Alaska Housing
FINANCE CORPORATION

Strategic Energy Efficiency & Financing

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AASB – Fall Boardsmanship

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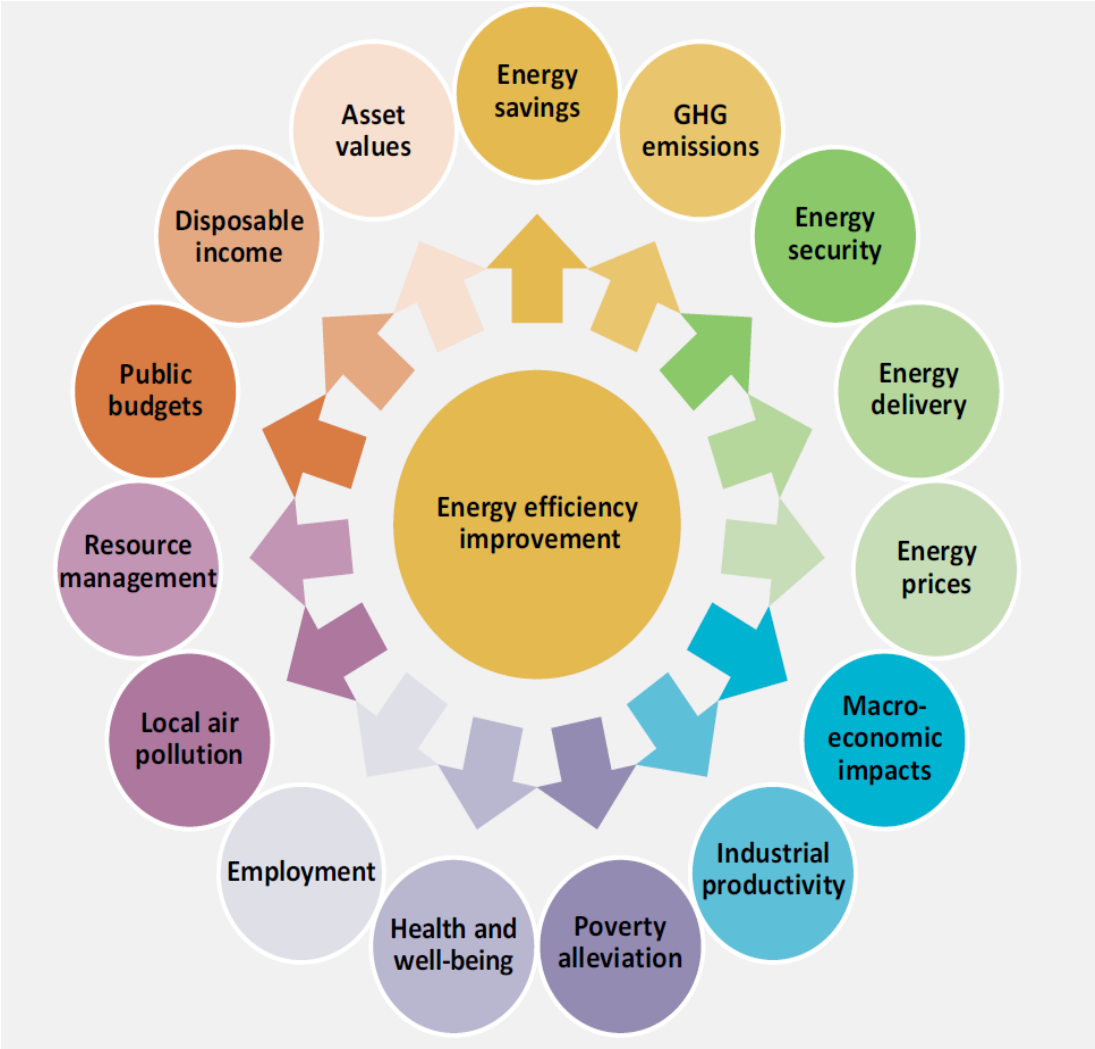
Energy efficiency is a smart investment

