HB

343

<TARGET><BILL>HB 343</BILL><SUBJECT>HB 343</SUBJECT><COMM>HTRA28</COMM></TARGET>

Alaska Legislature
Representative Charisse Millett

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Sponsor Statement – House Bill 343

In 2012, the Alaska Housing Finance Corporation conducted the most comprehensive audit to date of public facilities in Alaska. The results revealed that the State of Alaska could save tens of millions of dollars through a combination of simple and comprehensive systems overhauls. Making older buildings more energy efficient was the most cost effective. But one concern that came out of the audit was that a patchwork of different designs for essentially the same type of building persisted throughout Alaska. This resulted in maintenance fleets having to train much more to work on each individual facility. This in turn resulted in larger costs and slower turnaround times for maintenance and service operations. At a time when Alaska's budget is under greater scrutiny than ever, the need to be mindful and considerate of the public's money must be used when looking at these facilities.

House Bill 343 recognizes that Alaska's state public facilities need to have standardized designs. In cooperation with the Departments of Administrations and Transportation-Public Facilities, the Alaska Housing Finance Corporation, the Alaska Energy Authority, and engineering, architectural and climate construction organization, standard designs for buildings built for specific purposes would be crafted. This would lead to a reduction in the design and planning phase of buildings, inevitably leading to a cost savings for the state. Retrofitting buildings where feasible in accordance with these standards would have older buildings benefit from a larger maintenance pool and more energy efficient changes that would extend the life of the building and enhance the quality of life for those working in these buildings.

House Bill 343 makes common sense. Without implementing a "one size fits all" policy, the State of Alaska should take steps to lay out standards that are transparent, built upon consensus, and increase the lifespan of public buildings that saves the state from unnecessary future obligations. I respectfully request your support.

LEGAL SERVICES

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LEGISLATIVE AFFAIRS AGENCY
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MEMORANDUM March 3, 2014

SUBJECT: HB 343 relating to the construction, major rehabilitation, and deferred maintenance of state agency public buildings based on standardized designs (Work Order No. 28-LS1528\A)

TO: Representative Charisse Millett
Attn: Akis Gialopsos

FROM: Terry Bannister
Legislative Counsel

You have requested a sectional summary of the above-described bill. As a preliminary matter, note that a sectional summary of a bill should not be considered an authoritative interpretation of the bill and the bill itself is the best statement of its contents.

Bill section 1. Adds a new article with three sections that relate to the use of standardized designs for public buildings.

Sec. 44.68.310 directs the Department of Transportation and Public Facilities ("Department") to establish standardized designs for public buildings and to identify individual components of the designs that can be used when use of the complete design is not feasible. Requires the Department to consult with certain listed state agencies and experts when establishing the designs and identifying the components. Sets criteria for the designs.

Sec. 44.68.320 requires a state agency to use the complete standardized designs for the construction, major rehabilitation, and deferred maintenance of a public building, unless use of the individual components is allowed under sec. 44.68.310(2).

Sec. 44.68.330 defines "public building" and "state agency" for the new article.

Bill section 2. Indicates that the new provisions apply to a public building if the planning begins on or after July 1, 2015.

Bill section 3. States that secs. 44.68.310 and 44.68.330 take effect immediately upon enactment.

Bill section 4. Gives the Act an effective date of July 1, 2015, except as provided in bill sec. 3.

If I may be of further assistance, please advise.

TLB:ray
14-097.ray

FISCAL NOTE

STATE OF ALASKA
2014 LEGISLATIVE SESSION

Bill Version: **HB 343**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB343-DOA-FAC-03-07-14
Title: STATE BUILDINGS: CONSTRUCTION & MAINT.
Sponsor: Representative Millett, P. Wilson
Requester: House Transportation

Dept. Affected: Administration
Appropriation: Division of General Services
Allocation: Facilities
OMB Component Number: 2429

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY15 Appropriation Requested	Included in Governor's FY15 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY15**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**
Personal Services	114.0		114.0	114.0	114.0	114.0	114.0
Travel							
Services	500.0		500.0	500.0	500.0	500.0	500.0
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**614.0**	**0.0**	**614.0**	**614.0**	**614.0**	**614.0**	**614.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF	614.0		614.0	614.0	614.0	614.0	614.0
1147	PublicBldg (Other)							
1007	I/A Rcpts (Other)							
1061	CIP Rcpts (Other)							
		614.0	**0.0**	**614.0**	**614.0**	**614.0**	**614.0**	**614.0**

POSITIONS							
Full-time	1		1	1	1	1	1
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY14) operating costs 0.0 *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY15) costs 0.0 *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? no
If yes, by what date are the regulations to be adopted, amended, or repealed? _____ Discuss details in analysis section.

Why this fiscal note differs from previous version (if initial version, please note as such)

Not applicable, initial version

Prepared by: Tom Mayer, Director — Phone: 907-465-5677
Division: Division of General Services — Date/Time: 3/7/14 3:05 PM
Approved by: Curtis Thayer, Commissioner — Date: 3/7/2014
Division: Division of General Services

(Revised 8/16/2013 OMB)

FISCAL NOTE ANALYSIS

STATE OF ALASKA
2014 LEGISLATIVE SESSION

BILL NO. HB 343

Analysis

The Department of Administration, Division of General Services believes the fiscal impact of this legislation cannot be accurately determined at this time. However, some of the quantifiable costs have been projected.

The Division of General Services would need to add a permanent full-time Contracting Officer III, range 19 to provide consultation with the Department of Transportation during the development of one or more standardized designs, would serve as the divisions compliance control position to ensure projects are in compliance with the standardized design, and would be the division expert for any changes to the standardized design.

In addition to the above employee costs, contractual services would be necessary for expert consultation with architectural and engineering firms.

Indeterminate costs: Cost increases due to the adoption of standardized designs. The lack of standardized designs at this time makes it impossible to estimate the full financial impact. Therefore, the Division of General Services submits only those costs which can be reasonably projected given the current bill language.

FISCAL NOTE

STATE OF ALASKA
2014 LEGISLATIVE SESSION

Bill Version: **HB 343**
Fiscal Note Number:
() Publish Date:

Identifier (file name): HB343-DOR-AHFC-03-07-14
Title: STATE BUILDINGS: CONSTRUCTION & MAINT.
Sponsor: Rep. Millett
Requester: (H)TRA

Dept. Affected: Department of Revenue
Appropriation: Alaska Housing Finance Corporation
Allocation: AHFC Operations
OMB Component Number: 110

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY15 Appropriation Requested	Included in Governor's FY15 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY15**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**
Personal Services							
Travel							
Services							
Commodities							
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF							
1005	GF/Prgm (DGF)							
1007	I/A Rcpts (Other)							
1156	Rcpt Svcs (DGF)							
		0.0	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

POSITIONS							
Full-time							
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY14) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY15) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? No
If yes, by what date are the regulations to be adopted, amended, or repealed? _____ Discuss details in analysis section.

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version.

Prepared by: Les Campbell, Budget Director — Phone: 907-330-8356
Division: Alaska Housing Finance Corporation — Date/Time: 3/7/14 11:15 AM
Approved by: Bryan Butcher, CEO — Date: 3/7/2014
Division: Alaska Housing Finance Corporation

(Revised 8/16/2013 OMB)

FISCAL NOTE ANALYSIS

STATE OF ALASKA
2014 LEGISLATIVE SESSION

BILL NO. HB 343

Analysis

The bill does not have a fiscal impact on AHFC .

FISCAL NOTE

STATE OF ALASKA
2014 LEGISLATIVE SESSION

Bill Version **HB343**
Fiscal Note Number
() Publish Date

Identifier (file name) HB343-DOT-SPF-3-13-14
Title State Buildings: Construction & Maint.
Sponsor Representative Millett
Requester House Transportation Committee

Dept. Affected DOT&PF
Appropriation Design, Engineering & Construction
Allocation Stwd Public Facilities
OMB Component Number 2882

Expenditures/Revenues (Thousands of Dollars)

Note: Amounts do not include inflation unless otherwise noted below.

	FY15 Appropriation Requested	Included in Governor's FY15 Request	Out-Year Cost Estimates				
OPERATING EXPENDITURES	**FY15**	**FY15**	**FY16**	**FY17**	**FY18**	**FY19**	**FY20**
Personal Services	267.2		267.2	267.2	267.2	267.2	267.2
Travel	4.0		4.0	4.0	4.0	4.0	4.0
Services	6.0		6.0	6.0	6.0	6.0	6.0
Commodities	16.0		1.0	1.0	1.0	1.0	1.0
Capital Outlay							
Grants, Benefits							
Miscellaneous							
TOTAL OPERATING	**293.2**	**0.0**	**278.2**	**278.2**	**278.2**	**278.2**	**278.2**

FUND SOURCE		(Thousands of Dollars)						
1002	Federal Receipts							
1003	GF Match							
1004	GF	293.2		278.2	278.2	278.2	278.2	278.2
1005	GF/Prgm (DGF)							
1007	I/A Rcpts (Other)							
1213	AHCC (UGF)							
TOTAL		**293.2**	**0.0**	**278.2**	**278.2**	**278.2**	**278.2**	**278.2**

POSITIONS							
Full-time	**2**		2	2	2	2	2
Part-time							
Temporary							

CHANGE IN REVENUES							

Estimated SUPPLEMENTAL (FY14) operating costs _____ *(separate supplemental appropriation required)*
(discuss reasons and fund source(s) in analysis section)

Estimated CAPITAL (FY15) costs _____ *(separate capital appropriation required)*
(discuss reasons and fund source(s) in analysis section)

ASSOCIATED REGULATIONS

Does the bill direct, or will the bill result in, regulation changes adopted by your agency? No
If yes, by what date are the regulations to be adopted, amended, or repealed? _____ Discuss details in analysis section.

Why this fiscal note differs from previous version (if initial version, please note as such)

Initial version.

Prepared by Connie McKenzie, Legislative Liaison — Phone 465-4772
Division Office of the Commissioner — Date/Time 3/7/2014 2:00PM
Approved by Mary P. Siroky, Director Administrative Services — Date 3/7/2014
Agency Department of Transportation and Public Facilities

(Revised 8/2/2013 OMB)

FISCAL NOTE ANALYSIS

STATE OF ALASKA **BILL NO.** HB343
2014 LEGISLATIVE SESSION

Analysis

In order to comply with the proposed bill, the Department of Transportation and Public Facilities would need to hire two positions. The lead position would be an Engineer/Architect III and the support position would be an Engineering Assistant II. These two positions would be responsible for the following tasks:

1) Establishing a set of standard designs that would be applicable for facilities that have a wide range of sizes, functions, locations and user groups. These standard designs would need to include the following areas of expertise: civil, structural, mechanical, electrical, environmental, architectural, information technology, and other specialized areas as needed (hatcheries, scientific laboratories, correction facilities, dormitories, aircraft hangers, etc.).

2) Update and revise the standard designs as industry standards change and national, state and local code requirements are revised.

Ongoing costs include:	
Personal Services	$267.2 (Salary & Benefits)
Travel	$4.0 (Travel)
Industry & Trade Organizations	$2.0 (Services-memberships)
Core Services	$2.0 x 2 = $4.0 (Services)
Commodities	$0.5 x 2 = $1.0 (Commodities)
One time costs include (year one only):	
Computer and furniture	$7.5 x 2 =$ 15.0 (Commodities)
Total year one costs	$293.2

Potential Paybacks from Retrofitting Alaska's Public Buildings

Dr. Kathryn Dodge, Nathan Wiltse, and Dustin Madden *March 27, 2013*
Cold Climate Housing Research Center

In 2010, Alaska's Legislature passed HB 306 establishing a statewide energy policy including the goal of "decreasing public building energy consumption through...energy-efficient technologies." That year they also passed SB 220 establishing a $250 million Energy Efficiency Revolving Loan Fund to help fund these retrofits. In 2011, Alaska Housing Finance Corporation used American Recover and Reinvestment funds to conduct energy audits on over 325 public facilities throughout Alaska. At the same time Alaska Native Tribal Health Consortium conducted audits of over 65 health clinics, washaterias, and water treatment facilities. As a result, almost 400 public building owner/operators have received investment grade energy audits on their facilities which include a list of recommended improvements and their estimated paybacks. Cold Climate Housing Research Center (CCHRC) evaluated the potential payback public facility owners could realize from implementing the cost effective energy efficiency measures [1] recommended in the audits. These findings follow.

By implementing only cost effective measures, public building owners could save an average of $21,800/year in energy savings per building, with an average simple payback of 4.5 years. Should public organizations choose to finance these $82,000 in improvements through a 15 year loan (at 3.75% interest) from AHFC's Energy Efficiency Revolving Loan program they would pay $7,200 in annual loan payments. Since annual energy savings are estimated at $21,800, after deducting loan payments the average public organization will save $14,700 per year. Once the loan is paid off, assuming no change in energy costs, or usage patterns, they will continue to save an average of $21,800 per year.

While there is variation between cost savings available per building, in general these audits have shown significant potential for public entities to reduce their energy costs by implementing energy efficiency measures. Table 1 shows the variation in building energy savings potential by building usage type; Table 2 demonstrates the variation by ANCSA region. Additionally, Appendix A lists the estimated potential energy savings and costs identified by the auditors for each of the 357 buildings by ANCSA region, community and building name along with.

On a state level, for an investment of $29 million, Alaskans would save an estimated $79 million in energy costs over the life of the energy efficiency investment, resulting in more sustainable communities. This report only addresses the approximately 400 public facilities, out of an estimated 5,000, public facilities in Alaska. While each building is unique and will vary from this average, these findings are illustrative of the savings potential available to the University of Alaska, REAAs, and Alaska municipal, tribal and state agencies. Finally, this suggests that the $250 million Revolving Loan Fund is sufficient to finance the retrofit of most public buildings in Alaska.

[1] Improvements had a savings-to-investment ratio greater than 1.

In conclusion, almost 400 building owners have detailed lists of energy efficiency measures and payback information to guide their investment decisions and loan programs are available to finance the improvements. Investing in these retrofits would save building owners an average of $21,000/year in energy costs for a cumulative savings of $8.7 million per year.

ASHRAE 90.1-2010 sets the energy standard (Consulting-Specifying Engineer; January 2013)

The widely used energy standard reaches an inflection point that demands both efficient design and accountability from building inhabitants.

By David P. Callan, PE, CEM, HBDP, LEED AP, Environmental Systems Design
01/23/2013

As ANSI/ASHRAE/IESNA Standard 90.1, Energy Standard for Buildings Except Low-Rise Residential Buildings, has evolved and expanded over time, so has its impact on the industry. In 1992, the Energy Policy Act required the Dept. of Energy to review each new version of Standard 90.1, while requiring all states to adopt energy codes that are substantially equal to the standard as well. Additionally, the International Energy Conservation Code registers compliance with 90.1 as an alternative way of meeting that code, while the U.S. Green Building Council's LEED also references 90.1, making it one of the most successful and widely adapted energy codes to date.

Today, however, ASHRAE 90.1, with its newest 2010 version, and scheduled for a new release in 2013, stands at a key inflection point. Calling for a 30% energy improvement over the 2004 standard, the law of diminishing returns will begin to come into play as the code authoring committees and designers continue to increase the performance requirements for each new building, squeezing every last kilowatt hour out of the sponge.

This inflection point begs the question: What makes a building truly energy efficient, and how does one quantify it? In light of the 2008 report by the New Building Institute, which suggests the first generation of LEED buildings hasn't lived up to its expectations, ASHRAE 90.1-2010 must demand a new definition of high performance that moves beyond initial design to consider and account for the life of the building.

And that's just what it does. ASHRAE 90.1-2010 demands much more from a building than ever before, architecturally, aesthetically, and through modified human consumption. From the building envelope to its HVAC systems, commissioning, lighting, and power, ASHRAE 90.1-2010 ushers in a new area of accountability not only for those who design buildings, but also for those who inhabit them.

Here's a quick look at what's new and how, where, and when it all applies.

Building envelope

More insulation and better glass will be required of tomorrow's building envelope. Cool roofs are now required in climate zones 1 through 3, while building orientation will play a larger role as well. Additionally, the early integration of architecture and mechanical, electrical, plumbing (MEP), and fire protection engineering will be inevitable to achieve compliance and optimal envelope performance.

· 40% maximum glazing. Per the prescriptive path, no more than 40% of any surface façade can be fenestration unless the façade can perform as well as a wall that is 40% window or less. And, while the energy cost budget method allows for more flexibility and trade-offs between building systems, it's likely that the floor-to-ceiling glass tower built just five years ago won't be able to be replicated, as it's very difficult to get enough performance out of a floor-to-ceiling glazed curtainwall.

· Orientation requirements. While ASHRAE 90.1 previously had no orientation requirements, the 2010 version now requires that buildings be oriented so that more of the glass is distributed across the south façade, minimizing glazing on the east and west walls. This will further reduce cooling loads and take advantage of southern solar gains when the sun is low in the sky during the winter months, while being able to more effectively shade the high summer sun.

· Continuous air barrier. Assemblies, such as curtainwalls, must be rated to limit air leakage to 0.04 cfm/sq ft. The air barrier and all the joints on the façade need to be detailed.

· Daylight controls. Automatic daylight controls are required in any space adjacent to a window 250 sq ft or larger. While most new buildings employ this technology as a "sustainable element," 90.1-2010 made it standard.

· Minimum insulation. Though more significant changes are expected in the 2013 edition, the minimum insulation values for opaque assembles have also increased, depending on the climate.

HVAC systems

HVAC systems saw the greatest change in ASHRAE 90.1-2010, including alterations to the minimum equipment efficiency ratings, fan power limitations, energy recovery, reheat limitation, economizers, and duct sealing and leakage.

· Fan power. Calling for more efficient fans, ASHRAE 90.1-2010 will reduce the amount of fan power allowed to be used in a building. This can be achieved through lower static pressure duct systems, which translates to fewer bends, wider ducts, and shorter runs—all of which impact architectural space planning.

