SB

121

SENATE COMMITTEE REPORT
First Committee of Referral

DATE: 2/20/09

FURTHER: Finance

Date of 5-Day Notice: _____
(in accordance with Uniform Rule 23)

DATE TURNED IN TO OFFICE: 3/13/09

Resources Committee considered SENATE BILL NO. 121

SB 121 ENERGY EFFICIENCY BLDGS/PUBLIC WORKS

"An Act relating to energy efficiency for public facilities with the intent of reducing state operating costs."

and recommends:

[ ] be **replaced** with [ ] **SCS** or [✓] **CS** SB 121 (RES)

[ ] adopt **previous** [ ] **SCS** or [ ] **CS** _____ (_____)

[ ] attached amendment(s)

[ ] adopt _____ Letter of Intent

[ ] further referral to _____ Committee

SENATE BILL:
[ ] Same Title
[✓] New Title

HOUSE BILL:
[ ] Same Title
[ ] Technical Title Change
[ ] New Title w/ SCR #_____

NEW FISCAL NOTE(S):

Department	Date	Fiscal	Indet	Zero	FN#
DCCED	3/9	✓			
1 fiscal info forthcoming					

PREVIOUS FISCAL NOTE(S):

Department	Date	Fiscal	Indet	Zero	FN#

[ ] **APPROPRIATION - no fiscal note**

SIGNATURES AND RECOMMENDATIONS:	PRINTED LAST NAME	DO PASS	DO NOT PASS	NO REC	AMEND
	WAGONER	✓			
	STEVENS			X	
	STEDMAN			X	
	Wielechowski	✓			
CO-CHAIR:	McGuire	✓			
CO-CHAIR:					

ALASKA STATE LEGISLATURE

SENATOR LESIL McGUIRE
SENATOR BILL WIELECHOWSKI
Co-Chairs, Senate Resources Committee

MEMORANDUM

Memorandum

To: Leg. Legal

From: Shalon Szymanski, Committee Aide
Senate Resources Committee

Date: March 13, 2009

Re: Final CS Request

Please create a Final Committee Substitute (SRES) for work order # **26-LS0586\W**.

SB 121 did move out of committee today with no changes to the CS and we would like to have it read across on the floor Monday.

Thank you!

CS for SB 121\W (3/13/09)
compared with CS for SB 121 \P (3/9/09).

"An act relating to energy audits of public facilities and to energy efficiency for public facilities with the intent of reducing state operating costs."

The following five changes have been made to the CS for SB 121\P based on feedback provided by experts and committee members at its first hearing on Monday, Mar. 9, 2009. All changes have been requested and/or approved by Dept. of Transportation & Public Facilities and Alaska Energy Authority.

Changes to the bill:

1. The Dept. of Transportation & Public Facilities has requested that the database be updated annually, rather than every 10 years. This can be done simply by having individual building managers update data based on their utility bills. If substantial inefficiencies are found in a facility, then an energy audit and potential retrofit will be scheduled for that facility. **The only difference here is an annual update.**

2. All facilities **(not just heated facilities)** shall be retrofitted and eligible for performance contract retrofit projects. DOT asked that ALL facilities be eligible for performance contracting, regardless of whether or not they are heated and the section regarding retrofitting was also adjusted for consistency. *(Lighting projects still must be as efficient as possible while meeting federal guidelines; however the department felt it important for all buildings to be evaluated and eligible for retrofits.)*

3. **The reference to the International Energy Conservation Code (IECC) was removed** and the bill now states that: Facilities will be made to meet or exceed the most recently published edition of the ASHRAE/IESNA standard 90.1 as published by the American Society of Heating, Refrigerating and Air-Conditioning Engineers. **ASHRAE is more typically used for commercial facilities and also does a much better job at addressing Alaska's climate conditions**, while still meeting the same basic guidelines found in the IECC. Although the IECC embodies ASHRAE, it only recognizes 3 climatic zones which is insufficient for the entire state of Alaska. *(For the point of definitions, IESNA refers to the Illuminating Engineering Society of North America).*

4. The **decision to postpone a retrofit** due to lack of cost-effectiveness was modified to add a provision that this decision may be based in part on whether or not the department would be able to meet a return on investment within 15 years after project completion.

5. **The energy use index language** found in Sec. 44.83.955, was **adjusted to better define the energy use index and the database**. The Alaska Energy Authority shall establish an energy use index to measure energy consumption. The database they prepare will be made up of energy use index data for each facility. These changes did not alter content, just provided for better clarity through definition.

26-LS0586\P
Kane
3/9/09

CS FOR SENATE BILL NO. 121(RES)

IN THE LEGISLATURE OF THE STATE OF ALASKA

TWENTY-SIXTH LEGISLATURE - FIRST SESSION

BY THE SENATE RESOURCES COMMITTEE

Offered:
Referred:

Sponsor(s): SENATE RESOURCES COMMITTEE

A BILL

FOR AN ACT ENTITLED

"An Act relating to energy audits of public facilities and to energy efficiency for public facilities with the intent of reducing state operating costs."

BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF ALASKA:

*** Section 1.** The uncodified law of the State of Alaska is amended by adding a new section to read:

PURPOSE. The purpose of this Act is to reduce the amount of energy consumed by public facilities by 20 percent not later than 15 years after the completion of the energy use index database, thereby reducing costs to the state and increasing jobs in energy efficiency industries.

*** Sec. 2.** AS 44.42.065 is amended to read:

Sec. 44.42.065. Energy use index database maintenance; energy audit [CONSERVATION OF ENERGY IN PUBLIC BUILDINGS]. (a) The department shall

(1) update the energy use index database established in

AS 44.83.955

(A) when a retrofit project for a public facility is completed;

(B) not less than every 10 years after completion of a retrofit project for a public facility;

(C) when the state acquires ownership of a new public facility; or

(D) when significant capital improvements have been performed on a public facility; and

(2) conduct [, AT LEAST ONCE EVERY SEVEN YEARS, PERFORM] an energy audit of each public **facility whenever, in updating the energy use index under (1) of this subsection, the department determines there is substantial energy inefficiency for the public facility** [BUILDING].

(b) The department shall include in each energy audit required by **(a)(2)** [(a)] of this section recommendations for corrective measures to improve the energy efficiency and to minimize the life-cycle cost of the public **facility** [BUILDING] surveyed. These measures may include (1) energy conservation measures, (2) measures involving solar technology and other alternative energy systems, (3) energy management, and (4) maintenance and operating procedures and energy-related modifications. In recommending the corrective measures, the department shall give priority to changes in maintenance and operating procedures over measures requiring substantial structural modification or installation of equipment.

(c) In this section, "energy audit" means a determination of

(1) the energy consumption characteristics of a **public facility** [BUILDING], including the size, type, and rate of energy consumption of major energy-consuming systems of the **public facility** [BUILDING] and the climate characterizing the region where the **public facility** [BUILDING] is located; and

(2) a determination of the energy conservation and cost savings likely to result from appropriate energy-conserving maintenance and operating procedures and modifications, including the purchase and installation of energy-related fixtures.

*** Sec. 3.** AS 44.42 is amended by adding a new section to read:

Sec. 44.42.067. Retrofits; performance contracting for energy efficiency. (a) In addition to its obligation under AS 44.42.065, the department shall retrofit all heated public facilities listed in the energy use index described in AS 44.83.955. For nonheated public facilities listed in the index, the department shall retrofit, replace, or redesign inefficient lighting fixtures to be as efficient as possible while meeting federal guidelines.

(b) In carrying out the duty under (a) of this section, the department may, if no other funding or partial funding for a project is available

(1) enter into an energy performance contract; and

(2) administer a performance contract for a public facility by contracting with an energy service company that is a member of the National Association of Energy Service Companies.

(c) If the department uses an energy performance contract under (b) of this section for a project retrofitting a heated public facility, the contract may also include alternative energy projects and capital improvements not related to energy retrofitting.

(d) The department shall manage its duties under (a) of this section so that the retrofitting of state facilities identified in the energy use index database described in AS 44.83.955 shall be completed not later than 15 years after completion of the energy use index database.

(e) If the department determines that an energy retrofit described under (a) of this section is not cost-effective, the department may postpone the retrofit until it is determined to be cost-effective or additional capital improvements are required.

(f) Any retrofit, new construction, or deferred maintenance of a public facility performed under this section shall be made in accordance with the most recently published edition of the International Energy Conservation Code or the 90.1 standard of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. The department is not required to comply fully with the International Energy Conservation Code or the 90.1 standard of the American Society of Heating, Refrigerating and Air-Conditioning Engineers if the climate of an area of the state makes the standards inappropriate for the retrofit, new construction, or deferred maintenance.

(g) In this section,

(1) "performance contract" means an agreement for the provision of energy services and equipment in which a private entity or qualified third party agrees to finance, design, construct, install, maintain, operate, or manage energy systems or equipment to improve the energy efficiency of, or produce energy for, a facility in exchange for a portion of the cost savings, lease payments, or specified revenue, and by which the level of payments is made contingent on verified energy savings, energy production, avoided maintenance, avoided energy equipment replacement, or any combination of verified energy savings, energy production, avoided maintenance, or avoided energy equipment replacement;

(2) "public facility" means a facility owned or controlled and held by the state for government or public use.

*** Sec. 4.** AS 44.83 is amended by adding a new section to read:

Sec. 44.83.955. Energy use index. (a) The authority shall

(1) establish an energy use index for all public facilities to capture baseline energy consumption data and energy efficiency data for prioritization of energy retrofit projects;

(2) prepare a baseline energy use index database for all public facilities evaluated and of the energy information collected; and

(3) adopt regulations establishing the methodology to be used in determining the energy use index described in (1) of this subsection.

(b) In this section, "public facility" means a facility owned or controlled and held by the state for government or public use.

