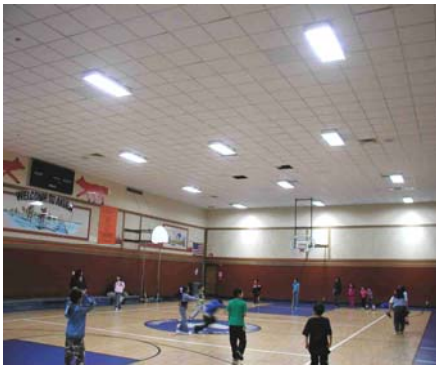
Village End Use Energy Efficiency Measures Program ’05 – ’06
AEA Grant # 2195234 Administered by Alaska Building Science Network

Kasigluk Final Report



Community Summary

14 Community buildings and 7 teacher housing units received energy efficiency upgrades February ’06 - Summer ’07

KTC Tribal Office Building, KTC/AVCP Housing Authority Office Building, Clinic, Public Safety Building, Sanitation Maintenance Shop, Washeteria, General Store, Hardware Store, Small Store, Kasigluk Inc. Corp. Board Office, Marina Welding Shop/Fuel Station, LKSD Maintenance Shop, Akiuk School Multipurpose, Akula School Multipurpose, 7 Teacher Housing Units

Village-Wide Lighting Retrofit Summary:

- Retrofitted 184 light fixtures village-wide with electronic ballasts and T8 lamps
- Installed: 79 compact fluorescent light bulbs village-wide
- T5 Light fixtures were installed in Akula and Akiuk School Gymnasiums
- Pre-retrofit energy use for all lighting: 38,572 watts
- Post-retrofit energy use for all lighting: 20,936 watts
- Energy savings projection: 17,636 watts (17.64 kW)
- **Pre-retrofit to post retrofit energy reduction**: 46 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$10,582	1,287 Gallons	$2,355
7 Hours	$18,518	2,252 Gallons	$4,120
10 Hours	$26,454	3,217 Gallons	$5,886

- Total project cost for all measures: $ 37,250
- Simple mean payback* (lighting measures only): 2.01 Years
  *(All grant funds, but accounting for lighting savings only)
- Total village wide in-kind contribution: $ 16,487

Additional Energy Efficiency Measures: (Budget Expense: $ 1,989)

Local maintenance staff: Wilson Twitchell traveled to Nunapitchuk and participated in a Nine-hour, hands-on energy efficiency boiler training in Nunapitchuk

Kasigluk Traditional Council Owned Buildings

These buildings were owned and maintained by KTC during the '05-'06 grant cycle.

Traditional Council owned Buildings - Lighting Retrofit Summary:

- Lighting upgrades completed in February, 2006
- Retrofitted 52 linear fluorescent fixtures with T8 lamps and electronic ballasts
- Installed: 46 compact fluorescent light bulbs
- Pre-retrofit energy use for all lighting: 8,719 watts
- Post-retrofit energy use for all lighting: 3,748 watts
- Energy savings projection: 4,971 watts (4.97 kW)
- **Pre-retrofit to post retrofit energy reduction**: 57 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$2,983	363 Gallons	$664
7 Hours	$5,220	635 Gallons	$1,161
10 Hours	$7,457	907 Gallons	$1,659

KTC Tribal Office Building (Akula)

KTC EPA IGAP Office.

CFL in stairwell.

KTC front office.

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Main KTC Offices-Akula	0	0	10	0	0	1	0	0

- Pre-retrofit energy use: 680 watts
- Post-Retrofit Energy Use: 483 watts
- Energy savings projection: 197 watts (.20 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 29 %

- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$118	14 Gallons	$26
7 Hours	$207	25 Gallons	$46
10 Hours	$296	36 Gallons	$66

Notes: Rural CAP completed a prior retrofit of electronic ballasts and 32-watt T-8 lamps in most fixtures. We were able to match light levels while reducing to 25 watt T8s in the entire building.

KTC/AVCP Housing Authority Office Building (Akula)

T8 upgrade in office space.