Multiple benefits of energy efficiency



iea.org

Background

American Recovery & Reinvestment Act funds

- Benchmarking
- Energy Audits
- White Paper

Alaska Energy Efficiency Revolving Loan Fund

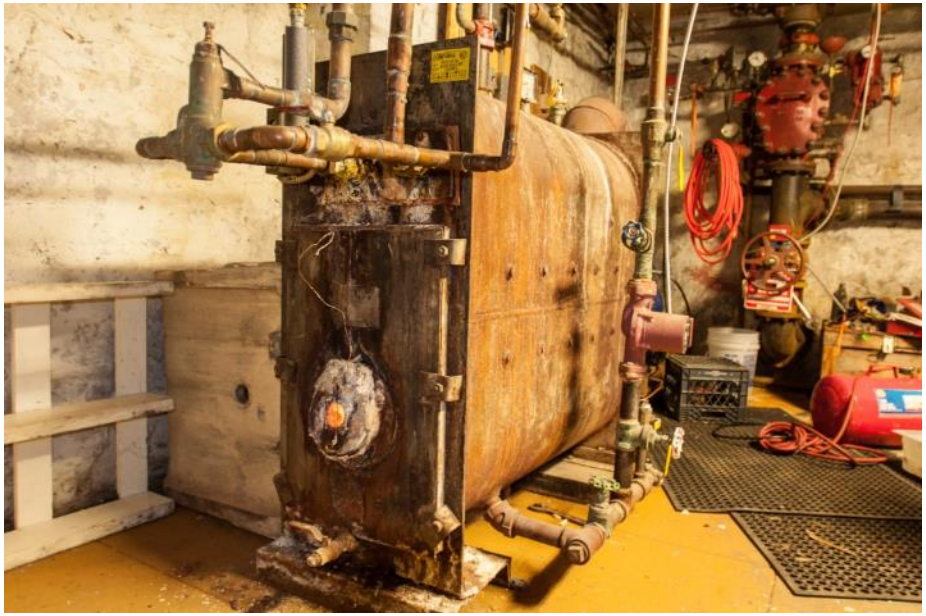
- Outreach
- Technical Assistance

Department of Energy funds

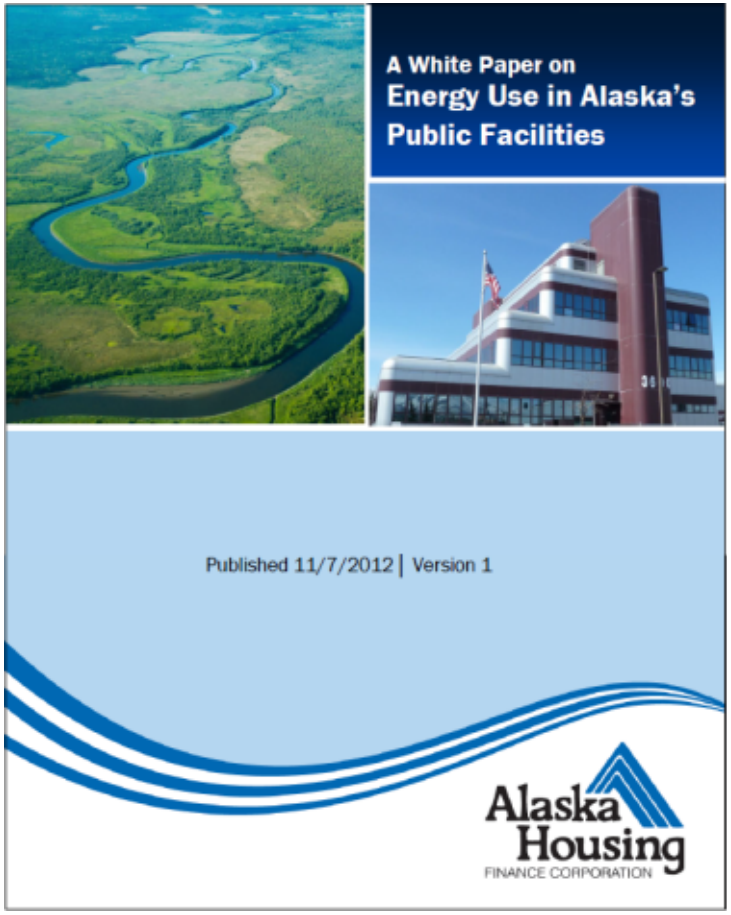
- Strategic Energy Management Practices Guide

Energy Efficiency Potential

- Public buildings - 5,000 in AK
- Average age - 33 yrs.
- Annual energy expenditure - $640 million
- AK has some of the highest energy costs in the US



