Energy Efficiency in Southeast Businesses

Photo Credit: Tim Leach

SOUTHEAST CONFERENCE

Annual Meeting Haines, AK
September 21, 2017

Conservation–
Using Less

VS

Efficiency – “Doing More with Less”

Energy Audit Traveling Team **Phase I**

Public and Private Buildings Audited

Hoonah:	11
Haines:	9
Klawock:	6
Craig:	8

Total: Over 230,000ft²

Implementation Cost of Recommended EEMs:	$382,701
Estimated Annual Savings:	$173,782
Simple Payback:	2.2 years!

REAP Renewable Energy Alaska Project

HAA AANÍ

ALASKA ENERGY AUTHORITY

USDA

SOUTHEAST CONFERENCE

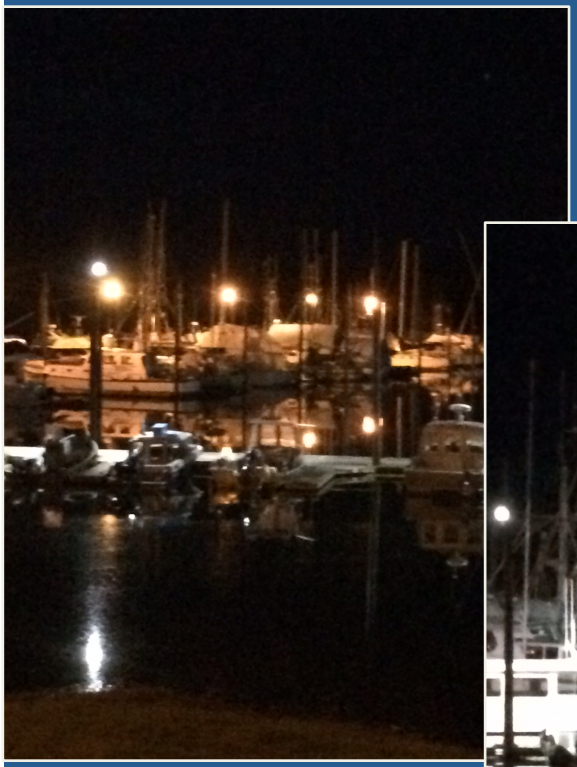
SUSTAINABLE SOUTHEAST PARTNERSHIP

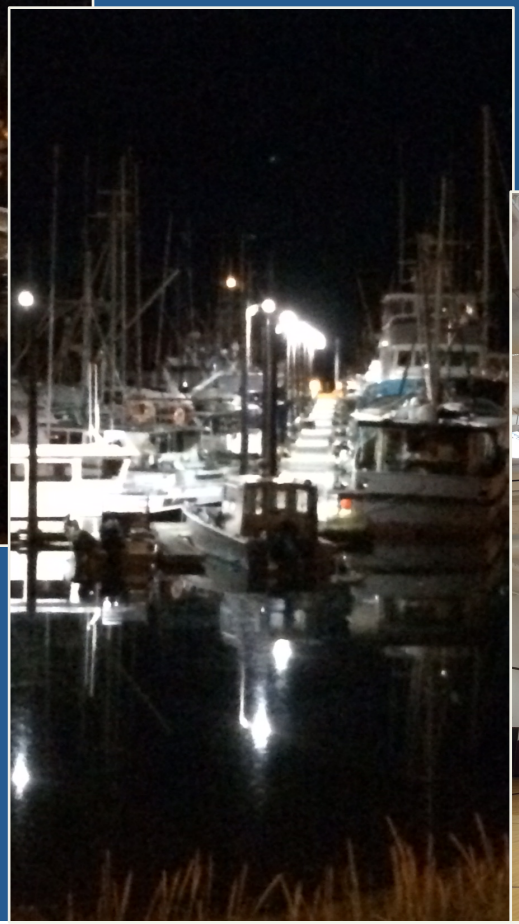
Alaska Housing FINANCE CORPORATION

Energy Audits of Alaska

Hoonah's Energy Champions

- Water Treatment Plant
- Hoonah Pool
- Hoonah Gym
- City Hall
- Harbor
- City Shop
- Youth Center





"This pic is of the first LED conversion being completed at City Hall! We have 40 fixtures with 120 bulbs that we are changing out to ring in the new year."