Hallway.

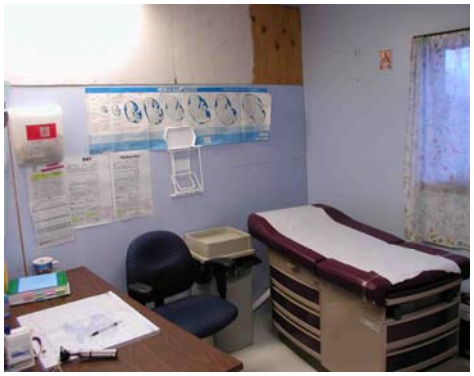
Office space.

Materials Installed	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL	8-foot 1-lamp fixtures
KTC Housing Authority Office Akula	1	3	0	1	2	0	3

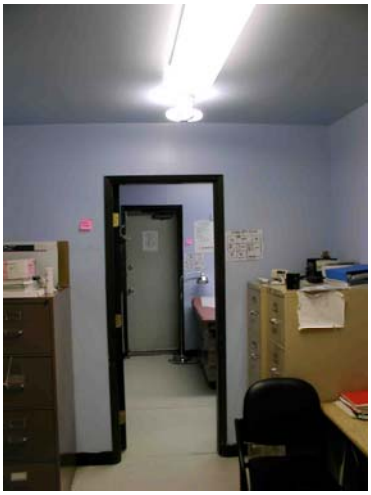
- Pre-retrofit energy use: 751 watts
- Post-Retrofit Energy Use: 454 watts
- Energy savings projection: 297 watts (.30 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 40 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$178	22 Gallons	$40
7 Hours	$312	38 Gallons	$69
10 Hours	$446	54 Gallons	$99

Clinic (Akula)



Clinic exam room.



Clinic office space.

Paul Twitchell works on a fixture.

Materials Installed	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Clinic-Akula	0	2	9	3	1	0	1

- Pre-retrofit energy use: 1,528 watts
- Post-Retrofit Energy Use: 822 watts
- Energy savings projection: 646 watts (.65 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 42 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$388	47 Gallons	$86
7 Hours	$678	82 Gallons	$151
10 Hours	$969	118 Gallons	$216

Public Safety Office (Akula)

Materials Installed	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Public Safety Bldg Police Station-Akula	0	0	0	0	12	2	6

- Pre-retrofit energy use: 1,290 watts
- Post-Retrofit Energy Use: 346 watts
- Energy savings projection: 944 watts (.94 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 73 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$566	69 Gallons	$126
7 Hours	$991	121 Gallons	$221
10 Hours	$1,416	172 Gallons	$315

Notes: All incandescent light bulbs were replaced with compact fluorescent lamps, which will provide excellent energy savings. However, due to fixture design and the limited number of existing fixtures, the dispatch office area remains poorly lit.

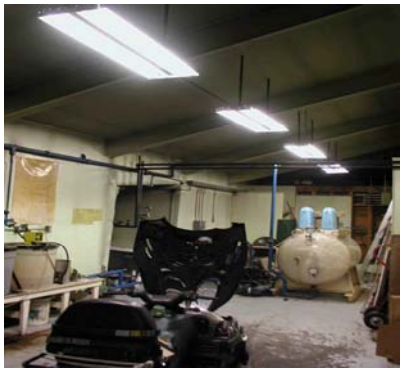
Sanitation Maintenance Shop (Akula)

Materials Installed	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL	8-foot 1-lamp fixtures
Sanitation Warehouse / Maint Shop Akula	0	0	0	7	0

- Pre-retrofit energy use: 780 watts
- Post-Retrofit Energy Use: 175 watts
- Energy savings projection: 605 watts (.61 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 78 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$363	44 Gallons	$81
7 Hours	$635	77 Gallons	$141
10 Hours	$908	110 Gallons	$202

Washeteria (Akiuk)


Washeteria chemical room.


Electronic ballast Installed.


Washeteria shower room.