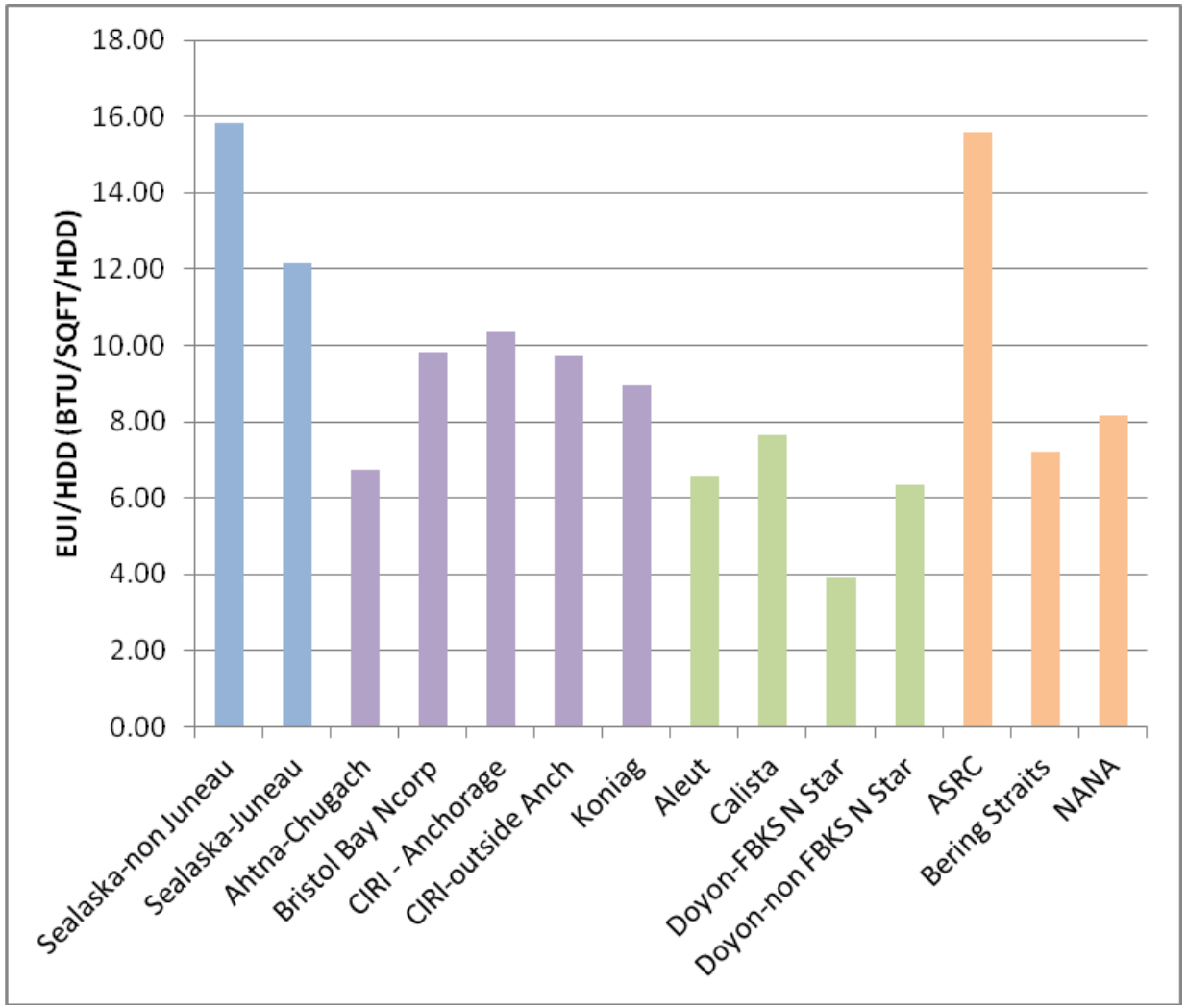
Energy Efficiency Works



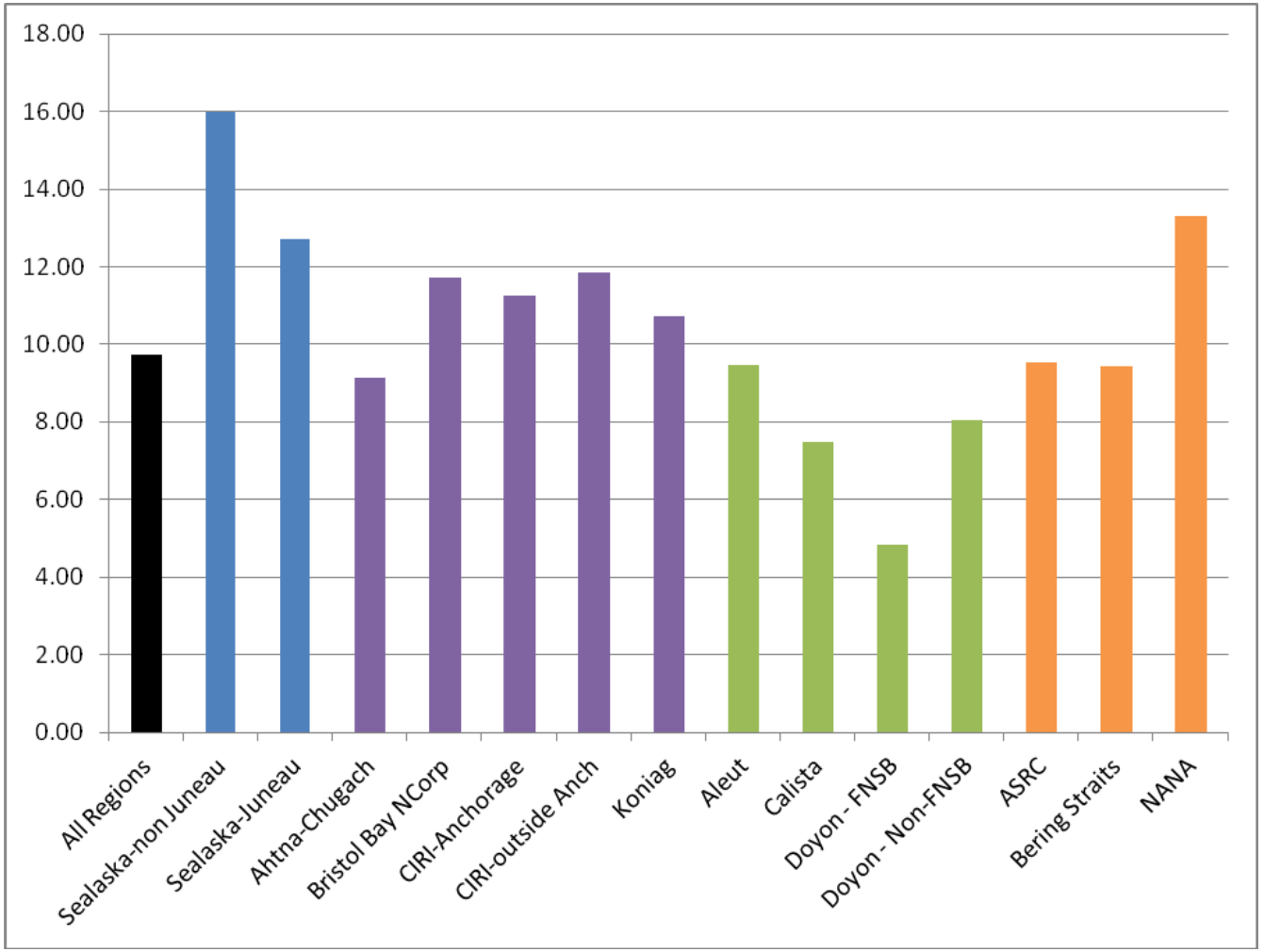
The take away:

- Assuming average savings of 20%, potential **annual savings of $125 million** in our public facilities
- EE can help reduce costs and focus limited public dollars on core activities

Average EUI by region



Average School EUI by region



Fruit on the ground

- Turn it off:
  - School Refrigerators in summer
  - Vending machines when building not occupied – cheap timers work well
  - Boilers, HVAC, lights, fans, pumps when building is unoccupied
  - Computers and office equipment when not occupied

Low Hanging Fruit

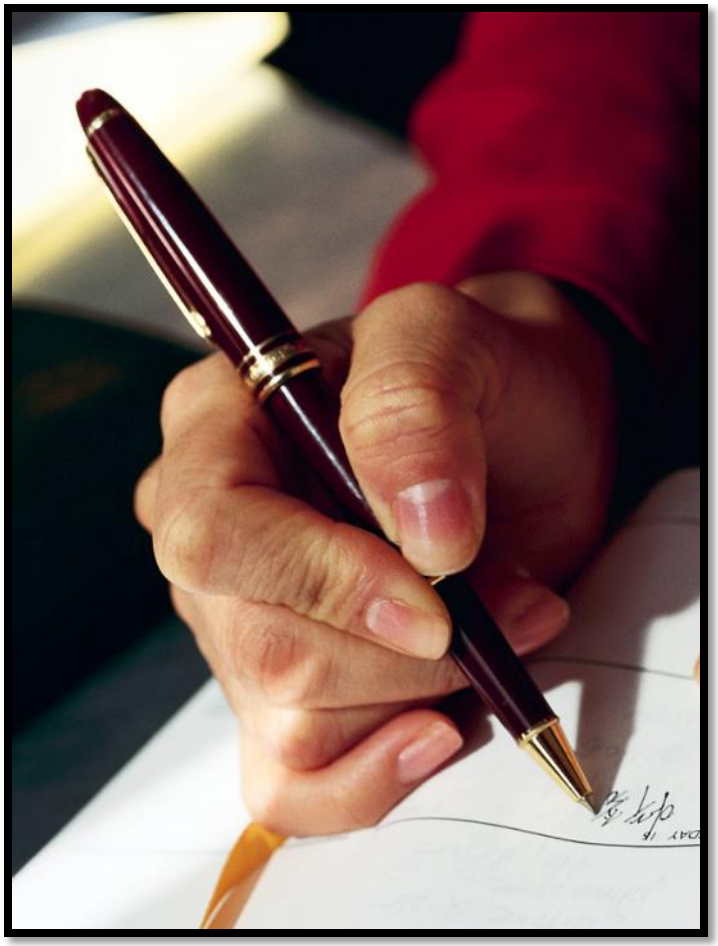
- Track energy use
- Re-program controls to actual operations
- Occupancy sensors
- Tune up existing equipment – boilers, HVAC, controls, etc.

Overhead Fruit

- Build efficiency into planned maintenance
  - Pump, motor or ballast replacement
- Consolidate modular design to reduce energy load to underutilized areas
- Retro-commissioning
- Educate operators on specific systems – snowmelt, DDC, Lighting controllers, etc.
- Demand controlled ventilation
- Lighting retrofits

Recommendations: Policy

1. **Develop an energy policy**
   - Set goals



Recommendations: Policy

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4. **Provide Operator Training**