Additionally, individual variable air volume (VAV) fans with motors greater than or equal to 10 hp need a variable speed drive (VSD), or another means of reducing fan power consumption.

· Energy recovery. In some climate zones (see ASHRAE Table 6.5.6.1), energy recovery may be required for air-handling systems with as little as 30% outside air, reducing the size of a unit that triggers the requirement.

· Reheat limitations. Reheat will not be allowed unless the air being reheated is less than or equal to 30% of the peak flow or the minimum required ventilation rates. This effectively encourages HVAC designers to look toward a dedicated outside air systems (DOAS) in commercial spaces, as well as likely eliminating constant volume systems for hospitals and labs. Employing separate perimeter heating, or finned tube radiation, is another simple way to meet this requirement.

· Economizers. Economizers are now required for all climate zones, except 1A and 1B (see ASHRAE climate table), for systems with more than 54,000 Btu/hour (previously 134,000 Btu/hour). This applies to air conditioning units 4.5 tons and larger, which includes just about every commercial setting. A waterside economizer may be able to be substituted to achieve the same result.

· Duct sealing and leakage (addendum cq). Duct work higher than 3-in. w.g. and all outdoor air ducts need to be Seal Class A and Leakage Class 4. By surface area, 25% needs to be tested to demonstrate conformance.

· Minimum equipment efficiencies. Minimum performance requirements of heating and air conditioning equipment, including chillers, boilers, and packaged equipment, continue to increase from the previous standard. Designers must pay special attention to which path of compliance will be used when testing chillers with or without VFDs.

· Supply air temperature reset. While often employed in commercial HVAC design, 90.1-2010 marks the first time supply air temperature reset control is actually required.

· Heat rejection. This now effectively limits the use of centrifugal fans in cooling towers.

· HVAC commissioning. Possibly the most significant ASHRAE 90.1-2010 update, HVAC commissioning is now required for control systems on most projects greater than 50,000 sq ft.

Lighting

From exit signs to parking garages, artificial lighting (and the lack of it) continues to gain efficiency with 90.1-2010, not only in the lighting power density (LPD) requirements, but also in the application and use of lamps and controls.

· Whole building lighting power density. Power allowances are reduced, dropping about 10% on average (see Table 9.5.1).

· Daylighting. Previously used to add efficiency, daylighting is now required in many spaces in the prescriptive path.

· Efficient lighting. More efficient lighting is now also required, including exit signs that are limited to 5 W/lighted face, which means using LED or LEC (electroluminescent) exit lights. Parking garage lighting needs to be reduced by 30% when there is no activity.

· Controls. Daylighting controls are now required in projects larger than 50,000 sq ft, while more sophisticated occupancy sensors are required for training rooms, lecture halls, and storage rooms 50 to 1,000 sq ft. Automatic shut-off is required, with the exception of patient care areas, spaces where lighting is required for 24-hour use, and where automatic shut-off would be unsafe. Functional testing of all of these controls is also now required.

Power

Beyond the power that supports the energy-consuming building systems, ASHRAE 90.1-2010 targets the local receptacle, attempting to reduce the ever-growing "vampire" plug loads, both during downtime and after hours.

120-V outlets. Fifty percent of 120-V outlets that serve private offices, open offices, and computer classrooms must be provided with automatic receptacle control. Buildings are encouraged to put parasitic loads (i.e., printers, chargers, heaters, etc.) on half of the outlets so they can be switched off with occupancy, as plug-in loads can account for 15% to 50% of a building's electricity. To reach the next level of performance, efficiency requirements must trickle down to building inhabitants and their behaviors. How people interact with the building and how process loads are handled in the building will all be crucial to the success and compliance of ASHRAE 90.1-2010, and beyond.

While previously, energy standards focused only on construction practices, tomorrow's standards will require that all building inhabitants become active participants in reducing the energy consumption of their buildings by being cognizant of their surroundings. ASHRAE 90.1-2010 has hit this inflection point. To do a whole lot better than 90.1-2010, aesthetics, cost, and human behavior will have to change.

David P. Callan is senior vice president at Environmental Systems Design, where he oversees the management of the technical staff in the design of high-performance projects. His experience includes the design and analysis of building systems and energy-saving measures for new and existing buildings worldwide, as well as the research and development of analysis techniques for new building technologies.

ASHRAE 90.1-2010 compliance

ASHRAE 90.1-2010 compliance will once again permit the use of the energy cost budget method to demonstrate that the proposed building's energy cost will be the same or less than that of a building designed to minimally comply with the standard. This is different than the Appendix G simulation, often used in calculating U.S. Green Building Council LEED compliance, that includes more flexibility for trade-offs. While both methods employ energy modeling, and Appendix G is often preferred for its allowance of different baseline and proposed HVAC system types, only the energy cost budget method can be used to demonstrate compliance with ASHRAE 90.1-2010 or the International Energy Conservation Code (IECC).

Alaska Department of Transportation & Public Facilities

Standardized Designs for Public Buildings

David Kemp, P.E., PMP
Christopher Hodgin, P.E., CEM, LEED-AP

March 13, 2014

Statewide Public Facilities – Functions

- Statewide Public Facilities (SWPF) provides project management services for the planning, design and construction for both new vertical facilities (buildings) as well as renovation of existing facilities for most State of Alaska Departments.

DOL- AVTEC Dormitory (Seward)

Statewide Public Facilities – Functions

- AS 35.10.190(a) The Department shall coordinate the procurement of physical facilities for the state to insure the greatest cost saving of planning, design, and contractual techniques.
- Eleven Professional Engineers, three Licensed Architects, two Project Manager Professionals and four Engineers in Training.

Energy Savings Performance Contracting

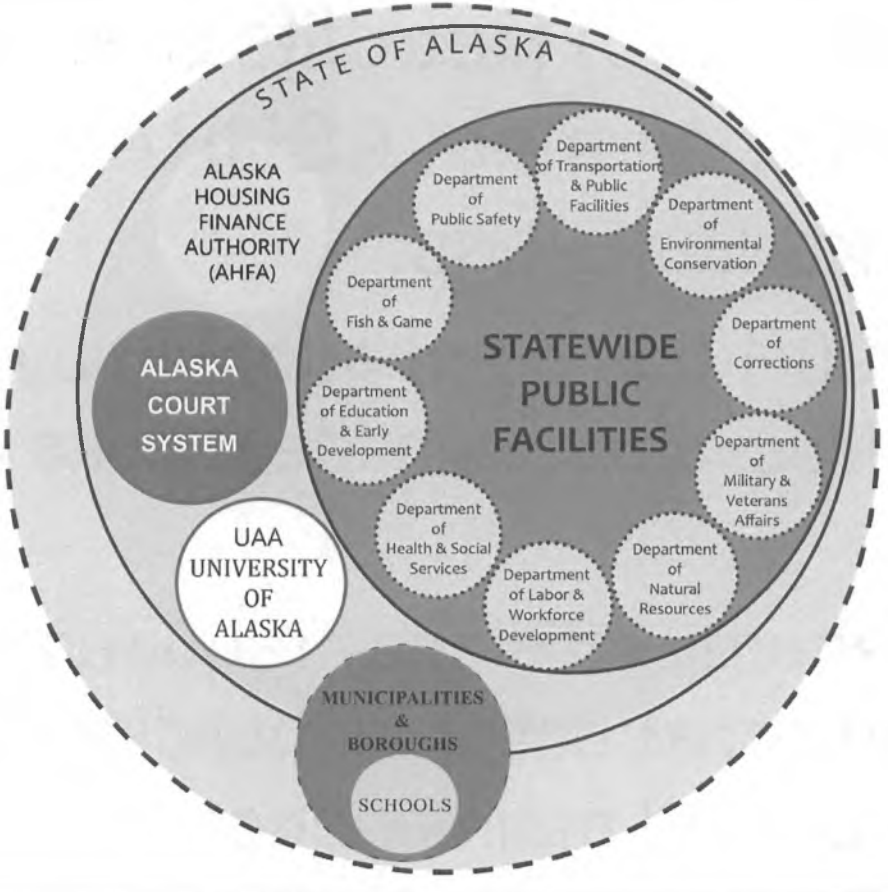
- Method for accomplishing energy improvement projects that are funded by the energy savings of those projects.
- The State has achieved combined energy cost savings greater than **$2.1M per year** in over 40 public facilities statewide.

ANNUAL ENERGY SAVINGS ACHIEVED		
Electricity	> 7,700,000	kWh
Natural Gas	> 162,000	CCF
Heating Oil	> 227,000	Gallons
CO2 Reduction	> 9,500	Tons

Current Regulatory Requirements

- AS 44.42.067 (b-c) Retrofits and new construction shall meet ASHRAE 90.1, Energy Standards for Buildings.
  - ASHRAE 90.1 has been adopted by most states, including Alaska through the Alaska Sustainability Act.
  - Provides energy efficiency requirements for the design and construction of buildings and guidance for operation and maintenance

Capital Improvement Projects in Alaska



Public Buildings in Alaska

- Vary widely in complexity and function from a highway sand storage shed to a fish and game sport fish hatchery.
- Significant variation in energy costs depending on location in the State.
- Must be designed to withstand significant variations in climatic conditions and geotechnical requirements –Ketchikan to Nome.

Questions & Further Information

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Chief, Statewide Public Facilities
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Christopher Hodgin, P.E., C.E.M.
Dept. of Transportation & Public Facilities
Program Manager, Energy Office
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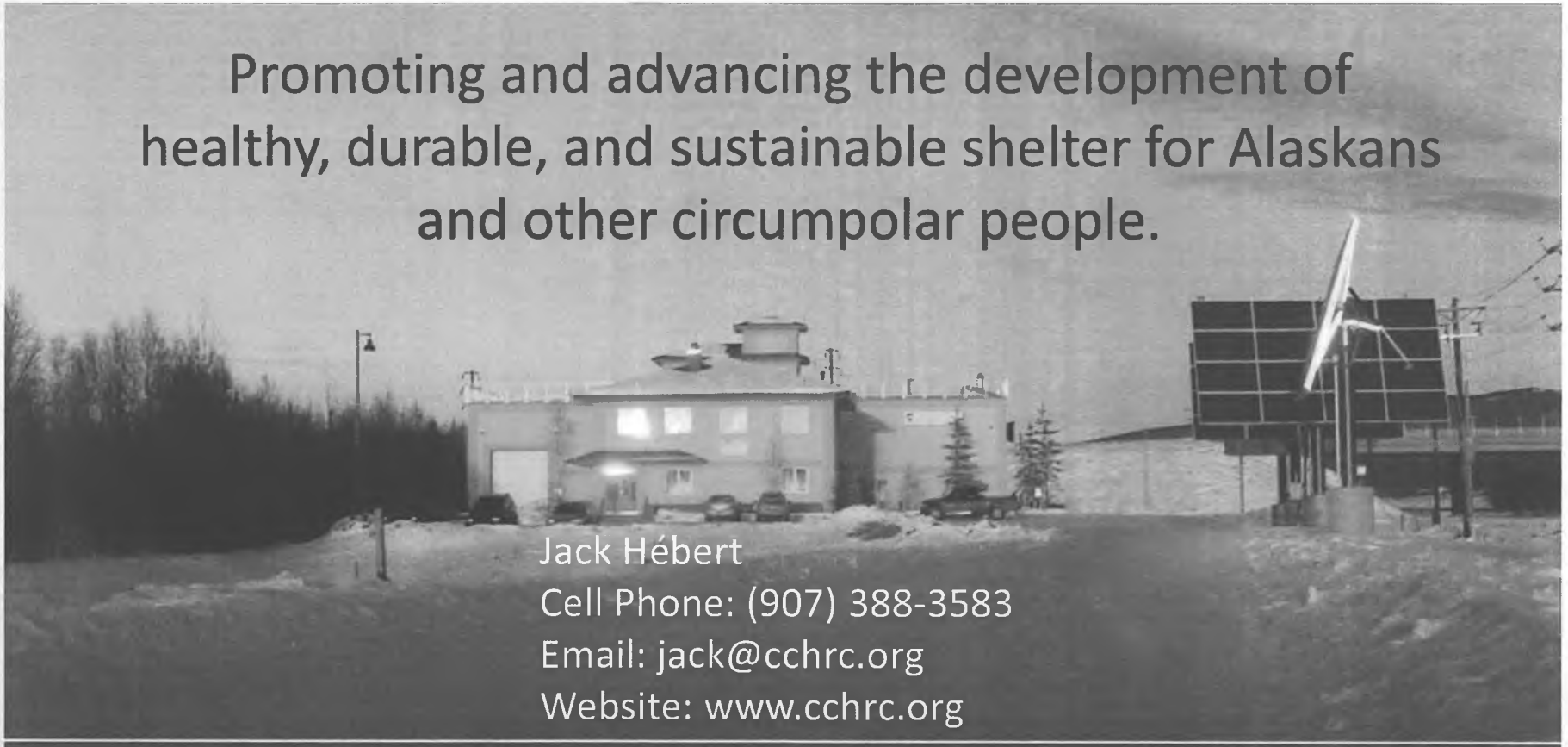
(907) 269-7484

Thank you for your attention and this opportunity.



Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people.

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Research • Innovation • Education

Cold Climate Housing Research Center

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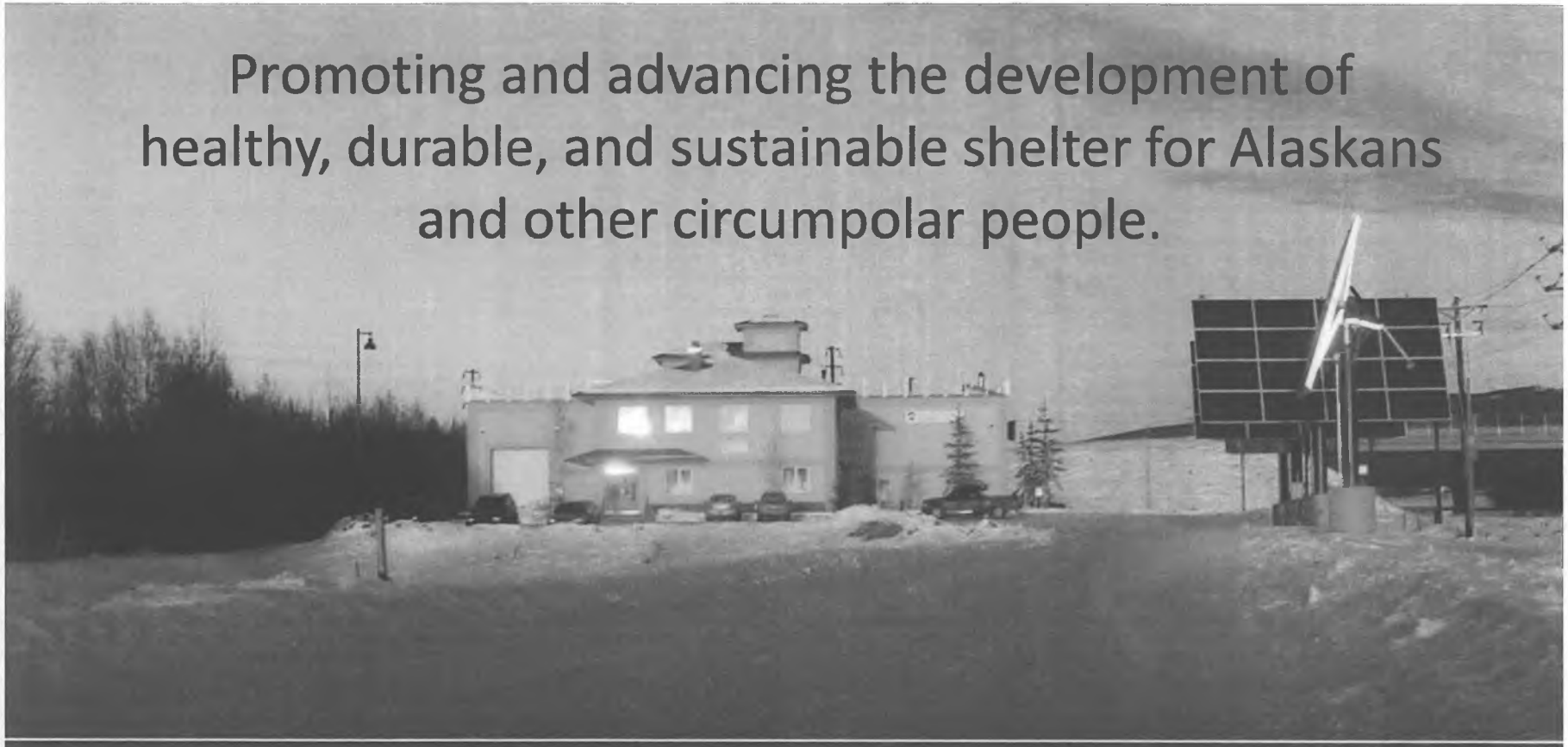
Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people.



