

# School Energy Use

***Findings from  
“A White Paper on Energy Use in Alaska’s Public  
Facilities”***

Presentation to Senate Finance Subcommittee for the Department of  
Education and Early Development

August 20, 2013

# Why AHFC, Energy & Public Facilities?

- Energy efficiency programs merger (1992)
- Developed expertise in energy efficiency
- State legislation



# AHFC, Energy & Public Facilities

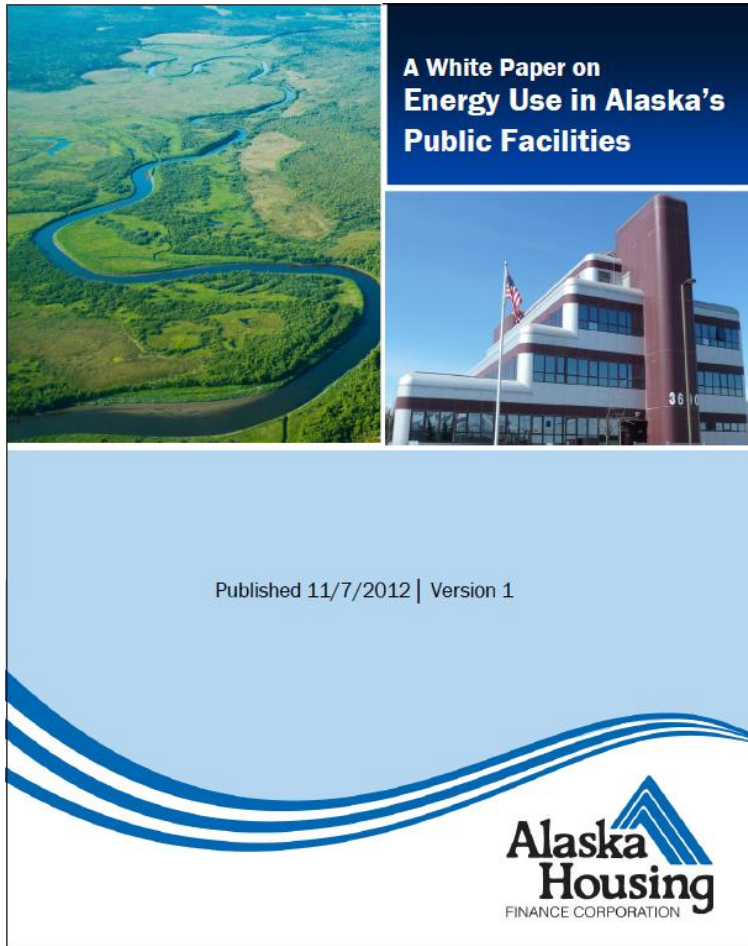
## Alaska Senate Bill 220 in 2010



Established \$250 million revolving loan fund in AHFC for energy efficient improvements of public facilities

