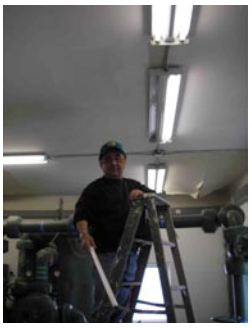
Village End Use Energy Efficiency Measures Program ’05 – ’06
AEA Grant # 2195225 Administered by Alaska Building Science Network

Old Harbor Final Report


7 Community Buildings received energy efficiency upgrades (May ’05 & December ’06)

Tribal Building, City/Fire Hall/ Public Safety/village Native Corp Building, Old Clinic, Senior Center, Water Treatment Building, Pre-School, Old Harbor School, School Gym

Village-Wide Lighting Retrofit Summary:

- Retrofitted 299 light fixtures village-wide with electronic ballasts and T8 lamps
- Installed: 32 compact fluorescent light bulbs village-wide
- T5 Light fixtures were installed in Gym and School Commons area.
- Pre-retrofit energy use for all lighting: 41,432 watts
- Post-retrofit energy use for all lighting: 24,613 watts
- Energy savings projection: 16,819 watts (16.82 kW)
- **Pre-retrofit to post retrofit energy reduction**: 41 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$7,400	1,274 Gallons	$3,122
7 Hours	$12,951	2,230 Gallons	$5, 463
10 Hours	$18,501	3,185 Gallons	$7,804

- Total project cost for village: $38,235
- Simple payback (lighting measures only): 2.95 Years
- Total village-wide in-kind contributions: $ 17,407

Additional Energy Efficiency Measures: (Budget Expense: $ 4,001)

- Boiler Training in Old Harbor for 6 local maintenance staff
- Cleaning and energy efficiency tuning for city building boiler
- Outdoor temp boiler controls installed in 2 buildings (1 still to be installed summer ’07)
- Programmable Thermostats installed in 3 locations

Old Harbor City Owned Buildings

Energy efficient lighting upgrades were completed in six buildings owned by the City of Old Harbor. Existing linear fluorescent light fixtures with T12 lamps and magnetic ballasts were upgraded to T8 fluorescents with electronic ballasts by local maintenance staff. Any incandescent light bulbs were replaced with compact fluorescent bulbs.

City owned Buildings - Lighting Retrofit Summary:

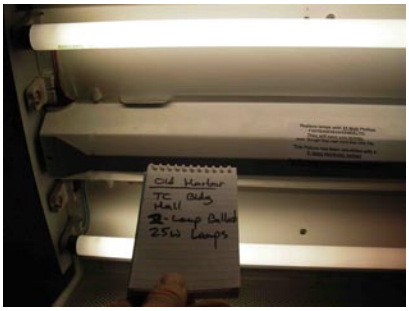
- City lighting upgrades were completed in May, 2005
- Retrofitted 134 linear fluorescent fixtures with T8 lamps and electronic ballasts
- Installed: 32 compact fluorescent light bulbs
- Pre-retrofit energy use for all lighting: 17,014 watts
- Post-retrofit energy use for all lighting: 8,836 watts
- Energy savings projection: 8,178 watts (8.18 kW)
- **Pre-retrofit to post retrofit energy reduction**: 48 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$3,598	620 Gallons	$1,518
7 Hours	$6,297	1,084 Gallons	$2,656
10 Hours	$8,996	1,549 Gallons	$3,795

Tribal Building

Old Harbor Tribal Building


Mike Alexander in Bingo Hall, de-lamped from 4 to 2 lamps



Corridor fixture delamped w/25w lamps

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Tribal Building	29	4	3	2	10	0	0

- Pre-retrofit energy use: 6,612 watts
- Post-Retrofit Energy Use: 2,663 watts
- Energy savings projection: 3,949 watts (3.95 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 60 %

- **Estimated Annual Savings:**

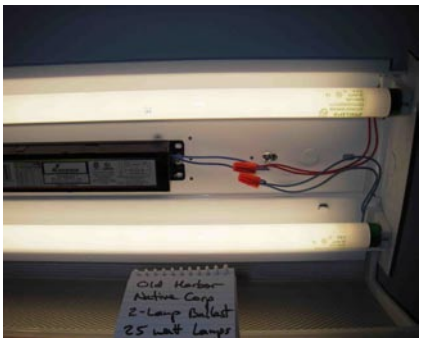
Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,738	299 Gallons	$733
7 Hours	$3,041	524 Gallons	$1,283
10 Hours	$4,344	748 Gallons	$1,832