*** Sec. 5.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ENERGY USE INDEX DATABASE. The Alaska Energy Authority shall establish the energy use index database described in AS 44.83.955, added by sec. 4 of this Act, not later than six months after the effective date of this Act.

*** Sec. 6.** The uncodified law of the State of Alaska is amended by adding a new section to read:

ENERGY PERFORMANCE REPORT. Not later than January 31 of each of the three

years following the completion of an energy retrofit project, the Department of Transportation and Public Facilities shall submit to the legislature an energy performance report detailing the effectiveness of the energy efficiency measures provided for in this Act.

FISCAL NOTE

STATE OF ALASKA
2009 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: **CSSB 121 (RES)**
() Publish Date:

Identifier (file name): SB121CS(RES)-CED-AEA 03-09-09
ENERGY EFFICIENCY FOR PUBLIC FACILITIES

Dept. Affected: DCCED
RDU Alaska Energy Authority
Component Alternative Energy & Efficiency

Sponsor Senate Resources Committee
Requester Senate Resources Committee

Component Number 2888

Expenditures/Revenues (Thousands of Dollars)

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

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2010**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**
Personal Services							
Travel							
Contractual							
Supplies							
Equipment							
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**
CAPITAL EXPENDITURES	**100.0**						
CHANGE IN REVENUES ( )							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	100.0						
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**100.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**	**0.0**

Estimate of any current year (FY2009) cost: 0.0

POSITIONS

Full-time							
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necessary)*

This bill would require the Alaska Energy Authority (AEA) to:
1- Establish a baseline energy index and energy efficiency data for prioritization of retrofits of state owned or controlled facilities.
2- Adopt regulations to establish methodology to be used in establishing the index.

AEA estimates it will cost $100.0 to complete this one-time capital project.

Prepared by: Linda MacMillan - AEA Project Accountant
Phone 907-771-3029
Division Alaska Energy Authority
Date/Time 3/6/09 3:30 PM
Approved by: Emil Notti, Commissioner
Date 3/9/2009
Department of Commerce, Community and Economic Development

(Revised 9/10/2008 OMB)

FISCAL NOTE

STATE OF ALASKA
2009 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: **SB 121**
() Publish Date:

Identifier (file name): SB121-DOT-SPF-3-07-09
Title: Energy Efficiency Bldgs/Public Works
Sponsor: Senate Resources
Requester: Senate Resources

Dept. Affected: DOT&PF
RDU: Design Engineering & Construction
Component: Statewide Public Facilities
Component Number: 2882

Expenditures/Revenues (Thousands of Dollars)

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

	Appropriation Required	Information					
OPERATING EXPENDITURES	**FY 2010**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**
Personal Services	230.2	0.0	332.1	332.1	332.1	332.1	332.1
Travel	25.0	0.0	30.0	30.0	30.0	30.0	30.0
Contractual	0.0	0.0		0.0	0.0	0.0	0.0
Supplies	1.0	0.0	1.5	1.5	1.5	1.5	1.5
Equipment	5.0	0.0	2.5	0.0	0.0	5.0	0.0
Land & Structures	0.0	0.0		0.0	0.0	0.0	0.0
Grants & Claims	0.0	0.0		0.0	0.0	0.0	0.0
Miscellaneous	0.0	0.0		0.0	0.0	0.0	0.0
TOTAL OPERATING	**261.2**	**0.0**	**366.1**	**363.6**	**363.6**	**368.6**	**363.6**
CAPITAL EXPENDITURES							
CHANGE IN REVENUES ( )							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	261.2	0.0	366.1	363.6	363.6	368.6	363.6
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**261.2**	**0.0**	**366.1**	**363.6**	**363.6**	**368.6**	**363.6**

Estimate of any current year (FY2009) cost: $ 0.0

POSITIONS

Full-time	**2**	0	3	3	3	3	3
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necessary)*

Case One: No GF appropriation for energy efficiency retrofits. Retrofits will be accomplished via energy savings performance contracts. The performance contracts are funded with loans which are paid back over time using money that would have been expended on the energy saved from implementing the energy savings measures, from the using agencies existing operating budget. No reduction in operating budgets will be seen until the loan has been repaid.

Two engineering positions required in year one to implement and administer the program, with a third position added in FY2011.

FY 2010 One Engineer/Architect II, Range 23, Anchorage; One Engineering Assistant II, Range 19, Anchorage

FY 2011 One Engineering Assistant II, Range 19, Fairbanks

Prepared by: Mary Siroky, Special Assistant/Legislative Liaison — Phone 465-4772
Division: Department of Transportation and Public Facilities — Date/Time 3/7/09 11:00 AM
Approved by: Nancy Slagle, Director Administrative Services — Date 3/7/2009
Department of Transportation and Public Facilities

(Revised 9/10/2008 OMB)

2984

FISCAL NOTE

STATE OF ALASKA
2009 LEGISLATIVE SESSION

Fiscal Note Number:
Bill Version: **SB 121**
() Publish Date:

Identifier (file name): SB121-DOT-SPF-3-07-09
Title: Energy Efficiency Bldgs/ Public Works
Sponsor: Senate Resources
Requester: Senate Resources

Dept. Affected: DOT&PF
RDU: Design, Engineering & Construction
Component: Statewide Public Facilities
Component Number: 2882

Expenditures/Revenues (Thousands of Dollars)

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

	Appropriation Required	Information					
OPERATING EXPENDITURE	**FY 2010**	**FY 2010**	**FY 2011**	**FY 2012**	**FY 2013**	**FY 2014**	**FY 2015**
Personal Services	230.2	0.0	460.4	460.4	460.4	460.4	460.4
Travel	25.0	0.0	40.0	40.0	40.0	40.0	40.0
Contractual							
Supplies	1.0	0.0	2.0	2.0	2.0	2.0	2.0
Equipment	7.5	0.0	2.5	0.0	0.0	5.0	0.0
Land & Structures							
Grants & Claims							
Miscellaneous							
TOTAL OPERATING	**263.7**	**0.0**	**504.9**	**502.4**	**502.4**	**507.4**	**502.4**
CAPITAL EXPENDITURES	**8,000.0**	**0.0**	**16,900.0**	**16,900.0**	**16,900.0**	**16,900.0**	**16,900.0**
CHANGE IN REVENUES (							

FUND SOURCE (Thousands of Dollars)

1002 Federal Receipts							
1003 GF Match							
1004 GF	8,263.7	0.0	17,404.9	17,402.4	17,402.4	17,407.4	17,402.4
1005 GF/Program Receipts							
1037 GF/Mental Health							
Other Interagency Receipts							
TOTAL	**8,263.7**	**0.0**	**17,404.9**	**17,402.4**	**17,402.4**	**17,407.4**	**17,402.4**

Estimate of any current year (FY2009) cost $ 0.0

POSITIONS

Full-time	**2**	0	4	4	4	4	4
Part-time							
Temporary							

ANALYSIS: *(Attach a separate page if necess*

Case Two: GF appropriation for energy efficiency retrofits. Retrofits will be accomplished via design and construction contracts. Two engineering positions required in year one to implement and administer the program, with two additional positions added in FY2011. Assumptions:

FY 2010 One Engineer/Architect II, Range 23, Anchorage; One Engineering Assistant II, Range 19, Anchorage
FY 2011 One Engineer/Architect I, Range 22, Anchorage; One Engineering Assistant II, Range 19, Fairbanks

8,000,000 square feet to be retrofitted, estimate only at this point based upon limited information on executive branch and court system buildings from the current list of state owned buildings from DOA Risk Management, estimating two thirds are heated. Does not include the University.

Prepared by: Mary Siroky, Special Assistant/Legislative Liaison — Phone 465-4772
Division: Department of Transportation and Public Facilities — Date/Time 3/7/09 11:00 AM
Approved by: Nancy Slagle, Director Administrative Services — Date 3/7/2009
Department of Transportation and Public Facilities

(Revised 9/10/2008 OMB)

ALASKA STATE LEGISLATURE

Senate Resources Committee

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SENATE RESOURCES COMMITTEE

SPONSOR STATEMENT

Senate Bill 121: "An Act relating to energy efficiency for public facilities With the intent of reducing state operating costs."

SB 121 will decrease the cost of operating state facilities by reducing the amount of energy consumed by public facilities over the next fifteen years.

This bill requires the Department of Transportation and Public Facilities to retrofit, where cost effective, all public facilities within 15 years of the completion of an energy use index database. Retrofitting numerous public facilities will save energy and energy costs but could be very expensive if it weren't for performance contracting. Performance contracting by an energy service company allows the state to retrofit many more buildings through a pay as you save system than could be funded annually. It's a win-win situation. No money is spent out of pocket, initial savings are paid to the energy service company for the retrofit, and within 15 years or less, cost savings from efficiency upgrades go directly to the state, saving public funds.

In order to prioritize energy retrofit projects, an energy use index database must be established to provide baseline data on the energy consumption of individual facilities. Once this data is all in one place, the state can identify which facilities consume the greatest amount of energy and are therefore most costly to operate, so that those facilities can be targeted for priority retrofitting.

This bill requires the Alaska Energy Authority to create an energy use index database and requires the Department of Transportation and Public Facilities to update the database every 10 years from the date of an individual retrofit or whenever there are substantial changes to a facility. If during an update, substantial inefficiencies are identified for a facility in the database, a new energy use audit and potential retrofitting of that facility would be arranged by the department.

In 2004, the Alaska Department of Transportation and Public Facilities executed a performance contract to retrofit 8 public buildings. Based on 2006-2007 utility rates, this contract has saved the state $365,991, significantly more than the contract guaranteed. Based on 2008 rates, this savings would actually be $557,096. Electricity usage was cut by 22%, natural gas by 15%, and fuel oil by 36 percent. If the state executed just 25 similar contracts, the state could save over $13 million (based on 2008 rates) in the first year.