Materials Installed	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Washeteria-Akiuk	0	7	11	3	5	8	0

- Pre-retrofit energy use: 3,690 watts
- Post-Retrofit Energy Use: 1,408 watts
- Energy savings projection: 2,282 watts (2.28 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 62 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,369	166 Gallons	$305
7 Hours	$2,396	291 Gallons	$533
10 Hours	$3,423	416 Gallons	$762

Notes: All fixtures were retrofitted with electronic ballasts and 25-watt T-8 lamps. Thirteen 4-lamp fixtures were reduced to 2-lamps each bringing additional savings. These upgrades improved light levels in the main washeteria lobby, rear maintenance shop, boiler room, chemical room and back office while reducing energy use significantly.

Kasigluk Village Corporation Owned Buildings

These buildings were owned and maintained by Kasigluk, Inc. during the ’05-’06 grant cycle.

Village Corporation owned Buildings - Lighting Retrofit Summary:

- Lighting upgrades completed in February, 2006
- Retrofitted 84 linear fluorescent fixtures with T8 lamps and electronic ballasts
- Installed: 2 compact fluorescent light bulbs
- Pre-retrofit energy use for all lighting: 12,907 watts
- Post-retrofit energy use for all lighting: 7,278 watts
- Energy savings projection: 5,629 watts (5.63 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	$3,377	411 Gallons	$752
7 Hours	$5,910	719 Gallons	$1,315
10 Hours	$8,444	1,027 Gallons	$1,879

General Store (Akula)

Front office.

Eight foot T8 upgrades.

Materials Installed	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL	8-foot 2-Lamp fixtures 59w lamps
General Store-Akula	1	6	0	0	0	0	30

- Pre-retrofit energy use: 5,252 watts
- Post-Retrofit Energy Use: 3,899 watts
- Energy savings projection: 1,353 watts (1.35 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 26 %

- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$812	99 Gallons	$181
7 Hours	$1,421	173Gallons	$316
10 Hours	$2,030	247 Gallons	$452

Notes: Existing lighting in the primary retail area of the store was provided by thirty, 8ft, 2-lamp fixtures with magnetic ballasts and 75-watt T-12 lamps. Village corp.maintenance staff retrofitted those with electronic ballasts and 59- watt T-8 lamps. The light levels in all aisles, office spaces and storage areas are greatly improved while the energy use dropped 26%.

Hardware Store (Akula)

T8 Retro-Kit.

Harry Andrew works on a fixture.

Materials Installed	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Hardware Store-Akula	12	0	2	0	0	0	0

- Pre-retrofit energy use: 4,120 watts
- Post-Retrofit Energy Use: 1,544 watts
- Energy savings projection: 2,576 watts (2.58 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 63 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,546	188 Gallons	$344
7 Hours	$2,705	329 Gallons	$602
10 Hours	$3,864	470 Gallons	$860

Notes: Four-foot, four-lamp fixtures were de-lamped to two 25-watt lamps per fixture, with one fixture taken off-line. Twelve 8ft, high output (HO) 2-lamp fixtures in the main retail area were retrofitted with 4-foot, 4-lamp T-8 "retro-kits, with an energy use of 120 watts/fixture." The original 8ft fixtures operated at 260 systems watts per fixture and provided more light than necessary. This strategy greatly reduced the wattage per fixture while providing plenty of light for the retail area.

Small Store (Akiuk)

Materials Installed	2-Lamp Ballasts 32w lamps	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Small Store Akiuk	0	0	0	4	0	1	1	0

- Pre-retrofit energy use: 495 watts
- Post-Retrofit Energy Use: 241 watts
- Energy savings projection: 254 watts (.25 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 51 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$152	19 Gallons	$34
7 Hours	$267	32 Gallons	$59
10 Hours	$381	46 Gallons	$85

Kasigluk Inc. Board Offices (Akula)

Kasigluk, Inc. boardroom.

Michael Tinker, Jr. works on a fixture.

Corporation office space.

