43
• Projected Annual Fuel Cost Savings:	\$247
• Total Projected Annual Energy Cost Savings:	\$975

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	1
CFL-14 W	1
CFL-19W	7
CFL-23 W	1

• Pre-retrofit energy use:	0.919 Kilowatts
• Post-retrofit energy use:	0.216 Kilowatts
• Energy savings projection:	0.703 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	76%
• Estimated Annual Savings:	kWh Saved: 1,230

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$416.25	49.51	\$190.11
7 Hours/day	\$728.43	86.64	\$332.69
10 Hours/day	\$1,040.62	123.77	\$475.27
1375 Hours/year (Est.)	\$572.34	68.07	\$261.40

Teacher Housing Trailer**Weatherization Retrofit Summary:**

- Air sealed building to reduce air leakage.
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- Annual energy savings projection: 43 gallons
- Estimated Annual Heating Fuel Cost Savings: **\$247**

Teacher Housing White House

Total Building Savings All Measures:

• Projected Annual Electrical Savings (kWh):	599
• Projected Annual Electrical Cost Savings:	\$354
• Projected Annual Heating Fuel Savings (gallons):	246
• Projected Annual Fuel Cost Savings:	\$1,415
• Total Projected Annual Energy Cost Savings:	\$1,769

Lighting Retrofit Summary:



Materials Installed

Quantity

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

• Pre-retrofit energy use:	0.444 Kilowatts
• Post-retrofit energy use:	0.102 Kilowatts
• Energy savings projection:	0.342 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	77%
• Estimated Annual Savings:	kWh Saved: 599

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$202.50	24.08	\$92.48
7 Hours/day	\$354.37	42.15	\$161.85
10 Hours/day	\$506.25	60.21	\$231.21
1375 Hours/year (Est.)	\$278.44	33.12	\$127.17

Teacher Housing White House**Weatherization Retrofit Summary:**

- Air sealed building to reduce air leakage.
 - Added 14" of loose-fill fiberglass insulation.
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- | | |
|---|----------------|
| • Annual energy savings projection: | 246 gallons |
| • Estimated Annual Heating Fuel Cost Savings: | \$1,415 |

Wood Shop

Lighting Retrofit Summary:



<u>Materials Installed</u>	<u>Quantity</u>
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	22
CFL-23 W	4

- Pre-retrofit energy use: 2.133 Kilowatts
- Post-retrofit energy use: 1.104 Kilowatts
- Energy savings projection: 1.029 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 48%
- Estimated Annual Savings: kWh Saved: 1,801

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$609.27	72.46	\$278.26
7 Hours/day	\$1,066.22	126.81	\$486.96
10 Hours/day	\$1,523.18	181.16	\$695.66
500 Hours/year (Est.)	\$304.64	36.23	\$139.13

SHISHMAREF NATIVE CORPORATION OWNED BUILDINGS*

SNC Office

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps 19

- Pre-retrofit energy use: 1.596 Kilowatts
- Post-retrofit energy use: 0.874 Kilowatts
- Energy savings projection: 0.722 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 45%
- Estimated Annual Savings: kWh Saved: 1,264

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
Locally Estimated	\$854.99	101.69	\$390.49
4 Hours/day	\$427.50	50.85	\$195.25
7 Hours/day	\$748.12	88.98	\$341.68
10 Hours/day	\$1,068.74	127.11	\$488.11

***Note: Shishmaref Native Corporation** opted to purchase materials and provide labor In-kind to complete energy efficiency retrofits for the **SNC Office**. 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.

SHISHMAREF LUTHERAN CHURCH OWNED BUILDINGS*

Lutheran Church

Lighting Retrofit Summary:



Materials Installed

Quantity

Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	33
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	29
CFL-19W	2

• Pre-retrofit energy use:	7.764 Kilowatts
• Post-retrofit energy use:	4.166 Kilowatts
• Energy savings projection:	3.598 Kilowatts
• Pre-retrofit to post retrofit energy reduction:	46%
• Estimated Annual Savings:	kWh Saved: 6,297

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$2,130.38	253.38	\$972.98
7 Hours/day	\$3,728.16	443.42	\$1,702.72
10 Hours/day	\$5,325.94	633.45	\$2,432.45
800 Hours/year (Est.)	\$1,704.30	202.70	\$778.38

***Note: Shishmaref Lutheran Church** opted to purchase materials and provide labor In-kind to complete energy efficiency retrofits for the **Lutheran Church & Parsonage**. 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.