Senate Bill 121:
Reducing State Operating Costs Through Energy Efficient Public Buildings

Proposal:

Decrease the cost of operating state facilities by reducing the amount of energy consumed by public buildings by 20 percent over the next fifteen years.

Background:

- Alaska faces some of the highest energy costs nationwide, and as the owner of nearly 1800 public facilities, the State of Alaska would benefit by taking steps to lower these operating costs.
- The easiest way for the state to reduce energy costs is to maximize energy efficiency of public facilities by installing energy savings measures that meet the most recently published International Energy Conservation Code (IECC) standards.
- The 2009 International Energy Conservation Code (IECC) provides facilities with 15% more efficiency than the 2006 code.
- Most public facilities in Alaska have not received energy efficiency upgrades and therefore do not meet the current International Conservation Code (IECC) standards.
- Beginning in 2004, The Department of Transportation and Public Facilities executed a performance contract with Siemens Building Technologies who has now audited and retrofitted 16 public facilities, in 2 contracts to improve energy efficiency.
- Performance contracts allow the state to retrofit many more buildings than could be funded annually through a pay as you save system. Initial savings are paid to an energy service company for the retrofit, and within 15 years or less, cost savings from the efficiency upgrades go directly to the state, saving public funds.
- The energy performance report from the first performance contract of 8 facilities shows that in the first year after receiving energy retrofits, the state saved $365,991 (using 2006-2007 rates). Using 2008 rates the savings would actually be $557,096.
- The efficiency measures that resulted in cost savings to the state cut electricity usage by 22%, natural gas by 15%, and fuel oil by 36%. Looking at these figures, the total reduction in energy usage for these 8 facilities in the first year was 24 percent.
- Prioritizing energy retrofit projects will allow the state to realize the greatest savings by providing for energy efficiency measures in the facilities which consume the greatest amount of energy and therefore cost the most to operate, prior to retrofitting buildings which consume less.
- To help the state identify which facilities consume the most energy and prioritize energy retrofit projects accordingly, an energy use index database containing energy use data for each public facility should be established and maintained using data from utility bills.
- By prioritizing retrofit projects and using performance contracts, the state can begin saving energy right away and save in operating costs for years to come.

CS for SB 121 – General Intent, Additions and Changes

"An act relating to energy efficiency for public facilities with the intent of reducing state operating costs"

This bill provides for the Alaska Energy Authority to establish an energy use index database so that the state can identify the amount of energy consumed by each public facility and better prioritize energy retrofit projects to help reduce state operating costs.

This bill requires the Department of Transportation and Public Facilities to retrofit, where cost effective, all public facilities within 15 years of the completion of the energy use index database.

This bill allows the department to use performance contracting with a qualified energy service company so that the state can achieve energy audits and efficiency upgrades through a "pay as you save" system, where the state is guaranteed a specific energy savings and is able to pay for the contract in 15 years or less, with savings earned through efficiency upgrades.

This bill requires the department to update the energy use index database with information from new utility bills every 10 years or whenever a substantial change has been made for a facility. If a substantial inefficiency is detected during database maintenance, the department shall perform an energy audit and possibly another retrofit.

Below are a few changes and additions offered in the Committee Substitute to SB 121.

Changes to the bill:
The Purpose has been changed to say that the amount of energy consumed should be reduced by 20 percent not later than 15 years after completion of the energy use index database.

The timeframe for completion of energy retrofit projects has changed from 10 years after the date of the act to 15 years from the date of completion of the energy use index database.

Maintenance and updates to the energy use index database will be made by the Department of Transportation and Public Facilities every 10 years and when there are substantial changes to a facility.

Additions to the bill:
Lighted facilities that are not heated shall be upgraded so that lighting is as efficient as possible while meeting federal guidelines.

If the department determines that a retrofit is not cost effective, the department may postpone the retrofit until it is determined to be cost effective or additional capital improvements are required.

All retrofits, new construction and deferred maintenance of state buildings shall be made in accordance with the most recently published version of the International Energy Conservation Code or the 90.1 standard of the American Society of Heating, Refrigerating and Air-Conditioning Engineers. The department may amend these standards to better address the climate needs throughout the state.

COLD CLIMATE HOUSING RESEARCH CENTER

CCHRC

Memo

Date: **March 9, 2009**

To: **Senate Resources Committee, State of Alaska**

From: **Dr. John N Davies, Research Director**

RE: **Support for SB 121**

As SB 121 addresses two of the key recommendations made in our report, *Alaska Energy Efficiency Program and Policy Recommendations,* we are in strong support of this bill.

The first recommendation was to establish an Energy Use Index for public buildings based on readily available utility bills and data about the size and use of each building. An energy use index is often as simple as energy used per square foot of heated floor space (BTU/sq. ft). Such an index gives the building owner a means of comparison with other similar buildings as to how the owner's building is performing. It also gives the state a means to prioritize retrofit work.