Notes: The Tribal Building was owned and maintained by the City during the '05-'06 grant cycle. Like many rural Alaska community buildings, the tribal building was over lamped. Before the retrofit there were 38, 4-lamp fixtures and 2, 2-lamp fixtures using old 40 watt lamps. We were able to match or improve light levels while reducing 27, 4-lamp fixtures down to 2-lamp fixtures using 32w T 8s. Corridor lighting was changed to 25w lamps for further savings. Two fixtures in the corridor were taken off line.

City / Fire Hall / Village Corp Building, includes: Fire Hall, City Offices, Village Native

Old Harbor City / Village Corp Building

Fire Truck Garage, 32w T8s



Fixtures in Native Corp lobby received 25w ,T8 lamps.

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
City Offices, Fire Hall, Public Safety	33	2	5	0	4	0	0

- Pre-retrofit energy use: 4,486 watts
- Post-Retrofit Energy Use: 2,507 watts
- Energy savings projection: 1,979 watts (1.98 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 44 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$871	150 Gallons	$367
7 Hours	$1,524	262 Gallons	$643
10 Hours	$2,177	375 Gallons	$918

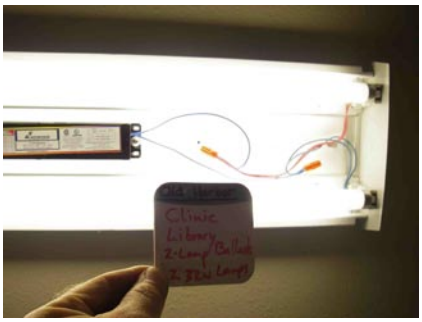
Notes: All light fixtures in the building except the garage, used 4-lamp fixtures that had previously been de-lamped to use only two, T12 lamps. During ABSN retrofits, both magnetic ballasts were taken off-line and removed from fixtures, thus saving an additional 4 - 5 watts per fixture.

For 2nd floor Village Native Corp offices, lobby received 2-lamp ballasts and 25w lamps in 5 of 8 fixtures. Remaining three fixtures were taken completely off-line,. Allowing for ample light for the use of space. All other 2nd floor fixtures received 2-lamp electronic ballasts and 32w T8 lamps.

Old Clinic

Old Harbor, Old Clinic Building

Dentist Lab



Library, typical 2-lamp fixture

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Old Clinic	21	0	0	0	12	0	1

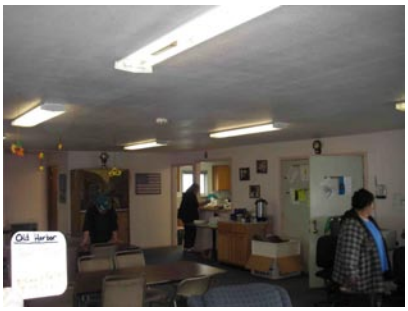
- Pre-retrofit energy use: 2,429 watts
- Post-Retrofit Energy Use: 1,441 watts
- Energy savings projection: 988 watts (.99 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 41 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$435	75 Gallons	$183
7 Hours	$761	131 Gallons	$321
10 Hours	$1,087	187 Gallons	$458

Notes, Old Clinic: All fixtures in the old clinic were 2-lamp, 34w T12s, except dentist's exam room which had been upgraded to a 4-lamp fixture. City of Old Harbor maintenance crews retrofitted all with 32w, T8s. One, 2-lamp fixture in corridor was taken off line.

Senior Center

Old Harbor Senior Center



2-lamp, 32w T8 retrofits

Judy Dobins prepares the best fresh Sea Bass in the North Pacific.