Recommendations: Policy

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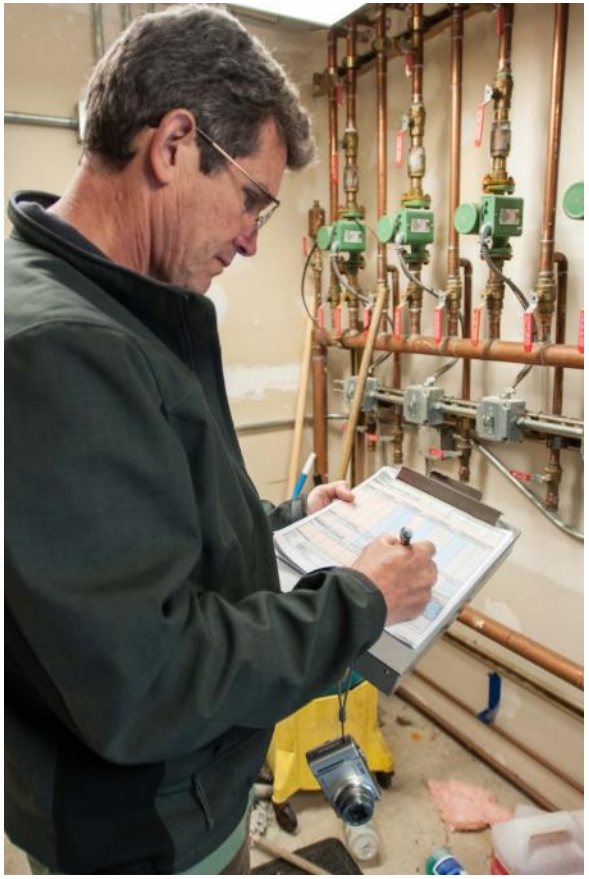
3. **Develop an energy management plan**
   - Establish a level of accountability
4. **Provide Operator Training**
5. **Prioritize efficiency retrofits**

Impact of Energy Policy

Photo credit McCool Carlson Green
mcgalaska.com

- Energy efficiency goals & design standards signal owner intent
- 70% annual savings - Machetanz School

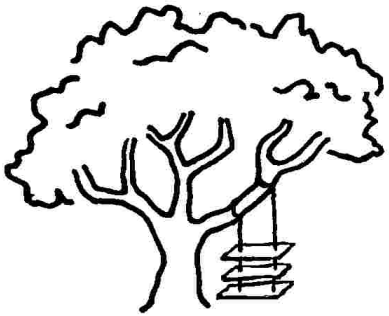
Impact of Energy Management



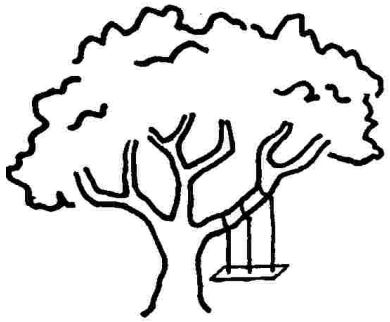
The Bottom Line:
It pays to know how much energy you use, and where and when you use it.

Energy Management, cont.