The second recommendation was "The Governor should direct each state agency to reduce energy consumption in its facilities by 20 percent from 2000 levels by 2020." We suggested that some sort of pay-as-you-save mechanism be used to fund the needed retrofits, either a revolving loan fund or to encourage the use of private energy service companies (ESCO). The funding mechanism uses some or all of the energy cost savings from the retrofit work to pay for financing the work.

CCHRC Internet Web Site: http://www.cchrc.org
PO Box 82489, Fairbanks, AK 99708 Phone: (907)457-3454 Fax: (907)457-3456

Alaska Energy Efficiency Program and Policy Recommendations

DRAFT

Final Report to
Cold Climate Housing Research Center
June 5, 2008

Project funded by:
Alaska Energy Authority
Alaska Housing Finance Corporation

INFORMATION INSIGHTS, INC.
212 FRONT STREET, STE. 100
FAIRBANKS, ALASKA 99701
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907 272-5074

7. The Alaska Housing Finance Corporation and Alaska Energy Authority should conduct an end-use survey of residential and commercial energy consumers.

AHFC and AEA should conduct a household survey to collect information about energy end-use and user behavior. Overall analysis should include survey data, AKWarm[10] data and utility data. The purpose of an end-use survey is to determine the specifics of residential energy consumption – how many people use electric hot water heaters versus gas; average age of refrigerators and industrial walk-in freezers in Alaska; the number of people and businesses that have switched to efficient lighting; and so on.

Baselines should be established by facility type and type of user.

- Quantify current energy use by
  - Residential – per household and type of user, i.e. multi-family versus single family
  - Commercial/public – square footage and type of user, i.e. hours per year of facility use; number of daily users

AHFC and AEA need to establish mechanisms for updating energy user data on an annual or biennial basis. Costs associated with these recommendations should be included in overall program administration.

The effect on homeowners and business owners of the recent run-up in energy prices (and in Juneau, the effect of temporary electrical transmission problems), has resulted in a variety of responses by state and local policy-makers. Additional information on end uses, updated periodically, would assist state and local policy-makers in choosing among policy options.

8. The Alaska Energy Authority should establish and report an Energy Use Index (EUI) for all public buildings.

The AEA should establish an energy use index for all public buildings, employing user and utility information. AEA should act as clearinghouse for EUIs, collecting and standardizing end-use information specific to Alaska. Energy use is usually then reported out in relation to square footage, type and hours of use, number of users, etc.

The Oregon Energy Trust has developed a simple and easy-to-use tool utilized by public schools in Oregon and Northern California based on the following ideas.

- A simple EUI can be established with 12 months energy use data (utility bills) and basic information about buildings use
- EUIs will help guide energy efficiency program funding to the highest users
- The EUI will serve the function of supplying basic baseline energy use information for public facilities

[10] AKWarm database housed at AHFC includes energy ratings on more than 25,000 households in Alaska. Information on energy used for home heating can be found for homes in parts of state the fuel source used for home heating is not used for other purposes.

We recommend the state contract for coordination and consolidation of EUI data; an estimated one-time cost of $50,000 would cover this effort. Set-up for such an endeavor would include choosing or developing a data gathering tool; working with Alaska DOT/PF to identify the contact person at each facility; contact and assistance to collect information; and consolidation of data. The state could choose to keep this project in-house but it is unlikely that costs would be reduced, they would just be less apparent.

PERFORMANCE ASSURANCE REPORT - YEAR ONE
FOR
STATE OF ALASKA

Prepared for:

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February 7, 2008

EXECUTIVE SUMMARY

This document is the first annual Performance Assurance Report and compares the measured energy savings against the energy savings that were guaranteed by Siemens Building Technologies (Siemens) as part of a Performance Contract that was executed in 2004. As part of that contract, Siemens implemented Facility Improvement Measures (FIMs) at eight facilities which included: upgrades to the lighting systems and lighting controls, installation of low-flow water fixtures, installation of high efficient motors, modifications and expansion of the energy management systems, installation of office equipment machine load controllers, burner upgrades, conversion of CV to variable volume HW pumping upgrades, replacement of generator heaters, upgrades to the chiller plant cooling, the addition of oil tank heaters, installation of an exhaust fan for the electrical room and building envelope improvements.

Facility energy or water savings are determined by comparing the energy use before and after the installation of the FIM. The "before" case is called the baseline; the "after" case is referred to as the post-installation or performance period. Baseline adjustments are included to account for changes that affect energy use but that are not caused by the measures. Such adjustments may account for differences in weather and occupancy conditions between the baseline and performance periods.

In general,

Savings = Baseline Energy Use – Post Installation Energy Use ± Baseline Adjustments

The measured energy and water savings for the Facility Improvement Measures (FIM's) installed provide $365,991 in actual cost avoidance savings in the first annual year report.

