SB
308

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

☐ *P.O. BOX B*
JUNEAU, ALASKA 99811-2100
PHONE: (907) 465-4700

☐ *949 E. 36TH AVENUE, SUITE 400*
ANCHORAGE, ALASKA 99508-4302
PHONE: (907) 563-1073

February 12, 1988

POSITION PAPER

RE: Senate Bill 308: "An Act Establishing the Alaska Energy-Efficient Home Equity Fund".

SPONSOR: Senators Fahrenkamp, Sturgulewski, Josephson, Szymanski and Rodey

Program Effects of Bill

Senate Bill 308 would create in the Department of Community and Regional Affairs an Alaska Energy-Efficient Home Equity Fund which would be a revolving loan fund to finance the incremental costs to builders to construct superinsulated homes.

Comments

The Department strongly supports the concept of superinsulation. Superinsulated homes can reduce the heating costs of a home by 50 to 80 percent, while costing only an additional 5 to 10 percent to construct. Superinsulation is a technology that is practical, economical, and available now. The Department has sought to foster quality construction through the Alaska Craftsman Home Training Program. With $200,000 from its share of the Exxon oil overcharge settlement, the Department has supported the Cooperative Extension Service's voluntary program of educating builders on this method of construction.

The Department, however, does not have a position on this legislation. While it supports the construction of superinsulated homes, it has questions regarding state subsidizing the construction of new homes in the light of the current housing glut and with the current state revenue situation.

David G. Hoffman, Commissioner

21-P1LH

STATE OF ALASKA
1988 LEGISLATIVE SESSION

BILL VERSION: SB 308
PUBLISH DATE: _____

FISCAL NOTE

REQUEST:

Revision Date: _____
Title: "An Act establishing the Alaska Energy-Efficient Home Equity Fund"
Sponsor: _____
Requestor: House C&RA

Agency Affected: Community & Regional Affairs
BRU: -- Housing Assistance
Components: Housing Loan Administration

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93
PERSONAL SERVICES		61.5	61.5	61.5	61.5	
TRAVEL		2.0	2.0	2.0	2.0	
CONTRACTUAL		4.8	4.8	4.8	4.8	
SUPPLIES		1.4	1.4	1.4	1.4	
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING		69.7	69.7	69.7	69.7	
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		69.7	69.7	69.7	69.7	
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME		2	2	2	2	
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

The Department estimates that two full-time positions, a loan closer (Range 12) and an accounting clerk 3 (Range 8) will be necessary to administer the program along with associated contractual & supply costs.

Prepared by: Jim Plasman, Deputy Director
Phone: 465-4750
Division: Municipal & Regional Assistance
Date: 2/12/88

Approved by Commissioner: _____
Date: _____
Agency: Community & Regional Affairs

Distribution (by preparer):
Legislative Finance
Legislative Sponsor
Requestor
Office of Management and Budget
Impacted Agency(ies)

STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Loan Closer II

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

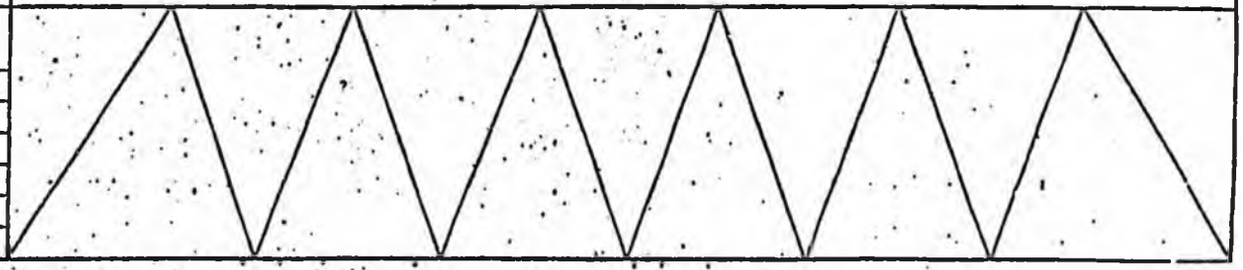
RANGE	BARGAINING UNIT
12A	GGU

MONTHLY SALARY	# MONTHS (CY)
2,826.28	12

JUSTIFICATION:

This position would process loans and grants under the Alaska energy-efficient home equity fund.

	DETAIL OF RELATED EXPENSES
01 PERSONAL SERVICES	33.9
02 TRAVEL	2.0
03 CONTRACTUAL	2.4
04 COMMODITIES	.7
05 EQUIPMENT	
08 OTHER	
TOTAL	39.0
1002 FEDERAL	
1003 G/F MATCH	
1004 GENERAL FUND	39.0
1005 I/A RECEIPTS	
1028 PROGRAM RECEIPTS	



STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Accounting Clerk III

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

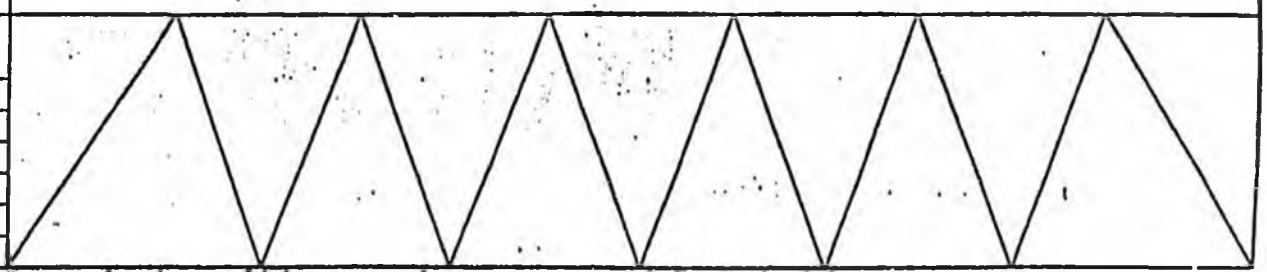
RANGE	BARGAINING UNIT
8A	GGU

MONTHLY SALARY	# MONTHS (CY)
1,631	12

JUSTIFICATION:

The position will provide the necessary accounting support for the Alaska energy-efficient home equity fund.

		DETAIL OF RELATED EXPENSES
01	PERSONAL SERVICES	27.6	
02	TRAVEL	-0-	
03	CONTRACTUAL	2.4	Telephone, copy services, postage
04	COMMODITIES	.7	Miscellaneous administrative
05	EQUIPMENT		
08	OTHER		
	TOTAL	30.7	
1002	FEDERAL		
1003	G/F MATCH		
1004	GENERAL FUND	30.7	
1005	I/A RECEIPTS		
1028	PROGRAM RECEIPTS		



01-1043 (Revised March, 1979)

5-1234L
Bradley
3/7/88

Original sponsors: Fahrenkamp, Sturgulewski, Josephson, et al.

IN THE HOUSE

CS FOR SENATE BILL NO. 308 ( )

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - SECOND SESSION

A BILL

For an Act entitled: "An Act relating to grants for energy efficient homes."

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

* Section 1. FINDINGS AND POLICY. (a) The legislature finds that

(1) high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contributions of dwellings to outdoor pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the home owner;

(2) state money now being spent to subsidize energy bills, to weatherize and repair poorly constructed homes, and to improve the health of people affected by poor indoor air quality would be reduced or eliminated as existing homes are replaced by homes that are built to meet Alaska Craftsman Home Program standards;

(3) state money now used to finance and repair homes would be invested more wisely in homes that are built to meet the Alaska Craftsman Home Program standards;

(4) local economic benefits are achieved when money being spent on energy, home repair, and health are reduced because of building to meet the improved building standards of the Alaska Craftsman Home Program;

(5) the principal responsibility for development of housing rests with the private sector;

(6) research and development of energy efficient housing will

create new jobs, provide technology that can be exported, develop new business opportunities, and increase the stability of the state's economy.

(b) It is the policy of the state to encourage the building of homes that meet the energy efficient standards of the Alaska Craftsman Home Program and to assist in the education, planning, and development of this standard of building in cooperation with the building industry.

* Sec. 2. AS 18.55.998(a) is amended to read:

(a) There is created in the Department of Community and Regional Affairs a supplemental housing development grant fund. Subject to the availability of appropriations for the purpose, the department shall make grants to regional housing authorities established under AS 18.-55.996 for the cost of on-site sewer and water facilities, road construction to project sites, <u>energy efficient design features in homes,</u> and extension of electrical distribution facilities to individual residences.

* Sec. 3. AS 44.47 is amended by adding a new section to read:

Sec. 44.47.378. ALASKA ENERGY EFFICIENT HOME GRANT FUND. (a) There is established in the department the Alaska energy efficient home grant fund consisting of money appropriated to it by the legislature. The commissioner shall administer the Alaska energy efficient home grant fund under the provisions of this section.

(b) The commissioner may grant funds from the Alaska energy efficient home grant fund to agencies of the state or federal government, individuals, or businesses that retrofit existing single family dwellings or build new single family dwellings that meet criteria adopted by the commissioner.

(c) The commissioner shall adopt guidelines and procedures for the fund after consultation with the board of directors of the Alaska Craftsman Home Program.

SENATE COMMITTEE REPORT

FIRST COMMITTEE OF REFERRAL

Date of _____ 5-DAY NOTICE
IN ACCORDANCE WITH UNIFORM RULE 23

FURTHER: L&C
FINANCE

**FISCAL NOTE(S) ATTACHED _____ **
IN ACCORDANCE WITH AS 24.08.035
(see below)

5/16/87

DATE TURNED INTO OFFICE 3/17/87

Mr. President:

C&RA Committee considered SB 308

establishing the Alaska energy efficient home equity fund

and recommended:

[ ] replace with CS for SB 308 [] same title
[] new title

[ ] attached amendment(s) and

[ ] do pass

[ ] do not pass

[ ] no recommendation

[X] individual recommendations

[ ] further referral to _____

[ ] letter of intent adopted and attached

** Committee [ ] attached or [ ] adopted fiscal note(s)
[ ] zero [ ] fiscal impact

MEMBERS SIGNING DO PASS

OTHER RECOMMENDATIONS

Curtis Stevens Do Pass
Chairman signature and recommendation

[ ] Committee Backup Attached

Alaska State Legislature

ARLISS STURGULEWSKI, Chairman
TIM KELLY, Vice Chairman
RICK HALFORD
MIKE SZYMANSKI
FRED ZHAROFF

P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-4989

Senate
Community and Regional Affairs Committee

March 8,1988

TO: Senate Community and Regional Affairs Committee Members

FROM: Senate C&RA Staff

Re: SB 308 - "An Act establishing the Alaska energy efficient home equity fund."

SB 308 will create the Alaska Energy Efficient Home Equity Fund in the Department of Community & Regional Affairs. Guidelines and procedures for the fund would be prepared in consultation with the Alaska Craftsman Home Program.

This bill has a fiscal note of $69.7 general fund and two positions. The fiscal note and department position paper are in your packet.

Representatives of the Department of Community & Regional Affairs as well as the sponsor will be at the meeting. Also, via teleconference, representatives of the University of Alaska's Cooperative Extension Service, the Alaska State Homebuilders Association and the Alaska Craftsman Home Program will attend the meeting.

STATE OF ALASKA

STEVE COWPER, GOVERNOR

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

949 E. 36th Avenue
Suite 403
Anchorage, AK 99508
(907) 563-1955

January 22, 1988

The Honorable Arliss Sturgulewski
Chairman, DCRA, Alaska State Senate
P. O. Box V
Juneau, AK 99811

Dear Sen. Sturgulewski:

An emergency 120-day moratorium has been granted delaying the effective date of the Energy Conservation Standard for New Residential Building's Regulation (19 AAC 69.210). The Department of Community and Regional Affairs intends to extend the moratorium to October 1, 1988. The moratorium is being sought to give the building industry more time to prepare for the implementation of the standard.

Persons interested in commenting on the proposed moratorium are invited to send written statements to:

Steve Baden
Office of Energy Programs
Rural Development Division
Department of Community and Regional Affairs
949 E. 36th Avenue, Suite 403
Anchorage, AK 99508

Comments will be accepted through February 14, 1988.

I have enclosed a copy of the Notice of Emergency Regulations. Copies of the standard can be reviewed at any of the Department's offices, at public libraries, and at local building departments. Copies of the standard can also be purchased for $4.00 at the above address.

Sincerely,

Michael C. Harper/ms

Michael C. Harper
Director

Enclosure

NOTICE OF ADOPTION OF EMERGENCY AMENDMENT

As required by AS 44.62.250, notice is given that under authority vested by AS 46.11.040, the Department of Community and Regional Affairs amended on this date, as an emergency regulation, 19AAC 69, Article 2 relating to the Energy Conservation Standard For New Residential Buildings.

This amendment took effect January 14, 1988

This amendment places a temporary 120 day moritorium on the implementation of the standard. This action is not expected to require an increased appropriation.

Copies of this regulation may be obtained by writing to Steve Baden, Chief, Conservation Section, Department of Community and Regionsl Affairs, 949 E. 36th Avenue, Suite 403, Anchorage, AK 99508.

Notice is also given that the Department of Community and Regional Affairs intends to make this regulation permanent under AS 44.62.260 delaying implementation of the standard to October 1, 1988. Any interested persons may submit written statements relevant to the action proposed. Written statements and arguments should be sent to the address given in the previous paragraph and must be received no later than February 24, 1988.

1-20-88
DATE

Juneau, Alaska
CITY

Signed
David G. Hoffman
Commissioner

Ketchikan Daily News March 8, '88

Read & file w/ Bldg

Local

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Signed,
Curious

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Signed;
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Session set for building changes

A public workshop to explain the state's new energy conservation standards for new residential buildings will be March 14 in Ketchikan.

Steve Baden, energy conservation coordinator for the Department of Community and Regional Affairs, will conduct the session. Notice of the workshop has been sent to all area contractors, realtors, assessors and others connected with the housing industry, Baden said. The workshop will be 2 to 4:30 p.m. in the Ketchikan City Council chamber.

The new thermal standards were scheduled to go into effect Jan. 1 of this year. But after opposition from Ketchikan realtors, assessors and financial institutions, Sen. Lloyd Jones and Rep. John Sund intervened. As a result, a moratorium on implementing the new standards was placed in effect until Oct. 1, 1988 for areas south of Juneau. The moratorium was later extended statewide.

Area housing representatives opposed the new standards because they felt they hadn't been adequately informed of the standards. They also felt explanations of the standards weren't clear and that they appered to have been developed for colder, drier climates than Ketchikan's.

Some of the questioned provisions are those which limit windows in new homes and the amounts and types of insulation. It was feared the standards would change Ketchikan's construction standards and increase area construction costs.

The new thermal standards law applies to all residential buildings whose construcion begins on or after Oct. 1, 1988, in order to qualify for state financing.

Proponents of the law maintain the standards are flexible enough to be adapted to Ketchikan's warmer, wetter climate. Baden said the new standards won't drastically change present building practices and that the required insulation levels are in line with those already developed by the Farmers' Home Administration, the city and borough of Juneau and the Pacific Northwest.

Baden also says the new standards are cost effective because the costs of energy building techniques would be recovered in a relatively short period of time through energy cost savings.

The new standards were developed through a two-year process with input from the public and the housing industry.

The new law can be reviewed at the Ketchikan Public Library. Copies can be obtained for $4 from Stuart Brooks, Department of Community and Regional Affairs, Office of Energy Programs, 949 E. 36th Avenue, Suite 403, Anchorage AK 99508.

Local group meets early

Individuals within the housing industry and members of the community at large are invited to a workshop session 2 to 5 p.m. Thursday at the First Bank conference room. The session is planned to discuss the state's new thermal energy standards, according to Trish Hoover. Interested persons will identify the concerns the group wishes to put forward at the state-sponsored workshop on thermal energy requirements March 14 in Ketchikan.

Alaska HOUSING FINANCE CORPORATION

February 22, 1988

The Honorable Kay Brown
Alaska State Legislature
House of Representatives
P. O. Box V
Juneau, AK 99811

Dear Representative Brown:

Alaska Housing Finance Corporation is aware of the recent delay of the effective date of implementing thermal and energy standards for new construction. Attached is a letter we recently sent to the Department of Community and Regional Affairs acknowledging our support of the implementation delay.

Your letter asked about AHFC's efforts to implement the regulations. Although AHFC supports the standards, we have neither the staff nor the expertise to actually implement construction standards. As you can see from the attached letter, the enforcement of the regulation has not been addressed. AHFC feels this is a serious omission. We do plan to require certification that the standards have been met for loans on new construction, thus keeping AHFC loans in compliance with statutes.

Please let me know if you have any other questions.

Sincerely,

Betty M. Cook

Betty M. Cook
Mortgage Operations Director

ec

Enclosure

Telephone (907) 276-5599

235 East 8th Avenue
Third Floor

P.O. Box 101020
Anchorage, Alaska 99510

Alaska State Legislature

HOUSE OF REPRESENTATIVES

Committee on Finance

Official Business

P.O. Box V
State Capitol
Juneau, Alaska 99811

March 9, 1988

Ronald D. Lehr, Executive Director
Alaska Housing Finance Corporation
P.O. Box 101020
Anchorage, Alaska 99510

Dear Dr. Lehr,

I recently received from Betty Cook a response to my letter of February 8th regarding AHFC's efforts pertaining to implementation of the minimum state thermal standards (AS 46.11.040) for new residential buildings. While I am pleased to know that you apparently support the standard, I remain concerned that you have yet to identify a specific and comprehensive implementation strategy.

Ms. Cook's letter indicated that AHFC plans to require certification that the standards have been met for loans on new construction, but that "enforcement of the regulation has not been addressed." I agree that this is a serious "omission" but it is also my understanding that responsibility for enforcement of the standard lies primarily with AHFC. I am anxious to work with you to ensure that this omission is addressed.

Some clarification of your plans would be appreciated. In particular:

- By what means will certification take place?
- Who will be responsible for the certification and what will the process entail?
- What are the timelines for your agency's implementation plan?

Since the thermal standard is due to take effect on October 1, 1988, it is essential that these questions be addressed and appropriate decisions made in the very near future. While I appreciate that the implementation effort may present some difficulties, it is my understanding that the Department of Community and Regional Affairs has been trying to work with AHFC since early 1986 to devise a workable implementation strategy. Since that time there have been numerous contacts by DCRA on this issue, which include:

April 8, 1986 - letter from (former) DCRA Commissioner Notti outlining an implementation method adopted by the South Dakota Housing Development Authority.

August 13, 1986 - correspondence from Commissioner Notti describing possible implementation options.

March 5, 1987 - correspondence from Commissioner Hoffmann requesting information on how AHFC will implement the standard. (It is my understandir', you responded by indicating that you would incorporate the compliance standard in your Seller/Servicer guidelines in the last quarter of 1987.)

May 11, 1987 - letter from DCRA Housing Assistance Director Micheal Harper proposing a compliance method based upon builder training, self-certification and spot inspection.

August 4, 1987 - correspondence from DCRA Housing Assistance Director Micheal Harper suggesting mandatory builder training education through the Alaska Craftsman Home Program and offering to pay the workshop fees. (Betty Cook responded saying that AHFC was "not yet certain of the actual requirement" that would be used to assure compliance with AS 46.11.040.)

November 19, 1987 - a meeting between AHFC staff Wayne Mundy, DCRA staff Steve Baden, Division of Occupational Licensing Director Randall Burns and Ray Price from the Office of the Governor.

November 23, 1987 - meeting between Steve Baden and Wayne Mundy to further discuss implementation options at which time it was indicated that DCRA would implement the standard for its loan program.

February 12, 1988 - correspondence from Micheal Harper indicating that DCRA would, in response to concerns about the need for greater public education on the standards, be holding workshops in twenty communities throughout the state starting March 14th. Mr. Harper asked -- as I did in my letter of February 8th -- for specific information on AHFC's implementation plans.

Dr. Lehr, this history of correspondence makes it painfully clear that the effort to identify a specific implementation strategy has been discussed thoroughly. The time has now come for AHFC to make some basic decisions

about how the standards will be implemented and enforced. As you know, the effective date of the new regulations was deferred as a result of confusion about the standards and the fact that a clear implementation strategy had not yet been devised. It would be irresponsible to allow such a situation to persist.

DCRA, for its part, is working to ensure that the building industry is familiar with the standards; it is imperative that AHFC also make a commitment to promptly resolving any outstanding ambiguity regarding implementation. As noted by Mr. Harper in his February 12th correspondence to you regarding the DCRA workshops: "One of the questions that is sure to arise [in the DCRA workshops] is how your corporation will implement the standard...." The question remains.

I am anxious to learn the specifics of your implementation strategy and propose that you, Commissioner Hoffmann and I meet to discuss this issue so that we do not all find ourselves once again at an impasse when the regulations go into effect this October. I would also like to ask that you take a personal interest in making sure that this matter is given priority attention.

I look forward to your response and learning when we can meet.

Sincerely,

Kay Brown

Representative Kay Brown

cc: Commissioner David Hoffmann
Ray Price

PUBLIC OPINION MESSAGE

DEAR: SENATOR STURGULEWSKI

NAME: JOHN HALE
TITLE: MANAGER, MAT-SU BOROUGH
ADDRESS: POB 1608
CITY: PALMER ZIP: 99645
PHONE: 745-4801
BILL NO: SB 308
SUBJECT: ENERGY EFFICIENT HOME EQUITY FUND
MESSAGE: BOROUGH ASSEMBLY VOTED TO SUPPORT THIS PROJECT.

POMID: 14093628
DATE: 03/09/88
TIME: 09:36:28
LIONAME: MAT-SU LIO

COPIES: SENATORS

KERTTULA
SZYMANSKI
HALFORD
KELLY
ZHAROFF

RECEIVED NOV 24 1987

KODIAK ISLAND BOROUGH
RESOLUTION NO. 87-71-R

A RESOLUTION OF THE KODIAK ISLAND BOROUGH ASSEMBLY SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM.

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy construction, improve the health and safety of the occupants, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owners; and

WHEREAS, Alaska state lawmakers have introduced legislation in the form of Senate Bill 308 and House Bill 318 and 319 that support the Alaska Craftsman Home Program. And that these bills will help improve and stimulate the homebuilding industry in Alaska through incentives and education and thereby improve the local economy of the Kodiak Island Borough; and

WHEREAS, the citizens of the Kodiak Island Borough will benefit substantially from the building of energy efficient homes as developed by the Alaska Craftsman Home Program.

NOW, THEREFORE, BE IT RESOLVED by the Kodiak Island Borough Assembly that it is the policy of the Kodiak Island Borough to encourage the building of homes to the energy efficiency standards of the Alaska Craftsman Home Program;

AND BE IT FURTHER RESOLVED that the Kodiak Island Borough supports Alaska State Senate Bill 308 and House Bill 318 and 319 to establish similar state policy and state support for the Alaska Craftsman Home Program.

PASSED AND APPROVED this 5 day of November, 1987.

KODIAK ISLAND BOROUGH

By _____
Borough Mayor

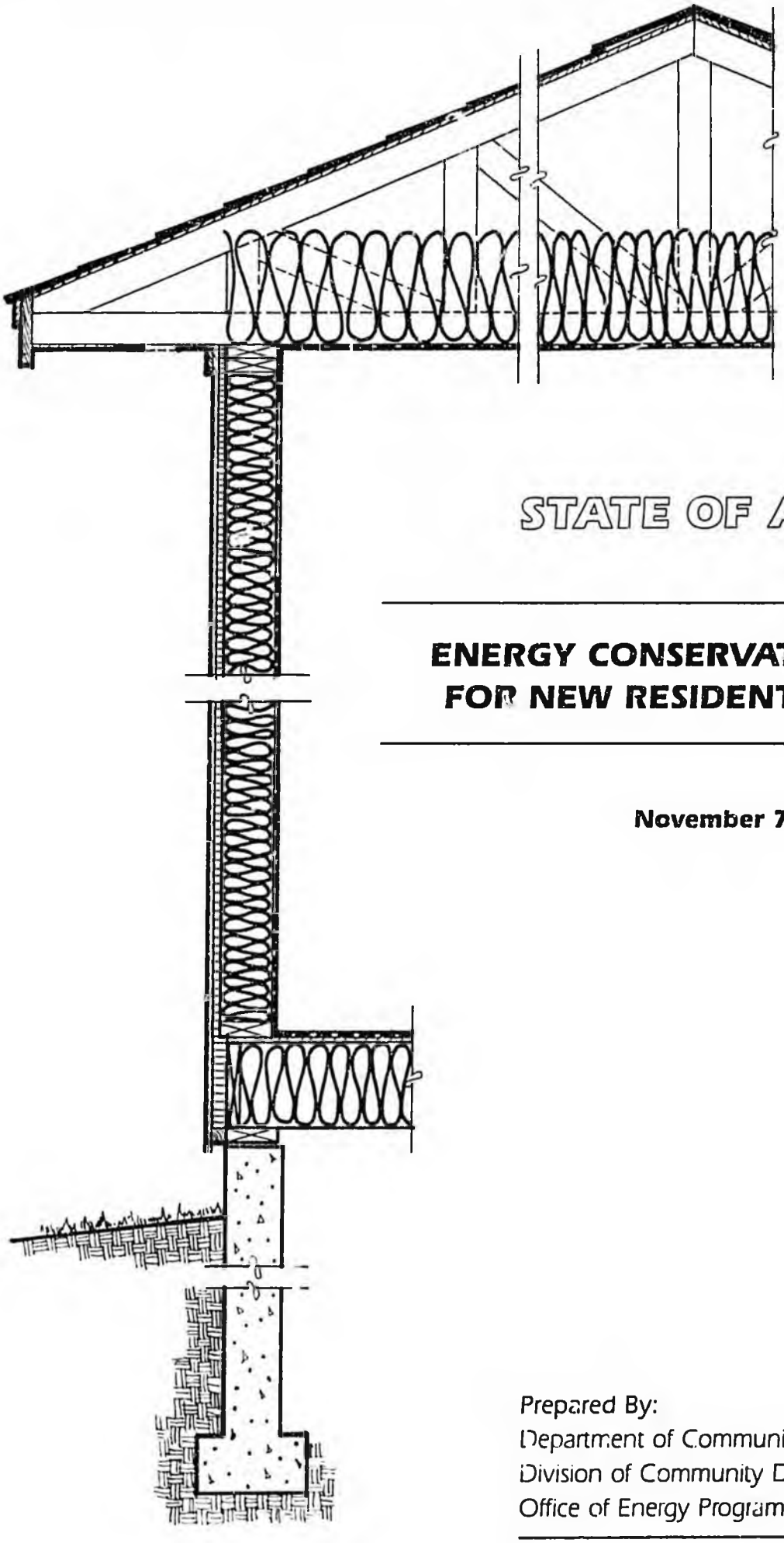
By _____
Presiding Officer

ATTEST:

By _____
Borough Clerk

RECEIVED MAR 1 1988

Mickie — (hope the speedway is correct!)
This is required by SB 308, HB 318 & 319
I told the mayor of Kodiak Island Borough, Jerome Selby, I would press this on to the Lieutenant Governor. He for your reference.
- Heather - Rep. Davidson
PS - HAPPY FRIDAY!



STATE OF ALASKA

ENERGY CONSERVATION STANDARD FOR NEW RESIDENTIAL BUILDINGS

November 7, 1986

Prepared By:
Department of Community & Regional Affairs
Division of Community Development
Office of Energy Program

ENERGY CONSERVATION STANDARD FOR NEW RESIDENTIAL BUILDINGS

This pamphlet was prepared with the support of the U.S. Department of Energy, DOE Grant No. DE-FG01-79PE70001. However, any opinions, findings, conclusions, or recommendations expressed herein are those of the author(s) and do not necessarily reflect the view of DOE.

1 2 3 4 5 6 7 8 9 0

STATE OF ALASKA

BILL SHEFFIELD, GOVERNOR

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

OFFICE OF THE COMMISSIONER

PO. BOX B
JUNEAU, ALASKA 99811
PHONE: (907) 465-4700

949 EAST 36TH AVENUE, SUITE 400
ANCHORAGE, ALASKA 99508
PHONE: (907) 563-1073

November 7, 1986

In accordance with Alaska Statute 46.11.040, the Department of Community and Regional Affairs hereby adopts the "Energy Conservation Standard for New Residential Buildings."

Alaska Statute 46.11.040 states that State financial assistance may not be approved or granted for the construction of new residential buildings unless the building is in compliance with the Standard. The statute does allow for exemptions when it can be proved that local standards meet or exceed the State standard or when local conditions are not cost effective to implement this Standard. Regulations on the issuing of exemptions are contained in the Alaska Administrative Code.

The Standard provides different requirements for each of five statewide regions to better account for climatic and cost differences experienced across the state.

The energy efficiency levels specified in the Standard require higher quality construction. In part, this means homes must be constructed with materials and methods that substantially reduce outside air leaking into the house. Through reduction of air leaks means reduced heating costs, it also means indoor air quality becomes more of a concern. This topic is covered in more detail in Chapters 2 and 6, which the user of this Standard is advised to read carefully.

Chapter 1 gives the purpose, policies, scope and establishment of the Standard. Please pay particular attention to the scope and establishment sections.

Chapter 2 specifies mandatory energy efficiency requirements such as flow control devices, air infiltration control, vapor retarders, and others that are just as significant as good envelope insulation for a complete residential conservation effort.

Chapters 3, 4, and 5 provide three different methods of complying with envelope requirements. The builder is free to choose any one of these methods most appropriate to the building situation.

Chapter 6 provides a few brief recommendations for those wishing to go beyond the minimum requirements of this Standard for even greater energy efficiency.

Chapter 7 lists definitions of terms used in the Standard.

The Appendices contain information useful for complying with the Standard.

The minimum energy conservation standard given in this document is the result of two years of intensive research. This research showed the minimum standards to be cost effective. This research also showed that higher levels of envelope insulation are also cost effective but over a longer period of time. These higher levels of insulation will be discussed in an energy education manual to be produced by the Department of Community and Regional Affairs in 1987.

Planning for the future has always made sense. With the average life of a home being 55 years, it makes sense to plan and build energy efficient homes now to insure their future value. Retrofitting a home later as energy costs increase will always cost more than building it energy efficiently now. And, many things cannot be retrofitted; they can only be done at the time of initial construction. These Standards will help you build now for energy efficiency. Your home will be more comfortable, affordable, and less expensive to heat every day.

The Department of Community and Regional Affairs sincerely believes the Energy Conservation Standard for New Residential Buildings will result in a better built, more energy efficient housing stock throughout Alaska.

Sincerely,

Emil Notti
Commissioner

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CHAPTER 1
PURPOSE, POLICIES, ESTABLISHMENT, AND SCOPE

1.1 PURPOSE

This document shall be known as the "Energy Conservation Standard for New Residential Buildings." It will be referred to herein as the "Standard."

The purpose of this Standard is to promote the construction of energy-efficient residential structures.

1.2 POLICIES

In the implementation, administration, and enforcement of the Standard the policy of the State of Alaska is to:

1. Develop public awareness of energy conservation building designs, technologies, and systems;

2. Establish acceptable and appropriate thermal standards for residential buildings based upon practical and cost-effective measures that will reduce the energy consumption of each home throughout the home's many years of use;

3. Permit flexibility in compliance by allowing alternative methods of meeting the energy conservation requirements of this Standard and encourage innovative design;

4. Provide review and monitoring of this Standard and its administration, at appropriate times, to make it responsive to users, technological developments, and change.

1.3 ESTABLISHMENT

The effective date of this Standard shall be January 1, 1988.

1.4 SCOPE

1. The Standard applies to residences that meet either of the following two criteria:

    - Detached single-family dwellings;

- o Residential dwelling units in buildings measuring 36 feet (four stories) or less in vertical distance from the floor of the lowest habitable story to the floor of the highest habitable story which are provided with an individual heating appliance(s) for each dwelling unit or a single heating appliance intended to heat no more than six dwelling units.

2. The Standard does not apply to:

   - o Transient housing such as hotels, motels, nursing homes, jails, barracks, or other similar use structures.

   - o Additions, alterations, or repairs to existing residential buildings.

     Exception: An addition of habitable space 50 percent or greater in floor area than the existing dwelling floor area must comply with the Standard. The existing dwelling, however, need not comply.

3. Mobile homes shall be governed by thermal standards adopted by the Federal Department of Housing and Urban Development (HUD) and known as 24 CFR Part 3280 "Manufactured Home Construction and Safety Standards."

4. In order for a new residential building to receive State financial assistance, the Standard must be used in its design. Compliance with requirements must be identifiable in the preconstruction stage through examination of design plans and specifications. Compliance is accomplished when the building meets or exceeds the requirements of the Standard.

5. The Standard shall not be used to abridge any safety, health, or environmental requirements found in the current Uniform Building, Mechanical, and Plumbing Codes, the National Electrical and Fire Codes, or the ventilation requirements of the American Society of Heating, Refrigeration, and Air-conditioning Engineers' (ASHRAE) Standard 62. The Standard is intended to supplement these codes.

6. Lighting requirements are not a part of the Standard.

7. The requirements of the Standard may be satisfied by using any one of the following three compliance methods. The choice of which method to apply is left to the user.

   - o Prescriptive Method - Chapter 3. This method provides the easiest path for determining compliance with the Standard. Minimum insulation R-values are given for each building envelope assembly. For walls, ceilings, and floors the R-values given are for insulation requirements through the cavity space only - in other words, insulation between wall studs and between floor or ceiling joists. Only the insulation is counted. R-values for interior finish materials such as sheetrock, paint, carpeting, or paneling and exterior finish materials such as plywood sheathing, siding, or brick facing cannot be counted.

     Use of the Prescriptive Method does not require extensive calculations. However, this method is the least flexible of the three because it cannot be used to trade off R-value requirements between different envelope assemblies or between different elements of the same assembly.

     When using the Prescriptive Method, all mandatory measures given in Chapter 2 must also be accomplished.

   - o Performance Method - Chapter 4. The Performance Method allows the designer to trade off insulation requirements between elements of a particular building envelope assembly. For example, if window area above the allowed 15 percent prescriptive maximum is desired, the performance method allows such an increase as long as the wall insulation R-value is also increased. Compliance is accomplished when the wall R-value increases enough to off set the extra heat loss resulting from the increased window area.

     Trade-offs between the different envelope assemblies are not allowed with this method. In other words, more insulation in the ceiling will not allow for decreased insulation in the wall. For this kind of trade-off Chapter 5, Building Budget Method, should be used.

     Some calculations are necessary with the Performance Method but these calculations are not difficult.

When using the Performance Method, all mandatory measures given in Chapter 2 must also be accomplished.

- Building Budget Method - Chapter 5. This method is the most complicated as well as the most flexible of the three compliance methods. Insulation requirements are not given. Instead, a total maximum building heat loss allowance must be calculated. The designer may choose any design, provided the building does not exceed the maximum heat loss value stated. Despite the extensive calculations and substantiation of data required with this method, freedom of design and innovation will make it attractive.

  When using the Building Budget Method, all mandatory measures given in Chapter 2 must also be accomplished.

A workbook will be available after April 30, 1987, to help you through some sample calculations and procedures for complying with the Standard.

CHAPTER 2
MANDATORY DESIGN MEASURES

Energy conservation for a home involves more than just insulating exterior walls, ceilings, and floors. As significant is good vapor retarder installation, controlled ventilation, high efficiency heating appliances, caulking and sealing, weather stripping, and many other measures that, together with envelope insulation, make a complete energy conservation package.

This chapter provides mandatory energy conservation measures that will reduce a home's energy costs. These measures must be complied with regardless of which method (Chapters 3, 4, or 5) is used to demonstrate compliance with the Standard. Chapter 6 recommends other ways to further reduce energy costs.

2.1 Insulation

Thermal insulation is the primary material that resists the flow of heat out of a warm house. There are many kinds of insulation materials. Ability to resist heat flow and flammability vary for each. Not only is the type of insulation important, careful attention should also be paid to the place as well as the manner in which insulation is used.

The following requirements govern the use of thermal insulation materials.

a. Insulation materials installed within 3 inches of a recessed light fixture enclosure or ballast or installed above the fixture may create a fire hazard by entrapping heat and preventing the free circulation of air. Follow practices recommended by the light fixture manufacturer and the insulation manufacturer for these conditions.

b. Insulation materials must not be installed within 2 inches of any concrete or masonry chimney unless the insulation is designated as noncombustible and approved for such installation by the insulation manufacturer. Check manufacturer's recommendations.

c. Clearance around gas vents or metal chimneys must comply with provisions of the current Uniform Mechanical and Plumbing Codes.

d. A permanent sleeve of fine wire mesh screen, sheet metal, or other noncombustible material shall be installed to maintain required clearances.

e. Objects such as piping, wiring, or electric boxes in insulated cavities should have insulation installed completely around them.

f. Insulation materials must not be installed in a manner that would obstruct openings required for attic ventilation. If airflow through attic vents is blocked, water vapor may condense on the underside of the roof, causing ice to form during cold periods. During warming periods the ice will melt and drip into the attic insulation and reduce its insulating effectiveness, possibly also causing structural as well as cosmetic damage.

g. Where baffles are made necessary to maintain required eave ventilation, they shall be of a fixed, rigid, and noncollapsible material such as wood, metal, polystyrene, or corrugated cardboard. Eave baffles shall provide a minimum clear space of 1½ inches above the baffle for the full width between roof rafters.

h. Loose fill insulation may be used in attic spaces where there is at least 30 inches of clear headroom at the roof ridge. Clear headroom is defined as the distance from the top of the bottom chord of the roof truss or ceiling joists to the underside of the roof sheathing. Loose insulation may not be used where ceilings slope more than 2½ in 12 inches. This requirement ensures that workers have adequate room to move around in the attic space to install insulation properly and that the insulation will not slump out of place over time.

i. The minimum installed weight per square foot of loose fill insulation must conform to the insulation manufacturer's installed design density per square foot at the manufacturer's labeled R-value.

j. Special care must be taken to prevent wind or blowing snow from entering attic vents and disturbing the original distribution of any insulation.

k. Some roof/ceiling insulation strategies will create "warm roof" situations. In much of Alaska, warm roofs will usually result in moisture-related problems. Designers and builders should learn the difference between warm and cold roofs and the appropriate application of each.

2.2 Vapor Retarders

Vapor retarders perform two functions: 1) they retard the diffusion of water vapor into building envelope assemblies,

and 2) a well-installed vapor retarder prevents airflow into and out of building envelope assemblies.

Airflow through breaks in the vapor retarder is especially serious because they will reduce the effectiveness of insulation (thereby increasing heat loss) and is also a major cause of water vapor moving into envelope assemblies. Water vapor within an envelope assembly can lead to structural and cosmetic damage over time.

About 3 to 5 gallons of water are dispersed into the air of a home each day as water vapor. With this much water vapor potentially leaking into envelope assemblies, it is easy to see that vapor retarders must be installed very carefully and without any breaks.