Dennis Gray
City Administrator
City of Hoonah

150 bulbs
22 watt savings / bulb
1,560 hours used / year
$0.22 / kwh
$1,133 saved / year (estimate)

Energy Audit Program Phase II

Businesses & Fishing Vessels (floating businesses)

Funded through U.S. Department of Agriculture, Alaska Housing Finance Corporation, and the Sustainable Southeast Partnership – **75% discount**

Implementation Cost of Recommended EEMs:	$1,364,862
Estimated Annual Savings:	$226,105
Simple Payback:	6 years

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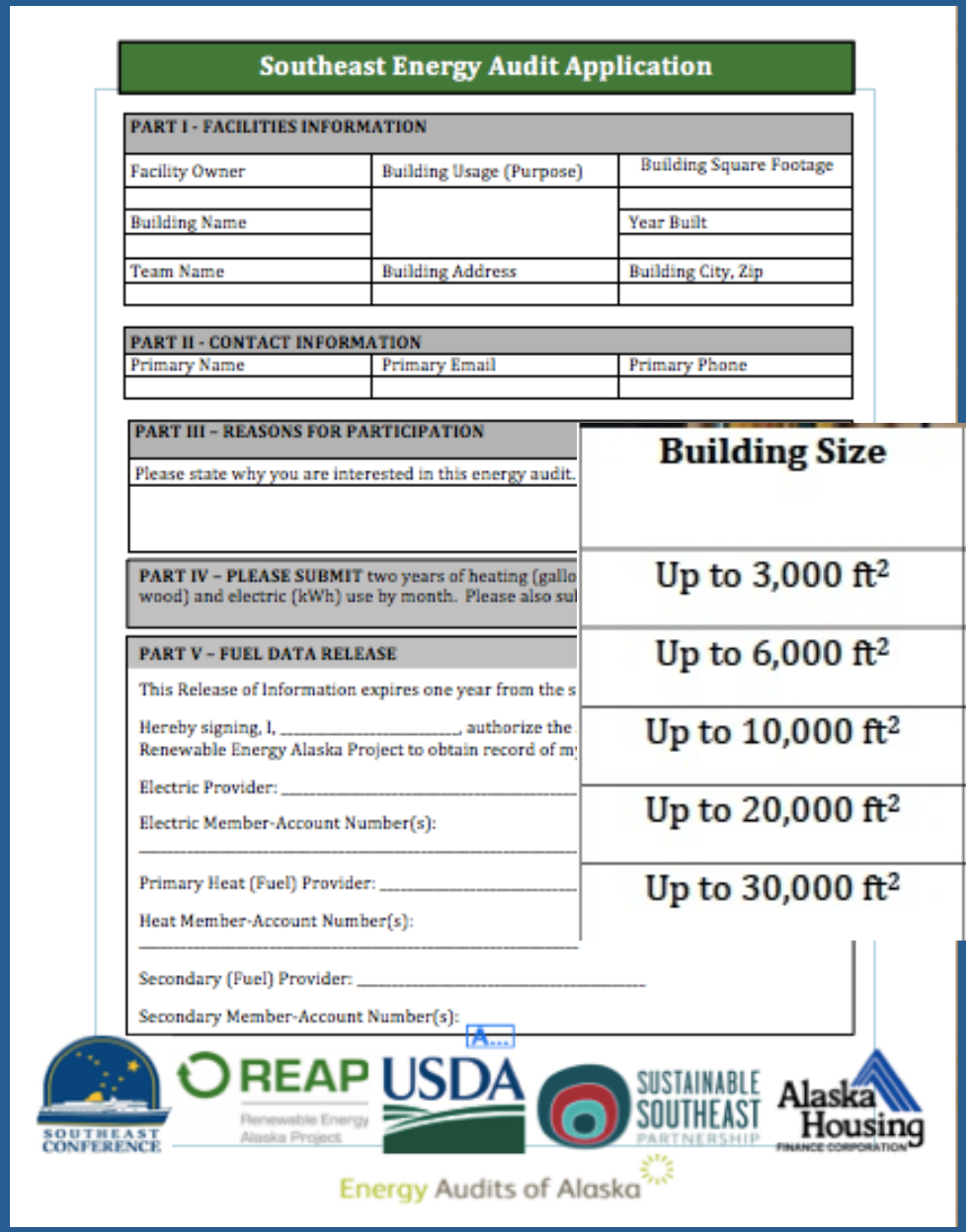
SUSTAINABLE SOUTHEAST PARTNERSHIP

Alaska Housing FINANCE CORPORATION

Save Energy
Expand Business



Southeast Energy Audit Application

PART I - FACILITIES INFORMATION		
Facility Owner	Building Usage (Purpose)	Building Square Footage
Building Name		Year Built
Team Name	Building Address	Building City, Zip

PART II - CONTACT INFORMATION		
Primary Name	Primary Email	Primary Phone

PART III – REASONS FOR PARTICIPATION

Please state why you are interested in this energy audit.