AHFC utilized ARRA funds to begin to assess public facility energy use

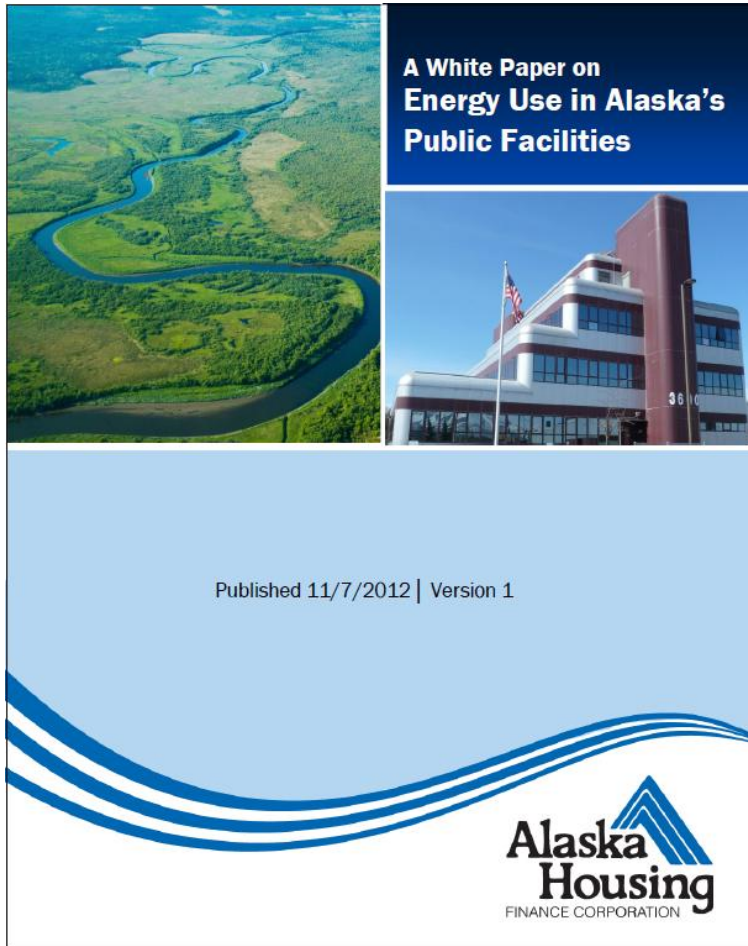
# AHFC Assessment Process



- Benchmarking
- Identify highest energy use buildings
- Perform ASHRAE Level 2 Investment Grade Audits of identified buildings using contractors
- Data gathered and analyzed
- Report of findings



# AHFC Energy Audit Results



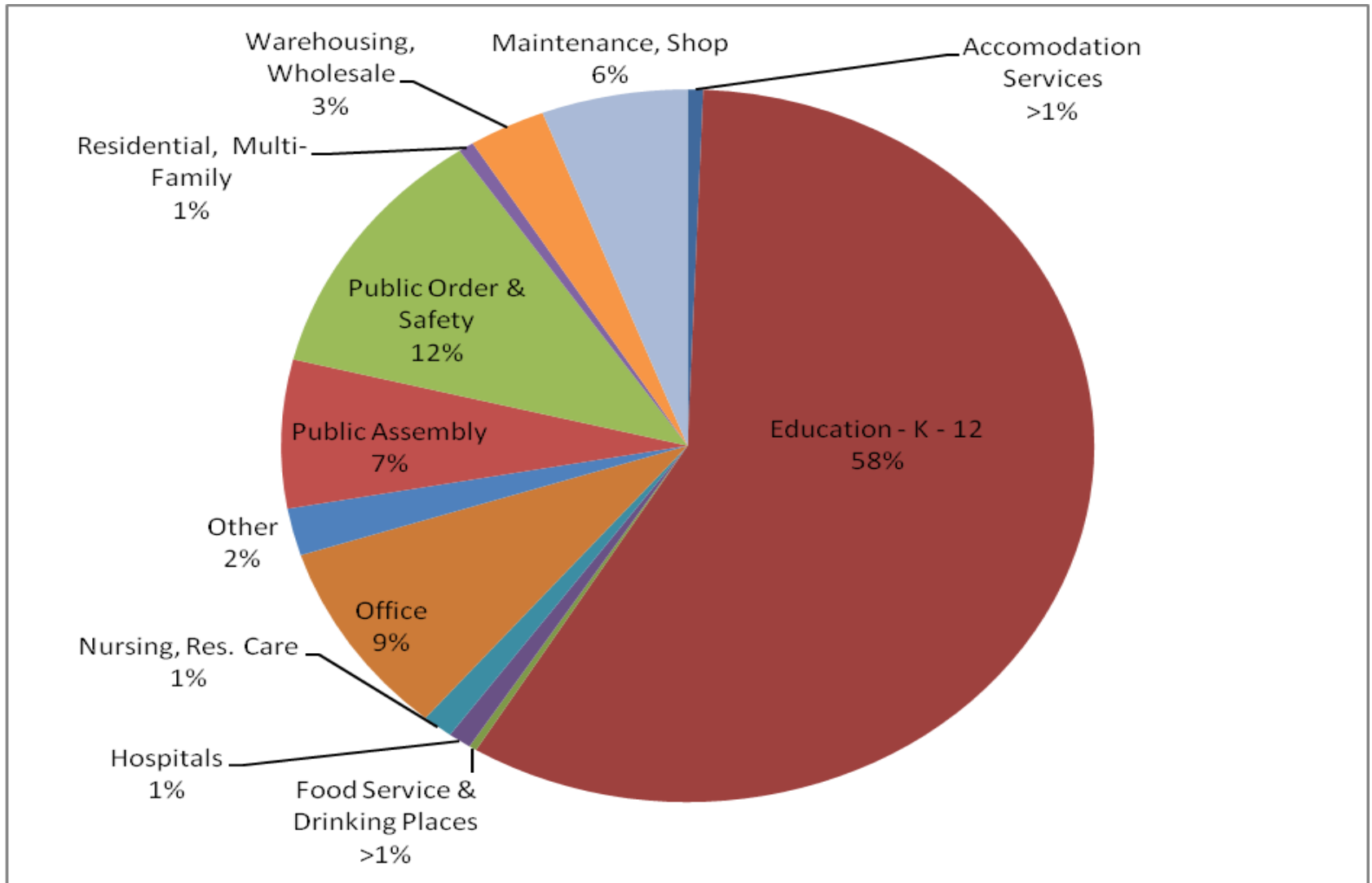
[www.ahfc.us](http://www.ahfc.us)