The total guaranteed annual energy savings and the measured energy savings are summarized in Tables A & B below:

Table A

	Original Contract Guaranteed Annual Energy Savings	Reported Measured Savings (Year 1)
Electrical Consumption	2,211,605 (kWh)	2,881,786 (kWh)
Electrical Demand	322 (kW)	457 (kW)
Natural Gas	11,168 (Therms)	13,324 (Therms)
Fuel Oil	70,216 (Gal)	94,336 (Gal)
Water	2,409,000 (Gal)	2,923,000 (Gal)

The monetized annual energy savings based off of the original contract guarantee is reported in the table below:

Table B

	Original Annual Energy Savings (Monetized) *	Reported Monetized Savings (Year 1)**
Energy & Utility Savings	$265,329	**$353,393**
Operational Savings	$12,528	**$12,528**
Total	$277,857	**$365,991**

**Monetized savings based off of 2003-2005 base year utility rates*

***Reported Monetized savings based off of 2006-2007 1 year utility performance period.*

The water fixture operational savings were based upon the historical typical life of a fixture. The typical life of a water fixture is about 10 to 12 years. The water fixtures needing repair and replacement were evenly distributed. The age of the building and spot replacements were also taken into consideration to determine the failure rate of a given water fixture. Each year there is between 8-10% failure rate for a fixture.

Per the contract, the utility rate used for savings calculations will be based on the utility rate in effect for the predominant bill or the utility rate in effect for the corresponding period of the baseline period whichever is greater. The current rates will be designated the floor price. An escalation rate of 3.5% per annual period will be applied to the floor rates. The escalated floor rate will be compared to the utility rate in effect in each future annual period, and the greater of the two will be applied

INTRODUCTION

Siemens Building Technologies, Inc. (Siemens) is pleased to present the State of Alaska (State) with this first annual Performance Assurance Report for the operation of the Facility Improvement Measures (FIMs) that were installed as part of the Performance Contract in 2004 at the eight facilities listed on Table 1. This report documents and compares the measured energy savings against the energy savings that were guaranteed by Siemens.

Table 1
List of Buildings Included in Project

Dimond Courthouse	State Office Building
Alaska Office Building	Aviation Building
Court Plaza	DOT/PF Annex Building
Douglas Island Building	Public Safety Building

The FIMs that were implemented as part of this project include: upgrades to the lighting systems and lighting controls, installation of low-flow water fixtures, installation of high efficient motors, modifications and expansion of the energy management systems, installation of office equipment machine load controllers, burner upgrades, conversion of CV to variable volume HW pumping upgrades, replacement of generator heaters, upgrades to the chiller plant cooling, the addition of oil tank heaters, installation of an exhaust fan for the electrical room and building envelope improvements. The FIMs that were installed in each building are identified on Table 2.

BASE YEAR

The Base Year for this project is a rolling base year starting in July 2002 through June 2005, and the annual performance period is from September 1, 2006 through September 1, 2007. Utility data for the base year which represents the Baseline Energy Use is summarized in Table 4 with detailed utility data for the base year provided in Appendix N in back of the Utility Rate Information.

Table 4
Baseline Energy Use

7/2002-6/2005	Electric		Natural Gas	Fuel Oil	Water	Sewer
	Consumption	Demand	Consumption	Consumption	Consumption	Consumption
Building	(kWh)	(kW)	(therms)	(gal)	(gal)	(gal)
Dimond Courthouse	1,516,840	4,283	0	83,096	1,579,000	1,579,000
Alaska Office Building	790.182	0	0	29,879	565,000	565,000
Court Plaza	530,632	784	0	14,665	90,000	90,000
Douglas Island Building	625,005	1,541	0	15,977	940,000	940,000
State Office Building	6,456,818	17,569	0	113,397	1,681,000	1,681,000
Aviation Building	1,758,960	4,676	29,218	0	680,000	680,000
DOT/PF Annex Building	185,640	5,880	9,789	0	200,000	200,000
Public Safety Building	1,044,873	2,418	48,062	0	430,000	430,000
Total	12,908,950	31,849	87,069	257,014	6,165,000	6,165,000

GUARANTEED ENERGY SAVINGS

This section reviews the energy savings that were guaranteed by Siemens as part of this project. Table 5 provides the guaranteed reductions for electricity, natural gas Fuel oil, and domestic water for each FIM. The guaranteed cost avoidance savings are based upon 2003-2005 base year rates.

Table 5
Guaranteed Savings for each FIM

		Electric		Natural Gas	Fuel	Water	Baseyear
		Consumption	Demand	Consumption	Consumption	Consumption	Cost Savings
FIM#	Description	(kWh)	(kW)	(therms)	(gal)	(kgal)	($)
1.00	Lighting Upgrades	1,277,391	322	-1,257	-2,109	0	$102,307
1.01	LightingControls	175,800	0	-10	-425	0	$9,073
2.00	WaterConservation		0	454	397	2,212	$25,089
3.00	Energy Efficient Motor Upgrades	21,812	0	0	0	0	$1,610
4.00	Energy Management/DDC Upgrades	669,911	0	12,096	68,323	0	$114,995
4.01	Office Equip. & Machine Load Controllers	25,500	0	0	0	0	$1,351
5.00	Upgrade Burners	0	0	0	2,184	0	$1,931
5.02	Convert CV to Variable HW Pumping	22,851	0	0	0	0	$1,376
5.03	Replace Generator Heaters	20,503	0	0	0	0	$1,236
5.06	Chiller Plant Cooling Upgrades	0	0	0	0	197	$2,053
5.08	Add Oil Tank Heaters	-455	0	0	0	0	$10,911
5.12	Install Exhaust for Electrical Room	24,900	0	0	0	0	$1,363
6.00	Building Envelope Improvements	33,394	0	-114	1,846	0	$4,562
	Totals	2,211,605	322	11,168	70,216	2,409	277,857