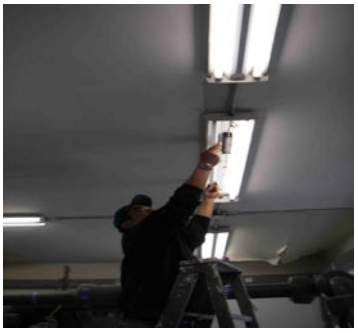
Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Senior Center	14	0	0	0	0	0	0

- Pre-retrofit energy use: 980 watts
- Post-Retrofit Energy Use: 840 watts
- Energy savings projection: 140 watts (.14 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 14 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$62	11 Gallons	$26
7 Hours	$108	19 Gallons	$45
10 Hours	$154	27 Gallons	$65

Notes: Existing lighting in the senior center was all 2-lamp fixtures with 34w T12s. The users of this building appreciated the much improved light quality and energy savings of 32w T8 lamps and electronic ballasts that retrofitted all fixtures.

Water Treatment Building



Old Harbor Water Treatment Bldg

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Water Treatment Building	11	0	0	0	0	0	0

- Pre-retrofit energy use: 902 watts
- Post-Retrofit Energy Use: 660 watts
- Energy savings projection: 242 watts (.24 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 27 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$106	18 Gallons	$45
7 Hours	$186	32 Gallons	$79
10 Hours	$266	46 Gallons	$112

Notes: All 11 fixtures went from 40w, T12s & magnetic ballasts to 32w T8s and electronic ballasts.

Pre-School

Old Harbor Pre-School

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Pre-School	10	0	0	0	0	0	5

- Pre-retrofit energy use: 1,605 watts
- Post-Retrofit Energy Use: 725 watts
- Energy savings projection: 880 watts (.88 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 55 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$387	67Gallons	$163
7 Hours	$678	117 Gallons	$286
10 Hours	$968	167 Gallons	$408

Notes: All light fixtures in the building used 4-lamp fixtures that had previously been de-lamped to use only two, T12 lamps. During ABSN retrofits, both magnetic ballasts were taken off-line and removed from fixtures, thus saving an additional 4 -5 watts per fixture from a previously unused magnetic ballast that was still connected to live wiring. The pre-school was an old National guard building that was substantially over-lit. The picture above shows several 4-lamp fixtures spaced only 2 feet apart. We were able to take half the fixtures off-line and retrofit the remainder with 2, 32w T8 lamps and electronic ballasts. Of 16 existing fixtures in the building, 6 were taken off-line. For fill-in lighting City maintenance crews installed 2, 25w CFLs in previously unused screw-in bulb sockets. Pre-school staff were happy with the light levels and the substantial energy savings.

Old Harbor, Kodiak Island Borough School District Owned Buildings

Typical Classroom, 1 of 7
8, 4-lamp fixtures/rm

Old Harbor School, K-12

All school lighting retrofits:
From 34w to 25 watt lamps

"The school is brighter! This will make the winter months more bearable! I would like to thank Mr. Butler for making our school brighter and more efficient." - Phyllis Clough, Old Harbor School Secretary 3-1-07

Materials Installed	2-Lamp Ballasts (1) 25w lamp	2-Lamp Ballasts (2) 25w lamps	4-Lamp Ballasts (4) 25w lamps
Fixture TOTALS	8	61	96

School owned Building – T8 Lighting Retrofit Summary:

- Substantial lighting upgrades were completed in Fall, 2006, with all T8 retrofits completed by Nov, 2006
- Retrofitted 165 linear fluorescent fixtures with T8 lamps and electronic ballast
- Pre-retrofit energy use for all lighting: 17,998 watts
- Post-retrofit energy use for all lighting: 11,331 watts
- Energy savings projection: 6,667 watts (6.67 kW)
- **Pre-retrofit to post retrofit energy reduction**: 37 %
- **Estimated Annual Savings:**

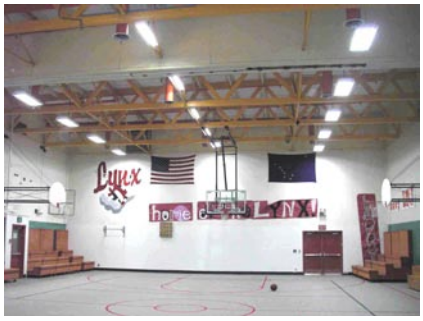
Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$2,933	505 Gallons	$1,237
7 Hours	$5,134	884 Gallons	$2,166
10 Hours	$7,334	1,263 Gallons	$3,094