- Avoid this…

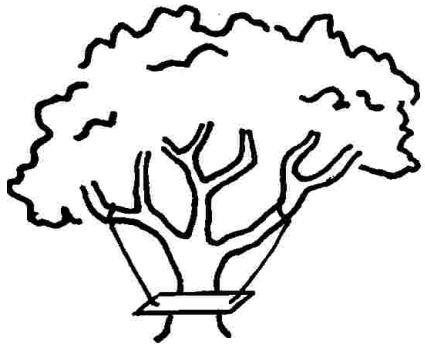


WHAT MARKETING SUGGESTED

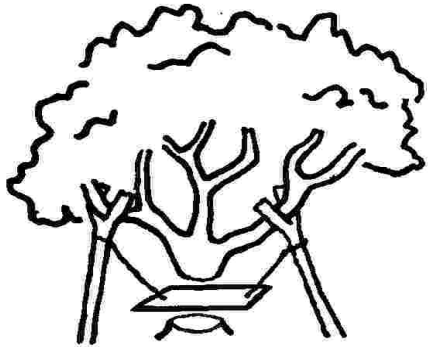


WHAT MANAGEMENT APPROVED

AS DESIGNED BY ENGINEERING



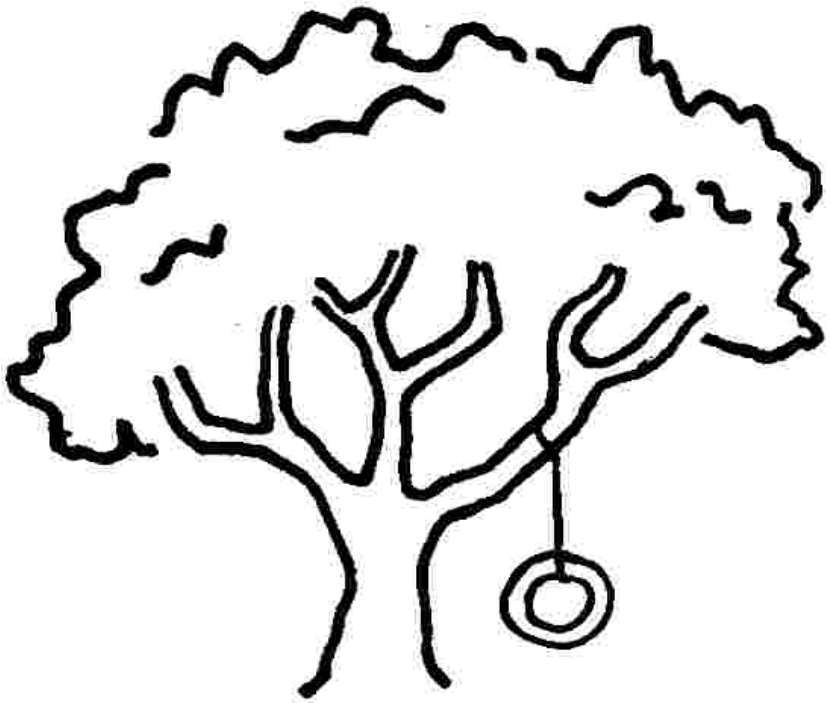
AS MANUFACTURED



AS INSTALLED

Energy Management, cont.

- Goals, Communication & Accountability



WHAT I REALLY WANTED !!

Impact of Operator Training

Impact of Priorities – Cost of Delay

Cash Flow Calculator

INPUTS & OUTPUTS

Pre-Retrofit Annual Energy Expenditure	$460,000	Cost for Improvements	$ 563,000	Loan Term (yrs.)	6
Post-Retrofit Annual Energy Expenditure	$317,000	Design/Engineering	$ 84,450	Interest Rate	2.500%
Post Retrofit Annual Energy Cost Savings	$143,000	Project Management	$ 16,890	Number of Payments per year	12
Post Retrofit Annual Energy Savings %	31%	Contingency	$ 56,300	Down Payment	$ -
Energy Cost Annual Escalation Rate	2.0%	Project Costs - Down Payment	$ 720,640	Discount Rate	8.0%
Assumed Project Life	15				

Impact of Priorities – Cost of Delay

INVESTMENT ANALYSIS		
Project Cost	$ 720,640	*Includes applicable incentives or down payment of $0*
Internal Rate of Return (IRR)	21%	*Assumes 2.0% annual utility cost increase*
Simple Payback	5.04	*Only applicable if using internal funds*
Cost of Delay (6 Months)	$ 84,081	*Lost incremental cash flow from waiting to implement project*
Life Cycle Savings	$ 1,739,051	*Assumes loan and immediate action, with 15 year equipment life*
Annual Savings		
With loan payment	$ 22,789	*Represents average energy cost savings - loan payments*
No loan payment	$ 168,161	*Represents increased cash flow from energy cost savings, in scenarios where no loan is taken, or where loan is paid off*

Energy efficiency is a

wise

investment

But if it makes so much sense…?

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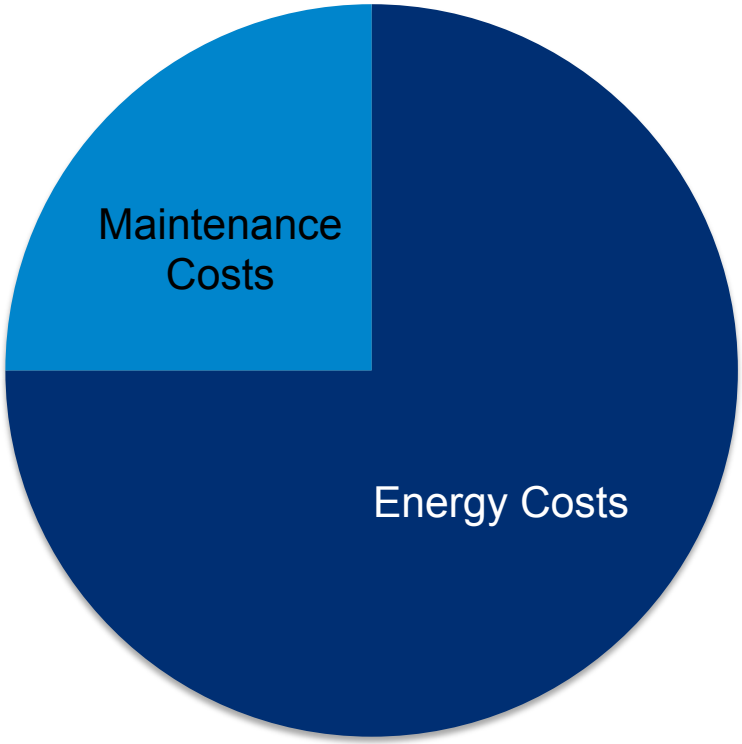
Mechanisms for investing in EE:

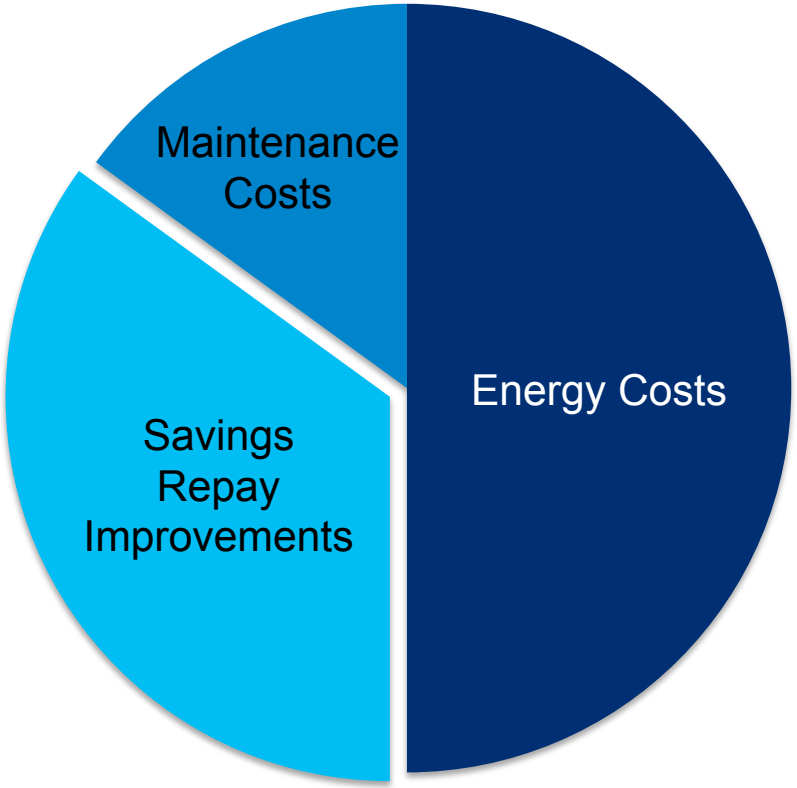
- Grant
- Cash
- Loan

Financing, can I afford it?

Before Improvements



After Improvements



Capital Solutions

- Alaska Housing Finance Corporation
  - Alaska Energy Efficiency Revolving Loan Program (AEERLP)

State, Municipal, Schools and the University of Alaska

No minimum /maximum

Development costs reimbursable

AHFC's AEERLP Rates

09/06/16	
Year	Rate
1	1.500
2	1.625
3	1.750
4	1.875
5	2.125
6	2.250
7	2.500
8	2.625
9	2.750
10	2.875
11	3.125
12	3.250
13	3.375
14	3.500
15	3.500

Capital Solutions

- United States Dept. of Agriculture
  - Rural Development - Community Facilities

Loans and grants

Construct or improve facilities

Rural requirement

Capital Solutions

- Rural Community Assistance Program (RCAC)