- >1,200 buildings benchmarked
- 327 buildings audited
- Over 40 engineers, auditors, and subcontractors utilized

## Findings:

- Estimated energy use for all 5000+ public buildings statewide is \$641 million
- Estimated annual potential savings \$125 million

# Public Facilities Audits

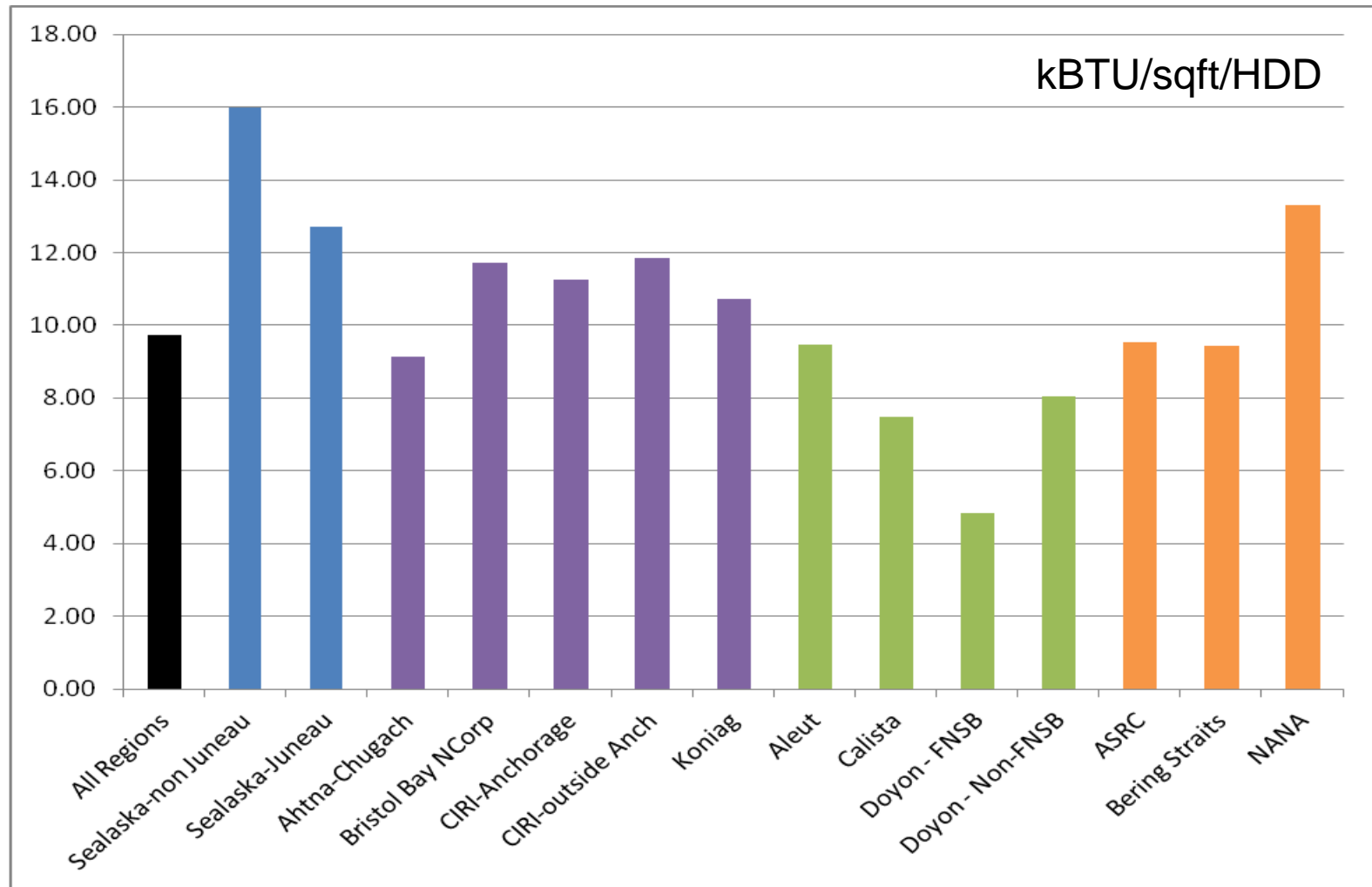


# School Energy Audits



- 184 of 479 public schools audited (38%)
- \$34.3 million annual energy costs of audited facilities
- Estimated annual energy costs for all schools is \$90 million
- Fuel costs range from \$13 to \$97 per MMBTU