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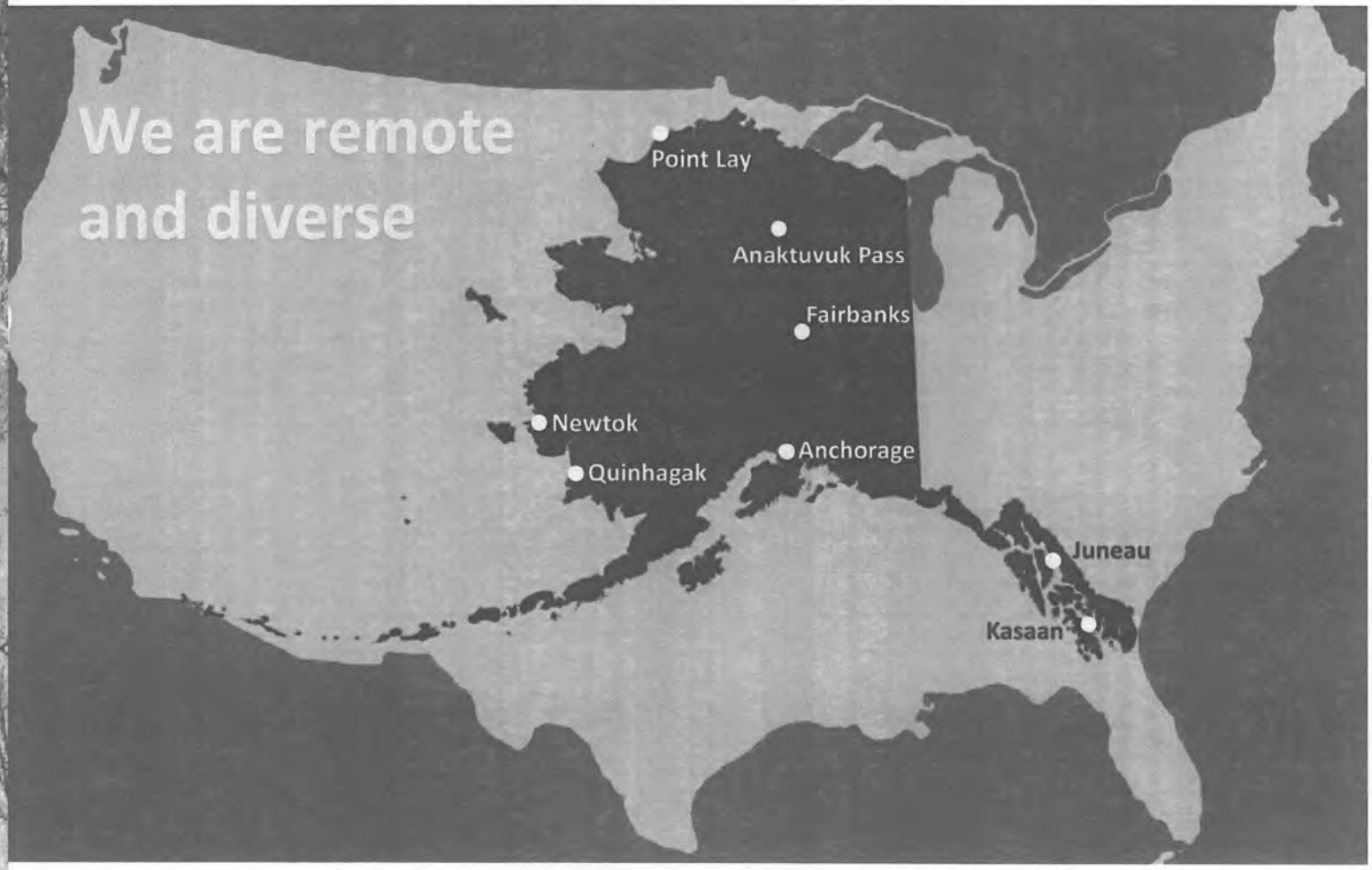

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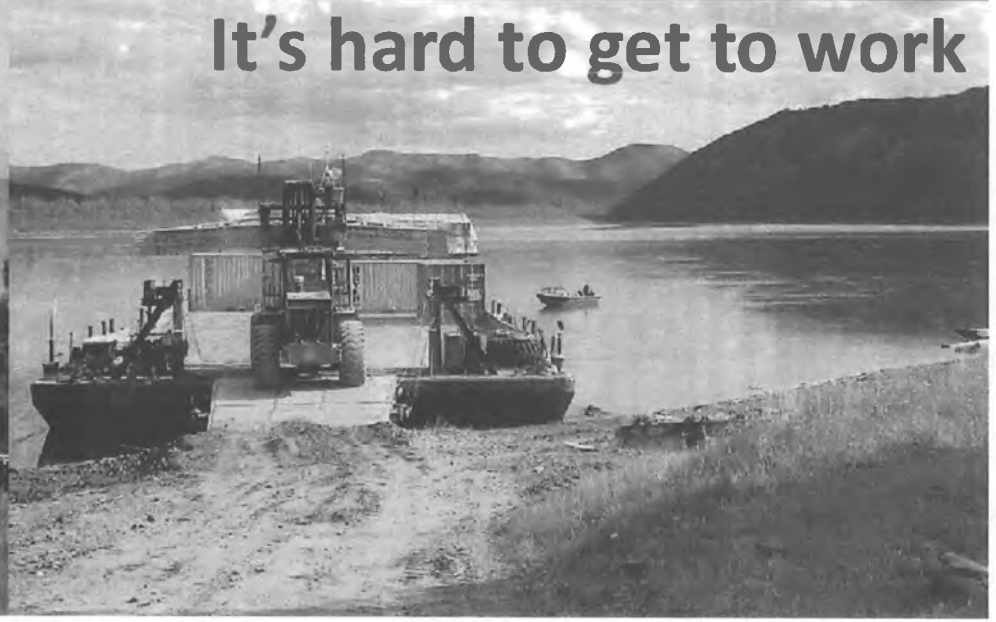
It's hard to get to work



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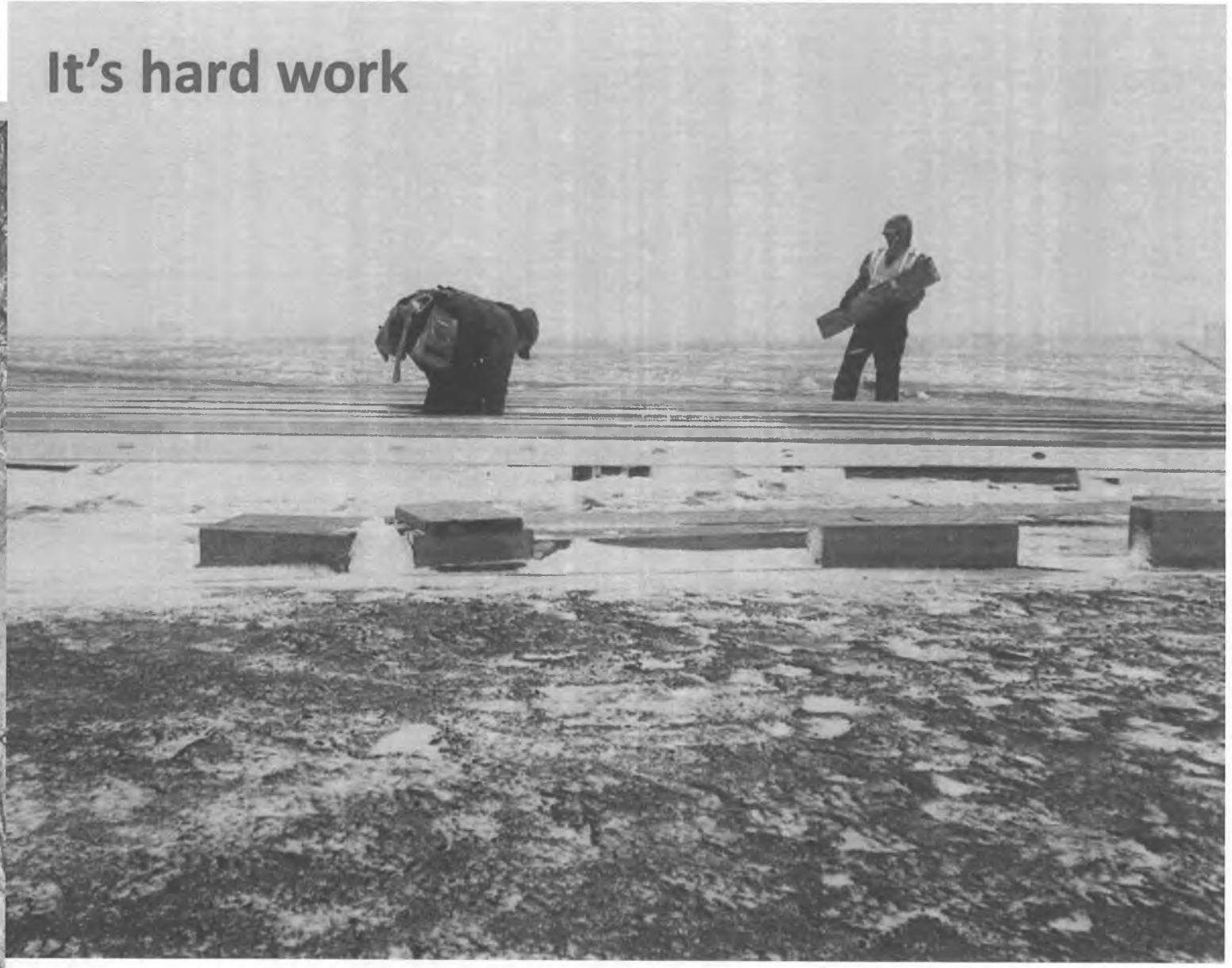
It's hard work

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Alaska is a Place of Problem Solvers

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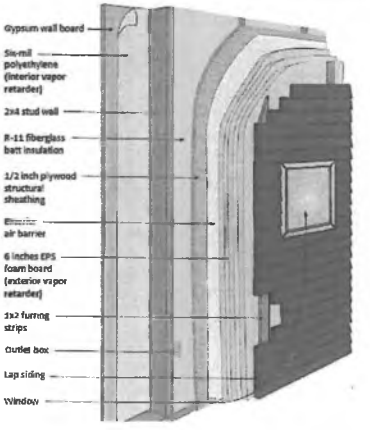
HOW DOES CCHRC SOLVE PROBLEMS?

Understand the problem

Gather Information

Identify Solutions



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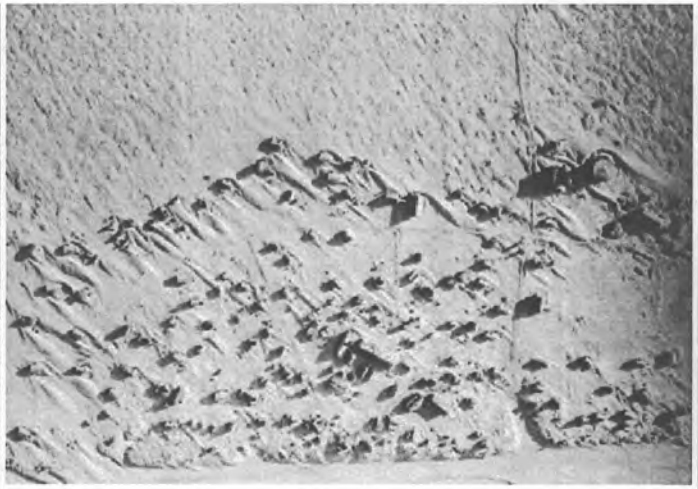

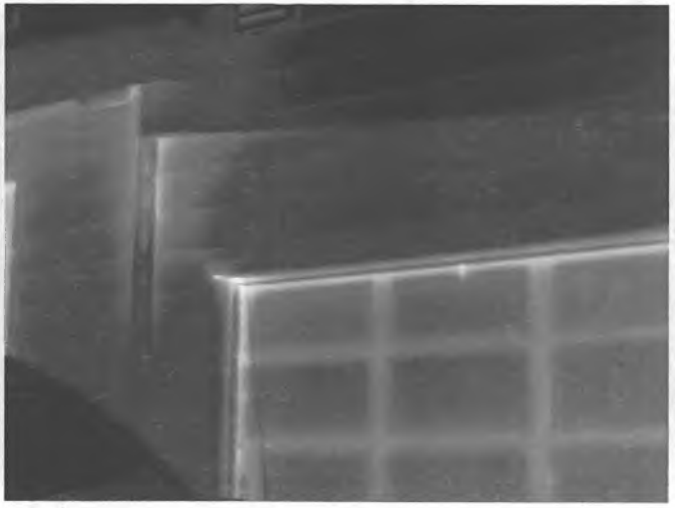

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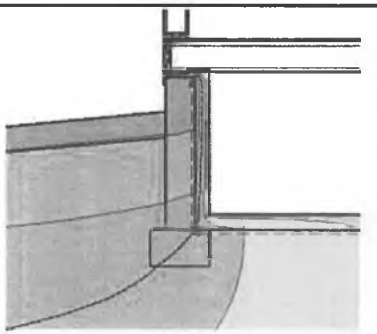
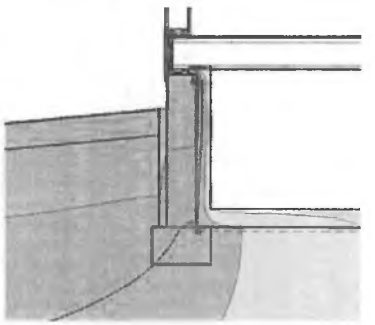
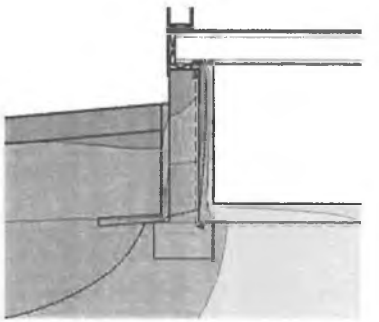
HOW DOES CCHRC SOLVE PROBLEMS?

Gather Information

	Scenario A	Scenario C	Scenario D
ge, AK ture: 36.5°F MC[1] avel Soil, 8% MC[1] all,			
	No Exterior Insulation	Vertical Exterior Insulation (2" XPS R-10 Foam Board)	Vertical Exterior Insulation with Horizontal Wing (2" XPS R-10 Foam Board, 48" Total Length)

ent (MC)

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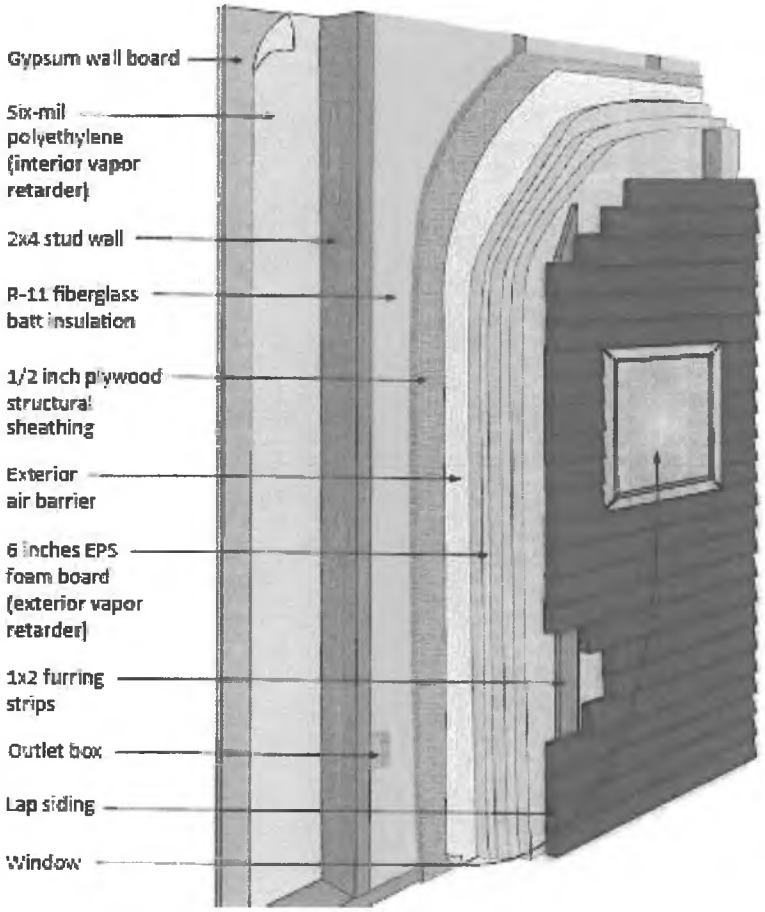
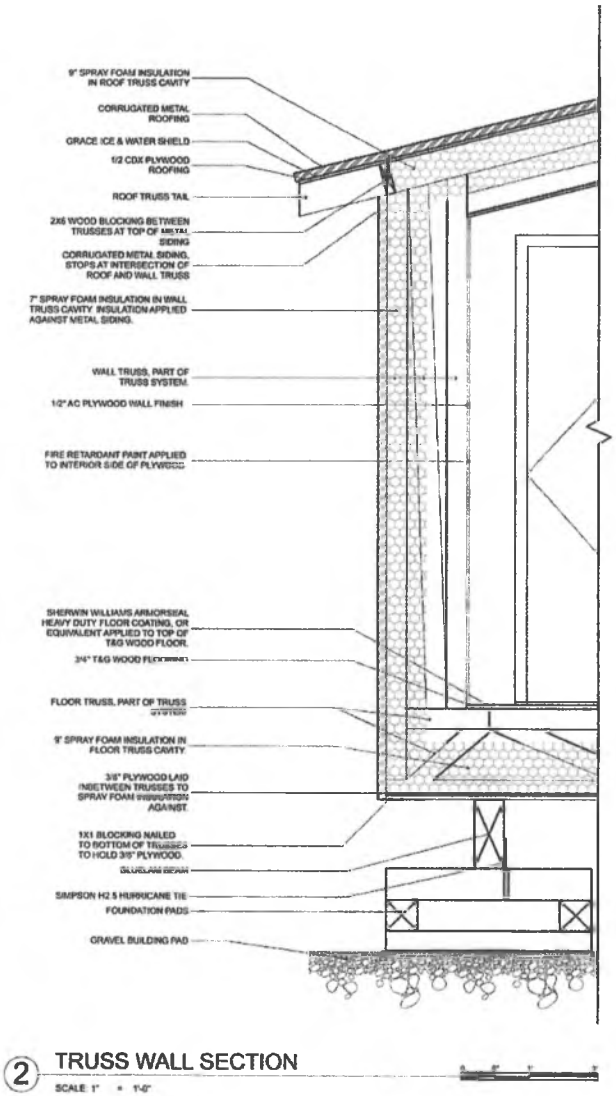
Identify Solutions





2 TRUSS WALL SECTION

SCALE: 1" = 1'-0"