PART IV – PLEASE SUBMIT two years of heating (gallo
wood) and electric (kWh) use by month. Please also sul

PART V – FUEL DATA RELEASE

This Release of Information expires one year from the s

Hereby signing, I, _____, authorize the
Renewable Energy Alaska Project to obtain record of m

Electric Provider: _____

Electric Member-Account Number(s):

_____

Primary Heat (Fuel) Provider: _____

Heat Member-Account Number(s):

_____

Secondary (Fuel) Provider: _____

Secondary Member-Account Number(s):

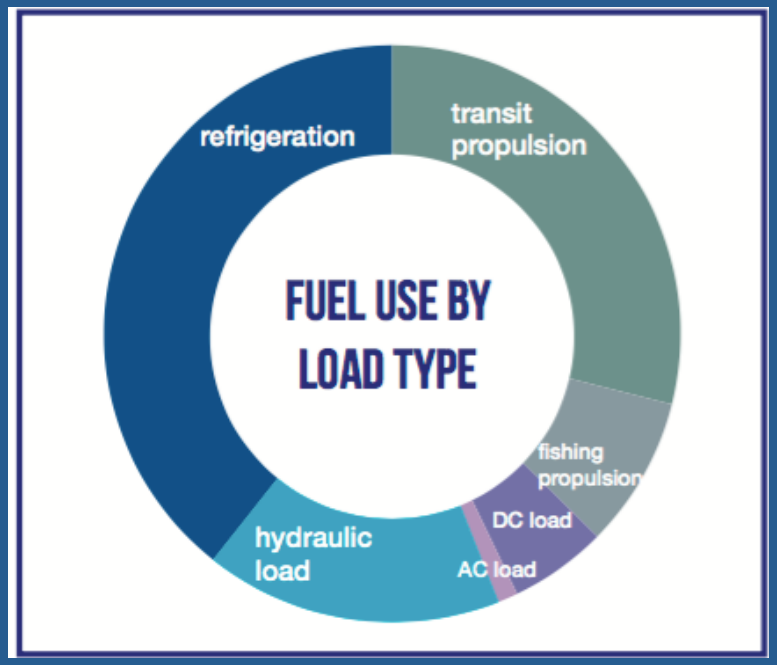
SOUTHEAST CONFERENCE · REAP Renewable Energy Alaska Project · USDA · SUSTAINABLE SOUTHEAST PARTNERSHIP · Alaska Housing Finance Corporation

Energy Audits of Alaska

Building Size	Cost of Level I Energy Audit	Cost to Building Owner (25%)
Up to 3,000 ft²	$600	$150
Up to 6,000 ft²	$900	$225
Up to 10,000 ft²	$1,200	$300
Up to 20,000 ft²	$1,600	$400
Up to 30,000 ft²	$2,100	$525

New this year – focus on fuel efficiency in fishing vessels!

**Vessel Energy Analysis Tool Available*



Alaska Longline Fishermen's Association

AFDF Alaska Fisheries Development Foundation, Inc.

a fisherman's guide to

FUEL EFFICIENCY

Improving fuel efficiency can help fishermen to save money and reduce their carbon footprint.

HERE'S HOW:

In 2013, the Alaska Fisheries Development Foundation, the Alaska Longline Fishermen's Association, and the Alaska Sea Grant Marine Advisory Program collaborated on a project to conduct energy audits on small Alaska fishing vessels. The energy audits collected baseline data on how much energy various systems on a fishing vessel use and provide context for energy conservation measures.

The information below is based on the Alaska Sea Grant publication "Saving Money with Fishing Vessel Energy Audits", a result of this collaborative project.

GENERAL OPERATION

Plan route
Take advantage of tides, currents, and predicted winds to save fuel

Adjust your autopilot
Ensure autopilot is tuned to minimize yaw and steer the straightest possible course

Reduce drag
Keep the hull clean by removing marine growth regularly. Minimize underwater appendages such as rolling chocks, transducers, stabilizers, and mounts

Use shore power
When dockside, using shore power is more cost effective than running an onboard diesel generator

Slow down
Decreasing your speed significantly reduces fuel consumption. This is the **#1** way to save fuel!