Old Harbor School Computer Lab

Old Harbor KIBSD staff Glen Clough and Tony Azuyak did the T8 retrofits

Notes: School-wide energy efficient lighting upgrades were completed in all primary areas of the school including classrooms, library, computer lab, bathrooms, kitchen, etc. Existing linear fluorescent light fixtures with 34 watt T12 lamps were upgraded by local, Old Harbor school maintenance staff with assistance from a KIBSD electrician. This was all in-kind labor provided by KIBSD. This lighting retrofit was our first substantial lighting project using Phillip's Energy Advantage 25 watt T8 lamps. This lamp delivers excellent light quality, with Phillip's Hi-Vision phosphor technology delivering 95% lumen maintenance and 85 CRI (High color rendering index results in truest colors. Some standard T8s have a CRI of 76. We were pleased with the results of this retrofit, with a 31% overall savings percentage. The existing lighting was all 34w T12 lamps and lower than average ballast factor magnetic ballasts. The result of this combination was a fairly low light out put but also fairly low existing energy use. Maintenance staff informed me that there were complaints from teachers of inadequate light levels from the existing system. To beat the low energy use by a reasonable margin we had to go with the 25w T8 lamps. Thorough wattage and light meter tests at the school revealed a win-win scenario where we could knock down energy use by 31% while substantially increasing light output. Teachers, staff and students at the school are very pleased with the results.

High Output T5 Lighting Upgrades for the Gym and Commons Area



Old Harbor School Gym
T5 Lighting

Commons / Cafeteria Area
Former 250w Multi-vapor lamps
provided poor indirect lighting

6, 112 w T5 fixtures replaced
7, 250w incandescent bulbs
for 55% electrical savings

The school gym and the commons/cafeteria area were retrofitted with ~ 4', linear T5 fluorescent light fixtures providing much improved light quality at substantially reduced energy use.

The former lighting in the gym was 8-foot, high-output T12 fluorescents. While this lighting provided mid-range energy efficiency, it also came with some problems. The light fixtures were unenclosed with an open metal grating protecting them from impacts with basketballs. Kids playing sports in the gym had to be prepared for occasional 8-foot lamp explosions overhead and a subsequent fall-out of glass and mercury laced dust from impact with basketballs. Our T5 lighting upgrade saved about 24% over the existing lighting. The fully enclosed and lensed T5 fixtures are protected from errant basketballs with heavy-duty wire guards. The new fixtures were also hung lengthwise with the gym, lessening the probability for ball impacts. This T5 lighting retrofit maintained a rapid pay back of 1.65 years on project grant expense due to the in-kind purchase of most of the T5 light fixtures and all the labor provided in-kind by the KIBSD.

The T5 lighting retrofit for the school commons area achieved a 55% energy reduction over the former 250w incandescent lamps applied in an indirect lighting scenario. The existing light level went from a dismal 8 – 10 foot candles to more than 30 foot-candles of light.

Alaska Building Science Network - Old Harbor T5 Lighting Upgrade Details

Gym retrofit was completed in Oct, 2006. Post retrofit utility tracking can begin in Nov, 2006.

Old Harbor Gym	Length (feet)	Width (feet)	Ceiling Hieght (feet)	# of Existing Fixtures	Existing Fixture Wattage	**Total Existing Wattage**	Existing Foot-candles	New Foot-Candles	# of New Fixtures	lamps / fixture	New Fixture Wattage	**Total New Wattage**
	84	55	20	24	205	4,920	30	40	18	3	171	3078
Gym was completed late Oct, 2006								40	6	2	114	684
						Total New wattage for gym lighting = 24% savings						3762

Savings & Payback Calculation for Gym: -23.53658537

Assume 1800 hrs / year for 250 days/year of use
Full cost of electricity: $0.48 /kWh
Watts of existing lighting: 4,920
New wattage for T5 fixtures: 3,762
Calculation: (Watts) x (hrs/year) / (1000w/kw) x (cost of electricity) = (cost / year)
Existing Cost: $4,251

Retrofitted Cost: $3,250

Annual Savings: $ $1,001

Material & shipping cost of Gym retrofit: $1,649.38

Simple Payback: Materials cost / annual savings = **1.64853595** years (for retrofit to pay for itself in grant purchased materials)