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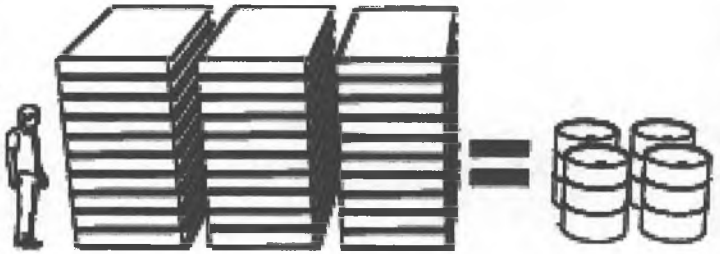

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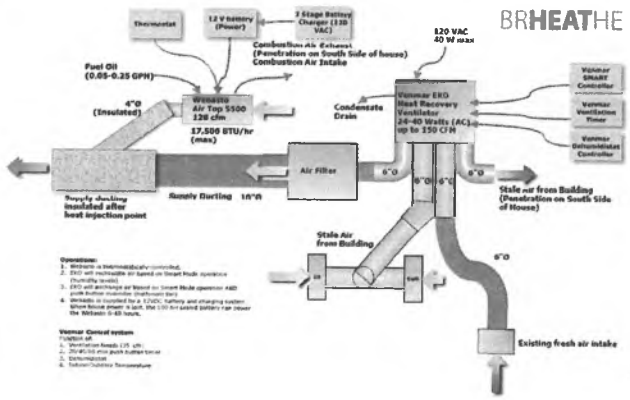

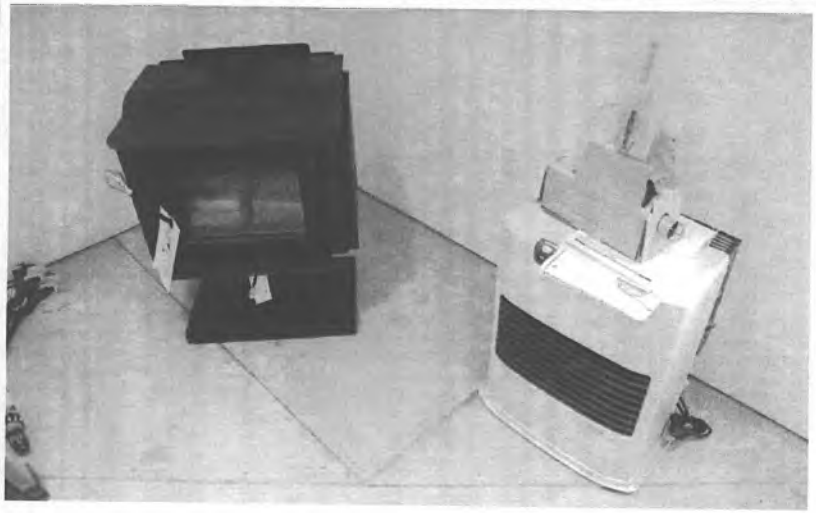

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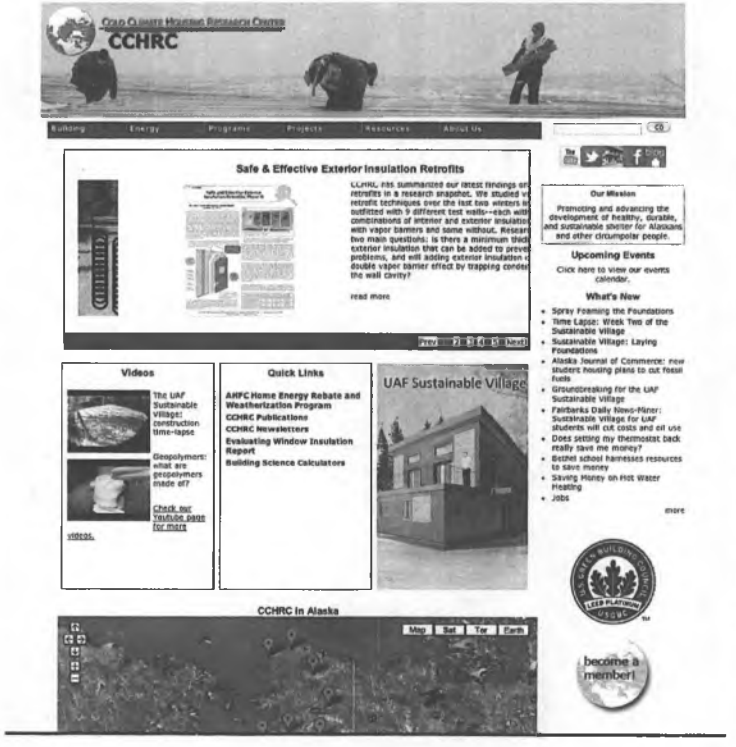
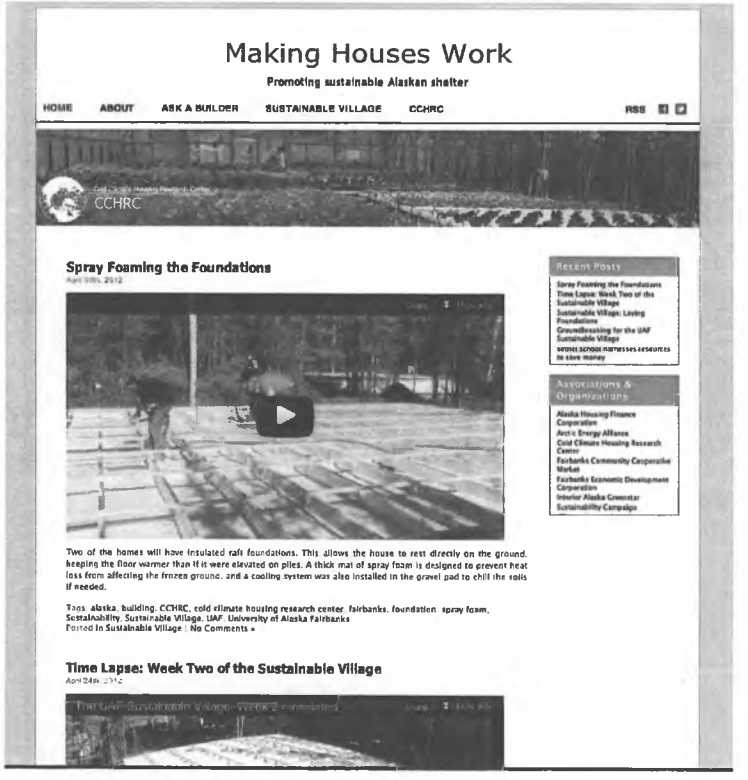
HOW ARE SOLUTIONS APPLIED?

Communicate with End Users

+50,000 Hits/yr



+20,000 Hits/yr



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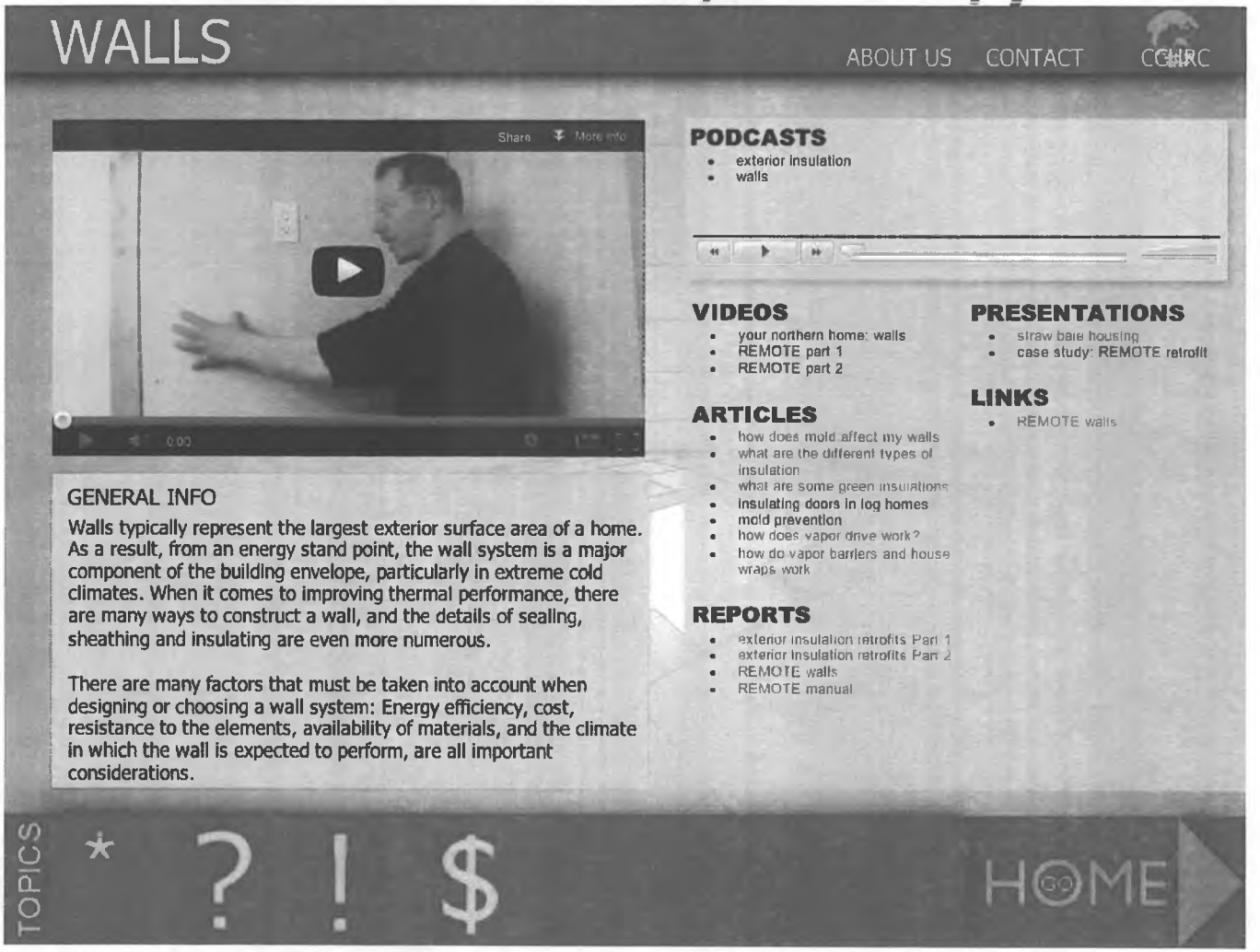

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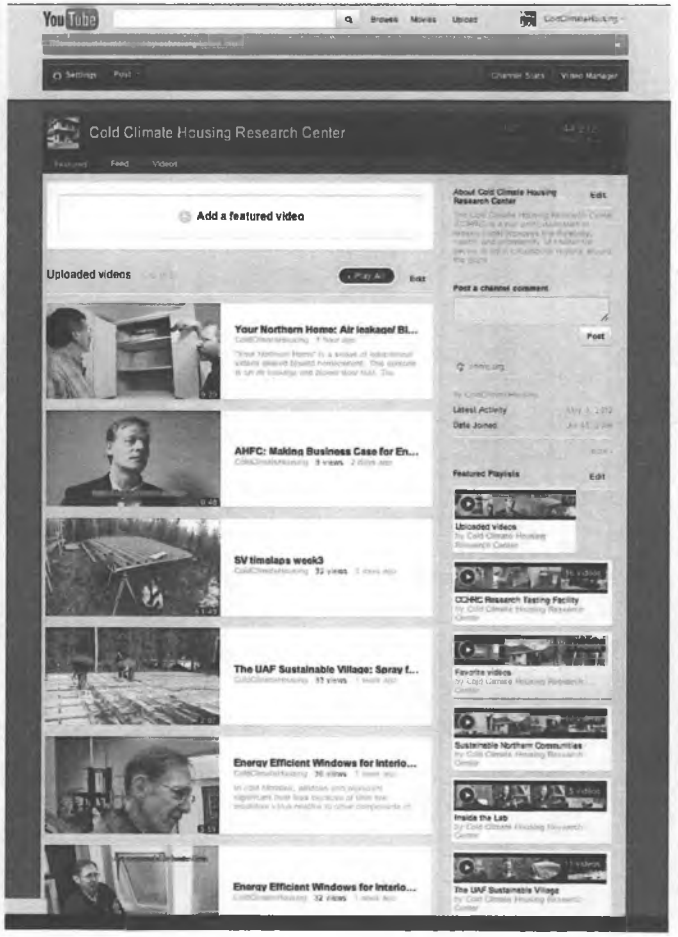
HOW ARE SOLUTIONS APPLIED?

Communicate with End Users

+200,000 Views



2,000 Tour Attendees
2,000 Consultations
50+ Classes

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HOW ARE SOLUTIONS APPLIED?

Demonstration

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HOW ARE SOLUTIONS APPLIED?

Demonstration

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HOW DO WE SOLVE PROBLEMS?

Understand the problem

- High Energy Costs in Some Public Facilities
- Budget Deficit
- Long-term Burden on State

Gather Information

- Benchmark
- Investment Grade Audits
- White Paper on Public Facilities

Identify Solutions

- REAL
- Standards
- Multi-stakeholder collaborations

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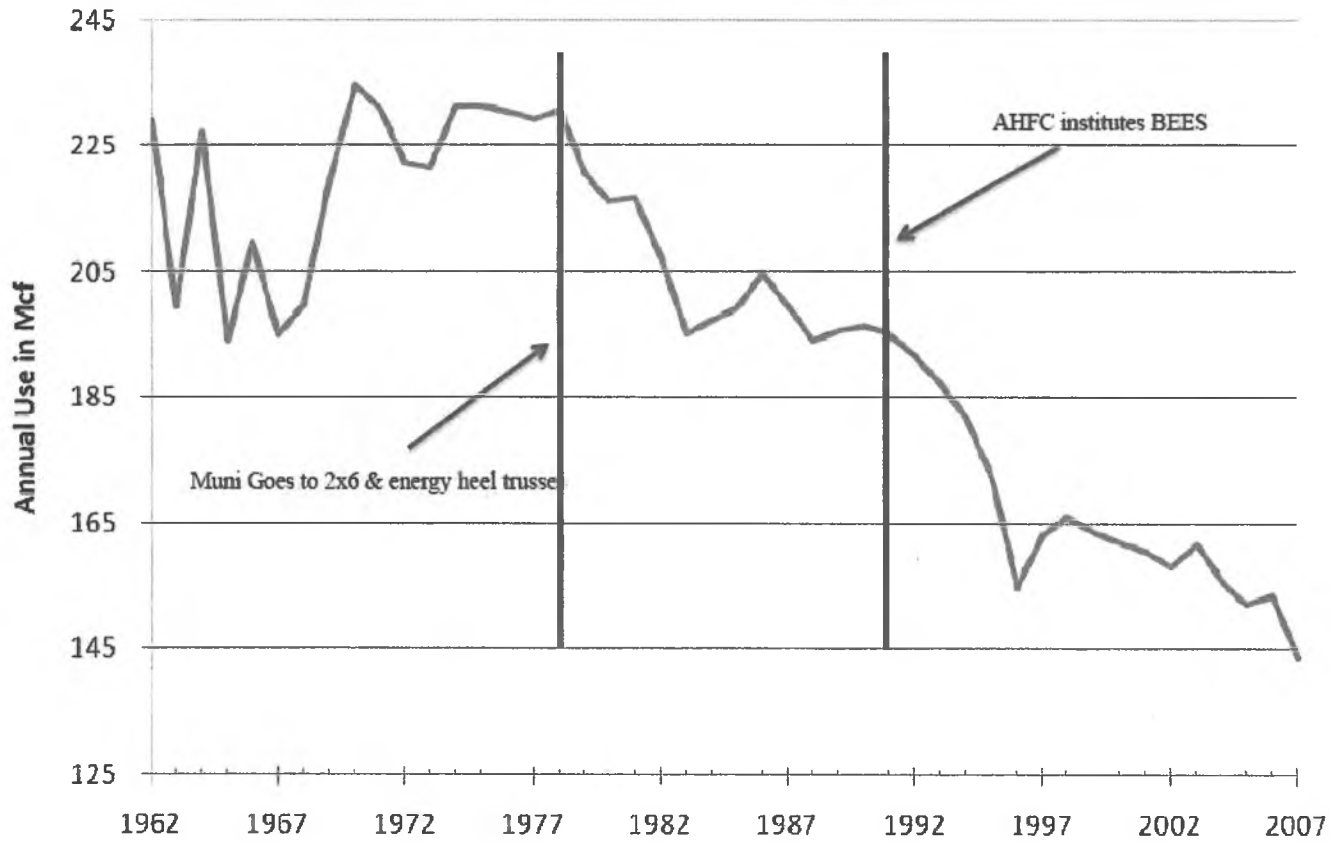
HOW ARE SOLUTIONS APPLIED?