# School Energy Use (not cost)



Energy use (EUI) per climate factors of audited schools by ANCSA region



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# School Energy Audits

## *Summary of Major Conclusions:*

1. Identified potential savings averaged \$31,000 to \$51,000 per school, or about 30% of their energy costs.
  2. There is a significant range of energy efficiency levels between schools of the various ANCSA regions.
  3. Building size and age, price of energy and regional climate do not appear to have significant impacts on these differences.
  4. Many of these schools are operated as if the school was fully occupied at all times.
  5. Many communities have experienced declining enrollment, thus their school was designed for more students than currently attend.
  6. Operator training and level of preventive maintenance are significant factors in energy use.
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## *Summary of **Major Recommendations:***

### Building operations:

1. Operate heat, ventilation and lights only during school hours. After hour users have reduced services.
2. Track energy use and compare.
3. Ensure the amount of heated building space and ventilation rates are in line with current occupancy.
4. Require building commissioning and retro-commissioning.

### Administrative:

1. Get an energy audit and implement recommendations
2. Develop and implement an energy policy & management plan with specific goals and deadlines.
3. Provide training to facility operators and technicians.

### Design:

1. Consider consolidation of other community functions into schools such as post offices, public offices, clinics, etc.
  2. Consider Life Cycle Cost when funding new facilities and remodels.
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## Estimated energy costs