ENGINE EFFICIENCY

Check exhaust
Exhaust from a well-maintained diesel engine is almost invisible

Check propulsion
A typical propeller converts only about 50% of horsepower into thrust. Improper sizing or marine growth can make propellers even less efficient

Use diesel engines fully loaded
Diesel engines are most efficient when providing about **40%-80%** of their rated horsepower. At light loads, diesel engines use more fuel/HP

Videos & information available on www.afdf.org and www.alfafish.org

Energy Audit Traveling Team **Phase I & II**

Public and Private Buildings Audited

Hoonah:	11	
Haines:		11
Klawock:	6	
Craig:	8	
Skagway:	4	
Metlakatla:	2	
Juneau:		5
Sitka:	6	
Vessels:	2	

Total: Over 360,000ft^2

Implementation Cost of Recommended EEMs:	$1,747,563
Estimated Annual Savings:	$399,887
Simple Payback:	4.4 years

NEW! Energy Efficiency Leadership Training Program

- Increase Community Capacity – Home Energy Leader is Trained and Paid per Home
- Reduce Residential Energy Costs
- LED Bulk Purchase
- Focus on High Energy Cost Communities with a Goal of 10% of homes
  - Hoonah, Kake, Yakutat, Angoon
  - Metlakatla

Training in November in Juneau!

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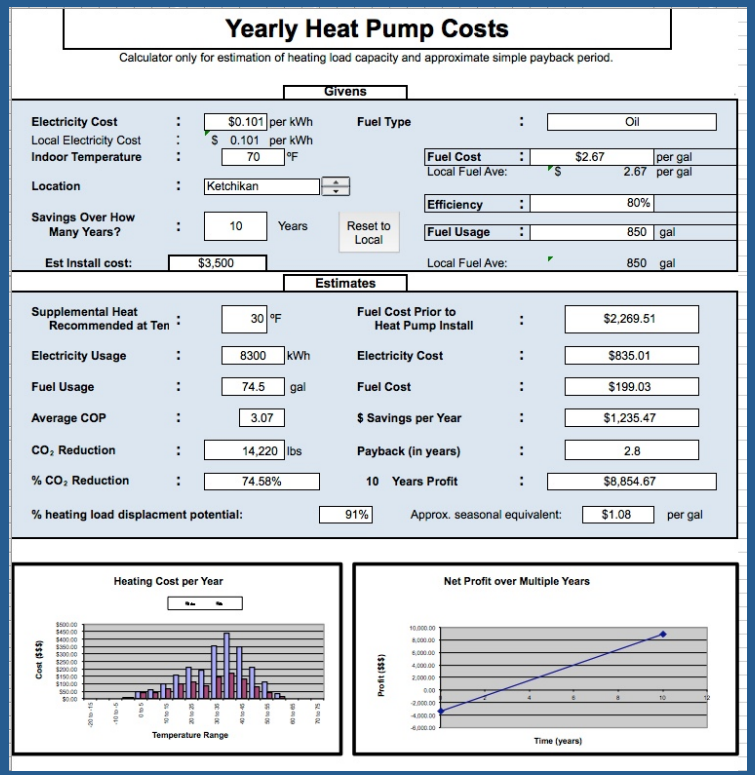
Air Source Heat Pump Exploration on POW

- Balance electric rates vs. fuel oil rates
- Surplus Hydropower



Yearly Heat Pump Costs

Calculator only for estimation of heating load capacity and approximate simple payback period.

Givens

Electricity Cost	$0.101 per kWh	Fuel Type	Oil		
Local Electricity Cost	$ 0.101 per kWh				
Indoor Temperature	70 °F	Fuel Cost	$2.67	per gal	
		Local Fuel Ave:	$ 2.67	per gal	
Location	Ketchikan				
Savings Over How Many Years?	10 Years	Efficiency	80%		
	Reset to Local	Fuel Usage	850	gal	
Est Install cost:	$3,500	Local Fuel Ave:	850	gal	

Estimates

Supplemental Heat Recommended at Ten	30 °F	Fuel Cost Prior to Heat Pump Install	$2,269.51
Electricity Usage	8300 kWh	Electricity Cost	$835.01
Fuel Usage	74.5 gal	Fuel Cost	$199.03
Average COP	3.07	$ Savings per Year	$1,235.47
CO_2 Reduction	14,220 lbs	Payback (in years)	2.8
% CO_2 Reduction	74.58%	10 Years Profit	$8,854.67

% heating load displacment potential: 91% Approx. seasonal equivalent: $1.08 per gal

Heating Cost per Year

Cost ($$)

Temperature Range

Net Profit over Multiple Years

Profit ($$)

Time (years)

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Thank You!