The following requirements govern vapor retarders:

a. A continuous vapor retarder must be installed in all building envelope assemblies (ceilings, walls, and floors).

b. Installation must be between the room interior surface and the theoretical winter design condition dew point within each assembly. In most assemblies, installation of a polyethylene (plastic) type vapor retarder would be over the stud, joist, or truss, which is then covered over with an interior finish material. In assemblies like a double wall, a rule of thumb for Regions 1 and 2 would be to locate the vapor retarder so that no less than 2/3 of the insulation R-value is on the cold side and no more than 1/3 is on the warm side of the vapor retarder. For the other three regions these ratios should be 3/4 and 1/4, respectively.

c. All punctures, tears, or joints, regardless of size or location (except for staples on studs), must be properly sealed. Examples of where this could occur is at pipe penetrations, electrical outlet boxes, and corners. Sealing can be done with acoustical sealant, caulk, special tapes, polyethylene material, or gaskets. Caution must be taken to select proper sealing materials for the intended application. For example, regular latex, oil-based, or silicone caulks may lose their seals over time. In many situations, acoustical sealant has proved to be more effective. Polyethylene tape has also proved to be more effective than duct tape.

d. Vapor retarders must have a perm rating of 0.5 or less. Materials specifically designed for vapor retardant purposes usually come with a perm rating supplied by the manufacturer. Perm ratings for other materials are

listed in various reference sources such as the ASHRAE Handbook of Fundamentals. Perm ratings for some materials are also listed in Appendix D.

Vapor retarder materials such as polyethylene must have all joints overlapped a minimum of 6 inches or one structural member (stud, joist, or truss) space, whichever is greater. Polyethylene material shall not be drawn tightly across structural members before fastening to such members. Flexibility for expansion, contraction and movement of structural members and the polyethylene attached to them must be provided. All joints in the vapor retarder must be backed with solid blocking.

The vapor retarder material need not be an integral part of the insulation material.

Different vapor retarder materials may be used throughout the structure provided they meet the above listed requirements. For example, the ceiling and wall vapor retarder may be polyethylene while the floor vapor retarder may be exterior grade plywood. All joints between material changes, however, must be sealed, gasketed, or overlapped to provide for continuous coverage.

e. Vapor retarders are not required for crawl space walls. Basement walls insulated on the interior, however, must comply with all vapor retarder requirements.

2.3 Air Infiltration Control

Cracks, joints, and openings in a building's exterior and interior can be the cause of as much as 40 to 50 percent of a building's total heat loss. The Standard contains a number of measures to minimize uncontrolled air infiltration. Controlling random air infiltration, then providing controlled ventilation, is the best way to reduce heating costs while providing needed fresh air.

Three alternative methods of providing for air infiltration control may be used. These are:

a. Sealing Measures. To minimize uncontrolled air infiltration all cracks, joints, and openings where it is possible for air to leak through the thermal shell must be caulked, gasketed, taped, weather-stripped, or otherwise sealed. Such locations include, but are not limited to:

   o Around window and door frames (between the unit and rough framing), between wall sole (bottom) plates and floors, between mudsills and foundation walls;

- o Around penetrations for plumbing, electricity, telephone and gas lines;

- o Around penetrations in the ceiling such as chimneys, flues, vents, or attic access doors;

- o At breaks, punctures or tears in the vapor retarder (as stated in paragraph 2.2, vapor retarders);

- o At holes in studs and top and bottom plates of interior or exterior partitions where piping or electric wiring passes through at the exterior envelope plane;

- o At all other such openings in the building envelope.

Electrical outlet boxes that interrupt the continuity of the vapor retarder must be sealed by either caulking or poly taping around the box to bridge the crack space between the vapor retarder and the box, by using poly pans to set the electric box into, or by applying electrical outlet gaskets under the switch or outlet cover plates.

Caulking, gaskets, and sealing materials and the manner in which they are applied must conform to requirements given in the current Uniform Building, Mechanical, and Plumbing Codes, the National Electrical Code, and manufacturers' recommendations. Stuffing fiberglass insulation into cracks is not an adequate sealing method. Stuffing fiberglass into cracks is acceptable only if the crack has also been sealed with a material such as caulking, gaskets, or urethane foam.

Exhaust systems must be provided with positive closure backdraft or automatic dampers.

Fireplaces shall be provided with a readily accessible, tight-closing damper.

Exception: Gas burning fireplaces shall have a minimum position stop on the damper as specified by the fireplace manufacturer and the Uniform Mechanical Code.

Doors, windows, and skylights must be fully weather stripped. Weather-stripping material must be appropriate to its manner of use, long lasting even under conditions of hard wear or frequent use and be made of appropriate weather-resistant materials.

Windows and doors must comply with the air infiltration rates shown below. ASTM E283-84 "Standard Test Method for Rate of Air Leakage Through Exterior Windows and Doors" shall be used to establish window and door infiltration rates.

Maximum allowable air infiltration rates are:

- **Windows:** 0.2 cubic feet per minute per linear foot of operable sash crack;
- **Swinging Doors:** 0.1 cubic feet per minute per linear foot of operable sash crack;
- **Sliding Doors:** 0.22 cubic feet per minute per linear foot of perimeter.

Compliance can be accomplished through specification of air leakage ratings in manufacturer's product literature.

Exception: Site-built window and skylight units with fixed lights are exempt from infiltration requirements but must be made tight fitting. Fixed lights must be retained by stops with sealant, gaskets, or caulking all around.

b. Blower Door Testing. Air infiltration control may be established in any manner provided total air changes per hour (ACH) per dwelling unit does not exceed the values given in Table 2.1 when tested in accordance with the American ASTM E779-86 "Standard Test Method for Determining Air Leakage Rate by Fan Pressurization" or the Canadian CAN/CGSB-149.10-M "Standard for Determination of Airtightness of Buildings by the Fan Depressurization Method."

TABLE 2.1 Airtightness Requirements

Building Type	ACH @ 50PA
Detached single-family and duplex dwellings	4
Other residential buildings	3

c. Tracer Gas Testing. Air infiltration control may be established in any manner provided seasonal average natural ACH per dwelling unit does not exceed 0.4 when tested in accordance with ASTM E741 "Practice for Measuring Air Leakage Rate by the Tracer Dilution Method."

2.4. Ventilation Requirements

Vapor retarder and air infiltration control measures given in the Standard will substantially reduce natural air ventilation. Proper design for adequate indoor air ventilation then becomes very important. Improper design can lead to health and moisture condensation problems. Though proper design cannot guarantee the home will be free of air-quality problems, it is the first step toward their elimination. Proper building construction and homeowner use/maintenance of the home are the other two most important criteria for a healthy, condensation-free home. The importance of proper ventilation has long been recognized by Alaska's native peoples. In the Arctic Slope region, for example, ventilation in traditional housing was provided for by the use of the kinguk.

The following measures govern ventilation design requirements.

a. Mechanical systems that exhaust interior air must provide a duct to contain and transport the exhaust air directly to the outdoors rather than into another room or space. Backdraft or automatic dampers must be used to provide positive closure of the duct during periods of standby to minimize heat loss.

b. Dwellings must be designed to provide ventilation air capability at rates specified for residential structures in the current ASHRAE 62-1981 Standard "Ventilation for Acceptable Indoor Air Quality." Revisions to ASHRAE Standard 62-1981 shall immediately become a part of this Standard.

   The following minimum ventilation rates, as excerpted from ASHRAE Standard 62-1981, can be used as a guide. These ventilation rates can be accomplished easiest by installing and using exhaust fans.

o	Bathrooms and toilet rooms	50 CFM
o	Kitchens	100 CFM
o	All other living spaces	10 CFM

   Excess condensation on windows is usually the first sign of a ventilation problem. Every effort should be made by the occupant to maintain relative humidity levels at a point where little or no condensation collects on windows.

c. FOR REGIONS 1 AND 2: The ventilation system may be through natural (passive) means, through forced mechanical means, or both. When natural infiltration rates are insufficient to meet ventilation air requirements, forced mechanical ventilation must be provided.

d. FOR REGIONS 3, 4 and 5: A forced mechanical ventilation system capable of providing indoor air ventilation rates as stated in paragraph b above must be installed in each residential unit. This may be a single, centralized exhaust-only system, an air-to-air heat exchanger, or a combination of systems such as bathroom and kitchen exhaust fans along with a centralized exhaust system for other areas of the house. The builder must provide written operating instructions to the homeowner for each mechanical ventilating system.

e. Combustion appliances and fireplaces must be provided with sufficient combustion and venting air requirements as recommended by the appliance manufacturer. Care should be taken to prevent backdrafting of dangerous combustion gases into the house - especially when exhaust fans are operating.

2.5 Thermal Breaks for Windows, Doors, and Skylights

Metal sashes, frames, and thresholds for windows, doors, and skylights must have thermal breaks between inside and outside surfaces.

2.6. Crawl Space Vents

Crawl space vents must be equipped with a mechanism to allow the vents to be closed tightly during the heating season.

2.7. Permeability of Outer Envelope Surfaces

Water vapor penetrating through the interior vapor retarder must be able to pass on through the building's outer envelope surfaces to the outdoors. Water vapor not passing through to the outdoors will condense into liquid water (then ice) when temperatures within the assembly are cold enough. Temperatures as high as 42°F may be enough to begin condensation. Continued conditions like this may damage the insulation and the building's structure.

Permeability of outer envelope surfaces determine how easily water vapor within the envelope passes on through to the outdoors. Outer envelope surfaces should be approximately 10 times more permeable than the inside vapor retarder or be constructed to pass water to the outdoors. For example, do not use plastic vapor retarders on the exterior face of envelope walls and don't tape joints of rigid insulation boards installed on the exterior face of envelope walls.

2.8 Attached Garages

Garages are major heat losers. They usually leak more air than any other enclosed space of a residence. The garage temperature often approaches that of the outdoor and the garage door opens so wide that the entire volume of air in the garage is exchanged with the cold outside air in a matter of seconds. Because of this leakiness even heated garages are cold.

For this reason walls, ceilings, and floors of conditioned spaces adjoining garages should also be well insulated. To accomplish this, attached and built-in garages shall be considered an unconditioned space, regardless if provided with a source of heating, for the purpose of determining insulation and vapor retarder requirements for walls, ceilings, and floors of adjoining conditioned spaces.

2.9 Conservation of Hot Water

Hot water is usually the second most demanding use of energy in a home. In a highly insulated home, hot water can be the most demanding use of energy. Conservation of hot water, therefore, can lower a home's energy costs significantly. The following mandatory measures will effect good hot water conservation:

a. Showerheads must be equipped with flow control devices that limit water flow to a maximum of 2.5 gallons per minute at main line distribution pressures rated from 20 to 80 pound per square inch. Flow control devices are not required where water turbidity or the distribution pressure at the showerhead may render them unusable.

b. Toilets must be plumbed to use the least amount of heated water necessary to prevent condensation on the tank and bowl. Alternatively, toilet tank insulating liners may be used to prevent condensation.

c. Electric and gas storage hot-water heaters with capacities of 120 gallons or less must have the tank top and side surfaces insulated to at least R-16 or must have a standby loss rate not exceeding 3.0 watts per square foot of external tank surface area. Insulation may be inside the outer tank jacket or wrapped outside the outer tank jacket. In no case can the combined internal and external insulation be less than R-16. Internal tank insulation must be labeled on the tank exterior by the manufacturer. External wrap insulation must not cover the control panel nor interfere with relief or drain valves, drain pipes, or incoming and outgoing plumbing lines.

Hot-water piping leading from the water heater must be insulated with at least R-4 insulation for the first 3 feet of pipe closest to the water heater. It is not necessary, however, to penetrate a fire wall with the pipe insulation. Also, check the Mechanical and Plumbing codes for required clearances of any combustible pipe insulation to vent pipes.

Exception: Storage hot water heaters in conditioned spaces that use the same energy source as used for space heating need not be insulated, nor does the hot water piping need to be insulated.

d To minimize conduction heat loss, electric water heaters cannot be set in direct contact with concrete floors. A minimum of 10 inches, measured vertically from the concrete floor up to the bottom of the heater, or R-10 insulation between the floor and the bottom of the heater must be installed.

e. All storage-type water heaters must be provided with thermostats capable of varying the heater's temperature settings. Water temperatures in excess of 120°F are not necessary for dishwashers when good detergent products are used. Water at 140°F takes only five seconds to develop third degree skin burns. Therefore, thermostats shall be set at time of installation to 130°F or less (120°F is preferable). For most gas water heaters, thermostats set between "medium" and "low" will obtain 130°F. Electric water heaters are generally equipped with degree temperature settings.

f. Water heaters must be equipped with heat traps on both the inlet and outlet piping. A heat trap may take the form of a bent piece of tubing which forms a loop of 360 degrees, a check valve, or any other means which effectively restricts the natural tendency of hot water to rise in vertical pipes during periods of standby.

2.10 Heating Systems

Poor or improperly functioning equipment can easily increase heating costs by 25 percent. Savings gained from better equipment, properly installed for maximum efficiency, will more than offset the extra cost of that equipment. The following requirements give the homeowner documented assurance that good equipment and proper installation have been provided.

The following requirements govern heating systems:

General Requirements

All heating appliances must be installed and adjusted per manufacturers' recommendations. Adequate combustion air must be provided to the appliance for proper operation. Failure to do so will create unsafe conditions.

Chimney/Flue Requirements

a. Chimneys must be installed per manufacturers' recommendations for proper operation, maintenance, and safety to eliminate condensation or backdrafting problems.

b. Condensing heating appliances should use only approved plastic flues per manufacturer's recommendations.

Steady-state Efficiency Requirements

a. Noncondensing oil heating appliances must be adjusted for maximum steady-state efficiency within the range of 80 to 84 percent (inclusive).

b. Noncondensing gas heating appliances must be adjusted for maximum steady-state efficiency within the range of 79 to 82 percent (inclusive).

Exception: Noncondensing gas heating appliances may be adjusted to operate at efficiencies exceeding 82 percent if substantial documentation is provided to approving officials to prove that such appliances will not create condensation problems.

Flue Test Requirements

a. Flue tests for condensing heating appliances are not required. Condensing appliances must be so identified on manufacturer's literature.

b. Flue tests for noncondensing heating appliances are required. Heating appliances not identified in manufacturer's literature as condensing will be considered noncondensing.

Exception: Flue tests are not required for noncondensing appliances nominally rated at 40,000 Btu and less.

c. Flue tests for noncondensing appliances are required before initial occupancy and must have test results documented and posted on or close to the heating appliance. The format and information to be included on the posted document must be as follows:

Flue Test For Noncondensing Heating Appliances

OIL			GAS	
Required	Actual		Required	Actual
0.06 or less	_____	Draft (in inches of water at the breach)	0.01 to 0.03	_____
0 or 1	_____	Smoke Number (per ASTM D2165-65)	N/A	N/A
6% to 13%	_____	Carbon Dioxide (percent), or,	6% to 10%	_____
13% to 3.5%	_____	Oxygen (percent)	10.5% to 3%	_____
375°F to 550°F	_____	Actual Stack Temperature (°F)	375°F to 525°F	_____
80% to 84%	_____	Steady State Efficiency (percent)	79% to 82%	_____
N/A	N/A	Carbon Monoxide (ppm below 100)	Yes	_____

Name of person performing test_____

Name of testing company_____

Address of testing company_____

Date of test (month, day and year)_____

Recommendations or other comments_____

_____ _____

_____

CHAPTER 3
PRESCRIPTIVE METHOD

This chapter establishes design criteria in terms of minimum prescribed (given) insulation requirements for the building envelope, plumbing, and heating air ducts.

The Prescriptive Method does not require extensive calculations. It is the least flexible of the three possible compliance methods but is the easiest way to comply with the Standard. This method cannot be used to trade-off R-value requirements between different envelope assemblies or different elements of the same assembly. For example, you cannot put more insulation in the ceiling in order to put less insulation in the wall. If this is desired, Chapters 4 or 5 should be used as the means of compliance.

The Prescriptive Method does not dictate specific building methods. Any method of constructing the residence may be used provided clear compliance with the minimum insulating requirements can be shown. For example, to meet a minimum R-18 wall insulation requirement, the builder may use an R-19 fiberglass batt in a 2x6 framed wall, an R-13 fiberglass batt in a 2x4 framed wall with R-5 rigid insulation over the framing, or foamed-in-placed urethane between 2x4 framing.

When using the Prescriptive Method as the means of compliance, all mandatory measures given in Chapter 2 must also to be accomplished.

Design and insulation requirements are given below and also shown on Table 3.2, page 22.

3.1 Insulation Minimums

R-value minimums given in this chapter are for insulation installed between or over structural members. Only the insulation is counted. R-values for materials such as sheetrock, paneling, plywood, siding, air films, or earth backfill for example, cannot be included.

R-value minimums refer to the installed R-value. Compression of some insulating products will result in lower R-values. For example, placing an R-30 batt into a 2x8 wall will compress the batt from 9½ inches down to 7¼ inches. This will result in a decreased R-value from the listed R-30 down to approximately R-26. Table 3.1 shows nominal examples of resultant R-values when fiberglass batts are compressed.

TABLE 3.1

Resultant R-value when fiberglass batt insulation is compressed into a confined space. Resultant R-values differ among manufacturers.

Nominal Lumber Size	Actual Lumber Width	Initial R-value/Thickness R-38 12"	R-30 9½"	R-22 6 3/4"	R-19 6 1/8"	R-13 3 5/8"	R-11 3½"
		Installed R-value					
2" x 12"	11¼"	37	-	-	-	-	-
2" x 10"	9¼"	32	30	-	-	-	-
2" x 8"	7¼"	27	26	-	-	-	-
2" x 6"	5½"	-	21	20	18	-	-
2" x 4"	4"	-	-	15	14	-	-
2" x 4"	3½"	-	-	14	13	13	-
2" x 3"	2½"	-	-	-	-	9.8	8.8
2" x 2"	1½"	-	-	-	-	6.3	6.0
2" x 1"	1½"	-	-	-	-	-	-

3.2 Ceilings

Envelope ceilings must be insulated to the minimum R-value shown in Table 3.2.

Insulation located over perimeter walls cannot be less than R-30.

Insulated shed, flat, cathedral, and dome-type ceilings require special attention to ventilation and vapor retarder requirements.

3.3 Walls Above Grade

Envelope walls above grade must be insulated to the minimum R-value shown in Table 3.2.

Rim joist areas must be insulated to a minimum of 1/3 the R-value required for above-grade walls.

3.4 Walls Below Grade (Foundation Walls)

Insulation must cover a minimum of the top 2 feet of a crawl space wall and the top 4 feet of a basement wall. Minimum insulation R-value is shown in Table 3.2.

Exception: Crawl space walls need not be insulated provided the floor above the crawl space is insulated to the minimum R-value shown in Table 3.2 for floors and there is no danger of foundation damage from frost heaving.

Insulation materials should have appropriate weather resistant properties for the intended use and must be applied as recommended by the insulation manufacturer.

Vapor retarders are not required for crawl space or uninsulated basement walls.

Vapor retarders are required for basement walls insulated on the interior.

3.5 Floors

Envelope floors must be insulated to the minimum R-value shown in Table 3.2.

Exception: Floors over a crawl space need not be insulated provided the crawl space walls are insulated as required for "Below-grade Walls."

Rim joist areas must be insulated to the same requirement as the wall above it.

3.6 Slab-on-grade Floors

Slab-on-grade floors of conditioned spaces (or unconditioned spaces when a monolithic pour is made) must be provided with perimeter insulation. The minimum R-value required is shown in Table 3.2.

Insulation materials should have appropriate weather-resistant properties for below-grade application and must be applied as recommended by the manufacturer.

Insulation must extend downward from the top of the slab to the bottom of the footing, then extend horizontally beneath or away from the footing for a minimum total distance of 24 inches.

Permafrost areas require engineering analysis for proper application of insulation in contact with the ground. Improper application may result in severe damage to the structure.

3.7 Glazing

Glazing is the single most important element of a building's envelope. Glazing can account for as much as 25 percent of the total envelope (conductive) heat loss in a home, although it generally accounts for only 3 to 5 percent of the total envelope area. A double glazed window loses 10 times more heat per square foot than a 2x6 insulated wall. Glazing R-value and area limitations given below will substantially reduce envelope heat loss.

All glazing units must have a tested R-value not less than specified below. Testing must be conducted by a certified testing laboratory. Manufacturer's product literature must specify the tested R-value and the name of the testing laboratory.

a. Exterior wall glazing may not exceed the limitations set forth below:

Glazing Area *	Minimum R-value Required			
	Regions 1 and 2	Region 3	Region 4	Region 5
up to 8%	2.10	2.30	2.80	2.80
greater than 8% and up to 11%	2.80	2.80	2.80	2.80
greater than 11% and up to 15%	4.00	4.00	4.00	4.00

glazing area greater than 15% not allowed in any region

* As a percent of the total gross above-grade wall envelope area. For example, if total wall area equals 1184 sq. ft. and total glazed area equals 112 sq. ft., then glazing area is 9½ percent (112 ÷ 1184 = 0.095). Since 9½ percent is in the 8 to 11 percent category, all glazing in the exterior wall must then have an R-value of 2.8 or greater.

Exception: Wall glazing for special architectural or decorative features is allowed but must have a minimum R-value of 1.5 and may not exceed 5 percent of the allowable window glazing area. For example, if allowable window area equals 130 square feet, then:

130 sq. ft. x 0.05 = 6.50 sq. ft.

In this example, no more than 6.50 square feet of special glazing is allowed.

b. Skylight glazing area may not exceed 1 percent of the total insulated ceiling area per dwelling unit and must have a minimum R-value of 2.0. For example, if the insulated ceiling area equals 1500 square feet, then:

1500 sq. ft. x 0.01 = 15 sq. ft.

In this example, no more than 15 square feet of skylight is allowed.

Note that ceilings with skylights will require increased insulation R-values in order to offset the additional heat loss through the skylight. Therefore:

- o For each square foot of skylight area, the R-value per 100 square feet of insulated ceiling area must be increased according to the schedule shown in Table 3.2 for ceiling #2.

c. Door glazing area may not exceed 10 square feet total for all exterior doors in Regions 1 and 2, nor 5 square feet total for all exterior doors in Regions 3, 4 and 5. Minimum R-value of door glazing must be 2.10.

3.8 Doors

Unglazed portions of exterior doors must have a minimum R-value of 7.0.

Exception: One exterior door in Regions 1 and 2 may have an R-value less than 7 but no less than 2.5.

3.9 Plumbing

Hydronic and domestic hot-water pipes located outside of conditioned spaces and not intentionally used to heat the space or, if within 3 inches of a cold-water pipe, must be insulated to a minimum R-value of 4.0.

Plumbing must comply with the current Uniform Plumbing Code.

3.10 Air Ducts

For Region 1: Air ducts transporting conditioned air through attics, garages, and crawl spaces must be sealed at all joints and insulated to a minimum R-value of 6.0.

For Regions 2, 3, 4, and 5: Air ducts not intended to heat a space directly or through transmission losses must be sealed at all joints and insulated to a minimum R-value of 6.0.

Air ducts transporting air of 70°F or more are not permitted in unconditioned attic spaces unless the air is being exhausted directly to the outdoor environment.

Air ducts must comply with the current Uniform Mechanical Code.

3.11 Log House

Though the walls of a log house may not meet the prescriptive insulation values of Table 3.2, the house can be made to meet the maximum heat loss budget values of Table 5.1. This can be done by adding more insulation in the ceiling and floor, reducing window area, increasing window R-values, and doing other measures so that total building heat loss does not exceed the maximum given in Table 5.1.

TABLE 3.2 PRESCRIPTIVE ENVELOPE R-VALUE REQUIREMENTS

This table lists minimum prescribed insulation requirements for the building envelope. The builder may use any method of constructing the building envelope provided clear compliance with the listed R-values can be shown and is acceptable to approving officials.

CAUTION: Permafrost areas require engineering analysis for proper application of insulation in contact with the ground.

Region Number Region Name Heating Fuel	Prescriptive Envelope R-Value Requirements						
	Ceiling[1]		Above-grade Wall	Floor	Below-grade Wall	Slab-on-grade Floor	Door[2]
	#1	#2					
Region 1 Southeast All Fuels	38	48	21	30	15	15	2.5, 7
Region 2 Southcentral, Aleutian, Kodiak							
Natural Gas	38	45	18	19	10	10	2.5, 7
All Other Fuels	38	48	25	30	15	15	2.5, 7
Region 3 Interior, Southwest All Fuels	38	48	25	43	19	15	7
Region 4 Northwest All Fuels	38	48	30	43	19	15	7
Region 5 Arctic Slope All Fuels	52	NA[3]	35	52	--	--	7

Notes:

1. Ceiling #1: R-values listed are for ceilings with no skylights.
   Ceiling #2: R-values listed are for ceilings with skylights. See paragraph 3.7b.
2. One exterior door in Region 1 may have an R-value less than 7 but no less than 2.5.
3. Not allowed.

CHAPTER 4
PERFORMANCE METHOD

The Performance Method allows the designer to trade off insulation requirements between elements of a particular building envelope assembly. For example, if window area above the allowed maximum (as given in Chapter 3) is desired, the Performance Method allows such an increase provided the opaque wall R-value is also increased. Compliance is met when the opaque wall R-value increases enough to offset the extra heat loss resulting from the increased window area.

Trade-offs between different envelope assemblies are not allowed under this method. In other words, more insulation in the ceiling will not allow for decreased insulation in the wall. For this kind of trade-off Chapter 5, Building Budget Method, should be used.

The Performance Method can be used together with the Prescriptive Method. For example, if ceilings and floors will be insulated as specified in the Prescriptive Method but changes are desired for wall R-values, then the ceiling and floor can use the Prescriptive Method for compliance but the wall needs to show compliance through the Performance Method.

The Performance Method requires some calculations, but they are not difficult if careful application is used. R-values for materials such as sheetrock, paneling, plywood, siding, and air films, for example, may be included when calculating the overall transmittance value of an assembly. R-value for earth backfill at below-grade walls, however, cannot be included.

When using the performance method, all mandatory measures given in Chapter 2 must also be accomplished.

Design and insulation requirements are given below and also shown in Table 4.1, page 31.

4.1 Relationship of U-values and R-values

Although U-values may seem more difficult to understand than R-values, they are very simply related. The relationship is: $R = 1/U$ and $U = 1/R$. For example, the U-value for an R-38 fiberglass batt is equal to: $U = 1/38 = 0.026$.

When R-values are converted to U-values, only the first three decimal places should be used. Do not round the third digit. For example, the U-value of R-19 insulation carried to four decimal places is: $U = 1/19 = 0.0526$; use $U = 0.052$.

An example of how to calculate the overall thermal transmittance value (U_o) of a ceiling envelope assembly is

given in paragraph 4.11. Calculations for wall and floor assemblies would be similar.

4.2 Overall U_o-Values

The stated U-value of any one element of an envelope assembly may be increased while another element is decreased, provided the overall U_o-value of the entire assembly does not increase.

Equations 1, 2, and 3 must be used to determine U_o.

4.3 Ceilings

The overall thermal transmittance value (U_o) for the gross ceiling envelope area cannot exceed those values shown in Table 4.1.

Insulation located over perimeter walls cannot be less than R-30.

Insulated shed, flat, cathedral, and dome-type ceilings require special attention to ventilation and vapor retarder requirements.

Equation 1 must be used to determine acceptable combinations to meet the required ceiling U_o-values.

Equation 1

$$U_o = \frac{[U_{ceiling} \times A_{ceiling}] + [U_{skylight} \times A_{skylight}]}{A_o}$$

Where:

U_o = the overall thermal transmittance value of the gross ceiling envelope area expressed as Btu/(ft^2·hr·°F).

A_o = the gross overall ceiling envelope area in ft^2.

$U_{ceiling}$ = the composite thermal transmittance of all elements of the opaque ceiling expressed as Btu/(ft^2·hr·°F).

$A_{ceiling}$ = the gross opaque ceiling envelope area in ft^2.

$U_{skylight}$ = the composite thermal transmittance of all elements of the skylight, including the frame, expressed as Btu/(ft^2·hr·°F).

$A_{skylight}$ = the gross area of all skylights, including the frame in ft^2.

NOTE: Where more than one type of envelope ceiling and/or skylight is used, the U x A term for that exposure shall be expanded into its subelements, as:

Equation 1.1

$$[U_{ceiling_1} \times A_{ceiling_1}] + [U_{ceiling_2} \times A_{ceiling_2}] + \ldots, \text{ etc.}$$

4.4 Walls

The overall thermal transmittance value (U_o) for the gross above-grade envelope wall areas cannot exceed those values shown in Table 4.1. for above-grade walls.

The overall thermal transmittance value (U_o) for the gross below-grade envelope wall areas cannot exceed those values shown in Table 4.1 for below-grade walls. Insulation must cover a minimum of the top 2 feet of a crawl space wall and the top 4 feet of a basement wall.

Exception: Crawl space walls need not be insulated provided the floor above the crawl space is insulated to the minimum R-value shown in Table 4.1 for floors and there is no danger of foundation damage from frost heaving.

Insulation materials should have appropriate weather-resistant properties for the intended use and must be applied as recommended by the insulation manufacturer.

Vapor retarders are not required for crawl space or uninsulated basement walls.

Vapor retarders are required for basement walls insulated on the interior.

R-value for earth backfill cannot be included when calculating U_o for below-grade walls.

Equation 2 must be used to determine acceptable combinations to meet the required wall U_o-values. Above-, and below-grade walls should be calculated separately.

Equation 2

$$U_o = \frac{[U_{wall} \times A_{wall}] + [U_{glazing} \times A_{glazing}] + [U_{door} \times A_{door}]}{A_o}$$

Where:

U_o = the overall thermal transmittance value of the gross wall envelope area expressed as Btu/(ft^2·hr·°F).

A_o = the gross overall wall envelope (above or below grade) area in ft^2.

U_{wall} = the composite thermal transmittance of all elements of the opaque wall expressed as Btu/(ft^2·hr·°F).

A_{wal} = the gross opaque wall envelope (above or below grade) area in ft^2.

$U_{glazing}$ = the composite thermal transmittance of all elements of the glazed area, including the framing and sash expressed as Btu(ft^2·hr·°F).

$A_{glazing}$ = the gross glazed wall envelope area, including the framing and sash in ft^2.

U_{door} = the composite thermal transmittance of all elements of the door expressed as Btu/(ft^2·hr·°F).

A_{door} = the gross area of the door in ft^2.

NOTE: Where more than one type of wall, window, or door is used, the U x A term for that exposure shall be expanded into its subelements, as:

Equation 2.1

$$[U_{wall_1} \times A_{wall_1}] + [U_{wall_2} \times A_{wall_2}] + \ldots \text{, etc..}$$

4.5 Floors

The overall thermal transmittance value (U_o) for the gross envelope floor areas cannot exceed those values shown in Table 4.1.

Exception: Floors over a crawl space need not be insulated provided the crawl space walls are insulated as required for "Walls Below Grade."

Rim joist areas must be insulated to the same requirement as the wall above it.

Equation 3 must be used to determine acceptable combinations to meet the required floor U_o-values.

Equation 3

$$U_o = \frac{[U_{floor} \times A_{floor}]}{A_o}$$

Where:

U_o = the overall thermal transmittance value of the gross floor envelope area expressed as Btu/(ft^2·hr·°F).

A_o = the gross overall floor envelope area in ft^2.

U_{floor} = the composite thermal transmittance of all elements of the floor expressed as Btu/(ft^2·hr·°F).

A_{floor} = the gross floor envelope area in ft^2.

NOTE: Where more than one type of floor is used, the U x A term for that exposure shall be expanded into its sub-elements, as:

Equation 3.1

$$[U_{floor_1} \times A_{floor_1}] + [U_{floor_2} \times A_{floor_2}] + \ldots \text{ , etc.}$$

4.6 Slab-on-grade Floors

Slab-on-grade floors of conditioned spaces must be provided with perimeter insulation. The maximum overall U_o-value is shown in Table 4.1.

Insulation materials should have appropriate weather-resistant properties for below-grade application and must be applied as recommended by the manufacturer.

Insulation must extend downward from the top of the slab to the bottom of the footing, then extend horizontally beneath or away from the footing for a minimum total distance of 24 inches.

Permafrost areas require engineering analysis for proper application of insulation in contact with the ground. Improper application may result in severe damage to the structure.

4.7 Glazing

All glazing units must have a tested R-value. Testing must be conducted by a certified testing laboratory. Manufacturers' product literature must specify the tested R-value and the name of the testing laboratory.

4.8 Plumbing

Hydronic and domestic hot-water pipes located outside of conditioned spaces and not intentionally used to heat the space or, if within 3 inches of a cold-water pipe, must be insulated to a minimum R-value of 4.0.

Plumbing must comply with the current Uniform Plumbing Code.

4.9 Air Ducts

For Region 1: Air ducts transporting conditioned air through attics, garages, and crawl spaces must be sealed at all joints and insulated to a minimum R-value of 6.0.

For Regions 2, 3, 4, and 5: Air ducts not intended to heat a space directly or through transmission losses must be sealed at all joints and insulated to a minimum R-value of 6.0.

Air ducts transporting air of 70°F or more are not permitted in unconditioned attic spaces unless the air is being exhausted directly to the outdoor environment.

Air ducts must comply with the current Uniform Mechanical Code.

4.10 Framing Factors

The following factors should be used for wood framed walls when calculating the overall U_o-values required in this chapter. Framing factors account for the estimated amount of framing contained in opaque envelope areas.

Ceilings and Floors:

13 percent for 2-inch joists at 12 inches on center
10 percent for 2-inch joists at 16 inches on center
6 percent for 2-inch joists at 24 inches on center
10 percent for 2-inch plank and 4-inch beams at 48 inches on center

Walls:

15 percent for 2-inch studs at 16 inches on center
12 percent for 2-inch studs at 24 inches on center

4.11 U_o Calculation Example

This is an example of how to calculate a U_o-value for a ceiling with one skylight. U_o-values for walls and floors would be calculated in a similar manner.

Step 1: Calculate the composite thermal transmittance of all elements of the opaque (nonglazed) ceiling. R-values for each element of the opaque ceiling can be found in Appendix C or in other reference sources.

Between Framing	Ceiling R-Values	At Framing
0.61	inside air film	0.6
0.55	5/8" gypsum wall board	0.55
38.00	R-38 fiberglass insulation	N/A
N/A	2x4 truss bottom chord @ 24" oc.	4.35
N/A	fiberglass insulation above truss bottom cord	27.00
0.61	attic air film	0.61
39.77		33.12

Therefore: $U_{ceiling} = \frac{0.94}{39.77} + \frac{0.06}{33.12}$

$= 0.023 + 0.001$

$= \underline{0.024}$

* Remember to always include the effect of framing factors.

Step 2: Find the U-value of the skylight being used. Look in manufacturer's literature for the specified U-value or R-value. Remember, U = 1/R and R = 1/U. In this case, let's assume an R-2.0 skylight.

Therefore: $U_{skylight} = 1/R$
$= 1/2.0$
$= \underline{0.500}$

Step 3: Calculate the area of the opaque ceiling and the skylight.

a) only one skylight is being used and the area is given by the manufacturer as 8 sq. ft.

b) the gross ceiling area is:

30 ft. x 44 ft. = 1320 sq. ft.

So, the net ceiling (opaque) area is:

1320 sq. ft. - 8 sq. ft. = 1312 sq. ft.

Step 4: Calculate the overall thermal transmittance value (U_o) of the ceiling envelope.

$$U_o = \frac{[U_{ceiling} \times A_{ceiling}] + [U_{skylight} \times A_{skylight}]}{A_o}$$

$$= \frac{[0.024 \times 1312] + [0.500 \times 3]}{1320}$$

$$= \frac{31.488 + 4}{1320}$$

$$= \underline{0.026}$$

You can see from this example that performance calculations are not difficult. Also, this simple calculation shows that the resultant ceiling U_o-value of 0.026 exceeds the maximum allowable U_o-value of 0.024 given in Table 4.1. Therefore, the R-value of the R-38 ceiling insulation should be increased, or the skylight R-value should be increased, or the skylight should be eliminated. Compliance is accomplished when the calculated U_o-value equals or is less than the maximum allowable U_o-value given in Table 4.1.

TABLE 4.1 MAXIMUM ALLOWABLE ENVELOPE U_o-VALUES

Caution: Permafrost areas require engineering analysis for proper application of insulation in contact with the ground.

Region Number Region Name Heating Fuel	ENVELOPE PERFORMANCE CRITERIA, U_o				
	Ceiling	Above-grade Wall	Floor	Below-grade Wall	Slab-on-grade Floor
Region 1 Southeast All Fuels	0.024	0.089	0.032	0.066	0.066
Region 2 Southcentral, Aleutian, Kodiak Natural Gas	0.024	0.099	0.046	0.100	0.100
All Other Fuels	0.024	0.085	0.032	0.066	0.066
Region 3 Interior, Southwest All Fuels	0.024	0.078	0.022	0.059	0.066
Region 4 Northwest All Fuels	0.024	0.073	0.022	0.059	0.066
Region 5 Arctic Slope All Fuels	0.018	0.069	0.018	---	---

Chapter 5
BUILDING BUDGET METHOD

This chapter establishes design criteria in terms of the total amount of energy used by a building in all its systems. The Building Budget Method requires extensive calculations and substantiation of data. This method is the most complicated path to compliance with the Standard but is also the most flexible. The designer is free to design the building in any way, provided the building does not exceed the maximum net heat loss values given in this chapter.

5.1 Building Heat Loss Budget

Buildings designed in accordance with this chapter must not exceed the total building net heat loss budget given in Table 5.1, page 35, expressed in Btu per square foot of conditioned floor area per year. Net building heat loss means total building heat loss less any internal and solar gains.

5.2 Calculation Procedures

Calculation procedures must be documented, contain full details, and be based upon accepted engineering practices such as those used by ASHRAE.

5.3 Infiltration Calculation

Infiltration heat loss calculations are limited to no less than 0.5 air change per hour when deriving the building's total heat loss budget for comparison with Table 5.1. requirements.

5.4 Submission Requirements

Submissions must include plans and specifications showing details of all pertinent data, features, equipment, and systems of the building including complete descriptions of materials, engineering data, test data, manufacturer's data, and all other data necessary to allow proper identification of the proposed building's energy components. Submissions lacking sufficient detail to verify a building's energy budget may be rejected.

5.5 Framing Factors

The following factors should be used for wood-framed walls when calculating overall U_o-values. Framing factors account for the estimated amount of framing contained in opaque envelope areas. Chapter 4 shows an example of how framing factors are used.