Non & for-profits, public and tribal governments

Housing, community facilities, small business

Short-term loans for project development available

RCAC

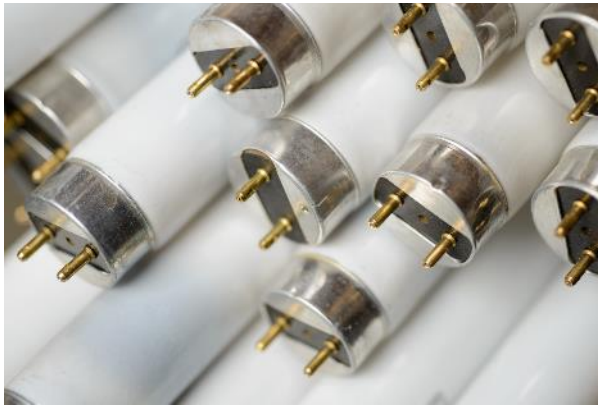
Capital Solutions

- Commercial Lenders

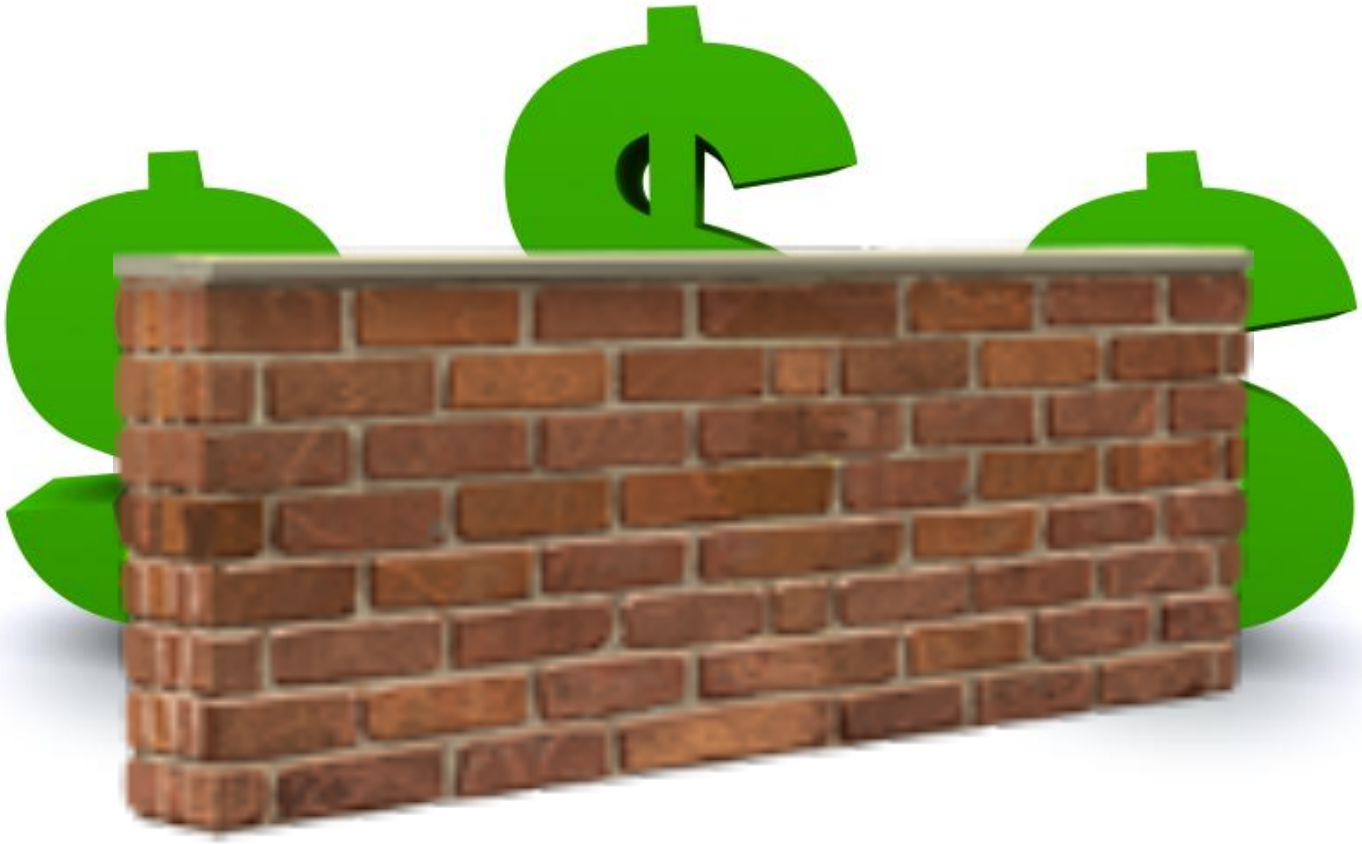
Lender originated to lender standards

Lease purchase available

May be more restrictive than state programs



If it makes so much sense…?



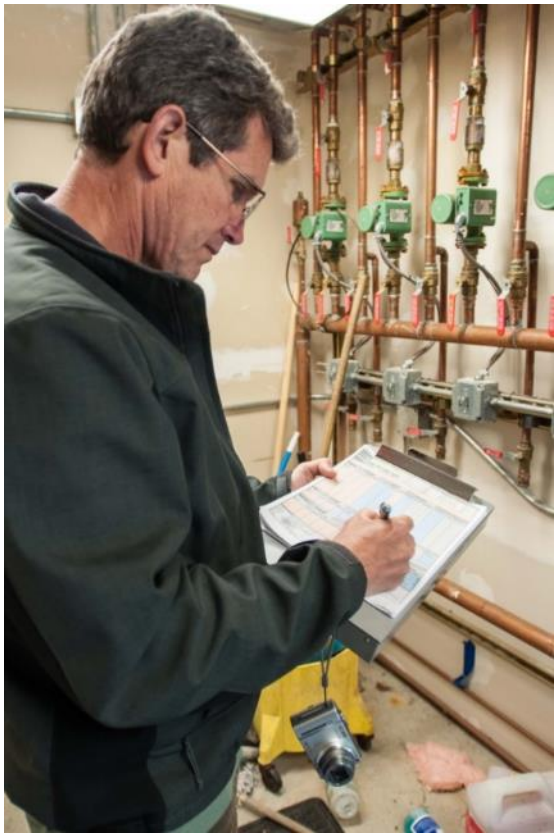
Barriers beyond money

Knowledge and motivation to pursue energy project financing

Before you can finance:

- You need energy use information
- A solid scope of work
- And something to back up the loan
- ➢ Sometimes it's worth it to ask for help from a project developer

Project Developers



Project Development

Preliminary development phase:

- Benchmark
- Portfolio analysis
- Work with stakeholders
- Walk through energy audits
- Evaluate technical feasibility
- Evaluate funding alternatives

Project Development

Development phase:

- Level 2 energy audits
- Develop scope of work
- Final package for financing
- Contracts awarded
- Construction commences
- Commissioning
- Measurement & Verification

Facilitating Energy Efficiency Projects

1. DOE Remote Alaska Communities Energy Efficiency (RACEE) Competition
2. DOT prequalified Energy Efficiency Project Developers
3. AHFC's Technical Assistance Center & Kickstarter grants

Thank You

Alaska Housing Finance Corporation

https://www.ahfc.us/efficiency/

Energy Efficiency Technical Assistance Center

eetac@ahfc.us

1-877-257-3228

or

Tim Leach

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907-330-8198