↑ savings guarantee

1. The guaranteed rate savings used in Table 5 are based upon 2003-2005 base year rates.

SUMMARY OF FINDINGS

The results of this Performance Assurance Report indicate that the State has had a very successful year in realizing the energy savings that were guaranteed by Siemens. Table 7 presents the utility savings that were measured during the first year of the agreement. The State achieved $365,991 in utility savings which is $88,134 more savings than anticipated. These savings are based upon (2006-2007) utility rates.

Table 7
Measured Savings for each FIM (Year 1)

FIM#	Description	Electric Consumption (kWh)	Electric Demand (kW)	Natural Gas Consumption (therms)	Fuel Consumption (gal)	Water Consumption (kgal)	Baseyear Cost Savings ($)
1.00	Lighting Upgrades	1,642,790	457	-1,621	-2,868	0	$134,944
1.01	LightingControls	249,007	0	-12	-602	0	$11,530
2.00	WaterConservation	25,998	0	732	641	2,704	$30,205
3.00	Energy Efficient Motor Upgrades	30,375	0	0	0	0	$2,908
4.00	Energy Management/DDC Upgrades	806,468	0	14,339	93,135	0	$151,984
4.01	Office Equip. & Machine Load Controllers	25,500	0	0	0	0	$1,327
5.00	Upgrade Burners	0	0	0	2,184	0	$3,324
5.02	Convert CV to Variable HW Pumping	22,851	0	0	0	0	$1,721
5.03	Replace Generator Heaters	20,503	0	0	0	0	$1,546
5.06	Chiller Plant Cooling Upgrades	0	0	0	0	219	$2,054
5.08	Add Oil Tank Heaters	0	0	0	0	0	$18,200
5.12	Install Exhaust for Electrical Room	24,900	0	0	0	0	$1,515
6.00	Building Envelope Improvements	33,394	0	-114	1846	0	$5,573
	Totals	2,881,786	457	13,324	94,336	2,923	$365,991

↑ savings at 2006-2007 rates

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Table 8 shows the associated cost avoidance savings for the first year with today's actual rates. The State achieved $557,096 in utility cost avoidance savings and this is based upon current year actual rate cost.

Table 8
Associated Cost Savings for each FIM and M&V Option – Actual

FIM #	Description	Measured Capacity (Option A)	Measured Consumption (Option B)	Main Meter Comparison (Option C)	Designated on Simulation or Calculation (Option D)	Total
1.00	Lighting Upgrades	$140,542	$0	$0	$0	140,542
1.01	LightingControls	$10,953	$0	$0	$0	10,953
2.00	WaterConservation	$33,258	$0	$0	$0	33,258
3.00	Energy Efficient Motor Upgrades	$2,908	$0	$0	$0	2,908
4.00	Energy Management/DDC Upgrades	$0	$328,827	$0	$0	328,827
4.01	Office Equip. & Machine Load Controllers	$0	$0	$0	$1,392	1,392
5.00	Upgrade Burners	$0	$0	$0	$6,465	6,465
5.02	Convert CV to Variable HW Pumping	$0	$0	$0	$1,805	1,805
5.03	Replace Generator Heaters	$0	$0	$0	$1,574	1,574
5.06	Chiller Plant Cooling Upgrades	$0	$0	$0	$2,095	2,095
5.08	Add Oil Tank Heaters	$18,200	$0	$0	$0	18,200
5.12	Install Exhaust for Electrical Room	$0	$0	$0	$1,925	1,925
6.00	Building Envelope Improvements	$0	$0	$0	$7,152	7,152
	Totals	$205,861	$328,827	$0	$22,408	$557,096

↑ savings at 2008 rates

3. The switch from #1 Oil to #2 Oil has had a tremendous impact on the current year cost avoidance with today's current fuel cost rate $/gals. During the base year the average cost $/gals for the #1 Oil was at $1.2558 compared to $1.1047 for the #2 Oil, and the extra cost for the use of #1 oil was $.1511. Considering the cost of #2 Oil is less expensive than the cost of #1 Oil, and with today's $ the cost of #1 Oil would have easily exceeded over $3.00 $/gals. The current cost of $/gals of #2 Oil in 2007 was $2.14 and in 2008 is now at $2.96 $/gals. This cost has more than doubled from the base year cost. The actual rates for 2008 were used in this table. The cost of fuel with today's $/gals rate of $2.96 is $275,680.