Ceilings and Floors:

13 percent for 2-inch joists at 12 inches on center
10 percent for 2-inch joists at 16 inches on center
6 percent for 2-inch joists at 24 inches on center
10 percent for 2-inch plant and 4-inch beams at 48 inches on center

Walls:

15 percent for 2-inch studs at 16 inches on center
12 percent for 2-inch studs at 24 inches on center

5.6 Design Parameters

The following design parameters shall be used for heat loss calculations required under this chapter:

a. Temperatures:

- Indoor design dry bulb temperature shall not be set less than 65°F when calculating heat loss;
- Select outdoor design dry bulb temperature from the weather station given in Appendix B, Weather Data that is most representative of the proposed building site;
- Select heating degree days from the weather station given in Appendix B, Weather Data that is most representative of the proposed building site.

b. Relative Humidity:

- Indoor winter design relative humidity shall not exceed 30 percent.

c. Internal Heat Gain:

In the absence of verifiable data, internal heat gain for an average household may be assumed at:

- Men 480 Btu/person/hour of occupancy
- Women 410 Btu/person/hour of occupancy
- Children 360 Btu/person/hour of occupancy
- Appliances 37,400 Btu/day total all appliances

d. Solar Gains:

Solar heat gains may be included provided substantial documentation, using proven methodologies, are used. Documentation must be submitted for evaluation.

TABLE 5.1 MAXIMUM HEAT LOSS BUDGET ALLOWABLE

Region No. Region Name Heating Fuel	Maximum Allowable Net Heat Loss* (BTU/SF of floor area /year)	
	Detached Single-family & Duplex Units	All Other Applicable Residential Units (Multi-family)
Region 1 Southeast All Fuels	33,000	24,000
Region 2 Southcentral, Aleutian, Kodiak Natural Gas	43,800	30,700
All Other Fuels	37,000	28,700
Region 3 Interior, Southwest All Fuels	55,200	43,300
Region 4 Northwest All Fuels	6.,700	48,000
Region 5 Arctic Slope All Fuels	82,000	65,400

* The gross floor area of all conditioned spaces.

CHAPTER 6
RECOMMENDED MEASURES

This Chapter recommends further energy conservation measures as a guide for homeowners, designers, or builders who desire increased energy-efficiency levels in their homes. These measures are NOT mandatory.

6.1 Air Infiltration Barriers

Alaskan homes lose as much as 40 to 50 percent of heated interior air to the outdoors every hour due to uncontrolled air infiltration. Wind blowing into exterior walls and floors contributes to this heat loss.

Air infiltration barriers on exterior envelope surfaces can reduce heat loss. Infiltration barrier material is applied on the exterior side of joists, studs, rigid insulation, or structural sheathing, then covered over with finished siding material. The air infiltration barrier should be highly permeable so that it does not entrap moisture within the wall or floor cavity yet tight enough to prevent wind from blowing into the cavity. 'Parsec' and 'Tyvek' are names of two products used as air infiltration barriers. Their appearance and manner of installation is similar to that of a tough, white paper that is rolled onto the house from a 9 ft. wide x 100 ft. long roll.

6.2 Indoor Air Quality

Indoor air quality in "tight," energy efficient homes is of greater concern than in "leaky" energy-inefficient homes. Tight homes can concentrate existing indoor pollutants because of low air excharge rates, but tight homes do not "produce" pollutants. Pollutants come from the materials the builder selects to construct the home, the home's site, and the goods the homeowner brings into the home. These things are controllable to a large extent by the builder and homeowner. Identifying possible sources and strengths of pollutants before construction and minimizing their use or impact is the best way to reduce indoor air pollution levels. Increasing the leakiness of a home without minimizing pollutant sources will not necessarily assure good indoor air quality, but will certainly increase energy costs.

Using ventilation devices such as central exhaust systems, bathroom and kitchen range hood fans, and air-to-air heat exchangers will substantially improve indoor air quality and are recommended as a means to control house ventilation

with greater accuracy but without excessive heat loss. As a guide, ventilation systems (natural or mechanical) should collectively be capable of providing the following minimum ventilation rates, as excerpted from ASHRAE Standard 62 -1981.

o	Bathrooms and toilet rooms	50 CFM
o	Kitchens	100 CFM
o	All other living spaces	10 CFM

Moisture accumulation is the most prevalent indoor air quality problem in Alaska. Bathrooms and kitchens usually produce the most moisture. A 50 CFM exhaust fan in a 6 ft. x 9 ft. x 8 ft. height bathroom will provide one complete room air change in about 4½ minutes. A 100 CFM kitchen range hood fan in a 9 ft. x 14 ft. x 8 ft. height kitchen will provide one complete room air-change in about 10 minutes. Obviously, most of a home's potential moisture problems can be eliminated by simply using these exhaust fans whenever moisture is generated in these rooms. Exhaust fans in bathrooms and kitchens are recommended even if openable windows are provided in these rooms.

Whenever exhaust fans are used in living spaces care must be taken to prevent dangerous backdrafting of combustion gases into living spaces from appliances such as furnaces and fireplaces. Make sure combustion appliances are always provided with adequate air supplies as recommended by the appliance manufacturer even when operating exhaust fans as mentioned above.

6.3 Air-To-Air Heat Exchangers

Air-to-air heat exchangers provide a positive means of controlling indoor air quality while also recovering heat energy that would otherwise be exhausted to the outdoors.

An air-to-air heat exchanger is a ventilation device capable of transferring heat from the air being exhausted to the fresh, cold air being pulled into the house. Heat exchangers do not produce heat; they only exchange heat from one air stream to another. As much as 50 to 70 percent of the heat in stale, warm air can be recovered. Also, since most exchangers do not mix air streams, good indoor air quality is attained even with low air exchange rates.

Consumers are advised to choose heat exchangers carefully as some exchangers have exhibited freezing and maintenance problems in the extreme cold of Alaska.

6.4 Arctic Entries

Arctic entries control excessive heat loss to the outdoors by allowing only the small amount of heated air in the entry to be lost to the outdoors each time the exterior door is opened.

6.5 Clock Thermostats

Clock thermostats provide automatic temperature setback when comfort space heating is reduced or not desired. In Anchorage, for example, if the thermostat is set back from 72°F to 60°F during the night and during the day when the house is unoccupied there can be as much as a 16% reduction in energy costs.

6.6 Water-heater Timers

Automatic water-heater timers reduce heat loss from water heaters during periods of standby. Timers should be installed only on water heaters in semiconditioned or unconditioned spaces if there is no danger of freezing or excess condensation on the tank surface. Timers should be installed on water heaters in conditioned spaces if the heater uses a fuel of significantly greater cost than that used to provide space heat.

6.7 Crawl Space Vents

Crawl space vents should be closed and covered with insulation during the heating season to prevent heat loss except in areas of permafrost conditions.

6.8 Appliances

Consumers should be aware of energy requirements for appliances. Though an individual appliance may not seem to have much of an impact on energy costs, today's homes usually have many appliances and, all together, their energy demands do have a noticeable impact upon the energy costs of the home.

Choose appliances that are energy efficient. Check the "Energy Guide" label of comparable appliances before buying. Properly maintain all appliances, and they will remain efficient.

6.9 Lighting

Many lighting design considerations can lower energy costs significantly. Use reflector type fixtures and bulbs for more light at less wattage. Use task instead of general lighting fixtures when possible. Fluorescent fixtures last 7 to 10 times longer than incandescent fixtures and use about one-third as much energy for the same light output. Timers can be installed to automatically turn lights off when not needed. Keep fixtures clean; dust and dirt on fixtures can lower lighting levels as much as 50%. The easiest way to save on lighting costs is to simply turn lights off when not needed and use natural lighting whenever possible.

Avoid recessing light fixtures into exterior walls or ceilings. These fixtures make installation of the vapor retarder and insulation difficult. Such difficulties often lead to moisture, structural, and heat loss problems.

6.10 Floor Protection

Insulation in floors over piling or post and pad type foundations needs to be protected from direct exposure to the outdoor environment or from destruction by animals. This can be done by covering the underside of the floor with an appropriate material such as plywood sheathing. Without a covering, high winds or animals may pull floor insulation out of place or destroy it altogether. In areas free of permafrost, foundation perimeter skirting will afford similar protection.

6.11 Fireplaces

At best, most fireplaces return only 10 percent of the burning wood's energy to the room while exhausting about 90 percent of the energy up the chimney. To be even 10 percent efficient, the average fireplace will consume about 2400 cubic feet of air (the amount in an average living room) every six minutes!

When fireplaces are not in use, or when a smoldering fire is left to die out overnight, dampers left in the open position will continuously exhaust a tremendous amount of interior air.

To minimize this heat loss, the following recommendations are provided for masonry fireplaces and factory built metal fireplaces:

a. Provide a combustion air intake duct to draw air from outside the building directly into the firebox. The air intake should have six square inches minimum clear cross sectional area and should be equipped with a readily accessible, operable, and tight-fitting damper;

b. Provide a tight fitting, closeable metal or glass door(s) covering the entire opening of the firebox;

c. Some fireplaces are significantly more efficient than others. Check efficiency ratings when shopping.

6.12 Adjustable Door Frames and Thresholds

Expansion and contraction movements and differential settling of the house will render door frames and thresholds out-of-plumb with the door. Adjustable door frames and thresholds allow the homeowner the chance to square the frame and door for a continued tight, effective seal against air leakage.

6.13 Building Design

The following building concepts are examples of good energy conservation design:

a. Orient heat-producing spaces such as kitchens and furnace rooms on the north side of the house;

b. Orient least-used rooms such as bedrooms, closets, and storage spaces on the north side of the house;

c. Orient living spaces on the south side of the house to take advantage of solar energy;

d. Minimize north-facing windows;

e. Locate plumbing fixtures as close to the water heater as possible to minimize heat loss from long pipe runs;

f. Locate water supply and wastewater pipes on interior walls instead of exterior walls to reduce heat loss and potential freeze-up problems;

g. Locate built-ins such as medicine cabinets, towel bars, phone and television outlet boxes on inside walls. This avoids installation difficulties for the vapor retarder and insulation in exterior walls which could lead to moisture, structure, and heat loss problems.

h. Thermal mass such as concrete, bricks, water, steel, tile, or masonry blocks help to store heat and even temperature differences between night and day. Place as much mass as possible where the sun coming through south-facing windows may strike it directly.

i. Darker exterior building colors absorb more solar heat than lighter colors. However, lighter interior colors distribute light throughout the house better than darker colors.

6.14 Site Design

The following site design considerations will help to minimize building heat loss.

a. Minimize the building's exposed envelope area while maximizing interior volume;

b. In areas where solar heat gains can be substantial, it is generally better to shape the building longer on the east/west axis and shorter on the north/south axis;

c. Utilize surrounding surfaces and landscaping materials such as hills, trees, and shrubbery to deflect or reduce winter winds while at the same time increasing summer ventilation possibilities (if needed) and solar heat gains.

d. Utilize ponds, lakes and clear, flat surfaces to the south of the building to enhance reflected solar gains.

CHAPTER 7
DEFINITIONS

The following definitions apply to this Standard.

1. Above-grade Wall. Any portion of a wall more than 12 inches above the adjacent finished grade shall be considered an above grade-wall.

2. Approved. Refers to approval by building officials of materials and types of construction as the result of investigations and tests by them, or by reason of accepted principles or tests by recognized authorities, technical or scientific organizations.

3. ASHRAE. The American Society of Heating, Refrigeration, and Air Conditioning Engineers.

4. ASTM. The American Society for Testing and Materials.

5. Below-grade Wall. Any portion of a wall which extends no more than 12 inches above the adjacent finished grade shall be considered a below grade-wall.

6. British Thermal Unit (Btu). Btu means the approximate amount of heat energy required to raise the temperature of one pound of water by one degree Farenheit.

7. Ceiling. Any group of members which define the boundaries of a space and has a slope of 60 degrees or less with the horizontal plane.

8. CFM. A unit of measure - Cubic Feet per Minute.

9. Conditioned Space. A room or other enclosed space which is intentionally or unintentionally heated and capable of maintaining a temperature of 50 degrees Farenheit or higher. Bedrooms, living rooms, and kitchens are examples of conditioned space.

10. Dry-bulb temperature. Temperature of air as indicated by a standard thermometer, as contrasted with wet-bulb temperature which depends upon atmospheric humidity.

11. Dwelling Unit. A single unit providing complete, independent living facilities for one or more persons, including provisions for sleeping, eating, cooking, and sanitation. Sanitation facilities may be detached from the dwelling unit.

12. **Exterior Envelope.** Those surfaces of a structure which are exposed to conditioned or semiconditioned space on one side and the outdoor environment on the other. This does not include roof eaves/soffits projecting beyond the exterior wall of the structure.

13. **Glazed Area.** Is equal to the frame dimensions for sliding glass doors, windows, or skylights, including the glazing and the sash.

14. **Glazing.** All transparent or translucent materials in the exterior envelope that lets in natural light, including windows, skylights, sliding glass doors, glass brick walls, and the glazed portions of doors.

15. **Gross Ceiling Envelope Area.** The sum of all ceiling envelope areas including the area directly above exterior walls.

16. **Gross Floor Envelope Area.** The sum of all floor envelope areas including basements, mezzanines, and intermediate floored tiers of headroom height, measured from the exterior face of envelope walls or from the center line of walls separating buildings, but not including:

    - Covered walkways, open roofed-over areas, porches, and similar spaces;

    - Exterior terraces or steps, chimneys, roof overhangs, and similar features.

17. **Gross Wall Envelope Area.** The sum of all wall envelope areas including opaque wall areas, window areas, and door areas and measured from the structural subfloor elevation for above grade walls or from the top of the footing for below grade walls up to the junction point with roof/ceiling structural members.

18. **Habitable Space.** Is space in a structure for living, sleeping, eating, or cooking, or which has the potential for such uses, and has a ceiling height of not less than 7 feet 6 inches. Bathrooms, toilet compartments, closets, halls, foyers, storage or utility space, and similar areas are <u>not</u> considered habitable space.

19. **Habitable Story.** The horizontal divisions of a building, extending from the floor to the ceiling or roof lying directly above it, and having the uses of habitable space.

20. Heating Degree Day (HDD_{65}). A unit, based upon temperature difference and time, used in estimating fuel consumption and specifying the nominal heating load of a building in winter. For any one day, when the mean temperature is less than 65 degrees Farenheit, there are as many Heating Degree Days as degrees Farenheit difference in temperature between the mean temperature for the day and 65 degrees Farenheit.

21. Infiltration. The uncontrolled flow of air through holes, openings, cracks and crevices in and around any building element caused by pressure effects of wind and/or the effect of differences in indoor and outdoor air density.

22. New Residential Building. Means a residential building whose construction begins after December 31, 1987 and has been occupied less than one year.

23. Opaque Envelope Area. All exterior envelope areas except openings for glazed area (windows, skylights, or sliding glass doors) or door area.

24. R-value. See "Thermal Resistance (R)."

25. R_o-value. See "Thermal Resistance, overall (R_o)."

26. Semiconditioned Space. A room or other enclosed space which is heated directly or indirectly by the presence of components of a heating system or by thermal transmission from an adjoining conditioned space and kept at a temperature less than 50 degrees Farenheit. Crawl spaces, attached garages, mechanical rooms, and basements are examples of semiconditioned space.

27. Skylight. Any opening in the roof surface which is glazed with a transparent or translucent material, including the frame.

28. Slab-on-grade. Horizontally placed concrete in direct or indirect (as when placed over rigid insulation) contact with the ground and used as a floor within the building envelope.

29. Steady State Efficiency. A measurement taken when the heating system is warmed up and in a state of unchanging ("steady") temperatures throughout the heating appliance and distribution system.

30. Thermal Resistance (R). A measure of the ability of a given material to resist heat flow. R is the numerical reciprocal of U. Thus, R = 1/U. The higher the R, the higher the insulating value. All insulation products having the same R, regardless of material or

thickness, are equal in insulating value; expressed as $(ft^2 \cdot hr \cdot °F)/Btu$. R-values for individual elements can be added to give a total R-value for an assembly.

31. Thermal Resistance, overall (R_o). A measure of the overall ability of a gross area to resist heat flow. Heat may flow through various materials along various parallel paths. R_o is the numerical reciprocal of U_o. Thus, $R_o = 1/U_o$; expressed as $(ft^2 \cdot hr \cdot °F)/Btu$.

32. Thermal Transmission (Q). The quantity of heat flowing from one space to another through an intermediary element (walls, ceilings, floors, pipes, and studs are examples) due to all mechanisms, in unit time, under the conditions prevailing at that time; expressed as Btu/hr.

33. Thermal Transmittance (U). The coefficient of heat transmission (air to air). It is the time rate of heat flow per unit area and unit temperature difference between the warm side and cold side air films, expressed as $Btu/(ft^2 \cdot hr \cdot °F)$. The U-value applies to combinations of different materials used in series along the heat flow path, single materials that comprise a building section, cavity air spaces, and surface air films on both sides of a building element (as applicable). U values cannot be added together to give a total U-value for an assembly.

34. Thermal Transmittance, overall (U_o). The overall thermal transmittance of a gross area of the exterior building envelope, expressed as $Btu/(ft^2 \cdot hr \cdot °F)$. The U_o-value applies to the combined effect of the time rate of heat flow through the various parallel paths, such as windows, doors, and opaque construction areas, comprising the gross area of one or more exterior building envelope assembly such as walls, floors, or roof/ceilings.

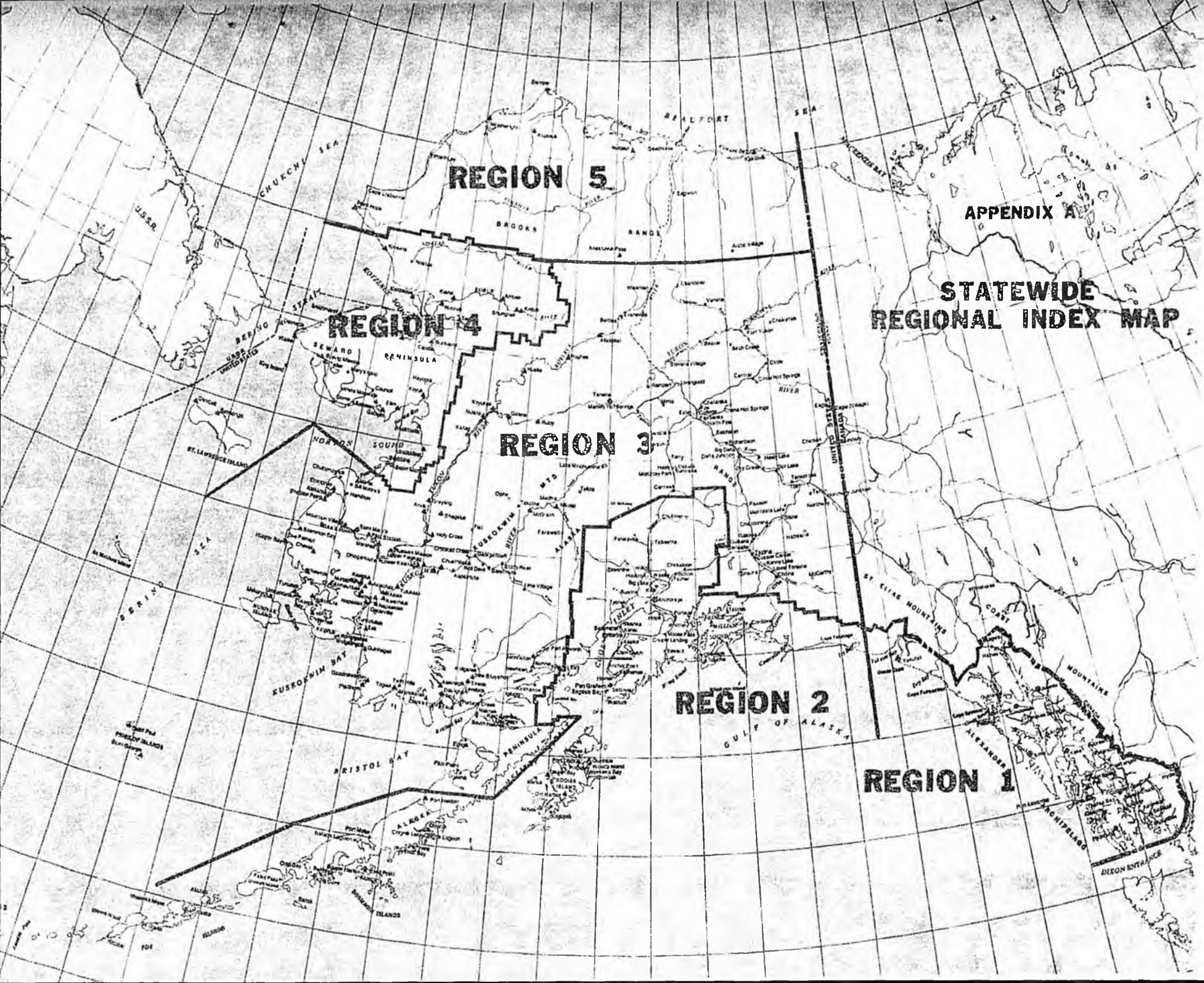
35. Thermostat. An automatic device used to control heating or cooling appliances. Thermostats are actuated by temperature and designed to be responsive to temperature.

36. U-value. See "Thermal Transmittance (U)."

37. U_o-value. See "Thermal Transmittance, overall (U_o)."

38. Wall. Any group of members which define the boundaries of a building or space and has a slope of 60 degrees or greater with the horizontal plane.

39. Window. Any opening (other than a door) in the wall surface which is glazed with a transparent or translucent material, including the framing and sash.


APPENDIX A
STATEWIDE
REGIONAL INDEX MAP
REGION 5
REGION 4
REGION 3
REGION 2
REGION 1
CHUKCHI SEA
BEAUFORT SEA
BROOKS RANGE
SEWARD PENINSULA
NORTON SOUND
BERING SEA
KUSKOKWIM BAY
BRISTOL BAY
ALASKA PENINSULA
GULF OF ALASKA
ALEXANDER ARCHIPELAGO
DIXON ENTRANCE
ST. ELIAS MOUNTAINS
COAST MOUNTAINS
KUSKOKWIM MTS
USSR
UNITED STATES
CANADA

APPENDIX A continued

Statewide Regional Index

For your convenience, the following cities/villages have been grouped according to their appropriate regions. These regions determine the requirements necessary for compliance with the Standard.

REGION 1
SOUTHEAST

Angoon
Annette
Annex Creek
Auke Bay
Baranof
Beaver Falls
Bell Island
Calder
Canyon Island
Chenega
Chichagof
Coffman Cove
Cordova
Craig
Edna Bay
Eldred Rock
Elfin Cove
Five Finger Light Station
Glacier Bay
Gull Cove
Gustavus
Haines
Hollis
Hoonah
Hydaburg
Hyder
Juneau
Kake
Kasaan
Ketchikan
Klawock
Klukwan
Kupreanof
Metlakatla
Myers Chuck
La Touche
Lincoln Rock Light
Little Port Walter
Moose Valley
Ocean Cape
Pelican
Petersburg
Port Alexander
Port Baker
Port Protection
Saxman
Seclusion Harbor
Sitka
Skagway #2
Smuggler Cove
Snettisham
Tatitlek
Tenakee Springs
Thorne Bay
View Cove
Wrangell
Yakutat

REGION 2
SOUTHCENTRAL, ALEUTIAN, KODIAK

Adak
Afognak
Akhiok
Akutan
Anchor Point
Anchorage
Anderson
Atka
Attu
Belkofski
Big Lake
Cape Sarichef
Caswell
Chickaloon
Chignik
Chignik Lake
Chiniak
Chulita
Clam Gulch
Cold Bay
Cold Harbor
Cooper Landing
Cordova
Curry
Diamond Ridge
Driftwood Bay
Dutch Harbor
Eklutna
Elmendorf
English Bay
False Pass
Fort Glenn
Fort Richardson
Girdwood
Homer
Hope
Houston
Ivanoff Bay
Iguigig
Kachemak
Kaguyak
Karluk
Kasigluk
Kasilof
Kenai
Kenney Lake
King Cove
King Salmon
Kipnuk
Knik
Kodiak
Kokhanok
Koliganek
Kotlik
Kulis ANGB
Kwethluk
Kwigillingok
Larsen Bay
Latouche
Lime Village
Lower Kalskag
Manokotak
Marshall
Mat. Ag. Exp.
McGrath
Middleton Island
Moose Pass
Mountain Village
Napakiak
Napamiute
Napaskiak
Naptowne
Nelson Lagoon
Newhalen
New Stuyahok
Newtok
Nightmute
Nikiski Terminal
Ninilchik
Nikolski
Old Harbor
Ouzinkie
Palmer
Perryville
Petersville
Piliar Mountain
Pitka's Point
Portage
Port Graham
Port Heiden
Port Lions
Port Moller
Portlock
Rabbit Creek
Roswell Bay
Salamatof
Sanak
Sand Point
Sawmill
Seldovia
Seward
Shemya
Swentna
Soldotna
Squaw Harbor
Starisky Creek
Sterling
Summit
Susitna
Sutton
Tehneta Pass
Talkeetna
Thompson Pass
Trappers Creek Camp
Tyonek
Unalaska
Unga
Unnak Island
Valdez
Wasilla
Whittier
Willow
Womens Bay
Yakataga Bay

REGION 3
INTERIOR, SOUTHWEST

Akiak
Akiachak
Alakanuk
Aleknagik
Allakaket
Anderson
Aniak
Anvik
Atmautluak
Aurora
Bear Creek
Beaver
Beaver Creek
Bethel
Bettles
Big Delta
Big Mountain
Bill Moore's
Birch Creek
Black Rapids
Boundary
Canyon Creek
Cape Newenham
Cape Romanzof
Cathedral Rapids
Creek #2
Cantwell
Central
Chalkyitsik
Chandalar
Chandalar Lake
Chatanika
Chauthbaluk
Chefornak
Chena Hot Springs
Chevak
Chicken
Chistochina
Chitina
Chuloonawick
Circle
Circle Hot Springs
Clark's Point
Clear
Coldfoot Camp
College
Copper Center
Crooked Creek
Delta Junction
Dillingham
Donnelly
Dot Lake
Dry Creek
Eagle
Eek
Egegik
Eielson
Ekuk
Ekwok
Emmonak
Ernestine
Ester
Eureka
Evansville
Fairbanks
Farewell
Ferry
Fort Greeley
Fort Wainwright
Fort Yukon
Fox
Flat
Gakona
Galena
Gerstle River
Georgetown
Glennallen
Gold King Creek
Goodnews Bay
Grayling
Gulkana
Hamilton
Harding Lake
Healy
Healy Lake
Holy Cross
Hooper Bay
Hughes
Huslia
Iguigig
Iliamna
Indian Mountain
Kalskag
Kaltag
Kanatak
Kasigluk
Kennicott
Kenny Lake
King Salmon
Kipnuk
Knob Ridge
Kokhanok
Koliganek
Kongiganak
Kotlik
Koyukuk
Kwethluk
Kwigillingok
Lake Munchumina
Lime Village
Livengood
Lower Kalskag
Lower Tonsina
Manley Hot Spring
Manokotak
Marshall
May Creek
McCallum
McCarthy
McGrath
McKinley Park
Medfra
Mekoryuk
Mentasta Lake
Minto
Mountain Village
Murphy Dome
Naknek
Napakiak
Napamiute
Napaskiak
Nebesna
Nenana
Newhalen
New Stuyahok
Newtok
Nightmute
Nikolai
Nondalton
North Pole
Northway
Northway Junction
Nulato
Nunapitchuk
Ohogamiute
Ophir
Oscarville
Paimuit
Paxson
Paxson Lake
Pedro Dome
Pilot Point
Pilot Station
Platinum
Port Alsworth
Quinhagak
Rampart
Red Devil
Richardson
Russian Mission
Ruby
Saint George
Saint Mary's
Saint Mathew
Saint Paul Island
Salchaket
Scammon Bay
Shageluk
Sheldon Point
Slana
Sleetmute
Slide Mountain
South Naknek
Sparrevohn
Stevens Village
Stony River
Suntrana
Summit
Takotna
Tanacross
Tanana
Tatalina
Telida
Tetlin
Togiak
Tok
Toksook Bay
Tonsina
Tuluksak
Tununak
Tuntutuliak
Twin Hills
Ugaskik
Upper Kalskag
Usibelli
Unkumiute
Venetie
Wisemen

Statewide Regional Index

REGION 4
NORTHWEST
Ambler
Anvil Mountain
Brevig Mission
Buckland
Candle
Council
Deering
Diomede
Elim
Gambell
Golovin
Granite Mountain
Haycock
Kalakaket Creek
Kiana
King Island
Kivalina
Kobuk
Kotzebue
Koyuk
Mary's Igloo
Moses Point
Noatak
Nome
Noorvik
Northeast Cape
North River
Savoonga
Selawik
Shaktoolik
Shishmaref
Shungnak
Solomon
Stebbins
St. Michael
Teller
Tin City
Unalakleet
Wales
White Mountain

REGION 5
ARCTIC SLOPE
Anaktuvuk Pass
Arctic Village
Atqasut
Barrow
Cape Lisburne
Deadhorse
Kaktovik
Nuiqsut
Oliktok
Point Hope
Point Lay
Prudhoe Bay
Sagwon
Umiat
Wainwright

APPENDIX B
Statewide Climate Data

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	97½ % WIND PVLG DIR	97½ % WIND MEAN SPEED MPH
1 SOUTHEAST							
Angoon	57-30	134-35	8,511 ***	----	41.6	SE	----
Annette WSO AP	55-02	131-34	7,132 *	17	45.7	SSE	10.8
Annex Creek	58-19	134-06	9,312 *	----	39.8	SE	----
Auke Bay	58-23	134-39	8,906 ***	----	40.6	---	----
Baranof	57-05	134-50	8,651 ***	----	41.3	---	----
Beaver Falls	55-23	131-28	7,557 *	----	44.2	---	----
Bell Island	55-56	131-34	7,811 ***	----	43.6	---	----
Calder	56-10	133-27	7,994 ***	----	43.1	---	----
Canyon Island	58-43	133-40	9,417 ***	----	39.2	---	----
Chichagof	57-39	136-05	8,432 ***	----	41.9	---	----
Craig	55-22	133-09	7,337 ***	----	44.9	SE	----
Eldred Rock	58-58	135-13	8,651 ***	----	41.3	SW	----
Five Finger Light Station	57-16	133-37	8,080 *	----	42.9	SSE	----
Glacier Bay	58-22	136-00	9,271 ***	----	39.6	---	----
Gull Cove	58-12	136-09	8,687 ***	----	41.2	---	----
Gustavus	58-24	135-44	8,797 ***	----	40.9	---	----
Hollis	55-29	132-40	7,264 ***	----	45.1	---	----
Hoonah	58-07	135-25	9,552 **	0	----	---	----
Hydaburg	55-12	132-49	7,008 ***	----	45.8	---	----
Juneau WSO AP	58-22	134-35	9,105 *	1	40.3	ESE	8.6
Kake	56-58	133-56	8,359 ***	----	42.1	---	----
Ketchikan	55-21	131-39	7,065 *	----	46.2	SE	----
Klukwan	59-24	135-53	10,476 ***	----	36.3	---	----
Lincoln Rock Light	56-03	132-41	7,373 ***	----	44.8	---	----
Little Port Walter	56-23	134-39	8,119 *	----	42.8	N	----
Moose Valley	59-26	136-05	10,658 ***	----	35.8	---	----
Ocean Cape	59-32	139-51	9,533 **	5	----	---	----
Pelican	57-57	136-13	8,833 ***	----	40.8	---	----
Petersburg	56-49	132-57	8,508 *	----	41.9	SW	----
Port Alexander	56-15	133-38	7,702 ***	----	43.9	---	----
Skagway #2	59-27	135-18	8,833 ***	----	40.8	---	----
Seclusion Harbor	56-33	133-52	7,957 ***	----	43.2	---	----
Sitka FAA AP	57-04	135-21	7,509 *	17	44.1	---	----
Smuggler Cove	55-05	131-35	7,053 **	17	----	---	----
Snettisham	57-59	133-47	10,366 ***	----	36.6	---	----
Tenakee Springs	57-46	135-13	8,359 ***	----	42.1	---	----
View Cove	55-03	132-59	6,826 ***	----	46.3	---	----
Wrangell	56-28	132-23	8,197 *	----	43.0	SE	----
Yakutat WSO AP	59-31	139-40	9,605 *	5	38.8	E	7.7

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	97½ % WIND PVLG DIR	97½ % WIND MEAN SPEED MPH
2 SOUTHCENTRAL, ALEUTIAN, KODIAK							
Anchorage WSO AP	61-10	150-01	10,816 *	- 18	35.0	NNE	6.7
Big Lake	61-33	149-52	11,753 ***	----	32.8	---	----
Caswell	61-58	150-02	12,410 ***	----	31.0	---	----
Chickaloon	61-47	148-28	11,790 ***	----	32.7	---	----
Clam Gulch	60-13	151-25	11,375 **	- 21		---	----
Cordova FAA AP	60-30	145-30	9,837 *	- 2	38.2	---	----
Curry	62-37	150-00	10,987 ***	----	34.9	---	----
Diamond Ridge	59-41	151-37	10,394 **	2		---	----
Eklutna	61-28	149-22	10,987 ***	----	34.9	---	----
Elmendorf AFB	61-15	149-48	10,940 *	- 16	35.1	---	----
Fort Richardson/ Bryant AAF	61-16	149-39	10,722 **	- 16		---	----
Girdwood	60-56	149-10	10,478 ***	----	36.3	---	----
Homer WSO	59-38	151-30	10,349 *	- 2	36.5	NE	6.5
Kasilof	60-19	151-15	11,502 *	----	34.1	---	----
Kenai FAA AP	60-34	151-15	11,609 *	- 23	33.1	N	6.6
Kenney Lake	61-43	144-56	14,199 ***	----	26.1	---	----
Kulis ANGB	61-10	149-59	10,911 **	- 18		---	----
Latouche	60-03	147-54	8,614 ***	----	41.4	---	----
Mat. Ag. Exp.	61-34	149-16	10,849 ***	----	35.2	NE	----
Middleton Island	59-27	146-18	8,188 **	21	42.3	ESE	13.8
Moose Pass	60-29	149-22	11,315 ***	----	34.0	----	----
Naptowne	60-32	150-35	12,054 **	- 26		---	----
Neklason Lake	61-37	149-15	11,220 **	- 22		---	----
Nikiski Terminal	60-41	151-24	11,060 ***	----	34.7	---	----
Ninilchik	60-03	151-40	11,352 ***	- 24	33.9	---	----
Palmer AAES	61-36	149-06	11,081 *	----		---	----
Portage	60-50	148-58	10,293 ***	----	36.8	---	----
Rabbit Creek	61-05	149-44	10,814 **	- 13		---	----
Roswe. Bay AFS	60-25	146-09	9,765 **	0		---	----
Sawmil	61-48	148-19	13,531 **	- 18		---	----
Seward	60-07	149-27	9,350 *	7	39.6	---	----
Soldotna	60-32	151-05	11,615 **	- 23	32.5	---	----
Starisky Creek	59-33	151-47	10,855 **	- 20		---	----
Sterling	60-32	150-45	12,118 ***	- 24	31.8	---	----
Summit WSO	63-19	149-07	14,368 ***	----	25.5	NE	9.7
Susitna	61-32	150-30	10,731 ***	----	35.6	---	----
Tahneta Pass	61-50	149-19	14,361 **	- 18		---	----
Talkeetna WSO	62-18	150-06	11,804 *	----	32.8	---	----
Thompson Pass	61-07	145-43	13,323 ***	----	28.5	---	----
Trappers Creek Camp	61-51	150-22	11,863 ***	----	32.5	---	----
Valdez WSO	61-08	146-21	9,711 *	----	36.0	---	----
Whittier	60-47	148-41	9,444 **	5	38.7	---	----
Yakataga	60-04	142-25	9,222 **	10	34.1	ESE	7.1

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	97½ % WIND PVLG DIR	 MEAN SPEED MPH
2 SOUTHCENTRAL, ALEUTIAN, KODIAK (continued)							
Adak	51-53	176-39	8,938 *	23	40.8	W	14.5
Atka	52-12	174-12	9,054 ***	----	40.2	---	----
Attu/Casco Cove CGS	52-50	173E10	8,339 **	22		---	----
Cape Sarichef	54-36	164-55	9,985 **	12		---	----
Chignik	56-18	158-24	10,001 ***	----	37.6	---	----
Cold Bay AFS	55-12	162-43	9,877 *	9	37.9	---	----
Cold Harbor	55-20	160-36	9,490 ***	----	39.0	---	----
Driftwood Bay AFS	53-58	166-53	10,637 **	11		---	----
Dutch Harbor	53-53	166-32	9,197 **	16	40.5	SE	11.0
Nikolski AFS	52-58	168-51	9,555 **	21		---	----
Port Heiden	56-59	158-38	10,441 **	- 6	35.7	S	----
Port Moller	55-59	160-30	10,290 **	- 1	34.3	---	10.0
Sand Point	55-20	160-30	9,271 ***	----	39.6	---	----
Shemya AFB	52-43	174E05	9,573 **	24	39.7	SE	----
Kodiak WSO	57-45	152-30	8,837 *	13	40.7	---	----
Larsen Bay	57-32	153-58	9.160 ***	----	39.9	---	----
Old Harbor	57-12	153-18	8,614 ***	----	41.4	---	----
Pillar Mountain	57-47	152-26	9,925 **	10		---	----