Through Standards: Example from the Housing Industry

Chart 3 - 2008 Residential Customer Average Annual Usage By Year Service Was Initiated



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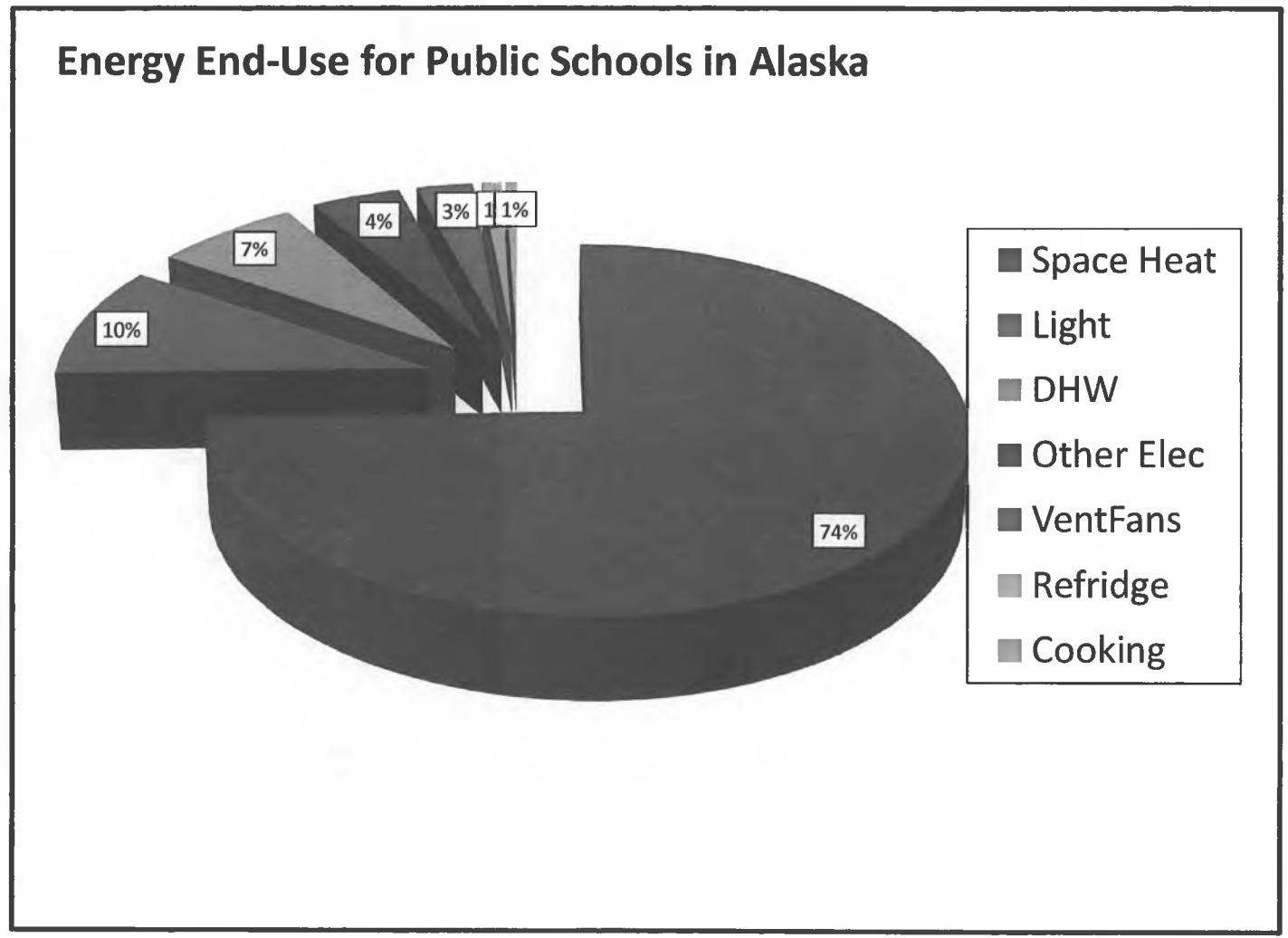
HOW DO WE SOLVE PROBLEMS?

Gather Information



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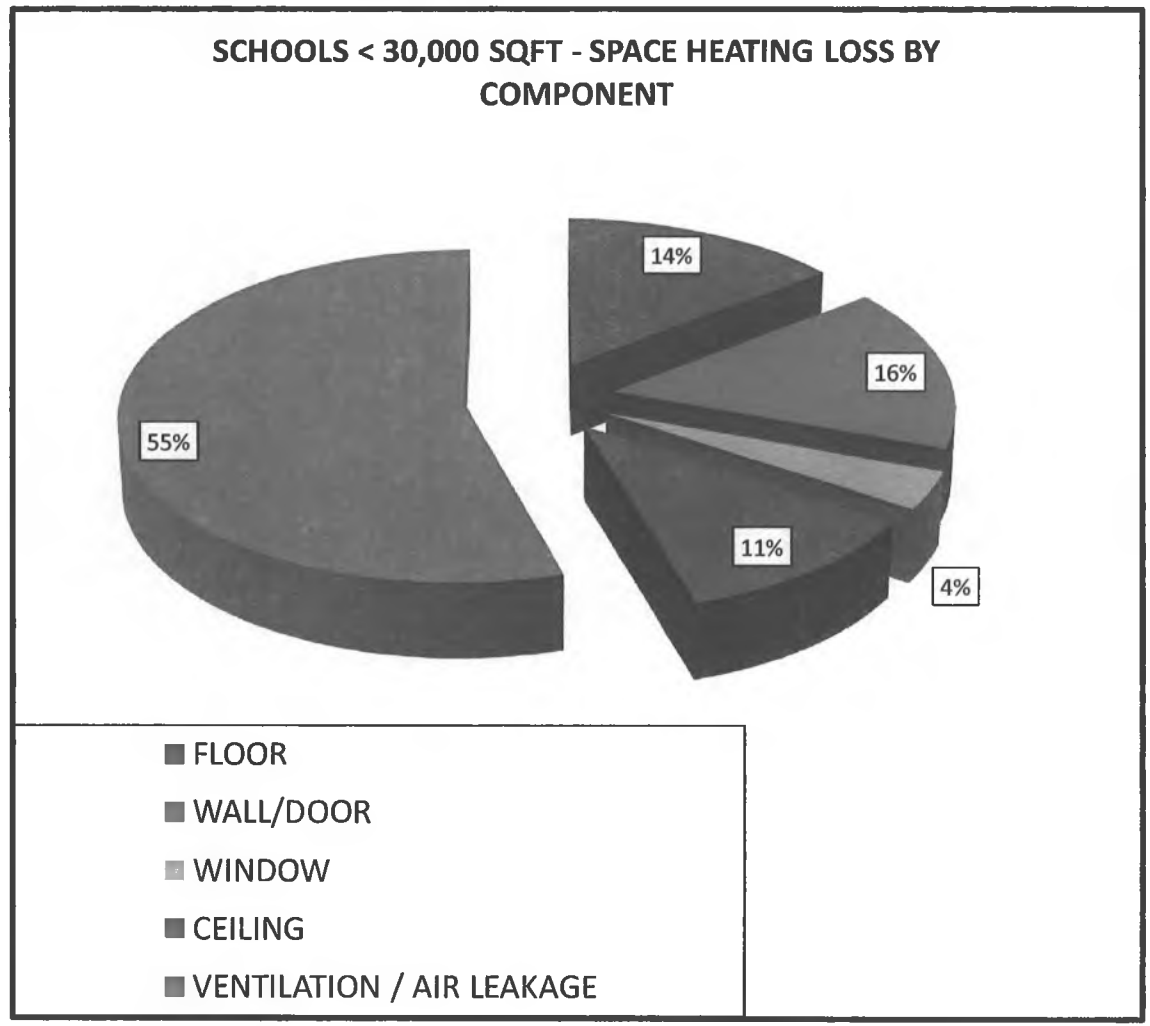
HOW DO WE SOLVE PROBLEMS?

Gather Information

Source of Heat Loss in Public Schools



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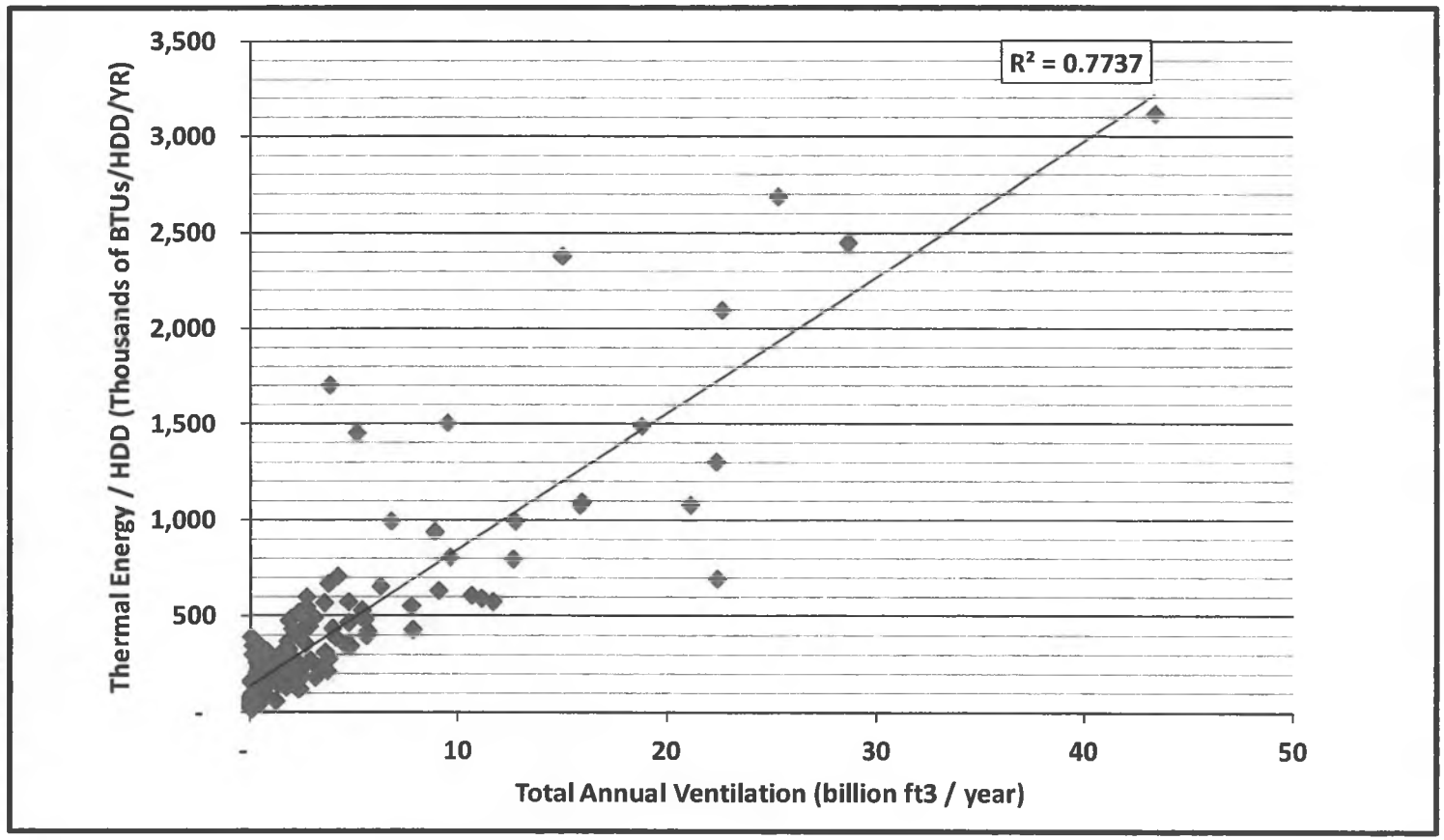
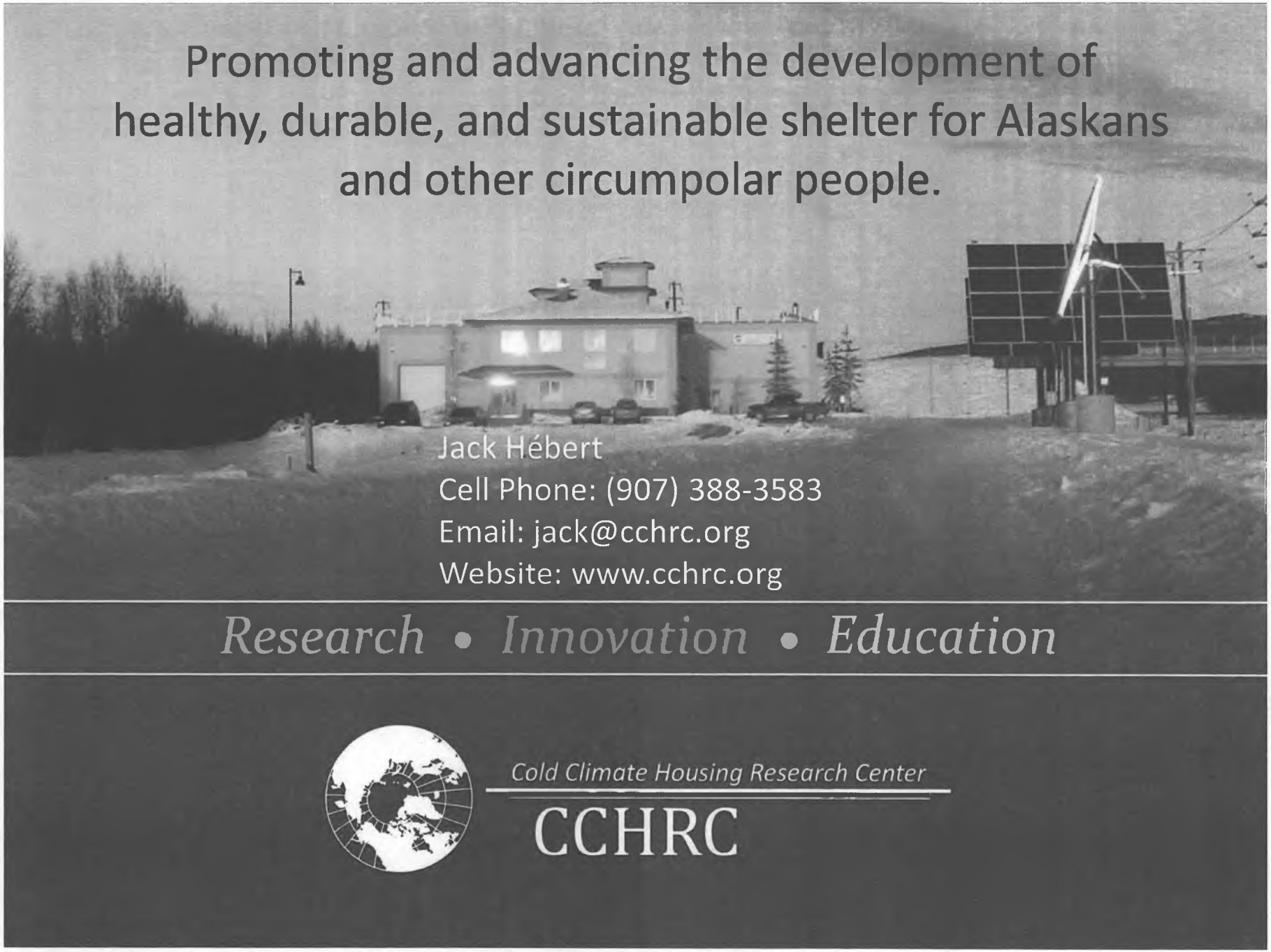
HOW DO WE SOLVE PROBLEMS?
Gather Information

Ventilation is a Key Driver of Energy Use





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Jack Hébert
Cell Phone: (907) 388-3583
Email: jack@cchrc.org
Website: www.cchrc.org

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AHFC and Public Facilities Energy Use

House Bill NO. 343

March 13, 2014

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AHFC, Energy & Public Facilities

Alaska Senate Bill 220 in 2010

Established $250 million revolving loan fund for energy efficiency improvements on public facilities

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

Alaska Housing
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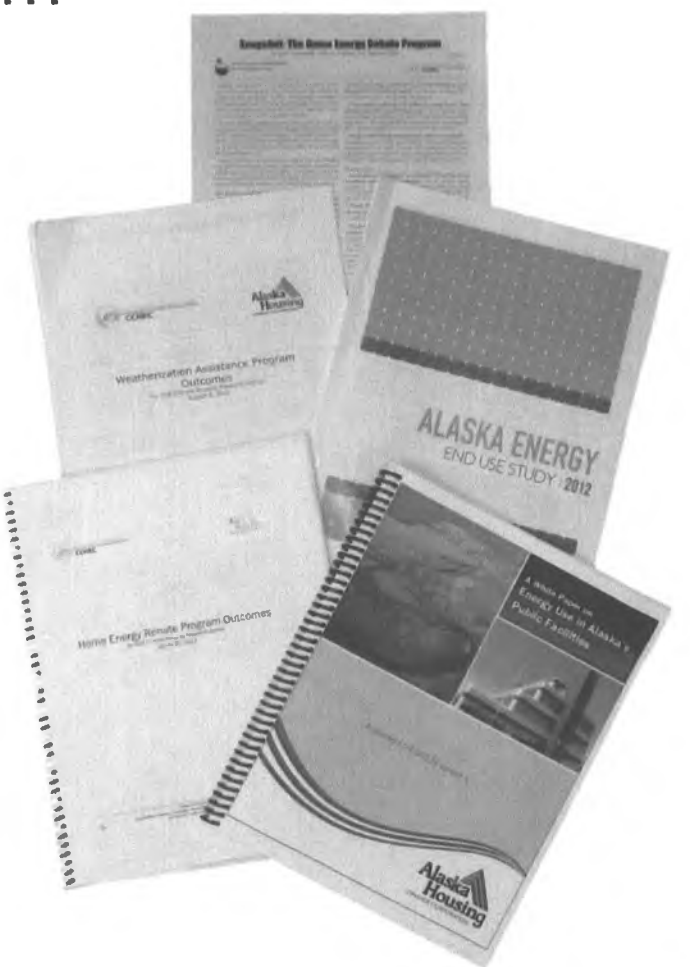
ARIS