Materials Installed	4-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Corp Board Office-Akula	0	0	6	0	0	0	0

- Pre-retrofit energy use: 960 watts
- Post-Retrofit Energy Use: 312 watts
- Energy savings projection: 648 watts (.65 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 68 %

- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$389	47 Gallons	$87
7 Hours	$680	83 Gallons	$151
10 Hours	$972	118 Gallons	$216

Notes: All six 4ft (four lamp) fluorescent light fixtures were de-lamped to 2-lamps each and retrofitted with electronic ballasts and 25 watt T-8 lamps which improved light levels and reduced energy use significantly.

Marina/Welding Shop

T8 upgrades in welding shop.

Roger White Works on a fixture.

Marina retail space.

Materials Installed	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	4-Lamp Ballasts 25w lamps	13w CFL	20w CFL	25w CFL
Marina/welding shop-Marina	8	12	3	0	0	0

- Pre-retrofit energy use: 2,080 watts
- Post-Retrofit Energy Use: 1,282 watts
- Energy savings projection: 798 watts (.80 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 38 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$479	58 Gallons	$107
7 Hours	$838	102 Gallons	$186
10 Hours	$1,197	146 Gallons	$266

Lower Kuskokwim School District Owned Buildings - Kasigluk School

These buildings were owned or leased and maintained by LKSD during the '05-'06 grant cycle.

School owned Buildings - Lighting Retrofit Summary:

- Lighting upgrades completed in Summer 2007
- Retrofitted 48 linear fluorescent fixtures with T8 lamps and electronic ballasts
- Installed: 31 compact fluorescent light bulbs
- Pre-retrofit energy use for all lighting: 16,946 watts
- Post-retrofit energy use for all lighting: 9,910 watts
- Energy savings projection: 7,036 watts (7.04 kW)
- **Pre-retrofit to post retrofit energy reduction**: 42 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$4,222	513 Gallons	$939
7 Hours	$7,388	898 Gallons	$1,644
10 Hours	$10,554	1,283 Gallons	$2,348

LKSD Maintenance Shop

Materials Installed	2-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	13w CFL	20w CFL	25w CFL	1-lamp fixture
LKSD Shop	0	0	2	0	12	0	0

- Pre-retrofit energy use: 880 watts
- Post-Retrofit Energy Use: 344 watts
- Energy savings projection: 536 watts (.54 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 61 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$322	39 Gallons	$72
7 Hours	$563	68 Gallons	$125
10 Hours	$804	98 Gallons	$179

Notes: Various CFL wattage combinations and de-lamping enabled maximum light output and minimum wattage. These strategies greatly improved light levels in the working space while reducing total wattage per fixture.

Teacher Housing Units

Materials Installed	2-Lamp Ballasts 32w lamps	2-Lamp Ballasts 25w lamps	2-Lamp Fixtures 3-lamp ballasts 25w lamps	13w CFL	20w CFL	25w CFL	1-lamp fixture
Teacher Housing	0	44	1	5	14	0	1

- Pre-retrofit energy use: 5,041 watts
- Post-Retrofit Energy Use: 2,498 watts
- Energy savings projection: 2,543 watts (2.54 Kw)
- **Pre-retrofit to post retrofit energy reduction**: 50 %
- **Estimated Annual Savings:**

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,526	186 Gallons	$340
7 Hours	$2,670	325 Gallons	$594
10 Hours	$3,815	464 Gallons	$849

High Output T5 Lighting Upgrades for Akula and Akiuk School Gymnasiums

Akula High School Multi-Purpose With T-5 Upgrades

The first phase of Akula gymnasium pictured above was completed during the '06 summer recess by in-kind labor provided by LKSD.

LKSD Gymnasium/Multipurpose Room (Akula)
Fifteen high-pressure sodium fixtures operating at 415 watts were replaced by fifteen T-5 (4-lamp) fixtures operating at 228 watts each. An additional eight (2-lamp) T-5 fixtures will be installed during summer 2007 to increase light levels. Including the additional 2-lamp fixtures this upgrade will achieve an overall 30% savings.