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	97½ % WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	WIND PVLG DIR	WIND MEAN SPEED MPH
3 INTERIOR, SOUTHWEST							
Allakaket	66-34	152-32	16,608 ***	---	19.5	E	----
Aurora	62-24	145-02	13,593 **	- 37	---	---	----
Bear Creek	65-15	151-55	13,861 **	- 35	---	---	----
Beaver Creek	63-03	141-49	14,770 **	- 47	---	---	----
Bettles WSO AP	66-55	151-31	15,959 *	- 45	---	NNW	6.7
Big Delta	64-00	145-44	13,697 *	- 43	---	---	----
Black Rapids	63-29	145-50	12,553 **	- 30	---	---	----
Boundary	64-04	141-06	15,586 ***	---	22.3	---	----
Canyon Creek	64-18	146-32	13,298 **	- 37	---	---	----
Cathedral Rapids Creek #2	63-23	143-47	15,275 **	- 51	23.9	---	----
Chandalar Lake	67-30	143-30	17,739 ***	---	16.4	---	----
Chena Hot Springs	65-03	146-03	15,403 ***	---	22.8	---	----
Chistochina	62-34	144-40	13,834 ***	---	27.1	---	----
Chitina	61-31	144-26	13,140 ***	---	29.0	---	----
Circle Hot Springs	65-29	144-38	15,671 ***	---	22.0	SW	----
Clear	64-20	149-10	15,330 ***	---	23.0	---	----
Coldfoot Camp	67-15	150-11	18,068 ***	---	15.5	---	----
Delta Junction	64-02	145-44	14,235 ***	- 43	26.0	ESE	8.1
Donnelly	63-47	145-51	12,683 **	- 30	---	---	----
Dot Lake	63-39	144-04	14,162 ***	---	26.2	---	----
Eielson AFB	64-40	147-06	14,498 **	- 48	25.1	W	3.5
Ernestine	61-26	145-06	13,980 ***	---	26.7	---	----
Eureka	65-11	150-13	14,892 ***	---	24.2	---	----
Fairbanks WSO AP	64-49	147-52	14,274 *	- 47	25.7	SW	5.3
Fort Greely	63-58	145-44	13,698 **	- 43	---	---	----
Fort Wainwright	64-50	147-37	14,345 **	- 47	---	---	----
Fort Yukon AFS	66-34	145-15	16,084 **	- 57	20.4	NE	8.1
Gakona	62-18	145-18	15,038 ***	---	23.8	---	----
Galena	64-44	156-56	15,087 **	- 46		---	----
Gerstle River	63-48	145-00	13,398 **	- 41	---	---	----
Glennallen	62-07	145-33	14,892 ***	---	24.2	---	----
Gold King Creek	64-12	149-55	13,364 **	- 35	---	---	----
Gulkana	62-16	145-23	13,938 ***	---	26.8	NE	----
Gulkana WSO	62-09	145-27	14,004 *	- 40	---	NE	6.8
Harding Lake	64-24	146-57	13,398 **	- 41	---	---	----
Healy	63-51	148-58	12,775 ***	---	30.0	---	----
Indian Mountain AFS	66-00	153-42	15,169 **	- 40	23.5	ENE	5.8
Kennicott	61-29	142-53	12,702 ***	---	30.2	---	----
Knob Ridge	63-38	144-03	15,080 **	- 49	---	---	----
Manley Hot Springs	65-00	150-38	14,783 ***	---	24.5	N	----
May Creek	61-21	142-41	14,381 ***	---	25.6	---	----
McCallum	63-14	145-38	13,343 **	- 36	---	---	----

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	97½ % WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	WIND PVLG DIR	WIND MEAN SPEED MPH
3 INTERIOR, SOUTHWEST (continued)							
McCarthy	61-26	142-55	11,899 ***	---	32.4	---	----
McGrath WSO AP	62-58	155-37	14,574 *	- 47	25.2	N	4.9
McKinley Park	63-43	148-58	14,152 *	----	26.9	SE	----
Murphy Dome AFS	64-57	148-21	13,795 **	- 32	---	---	----
Nenana	64-33	149-05	14,539 **	- 50	25.1	---	----
Nikolai	62-58	154-09	15,075 ***	---	23.7	---	----
North Pole	64-45	147-21	15,403 ***	---	22.8	---	----
Northway FAA AP	62-57	141-56	15,855 *	- 53	22.4	---	----
Paxson Lake	62-58	145-28	13,483 **	- 25		---	----
Pedro Dome	65-02	147-30	13,600 **	- 33		---	----
Slide Mountain	62-01	146-50	15,148 ***	---	25.3	---	----
Summit	63-20	149-08	14,368 **	- 30		NE	9.7
Tanana WSO	65-10	152-06	15,229 *	- 48		---	----
Tatalina AFS	62-54	155-58	13,453 **	- 28	28.1	---	----
Tok	63-20	142-59	15,732 ***	- 54	24.9	---	----
Aniak	61-35	159-32	13,412 **	- 39	28.2	ESE	6.9
Bethel	60-47	161-47	13,213 ***	- 39	28.7	NNE	12.9
Bethel WSO AP	60-47	161-48	13,334 *	- 28		NNE	12.9
Big Mountain	59-23	155-13	12,144 **	- 13		---	----
Cape Newenham AFS	58-39	162-04	11,481 **	- 11		---	----
Cape Romanzof	61-47	166-02	13,130 **	- 14		---	----
Crooked Creek	61-52	158-06	13,432 ***	---	28.2	---	----
Dillingham	59-02	158-27	11,279 ***	---	34.1	N	----
Holy Cross	62-12	159-46	13,067 ***	---	29.2	NW	----
Iliamna	59-45	154-55	12,144 **	- 19	33.3	ESE	10.4
Kalskag	61-32	160-18	13,323 ***	---	28.5	NE	----
Kanatak	57-34	156-02	8,468 ***	---	41.8	---	----
King Salmon WSO AP	58-41	156-39	11,716 *	- 22	33.2	N	11.0
Mekoryuk	60-23	166-11	13,031 ***	---	29.3	---	----
Naknek	58-45	157-00	11,133 **	- 12		---	----
Port Alsworth	60-12	154-19	11,607 ***	---	33.2	---	----
Sparrevohn AFS	61-06	155-35	12,982 **	- 26	29.4	---	----
St. George	56-36	169-32	10,476 ***	---	36.3	---	----
St. Mary's	62-04	163-11	12,870 ***		29.7		
St. Paul Island WSO AP	57-09	170-13	11,178 *	4	34.5	NW	18.4

REGION NUMBER REGION NAME STATION	LATITUDE DEG-MIN	LONGITUDE DEG-MIN	ANNUAL HEATING DEGREE DAYS, 65°F	97½ % WINTER DESIGN DRY BULB TEMP.,°F	MEAN ANNUAL TEMP.,°F	WIND PVLG DIR	WIND MEAN SPEED MPH
4 NORTHWEST							
Anvil Mountain	64-34	165-22	14,555 **	- 27		---	----
Candle	65-55	161-56	16,462 ***	---	19.9	N	----
Gambell	63-47	171-45	14,892 ***	---	24.2	N	16.8
Golovin	64-33	163-02	13,943 ***	---	26.8	NW	----
Granite Mountain	65-26	161-14	14,986 **	- 32		---	----
Kalakaket Creek	64-26	156-50	13,942 **	- 32		---	----
Kobuk	66-55	156-52	16,133 ***	---	20.8	---	----
Kotzebue WSO AP	66-52	162-38	16,032 *	- 37	20.9	E	13.0
Moses Point	64-42	162-03	14,505 **	- 35	24.9	NNE	----
Nome WSO AP	64-30	165-26	14,371 *	- 27	25.6	WSW	11.0
Noorvik	66-50	161-30	------ ***	---	-----	---	----
Northeast Cape	63-18	168-42	14,418 ***	- 20	25.5	SE	12.9
North River	63-53	160-31	14,027 **	- 33		---	----
Savoonga	63-42	170-29	15,148 ***	---	23.5	---	----
Shishmaref	66-15	166-04	16,316 ***	---	20.3	N	----
Shungnak	66-52	157-09	15,586 ***	---	22.3	---	----
St. Michael	63-29	162-02	14,272 ***	---	25.9	N	----
Tin City AFS	65-34	167-55	16,192 **	- 27	21.0	NW	17.5
Unalakleet	63-53	160-48	14,027 **	- 34	26.4	E	12.7
Wales	65-37	168-05	15,987 ***	---	21.2	NE	----
White Mountain	64-41	163-24	13,578 ***	---	27.8	N	----
5 ARCTIC SLOPE							
Anaktuvuk Pass	-----	------	18,873 ***	----	13.3	---	----
Arctic Village	68-08	145-32	18,433 ***	---	14.5	---	----
Barrow	71-18	156-47	20,265 *	- 41	9.3	W	11.9
Cape Lisburne AFS	68-53	166-07	17,063 **	- 31	18.1	S	12.5
Oliktok	70-31	149-53	20,265 **	- 41	---	---	----
Point Hope	68-21	166-47	16,973 ***	---	18.5	---	----
Point Lay	69-44	163-01	19,194 **	- 37	12.5	NE	----
Prudhoe Bay	-----	------	19,749 ***	----	10.2	NE	10.0
Umiat	-----	------	19,966 ***	----	10.3	W	7.7
Wainwright	70-36	159-53	19,991 **	- 41	10.9	E	----

NOTES

1. Annual Heating Degree Days

*Annual heating degree day normals (Base 65°F) from "Monthly Normals of Temperature, Precipitation, and Heating and Cooling Degree Days 1951 - 80 Alaska;" Climatography of the United States No. 81; National Climate Center, Asheville, N.C. Sept. 1982, except as noted. The normal of a climatological element is the arithmetic mean computed over the time period indicated. Heating degree day data from this publication was given priority over data from the following two sources for identical stations.

**Annual heating degree days from Air Force Manual of Engineering Weather Data for Facility Design and Planning (AFM-88-29), July 1, 1978. Heating degree days are the mean annual number of degree days using a base of 65°F and a 30-year period of record when available.

***Annual heating degree days from Jim Wise, State Climatologist, Arctic Environmental Information Data Center (AEIDC).

2. Design temperatures from Air Force Manual of Engineering Weather Data for Facility Design and Planning (AFM-88-29), July 1, 1978. Design temperatures for the Alaskan stations listed in ASHRAE's Handbook of Fundamentals 1981, correlate identically with those values listed in AFM-88-29.

3. Mean annual temperature from Jim Wise, State Climatologist, Arctic Environmental Information Data Center (AEIDC), Anchorage, Alaska.

4. Wind Speed and direction is coincident with average winter temperatures. From Jim Wise, AEIDC.

5. This compilation of climatological data was prepared by Stuart Brooks, Office of Energy Programs, Division of Community Development, Department of Community and Regional Affairs, State of Alaska, October 22, 1985.

APPENDIX C

Thermal Properties of Typical Building and Insulating Materials

The following tables provide information useful in determining compliance with this Standard. Much of the information was reprinted with permission from the ASHRAE Handbook of Fundamentals, 1985 edition. Information from these tables, or specific manufacturer's data may be used to verify compliance.

1. THERMAL PROPERTIES OF TYPICAL BUILDING AND INSULATING MATERIALS - (DESIGN VALUES)[1]

(These constants are expressed in Btu/ft^2·hr·°F). Resistance (R) is for the thickness listed or per inch thickness. All values are for a mean temperature of 75°F, except as noted by an (*) which have been reported at 45°F.)

Description	Density (lb/ft^3)	Resistance (R) Per Inch Thickness	Resistance (R) For Thickness listed	Specific Heat, Btu/(lb)(deg F)
Building Board				
Boards, Panels, Subflooring, Sheathing, Woodboard Panel Products				
Gypsum or plaster board ..... 0.375 in.(3/8")	50	-	0.32	0.26
Gypsum or plaster board ..... 0.5 in.(½")	50	-	0.45	
Gypsum or plaster board ..... 0.625 in.(5/8")	50	-	0.56	
Plywood (Douglas fir)	34	1.25	-	0.29
Plywood (Douglas fir) ..... 0.25 in.(¼")	34	-	0.31	
Plywood (Douglas fir)..... 0.3125 in.(5/16")	34	-	0.39	
Plywood (Douglas fir) ..... 0.375 in.(3/8")	34		0.47	
Plywood (Douglas fir)..... 0.4375 in.(7/16")	34	-	0.55	
Plywood (Douglas fir) ..... 0.5 in.(½")	34		0.62	
Plywood (Douglas fir) ..... 0.625 in.(5/8")	34	-	0.77	
Plywood or wood panels ..... 0.75 in.(3/4")	34	-	0.93	0.29
Hard Board				
Medium density	50	1.37	-	0.31
High density, service temp. service underlay	55	1.22	-	0.32
High density, std. tempered.....	63	1.00	-	0.32
Particleboard				
Low density.....	37	1.85	-	0.31
Medium density	50	1.06	-	0.31
High density	62.5	0.85	-	0.31
Underlayment ..... 0.625 in.	40	-	0.82	0.29
Building Membrane				
Vapor-permeable felt, 15#	0	-	0.06	
Vapor-seal, 2 layers of mopped 15-lb felt.....	-	-	0.12	
Vapor-seal, plastic film	-	-	Negl.	

Description	Density (lb/ft^3)	Resistance (R) Per Inch Thickness	Resistance (R) For Thickness listed	Specific Heat, Btu/(lb) (deg F)
Finish Flooring Materials				
Carpet and fibrous pad.....	-	-	2.08	0.34
Carpet and rubber pad	-	-	1.23	0.33
Cork tile ..... 0.125 in.	-	-	0.28	0.48
Terrazzo ..... 1 in.	-	-	0.08	0.19
Tile-asphalt, linoleum,				
vinyl, rubber	-	-	0.05	0.30
ceramic				0.19
Wood, hardwood fin. 0.75 in.			0.68	
Insulating Materials				
Blanket and Batt [2, 3]				
Mineral fiber, fibrous form processed from rock, slag or glass				
approx. 2-2.75 in.	0.3-2.0	-	7	0.17-0.23
approx. 3-3.5 in.	0.3-2.0	-	11	
approx. 3.5-6.5 in.	0.3-2.0	-	19	
approx. 6-7in.	0.3-2.0	-	22	
approx. 8.5-9 in.	0.3-2.0	-	30	
approx. 12 in.		-	38	
Board and Slabs [4]				
Cellular glass	8.5	2.63	-	0.24
Glass fiber, organic bonded..	4-9	4.00	-	0.23
Expanded polystyrene extruded				
Cut cell surface	1.8	4.00	-	0.29
Smooth skin surface	2.2	5.00	-	0.29
Smooth skin surface	3.5	5.26	-	
Expanded polystyrene, molded				
beads	1.0	3.85	-	-
	1.25	3.90-4.0	-	
	1.5	4.17	-	-
	1.75	4.17	-	-
	2.0	4.35	-	-
Cellular polyurethane				
unfaced.....	1.5	6.25	-	0.38
faced [10]	1.5	7.14	-	
Polysiocyanurate, faced [10]	2	7.04	-	0.22
Nominal 0.5 in.		-	3.6	
Nominal 1.0 in.			7.2	
Nominal 2.0 in.			14.4	

Description	Density (lb/ft^3)	Resistance (R) Per Inch Thickness	Resistance (R) For Thickness listed	Specific Heat, Btu/(lb)(deg F)
Loose Fill				
Cellulosic insulation (milled paper or wood pulp)	2.3-3.2	3.13-3.70	-	0.33
Perlite, expanded	5.0-8.0	2.70	-	0.26
Mineral fiber (rock, slag or glass)[3]				
approx. 3.75-5 in.	0.6-2.0		11	0.17
approx. 6.5-8.75 in.	0.6-2.0		19	
approx. 7.5-10 in.	0.6-2.0		22	
approx. 10.25-13.75 in.	0.6-2.0		30	
Vermiculite, exfoliated	7.0-8.2	2.13	-	3.20
	4.0-6.0	2.27	-	
Masonry Materials				
Concretes				
Cement mortar	116	0.20	-	
Lightweight concrete	120	0.19	-	
	100	0.28	-	
	80	0.40	-	
Perlite, expanded	40	1.08		
	30	1.41		
	20	2.00		0.32
Normal-weight concrete	135	0.11		0.22
	160	0.08		
Stucco	116	0.20		
Masonry Units				
Brick, common[5]	120	0.20	-	0.19
Brick, face[5]	130	0.11	-	
Clay tile, hollow:				
1 cell deep 4 in.	-	-	1.11	
2 cells deep 6 in.	-	-	1.52	
2 cells deep 8 in.	-	-	1.85	
2 cells deep 10 in.	-	-	2.22	
3 cells deep 12 in.	-	-	2.50	
Concrete blocks, three oval core:				
Sand and gravel aggregate 4 in.	-	-	0.71	0.22
8 in.	-	-	0.11	
12 in.	-	-	1.28	
Cinder aggregate 4 in.	-	-	1.11	
8 in.	-	-	1.72	
12 in.	-	-	1.89	

Description	Density (lb/ft^3)	Resistance (R) Per Inch Thickness	Resistance (R) For Thickness listed	Specific Heat, Btu/(lb) (deg F)
Masonry Units (continued)				
Concrete blocks, rectangular core[6]				
Sand and gravel aggregate				
2 core, 8 in. 36 lb[7]	-	-	1.04	0.22
Same with filled core[8]	-	-	1.93	0.22
Stone, lime or sand	-	0.08	-	0.19
Plastering Materials				
Cement plaster, sand aggregate	116	0.20	-	0.20
Sand aggregate 0.375 in.	-	-	0.08	0.20
Sand aggregate 0.75 in.	-	-	0.15	0.20
Gypsum plaster:				
Lightweight aggregate 0.5 in.	45	-	0.32	
Lightweight aggregate 0.625 in.	45	-	0.39	
Lightweight aggregate on metal lath 0.75 in.	-	-	0.47	
Perlite aggregate	45	0.67	-	0.32
Sand aggregate	105	0.18	-	0.20
Sand aggregate 0.5 in.	105	-	0.09	
Sand aggregate 0.625 in.	105	-	0.11	
Sand aggregate on metal lath 0.75 in.	-		0.13	
Vermiculite aggregate	45	0.59	-	
Roofing				
Asbestos-cement shingles	120	-	0.21	0.24
Asphalt roll roofing	70	-	0.15	0.36
Asphalt shingles	70	-	0.44	0.30
Built-up roofing 0.375 in.	70	-	0.33	0.35
Wood shingles, plain and plastic film faced	-	-	0.94	0.31
Siding Materials (On Flat Surface)				
Shingles				
Wood, 16 in., 7.5 in. exposure	-	-	0.87	0.31
Wood, double, 16-in., 12-in. exposure	-	-	1.19	0.28
Wood, plus insul. backer board, 0.3125 in.	-	-	1.40	0.31

Description	Density (lb/ft^3)	Resistance (R) Per Inch Thickness	Resistance (R) For Thickness listed	Specific Heat, Btu/(lb) (deg F)
Siding Materials (On Flat Surface) (continued)				
Siding				
Wood, drop, 1 x 8 in.	-	-	0.79	0.28
Wood, bevel, 0.5 x 8 in., lapped	-	-	0.81	0.28
Wood bevel, 0.75 x 10 in., lapped	-	-	1.05	0.28
Wood, plywood, 0.375 in., lapped	-	-	0.59	0.29
Wood, medium density siding, 0.4375 in. [9]	40	0.67		0.28
Aluminum or Steel, over sheathing				
Hollow-backed	-	-	0.61	0.29
Insulating-board backed nominal 0.375 in.	-	-	1.82	0.32
Insulating-board backed nominal 0.375 in., foil backed			2.96	
Woods				
Maple, oak, and similar hardboards	45	0.91	-	0.30
Fir, pine, and similar softboards	32	1.25	-	0.33
0.75 in.	32	-	0.94	0.33
1.5 in.		-	1.89	
2.5 in.		-	3.12	
3.5 in.		-	4.35	
Logs [11]				
6" 3-Sq log	167	-	8.40	-
8" Milled log	150	-	8.90	-
8" 3-Sq log	297	-	9.20	-
9" Milled log	153	-	10.70	-
12" Turned log	199	-	11.80	-
14" Turned log	240	-	13.70	-
16" Turned log	274	-	15.70	-

NOTES:

1. Representative values for dry materials were selected by ASHRAE TC 4.4, Thermal Insulation and Moisture Retarders (Total Thermal Performance Design Criteria). They are intended as design (not specification) values for materials in normal use. Insulation materials in actual service may have thermal values which vary from design values depending on their insitu properties such as density and moisture content. For properties of a particular product, use the value supplied by the manufacturer or by unbiased tests.

2. Does not include paper backing and facing, if any.

3. Conductivity varies with fiber diameter. Also, insulation is produced in different densities; therefore, there is some variation in overall batt thickness for the same nominal R-value among manufacturers. Relating specific R-values to specific thicknesses should be nominal only.

4. Values are for aged, board stock.

5. Face brick and common brick do not always have these specific densities. When density is different from that shown, there will be a change in thermal conductivity.

6. Data on rectangular core concrete block differ from the above data on oval core blocks due to core configuration, different mean temperatures, and possibly differences in unit weights. Weight data on the oval core blocks tested are not available.

7. Weights of units approximately 7.625 in. high and 15.75 in. long. These weights are given as a means of describing the blocks tested, but conductance values are all for 1 ft^2 of area.

8. Vermiculite, perlite, or mineral wood insulation. Where insulation is used, vapor barriers or other precautions must be considered to keep insulation dry.

9. Values for metal siding applied over flat surfaces vary widely, depending on amount of ventilation of air space beneath the siding; whether air space is reflective or nonreflective; and on thickness, type, and application of insulating backing-board used. Values given are averages for use as design guides, and were obtained from several guarded hotbox tests (ASTM C236) or calibrated hotbox (BSS 77) on hollow-backed types and types made using backing-boards of wood fiber, foamed plastic, and glass fiber. Departures of ±50% or more from the values given may occur.

10. Time-aged values for board stock with aluminum foil facers on two major surfaces.

11. Moisture content of logs at 15 percent. From Axel Carlson, Professor Emeritus, University of Alaska.

2. R-VALUES OF WOOD DOORS (U = 1/R)

Nominal Thickness	Description	Winter[1] No Storm Door	Summer[2] No Storm Door
1-3/8 in.	Solid core flush door	2.56	2.63
1-3/8 in.	Panel door with 7/16-in. panels	1.75	1.85
1-3/4 in.	Solid core flush door	3.03	3.12
	With single glazing[3]	2.17	2.72
	With insulating glass[3]	2.70	2.78
1-3/4 in.	Panel door with 7/16-in. panels[4]	1.85	1.92
	With single glazing[5]	1.49	1.58
	With insulating glass[5]	2.00	2.08
1-3/4 in.	Panel door with 1-1/8-in. panels[4]	2.56	2.63
	With single glazing[5]	1.64	1.72
	With insulating glass[5]	2.72	2.38

NOTES:

Values for doors are based on nominal 3'0" x 6'8" door size. Interpolation and moderate extrapolation are permitted for glazing areas and door thicknesses other than those specified.

1. 15 mph outdoor air velocity; 0°F outdoor air temperature; 70°F inside air temperature; natural convection.

2. 7.5 mph outdoor air velocity; 89°F outdoor air temperature; 75°F inside air temperature; natural convection.

3. 17 percent exposed glass area; insulating glass contains 0.25 inch air space.

4. 55 percent panel area.

5. 33 percent glass area; 22 percent panel area; insulating glass contains 0.25 inch air space.

3. R-VALUES OF WINDOWS, SKYLIGHTS AND LIGHT-TRANSMITTING PARTITIONS (U = 1/R)

(These values are for heat transfer from air to air)

PART A[1] - Exterior Vertical Panels (Windows, Sliding Patio Doors, and Partitions), Flat Glass, Plastic Sheet and Glass Block.

Description	No Storm Sash	
	Winter	Summer
Flat Glass[2]		
Single Glass	0.91	0.96
Insulating Glass; Double[3]		
3/16 in. air space[4]	1.61	1.54
1/4 in. air space[4]	1.69	1.64
1/2 in. air space[5]	2.04	1.76
1/2 inc. air space, low emittance coating[6]		
e = 0.20	3.12	2.63
e = 0.40	2.63	2.08
e = 0.60	2.32	1.96
Insulating Glass; Triple[3]		
1/4 in. air spaces[4]	2.56	2.72
1/2 in. air spaces[7]	3.22	2.56
Storm Windows		
1-in. to 4-in air space[4]	2.00	2.00
Plastic Sheet		
Single Glazed		
1/8 in. thick	0.94	1.02
1/4 in. thick	1.04	1.12
1/2 in. thick	1.23	1.31
Insulating Unit; Double[3]		
1/4 in. air space[4]	1.82	1.78
1/2 in. air space[3]	2.32	2.22
Glass Block[8]		
6 x 6 x 4 in. thick	1.67	1.75
8 x 8 x 4 in. thick-with cavity divider	1.78	1.85
	2.08	2.17
12 x 12 x 4 in. thick-with cavity divider	1.92	2.00
	2.72	2.38
12 x 12 x 2 in. thick	1.67	1.75

PART B-Exterior Horizontal Panels (Skylights)-Flat Glass and Plastic Domes

Description	Winter[9]	Summer[10]
Flat Glass[5]		
Single Glass	1.11	1.20
Insulating Glass; Double[3]		
3/16 in. air space[4]	1.43	1.75
¼ in. air space[4]	1.54	1.85
½ in. air space[3]	1.69	2.04
½ in. air space, low emittance coating[6]		
e = 0.20	2.08	2.78
e = 0.40	1.92	2.38
e = 0.60	1.78	2.17
Plastic Domes[11]		
Single walled	0.87	1.25
Double walled	1.43	2.17

PART C - Adjustment Factors for Various Window and Sliding Patio Door Types (Multiply U-values in Parts A and B By These Factors)

Description	Single Glass	Double Insulating Glass	Triple Insulating Glass	Storm Sash Over Double or Triple Insulating Glass
Windows				
All Glass[12]	1.00	1.00	1.00	1.00
Wood frame-80% glass	0.85-0.95	0.90-1.00	0.95-1.00	0.95-1.00
Wood frame-60% glass	0.80	0.85	0.80	0.80
Metal frame-80% glass	1.00-1.10	1.20-1.30	1.30-1.50	1.30-1.50
Thermally improved metal frame	0.90-1.00	0.95-1.15	1.00-1.25	0.95-1.25
Sliding Patio Doors				
Wood frame	0.95	1.00	-	
Metal frame	1.00	1.10[13]	-	

NOTES: 1. See Part C for adjustments for various window and sliding patio door types. Window manufacturers should be consulted for specific data.
2. Emittance of uncoated glass surface = 0.84.
3. Double and triple refer to the number of lights of glass.
4. 1/8 in. glass.
5. ¼ in. glass.
6. Coating on either glass surface facing air space; all other glass surfaces uncoated.
7. Window design: ¼ in. glass-1/8 in. glass-¼ in. glass.
8. Dimensions are nominal.
9. For heat flow up.
10. For heat flow down.
11. Based on area of opening, not total surface area.
12. Refers to windows with negligible opaque area.
13. Values will be less than these when metal sash and frame incorporate thermal breaks. In some thermal break designs, U-values will be equal to or less than those for the glass. Window manufacturers should be consulted for specific data.

4. RESISTANCE (R) VALUES OF AIR FILMS

Position of Surface	Direction of Heat Flow	E=0.90	E=0.20	E=0.05
Still Air				
Horizontal	Upward	0.61	1.10	1.32
45°slope	Upward	0.62	1.14	1.37
Vertical	Horizontal	0.68	1.35	1.70
45° slope	Down	0.76	1.67	2.22
Horizontal	Down	0.92	2.70	4.55
Moving Air				
(any position)				
15 mph wind	Any	0.17 (winter)	-	-
7½ mph wind	Any	0.25 (summer)	-	-

NOTES:

1. No surface has both an air space resistance value and a surface resistance value. No air space value exists for an surface facing an air space of less than 0.5 in.
2. Conductances are for surfaces of the stated emittance facing virtual blackbody surroundings at the same temperature as the ambient air. Values are based on a surface - air-temperature differences of 10 deg. F and for surface temperature of 70 deg. F.

5. RESISTANCE (R) VALUES OF AIR SPACES[1]

Position of Air Space[2] and Thickness (in.)	Direction of Heat Flow	Surface Emittance (E) E=0.82	E=0.2	E=0.05
Horizontal ½	Up	0.87	1.70	2.22
3/4		0.84	1.60	2.05
1 ½		0.89	1.81	2.40
3 ½		0.93	1.95	2.66
45° slope ½	Up	0.94	2.00	2.75
3/4		0.90	1.83	2.44
1 ½		0.94	1.99	2.74
3 ½		0.96	2.10	2.95
Verticle ½	Horizontal	1.01	2.35	3.46
3/4		0.91	1.88	2.54
1 ½		1.02	2.39	3.55
3 ½		1.01	2.32	3.40
45° slope ½	Down	1.02	2.40	3.57
3/4		0.92	1.89	2.55
1 ½		1.09	2.85	4.66
3 ½		1.08	2.73	4.36
Horizontal ½	Down	1.02	2.41	3.59
3/4		0.92	1.89	2.55
1 ½		1.15	3.27	5.90
3 ½		1.24	4.09	9.27

NOTES:

1. Values apply only to air spaces of uniform thickness bounded by plane, smooth, parallel surfaces with no leakage of air to or from the space. These conditions are not normally present in standard building construction; decrease R-values for construction situation. Thermal resistance values for multiple air spaces must be based on careful estimates of mean temperature differences for each air space.

2. Air space mean temperature at 50°F and temperature difference at 10°F. Assumes one surface of air space as non-reflective (E=.90) and other surface at stated emittance.

3. Interpolation is permissible for other values of mean temperature, temperature differences, and effective emittance E. See Chapter 23, 1981 ASHRAE Fundamentals Handbook.

4. Credit for an air space R-value cannot be taken more than once and only for the boundary conditions established.

5. R-values of horizontal spaces with heat flow downward are substantially independent of temperature difference.

6. REFLECTIVITY AND EMITTANCE VALUES OF VARIOUS SURFACES AND EFFECTIVE EMITTANCES OF AIR SPACES

Surface	Reflectivity in Percent	Average Emittance E	Effective Emittance E of Air Space	
			One Surface emittance E; the other 0.90	Both Surfaces emittances E
Aluminum foil, bright	92 to 97	0.05	0.05	0.03
Aluminum sheet	80 to 95	0.12	0.12	0.06
Aluminum coated paper, polished	75 to 84	0.20	0.20	0.11
Steel, galvanized bright ...	70 to 80	0.25	0.24	0.15
Building materials: wood, paper, masonry, ... nonmetallic paints	5 to 15	0.90	0.82	0.82
Concrete	-	0.88	-	-
Concrete, rough	-	0.97	-	-
Earth, Packed and Dry	-	0.41	-	-
Ice (32°F)	-	0.95	-	-
Paints:				
Aluminum	30 to 70	0.50	0.47	0.35
Black Lacquer	-	0.80	-	-
Flat Black Lacquer	-	0.96	-	-
White Enamel	-	0.80	-	-
Plaster, Rough White	-	0.91	-	-
Regular glass, smooth	5 to 15	0.84	0.77	0.72

APPENDIX D

Perm Ratings of Typical Building Materials

The following tables provide information useful in determining compliance with this Standard. The information was reprinted with permission from the ASHRAE Handbook of Fundamentals, 1985 edition except as noted. Information from these tables, or specific manufacturers data may be used to verify compliance.

Table 2 Permeance and Permeability of Materials to Water Vapor[a]

Material	Thickness (in.)	Permeance (Perm)	Resistance[l] (Rep)	Permeability (Perm-in.)	Resistance/in.[l] (Rep/In.)
Materials used in construction					
Concrete (1:2:4 mix)				3.2	0.31
Brick masonry	4	0.8[f]	1.3		
Concrete block (cored, limestone aggregate)	8	2.4[f]	0.4		
Tile masonry, glazed	4	0.12[f]	8.3		
Asbestos cement board	0.12	4-8[d]	0.1-0.2		
With oil base finishes		0.3-0.5[d]	2-3		
Plaster on metal lath	0.75	15[f]	0.067		
Plaster on wood lath		11[e]	0.091		
Plaster on plain gypsum lath (with studs)		20[f]	0.050		
Gypsum wall board (plain)	0.375	50[f]	0.020		
Gypsum sheathing (asphalt impreg.)	0.5			20[d]	0.050
Structural insulating board (sheathing qual.)				20-50[f]	0.050-0.020
Structural insulating board (interior, uncoated)	0.5	50-90[f]	0.020-0.011		
Hardboard (standard)	0.125	11[f]	0.091		
Hardboard (tempered)	0.125	5[f]	0.2		
Built-up roofing (hot mopped)		0.0			
Wood, sugar pine				0.4-5.4[f,b]	2.5-0.19
Plywood (douglas fir, exterior glue)	0.25	0.7[f]	1.4		
Plywood (douglas fir, interior glue)	0.25	1.9[f]	0.53		
Acrylic, glass fiber reinforced sheet	0.056	0.12[d]	8.3		
Polyester, glass fiber reinforced sheet	0.048	0.05[d]	20		
Thermal insulations					
Air (still)				120[f]	0.0083
Cellular glass				0.0[d]	∞
Corkboard				2.1-2.6[d]	0.48-0.38
				9.5[e]	0.11
Mineral wool (unprotected)				116[e]	0.0086
Expanded polyurethane (R-11 blown) board stock				0.4-1.6[d]	2.5-0.52
Expanded polystyrene—extruded				1.2[d]	0.83
Expanded polystyrene—bead				2.0-5.8[d]	0.50-0.17
Phenolic foam (covering removed)				26	0.038
Unicellular synthetic flexible rubber foam				0.02-0.15[d]	50-6.7
Plastic and metal foils and films[c]					
Aluminum foil	0.001	0.0[d]			
Aluminum foil	0.00035	0.05[d]	20		
Polyethylene	0.002	0.16[d]	6.3		3100
Polyethylene	0.004	0.08[d]	12.5		3100
Polyethylene	0.006	0.06[d]	17		3100
Polyethylene	0.008	0.04[d]	25		3100
Polyethylene	0.010	0.03[d]	33		3100
Polyvinylchloride, unplasticized	0.002	0.68[d]	1.5		
Polyvinylchloride plasticized	0.004	0.8-1.4[d]	1.3-0.72		
Polyester	0.001	0.73[d]	1.4		
Polyester	0.0032	0.23[d]	4.3		
Polyester	0.0076	0.08[d]	12.5		
Cellulose acetate	0.01	4.6[d]	0.2		
Cellulose acetate	0.125	0.32[d]	3.1		

Plywood (various species, exterior glue)	0.375	0.80**	
	0.50	0.50**	

Table 2 Permeance and Permeability of Materials to Water Vapor[a] (Concluded)

Material	Weight[b]	Permeance (Perms) Dry-Cup	Wet-Cup	Other	Resistance[i] (Rep) Dry-Cup	Wet-Cup	Other
Building paper, felts, roofing papers[g]							
Duplex sheet, asphalt laminated, aluminum foil one side	8.6	0.002	0.176		500	5.8	
Saturated and coated roll roofing	65	0.05	0.24		20	4.2	
Kraft paper and asphalt laminated, reinforced 30-120-30	6.8	0.3	1.8		3.3	0.55	
Blanket thermal insulation back up paper, asphalt coated	6.2	0.4	0.6-4.2		2.5	1.7-0.24	
Asphalt-saturated and coated vapor retarder paper	8.6	0.2-0.3	0.6		5.0-3.3	1.7	
Asphalt-saturated but not coated sheathing paper	4.4	3.3	20.2		0.3	0.05	
15-lb asphalt felt	14	1.0	5.6		1.0	0.18	
15-lb tar felt	14	4.0	18.2		0.25	0.055	
Single-kraft, double	3.2	31	42		0.032	0.024	
Liquid-applied coating materials	**Inches**						
Commercial latex paints (dry film thickness)[j]							
Vapor retarder paint	0.0031			0.45			2.22
Primer-sealer	0.0012			6.28			0.16
Vinyl acetate/acrylic primer	0.002			7.42			0.13
Vinyl-acrylic primer	0.0016			8.62			0.12
Semi-gloss vinyl-acrylic enamel	0.0024			6.61			0.15
Exterior acrylic house and trim	0.0017			5.47			0.18
Paint-2 coats							
Asphalt paint on plywood			0.4			2.5	
Aluminum varnish on wood		0.3-0.5			3.3-2.0		
Enamels on smooth plaster				0.5-1.5			2.0-0.66
Primers and sealers on interior insulation board				0.9-2.1			1.1-0.48
Various primers plus 1 coat flat oil paint on plaster				1.6-3.0			0.63-0.33
Flat paint on interior insulation board				4			0.25
Water emulsion on interior insulation board				30-85			0.03-0.012
Paint-3 coats	Oz/ft^2						
Exterior paint, white lead and oil on wood siding		0.3-1.0			3.3-1.0		
Exterior paint, white lead-zinc oxide and oil on wood		0.9			1.1		
Styrene-butadiene latex coating	2	11			0.09		
Polyvinyl acetate latex coating	4	5.5			0.18		
Chloro-sulfonated polyethylene mastic	3.5	1.7			0.59		
	7.0	0.06			16		
Asphalt cut-back mastic, 1/16 in., dry		0.14			7.2		
3/16 in., dry		0.0			—		
Hot melt asphalt	2	0.5			2		
	3.5	0.1			10		

[a]In this chapter the permeance, resistance, permeability and resistance per unit thickness values are given in the following units:

Permeance	Perm	= gr/h·ft^2·in. Hg
Resistance	Rep	= in. Hg·ft^2·h/gr
Permeability	Perm-in.	= gr/h·ft·(in. Hg/in.)
Resistance/unit thickness	Rep/in.	= (in. Hg·ft^2·h/gr)/in.

[a]Table 2 gives the water vapor transmission rates of some representative materials. The data are provided to permit comparisons of materials; but in the selection of vapor retarder materials, exact values for permeance or permeability should be obtained from the manufacturer of the materials under consideration or secured as a result of laboratory tests. A range of values shown in the table indicate variations among mean values for materials that are similar but of different density, orientation, lot or source. The values are intended for design guidance and should not be used as design or specification data. The compilation is from a number of sources; values from dry-cup and wet-cup methods were usually obtained from investigations using ASTM E96 and C355; values shown under *others* were obtained from investigations using such techniques as *two-temperature, special cell*, and *air-velocity*. Values included were obtained from Ref. 14 to 29 and other sources. Some values were obtained from unpublished tests conducted by Pennsylvania State University and the Building Research Div., National Research Council of Canada.

[b]Depending on construction and direction of vapor flow.

[c]Usually installed as vapor retarders, although sometimes used as exterior finish and elsewhere near cold side where special considerations are then required for warm side barrier effectiveness.

[d]Dry-cup method.

[e]Wet-cup method.

[f]Other than dry- or wet-cup method.

[g]Low permeance sheets used as vapor retarders. High permeance used elsewhere in construction.

[h]Basic weight in lb per 100 ft^2(lb per square ft).

[i]Resistance and resistance/in. values have been calculated as the reciprocal of the permeance and permeability values.

[j]Cast at 10 mils wet film thickness.[31]

** From the American Plywood Association, Tacoma, Washington.

(D) engaging in an action or behavior for the purpose of obtaining reimbursement for work not performed, not approved, or performed in violation of the laws, regulations, and prescribed procedures for the low-income weatherization program under this chapter; and

(E) violating the terms of the contract with the division. (Eff. 9/22/84, Reg. 91)

Authority: AS 44.47.050(18)

ARTICLE 2.
ENERGY CONSERVATION STANDARD FOR NEW RESIDENTIAL BUILDINGS

Section
210. Adoption of standard
220. Delegation of authority
230. Waiver of standard
290. Definitions for 19 AAC 69.210–19 AAC 69.290

19 AAC 69.210. ADOPTION OF STANDARD. An energy conservation standard for new residential buildings, dated November 7, 1986, is adopted by reference. This standard, prepared by the department, provides minimum acceptable thermal levels for the building envelope and other mandatory conservation measures. This standard applies to a new residential building for which state financial assistance is received after December 31, 1987. Copies of this standard are available to the public at any of the department's offices, at public libraries, and at local municipal building departments. (Eff. 5/21/87, Reg. 102)

Authority: AS 46.11.040
AS 46.11.900

19 AAC 69.220. DELEGATION OF AUTHORITY. The commissioner delegates the authority of the department under AS 46.11.040 and 46.11.900, to the director, division of community development. (Eff. 5/21/87, Reg. 102)

Authority: AS 46.11.040
AS 46.11.900

19 AAC 69.230. WAIVER OF STANDARD. (a) The director will grant a waiver from the standard for a new residential building

(1) that is in compliance with a municipal building code that meets or exceeds the standard; or

(2) if a discretionary waiver is approved under (c) of this section.