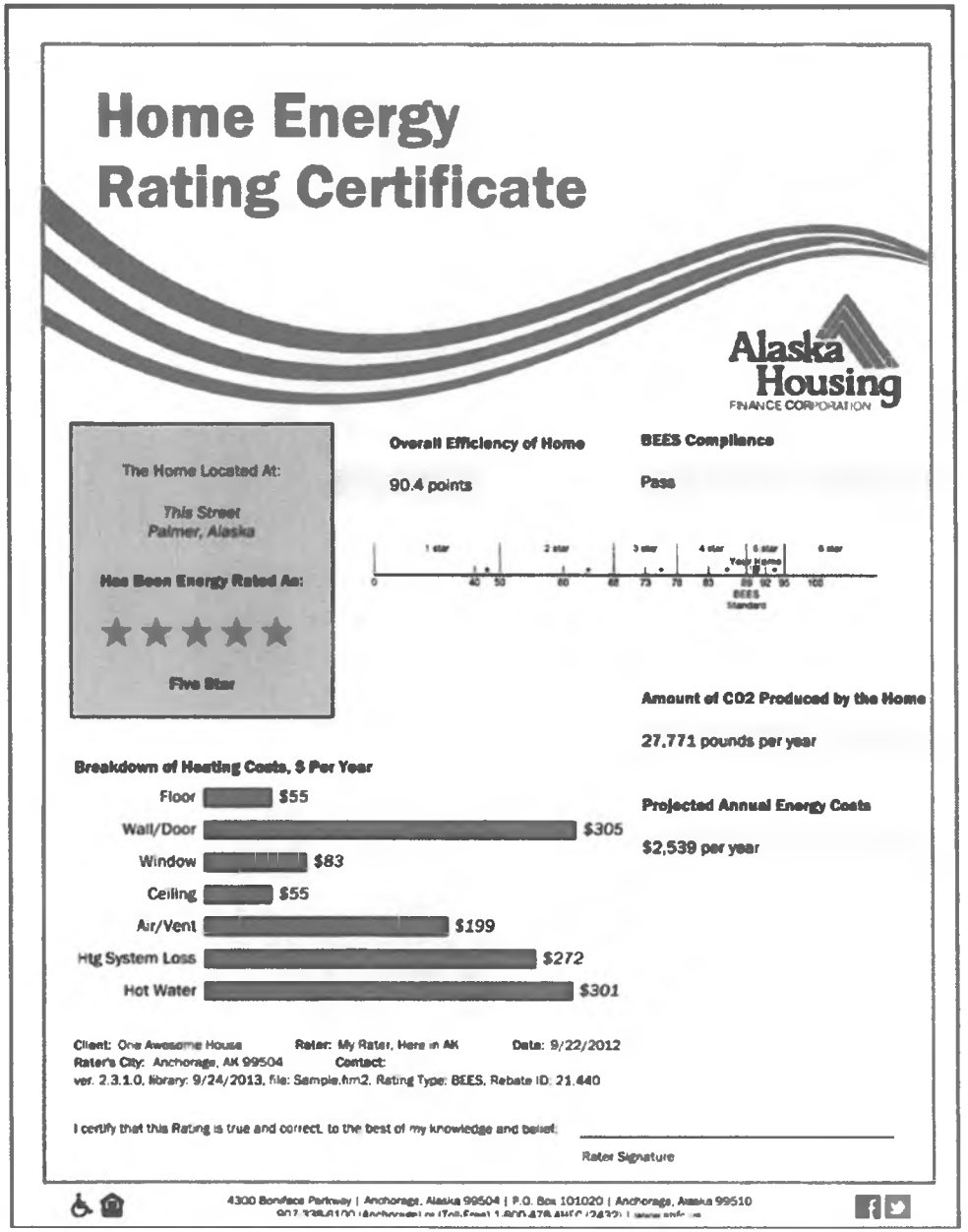
Alaska Retrofit Information System

- AHFC's ARIS database has become the clearinghouse for information on Alaska buildings
- More than 75,000 unique records
- Information from the database is used for policy decisions, research, program measurement, studies and reports, and much more



HERS

Home Energy Rating System



Home Energy Rating Certificate

Alaska Housing FINANCE CORPORATION

The Home Located At:

This Street
Palmer, Alaska

Has Been Energy Rated As:

★★★★★

Five Star

Overall Efficiency of Home

90.4 points

BEES Compliance

Pass

1 star 2 star 3 star 4 star 5 star 6 star

0 40 50 60 68 73 78 83 89 92 95 100

Your Home

BEES Standard

Amount of CO2 Produced by the Home

27,771 pounds per year

Breakdown of Heating Costs, $ Per Year

Floor	$55
Wall/Door	$305
Window	$83
Ceiling	$55
Air/Vent	$199
Htg System Loss	$272
Hot Water	$301

Projected Annual Energy Costs

$2,539 per year

Client: One Awesome House Rater: My Rater, Here in AK Date: 9/22/2012
Rater's City: Anchorage, AK 99504 Contact:
ver. 2.3.1.0, library: 9/24/2013, file: Sample.hm2, Rating Type: BEES, Rebate ID: 21,440

I certify that this Rating is true and correct, to the best of my knowledge and belief.

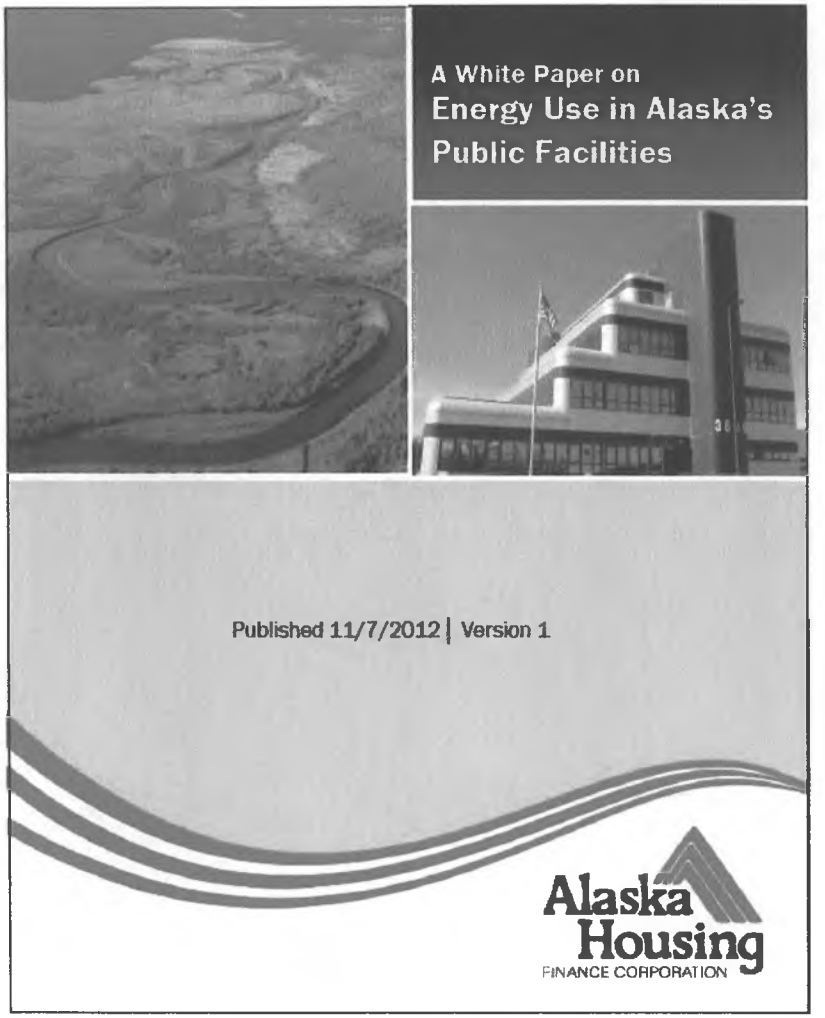
Rater Signature

4300 Boniface Parkway | Anchorage, Alaska 99504 | P.O. Box 101020 | Anchorage, Alaska 99510

BEES

Building Energy Efficiency Standard

Assessment Process



Benchmarking more than 1,200 buildings

Identify highest energy use buildings

Perform Investment Grade Audits of 327 identified buildings

Data gathered and analyzed

Report of findings

Energy Audit Results

Audits provide basic knowledge not previously known

Significant savings potential, $14.7m for 327 buildings

Age of building had little correlation to energy use – new doesn't mean efficient

AHFC Energy Improvements

Purchased headquarters in 2011 following 14 year lease

Immediately starting implementing efficiency measures including HVAC, lighting, and roof insulation

Continue to monitor the buildings performance to ensure energy savings are achieved

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FINANCE CORPORATION

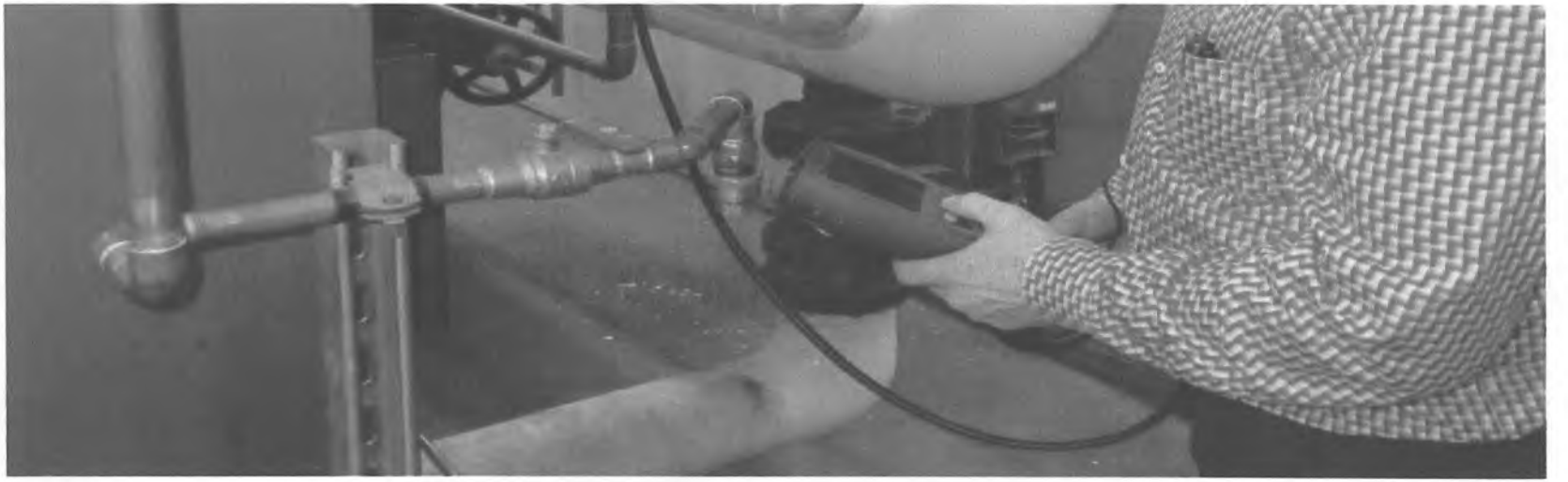
Overall Energy Audit Recommendations

Appropriately size new buildings

Establish a level of accountability

Meter and track energy use data

Consolidate facility use where possible



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FINANCE CORPORATION

Recommendations for Building Design

Consider life-cycle cost of building components and equipment, especially in areas with high energy costs (Codes are just a minimum)

Designers should consider building use, system sizes, controlled ventilation, and lighting to maximize efficiency

Reduce excessive glass and maximize daylight harvesting

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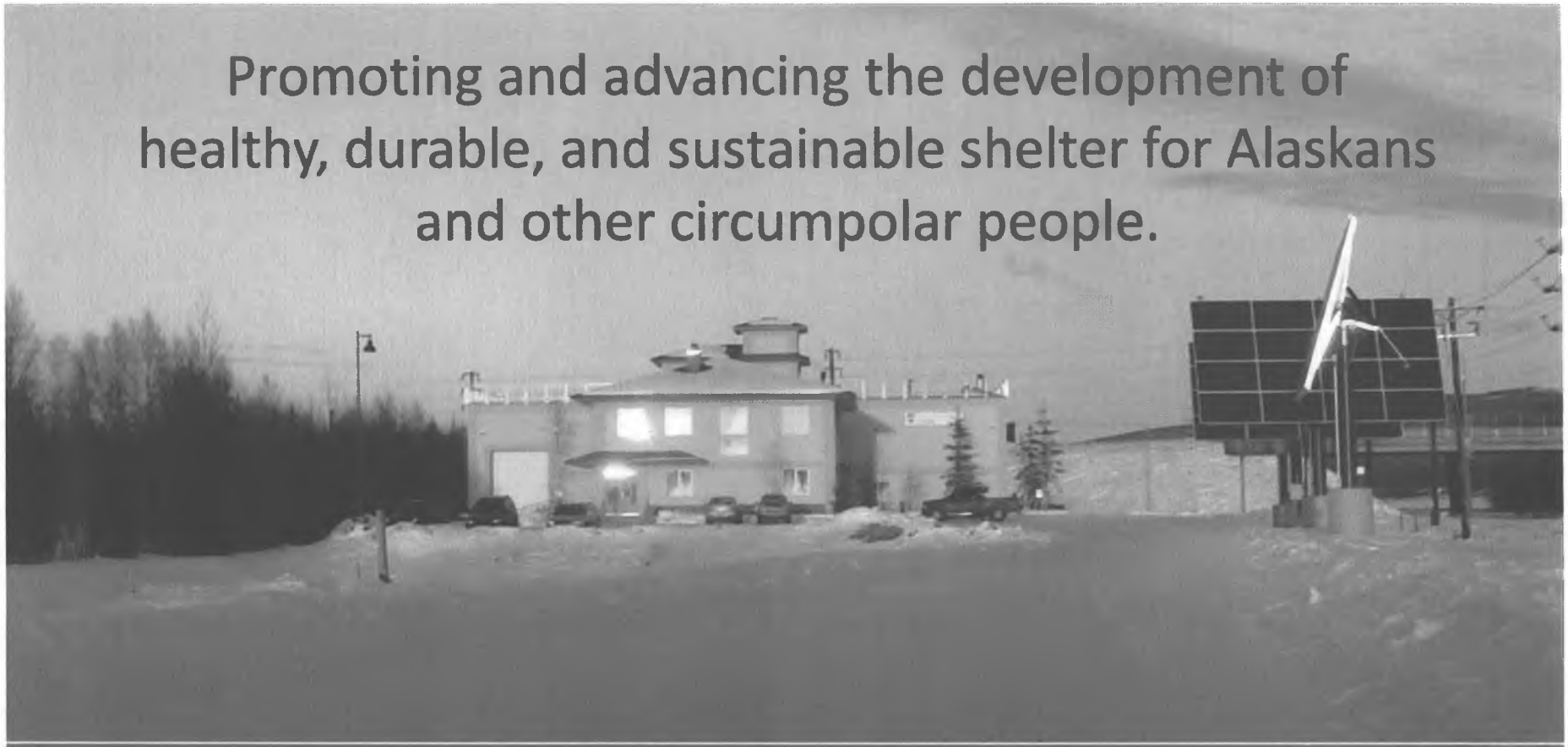
FINANCE CORPORATION

Questions

AHFC Stock Photo

Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people.



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It's hard to get to work

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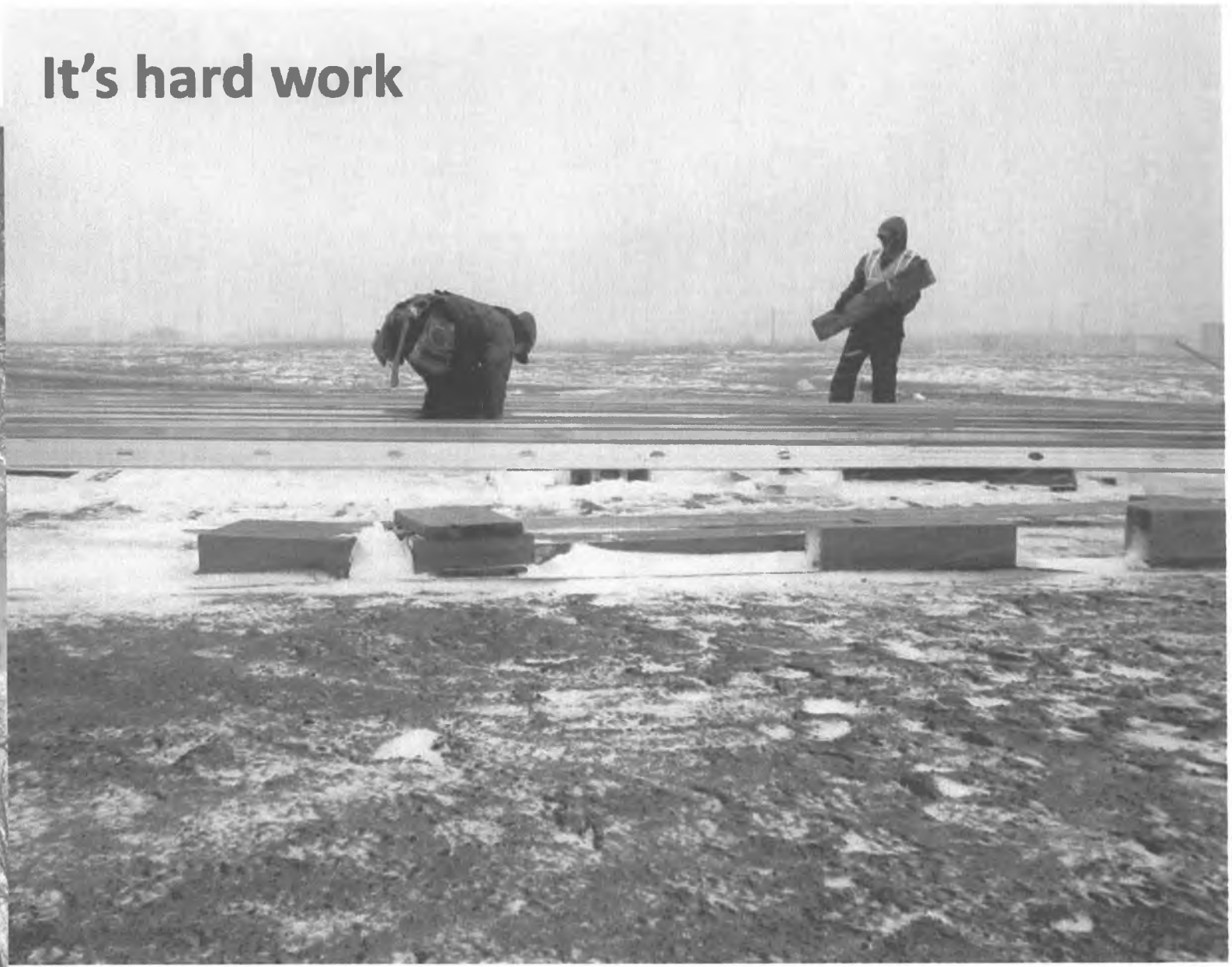
It's hard work