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,136	138 Gallons	$253
7 Hours	$1,988	242 Gallons	$442
10 Hours	$2,840	345 Gallons	$632

LKSD Gymnasium/Multipurpose Room (Akiuk)
Notes: Twelve metal halide fixtures operating at 400 watts each will be replaced by twelve T-5 (4-lamp) fixtures operating at 228 watts each to be installed during summer 2007. This upgrade will greatly improve light levels in the gym with an estimated 43% savings in total wattage.

Hours Per Day / 250 Days Per Year	Electrical Savings	Avoided Diesel Use	Avoided Diesel Costs
4 Hours	$1,238	151 Gallons	$276
7 Hours	$2,167	264 Gallons	$482
10 Hours	$3,096	376 Gallons	$689

Kasigluk - Akiuk T5 Lighting Upgrade Details - ABSN Energy Efficiency Projects '05-'06

These retrofits will be completed by LKSD before fall school session '07.

Kasigluk Akiuk 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**
Gym	62	52	sloping (18'-29')	12	400	4,800	30 - 35 DL	45	12	4	228	2736

New T5 wattage = 57 watts / lamp, which includes ballast wattage

Total New wattage for gym = 43% savings

Savings & Payback Calculation for Gym: -43

Assume 1750 hrs / year for 250 days/year of use

Full cost of electricity: $0.60 /kWh

Watts of existing lighting: 4,800

New wattage for T5 fixtures: 2,736

Calculation: (Watts) x (hrs/year) / (1000w/kw) x (cost of electricity) = (cost / year)

Existing Cost: $5,040

Retrofitted Cost: $2,873

Annual Savings: $ $2,167

Material & shipping cost of Gym retrofit: $3,510.00

Simple Payback: Materials cost / annual savings = **$1.62** years (for retrofit to pay for itself in materials)

Kasigluk - T5 Lighting Upgrade Details - ABSN Energy Efficiency Projects '05-'06

The 15, 4-lamp fixtures were completed summer of '06. The additional 8, 2-lamp fixtures will be completed by LKSD before fall school session '07.

Kasigluk - Akula 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**
Kasigluk, Akula	86	55	19	15	415	6,225	25 av USKH & DL	43	15	4	228	3420
New T5 wattage = 57 watts / lamp, which includes ballast wattage									8	2	114	912
					Total New wattage for gym = 30 % savings							4332

Savings & Payback Calculation for Gym: -30.40963855

Assume 1750 hrs / year for 250 days/year of use

Full cost of electricity: $0.60 /kWh

Watts of existing lighting: 6,225

New wattage for T5 fixtures: 4,332

Calculation: (Watts) x (hrs/year) / (1000w/kw) x (cost of electricity) = (cost / year)

Existing Cost: $6,536

Retrofitted Cost: $4,549

Annual Savings: $ $1,988

Material & shipping cost of Gym retrofit: $7,804.00

Simple Payback: Materials cost / annual savings = **3.93** years (for retrofit to pay for itself in materials)

T-12 Lamp and magnetic ballast recycling

All waste lamps and ballasts were removed from the community for recycling including forty-five PCB ballasts.

T-12 8ft lamps prepared for recycling.

Lamp recycling container .

Lamps prepared for shipping.

Heating Energy Efficiency Site Visit by Charlie Deer May 2 & 3, 2006
Held in Nunapitchuk – attended by 1 maintenance staff from Kasigluk