(b) A request for waiver under (a)(1) of this section must be submitted to the director in writing by a responsible official of the municipal building department. A copy of the municipal building code must be included, and the request for waiver must specify those portions of the municipal building code which meet or exceed the standard. The following apply to a request for waiver under this subsection:

(1) The director will, within 10 working days, notify the requestor, in writing, of receipt of the request for waiver. The director will consider the request for waiver and will, within 30 working days after receipt of the request, render a decision as to whether the municipal building code meets or exceeds the standard.

(2) The director's decision granting or denying the request for waiver will be sent by certified mail to the requestor. A requestor who disagrees with the director's decision may appeal the decision to the commissioner. The requestor must submit the appeal to the commissioner within 30 days after receipt of the director's decision. The appeal must be in writing and must contain copies of the original request for waiver, the director's decision, and additional justification for approval of the waiver. The commissioner will notify the requestor of receipt of the appeal, and will render a decision within 45 days. The commissioner's decision is final and will be provided to the requestor and the director.

(c) An agency responsible for the disbursement of state financial assistance for the construction or purchase of a new residential building may seek waiver of the standard by submitting a written request for waiver to the director under (a)(2) of this section. The requestor shall, 30 days before submission to the department, publish an intent to request a waiver in the Alaska Administrative Journal and in a local newspaper in the area where the new residential building is going to be built. The

notice must solicit public comment. The request for waiver must contain proof of soliciting public comment, and must indicate the reasons why the standard cannot be implemented, why the waiver should be granted, and the effective period of the waiver. The following apply to a request for waiver under this subsection:

(1) The director will, within 10 working days, notify the requestor, in writing, of receipt of the request for waiver. The director will consider the request for waiver and will render a decision within 30 working days after receipt of the request. The director will consider the request for waiver using the following criteria:

(A) A request for waiver regarding the thermal levels of the envelope will be evaluated using the life-cycle-cost model that was used to arrive at the thermal levels in the standard. If a requestor adjusts the variable factors of the model, justification must be provided supporting the adjustments. Adjustments may be made to variables that affect the economics of the calculation or the thermal values of the ceiling, floor, walls, windows, and doors. These adjustments must result in an improved life-cycle-cost present value over a 30-year analysis period in order to be considered for a waiver; or

(B) A request for waiver regarding the mandatory measures stated in chapter 2 of the standard will be evaulated based on the cost of complying, the overall benefit of the measure to the homeowner, and other criteria as determined by the director.

(2) The director's decision granting or denying the request for waiver will be sent by certified mail to the requestor. A requestor who disagrees with the director's decision may appeal the decision to the commissioner. The requestor must submit the appeal to the commissioner within 30 days after receipt of the director's decision. The appeal must be in writing, and must contain copies of the original request for waiver, the director's decision, and additional justification for approval of the waiver. The commissioner will notify the requestor of receipt of the appeal, and will render a decision within 45 days. The commissioner's decision will be based upon the criteria contained in (1)(A) and (B) of this subsection. The commissioner's decision is final and will be provided to the requestor and the director. (Eff. 5/21/87, Reg. 102)

Authority: AS 46.11.040
AS 46.11.900

19 AAC 69.290. DEFINITIONS FOR 19 AAC 69.210 – 19 AAC 69.290. (a) In 19 AAC 69.210 – 19 AAC 69.290,

(1) "agency" means a state agency that directly or indirectly disburses state financial assistance for the construction or purchase of a new residential building;

(2) "building envelope" means the exterior areas of the building, such as walls, roof, and floor or crawl space;

(3) "commissioner" means the commissioner of community and regional affairs;

(4) "department" means the Department of Community and Regional Affairs;

(5) "director" means the director of the division of community development in the department;

(6) "division" means the division of community development in the Department of Community and Regional Affairs;

(7) "life-cycle-cost model" means the computer model that was developed to arrive at the thermal levels of the standard, which are known as "AKWARM"; Appendix B of "AKWARM" defines all the variables used in the computer model;

(8) "new residential building" means a residential building for which construction began after December 31, 1987, and which has been occupied less than one year;

(9) "requestor" means the entity submitting a request for waiver from the standard;

(10) "standard" means the energy conservation standard for new residential buildings, dated November 7, 1986, and adopted by reference in 19 AAC 69.210;

(11) "state financial assistance" means a loan, grant, guarantee, insurance, payment, rebate, subsidy, or other form of state assistance, other than aid under AS 29.60 and AS 43.18, including the purchase by a state agency of a loan to finance the purchase of a new residential building;

(12) "thermal levels" means the thermal resistance levels as specified by the standard.

(b) In AS 46.11.040, "conveyance" means the closing of a loan to purchase a residence. (Eff. 5/21/87, Reg. 102)

Authority: AS 46.11.040
AS 46.11.900

Editor's Note: Copies of "AKWARM," mentioned in 19 AAC 69.290(7), are available to the public at any of the department's offices, at public libraries, at local municipal building departments, and from the Cooperative Extension Service, University of Alaska.

PART 4.
DIVISION OF HOUSING ASSISTANCE

Chapter

80. Housing Assistance Loan Fund (19 AAC 80.010–19 AAC 80.900)
82. Home Ownership Assistance Program (19 AAC 82.010–19 AAC 82.900)
83. State-Assisted Rental Housing Construction Program (19 AAC 83.010–19 AAC 83.900)
85. Senior Citizens Housing Development Fund (19 AAC 85.010–19 AAC 85.130)
88. Supplemental Housing Development Grant Fund (19 AAC 88.010–19 AAC 88.900)

CHAPTER 80.
HOUSING ASSISTANCE LOAN FUND

Editor's Note: Effective 4/16/83, former 19 AAC 95 was reorganized, renamed, and renumbered as 19 AAC 80. The history notes from former 19 AAC 95 were not carried forward in the reorganization.

Section

10. Borrower eligibility
20. Loan programs
25. Turnkey III home purchase program
30. Indirect and direct loans
40. Loan amounts and restrictions
50. (Repealed)
60. Loan term
70. Security
80. Minimum health and safety standards
90. Application process
100. Loan purchase procedures
105. Loan closing procedures
110. Inspections
120. Foreclosure
130. Service agreements
140. Appeals
150. Regions
160. Nonowner-occupied housing
170. Nonowner-occupied housing; conditions
180. Discrimination clause
900. Definitions

19 AAC 80.010. BORROWER ELIGIBILITY. (a) The division may originate or purchase all or part of a loan under AS 44.47.380 if the requirements of AS 44.47.370 – 44.47.560 and of 19 AAC 80.010(b) – 19 AAC 80.900 are

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

DIVISION OF COMMUNITY DEVELOPMENT

STEVE COWPER, GOVERNOR

P.O. BOX BC
JUNEAU, ALASKA 99811
PHONE: (907) 465-4890

949 E. 36TH AVENUE, SUITE 400
ANCHORAGE, ALASKA 99508
PHONE: (907) 563-1955

P.O. BOX BD
JUNEAU, ALASKA 99811
PHONE: (907) 465-4814

1514 CUSHMAN STREET, ROOM 208
FAIRBANKS, ALASKA 99701
PHONE: (907) 456-1505

P.O. BOX 1068
NOME, ALASKA 99762
PHONE: (907) 443-2274

P.O. BOX 348
BETHEL, ALASKA 99559
PHONE: (907) 543-2885

September 10, 1987

Dear Alaskan:

The Division of Community Development, Department of Community and Regional Affairs has approved the waiver submitted by the Housing Assistance Division regarding the lowering of floor R-values for Regions 3,4,and 5 for compliance with the Energy Conservation Standard for New Residential Buildings.

Enclosed are two tables showing the revised requirements. Please insert these in the Standard which you have previously received.

Also enclosed for your information is a copy of the final regulations adopting the Standard.

Thank you for your cooperation.

Sincerely,

M. C. Harper

Michael C. Harper
Director

Enclosures

TABLE 3.2 PRESCRIPTIVE ENVELOPE R-VALUE REQUIREMENTS

This table lists minimum prescribed insulation requirements for the building envelope. The builder may use any method of constructing the building envelope provided clear compliance with the listed R-values can be shown and is acceptable to approving officials.

CAUTION: Permafrost areas require engineering analysis for proper application of insulation in contact with the ground.

Region Number Region Name Heating Fuel	Prescriptive Envelope R-Value Requirements						
	Ceiling[1] #1	Ceiling[1] #2	Above-grade Wall	Floor	Below-grade Wall	Slab-on-grade Floor	Door[2]
Region 1 Southeast All Fuels	38	48	21	30	15	15	2.5, 7
Region 2 Southcentral, Aleutian, Kodiak							
Natural Gas	38	45	18	19	10	10	2.5, 7
All Other Fuels	38	48	25	30	15	15	2.5, 7
Region 3 Interior, Southwest All Fuels	38	48	25	38	19	15	7
Region 4 Northwest All Fuels	38	48	30	38	19	15	7
Region 5 Arctic Slope All Fuels	52	NA[3]	35	43	--	--	7

Notes:

1. Ceiling #1: R-values listed are for ceilings with no skylights.
   Ceiling #2: R-values listed are for ceilings with skylights. See paragraph 3.7b.
2. One exterior door in Region 1 may have an R-value less than 7 but no less than 2.5.
3. Not allowed.

(Revised 9/4/87)

TABLE 4.1 MAXIMUM ALLOWABLE ENVELOPE U_o-VALUES

Caution: Permafrost areas require engineering analysis for proper application of insulation in contact with the ground.

Region Number Region Name Heating Fuel	ENVELOPE PERFORMANCE CRITERIA, U_o				
	Ceiling	Above-grade Wall	Floor	Below-grade Wall	Slab-on-grade Floor
Region 1 Southeast All Fuels	0.024	0.089	0.032	0.066	0.066
Region 2 Southcentral, Aleutian, Kodiak					
Natural Gas	0.024	0.099	0.046	0.100	0.100
All Other Fuels	0.024	0.085	0.032	0.066	0.066
Region 3 Interior, Southwest All Fuels	0.024	0.078	0.028	0.059	0.066
Region 4 Northwest All Fuels	0.024	0.073	0.028	0.059	0.066
Region 5 Arctic Slope All Fuels	0.018	0.069	0.022	---	---

(Revised 9/4/87)

Jim Plasman now says that if there is going to be an amendment to change or delay the annual standards Regs, he would like to testify.

Alaska MUNICIPAL League

TELEPHONE
(907) 586-1325

105 MUNICIPAL WAY, SUITE 301
JUNEAU, ALASKA 99801

TO: Senator Arliss Sturgulewski, Chair
Members of the Senate Community and Regional Affairs Committee

FROM: Scott A. Burgess, Executive Director

DATE: March 8, 1988

SUBJECT: SB 308 - Alaska Craftsman Home Program

The Alaska Municipal League supports the concept of SB 308.

The Alaska Municipal League has had policies encouraging energy efficiency in private and public construction for a number of years. At the annual meeting in November 1987, the membership adopted Resolution No. 88-36 in support of the energy-efficient standards developed by the Alaska Craftsman Home Program for home construction and in support of state support for the Alaska Craftsman Home Program. SB 308 implements this Resolution.

Again, the AML supports SB 308.

Attachment: AML Resolution No. 88-36

RESOLUTION OF THE ALASKA MUNICIPAL LEAGUE

RESOLUTION NO. 88-36

A RESOLUTION SUPPORTING ENERGY EFFICIENCY OF HOMES.

WHEREAS, high-quality energy-efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contribution of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska state lawmakers have introduced legislation which supports efficiency in homes that support the Alaska Craftsman Home Program and this legislation will help improve and stimulate the home building industry in Alaska through incentives and education and, thereby, improve the local economy of the State, and

WHEREAS, the citizens of the State of Alaska will benefit substantially from the building of energy-efficient homes as developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED that it is the policy of the 'laska Municipal League to encourage the building of homes to the energy-efficient standards of the Alaska Craftsman Home program and further that the Alaska Municipal League supports legislation to establish similar state policy and state support for the Alaska Craftsman Home Program.

Adopted this 13th day of November 1987.

George W. Carte', President

ATTEST:

Scott A. Burgess, Executive Director

Alaska State Legislature

ARLISS STURGULEWSKI, Chairman
TIM KELLY, Vice Chairman
RICK HALFORD
MIKE SZYMANSKI
FRED ZHAROFF

P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-4989

Senate
Community and Regional Affairs Committee

March 8,1988

TO: Senate Community and Regional Affairs Committee Members

FROM: Senate C&RA Staff

Re: SB 308 - "An Act establishing the Alaska energy efficient home equity fund."

SB 308 will create the Alaska Energy Efficient Home Equity Fund in the Department of Community & Regional Affairs. Guidelines and procedures for the fund would be prepared in consultation with the Alaska Craftsman Home Program.

This bill has a fiscal note of $69.7 general fund and two positions. The fiscal note and department position paper are in your packet.

Representatives of the Department of Community & Regional Affairs as well as the sponsor will be at the meeting. Also, via teleconference, representatives of the University of Alaska's Cooperative Extension Service, the Alaska State Homebuilders Association and the Alaska Craftsman Home Program will attend the meeting.

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

- *P.O. BOX B*
  JUNEAU, ALASKA 99811-2100
  PHONE: (907) 465-4700
- *949 E. 36TH AVENUE, SUITE 400*
  ANCHORAGE, ALASKA 99508-4302
  PHONE: (907) 563-1073

February 12, 1988

POSITION PAPER

RE: Senate Bill 308: "An Act Establishing the Alaska Energy-Efficient Home Equity Fund".

SPONSOR: Senators Fahrenkamp, Sturgulewski, Josephson, Szymanski and Rodey

Program Effects of Bill

Senate Bill 308 would create in the Department of Community and Regional Affairs an Alaska Energy-Efficient Home Equity Fund which would be a revolving loan fund to finance the incremental costs to builders to construct superinsulated homes.

Comments

The Department strongly supports the concept of superinsulation. Superinsulated homes can reduce the heating costs of a home by 50 to 80 percent, while costing only an additional 5 to 10 percent to construct. Superinsulation is a technology that is practical, economical, and available now. The Department has sought to foster quality construction through the Alaska Craftsman Home Training Program. With $200,000 from its share of the Exxon oil overcharge settlement, the Department has supported the Cooperative Extension Service's voluntary program of educating builders on this method of construction.

The Department, however, does not have a position on this legislation. While it supports the construction of superinsulated homes, it has questions regarding state subsidizing the construction of new homes in the light of the current housing glut and with the current state revenue situation.

David G. Hoffman, Commissioner

21-P1LH

STATE OF ALASKA
1988 LEGISLATIVE SESSION

BILL VERSION: SB 308
PUBLISH DATE: _____

FISCAL NOTE

REQUEST:

Revision Date: _____
Title: "An Act establishing the Alaska Energy-Efficient Home Equity Fund"
Sponsor: _____
Requestor: House C&RA

Agency Affected: Community & Regional Affairs
BRU: -- Housing Assistance

Components: Housing Loan Administration

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93
PERSONAL SERVICES		61.5	61.5	61.5	61.5	
TRAVEL		2.0	2.0	2.0	2.0	
CONTRACTUAL		4.8	4.8	4.8	4.8	
SUPPLIES		1.4	1.4	1.4	1.4	
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING		69.7	69.7	69.7	69.7	
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		69.7	69.7	69.7	69.7	
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME		2	2	2	2	
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

The Department estimates that two full-time positions, a loan closer (Range 12) and an accounting clerk 3 (Range 8) will be necessary to administer the program along with associated contractual & supply costs.

Prepared by: Jim Plasman, Deputy Director
Phone: 465-4750
Division: Municipal & Regional Assistance
Date: 2/12/88

Approved by Commissioner: _____
Date: _____
Agency: Community & Regional Affairs

Distribution (by preparer):
Legislative Finance
Legislative Sponsor
Requestor
Office of Management and Budget
Impacted Agency(ies)

STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Loan Closer II

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

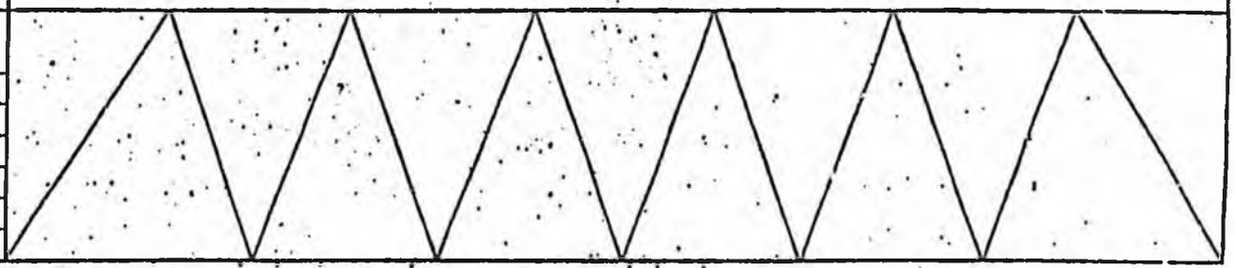
RANGE	BARGAINING UNIT
12A	GGU

MONTHLY SALARY	# MONTHS (CY)
2,826.28	12

JUSTIFICATION:

This position would process loans and grants under the Alaska energy-efficient home equity fund.

DETAIL OF RELATED EXPENSES	
01 PERSONAL SERVICES	33.9
02 TRAVEL	2.0
03 CONTRACTUAL	2.4
04 COMMODITIES	.7
05 EQUIPMENT	
08 OTHER	
TOTAL	39.0
1002 FEDERAL	
1003 G/F MATCH	
1004 GENERAL FUND	39.0
1005 I/A RECEIPTS	
1028 PROGRAM RECEIPTS	



STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Accounting Clerk III

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

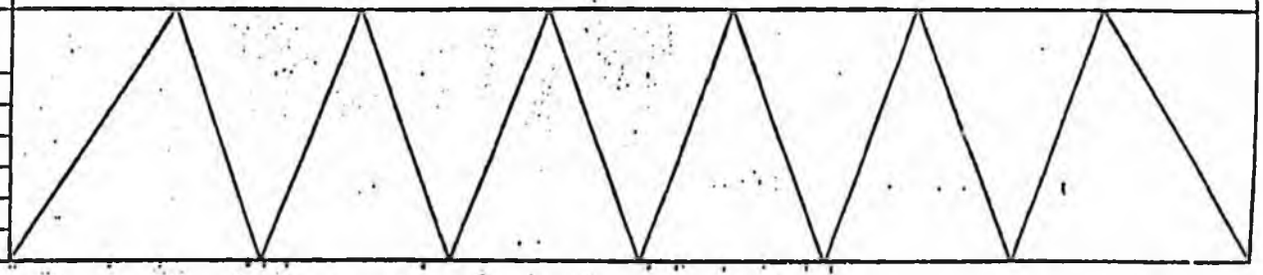
RANGE	BARGAINING UNIT
8A	GGU

MONTHLY SALARY	# MONTHS (CY)
1,631	12

JUSTIFICATION:

The position will provide the necessary accounting support for the Alaska energy-efficient home equity fund.

		DETAIL OF RELATED EXPENSES
01	PERSONAL SERVICES	27.6	
02	TRAVEL	-0-	
03	CONTRACTUAL	2.4	Telephone, copy services, postage
04	COMMODITIES	.7	Miscellaneous administrative
05	EQUIPMENT		
08	OTHER		
	TOTAL	30.7	
1002	FEDERAL		
1003	G/F MATCH		
1004	GENERAL FUND	30.7	
1005	I/A RECEIPTS		
1028	PROGRAM RECEIPTS		



RECEIVED NOV 24 1987

KODIAK ISLAND BOROUGH
RESOLUTION NO. 87-71-R

A RESOLUTION OF THE KODIAK ISLAND BOROUGH ASSEMBLY SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM.

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy construction, improve the health and safety of the occupants, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner; and

WHEREAS, Alaska state lawmakers have introduced legislation in the form of Senate Bill 308 and House Bill 318 and 319 that support the Alaska Craftsman Home Program. And that these bills will help improve and stimulate the homebuilding industry in Alaska through incentives and education and thereby improve the local economy of the Kodiak Island Borough; and

WHEREAS, the citizens of the Kodiak Island Borough will benefit substantially from the building of energy efficient homes as developed by the Alaska Craftsman Home Program.

NOW, THEREFORE, BE IT RESOLVED by the Kodiak Island Borough Assembly that it is the policy of the Kodiak Island Borough to encourage the building of homes to the energy efficiency standards of the Alaska Craftsman Home Program;

AND BE IT FURTHER RESOLVED that the Kodiak Island Borough supports Alaska State Senate Bill 308 and House Bill 318 and 319 to establish similar state policy and state support for the Alaska Craftsman Home Program.

PASSED AND APPROVED this 5 day of November, 1987.

KODIAK ISLAND BOROUGH

By _____
Borough Mayor

By _____
Presiding Officer

ATTEST:

By _____
Borough Clerk

SB308

The Alaska Craftsman Home Program

The burden that energy cost places upon the family is illustrated by the fact that rural Alaskans (off the natural gas line) spend between 16% and 27% of their incomes on energy bills. In general terms it costs on average between $1,200 to $1,500 annually to heat a home in Alaska. Well over $1 Billion is spent annually to keep Alaskans warm in their homes.

A superinsulated building saves the home owner from 50% to 80% of the heating costs which can be between $45,000 and $120,000 over the 60 year life of the home and could eventually reduce Alaska's home heating bill $800,000,000 annually. It is clear that conservation has a key role to play in the State's economic development strategy as well as energy policy.

There is a second motivation for achieving the Alaska Craftsman Home Program standard. The motivation is health and safety. The Consumer Federation of America estimates that poor indoor air pollution costs this country $100 Billion annually. The more conservative Bonneville Power Administration puts the estimate at $30 Billion. Clearly with estimates as high as 20,000 radon induced deaths a year the mitigation methods for indoor air pollution taught in the Alaska Craftsman workshops and embodied in the voluntary standards are sorely needed.

The Alaska Craftsman Home Program is designed to provide, technical information for the industry and has its roots in the $50,000,000 Canadian R-2000 program and is patterned after it.

A key to the success of the ACHP program lies in the cooperative approach. The program is voluntary. The program is government funded yet is a partnership of The Department of Community and Regional Affairs, University of Alaska Cooperative Extension Service, Energy Rated Homes of Alaska, and Alaska State Homebuilders Association.

The ACHP has set a voluntary performance standard based on the latest technology. Building this way results in; significantly reduced energy bills, a more durable home, increased comfort, reduced noise from outside sources, and improved indoor air quality.

The Alaska Craftsman Home Program started with a pilot series of building seminars March of 1986. Since then we have trained 24 Alaskans to conduct two-day workshops around the State on the superinsulation technology detailed in the new Alaska Craftsman Home Building Manual. These 24 people represent all regions of the State and are divided into 12 training teams. These trainers have put on 15 regional workshops. The program has been evaluated and is undergoing revisions after internal and international critique from Canada, Japan, Norway the National Association of Homebuilders, National Center for Appropriate Technology, Minnesota Cold Weather Housing Institute, 6 National Laboratories, and the Department of Energy.

24 workshops are scheduled across the State this year.

Legislation is pending to appropriate nearly $8,000,000 to the program in the areas of Program support, public education, incentives, and research. The legislation will include the following program needs. The legislation in House Bill 318 and 319 and Senate Bill 308 would fund the program for 4 years and would change the housing industry.

The Yukon territory will build 80% of their homes to superinsulation standards this year. The countries of Scandinavia build nearly all their homes to superinsulation standards, and it can happen here in Alaska too.

The volunteer trainers and 25 volunteer technical committee people have contributed over 4,200 hours of time to making this program work from March until December of 1987. 190 people have been trained and 4 homes are under construction.

Many political, economic development, and environmental groups have recognized the potential of this program and supported it. A growing listing of these include:

The Alaska Municipal League

The Matanuska Susitna Borough

The Kenai Peninsula Borough

The Kodiak Island Borough

The Municipality of Anchorage

City of Palmer

City of Kenai

City of Seward

City of Anderson

City of Soldotna

City of Wasilla

The Department of Community and Regional Affairs

The Joint Energy Task Force of Utilities

North Slope Borough Utilities

The American Lung Association

Alaska Center For the Environment

Fairbanks Chamber of Commerce

Interior Economic Development Council

Alaska State Homebuilders Association

Building Industry Association of Anchorage

Kenai Homebuilders Association

Interior Homebuilders Association

Association of Housing Authorities

The Anchorage Daily News

The Frontiersman

Example Resolution

RESOLUTION OF THE ALASKA MUNICIPAL LEAGUE

RESOLUTION NO. 88-36

A RESOLUTION SUPPORTING ENERGY EFFICIENCY OF HOMES.

WHEREAS, high-quality energy-efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contribution of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska state lawmakers have introduced legislation which supports efficiency in homes that support the Alaska Craftsman Home Program and this legislation will help improve and stimulate the home building industry in Alaska through incentives and education and, thereby, improve the local economy of the State, and

WHEREAS, the citizens of the State of Alaska will benefit substantially from the building of energy-efficient homes as developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED that it is the policy of the Alaska Municipal League to encourage the building of homes to the energy-efficient standards of the Alaska Craftsman Home program and further that the Alaska Municipal League supports legislation to establish similar state policy and state support for the Alaska Craftsman Home Program.

Adopted this 13th day of November 1987.

George W. Carte', President

ATTEST:

Scott A. Burgess, Executive Director

Introduced: 5/15/87
Referred: Community & Regional Affairs and Finance

5-1191A

Funding Information
General Fund $7,965,000
Other Funds -0-
$7,965,000

BY ELLIS, KOPONEN, MENARD, ULMER, DAVIDSON, LARSON AND DAVIS

IN THE HOUSE

HOUSE BILL NO. 319

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making special appropriations for the Alaska energy efficient home program; and providing for an effective date."

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

* Section 1. The sum of $1,615,000 is appropriated from the general fund to the University of Alaska, cooperative extension service, for preparation and implementation of the Alaska energy efficient home program and for instrumentation and data base development for the program.

* Sec. 2. The sum of $1,400,000 is appropriated from the general fund to the University of Alaska for development of a portable, instrumented test shelter and for research activities of the Alaska energy efficient home program that have been approved by the board of directors of the program.

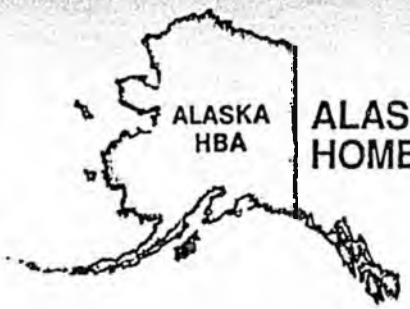
* Sec. 3. The sum of $450,000 is appropriated from the general fund to the Department of Community and Regional Affairs to develop and distribute educational information for the general public regarding the Alaska energy efficient home program.

* Sec. 4. The sum of $4,500,000 is appropriated from the general fund to the Alaska energy efficient home equity fund (AS 44.47.370) in the Department of Community and Regional Affairs for the purposes of the fund.

* Sec. 5. The appropriations made by this Act lapse into the general fund June 30, 1992.

* Sec. 6. This Act takes effect on the effective date of an Act passed by the Fifteenth Alaska State Legislature that establishes the Alaska

energy efficient h me equity fund.



ALASKA STATE HOMEBUILDERS ASSOCIATION

file my legislation

June 2, 1987

Senator Arliss Sturgulewski
2957 Sheldon Jackson
Anchorage, Alaska 99508

Dear Senator Sturgulewski,

Thank you for cosponsoring Senate bill 308 associated with the Alaska Craftsman Home Program. The Alaska Craftsman Home Program is very innovative and will certainly improve the shelter industry and quality of life for all Alaskans. The legislative interest and support has been very gratifying. I am extremely pleased that you have chosen to be an advocate. If there are any questions you have regarding the program please contact me here in Wasilla (376–5130) or Don Markle at the program management office in Anchorage (279–5582). I look forward to working with you next year as we get this needed legislation enacted.

Sincerely,

James Malapanes

James Malapanes
President

2204 CLEVELAND AVENUE • ANCHORAGE, ALASKA 99517 • (907) 248-7776

Agenda

Meeting: Alaska Craftsman Home Program

Place: Cooperative Extension Service
2221 E. Northern Lights Blvd.
Suite 240
Anchorage, Alaska 99501

Date: 10:00AM – 11:00AM TUESDAY September 8, 1987

THIS IS AN AUDIO- CONFERENCE AND YOU CAN ATTEND BY CALLING 800–478–5020 after 10:00am. ONLY ONE PHONE IN FROM A COMMUNITY, SO GO TO YOUR LOCAL CES OFFICE OR TALK TO OTHERS WHO MIGHT LIKE TO ATTEND TO ASSURE THAT EVERYONE CALLS FROM ONE NUMBER PER COMMUNITY. CES HAS SPEAKER PHONES.

Purpose: Update and planning for fall conference.

1.) Administrative Report.

a. Vermont presentation

b. Kenai Peninsula trips

c. Homebuilders convention

d. Radon calls

e. Airlines

f. Accedidation for courses

g. Energy Task Force – Rich

h. 800 number

i. State Fairs

2.) Technical Committee Report.

a. foriegn reviews

b. Manual reviews

c. Materials list

3.) State Report.

a. Exxon Committee

b. Blower Door Agreement

4.) Fall conference.

a. Ginny Moore on place

b. Agenda

c. Travel Arrangements

5.) Loan Program

6.) Workshop schedule.

7.) Housing Authority

8.) Legislation and new session

9.) New Business

LOAN PROGRAM FOR RENOVATION OF HOMES

Contact: Don Markle
Cooperative Extension Service
2221 E. Northern Lights Suite 240
Anchorage, Alaska 99508

Program Description

— Zero interest loans are given to people who renovate homes to new state thermal standards and have those homes certified to meet those standards by the Alaska Craftsman Home Program .
— Loans for renovation of existing homes may not exceed the lesser of
1. $10,000
2. an amount, as determined by the actual cost of labor and materials for each category, which is documented by invoices, bids or contract; or
3. an amount, as determined by an acceptable energy improvement payback calculation, which is equal to the total estimated energy savings attributable to the energy conservation improvement over a fifteen—year period following the purchase, construction, or installation of the energy conservation improvement.
— Loans are only eligible for permanent homes greater than 800 square foot in size.
— Loan Terms for New Homes are that the loan is due upon sale, title transfer or refinancing of the home. Alternatively the homeowner may choose to pay the loan back in a 15 year amortization.
— 50% of loan proceeds will be disbursed to the applicant as documented and supported by labor and material estimates submitted with the loan application. This documentation must clearly describe the items being purchased. In addition, within 120 days after the loan has closed the applicant must produce a certification of renovation from the Alaska Craftsman Home Program certifying that renovation has met minimal state thermal standards, ACHP ventilation requirements and infiltration standards, the Division will then disperse the remaining 50% of the loan proceeds.
— Assumptions will be allowed on 15 year amortized loans only.
— Subordination requests will be considered if the amount subordinated plus the loan amount is less than the assessed tax value of the property.
— All loans will be secured by a Deed of Trust against the property receiving the improvements.
— Refinancing is allowed only under the 15 year amortization program otherwise loans come due.
— The project must be completed and ready for inspection 120 days after loan is closed. Inspection will be done by Energy Rated Home Program to ACHP standards for new homes. The standard requires an air leakage test below 3.5 air changes an hour at 50 Pascals, ventilation certification that mechanical ventilation will supply 1/2 air change per hour and a 80% or higher rating in the energy rated home program.
— The builder must have received training in the Alaska Craftsman Home Program prior to construction.
— Program standards are regionalized.

LOAN PROGRAM FOR NEW HOMES

Contact: Don Markle
Cooperative Extension Service
2221 E. Northern Lights Suite 240
Anchorage, Alaska 99508

Program Description

- Zero interest loans are given to people who build new homes to standard set by the Alaska Craftsman Home Program and have those homes certified to meet those standards.
- Lending Limits for new home loans may not exceed the lesser of
  1. $6,000; or
  2. $2.50 x the Houses Heated interior Square Footage.
- On September 1, 1990 the lending limits will change to
  1. $4,500; or
  2. $1.87 x the Houses Heated interior square footage.
- Loans are only eligible for permanent homes greater than 800 square foot in size.
- Loan Terms for New Homes are that the loan is due upon sale, title transfer or refinancing of the home. Alternatively the homeowner may choose to pay the loan back in a 15 year amortization.
- Dispersement of proceeds to be upon presentation of Alaska Craftsman Home Certificate and registration.
- Assumptions will be allowed on 15 year amortized loans only.
- Subordination requests will be considered if the amount subordinated plus the loan amount is less than the assessed tax value of the property.
- All loans will be secured by a Deed of Trust against the property receiving the improvements.
- Refinancing is allowed only under the 15 year amortization program otherwise loans come due.
- The project must be completed and ready for inspection 120 days after loan is closed. Inspection will be done by Energy Rated Home Program to ACHP standards for new homes. The standard requires an air leakage test below 1.5 air changes an hour at 50 Pascals, ventilation certification that mechanical ventilation will supply 1/2 air change per hour and a 95% or higher rating in the energy rated home program.
- The builder must have received training in the Alaska Craftsman Home Program prior to construction.
- Alaska Craftsman Home Program standards are regionalized.

Variances from State Thermal Standard

- Monetary incentives are given to encourage energy efficient construction.
- The program is designed to promote private sector efforts in promoting energy conservation building styles.
- Much of promotional work will be completed by private firms after initial introduction.
- Standards to be achieved are the optimal standards as opposed to minimal standards.

Program objectives

— To encourage the building of homes to Alaska Craftsman standards, which are the optimal conservation standards with present technology.
— To shift the available stock of homes toward more energy efficient homes.

Relation of program objectives to other state objectives

— The State is embarking on an ambitious conservation plan aimed at displacing electrical and space heating needs. This and other programs aimed at the thermal space heating are fully integrated to achieve as low a heating fuel requirement per hour as is technically and economically practical.

Rationale for the program

— Thermal heating requirements make up approximately 34% of the energy budget for the State of Alaska.
— Energy bills make up a larger than national average percentage of a home owners expenses in most areas of Alaska.
— Computer simulations and economic evaluation of existing homes indicate that building to Alaska Craftsman Home Program Standards is the most economical building method.
— Insulation levels for homes built in Alaska are not significantly higher than homes in the northern continental United States despite much higher heating degree days and harsher environmental conditions.
— Incentives are offered to ensure substantial customer participation rates and to cover the costs of the builder in learning the new technology.
— Incentives are high enough to ensure a shift in purchasing behavior.
— The sliding scale in incentives based on square footage was designed to reflect the difference in costs and necessary incentives to attain the standards.

Regulatory influence on program specifications

— The Alaska Craftsman standard and the Energy Rated Homes evaluation methods have been modeled around the State Thermal Standards and the computer economic simulations the Thermal Standards are based on. Each of the three programs have a citizens advisory group that helped to implement the program. The Alaska Craftsman Home Program is governed by a board of directors representing the building industry, banking industry, State of Alaska and University of Alaska.
— The State energy conservation program and energy extension service have provided the funding and contract management of the Alaska Craftsman Home Program to date.

Target market
— All new single family construction.

Technologies promoted
— Massive amounts of insulation, minimal air leakage construction and testing techniques, passive solar design, mechanical ventilation with heat recovery.

Marketing techniques
— Primary marketing to date has been to homebuilders through two day workshops. Direct mail was used to promote the workshops.

- Public presentations are now being conducted through the political organizations around the State, i.e. city councils, borough assemblies, and state legislature.
- General public marketing will begin with brochures, directed mailings, T.V. advertising, newspaper advertising, and radio promotions. Public presentations are now underway.
- Programs are given to local builders associations to keep them informed on the program development.

Questions:
1. What are the number of new homes to be built in the State over the next ten years, how many will participate and at what level of state funding over loan program?
prediction of the percentage that will choose full ACHP as opposed to minimal state levels.
prediction of level of funding for homes ie. 30% need $6,000 20% need $4,000 etc.
prediction of overall success of program ie. How many will actually participate per year.
What is the percentage of energy saved per house and for program

2. What is the present value and after inflation dollar energy savings of the the new home programs at various levels of program commitment?
Prediction on house values for new and renovated homes
3. What is the BTU savings for each year of the program?
4. What is the present value and after inflation dollar savings in fuel heating subsidy programs?
5. What are the infrastructure (fuel lines and storage etc.) cost savings realized by implementing this program.
6. What are the energy cost increase per gallon as a result of implementation? ie existing capital expenses for utilities spread over few energy units saved? Will there be savings in eliminating expenses, refer to #5.
7. What are the governmental program savings from implementing this program? ie weatherization funds and management phased out etc..
8. What are the health cost net present value and after inflation savings resulting from increase ventilation rates as a result of this program?
9. How many lives would be saved by increased ventilation rates?
10. How much reduced and deferred maintenance can be saved as a result of this program?
CARE: What are estimates per house?
Do they vary for larger homes?
11. What are the predicted economic multiplier benefits to reducing the outflow of cash in a community by reducing energy costs?
12. Can Alaska build a materials supply industry around the program? ie timber, insulation manufacturing?
13. What would the labor impacts be of the program?
a. carpenters and contractors, assume 50% of cost is labor
b. designers and engineers?
c. inspection?
d. loan processors?
e. material supply?
f. material manufacturing?
14. Are these the people with the highest unemployment rates in the State?
15. What has been the history of Alaska spending on thermal energy needs relative to electrical and transportation needs? What percent of Alaska energy budget is thermal energy needs compared to other sectors?
16. What reduction in crime can be attributed to improved air quality?
should this be included in the study?

COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF ALASKA, USDA & SEA GRANT COOPERATING

University of Alaska, Fairbanks, Alaska 99775-5200

August 21, 1987

Dr. Arne Elmroth

Dear Dr. Elmroth:

I have a proposition for your regarding a consultation for our Alaska Craftsman Home Program Manual review process which is on-going here in the state of Alaska. Your name has been familiar to me for some time and you were also recommended to me by Mr. Oyvind Aschehoug of the Norwegian Institute of Technology in Trondheim.

We are involved in a rather short but intense review process of our on-going building design manual for cold climates, and we need someone with expertise in many facets of cold weather building. It was felt that your expertise matched this requirement very well within the Swedish National Building Research Council.

We would like you to participate in a review of our manual. However, we do not wish for you to review the entire manual, but only the things which fall within the area of your expertise. We are asking you to do this as an international effort to make you aware of our program, and also to get feedback from what we feel are the best international sources of expertise in this area.