Parsonage

Lighting Retrofit Summary:

<u>Materials Installed</u>	<u>Quantity</u>
Fluorescent 2-lamp electronic ballast, (2) 25 watt T8 lamps	17
Fluorescent 4-lamp electronic ballast, (4) 25 watt T8 lamps	2

- Pre-retrofit energy use: 1.764 Kilowatts
- Post-retrofit energy use: 0.962 Kilowatts
- Energy savings projection: 0.802 Kilowatts
- Pre-retrofit to post retrofit energy reduction: 45%
- Estimated Annual Savings: kWh Saved: 1,404

Hours Per Day / 250 Days Per Year	Electrical Savings	Comparative Avoided Diesel Use (gal)	Comparative Avoided Diesel Costs
4 Hours/day	\$474.86	56.48	\$216.88
7 Hours/day	\$831.01	98.84	\$379.54
10 Hours/day	\$1,187.16	141.20	\$542.20
1375 Hours/year (Est.)	\$652.94	77.66	\$298.21

***Note: Shishmaref Lutheran Church** opted to purchase materials and provide labor In-kind to complete energy efficiency retrofits for the **Lutheran Church & Parsonage**. 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.

Shishmaref, 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		5	\$20.00	\$100.00	Number of entities x 1 hour each
Staff time for Attending teleconference		3	\$20.00	\$60.00	City time
Staff time for Attending teleconference		2	\$20.00	\$40.00	TC/IRA time
Staff time for Attending teleconference		2	\$20.00	\$40.00	School time
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	3	25	\$75.00	Arthur Sheldon - Water Operator, City
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	3	25	\$75.00	Howard Weyioanna - Council Member, City
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	6	25	\$150.00	Dolly Eningowuk - Assistant Clerk (utility data summary & general assistance), City
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	2	25	\$50.00	Fred Eningowuk - Administrator, Tribe
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	6	25	\$150.00	Jon Kokeok - Maintenance, BSSD
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	2	25	\$50.00	Patrick & Rafael - Maintenance, City
Maint. Staff time to accompany Field Manager on building assessment	1/31-2/5/11	1	25	\$25.00	Archie - Tannery Operator, Tribe
Conservative village office administrative percentage of total project cost less ABSN Admin %. Total project cost = \$150,000/village - (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.	Aug '10 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, 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 - Assessment Visit	1/31-2/5/11	5 nights	\$70 ea.	\$700.00	Lodging at Shishmaref School for Paul Cotter & Dan Lung - Assessment Site Visit
Lodging for ABSN Field Managers - Lx Upgrade Visit	12/11-12/17/11	5 nights	\$70 ea.	\$1,190.00	Lodging at Shishmaref School for Todd Lance (5 nights), Dan Lung (6 nights), & Anna Hilbruner (6 nights) - Lx Upgrade Visit
Transportation and fuel costs - Lx Upgrade Visit	12/11-12/17/11	5 days	\$50/day	\$250.00	Use of Snowmachine & sled - Lx Upgrade Visit. School
City front-end loader to move backhaul to airstrip plus operator time				\$500.00	Use of Front-end loader, Operator's time - Lx Upgrade Visit. City
Shishmaref Lutheran Church: Materials, Labor, & Shipping - Lx Upgrade Visit	12/11-12/17/11			\$2,165.26	All materials, labor, and shipping costs covered for lighting upgrades to the Shishmaref Lutheran Church
Shishmaref Native Corporation: Materials, Labor, & Shipping - Lx Upgrade Visit	12/11-12/17/11			\$419.40	All materials, labor, and shipping costs covered for lighting upgrades to the Shishmaref Native Corporation
TOTAL				\$11,199.66	