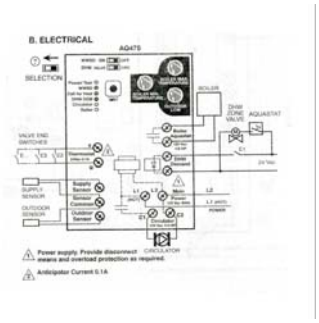
Boiler –room class-time

Charlie Deer demonstrating heating control systems

ABSN boiler specialist Charlie Deer traveled to Nunapitchuk and gave a 9-hour classroom and hands-on boiler energy efficiency care and maintenance training for maintenance staff from Nunapitchuk. Maintenance staff Wilson Twitchell from Kasigluk traveled to Nunapitchuk and attended the training in Nunapitchuk. Charlie Deer made special mention of Wilson Twitchell as someone who had strong potential for further training possibilities that Charlie felt could lead to job or career placement in heating maintenance. *"Wilson Twitchell from Kasigluk is a top hand. (ie. Throw him a ball and he picks it up and runs with it). I am sending him a flue gas analyzing kit. He can teach others to program thermostats, etc."* - Charlie Deer. The city administration office building and boiler was used for the training. A never used flue gas analyzer kit was found in the Laundromat and utilized for the training.

Components of a Bacharach Flu Gas Analyzing Kit used in boiler efficiency training and left with capable maint staff in their villages.

Smoke-test kit for analyzing flu gases for boiler efficiency



Schematic of outdoor temperature sensing boiler control

The city boiler was found to have gross glycol leaks which resulted in a failed expansion tank as well as deterioration of all other ferous metal in the system. To mitigate system leakage Charlie and trainees removed two of six di-electric unions and replaced them with sweat to thread adapters, then installed a new expansion tank. Class-time also included programming 5 setback thermostats for various community buildings and installing one for the city office building. Remaining programmed thermostats were given to the maintenance staff attending to install in their buildings.

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

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

In-Kind Item	Dates	Hours Contri-buted	Hourly Wage	Value / Amount	Notes
Staff time for project contact, introduction, and review of intro materials (Number of entities x 1 hour each)		3	$15.00	$45.00	Hrs contributed column indicates # of entities we worked with in the village. $15 / hr is our estimated average wage for local village staff: Tribal Administrators, City Clerks, Facilities Managers, maintenance staff, etc.
Staff time for Attending teleconference all entities village-wide		10.5	$15.00	$157.50	Hrs contributed column indicates length of telecon multiplied by # of village telecon participants
Office manager and/or Staff time for site visit set-up		6	$15.00	$90.00	city, tribal, corp store manager mtg time 1.5 hrs.
Office manager and/or Staff time for lighting upgrades follow-up				$125.00	EPA IGAP time for lighting upgrade follow up
Office Manager / Staff time for upgrades beyond lighting				$160.00	IRA/Corp administrative
Kasigluk Corp Maint. Staff		70	$10.00	$700.00	donated a 70 hrs maintenance worker payroll at $10/hr (raw figure only-hourly workers comp contributions and etc, not figured in)
Maint. Staff time to attend ABSN training	3/13/06		$12.00	$223.40	Training hours for Kasigluk TC maint staff
Village office administrative percentage of total project cost less ABSN Admin %. Total project cost = $37,250/village - (our admin percentage , (around 9%) Approx: $3,352) = $33,897 x 5% = $1,694 (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			$1,694.00	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.
Transportation and fuel costs - 1st assessment site-visit	Jan/Dec 2006			$250.00	4-wheeler rental 7 days + VPO transportation to Nunapitchuk
Lodging for ABSN Field Manager - all site visits		6	20	$120.00	School rate: 6 nights
Employer share of payroll contributions	3/13/06			$58.26	
Payroll/bookkeeping costs				$75.00	1 day- for maint. worker payroll
LKSD local Labor for school lighting retrofits		37	$15.00	$555.00	Complete lighting upgrades (not T-5s)
LKSD cert. electrician maint labor for T5 retrofits for Kasigluk **Akula** site				$7,190.00	LKSD record including air fare and including est for installing additional 8, 2-lamp T5s including air fare, etc.
LKSD cert. electrician maint labor for T5 retrofits for Kasigluk **Akiuk** site				$5,000.00	Est for Akiuk site - yet to be installed in summer '07.
Employer expense for Workman's Comp		883	0.05	$44.15	Generic multiplier: .05 x gross payroll of village labor
	TOTAL			$16,487.31	