My first question is, of course, can you review a series of chapters and get a written review back to us (in English, I'm afraid) within a two month time frame? We would be willing to pay you $500 American dollars for a service of this sort for a review in preparation for our own internal editing workshop to be held in the last week of October (Oct. 26-30), 1987. We would need to be in receipt of your review of our manual by Oct. 26.

My familiarity with your work came through a publication which you did with Bjørn Carlsson and Per-Åke Engvall entitled "Air Tightness and Thermal Insulation Building Design Solutions". For this reason I would like you to review the following chapters in our manual. I will annotate the chapter descriptions for your review in order to clarify what our expectations are.

The first chapter that I wish for you to review is the "Walls" and "Attics and Roofs", Chapters 6 and 7. These are essentially structural chapters for which a scientist such as yourself needs to review for the framing ideas and technical details of sealing the air vapor barrier. We wish to make the details easy to construct from a carpentry aspect. We have been very conservative about dealing with new ideas such as the airtight dry wall approach, since this design has not been tried in Alaska. This is a Canadian concept and I'm sure you are probably familiar with it. We would like to try it in a research house.

We would also like to add a section here on the Norwegian exterior cladding for marine climates. We felt that was very good information, and we have a lot of marine climate applications which are relevant for use of that information. Please especially attend to the details for vapor barrier continuity around floor plates, rim joists and other difficult areas and tell us with your experience if you know better ways to detail these features. Generally we want an editorial review of the quality of our presentation.

Next, I would also like you to devote some time to "Windows and Doors", Chapter 8. We have a local company here in Fairbanks, Alaska which has a franchise for the Danish primo polyvinylchloride-framed windows. They have managed to get the attention of other local companies. We have a very competitive window market in high technology windows, however, doors are very ill-adapted and we do not have good door technology. I understand that Swedish strategies for door opening, closure, and sealing are somewhat different than the usual. I would appreciate your commentary and elaboration on these features.

Chapter 9 is a ventilation chapter. Perhaps you could tap someone in your building research council (for a fee if you do not wish to do this yourself) to elaborate on the experience and latest technologies of ventilation systems in your climate and how they relate to our experience. We feel that the ventilation section is extremely weak in our manual, and it is going to be a major focus of attention in our review in October. Please be as critical as necessary and inform us if you can as to the needs for improvement.

This is what we would like you to review. I will send you, regardless of your ability to respond, a copy of our Alaska Craftsman Home Builder's Manual for review. I realize that this is short time and it is presumptious of me to ask you without calling you by phone. However, time is of the

essence. If you cannot do this within your schedule, please feel free to refer it to a competent colleague whom I would trust according to your recommendation.

Our plan for review is to have the first editorial revisions from you received by Oct. 26, 1987. We will reimburse you $500 U.S. upon receipt. After we use your review in developing new material and editing the manual, we will send you an updated manual for your review again sometime after November 1987. This will allow you to check what we have done to make sure we've included all necessary topics in an appropriate and understandable form. At that time an additional $500 will be paid upon receipt of that second review.

I hope you find this acceptable and can join us in this exciting and interesting program. We would like to enlist the awareness and support and review of the Swedish National Building Research Council in our program. Please notify me as soon as possible as to your decision and ability to participate.

Sincerely,

Rich Seifert

Richard Seifert
Energy Specialist

RS/gr

cc: Jon Buckle
Alaska Craftsman Home Program
Board of Directors

Cooperative Extension Service

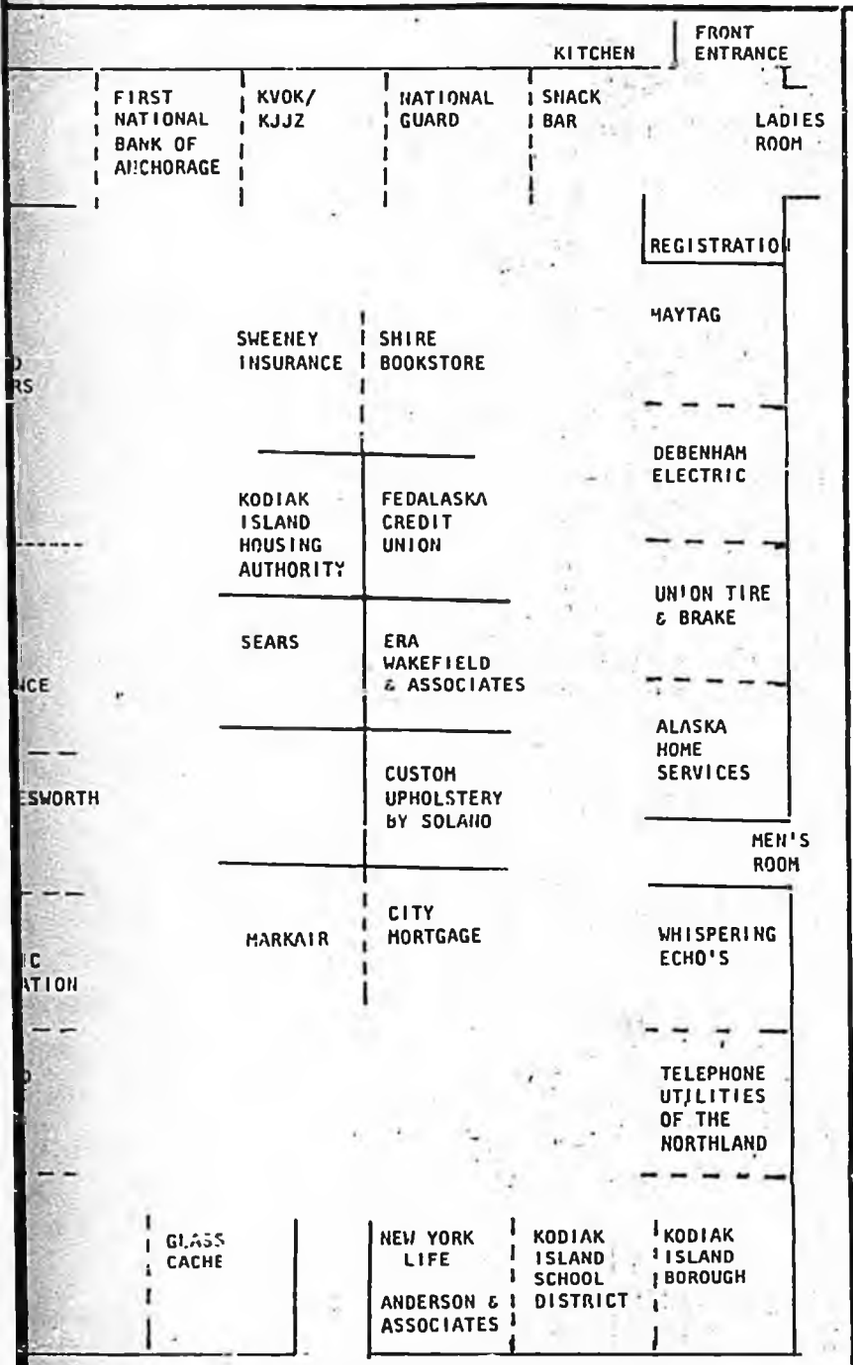
Whom does it serve?

The Cooperative Extension Service is the result of a unique partnership between the University of Alaska as a land-grant and sea-grant college and the U.S.D.A. and provides the people of Alaska with direct access to the resources of the University no matter where they live in the State. the Extension People have special training and expertise in the fields of agriculture, fisheries and marine resources, natural resource management, community development, family living and home economics, 4-H and youth education and local government assistance.

Extension's Field Offices:

The Cooperative Extension Service network of field offices has recently expanded to 17 locations in the following communities: Anchorage, Bethel, Cordova, Delta, Dillingham, Fairbanks, Homer, Juneau, Ketchikan, Kodiak, Kotzebue, McGrath, Nome, Palmer, Petersburg, Sitka, Soldotna.

THE FOLLOWING DOCUMENT HAS NOT BEEN FILMED BUT IS AVAILABLE IN THE ORIGINAL FILE



HOMESHOW 1988 SEMINAR SCHEDULE

SATURDAY, FEBRUARY 20, 1988

10:00 COFFEE WITH THE CONTRACTORS: This hour has

Superinsulation

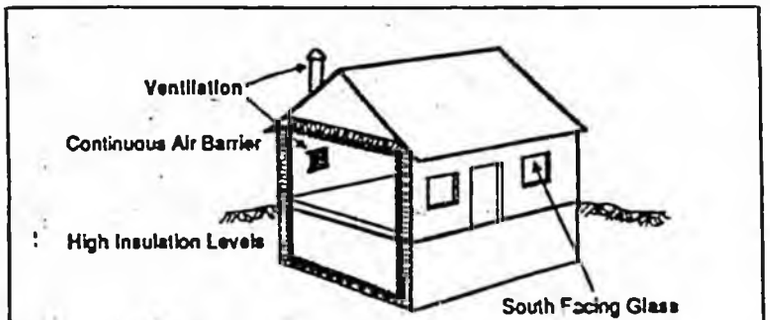
How you can make it work for you

From the Alaska Craftsman Home Program

Research, demonstration and development around the world has changed the way homes are being built in Northern climates. So many technical changes have taken place that an educational network is needed to keep the building industry in Alaska informed of the advancements. With such a network the Alaska building industry can stay abreast of advancements in other parts of the world as well as other parts of the state. The Alaska Craftsman Home Program is that education network.

The Alaska Craftsman Home Program provides a voluntary education service which today can inform homebuilders of the methods to reduce the thermal requirements of a residence as much as 80 percent compared to standard construction techniques now in practice in Alaska. This energy requirement reduction is achieved through proven techniques using available products and has proven economical paybacks to the builder and the eventual homeowner. The marketing advantage to building homes to the technical state of the art is significant and the resulting improvement in quality of life dramatic.

The energy savings that can be achieved is only one benefit



Superinsulation

place to improve the shelter industry as new technologies are developed in the future. The implications are that Alaskans will live in a more durable, affordable, comfortable and safer environment, and will benefit economically from the changes that have and will take place in the shelter industry as a result of the Alaska Craftsman Home Program.

GOALS

The immediate goal of the Alaska Craftsman Home Program is to:

Build thermal efficiency into the shelter industry in Alaska through education.

The long range goal of the Program is to:

Assist the Alaska shelter industry in providing the best, most appropriate and affordable shelter available.

In order to achieve these

THE HOME

The Alaska Craftsman Home Program sets a voluntary design and performance model. Generally speaking, the Alaska Craftsman Home has five elements.

1: A thermal requirement for the building envelope. These thermal standards vary for different regions of the State and are based on life cycle cost analysis.

2: Minimize natural air leakage. A blower door test is required to assure that the standard is met.

3: Controlled ventilation system to assure adequate air quality.

4: Assure that builder supplied lighting and appliances are efficient.

5: Safety standards must be met.

The Program is designed to encourage builder innovation

PUBLIC OPINION MESSAGE

DEAR: SENATOR STURGULEWSKI

NAME: DON MARKLE
TITLE:
ADDRESS: 2221 E. NORTHERN LIGHTS
CITY: ANCHORAGE ZIP: 99508
PHONE: 279-5582
BILL NO: SB 308
SUBJECT: ENERGY EFFICIENT HOME EQUITY FUND
MESSAGE: ARE WE STILL SCHEDULED FOR A TELECONFERENCE ON SB 308, MARCH 8, AT 3:00PM?

POMID: 03110355
DATE: 03/04/88
TIME: 11:03:55
LIONAME: ANCHORAGE LIO

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

P.O. BOX B
JUNEAU, ALASKA 99811-2100
PHONE: (907) 465-4700

949 E. 36TH AVENUE, SUITE 400
ANCHORAGE, ALASKA 99508-4302
PHONE: (907) 563-1073

February 12, 1988

POSITION PAPER

RE: Senate Bill 308: "An Act Establishing the Alaska Energy-Efficient Home Equity Fund".

SPONSOR: Senators Fahrenkamp, Sturgulewski, Josephson, Szymanski and Rodey

Program Effects of Bill

Senate Bill 308 would create in the Department of Community and Regional Affairs an Alaska Energy-Efficient Home Equity Fund which would be a revolving loan fund to finance the incremental costs to builders to construct superinsulated homes.

Comments

The Department strongly supports the concept of superinsulation. Superinsulated homes can reduce the heating costs of a home by 50 to 80 percent, while costing only an additional 5 to 10 percent to construct. Superinsulation is a technology that is practical, economical, and available now. The Department has sought to foster quality construction through the Alaska Craftsman Home Training Program. With $200,000 from its share of the Exxon oil overcharge settlement, the Department has supported the Cooperative Extension Service's voluntary program of educating builders on this method of construction.

The Department, however, does not have a position on this legislation. While it supports the construction of superinsulated homes, it has questions regarding state subsidizing the construction of new homes in the light of the current housing glut and with the current state revenue situation.

David G. Hoffman, Commissioner

STATE OF ALASKA
1988 LEGISLATIVE SESSION

BILL VERSION: SB 308
PUBLISH DATE: _____

FISCAL NOTE

REQUEST: _____

Revision Date: _____
Title: "An Act establishing the Alaska Energy-Efficient Home Equity Fund"
Sponsor: _____
Requestor: House C&RA

Agency Affected: Community & Regional Affairs
BRU: Housing Assistance

Components: Housing Loan
Administration

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93
PERSONAL SERVICES		61.5	61.5	61.5	61.5	
TRAVEL		2.0	2.0	2.0	2.0	
CONTRACTUAL		4.8	4.8	4.8	4.8	
SUPPLIES		1.4	1.4	1.4	1.4	
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING		69.7	69.7	69.7	69.7	
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		69.7	69.7	69.7	69.7	
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME		2	2	2	2	
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

The Department estimates that two full-time positions, a loan closer (Range 12) and an accounting clerk 3 (Range 8) will be necessary to administer the program along with associated contractual & supply costs.

Prepared by: Jim Plasman, Deputy Director — Phone: 465-4750
Division: Municipal & Regional Assistance — Date: 2/12/88

Approved by Commissioner: _____ — Date: _____
Agency: Community & Regional Affairs

Distribution (by preparer):
- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agency(ies)

STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE
Loan Closer II

LOCATION
Anchorage

TYPE (FULL OR PART-TIME) Full Time

NUMBER REQUESTED 1

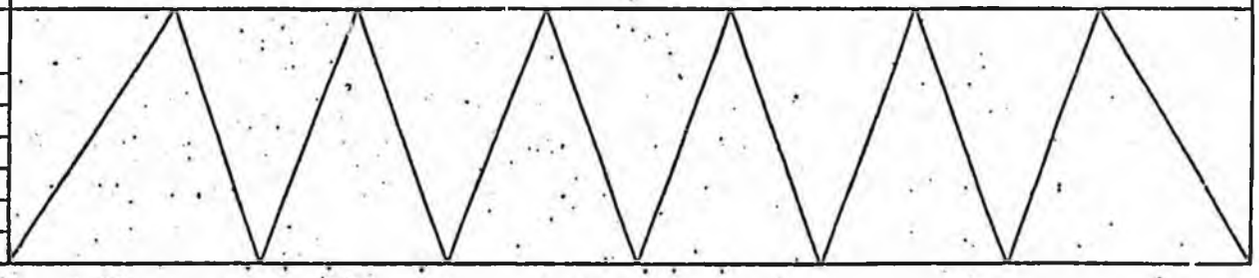
RANGE	BARGAINING UNIT
12A	GGU

MONTHLY SALARY	# MONTHS (CY)
2,826.28	12

JUSTIFICATION:

This position would process loans and grants under the Alaska energy-efficient home equity fund.

DETAIL OF RELATED EXPENSES	
01 PERSONAL SERVICES	33.9
02 TRAVEL	2.0
03 CONTRACTUAL	2.4
04 COMMODITIES	.7
05 EQUIPMENT	
08 OTHER	
TOTAL	39.0
1002 FEDERAL	
1003 G/F MATCH	
1004 GENERAL FUND	39.0
1005 I/A RECEIPTS	
1028 PROGRAM RECEIPTS	



STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Accounting Clerk III

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

RANGE	BARGAINING UNIT
8A	GGU

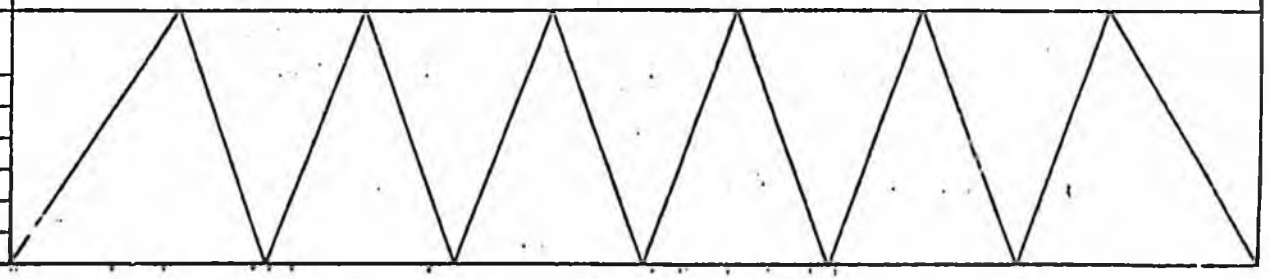
MONTHLY SALARY	# MONTHS (CY)
1,631	12

JUSTIFICATION:

The position will provide the necessary accounting support for the Alaska energy-efficient home equity fund.

		DETAIL OF RELATED EXPENSES
01	PERSONAL SERVICES	27.6
02	TRAVEL	-0-
03	CONTRACTUAL	2.4
04	COMMODITIES	.7
05	EQUIPMENT	
08	OTHER	
	TOTAL	30.7
1002	FEDERAL	
1003	G/F MA[illegible]H	
1004	GENEP[illegible].FUND	30.7
1005	I/A [illegible]S	
1028	PR[illegible]EIPTS	

Telephone, copy services, postage
Miscellaneous administrative



01-1043 (Revised March, 1979)

Introduced by: Mayor Jones
Introduced: 06/02/87
Drafted by: G.L.S.

MATANUSKA-SUSITNA BOROUGH

Resolution Serial No. 87-66

A RESOLUTION SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM FOR REDUCED HOME ENERGY CONSUMPTION.

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve health and safety of the occupants of dwellings, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, in the First Session of the Fifteenth Alaska Legislature, Senate Bill 308 and House Bill 318 supporting the Alaska Craftsman Home Program were introduced, and

WHEREAS, the adoption of said bills would improve and stimulate the home building industry in Alaska through incentives and education, thereby contributing to the overall economy of the state and the Matanuska-Susitna Borough, and

WHEREAS, the citizens of the Matanuska-Susitna Borough will benefit substantially from the construction of energy efficient homes following the guidelines developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED BY THE ASSEMBLY OF THE

1. That it is the policy of the Matanuska-Susitna Borough to encourage the construction of homes to the energy efficient standards of the Alaska Craftsman Home Program.

2. That the Assembly supports the concepts as set out in Senate Bill 308 and House Bill 318 as introduced in the First Session of the Fifteenth Alaska Legislature to establish such a state policy and to provide support for the Alaska Craftsman Home Program.

PASSED AND APPROVED by the Assembly of the Matanuska-Susitna Borough this 2nd day of June, 1987.

Dep Mayor

Dorothy A. Jones, Mayor

ATTEST:

Chris Seagraves, Borough Clerk
(SEAL)

International Conference of Building Officials

Alaska Southeast Chapter

POSITION PAPER SB-308 HB-318
ENERGY EFFICIENT BUILDING TECHNOLOGY

Our members support this bill and all efforts to achieve affordable well built housing in Alaska.

The standards of the Alaskan Craftsman Home Program represent the latest in scientific technology adapted to our unique climatic and economic conditions. Homes built to these standards will be healthier, less expensive to maintain and more durable than other housing units.

Creation of this fund will provide needed employment in the construction industry. This program could dramatically reduce the energy consumption of both new and existing dwellings in the State.

Local economies will benefit from the increase in disposable income which these energy savings will provide. Increased employment and improved general health of the population will contribute to long term economic stability.

These housing units are the legacy we will leave to future generations. Our innovations and courage will be appreciated now and for many years to come.

We request your continued support in this effort.

Sincerely,

Stephen O. Shows
President

P O Box 211411 Auke Bay, AK. 99821

RECEIVED [illegible] 1987

Suggested By: City Council

CITY OF KENAI

RESOLUTION 87-57

A RESOLUTION OF THE COUNCIL OF THE CITY OF KENAI, ALASKA, SUPPORTING THE ALASKA CRAFTSMAN'S HOME PROGRAM FOR REDUCED HOME ENERGY CONSUMPTION CONCEPT.

WHEREAS, in the first session of the Fifteenth Alaska Legislature, SB 308 and HB 318 supporting the Alaska Craftsman's Home Program were introduced, and

WHEREAS, the adoption of said bills would improve and stimulate the home building industry in Alaska through incentives and education thereby contributing to the overall economy of the state, the Kenai Peninsula Borough and the City of Kenai, Alaska, and

WHEREAS, [illegible] the Alaska Craftsman's Home Program will be benefitted economically by reducing home energy consumption, they will also be benefitted by improved health and safety of such constructed dwellings, the indoor air quality will be improved and their home maintenance needs will be decreased.

NOW THEREFORE, BE IT RESOLVED BY THE COUNCIL OF THE CITY OF KENAI, ALASKA, that said Council supports the concepts as set out in SB 308 and HB 318 as introduced in the first session of the Fifteenth Alaska Legislature to establish a state policy and to provide support for the Alaska Craftsman's Home Program.

PASSED BY THE COUNCIL OF THE CITY OF KENAI, ALASKA, this 2nd day of September, 1987.

JOHN J. WILLIAMS, MAYOR

ATTEST:

Janet Whelan

Janet Whelan, City Clerk

Sponsored by: Gieseler

CITY OF SEWARD, ALASKA
RESOLUTION NO. 87-079

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, IN SUPPORT OF THE ALASKA CRAFTSMAN HOME PROGRAM FOR REDUCED HOME ENERGY CONSUMPTION

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve health and safety of the occupants of dwellings, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs and increase the economic stability of the owner; and

WHEREAS, in the First Session of the Fifteenth Alaska Legislature, Senate Bill 308 and House Bill 318 supporting the Alaska Craftsman Home Program were introduced; and

WHEREAS, the adoption of said bills would improve and stimulate the home building industry in Alaska through incentives and education, thereby contributing to the overall economy of the state and the city of Seward; and

WHEREAS, the citizens of the city of Seward will benefit substantially from the construction of energy efficient homes following the guidelines developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, that:

Section 1. It is the policy of the city of Seward to encourage the construction of homes to the energy efficient standards of the Alaska Craftsman Home Program.

Section 2. The City Council supports the concepts as set out in Senate Bill 308 and House Bill 318 as introduced in the First Session of the Fifteenth Alaska Legislature to establish such a state policy and to provide support for the Alaska Craftsman Home Program.

Section 3. This resolution shall take effect immediately upon its adoption.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, this 14 day of September, 19 87.

Sponsored by: Gieseler

CITY OF SEWARD, ALASKA
RESOLUTION NO. 87-079

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, IN SUPPORT OF THE ALASKA CRAFTSMAN HOME PROGRAM FOR REDUCED HOME ENERGY CONSUMPTION

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve health and safety of the occupants of dwellings, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs and increase the economic stability of the owner; and

WHEREAS, in the First Session of the Fifteenth Alaska Legislature, Senate Bill 308 and House Bill 318 supporting the Alaska Craftsman Home Program were introduced; and

WHEREAS, the adoption of said bills would improve and stimulate the home building industry in Alaska through incentives and education, thereby contributing to the overall economy of the state and the city of Seward; and

WHEREAS, the citizens of the city of Seward will benefit substantially from the construction of energy efficient homes following the guidelines developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED BY THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, that:

Section 1. It is the policy of the city of Seward to encourage the construction of homes to the energy efficient standards of the Alaska Craftsman Home Program.

Section 2. The City Council supports the concepts as set out in Senate Bill 308 and House Bill 318 as introduced in the First Session of the Fifteenth Alaska Legislature to establish such a state policy and to provide support for the Alaska Craftsman Home Program.

Section 3. This resolution shall take effect immediately upon its adoption.

PASSED AND APPROVED BY THE CITY COUNCIL OF THE CITY OF SEWARD, ALASKA, this 14 day of September, 19 87.

By: Juanita Helms
Introduced: 01/14/88
Adopted: 01/21/88

RESOLUTION NO. 88-008

A RESOLUTION SUPPORTING ENERGY EFFICIENCY OF HOMES

WHEREAS, high-quality energy-efficient building technology developed by the Alaska Craftsman Home Program would substantially reduced home energy consumption. improve the health and safety of the occupants, improve indoor air quality, reduce the contribution of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska state lawmakers have introduced legislation which supports efficiency in homes that support the Alaska Craftsman Home Program and this legislation will help improve and stimulate the home building industry in Alaska through incentives and education and thereby, improve the local economy of the State, and

WHEREAS, the citizens of the borough will benefit substantially from the building of energy-efficient homes as developed by the Alaska Craftsman Home Program.

NOW, THEREFORE, BE IT RESOLVED that it is the policy of the Fairbanks North Star Borough to encourage the building of homes to the energy-efficient standards of the Alaska Craftsman Home Program and further that the borough assembly supports legislation to establish similar borough policy and borough support for the Alaska Craftsman Home Program.

PASSED AND APPROVED THIS 21ST DAY OF JANUARY, 1988.

Presiding Officer

ATTEST:

Clerk of the Assembly

NEWSLETTER

INSTITUTIONAL CONSERVATION PROGRAM

No. 9 February, 1988 Edited by Norman Bair

ICP Grant Applications Received - 1/15/88

The Institutional Conservation Program (ICP) for non-profit schools and hospitals received eight grant applications for the installation of energy conservation measures (ECMs) in Grant Cycle 10. They are being reviewed and it is expected that seven of the eight will be recommended for grants. One application does not meet the program requirements. The seven which will be recommended for funding are:

University of Alaska, Fairbanks
Yukon Koyukuk School District
City of Cordova School District
Kenai Peninsula Borough Schools
St. Mary's School, Kodiak
Yupiit School District
Bering Straits School District

Schedule for ICP Grant Applications

May 1, 1988	ECM Grants Awarded
March 1, 1988	Technical Assistance (TA) Applications available
April 29, 1988	TA Applications Due
August 15, 1988	TA Grants Awarded
October 1, 1988	ECM Applications available
January 15, 1989	ECM Applications Due

If you want to apply, please contact Norman Bair, ICP Program Manager, at 563-1955.

Approximate Available Grant Funds

Current ECM Cycle 10 estimate	$600,000
Technical Assistance (TA) Cycle 10	70,826
ECM Cycle 11 estimate	275,000

Note: Economic Hardship are yet to be decided

Materials Available on ICP

ICP Grant Application
ICP State Plan, including
  Appendix A, Energy Use Evaluation
  Appendix B, Technical Assistance (TA) Study
  Appendix C, ECM Grant Application Scoring
ICP Program Timeline (Detailed)
Sample "Request for Qualifications" and "Contract" for TA Studies
Sample Checklist for Operation and Maintenance
Sample Checklist for Energy Conservation Measures (ECMs)

Moratorium on Residential Thermal Standards

An emergency 120-day moratorium has been placed on the implementation of the Energy Conservation Standards for New Residential Buildings. In the interim 120-day period, the Department intends to request a permanent moratorium to delay the implementation of the Standard to October 1, 1988. Written comments are invited and should be addressed to:

Steve Baden
Chief, Energy Conservation Section
Department of Community and Regional Affairs
949 E. 36th Ave., Suite 403
Anchorage, AK 99508

Workshops are tentatively scheduled from March 14 through May in 20 communities around the state. Newspaper ads will give specific times and places. Contact Stuart Brooks at 563-1955 for more information.

Fluorescent Lamp Selection Criteria

There are some fluorescent lamps which have become the "in" thing because of promotional claims. Most of the major fluorescent lamp manufacturers have about 40 different lamps for the normal fluorescent fixtures. Some of the terms that need to be learned by the distinguishing buyer as they apply to fluorescents are lumens, degrees Kelvin, color rendering index (CRI), and watts.

The cost of operating the fluorescent lamps will vary according to the lumens per watt and the total lumen output. Lumens is a measurement of the amount of light produced by a lamp. Different kinds of commonly used 4-foot fluorescent tubes can range from 1900 to 3300 lumen output initially. The degrees Kelvin is a good indicator of the whiteness of the light. 2700 degrees Kelvin produces the yellower light of incandescent lamps and 5000 degrees Kelvin is a whiter light closer to daylight. Cool white lamps are 4100 degrees Kelvin and warm white are 3000 degrees Kelvin. The CRI indicates the relative color rendering quality. Generally, the higher the number the better the color rendering. But the CRI can only be compared between lamps with the same color temperature in degrees Kelvin.

Training and Conferences

"Alaska Craftsman Home Program Workshops",
Aniak, February 11-12
Unalaska, February 19-20
Anchorage, February 24-25
Fairbanks, February 24-25
Seward, March 11-12
This is a state-of-the-art workshop for architects designing energy-efficient buildings and for builders. $50.
Contact Ginny Moore, 563-1955 for information.

"Effective Building Maintenance Makes Money - II", February 22-24, Alaskaland, Fairbanks. Subjects include oil burners and controls, lighting, energy management control systems, electric motors and inverters, asbestos abatement, and fire alarm controls.
Contact Marcia Nye, 474-7800. Free.

Lamp and Lighting Seminar by Frank Gibler, Anchorage, February 24, Alaska Power Authority 701 E. Tudor Road, 9-11 am. Free.
Contact Pat Woodell, 561-7877.

Shared-Saving Performance Contracting Workshops
Anchorage, April 26-27
Fairbanks, April 27-28
The first day is for organizations wanting to install energy conserving measures. The second day is for businesses wanting to act as energy service companies which will finance, design and install the energy conservation measures.
Contact Frank D'Elia, 563-1955 for information.

National Awards Program for Energy Innovation

This program will again accept applications for awards for completed projects. The scoring will be on innovation, transferability, energy savings, and economic impact. Applications are due June 30, 1988. Contact Norman Bair at 563-1955 for information.

Training on Oil Burners for Rural Alaska

The Department will be issuing a Request for Proposals (RFP) in mid-March for training individuals from rural Alaskan communities on oil burner installation and maintenance. Proposers are limited to regional housing authorities, regional governmental agencies, school districts, regional native non-profit organizations, and electric utilities. The proposer will be responsible for selecting the trainees, organizing the training, and managing the trainees in homeowner counseling after the schooling. The goal is to have a trained oil burner technician in every community possible by 1991. This is an ongoing program. Last year's program provided or assisted in funding programs in the Nome, Dillingham, Kodiak, and Copper Center areas. Contact Norman Bair at 563-1955 for information.

New Videotapes in the Energy Library

"Super Good Cents", 12-part series
"Wayne Oil Burner Instruction"
"Bright Ideas in Lighting"

Contact Ginny Moore at 563-1955 for three-week checkouts.

National Inquiry and Referral Service

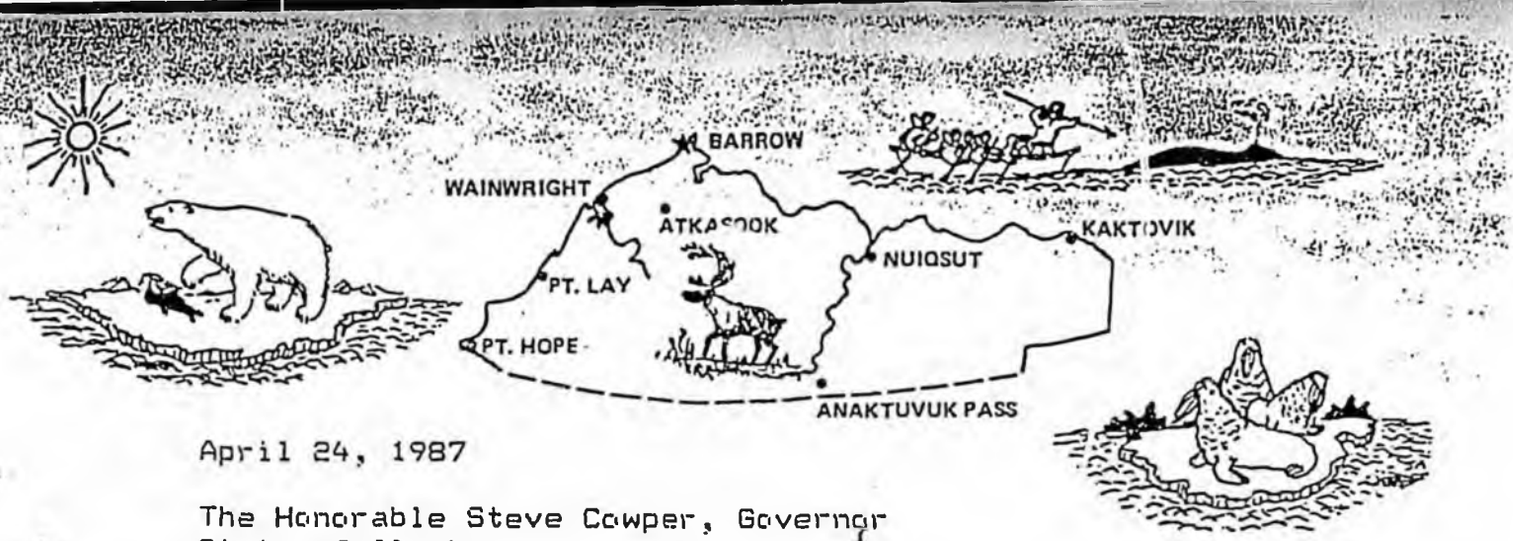
The Conservation and Renewable Energy Inquiry and Referral Service is available to Alaskans at telephone number 800-233-3071 or by writing: CAREIRS, P.O. Box 8900
Silver Spring, MD 20907

Alaska Department of Community
and Regional Affairs
Energy Programs Office
949 E. 36th Ave., Suite 403
Anchorage, AK 99508

DEPARTMENT OF COMMUNITY AND REGIONAL AFFAIRS
ASSISTING ALASKAN COMMUNITIES

Hon. Arliss Sturgulewski
Alaska State Senate
P.O. Box V
Juneau, AK 99811

Address Correction Requested



April 24, 1987

The Honorable Steve Cowper, Governor
State of Alaska
P.O Box A
Juneau, Alaska
99811

Dear Governor,

Recently we have received information regarding the Alaska Craftsman Home Program regarding education and implementation of efforts towards promoting high levels of energy efficiency for Alaskan Homes. Benefits to building super-insulated homes are far reaching encompassing home owners and the building industry, as well as having long range positive effects to community savings which assist in stimulating local economies, especially important to rural communities.

Here on the North Slope with communities paying the highest in the nation for heating fuel it is of the utmost importance to find and implement alternatives to insure our financial security for the years to come. Education for this generation and generations to come is very important. A recent state survey pointed out that the least likely way individual home owners learned about home energy efficiency was through the schools. With this in mind it is very important to establish a foundation on which to develop awareness for all alternatives available and capitalize on those alternatives that work.

The Alaska Craftsman Home Program Incentive Proposal is an idea which time has come, not for just our communities, but for all who call Alaska their "home".
Development of the State of Alaska's Residential Thermal Standards brought us a long ways to promote the ideals of resource efficiency. Promotion on the commercial, community, and individual home owner level with it,s development committed to education is indeed a worthwhile venture.

As Energy Planner for the North Slope Borough Utilities Dept. I support the Alaska Craftsman Home Program.

Best Regards

Energy Planner
N.S.B Utilities

NORTH SLOPE BOROUGH Dept. of Public Utilities • P.O. Box 69, Barrow, AK 99723 • Phone (907) 852-2611

Introduced by: Sewall, Glick
Date: September 1, 1987
Action: Adopted
Vote: Unanimous

KENAI PENINSULA BOROUGH
RESOLUTION 87-81

IN SUPPORT OF THE ALASKA CRAFTSMAN HOME PROGRAM FOR REDUCED HOME ENERGY CONSUMPTION

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve health and safety of the occupants of dwellings, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner; and

WHEREAS, the citizens of the Kenai Peninsula Borough will benefit substantially from the construction of energy efficient homes following the guidelines developed by the Alaska Craftsman Home Program;

NOW THEREFORE, BE IT RESOLVED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH:

Section 1. That it is the policy of the Kenai Peninsula Borough to encourage the construction of homes to the energy efficient standards of the Alaska Craftsman Home Program.

ADOPTED BY THE ASSEMBLY OF THE KENAI PENINSULA BOROUGH ON THIS 1 DAY OF September, 1987.

ATTEST:

Jonathan W. Sewall, Assembly President

Borough Clerk

Rod

CITY OF ANDERSON
P.O. Box 3100 • Anderson, AK 99744 • Phone (907) 582-2500

In Reply
Refer To:

April 20, 1987

The Honorable Steve Cowper
Governor
State of Alaska
Pouch
Juneau, Alaska 99811

Dear Governor Cowper:

On behalf of the City I am writing in support of the Alaska Craftsman Home Program, (ACHP). ACHP's efforts to promote residential energy efficiency in home building construction has been impressive.

The reduction in housing costs and maximization of thermal efficiency should be a major component in any attempt to develop Alaska's rural economy(s).

Local economic development efforts, currently underway in communities such as the City of Anderson, would be positively enhanced through the state's support of the ACHP.

Your support of programs such as the Alaska Craftsman Home Program, can help to ensure for the successful development of both rural and urban Alaska alike.

Thank you.

Sincerely,

THE CITY OF ANDERSON

Lanston Chinn
City Administrator

cc: Philip G. Loudon

605 Barrow Street, Suite 2, Anchorage, Alaska 99501 (907) 276-5864
Deborah Williams, Executive Director

AMERICAN LUNG ASSOCIATION of ALASKA

Dedicated to the prevention and control of lung disease

October 22, 1987

Governor Steve Cowper
P.O. Box A
Juneau, Alaska 99811

Dear Governor Cowper:

Indoor air quality is a pressing issue in Alaska. Two pending bills, HB 318 and 319, help address indoor air quality in a very practical manner through the Alaska Craftsman Home Program. Building energy efficient homes that also have healthful air quality is an important and achievable goal.

We urge your support of the Alaska Craftsman Home Program and other measures that promote indoor air quality.