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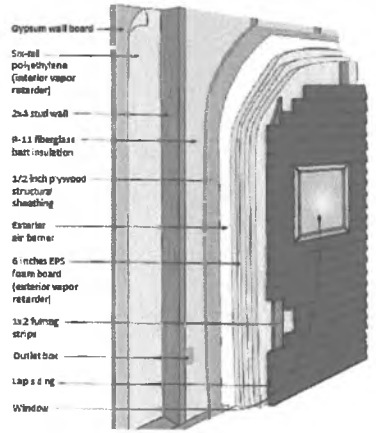
Identify Solutions



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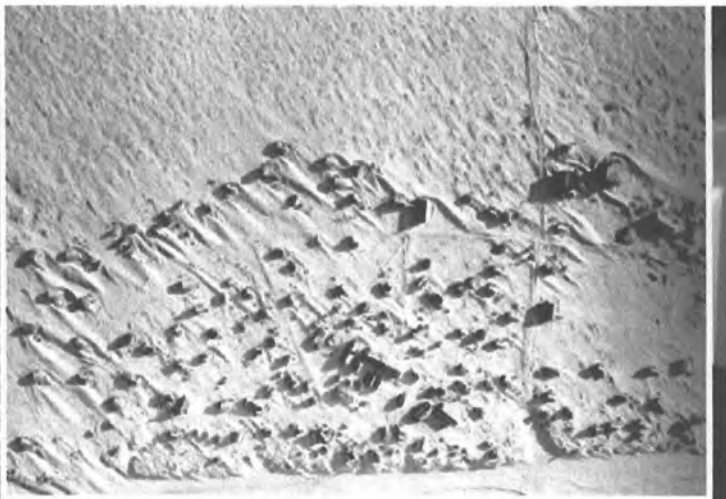

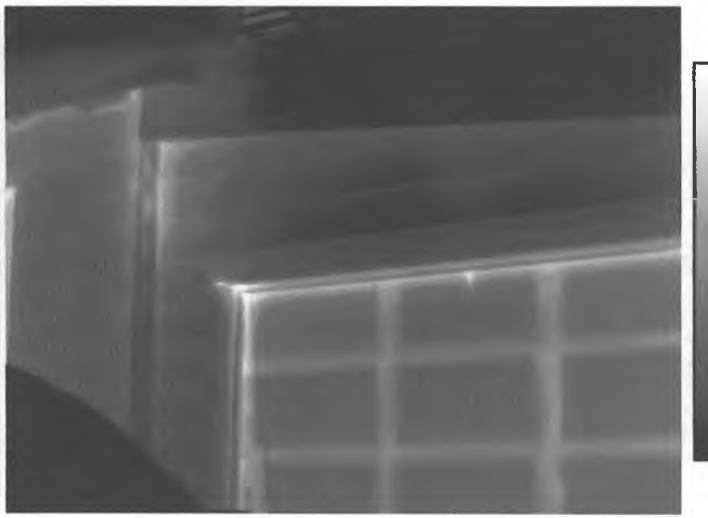

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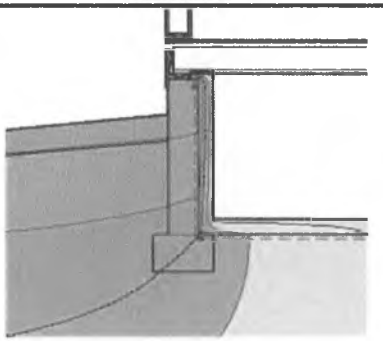
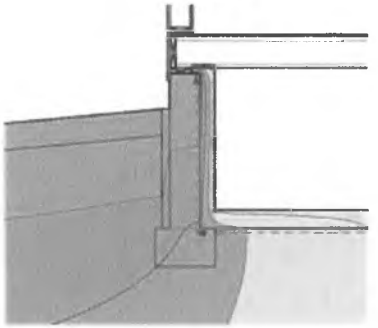
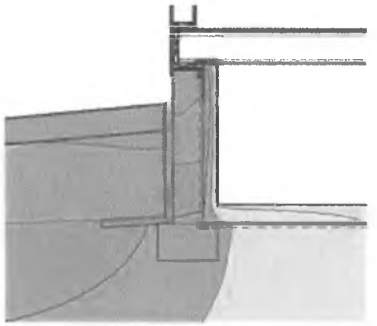
ge, AK ture: 36.5°F MC[1] avel Soil, 8% MC [1] all,			
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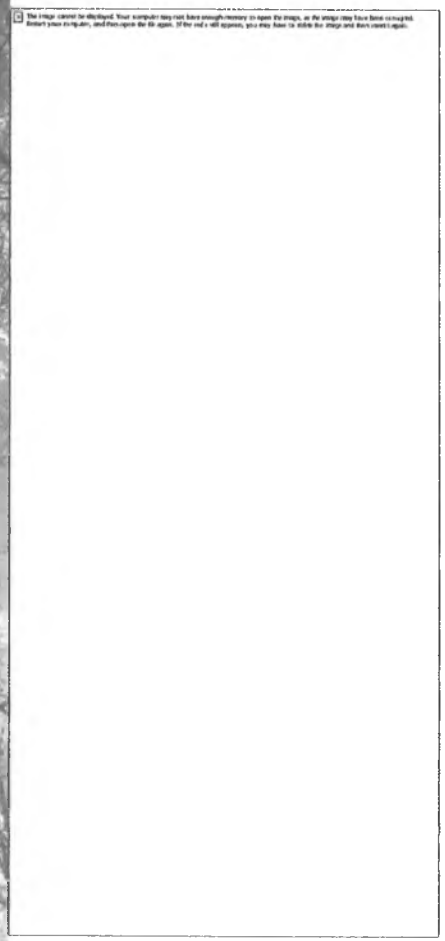

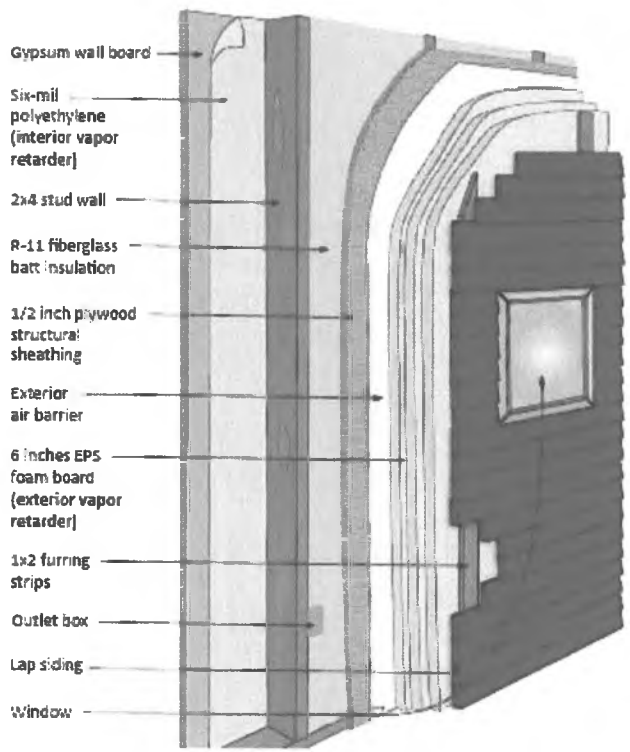

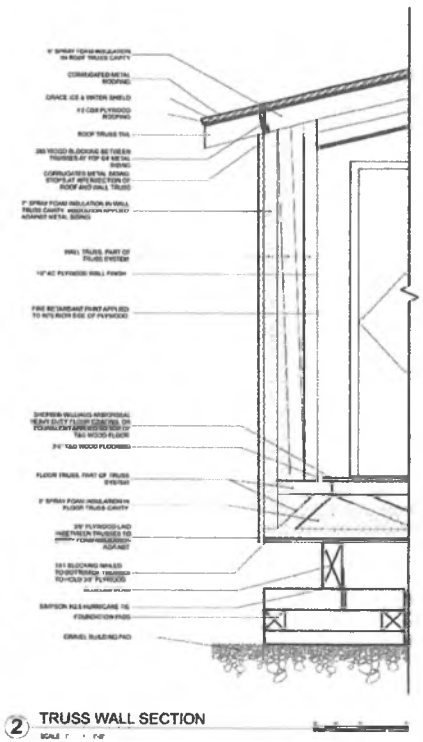

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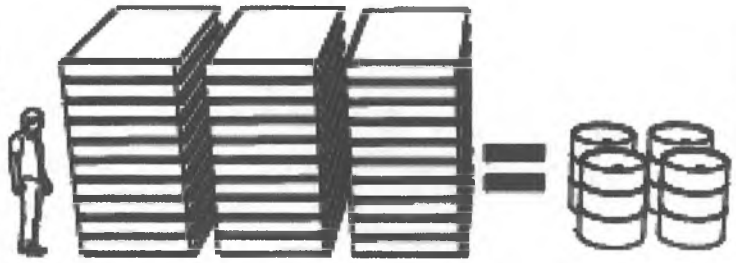

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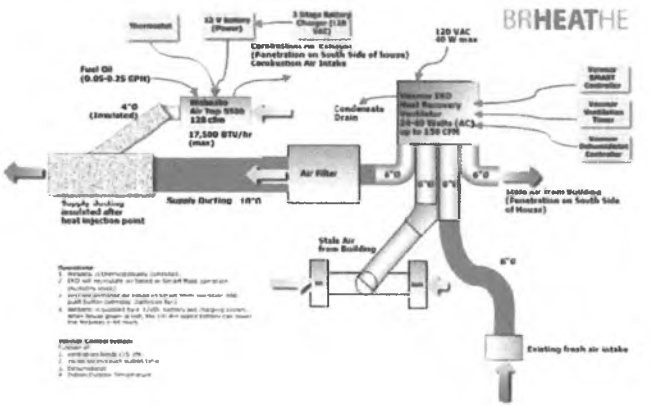

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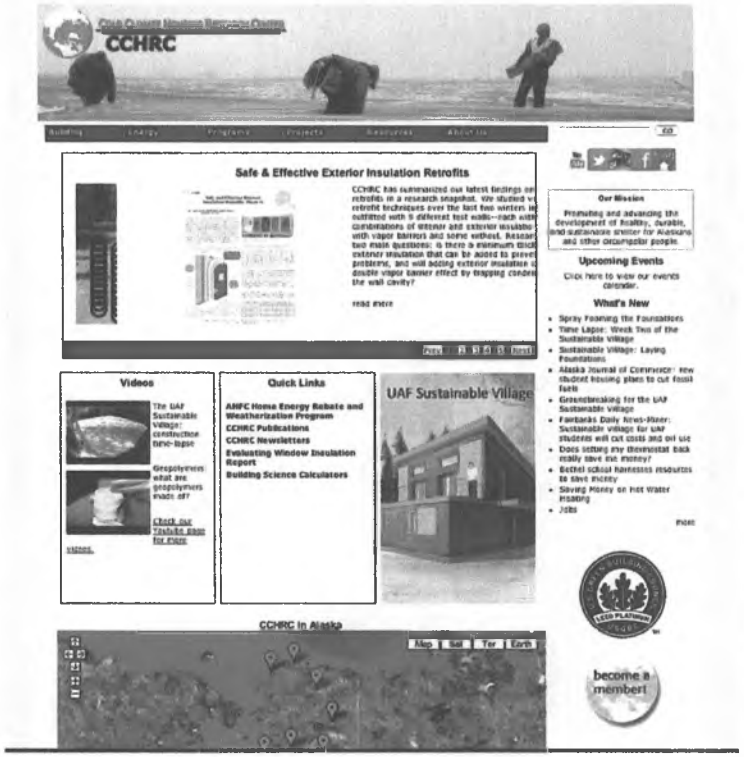
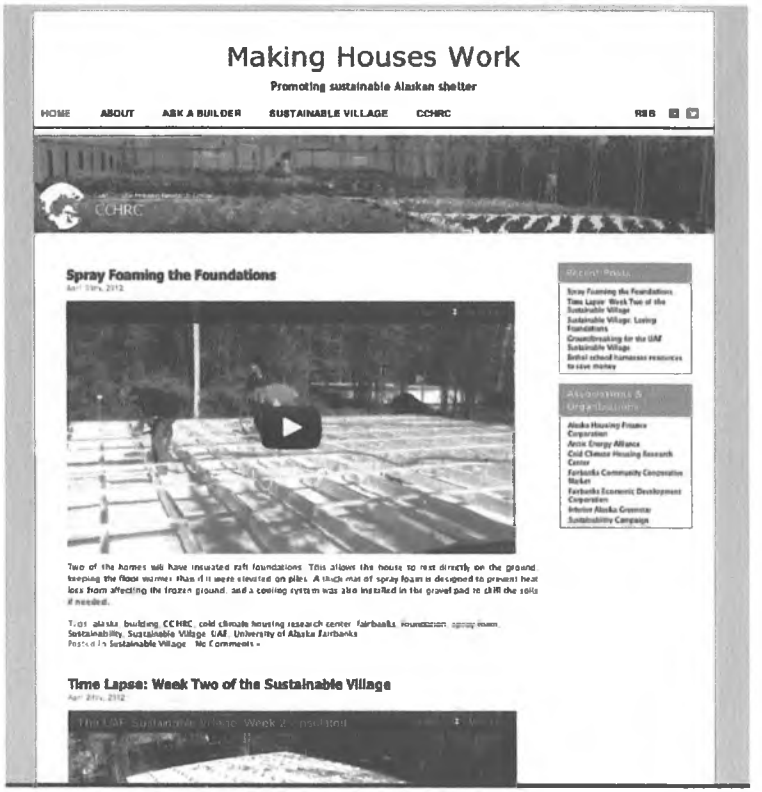
HOW ARE SOLUTIONS APPLIED?

Communicate with End Users

+50,000 Hits/yr



+20,000 Hits/yr



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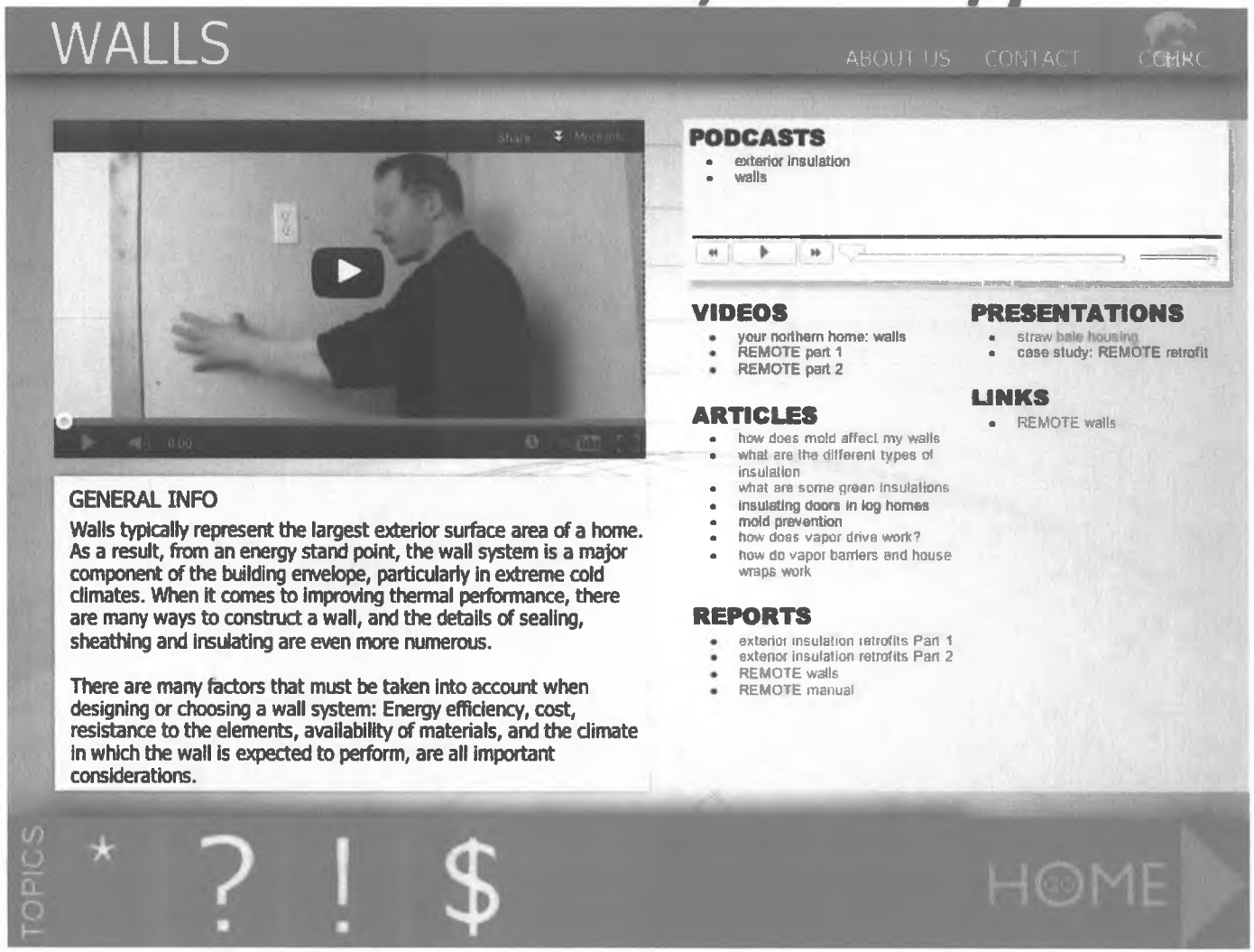
HOW ARE SOLUTIONS APPLIED?