Old Harbor School	Length (feet)	Width (feet)	Ceiling Hieght (feet)	# of Existing Fixtures	Existing Fixture Wattage	Total Existing Wattage	Existing Foot-candles	Projected New Foot-Candles	# of New Fixtures	lamps / fixture	New Fixture Wattage	Total New Wattage
Commons Area	35	23	14	6	250	1,500	8	38	6	2	114	684
Commons area was completed in Nov, 2006						Total New wattage for Commons = 54% savings						

-54.4

Savings & Payback Calculation for Gym:

Assume 1800 hrs / year for 250 days/year of use
Full cost of electricity: $0.48 /kWh
Watts of existing lighting: 1,500
New wattage for T5 fixtures: 684
Calculation: (Watts) x (hrs/year) / (1000w/kw) x (cost of electricity) = (cost / year)
Existing Cost: $1,296
Retrofitted Cost: $591
Annual Savings: $ $705

Est material & shipping cost of Gym retrofit: $1,200.00
Simple Payback: Materials cost / annual savings = **1.702069717** years (for retrofit to pay for itself in materials)

Additional Measures Beyond Lighting

Heating Measures for City / Fire Hall / Native Corp Building & Tribal Building:

"Ever since you came out and did that heating class and boiler tune ups and controls, our fuel use has been looking really good - especially considering how cold it's s been!"
- Russel Fox, Old Harbor City Manager 2-28-07.

- 16 hour Boiler Training provided in Old Harbor for 6 local maintenance staff (These training hours were provided in-kind by ABSN)
- Cleaning and energy efficiency tuning completed for City building boiler (estimated 5% overall fuel savings)
- Outdoor temp boiler control installed in City / Native Corp Building. In the summer of '07 an outdoor temp boiler control will be installed in the tribal building along with the new boiler from the old clinic. (estimated 5% - 15% overall fuel savings - conservative 7%)
- Programmable Thermostat installed in fire hall garage (constant 55' setting) (estimated 5% - 15% overall fuel savings - conservative 5%)
- Programmable Thermostat installed in Native Corp offices (night-time set-back: 55') (estimated 5% - 15% overall fuel savings - conservative 5%)
- Total fuel savings predicted: 17% (cleaning and tuning: 5%, outdoor temp control 7%, programmable thermostats throughout building: 5%)

Annual Savings Estimates from Heating Measures:

- Tribal building: FY06 Annual fuel use est: $2,000 x 17% = $340
- Total annual savings estimate from heating measures: $666
- City Building: FY06 Annual fuel use: $1920 x 17% = $326
- Total cost of heating measures including boiler training: $4,001
- Simple payback for City and Tribal building heating measures: 6 years

Old Harbor Boiler Training

Old Harbor Boiler Training for 6 local maintenance staff

Charlie Deer Covering Boiler Controls

Charlie Deer's 2-day, 16 hour Boiler Training Course

During this 16-hour course ABSN's boiler specialist Charlie Deer instructed Old Harbor maintenance staff in the fundamentals of boiler and fuel energy efficiency. This benefit to the grant came through an in-kind contribution of $2,100 provided by ABSN . Training topics covered: fuel, proper heating system sizing, testing boiler efficiency with a flu gas analyzer kit, cleaning and tuning boilers for energy efficiency, control options and proper control function, burner and nozzle components and function, outdoor temperature boiler controls, programmable thermostats, etc.

Outdoor Temperature Control for City / Native Corp / Fire Hall Building

This control senses outside air temperature. It will adjust the boiler to run at cooler temperatures, resulting in decreased fuel consumption during weather patterns of warmer outside air temperature. This control can save 5 – 15% total fuel use of a heating system.

Programmable Thermostats for City / Native Corp / Fire Hall Building

A programmable thermostat was installed in the fire truck garage and set for a constant 55°.

Upstairs in the Native Corp offices another programmable thermostat was installed and set for a constant 55° night-time setback.