**\$90,000,000**

**per year = all schools**

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# CASE STUDY

## Energy Savings Performance Contract

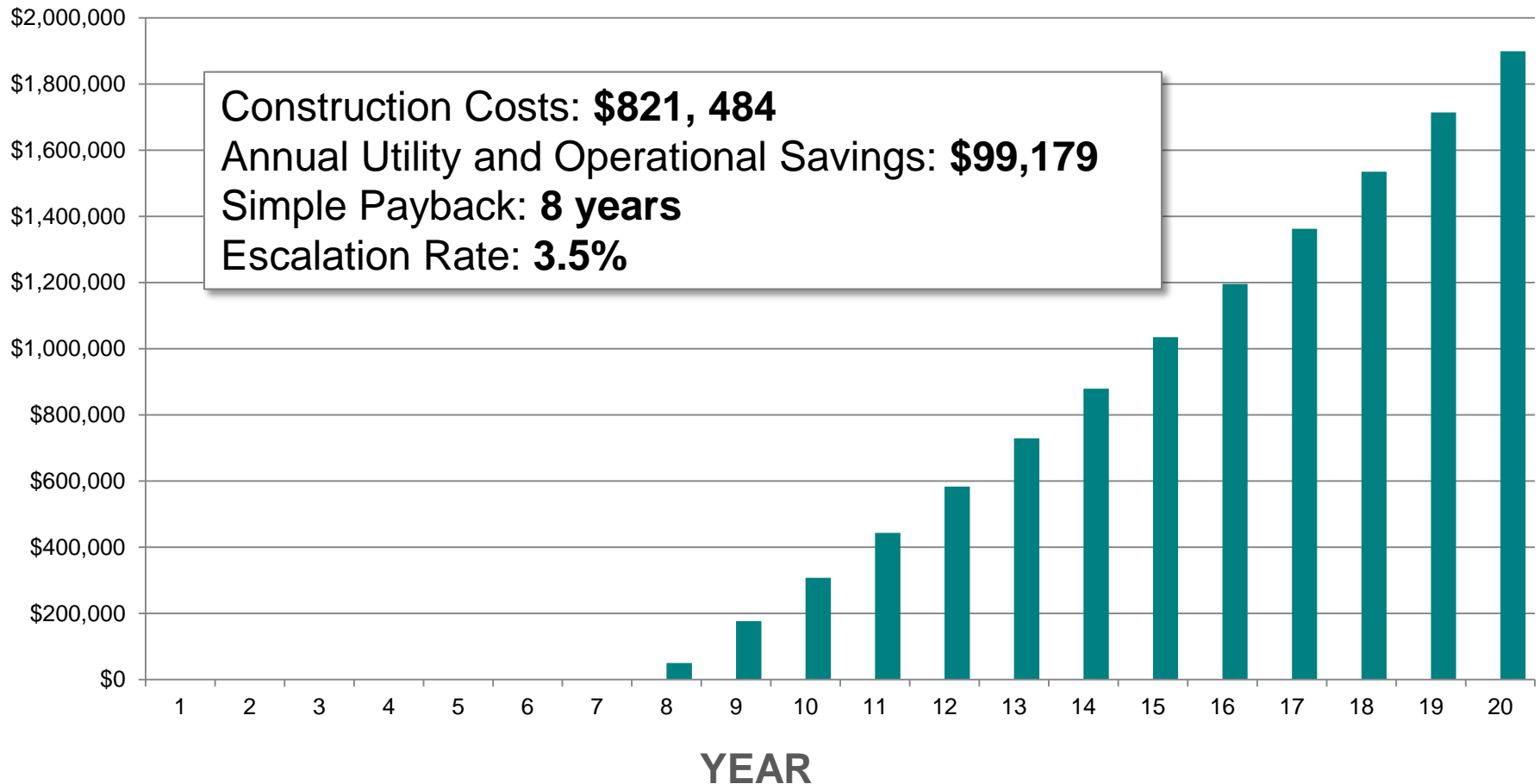
### CITY OF HOMER

- 2011 Audit & Energy Services Proposal
- 16 public buildings in Homer
- Prepared by Siemens Industry, Inc.
- Identified opportunities for long term energy cost savings



# CASE STUDY

## CUMULATIVE NET CASH FLOW





# AEERLP

## Alaska Energy Efficiency Revolving Loan Program

\$250m available for energy efficiency improvements for:

- |                       |                       |
|-----------------------|-----------------------|
| -Schools              | -State facilities     |
| -University of Alaska | -Municipal facilities |

Savings from energy efficiency improvements may be used to pay off the loan



Photo Credit: CAEC

# Challenges

Loan is a long-term commitment, budgets are year to year.

Budgets are unknown more than a year in advance, but are asked to commit 10-15 years out.



# Challenges

Will EED formula funding be reduced to match reduced utility bills?

This would limit the school's ability to use those funds to repay the loan. After the loan, these funds could be available for deferred maintenance.



# Challenges

## Split incentive – City & Borough Owned Schools

While renovation work can lower the utility bills for a school, the loan payments are made by the building owner which is the city or borough.





# Challenges

Energy Performance Contracts and Energy Services Companies may be unfamiliar to school decision makers

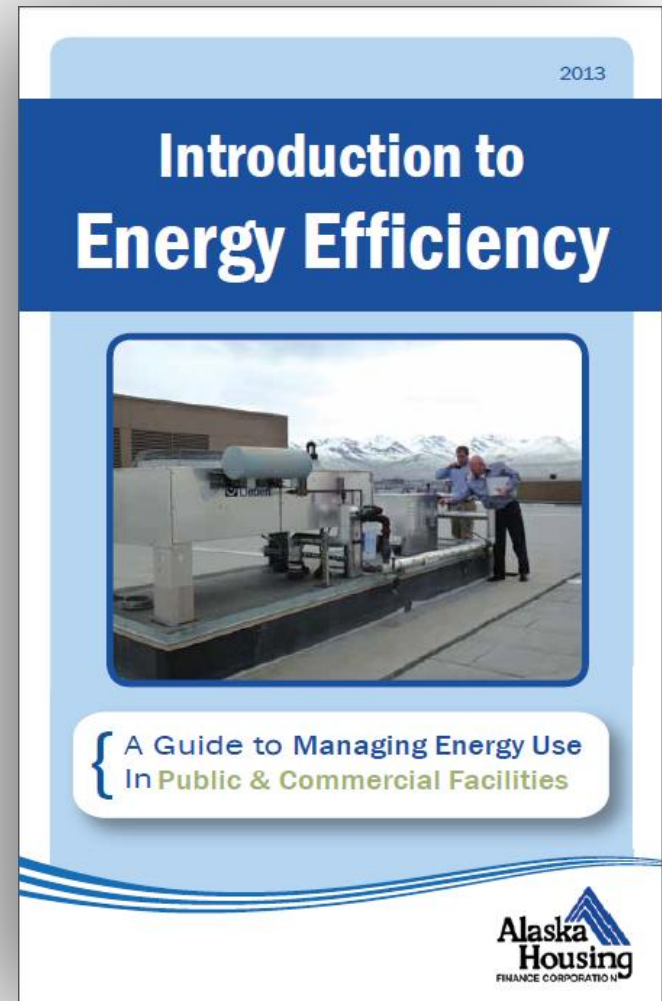


AHFC's revolving loan fund uses these new approaches as a way for schools to get work done without an upfront capital outlay.



# AHFC Assistance Available

- Retrofit Energy Assessment for Loan (REAL)
  - Provides technical assistance to potential borrowers.
- AHFC 10-module training series
  - Target audiences include school boards and city/borough councils.
- Reports & guides



# Questions?