Sincerely,

Deborah Williams
Executive Director

cc. Dan Markle

DW/cc

RECEIVED FEB 17 1987

Rod

CITY OF KODIAK
RESOLUTION NUMBER 51-87

A RESOLUTION OF THE COUNCIL OF THE CITY OF KODIAK SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce dwellings' contribution to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner; and

WHEREAS, the Alaska State Legislature has introduced legislation in the form of Senate Bill 308 and House Bills 318 and 319 that support the Alaska Craftsman Home Program with the expectation that these bills will help improve and stimulate the homebuilding industry in Alaska through incentives and education and thereby improve the local economy of the City of Kodiak; and

WHEREAS, the citizens of Kodiak will benefit substantially from the building of energy efficient homes as developed by the Alaska Craftsman Home Program,

NOW, THEREFORE, BE IT RESOLVED by the Council of the City of Kodiak, Alaska, the City of Kodiak encourages the building of homes to the energy efficient standards of the Alaska Craftsman Home Program and further that the City of Kodiak supports Alaska State Senate Bill 308 and House Bills 318 and 319 to establish similar state policy and state support for the Alaska Craftsman Home Program.

PASSED AND APPROVED this 14TH day of DECEMBER, 1987.

CITY OF KODIAK

Robert B Brodie
MAYOR

ATTEST:

Marcella Dalke
CITY CLERK

ASSOCIATION OF ALASKA HOUSING AUTHORITIES

RESOLUTION NO. 87-9

A RESOLUTION SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM.

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska State lawmakers have introduced legislation in the form of Senate Bill 308 and House Bill 318 and 319 which supports the Alaska Craftsman Home Program, and

WHEREAS, these bills will help improve and stimulate the homebuilding industry in Alaska through incentives and education and thereby improve the local economy of the State, and

WHEREAS, the citizens of the Sate of Alaska will benefit substantially from the building of energy efficient homes as developed by the Alaska Craftsman Home Program,

NOW THEREFORE BE IT RESOLVED that the Association of Alaska Housing Authorities encourages the building of homes to the energy efficiency standards of the Alaska Craftsman Home Program.

BE IF FURTHER RESOLVED that the Association of Alaska Housing Authorities supports Alaska State Senate Bill 308 and House Bill 318 and 319 to establish similar State policy and State support for the Alaska Craftsman Home Program.

Approved and adopted by the Association of Alaska Housing Authorities this 24 day of November, 1987.

Mike Shuler, President

Flo Dicot, Secretary

STATE OF ALASKA

DEPT. OF COMMUNITY & REGIONAL AFFAIRS

OFFICE OF THE COMMISSIONER

STEVE COWPER, GOVERNOR

☐ *P.O. BOX B*
JUNEAU, ALASKA 99811-2100
PHONE: (907) 465-4700

☐ *949 E. 36TH AVENUE, SUITE 400*
ANCHORAGE, ALASKA 99508-4302
PHONE: (907) 563-1073

February 12, 1988

POSITION PAPER

RE: Senate Bill 308: "An Act Establishing the Alaska Energy-Efficient Home Equity Fund".

SPONSOR: Senators Fahrenkamp, Sturgulewski, Josephson, Szymanski and Rodey

Program Effects of Bill

Senate Bill 308 would create in the Department of Community and Regional Affairs an Alaska Energy-Efficient Home Equity Fund which would be a revolving loan fund to finance the incremental costs to builders to construct superinsulated homes.

Comments

The Department strongly supports the concept of superinsulation. Superinsulated homes can reduce the heating costs of a home by 50 to 80 percent, while costing only an additional 5 to 10 percent to construct. Superinsulation is a technology that is practical, economical, and available now. The Department has sought to foster quality construction through the Alaska Craftsman Home Training Program. With $200,000 from its share of the Exxon oil overcharge settlement, the Department has supported the Cooperative Extension Service's voluntary program of educating builders on this method of construction.

The Department, however, does not have a position on this legislation. While it supports the construction of superinsulated homes, it has questions regarding state subsidizing the construction of new homes in the light of the current housing glut and with the current state revenue situation.

David G. Hoffman, Commissioner

21-P1LH

STATE OF ALASKA
1988 LEGISLATIVE SESSION

BILL VERSION: SB 308
PUBLISH DATE: _____

FISCAL NOTE

REQUEST: _____

Revision Date: _____
Title: "An Act establishing the Alaska Energy-Efficient Home Equity Fund"
Sponsor: _____
Requestor: House C&RA

Agency Affected: Community & Regional Affairs
BRU: Housing Assistance
Components: Housing Loan Administration

EXPENDITURES/REVENUES: (Thousands of Dollars)

OPERATING	FY 88	FY 89	FY 90	FY 91	FY 92	FY 93
PERSONAL SERVICES		61.5	61.5	61.5	61.5	
TRAVEL		2.0	2.0	2.0	2.0	
CONTRACTUAL		4.8	4.8	4.8	4.8	
SUPPLIES		1.4	1.4	1.4	1.4	
EQUIPMENT						
LAND & STRUCTURES						
GRANTS, CLAIMS						
MISCELLANEOUS						
TOTAL OPERATING		69.7	69.7	69.7	69.7	
CAPITAL						
REVENUE						

FUNDING: (Thousands of Dollars)

GENERAL FUND		69.7	69.7	69.7	69.7	
FEDERAL FUNDS						
OTHER						
TOTAL						

POSITIONS:

FULL-TIME		2	2	2	2	
PART-TIME						
TEMPORARY						

ANALYSIS: (Attach a separate page if necessary)

The Department estimates that two full-time positions, a loan closer (Range 12) and an accounting clerk 3 (Range 8) will be necessary to administer the program along with associated contractual & supply costs.

Prepared by: Jim Plasman, Deputy Director
Phone: 465-4750
Division: Municipal & Regional Assistance
Date: 2/12/88

Approved by Commissioner: _____
Date: _____
Agency: Community & Regional Affairs

Distribution (by preparer):
- Legislative Finance
- Legislative Sponsor
- Requestor
- Office of Management and Budget
- Impacted Agency(ies)

STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM
REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE: Loan Closer II

LOCATION: Anchorage

TYPE (FULL OR PART-TIME): Full Time

NUMBER REQUESTED: 1

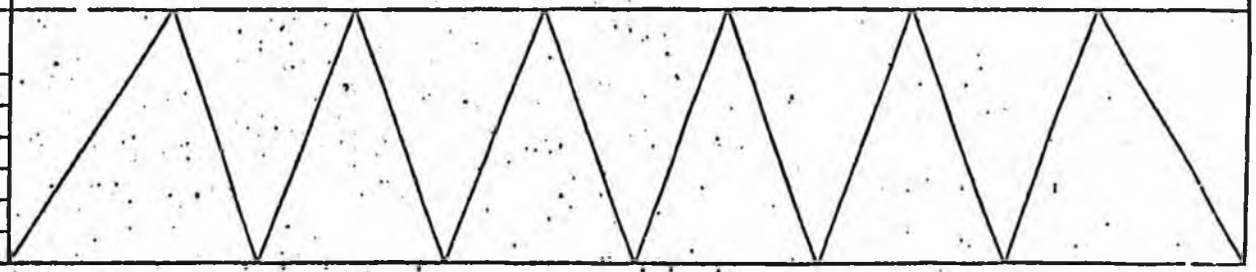
RANGE	BARGAINING UNIT
12A	GGU

MONTHLY SALARY	# MONTHS (CY)
2,826.28	12

JUSTIFICATION:

This position would process loans and grants under the Alaska energy-efficient home equity fund.

	DETAIL OF RELATED EXPENSES
01 PERSONAL SERVICES	33.9
02 TRAVEL	2.0
03 CONTRACTUAL	2.4
04 COMMODITIES	.7
05 EQUIPMENT	
08 OTHER	
TOTAL	39.0
1002 FEDERAL	
1003 G/F MATCH	
1004 GENERAL FUND	39.0
1005 I/A RECEIPTS	
1028 PROGRAM RECEIPTS	



STATE OF ALASKA
Office of the Governor
Budget & Management Div.

REVISED PROGRAM REQUEST FOR NEW POSITION

CATEGORY	
COVER PROGRAM	
AGENCY	Community & Regional Affairs
DIVISION	Housing Assistance
BUDGET REQUEST UNIT	Housing Assistance
BUDGET COMPONENT	Housing Loan
APPROPRIATION	
ALLOCATION	

POSITION TITLE
Accounting Clerk III

LOCATION
Anchorage

TYPE (FULL OR PART-TIME) Full Time

NUMBER REQUESTED 1

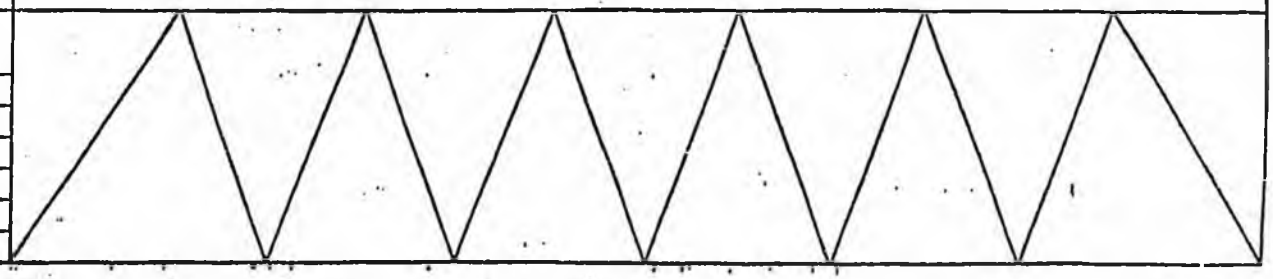
RANGE	BARGAINING UNIT
8A	GGU

MONTHLY SALARY	# MONTHS (CY)
1,631	12

JUSTIFICATION:

The position will provide the necessary accounting support for the Alaska energy-efficient home equity fund.

		DETAIL OF RELATED EXPENSES
01	PERSONAL SERVICES	27.6	
02	TRAVEL	-0-	
03	CONTRACTUAL	2.4	Telephone, copy services, postage
04	COMMODITIES	.7	Miscellaneous administrative
05	EQUIPMENT		
08	OTHER		
	TOTAL	30.7	
1002	FEDERAL		
1003	G/F MATCH		
1004	GENERAL FUND	30.7	
1005	I/A RECEIPTS		
1028	PROGRAM RECEIPTS		



Alaska State Legislature

SENATE
Office of the President

P.O. Box V
State Capitol
Juneau, Alaska 99811

11/6/88

December 10, 1987

MEMORANDUM

TO: All Senators

FROM: Senator Jan Faiks
President of the Senate

SUBJECT December 7 Energy Policy Task Force Meeting

During the Energy Policy Task Force Meeting the Chairman's initial notes for the direction to go in in drafting final recommendations were discussed. The following is a summary of these initial draft ideas:

ORGANIZATION:

1. Generally leave the new technical assistance, education, and research and development programs where they are.

2. Impose strong coordination by means of MOV's and by joint technical (& budgetary) advisory committee.

3. Transfer all loan programs into one program under the Alaska Energy Authority (a renamed APA) - including loan receipts. (Some Task Force members suggested that it might be more effective to transfer some loan program administration to different agencies instead).

FINANCING:

4. Support the concept of self-financing and strive toward no net annual cost to the general fund.

PROGRAM THRUSTS:

5. Change the name of APA to the Alaska Energy Authority (AEA) and give it a strong new thrust toward Alaska-appropriate

technology development and technical assistance to individuals and users of energy.

6. In general, emphasize technical assistance, education, and training rather than grants, subsidized loans, etc. (the fish vs. fishing pole concept).

7. Give strong emphasis to energy conservation and energy efficiency approaches.

8. In write up be careful not to unduly place too much emphasis on regional issues or entitlements.

PROGRAM SPECIFIC:

9. PCE: no change this year, provisionally assume the program is permanent, carefully change to program to cap it and provide incentives to users. Be ready for detailed recommendations in a few months.

10. Conservation Program: make a strong recommendation on standards and encouragement on new construction.

Enclosed are copies of other materials the Task Force discussed.

The following is the schedule for the next Task Force meetings:

December 14-15: Statewide public hearing teleconference from at least 10 locations.

January 18-19: Meeting in Juneau to go over final recommendations.

RESIDENTIAL ENERGY CONSERVATION LOAN FUND
Department of Commerce and Economic Development
Division of Investments

PURPOSE: To finance energy conservation improvements in existing buildings.

ELIGIBILITY AND CONDITIONS: Statutorily contingent on the applicant not having past due child support obligation. Loans may not exceed $5000 or the amount equal to the estimated total energy savings attributable to the improvement over a 10-year period. Interest rates are equal to an average of municipal bond yields for the 12 months preceding the loan.

PROGRAM HISTORY AND PRESENT STATUS: When this program began in 1980 it also allowed grants or refunds up to $300 if an energy audit demonstrated adequate savings. The authority to make refunds and grants was repealed in 1983. The total money committed to this program over the years is $8.3 million, and 2332 loans have been made. No funds were appropriated after FY 84, and only 2 loans were made during FY 87. As of June 30, 1987 the outstanding loans numbered 1163, and the outstanding principal on loans was $2.9 million. At that time, the delinquency rate was 6.4 %, and the number in default was 3.1 %.

DISCUSSION AND ANALYSIS: The Task Force was presented little information on this program. It now appears to be a non-functioning program. The Task Force heard no arguements for its continuation, although it would seem that this program could serve as a mechanism for homeowners to finance energy conservation measures, including weatherization measures. It is not clear why homeowners are not taking advantage of the loan program. Is the administering agency discouraging new loans, or is there some other reason?

[Questions for Division of Investments:

1. What is the current cost of administering this program? What staffing is required?

2. What causes have led to the dormancy of this program?]

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS:

1--Is there reason to continue this program? If so, what changes need to be made to make it viable?

2--If the program should be eliminated what should be done with the funds owing on principal and interest: allow them to devolve to the General Fund? Consider them as energy

program receipts to pass through the General Fund for assignment to energy programs, perhaps to the general energy revolving loan fund?

3--If this program is to be continued should it be transferred to APA or its successor organization?

Working Draft
Dec. 1, 1987

ALTERNATIVE ENERGY LOAN PROGRAM
Department of Commerce and Economic Development
Division of Investments

PURPOSE: Evidently to encourage the use of alternative (to diesel) sources of energy and to encourage the development and application of those alternative energy sources in Alaska. (No specific statement of purpose has been located, but one or more probably appear in the Alaska Statutes, if anyone is inclined to look.)

ELIGIBILITY AND CONDITIONS: No statuatory eligibility other than that the applicant does not have a past-due child support obligation as established by court order or by the cognizant state agency. The maximum loan amounts are $30,000 over 20 years at 5 percent interest for the first $15,000 and 15 percent for the amount of the loan that exceeds $15,000, computed as a composite rate.

PROGRAM HISTORY AND CURRENT STATUS: The history starts in 1978; it is long and lurid. Various statuatory changes were made over the years, culminating in the establishment of a special foreclosure reserve account and of property disposal procedures in 1985. Altogether, 2944 loans have been made, but there were only 10 in FY 87. The total loaned is $19.3 million, and as of July 30, 1987, the outstanding principal due was $10.2 million, in 1483 loans. No legislative appropriations were made in FY 87 (and probably none in FY 88). The number of delinquent loans (those past due for at least 60 days but not in litigation) was, on July 30, 1987, 4.4 %; and 4.6 % were delinquent. For all practical purposes this is a dead program--except that it has assets: $10 million in principal due.

DISCUSSION AND ANALYSIS: The Task Force was presented with little information on this program, perhaps for good reason. One is led to the conjecture that the program--while it seemed to be a good idea at the time--has met with limited success. It was easy to get money from the program; people took it, and perhaps later regretted their action. No one seems to have come forward to argue for its continuation.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS

1--In view of the deline of this program, does the Task Force wish to make a recommendation?

One possibility is to recommend nothing. Another is to recommend that that no further loans be made and that the program be taken off the books, the principal and interest owing to devolve to the state's General Fund. Another is to transfer the program over to the overall 'Energy Revolving Loan Fund' where the payments on principal 'and perhaps interest) can be considered as energy program receipts and be passed through the General Fund earmarked for general energy programs.

1/2

Working Draft
Dec. 1, 1987

WASTE HEAT RECOVERY PROGRAM
Alaska Power Authority

PURPOSE: To reduce overall energy costs by increasing, by as much as a factor of two, the recovery of energy from diesel fuel used to generate electricity, the additional energy recovered being typically used to heat public buildings located near rural generating facilities.

ELIGIBILITY AND CONDITIONS: Any electrical utility is eligible for receiving technical advice and assistance. The APA typically assesses each individual situation to determine the cost-effectiveness of a proposed installation and if it is found that payback can be obtained in 10 years or less the project is considered feasible.

PROGRAM HISTORY AND CURRENT STATUS: This program began in 1981 and has been continued since. Although a stand-alone program, it is essentially administered as part of the Rural Technical Assistance Program, and waste heat recovery projects are often pursued in conjunction with other electrical system improvements. In some cases the waste heat recovery doubles the energy extracted from the diesel fuel; it is possible to obtain paybacks in as few as two or three years. The APA has installed 19 systems, has assessed 42 other potential installations, and has requests for assistance from approximately 50 villages. The economic feasibility of this type of project is high enough that APA is prepared to sell revenue bonds on the open market to finance a number of additional installations.

DISCUSSION AND ANALYSIS: This program appears to be an example of an activity of sufficient economic viability that it can pay for itself, while at the same time reducing overall costs and the consumption of a fossil fuel, specificially diesel oil. It would seem then that many potential projects can be completed by offering only technical assistance and no subsidy. If that be true, a natural question is if private industry could not pursue this work on its own or with the assistance of APA. [Clarification is needed on the current extent of involvement of private industry in the waste heat recovery activities.] Relevant to this issue was a comment by one of the APA presenters that in the early phase of the program APA did contract out the feasibility work but then determined that the process was not giving good results. At that point apparently APA began to involve itself to a greater extent in the performance of the feasibility work, design and construction management.

waste Heat 3/2

It was noted in the presentation that savings from the heat recovery program in part accrue to the state through reduced costs incurred in heating schools and other state-owned facilities, and in some cases the projects may reduce the Power Cost Equalization subsidy.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS:

1--Should this program be eliminated, reduced, maintained as is, or increased?

2--If the program should be maintained or increased, are steps needed to ensure program stability, or to bolster it by additional state expenditures on R&D efforts?

3--Should there be a recommendation on the issue of private sector involvement?

LOW INCOME HOME ENERGY ASSISTANCE PROGRAM (LIHEAP)
Federally Funded by Block Grants to
Department of Health and Social Services
Division of Public Assistance
and
Seven Tribal Grantees

PURPOSE: To provide assistance to low-income households to offset the cost of home heating that is excessive in relation to household income, by means of payments made to energy suppliers on behalf of each household .

ELIGIBILITY AND CONDITIONS: The annual benefit given to an eligible household varies from $200 to $1100 depending on household size and income; geographic location of residence; type, annual usage and cost of local fuel; size and type of housing. Those households with incomes below 150 % of the poverty level defined for the state do qualify as do those with incomes less than 60 % of the median income for Alaska. For example, a family of four with an income of $22,943 qualifies. Determination of elegibility is based on family income during the past 3 months. Households containing an individual receiving Aid To Families with Dependent Children, food stamps, Supplemental Social Security Income, or certain income-tested VA benefits are automatically eligible. Amounts actually awarded may be limited by the total funds available.

PROGRAM HISTORY AND CURRENT STATUS: The program has been operating for 8 years. The Division of Public Assistance sevices approximately 12,000 applicants, and the tribal organizations service about 8,000. Only about half of the 40,000 eligible households in Alaska apply, but the money available during most years has not been enough to take care of those who do. This past year the average DPA grant was $480, with the regional average in Southeast Alaska being $420 and that in northern Alaska being $1000. The money goes mostly for home heating fuel but some (25 % or less) may go into electrical use because electricity may be required to operate heating units.

Pending federal approval, the State will use up to 15 % of its block funds for low-cost home weatherization, the money being transferred from DPA to DCRA for its weatherization program. Jeff Weltzin reported that the Tanana Chiefs used 15 % of the funds received for weatherization, and that they expended monies also to purchase high-efficiency wood stoves. He said that federal regulations really allowed as much as 25 % of the funds to be used for energy-conserving hardware and weatherization, and that Tanana Chiefs preferred that this course be taken. Other tribal groups evidently are spending almost all of their block grant funds on fuel payments. The estimated planning and administration cost for the DPA portion of the

program during FY 88 is $560,000, well below the 10 % limit allowed by the federal government, so there appears to be little or no net cost to the state.

Of concern to DPA is the level of federal funding for the program, described as "whimsical". Since a 30 % cut is threatened for the coming year, DPA has been limiting the grants accordingly, and has recommended that the tribal organizations do the same. It appears that they are not cutting back, so problems may lie ahead. The Division of Public Assistance holds back some money to be used for emergency assistance: additional money is occasionally given to grantees when they are in particularly desperate straits. Funding this current year is about $9 million, down from $11 million last year. These are program totals, the amount being split between DPA and the tribal organizations. Concern was expressed that in a weakening economy more applicants will come forward to ask for support from the program.

DISCUSSION AND ANALYSIS: Except for the fact that this program encourages a degree of reliance on government, it is rather innocuous from an energy policy point of view. It serves those people who most need help, without appearing to remove incentive to save money and energy. The Task Force did not receive much information about the administration of the program by tribal organizations, but it appears that the Divison of Public Assistance is doing a good job of administering its part. The federal regulations on conduct of the program seem comprehensive but adequately flexible, and that apparently proper degree of control no doubt contributes to the quality of the program.

Obvious contrasts appear between the LIHEAP and PCE programs. LIHEAP subsidizes energy; PCE subsidizes electricity. LIHEAP does not encourage increased energy consumption, whereas the PCE program does (at least for users of less than 750 KWH/mo). LIHEAP gives assistance on a need basis: PCE does not. LIHEAP contains provisions for funding energy conservation measures: PCE does not. LIHEAP is federally funded: PCE is state-funded.

ISSUES PERHAPS NEEDING ATTENTION AND WHICH MIGHT LEAD TO RECOMMENDATIONS BY THE TASK FORCE:

1. If federal funding for this program continues to decline, the state could choose to supplement the funds. Is this advisable?

2. Are there aspects of this program that should be incorporated into the state's PCE program?

LIHEAP 3/3

3. Even if the main portion of the state's energy programs were consolidated in some way, is there any reason that this program should not remain where it is?

WORKING DRAFT
December 7, 1987

ENERGY CONSERVATION REGULATIONS

Department of Community and Regional Affairs
Division of Community Development

PURPOSE

In order to improve the energy efficiency of Alaska's building stock, the legislature enacted legislation (AS 46.11.040) in 1980 stating that "State financial assistance may not be approved or granted for the construction of a new residential or commercial building if construction of the building begins after December 31, 1980, unless the building is in compliance with thermal and lighting energy standards." After some delay and a lengthy public review process, the Department of Community and Regional Affairs (DCRA) has promulgated regulations that establish thermal energy standards for new residential buildings. These standards become effective on January 1, 1988.

ELIGIBILITY AND CONDITIONS

The energy conservation standards that have been promulgated by DCRA apply to residential buildings that receive State financial assistance. This includes:

1. detached single-family dwellings,

2. buildings that are four stories or less and have a heating unit that provides heat to no more than six dwelling units, and

3. additions that increase the dwelling floor space by 50 percent or more, and begin construction after January 1, 1988.

It should be noted that mobile homes and transient housing need not comply with these standards.

The regulations establish thermal standards for new residential construction but not lighting standards. The standards may be satisfied by complying with one of three methods which are the:

1. prescriptive method,

2. performance method, or

3. building budget method.

The two principal State agencies that provide financing for new residential buildings are:

1. the Alaska Housing Finance Corp. (AHFC), and

2. the Housing Assistance Division (HAD) of DCRA.

PROGRAM HISTORY AND CURRENT STATUS

The milestones for the residential energy conservation standards are as follows:

1980 - The legislature passes an omnibus energy bill which includes the requirement that residential and commercial buildings must comply with thermal and lighting standards if they are to receive State financial assistance. The Department of Commerce and Economic Development is to adopt regulations that establish these standards.

1983 - The legislature amends AS 46.11.040 so that responsibility for adopting regulations is now with the Department of Community and Regional Affairs. DCRA establishes a 16-member advisory committee to help establish standards.

1984 - The advisory committee recommends that commercial standards be separated from the residential standards and that residential lighting standards not be included.

1985 - Draft residential thermal standards are developed by the advisory committee.

1986 - Extensive public hearings are held on the draft standards. Standards were finalized at the end of the year and adopted by DCRA.

1987 - Regulations are approved by the Lt. Governor's Office. Regulations are to become effective on January 1, 1988.

Although the Office of Energy Programs in DCRA was responsible for adopting the energy conservation standards, this agency does not have responsibility for enforcement. In effect, enforcement of the standards essentially rests with AHFC and HAD which provide State financing for housing.

AHFC has said that to comply with the energy conservation standards, it "intends to require builder certification that newly constructed homes have been built in accordance with that law". However, they do not intend to conduct construction inspections. "If a builder certifies to AHFC that a house was built in accordance with AS 46.11.040 and that certification proves false, this violation would be more appropriately dealt with by the State's Contractor's Licensing Division or the court system."

HAD has made efforts to comply with the standards by informing banks that service its loans that they "will be required to include in your loan purchase packages a notarized affidavit from the builder that the structure was built according to the standards and a copy of the builders certificate showing he or she completed the Alaska Craftsman Home Program Energy Efficiency Workshop."

DISCUSSION AND ANALYSIS

Despite the economic and comfort benefits of residential energy conservation measures, most new homes built in Alaska are not built to the most energy

efficient standards that could be justified by life-cycle costing. Listed below are some obstacles that often result in less than optimal construction.

1. With most new homes, the builder, rather than the home owner who will be paying the heating bills, decides what energy conservation measures should be included. Making changes to these energy conservation measures, if they are inadequate, adds unnecessary expense.

2. The building industry generally perceives that the added expense of energy conservation measures makes it more difficult for them to be to be competitive and/or profitable despite the advantage to the home owner.

3. To be effective, many energy conservation measures have to be properly installed. Once the house is completed, it is often difficult to tell if proper installation has taken place.

4. Energy conservation measures are usually upfront costs which may appear to be expensive or unaffordable to the consumer even though the savings that are expected to result over the lifetime of the product are greater than the cost of the product.

Mandatory thermal standards for new homes can protect the future home owner from having to pay more expensive heating bills as the result of a home builder who reduced his costs by using energy conservation measures or construction practices that are substandard. The thermal standards also protect the State's interest, particularly if the homeowner forecloses on an AHFC or HAD mortgage.

The Alaska State Homebuilders Association has recently voiced opposition to the energy conservation standards. Their objections generally relate to five points which are:

1. The cost of construction will be greater ($4,000-5,000 for a $110,000 home in a developed area) and the cost will have to be covered by the builder through reduced rates and additional downpayment by the homebuyer.

DCRA disputes that the cost will be that much more.

2. Environmental quality is a problem with tight houses. This can affect the health of the occupants and damage structural components (because of moisture buildup).

It should be noted that the standards do include ventilation requirements and recommend air-to-air heat exchangers which should prevent these problems from occurring.

3. There is a lack of experience with the building methods needed to met these standards and "no program for training is contemplated" nor are any public awareness programs planned.

It should be noted that DCRA does provide public information on energy conservation measures and the Energy Extension Service has provided homebuilders with training through its Alaska Craftsman Home Program Workshop.

4. There is no enforcement of the standards.

Enforcement is via the agencies that finance new home construction. AHFC and HAD have both indicated that they would comply with the statutes. HAD plans to take a more active posture by requiring builder certification and AHFC is also considering this approach.

5. The energy savings do not justify the increase in costs.

This objection seems to be based on the premise that the economic analysis should be based on the current average life of the loan (less than seven years) rather than a thirty year amortization. This is not a technically correct approach if the useful life of the energy conservation measure exceeds the average life of the loan.

The recommendation of the Homebuilders is to delay implementation of the standards for two years. During this time, the Homebuilders would like to resubmit the issue back to the legislature to review its appropriateness under current conditions and to provide a more thorough analysis of the need for the standards as well as its cost-effectiveness.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS

1. The principal issue with the energy conservation standards is whether or not to its effective date (January 1, 1988) should be postponed as recommended by the Alaska State Homebuilders Association. The discussion above should provide adequate information for considering this issue.

2. As stated earlier, enforcement of these standards is up to the State agencies that provide financing for new home construction. Clearly, these agencies have an obligation to comply with the regulations. However, there is some discretion as to whether the agency should assume a passive or active role in this enforcement. The most active role that an agency could assume in enforcing the standards is to inspect each home that it mortgages to assure compliance. But, obviously, this would entail additional costs. An issue that the Task Force may wish to discuss is how actively should agencies enforce these standards.

3. The purpose of the energy conservation standards is to protect the homebuyer from experiencing unnecessarily high heating bills due to inadequate conservation measures or building practices by the homebuilder. Does the homebuyer need protection? Also, how effective have voluntary methods, such as the Energy Rated Homes program, been in accomplishing the same purpose?

4. We are all aware that Alaska's shelter industry is experiencing severe economic problems. Do the energy conservation standards add to these problems by increasing the cost of new homes and perhaps reducing the profit margin of the homebuilder, or will the standards have a positive affect on the shelter industry by making it more difficult for modular housing to penetrate the Alaskan market as well as homebuilders who come to Alaska without the experience of building in cold climates?

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WORKING DRAFT
DECEMBER 7, 1987

LOW INCOME WEATHERIZATION
Department of Community and Regional Affairs
Rural Development Division

PURPOSE: the Low-Income Weatherization program is a federally sponsored program that is administered by the State. The purpose of the program is to reduce the home heating costs of low-income residents using standard energy conservation measures such as weatherstripping, caulking, vapor barrier and insulation. The program provides the materials, transportation, and labor that are needed to install the energy conservation improvements that are determined to be appropriate for each home.

ELIGIBILITY AND CONDITIONS: Regulations by the U.S. Department of Energy (DOE) established the eligibility and conditions that apply to the Low-Income Weatherization program. There are two ways that a household can qualify for weatherization:

1. By qualifying for AFDC, Social Security, Disability, or adult public assistance, or

2. By having a household income that is 60% of the mean income for the State.

These regulations are essentially the same as those used for the federally sponsored Low-Income Home Energy Assistance Program (LIHEAP) except that household income is based on the last 12 months for weatherization instead of the last 3 months for LIHEAP.

Federal regulations limit the amount of assistance to $1,600 per home, currently, which includes the cost of materials, transportation to the respective communities and installion.

Federal regulations give DCRA the discretion to allocate program funding but legislative intent limits this discretion. The legislative intent for the weatherization program is that funding should be allocated on the basis of; 1) cost of fuel oil, 2) heating degree days, and 3) percentage of homes not weatherized. DCRA uses these criteria to determine what percentage of its annual funding should go to each of six regions in the State (five rural regions and one region that includes urban centers).

The next step in the allocation process is to identify those communities that best meet the criteria. To achieve some economies-of-scale, the

Weatherization Funding History

FISCAL YEAR	DOE	LIEAP	STATE	EXXON	TOTAL
1981	$ 1.4 mil	--	--	--	$ 1.4 mil
1982	$ .8 mil	$ .5 mil	--	--	$ 1.3 mil
1983	$ 1.3 mil	$ .3 mil	$ 2.3 mil	--	$ 3.9 mil
1984	$ .9 mil	$ .3 mil	$ 5.1 mil	--	$ 6.3 mil
1985	$ 1.8 mil	$1.0 mil	$ 5.2 mil	--	$ 8.0 mil
1986	$ 1.5 mil	$ .8 mil	$ 2.1 mil	--	$ 4.4 mil
1987	$ 1.4 mil	$ .7 mil	$ .2 mil	$2.0 mil	$ 4.3 mil
1988	$ 1.4 mil	$ .7 mil	$ .2 mil	$2.0 mil	$ 4.3 mil
	$10.5 mil	$4.3 mil	$15.1 mil	$4.0 mil	$33.9 mil

Homes Weatherized

	Total Homes	As of 1987	% Weatherized
Anchorage	70,724	3,206	5
Fairbanks	22,628	974	4
Juneau	7,656	307	4
Rest of State	50,644	10,541	21
Total	151,652	15,028	10

Based on the 1980 census, it is estimated that about 45,000 homes in Alaska may qualify for weatherization.

PROGRAM HISTORY AND CURRENT STATUS:

The weatherization program (which operates on a federal fiscal year) is just completing its FY 87 efforts. During FY 87, about 1800 homes have been weatherized. Contractors for this effort include:

CONTRACTOR	REGION SERVED	CONTRACT VALUE
Municipality of Anchorage	Anchorage	$ 985,406
RuaAL CAP	Western Alaska	894,133
AK Comm. Dev. Corp.	Southcentral	894,033
SIH	Fairbanks	469,365
Tanana Chiefs	Doyon	318,482
TOTAL		$3,561,419

An $88,000 contract with SEACAP to serve Southeast communities, was canceled due to some irregularities that appeared after an audit of previous contracts. Both the FBI and the Juneau Police are also

Projected Funding for Conservation Program
($ 000)

Funding Source	FY 88	FY 89	FY 90	FY 91
Overcharge Funds				
Exxon	3,000	3,199	538	0
Stripper Well	0	0	3,743	0
Federal	2,220	2,147	1,900	1,800
State	698	698	698	698
TOTAL	5,918	6,045	6,879	2,498

Although the potential for a precipitous drop in funding for energy conservation programs is still at least two years away, it often takes government a year or two to respond to a problem. Therefore, if there is to be continuity in the weatherization program, now is the time to devout attention to this potential problem.

It should be noted that there may be some obligation for the State to restore general fund appropriations to the weatherization program since the allocation by the federal court of the overcharge funds was based on the premise that these funds would not be used to supplant other sources of funding. State funding for the capital budget portion of the program was eliminated about the time that the overcharge funds became available.

Future funding for the weatherization program raises the issue as to when the program can expect to have completed its job. Considering that:

1. It has taken about eight years to weatherize about one-third of the homes that are expected to qualify for weatherization (based on the 1980 census);

2. That the energy conservation measures being installed are essentially skimming the cream and do not include everything that could be cost-effective; and

3. That since 1980 there has been a considerable increase in the amount of housing stock in Alaska, much of it poorly built and needing weatherization:

The need for the program exceeds the amount of funding that can be expected at this point in time.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS.

Issues that could be of concern to the Task Force are:

1. Approximately $34 million has now been spent during the past eight years to weatherize 15,000 homes, an average cost of $2,265 per home; the annual average program cost being $4.5 million/year. If another

Working Draft
Dec. 1, 1987

RURAL TECHNICAL ASSISTANCE PROGRAM
Alaska Power Authority

PURPOSE: Provide assistance to rural communities in their efforts to develop, upgrade and operate electrical utility systems in order to decrease community dependence on diesel fuel. Currently involves provision of engineering, planning, and financial advice, direct on-location engineering services, and sometimes equipment.

ELIGIBILITY AND CONDITIONS: Any organized municipality, unincorported village or rural utility requesting it is eligible to receive technical assistance. The assistance is often given in conjunction with capital project appropriations to the APA or in in conjunction with loans or grants awarded to the recipient organizations by the legislature, either through the Alaska Power Authority or other administering agencies. In some cases the APA conducts the planning, design, construction and initial acceptance operations while retaining ownership of the facilities; then the ownership is transferred to the recipient organization.

PROGRAM HISTORY AND CURRENT STATUS: Within its Program Development Directorate the APA maintains a Rural Technical Support group consisting of 7 persons, and this group receives aid from other parts of APA so that the current level of effort involves a staffing of approximately 10 [?] full-time equivalent positions. Funding for these positions is approximately xx% from the APA operating budget and yy % from Capital Improvement Project (CIP) funds. The APA's October 1987 "Active Projects List" indicates that approximately 30 separate technical assistance projects are underway, not including waste heat recovery projects or reconnaissance and feasiblity studies. The projects include planning, construction, upgrading and operation of electrical distribution lines; development of small hydro generating facilities, assessments of community needs for technical assistance; energy conservation demonstration projects; community electrifcation projects; and assistance in obtaining right-of-ways or with other administrative and financial problems. The rural technical assistance given by the APA is actually somewhat broader than implied above; personnel involved in the program give communities needing it some administrative assistance and aid that goes beyond what we think of as strictly technical assistance. In this regard, one person has suggested that the overall program has a sort of amorphous structure.

:USSION AND ANALYSIS: The overall rural technical stance program operated by APA is one that has slowly ved during recent years as a result of the availability hat organization's technical capabilities and a growing eness by the legislature and by rural communities of the e of applying this capability to rural problems. eas direct fiscal awards without oversight often have made in the past, there seems to be a growing tendency ward grant or loan monies through APA in order to ensure nical oversight and an effective expenditure of the s. That trend may be only apparent--it may be more the lt of an overall reduction in capital appropriations.

In Alaska's rural areas this program evidently is ly regarded. Many rural residents appear to believe programs of this type are one of the best means to ve electrical services and reduce costs. However, an esting question has been raised about the way in which program is currently conducted. The suggestion has made that the program has moved in a direction that has PA into improper competition with private industry--it suggested that the original intent for APA's lvement was only to provide oversight on expenditure of funds, conduct assessments of problems and needs, linate personnel training programs, and provide gency services. Specific detailed issues raised include:

1. In its efforts to reduce project costs is APA ring too much into project design, construction gement and procurement of materials? (It is pointed out the procurement of materials [and only contracting for with private entities] removes the ability of a ate entity to mark up the cost of the materials, thereby cing the profitability to the private entity.) On the r side of the issue, APA personnel have commented that the years they have felt obligated to take a greater because of such problems as ill-advised design work by ractors which has led to the installation of excessive rating capacity and equipment not appropriate to the ation. Assuming that there may be some truth to the ements offered on both sides of this issue, what rammatic modifications could be made to make more use of private entities while also ensuring that they perform in a cost-effective manner.

2. Another issue raised is the danger of taking too of a "big brother" approach which removes onsibility and decision-making from rural communities, perhaps preventing them from doing planning, truction and operations work that the communities would r to do themselves, perhaps using force account labor contracting with private companies. Is this actually ing in this program? Related to this issue is the [illegible] of the advisability of encouraging

very small communities to have complex utility systems (water, sewer, electrical) that they may not have the expertise and inclination to operate efficiently. If these small communities are to have the facilities, should they be expected to maintain them by themselves, or instead should there be larger organizations like AVEC to take over the responsibility--perhaps using some combination of local labor and circuit rider personnel?

These and similar legitimate questions appear to need more investigation by the Task Force. While only raised in conjunction with this specific program, these questions have broader implications for all of the state's programs of technical nature.

In summary, the Rural Technical Assistance Program seems to be a popular and an effective one that is helping to reduce rural energy costs and improving the quality and safety of electrical supply. But the program's operation in its present form might be considered to be removing opportunities from private industry, and it might be having a tendency to remove initiative and responsibility from the local level.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS

1--Should this program be eliminated, reduced, maintained, or increased?

2--If the program should be maintained or increased, are steps needed to ensure program stability?

3--What level of staffing should the program have and should that staff maintain a high level of technical expertise and hands-on involvement in technical matters?