Heating Measures for Tribal Building:

Existing boiler in Tribal Building is worn out, corroded and full of leaks

New boiler from old clinic to be installed in summer '08

- In the summer of '07 an outdoor temp boiler control will be installed in the tribal building along with the new boiler from the old clinic.
  – estimated 5% - 15% overall fuel savings
- Programmable Thermostat will also be installed at time of boiler change-over
  – estimated additional 5% - 15% overall fuel savings.
- Periodic boiler cleaning and tuning is expected to occur through Victor Petersen - long-time resident and on-call village maintenance staff person for both City and Tribe. Victor participated in ABSN's 16 hour boiler training and is in charge of the Bacharak flu gas analyzer kit provided to him as the key maintenance staff person in Old Harbor. (estimated 5% overall fuel savings)

Old Harbor, In-Kind Contribution Tracking Record - ABSN Energy Efficiency Projects 2005 - 2006:

Village entities worked with: Tribe, City, School District.

In-Kind Item	Dates	Hours Contri-buted	Hourly Wage	Value / Amount	Notes
Known staff time for attending teleconference, and ABSN training		16	$15.00	$45.00	Hrs contributed column indicates length of telecon and training multiplied by # of village telecon participants
Village office administrative percentage of total project cost less ABSN Admin %. Total project cost = $38,235/village - (our admin percentage , (around 9%) Approx: $3,440) = $34,795 x 5% = $1,740 (this 5% 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 primarily for cumulative, otherwise unaccounted time expense for project support.	Jan '05 - Jan '07			$1,740.00	Each time we call, email, or fax a village entity, someone has to receive the communication, review and/or forward the information, follow-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, request a labor reimbursement agreement, or invoice etc, etc. Village expenses for phone charges, copying and fax costs, office supplies, etc are part of this amount.
Lodging for ABSN Field Managers – 3 site visits site-visit				$160.00	2 nights - Room & Board at Sportsman's Lodge - paid by City, and 4 nights at school - $20/night
Transportation and fuel costs – 3 site visits site-visit				$360.00	in-kind rent truck for 9 days plus fuel. $40/day
City of Old Harbor for Victor Peterson		25.5	$20.00	$510.00	in-kind labor 1st and 2nd site visits
City of Old Harbor for Michael Alexandrof		14	$15.00	$210.00	in-kind labor 1st and 2nd site visits
City of Old Harbor for Michael Alexandrof - Final site visit		10	$15.00	$150.00	in-kind labor final site visit
City of Old Harbor for 2 guys working with Charlie Deer heating site visit, Oct 23-27. See 11-1-06 email from Charlie about in-kind.	Oct-06	17	$12.00	$204.00	8.5 hours each (17 total) for Simon and Derick Lariyana to clean and tune boiler at Fire Hall - paid by Russell Fox.
ABSN In-kind - 16 hour boiler training for Charlie Deer's class time	Oct - '06			$2,100.00	ABSN In-kind - 16 hours training and 8 hrs prep time paid at @75/hr: plus 3 days per diem and materials = $ 2,100.
KIBSD local Old Harbor staff labor for T8 School-wide retrofit				$1,320.00	40 hours each for both Glen Clough ($15/hr - $600) and Tony Azuyak, ($18/hr - $720)
Employer expense for Workman's Comp				$78.85	Generic multiplier: .05 x gross payroll of village labor
KIBSD lighting upgrades - materials contribution				$3,560.58	(18) 3-lamp fixtures
KIBSD labor, travel, lodging, per diem for T5 retrofits in Gym and Commons area				$5,637.48	For Kenny Daws, KIBSD Electrician and Caleb electrician assist, include 2 trips to OH, (documented record from KIBSD)
KIBSD - Shipping for lighting fixtures for school	6/19/06			$650.00	1273 lbs. of ballasts, T8s, T5s, etc. Servant Air Airway bill: 345-0215-6081
KIBSD - paid for shipping Lazy Bay Ferry to back-haul old lamps and ballasts to Kodiak				$54.00	Minimum charge
Servant Air - Disposal / recycle shipment T12s & ballasts - back-haul	6/20/06			$340.00	Donated by Servant Air for 856 lbs. of T12s/T8s. Airway bill: 345-0205-1840 ,
NAC - Disposal / recycle shipment T12s & ballasts - back-haul	6/21/06			$287.31	Donated by NAC for 856 lbs. of T12s/T8s. Airway bill: 345-0205-1840.
	TOTAL			$17,407.22	