Communicate with End Users

+20,000 Hits/yr



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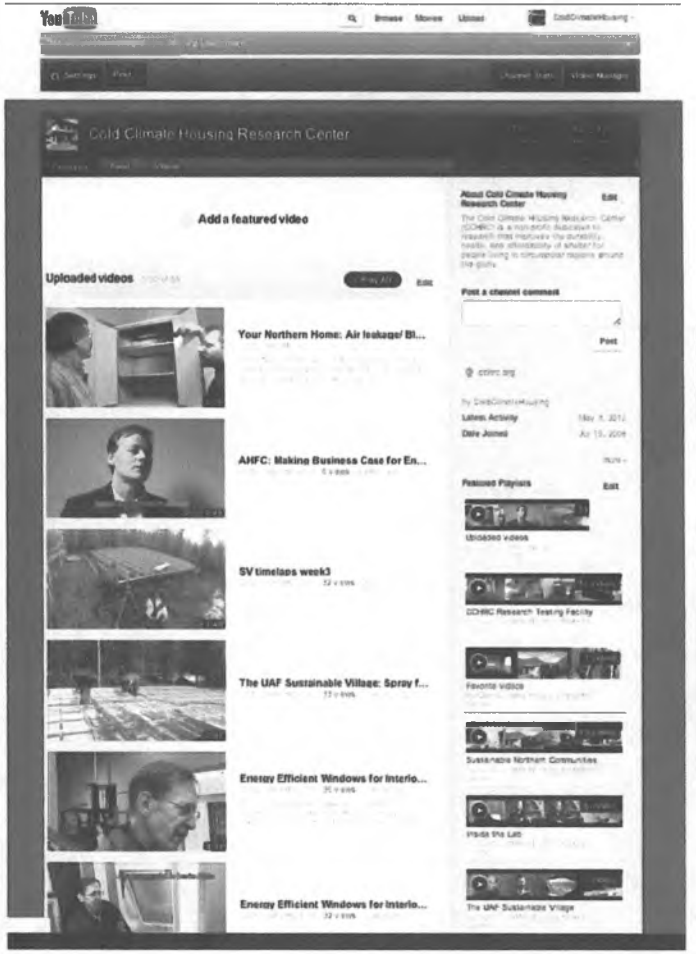
HOW ARE SOLUTIONS APPLIED?

Communicate with End Users

+200,000 Views



2,000 Tour Attendees
2,000 Consultations
50+ Classes

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HOW ARE SOLUTIONS APPLIED?

Demonstration

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HOW ARE SOLUTIONS APPLIED?

Demonstration

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HOW DO WE SOLVE PROBLEMS?

Understand the problem

- High Energy Costs in Some Public Facilities
- Budget Deficit
- Long-term Burden on State

Gather Information

- Benchmark
- Investment Grade Audits
- White Paper on Public Facilities

Identify Solutions

- REAL
- Standards
- Multi-stakeholder collaborations

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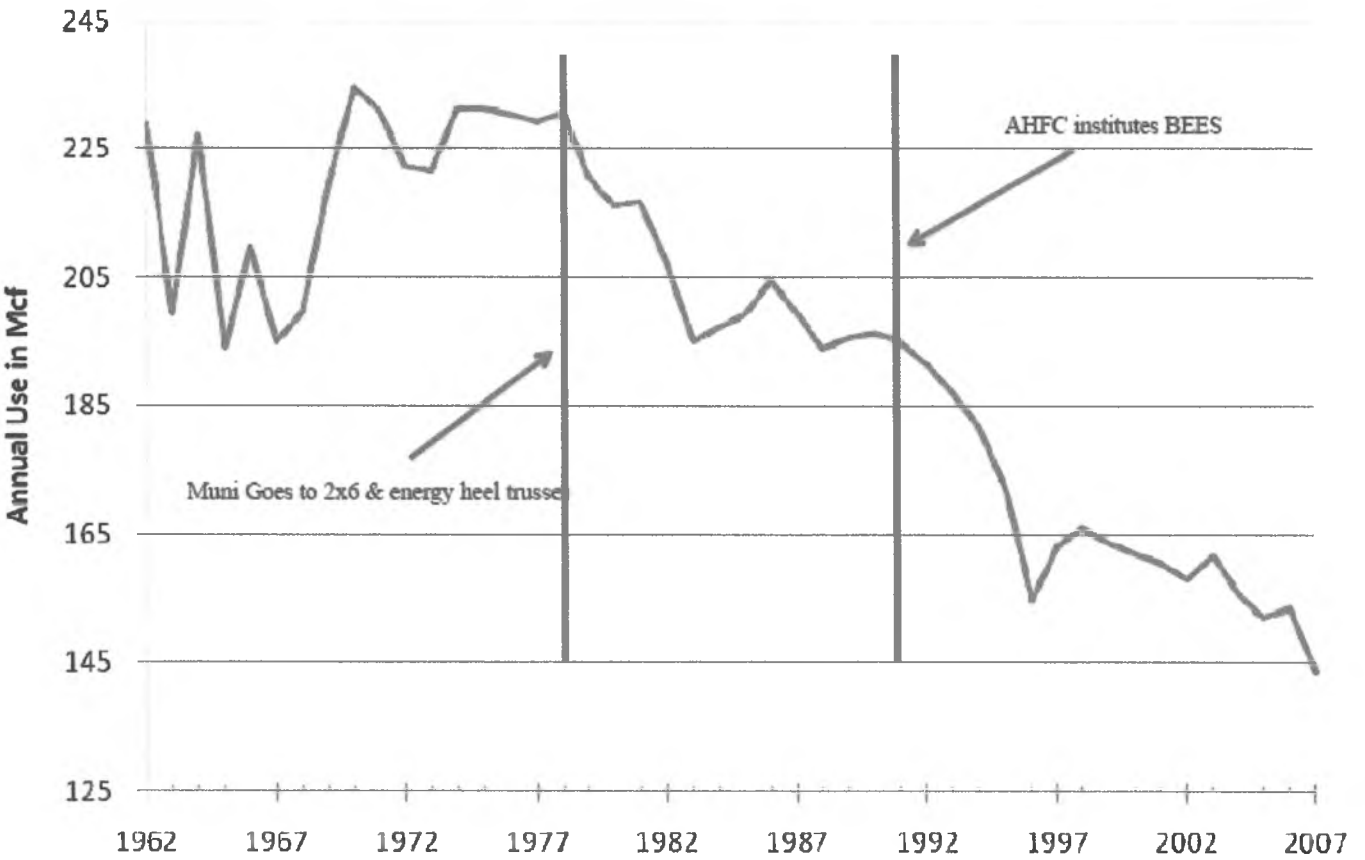
HOW ARE SOLUTIONS APPLIED?

Through Standards: Example from the Housing Industry

Chart 3 - 2008 Residential Customer Average Annual Usage By Year Service Was Initiated



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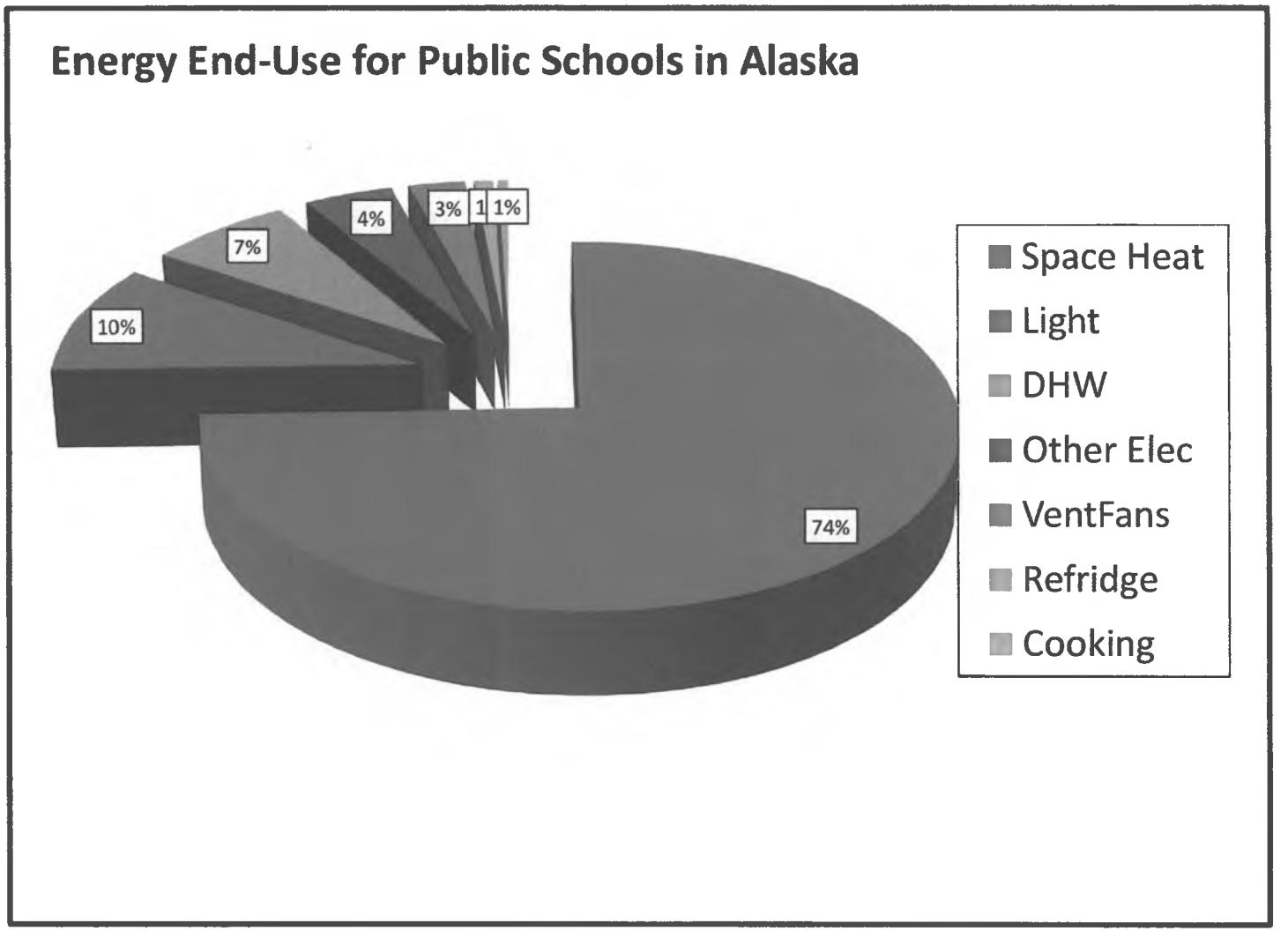
HOW DO WE SOLVE PROBLEMS?

Gather Information



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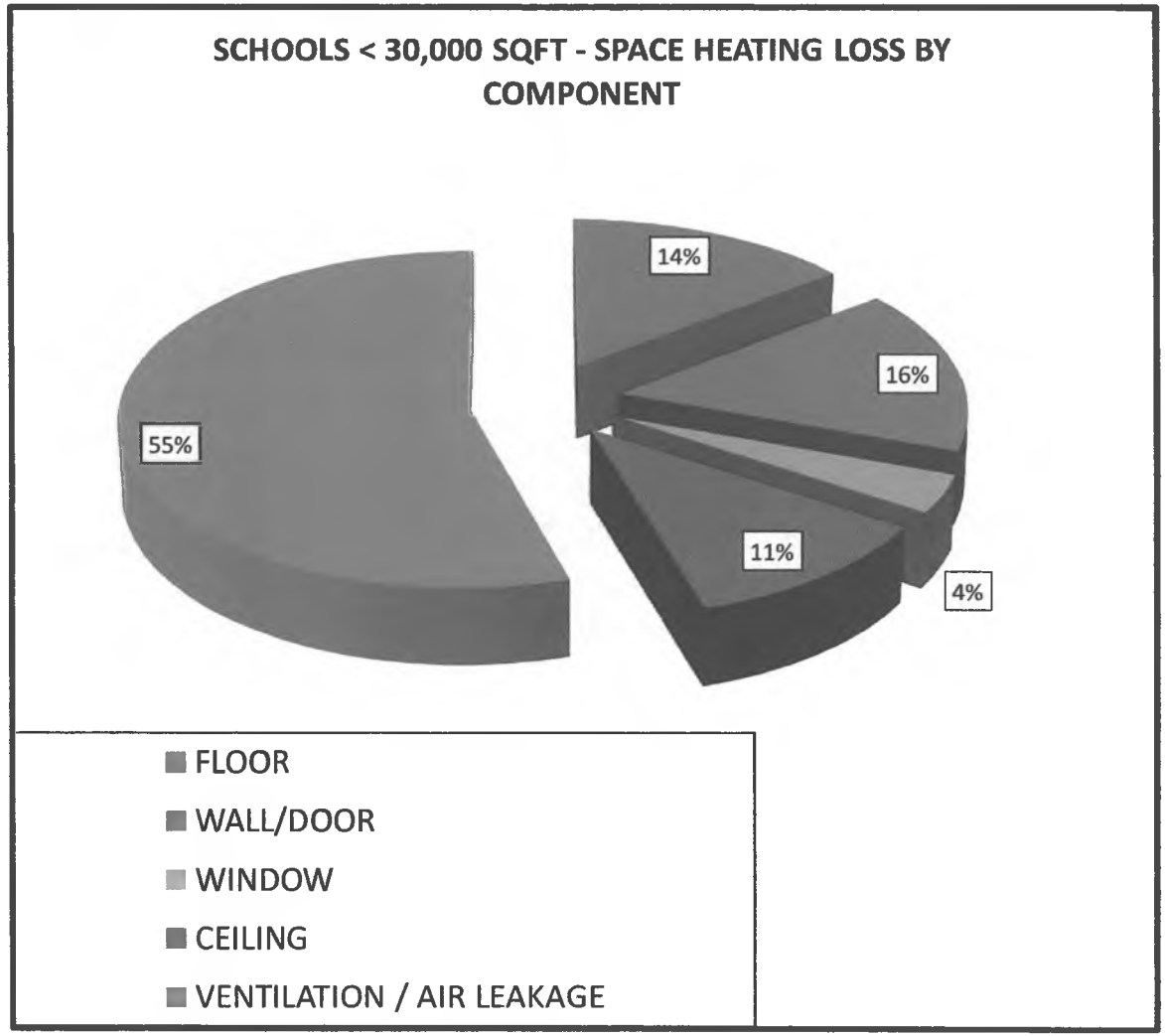
HOW DO WE SOLVE PROBLEMS?

Gather Information

Source of Heat Loss in Public Schools



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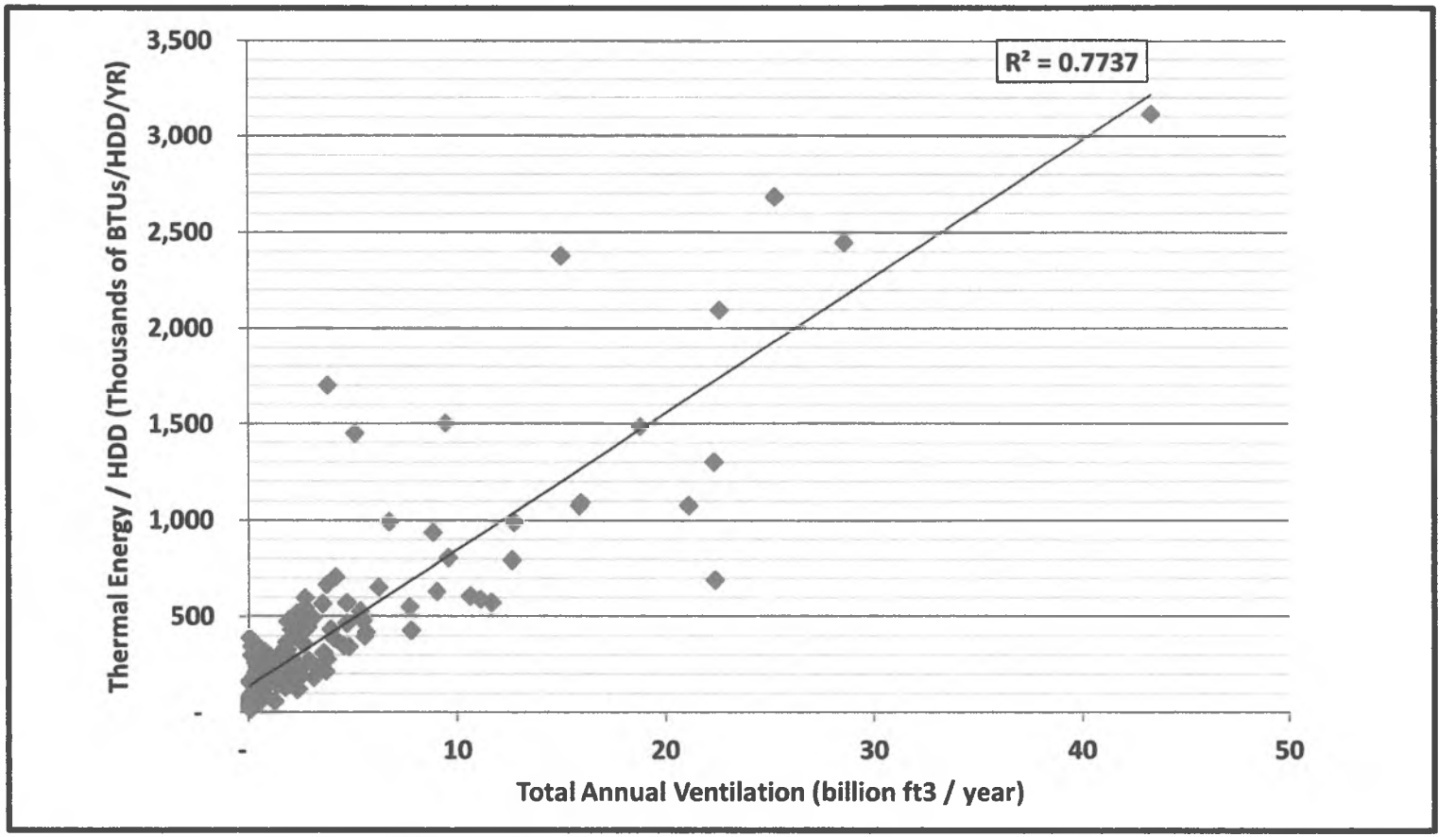
HOW DO WE SOLVE PROBLEMS?
Gather Information

Ventilation is a Key Driver of Energy Use




Promoting and advancing the development of healthy, durable, and sustainable shelter for Alaskans and other circumpolar people.
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