4--At what point does a program of this type improperly begin to compete with private enterprise? Where is the balance between proper technical assistance and oversight and an improper displacing of private industry?

5--At what point do technical assistance efforts begin to take away local initiative and responsibility?

6--What about the suggestion that this program be expanded by providing routine technical support by means of circuit-rider personnel--evidently now being done rather successfully in support of some rural water supply systems?

7--If a circuit-rider program is initiated should it be considered as a first step toward establishing rural regional utilities?

STATE ENERGY CONSERVATION PROGRAM
Department of Community and Regional Affairs

PURPOSE: Presentations to the Task Force indicated that this is a rather broad program with several thrusts which might all be categorized as being directed toward reducing energy consumption and costs. Commissioner David Hoffman stressed the theme that DCRA views the energy programs as tools which the department uses in conjunction with other programs in an overall attempt to build stronger rural communities and which would promote the preservation of smaller rural communities. Individual and community education is one general programmatic thrust.

ELIGIBILITY AND CONDITIONS: The general program is sufficiently diffuse in nature that it appears difficult to define the eligibility of program recipients and the requisite conditions under which program delivery occurs. Perhaps departmental proclivities are the main determinants, the overall needs being so great and the number of communities involved so large that factors such as community accessibility and responsiveness probably enter.

PROGRAM HISTORY AND CURRENT STATUS: This general program appears to have evolved from the remnants of several programs previously conducted within the Division of Energy and Power Development (DEPD) of the Department of Commerce and Economic Development and then transferred to DCRA when DPED was abolished in 1983. Approximately 8 staff positions are involved, not including 5 others in the Weatherization Program also operated by DCRA and closely related to this program (See separate description of the Weatherization Program). The FY 88 operating budget is $1.57 million and there is a $400,000 capital budget for the Institutional Conservation portion of the program. Of the operating budget, $448K is from the General Fund, and $1.12 million is from the federal EXXON funds.

The overall program appears to have these components:

Institutional Conservation

Development of Thermal and Other Standards and Promotion of Their Adoption.

Technical Assistance to Communities in Purchasing of Bulk Fuels

Community Energy Conservation Efforts and Planning (end-use considerations and least-cost efforts)

Energy Extension Service Sub-Programs
- Rural Residential Heating System Maintenance
- Alaska Craftsman Homes

Energy-Rated Homes
Energy Performance Contracting
General Energy Education

Some of the main concerns which persons involved in this program are attempting to deal with are described in the attached summary prepared by DCRA and entitled: "Rural Energy Issue Briefing".

DISCUSSION AND ANALYSIS: Of major operational concern is the current funding picture for this general program. both the federal and State governments have made major cutbacks on funding, and the program is now largely paid for by oil overcharge funds. The Oil Overcharge Consumer Advisory Board, a group advisory to DCRA and which includes sever l members of the Energy Policy Task Force, notes that: "S' e 1984, State funding for energy conservation has decreased 91% and federal funding also has decreased...The Advisory Board has recommended to the State that the remaining oil overcharge funds be allocated in FY 89 and that the expenditure of these funds take place over two fiscal years. The result is that, beginning in FY 90, there will be only a small amount of State and federally-funded programs to support energy conservation." See attached sheet entitled "Energy Conservation Funding" for a summary of past and expected future funding.

The person preparing this summary has a nagging feeling of not really understanding how this overall program is structured and how it operates in detail. The issues which strategies attack seem to be well defined, as are some of the specific strategies. Is my problem simply that the various program elements are so complexly interwoven that the whole assemblage looks amorphous? On the other hand, it may be that--especially if funding is declining and some hard choices have to be made--program personnel will have to undertake some planning activities that will establish various short- and long-term goals which the program can accomplish with various funding levels. The same thought, of course, might equally apply to some of the other programs the Task Force has reviewed.

A very important battle that program personnel are fighting is for the adoption of thermal and lighting standards and the general adoption of good building practices. The Task Force has heard ample evidence in support of constructing better buildings, an endeavor far from fully supported by all concerned. The Alaska Homebuilders Association is in fact lobbying to get a two-year delay on enforcement of the standards being adoped on January 1, 1988.

ISSUES NEEDING ATTENTION AND WHICH MIGHT LEAD TO TASK FORCE RECOMMENDATIONS

1. The major problem of declining funding fo: the overall conservation program.

2. Thermal and lighting standards.

3. Kudos for and criticisms of specific program elements. Any recommendations for programmatic priorities?

RURAL ENERGY ISSUE BRIEFING

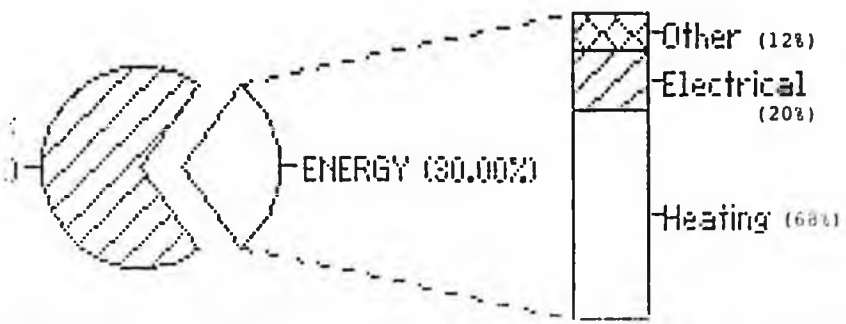
Department of Community and Regional Affairs

y represents one of the largest outflows of cash in many communities, severely limiting community development tunities.

Alaskans spend a considerable portion of their incomes %) on staying warm and on lighting. (This compares with for Anchorage.)

ng warm constitutes the greatest residential energy ex- (68%, as compared with electrical - 20%).

RDEN OF ENERGY COSTS ON RURAL FAMILY
(based on rural family income)



- Energy conservation presents the most practical and cost-effective long-term solution to high heating costs.

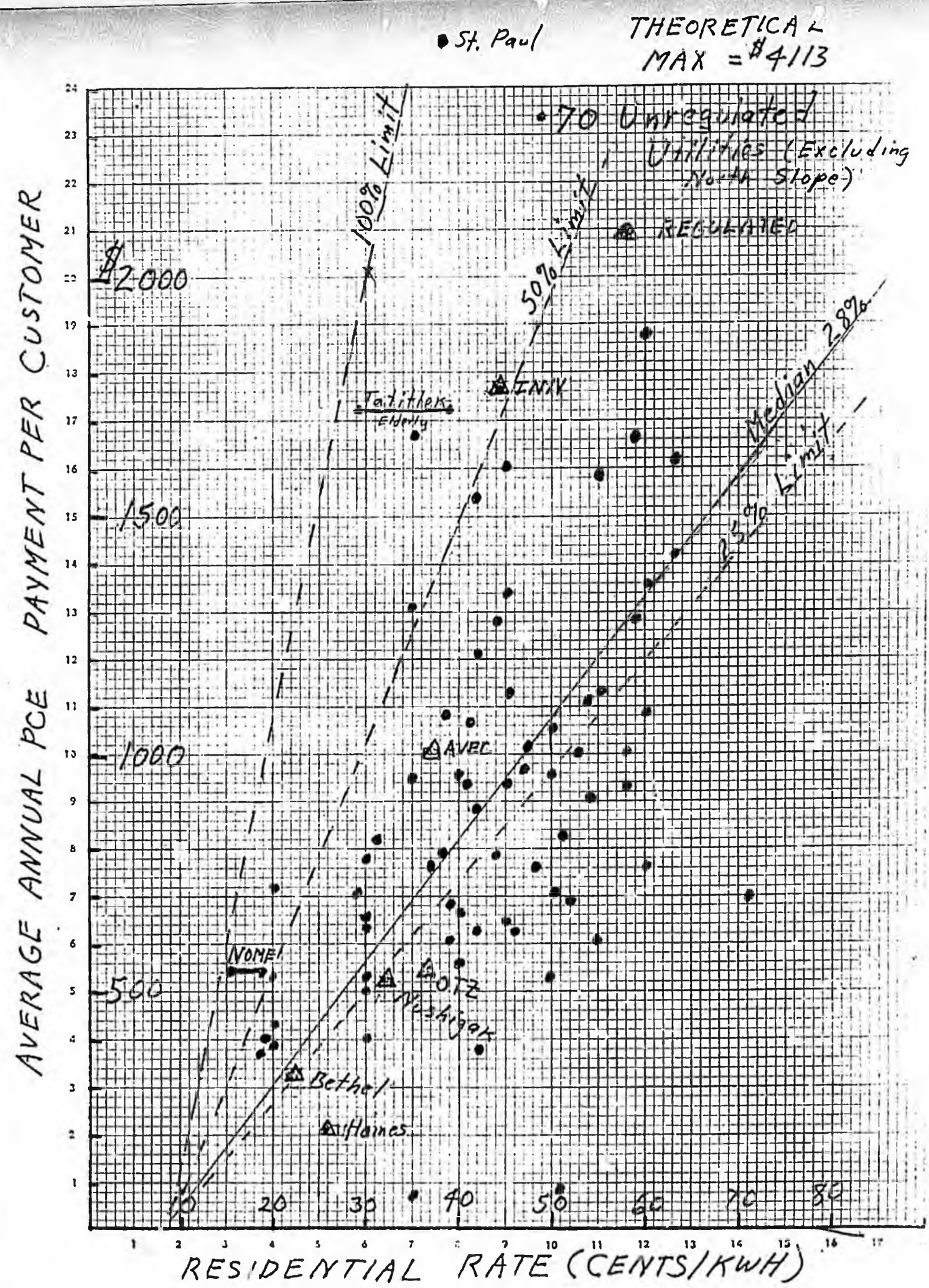
Examples of how various energy conservation measures can reduce the cash leaving the family and community are:

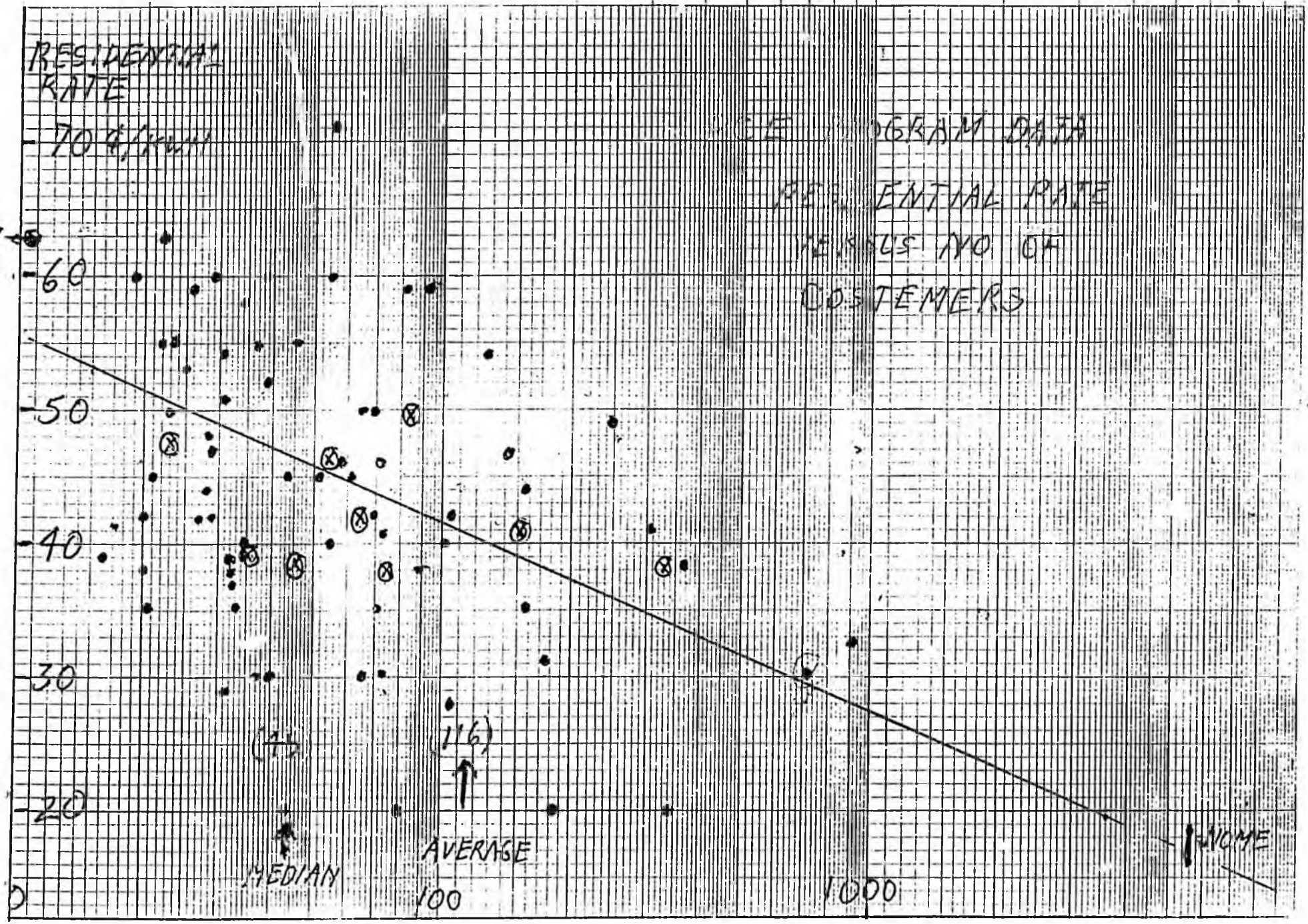
- Weatherization can reduce low income Alaskans' energy consumption in existing buildings by 18 to 20%;
- By building superinsulated homes, heating bills can be reduced as much as 80% over standard construction;
- High efficiency stoves and proper maintenance can result in 50% savings;
- Cooperative bulk fuel purchases can save communities 19-23% in fuel costs. This saving can be further enhanced through effective fuel management and appropriate financing.

- Every dollar saved through conservation represents at least a dollar reinvested in the community, creating jobs or strengthening the economy.

ENERGY CONSERVATION FUNDING

FUNDING SOURCE	FY84 7/83-6/84 $000	FY85 7/84-6/85 $000	FY86 7/85-6/86 $000	FY87 7/86-7/87 $000	FY88 7/87-6/88 $000	FY89 7/88-6/89 $000	FY90 7/89-6/90 $000	FY91 7/90-6/91 $000
EXXON (Restricted to existing Federal Program)	-0-	-0-	-0-	2,500	3,000	3,199	538	-0-
STRIPPER WELL	-0-	-0-	-0-	-0-	-0-	← 3,743 →		-0-
FEDERAL	2,078	1,350	3,023	2,720	2,220	2,147 (estimate)	1,900 (estimate)	1,800 (estimate)
STATE	7,406	7,232	3,362	1,361	698	698 (estimate)	698 (estimate)	698 (estimate)
TOTAL	9,484	8,582	6,385	6,582	5,918	6,045 (estimate)	6,879 (estimate)	2,498 (estimate)


St. Paul
THEORETICAL MAX = $4113
70 Unregulated Utilities (Excluding Non-AA Slope)
REGULATED
100% Limit
50% Limit
Median 2.8%
2.5% Limit
$2000
1500
1000
500
ENK
Tatitlek
Elderly
AVEC
NOME
OTZ
Bethel
Haines
AVERAGE ANNUAL PCE PAYMENT PER CUSTOMER
RESIDENTIAL RATE (CENTS/KWH)



E HISTOGRAM DATA

RESIDENTIAL RATE

VERSUS NO OF

CUSTOMERS

Superior
Millwork
Inc.

8401 BRAYTON DRIVE
ANCHORAGE, ALASKA 99507

PHONE: 344-0556

January 12, 1988

Commissioner David Hoffman
P.O. Box "B"
Juneau, Alaska 99811

Senator Jan Faiks
Senator Arliss Sturgelewski
P.O. Box "V"
Juneau, Alaska 99811

This letter is to express concern over the state's energy conservation standards for new residential buildings.

As a window manufacturer, I must complain about the standards for windows. Compliance with these specifications will be very expensive and have a minimum effect on the energy use of a home. Glazing is the target of these standards, with no mention of other critical functions of a window - such as, thermal efficiency of the frame or air infiltration. To increase the thermal value of the glass without addressing these other areas, serves no purpose other than to increase costs. Even if all these factors were addressed, the energy savings would not be cost effective.

The door specs as written also have alarming implications. To achieve the thermal values required, design options are virtually eliminated. Popular glass doors are not allowable unless other expensive measures are taken to satisfy the state requirements. Wood doors would be obsolete except for the possible "allowance" of one per home An efficient door is a good idea. However, the weatherstripping, door bottom and frame type can quickly defeat any gains made if they are not required to meet sensible standards. Also, an efficient door loses more heat when opened even occasionally, than it can save when shut. Although, the standards for doors do not increase costs dramatically, they limit the consumer's choices as well as discriminate against new homes having traditionally preferred doors.

In summary, I find these specific energy standards to be poorly conceived, expensive and uneffective. To require contractors and homebuyers to comply with these standards, gives an already weakened industry a severe blow when new home costs are considered. I believe these standards could be useful with revisions, but should be introduced gradually, so tnat they will not force such dramatic price increases on an already suffering industry.

Thank you for taking a few minutes out of your busy day to review this letter.

Sincerely,

SUPERIOR MILLWORK, INC.

Stewart Barnes
Sales Manager

SB:slw
cc: Robert Lunsford
Eugene W. Vik
Joan Lunsford

RESOLUTION OF THE ALASKA MUNICIPAL LEAGUE

RESOLUTION NO. 88-36

A RESOLUTION SUPPORTING ENEPGY EFFICIENCY OF HOMES.

WHEREAS, high-quality energy-efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contribution of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska state lawmakers have introduced legislation which supports efficiency in homes that support the Alaska Craftsman Home Program and this legislation will help improve and stimulate the home building industry in Alaska through incentives and education and, thereby, improve the local economy of the State, and

WHEREAS, the citizens of the State of Alaska will benefit substantially from the building of energy-efficient homes as developed by the Alaska Craftsman Home Program;

NOW, THEREFORE, BE IT RESOLVED that it is the policy of the Alaska Municipal League to encourage the building of homes to the energy-efficient standards of the Alaska Craftsman Home program and further that the Alaska Municipal League supports legislation to establish similar state policy and state support for the Alaska Craftsman Home Program.

Adopted this 13th day of November 1987.

George W. Carte', President

ATTEST:

Scott A. Burgess, Executive Director

Roc.

RECEIVED OCT 2 3 1987

CITY OF PALMER, ALASKA

RESOLUTION NO. 765

A RESOLUTION SUPPORTING THE ALASKA CRAFTSMAN HOME PROGRAM.

WHEREAS, high quality energy efficient building technology developed by the Alaska Craftsman Home Program would substantially reduce home energy consumption, improve the health and safety of the occupants, improve indoor air quality, reduce the contributions of dwellings to outdoor air pollution, increase home durability, reduce home maintenance needs, and increase the economic stability of the owner, and

WHEREAS, Alaska State lawmakers have introduced legislation in the form of Senate Bill 308 and House Bill 318 and 319 which supports the Alaska Craftsman Home Program, and

WHEREAS, these bills will help improve and stimulate the homebuilding industry in Alaska through incentives and education and thereby improve the local economy of the State, and

WHEREAS, the citizens of the State of Alaska and City of Palmer will benefit substantially from the building of energy efficient homes as developed by the Alaska Craftsman Home Program,

NOW, THEREFORE BE IT RESOLVED that the City of Palmer encourages the building of homes to the energy efficiency standards of the Alaska Craftsman Home Program.

BE IT FURTHER RESOLVED that the City of Palmer supports Alaska State Senate Bill 308 and House Bill 318 and 319 to establish similar State policy and State support for the Alaska Craftsman Home Program.

Approved and adopted by the Palmer City Council this 27th day of October, 1987.

GEORGE W. CARTE', MAYOR

S. WELLS WILLIAMS, ACTING CITY CLERK

AGENDA

12 November 1987, 2:00 PM

Alaska Mutual Bank (5th Avenue) Board Room

1. Introduction of Participants
2. Craftsman Homes - Don Markle
3. Energy Standards, Department of Community & Regional Affairs - Steve Baden
4. Energy Homes of Alaska - Peter Poray
5. Homebuilders - Greg Jones
6. General Discussion

COOPERATIVE EXTENSION SERVICE, UNIVERSITY OF ALASKA, USDA & SEA GRANT COOPERATING

ONLY THE BEGINNING

The Alaska Craftsman Home Program will offer more than workshops this year. In a four-phase program ACHP is planning a hotline, computer-planning, and development of new educational programs specifically for home buyers and realtors. Legislative interest includes a pilot program in rural Alaska, and incentives to homeowners and builders. ACHP plans further research for new design and product development.

Studies show that energy costs in areas of Alaska could rise 500% by the year 2000. Cost-efficient programs for energy-efficient homes are needed now.

I want information about the Alaska Craftsman Home Program workshop in my area this year.

Name _____

Address _____

State/Zip _____

I am: ☐ Homeowner
☐ Home builder
☐ Architect
☐ Realtor

Mail to:

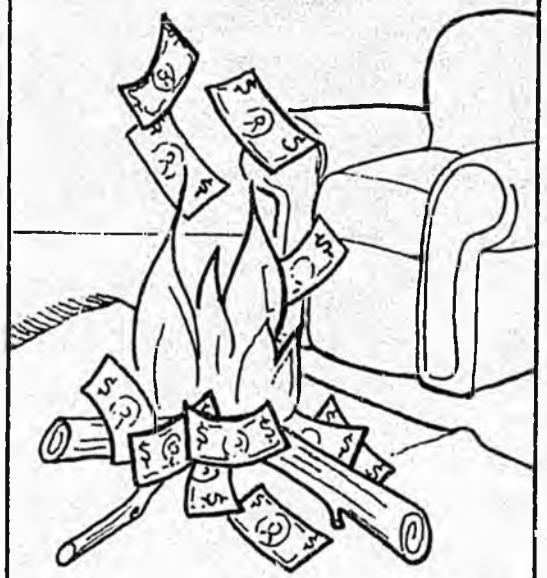
ALASKA CRAFTSMAN HOME PROGRAM
2221 E. Northern Lights Blvd.
Anchorage, AK 99508

Attn: Don Markle

ALASKA CRAFTSMAN HOME PROGRAM

ALASKA CRAFTSMAN HOME PROGRAM KNOWS

There's a better way to heat your home...*

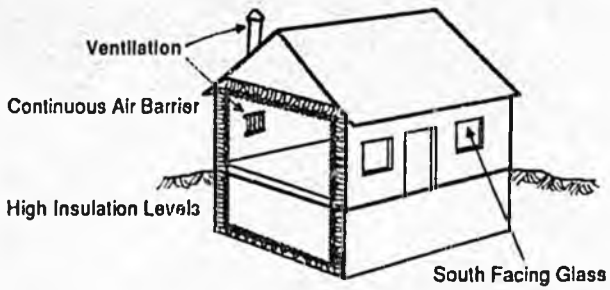


*Phil Loudon heats his Fairbanks home for $150.00 annually.

ALASKA CRAFTSMAN HOME PROGRAM

Superinsulation is an adaptable, thorough energy-conserving approach to designing and building that allows all the comforts of home without the high costs of heating.

To work properly, superinsulation must be understood and applied to all steps of home construction. The Alaska Craftsman Home Program (ACHP) is the educational network that allows the Alaska building industry to stay abreast of superinsulation advancements worldwide as well as here in Alaska.



Superinsulation

ACHP is designed to provide technical information to the Alaska building industry, and be a forum for the industry to work with the Alaska financial institutions and the University of Alaska research community.

ACHP has set voluntary performance standards for superinsulation building in Alaska. A standard that works with any popular architectural design and requires only standard materials, tools, and construction methods.

For the builder and the homeowner this means:

- Reduced energy bills, from 50% to 80% which can save the homeowner up to $100,000 over the house life.
- A more durable home with increased comfort and decreased noise.
- Improved indoor air quality, reducing radon as well as other deadly pollutants.

WE'RE AVAILABLE TO HELP

ACHP has trained 24 Alaskans to conduct two-day workshops on how to build properly for our harsh Alaskan climate. These workshops will explain the detailed superinsulation technology in the Alaska Craftsman Home Building Manual.

Workshops will provide information on:

- Superinsulation of walls, attics, and foundations.
- Ventilation for health and safety.
- Energy-efficient doors and windows.
- Design, including passive solar energy options.
- Condensation and infiltration control.
- Methods and materials for Alaska.

Superinsulated Homes have outperformed standard housing nationwide.

ENERGY RATED HOMES ALASKA

ALASKA STATE HOMEBUILDERS ASSOCIATION

DCRA

COOPERATIVE EXTENSION SERVICE
UNIVERSITY OF ALASKA,
USDA AND SEA GRANT COOPERATING

STATE OF ALASKA

DEPARTMENT OF LAW

OFFICE OF THE ATTORNEY GENERAL

STEVE COWPER, GOVERNOR

P.O. BOX K—STATE CAPITOL
JUNEAU, ALASKA 99811-0300
PHONE: (907) 465-3600

September 24, 1987

Honorable Arliss Sturgulewski
Alaska State Senate
2957 Sheldon Jackson
Anchorage, Alaska 99508

Re: Dept. of Community & Regional Affairs energy conservation standard regulations (Dept. of Law file no: 993-86-0095)

Dear Senator Sturgulewski;

You and I spoke by phone on September 23, 1987, regarding Department of Community and Regional Affairs' (DCRA) regulations that adopted an energy conservation standard for new residential buildings (19 AAC 69.210 -- 19 AAC 69.290). As I mentioned, although those regulations took effect May 21, 1987, the energy conservation standard adopted by reference in those regulations "applies to a new residential building for which state financial assistance is received after December 31, 1987." As we discussed this morning by phone, enclosed are copies of the following:

1. the April 21, 1987, Department of Law approval memo for that regulations project (our file no. 993-86-0095)

2. several pages of material, which DCRA submitted for filing with the regulations, relating to DCRA consideration of comments received regarding both the regulations project and the energy conservation standard adopted in the regulations

3. a September 24, 1986, letter regarding the proposed regulations, which DCRA sent to legislators, and to which is attached the list of those who received the letter

4. a copy of AS 24.20.445, regarding the Administrative Regulation Review Committee's power to suspend administrative regulations.

As I also mentioned to you this morning, to my knowledge no attorney general opinion exists regarding the validity of AS 24.20.445.

I hope this information is of help to you. If you need further information, please feel free to contact me.

Sincerely,

GRACE BERG SCHAIBLE
ATTORNEY GENERAL

By: B.J. Jordan
B.J. Jordan
Legal Text Editor

BJJ:cb

MEMORANDUM State of Alaska

TO: Honorable David Hoffman
Commissioner
Department of Community and
Regional Affairs

DATE: April 21, 1987

FILE NO.: 993-86-0095

THRU:

TELEPHONE NO.: 465-3600

SUBJECT: New regulations on the Energy Conservation Standard for New Residential Buildings (19 AAC 69.210 -- 19 AAC 69.290)

FROM: Grace Berg Schaible
Attorney General

By: Peter B. Froehlich
Assistant Attorney General
and Assistant Regulations Attorney

Under AS 44.62.060, we have reviewed the adoption of these regulations, and approve them for filing by the lieutenant governor. A duplicate original of this memorandum is being furnished the lieutenant governor, along with the regulations and related documents. The documents include a copy of the pamphlet which comprises the energy conservation standard for new residential buildings that is adopted by reference in new 19 AAC 69.210 and the "AKWARM" pamphlet mentioned in new 19 AAC 69.290(7).

Your March 10, 1987 adoption order states that this action is not expected to require an increased appropriation. Therefore, AS 44.62.195 does not require a fiscal note.

In accordance with AS 44.62.125(b)(6), some corrections have been made in these regulations, as shown on the attached copy.

PBF:md

cc: Steve Baden, Chief
Conservation Section
Division of Community Development

Susan D. Cox
Assistant Attorney General
Juneau

(Filed with the regulation

CONSIDERATION OF COMMENTS GIVEN AT PUBLIC HEARING ON RESIDENTIAL ENERGY CONSERVATION STANDARD AND REGULATIONS

On October 20, 1986, a public hearing was held on the residential energy conservation standard's regulations and the standard itself. The public hearing took place in Anchorage, Barrow, Bethel, Dillingham, Fairbanks, Homer, Juneau, Ketchikan, Kodiak, Kotzebue, Nome and Soldotna over the Legislative Teleconference Network. A total of forty three people attended the hearings and twenty three testified. In addition, twelve written comments were submitted. Over seven hundred forty copies of the draft standard, draft regulations, public notice were mailed out and Notice of the hearing was advertised in twenty newspapers across the state.

In the Spring of 1986 the Department conducted a public review process on the draft standard which included public meetings in nineteen communities across the state. One hundred forty Alaskans attended the public meetings and we received thirty four written comments.

COMMENTS ON REGULATIONS

Per the comments from the Attorney General's Office, the regulations draft was amended before the hearing. The changes were not substantive. The revised draft regulations were available at all teleconference sites before the hearing and the changes were announced at the hearing before testimony was taken.

There were few comments directed specifically to the regulations. The comments we did receive were in support of the draft. One person suggested changing 19 AAC 69.210 to refer to "new residential buildings" instead of "housing" which receive state financial assistance. The suggestion was accepted and the regulation's wording has been revised.

COMMENTS ON THE STANDARD

Most of the testimony centered upon the draft standard itself. The testimony can be grouped into the following categories:

(1) Support of the standard - A great majority of those who commented supported the standard. Twenty one of the twenty three people testifying at the hearing supported the State adopting the residential energy conservation standard. Eight of the twelve written comments also supported adopting the standard. There were, however, suggestions on how the draft standard could be improved which will be discussed in items 3-7.

(2) Opposition to the standard - This was expressed by the Alaska Housing Finance Corporation (AHFC), the Kenai Peninsula Homebuilders Association, the Building

Industry, and a builder in Wrangell. AHFC's opposition was that the standard should not be mandatory but rather a "free market 'choice'", and if mandated, it should apply to all housing, not solely State-financed housing. Our comments to AHFC's position is that the law specifically states that the standard would be mandatory for State-financed new residential homes. AHFC's position is also countered by the support for the standard by the other State residential financing agency, the Housing Assistance Division. In the public review process the Alaska State Housing Authority also endorsed implementing the standard.

The opposition by the Kenai Peninsula Homebuilders Association and the Wrangell contractor is their claim that the R-values mandated in the standard would raise the cost of the home from six to ten thousand dollars. Our research indicates that this position is not true. Increasing the thermal levels mandated in the standard for a home heated with gas in the Kenai Peninsula would result only in a $1,503 increase in construction costs while it would annually save $111 in energy costs and over the period of the loan it would save an estimated $1,843 in 1985 dollars. Increasing the thermal levels mandated in the Southeast would result only in an increase of $1,504 in construction costs while it would annually save $269 in heating costs and over the period of the loan it would save in energy costs an estimated $4,473 in 1985 dollars in fuel costs. Attached is the backup of these calculations. This analysis was the basis by which the advisory committee recommended the stated thermal levels. This information was also presented in our public meetings we conducted in nineteen communities, including Wrangell and Soldotna, last spring.

The Building Industry Association of Anchorage opposition to standard principally lies on the assertion that it would force AHFC out of the financing of new homes in Anchorage. AHFC's main attraction in the Anchorage market is the favorable terms it is able to provide in its loans. AHFC's share of the market fluctuates with how competitive its interest rates are with such funding as FHA. FHA has an energy conservation standard that is very similar to the State's. As it stands now the only way one can get a loan at favorable interest rates that does not meet an energy standard is go through AHFC. With the current high foreclosure rates it is not a good policy that the State not adopt a standard so that it can continue to subsidize substandard housing. The Alaska Legislature recognized this when it passed its original legislation. It is the State's policy that if the State is going to subsidize

new residential buildings, then it also has an interest in ensuring that the homes are energy efficient and affordable to maintain. Anchorage builder's concerns should be allayed with the adoption by AHFC of the energy rated homes program. Under this program AHFC will give favorable loan considerations on homes built to the energy standard.

(3) That Southeast should be a separate region with its own thermal levels - This position was advocated by Representative Robin Taylor and the Wrangell builder. This issue was also raised in Ketchikan during the public review process. After a review of the research we have concluded that the Southeast's climate will allow a separate region. The R-values for walls have therefore been reduced from R-25 to R-21, all of the other requirements will remain the same. Moving to R-21 will reduce construction costs by $248 while annually reducing heating costs by $269 over standard construction.

(4) That the thermal levels for floors in the Northwest Region should be lowered to R-37 - This issue was raised by the building inspector of Kotzebue. His position was that the R-43 called for in the standard would require a 16-inch TJI. He stated that the community's building suppliers currently only carry 2-by-12s or 12-inch TJI and are reluctant to plan for other inventory strategies. Our research as shown in Attachment 1 indicates that R-43 is economical. R-43 floors are also required in the Southwest, Interior and Fairbanks regions and we did not receive any concern from builders or suppliers in those regions. A 16-inch TJI is not unusual and not complicated to install. The standard's regulations will not go into effect until January 1, 1988, and this will allow plenty of time for the Kotzebue building material suppliers to stock 16-inch TJI's.

(5) Who will be responsible for enforcing the standard and how will it be accomplished? - This was the most asked question. Builders that meet the standard want to be assured that everyone else also meets the standard, consumers want to be assured that their homes meet the standard. On the other hand there is concern over the added costs and delays of more inspections. Because the statute does not provide a mandate for the Department of Community and Regional Affairs to oversee enforcement, this issue was not in our perview. The financing agencies are responsible for this issue and they will need to resolve it before January 1, 1988. We have previously prepared and sent to the financing agencies options on how the standard can be implemented.

(6) Education will be a critical element in the implementation of the standard - Building code officials said an education program is critical, particularly for owner builders, if the standard is to be effective. The Department is planning to include an education program, which will include workshops and development of a handbook, for the transition period before the standard's regulations go into effect.

(7) That lighting and appliance efficiency standards also be developed - This was advocated by the Rural Alaska Community Action Program and the Alaska Public Interest Research Group as the next step. The statute, however does not authorize the development of an appliance standard. (As a side note, Congress has recently, passed an appliance energy efficiency standard) In regards to a lighting standard the advisory committee recommended excluding lighting requirements from the standard because such standards are not appropriate in a residential standard. Lighting, however, will be a major component of the commercial standards.

(8) There were other comments made suggesting changes to other portions of the standard. These suggestions were not substantive and do not significantly affect either energy consumption or construction costs. All of these comments were considered by the energy program's staff. Appropriate changes have been incorporated.

ATTACHMENT 1

ANALYSIS OF THERMAL LEVELS FOR JUNEAU, KETCHIKAN, OUTLAYING SOUTHEAST, NOME/KOTZEBUE, AND KODIAK

JUNEAU

Rank	KCost	Pmt	El	EPV	LCCPV	Wall	Clg	Fdn	Floor	Wdw	Door	HLoss
115	32238	365	849	14132	50196	11	38	6.45	30	3.22	4.66	65
33	32712	370	641	10671	47265	18	38	6.45	30	3.22	4.66	49
23	33375	378	572	9517	46853	21	38	6.45	30	3.22	4.66	44
9	33463	379	531	8839	46275	23	38	6.45	30	3.22	4.66	41
7	33562	380	513	8531	46077	25	38	6.45	30	3.22	4.66	39

KETCHIKAN

113	32596	369	536	8923	41972	11	38	6.45	30	3.22	4.66	42
21	33075	374	380	6328	39863	18	38	6.45	30	3.22	4.66	30
15	33746	382	328	5463	39677	21	38	6.45	30	3.22	4.66	26
4	33835	383	299	4969	39274	23	38	6.45	30	3.22	4.66	24
1	33935	384	285	4737	39144	25	38	6.45	30	3.22	4.66	22

OUTLYING SOUTHEAST

109	42625	484	784	13049	61626	11	38	6.45	30	3.22	4.66	57
15	43252	491	583	9694	58987	18	38	6.45	30	3.22	4.66	42
13	44129	501	515	8576	58868	21	38	6.45	30	3.22	4.66	37
2	44246	502	476	7920	58345	23	38	6.45	30	3.22	4.66	35
1	44377	504	458	7621	58195	25	38	6.45	30	3.22	4.66	33

NOME/KOTZEBUE

System or Rank	KCost	Pmt	El	EPV	LCCPV	Wall	Clg	Fdn	Floor	Wdw	Door	HLoss
2x10	49052	557	2471	41104	96685	30	38	NA	30	3.22	4.66	147
12" TJI	51443	585	2281	37951	96240	30	38	NA	37.45	3.22	4.66	135
16" TJI	52618	598	2196	36541	96162	30	38	NA	45.63	3.22	4.66	130
16" TJI	53210	605	2121	35282	95574	30	38	NA	51.82	3.22	4.66	126

KODIAK

113	40476	459	900	14971	59721	11	38	6.45	30	3.22	4.66	67
26	41072	466	679	11296	56705	18	38	6.45	30	3.22	4.66	50
19	41904	475	605	10071	56400	21	38	6.45	30	3.22	4.66	45
7	42015	477	561	9330	55782	23	38	6.45	30	3.22	4.66	42
3	42139	478	541	900[illegible]	55592	25	38	6.45	30	3.22	4.66	40

(Those on the attached list were sent this letter.)

September 24, 1986

The Honorable Albert P. Adams
Alaska State House
of Representatives
P. O. Box 333
Kotzebue, AK 99752

Dear Representative Adams:

On Monday October 20, 1986, from 1:00 pm to 3:00 pm the Department of Community and Regional Affairs will be conducting a public hearing over the Legislative Teleconference Network on regulations establishing the State of Alaska's energy conservation standard for new residential buildings.

In 1983 the Alaska State Legislature mandated the Department of Community and Regional Affairs to develop an energy conservation standard for new residential buildings. The law (AS 46.11.040) also mandates that all new residential buildings supported by State financial assistance must conform to the standard.

To guide the Department in the development of the standard, a sixteen member statewide Advisory Committee was appointed. This diverse group represented the key elements of Alaska's housing industry: builders, contractors, financiers, local governments, building officials, utilities, architects, engineers, and rural organizations. The two main tenets that were adopted by the advisory committee were that the standard would improve the energy efficiency of Alaska's housing stock while not placing an undue financial burden upon the home buyer. The thermal levels set in the standard represent a consensus agreement of the advisory committee.

The enclosed standard represents two years of staff and committee research and input from a public review process that included public meetings in nineteen communities across the state and meetings with interest groups such as building code officials and builders as well as written comments.

I have enclosed the notice of public hearing which contains the hearing's teleconference sites, the draft regulations establishing the standard, and the draft standard.

I believe that the energy standard will aid Alaska's housing industry. By building energy efficient homes, buyers will have more confidence in their long-term ability to afford their homes despite increases in energy costs. Ensuring energy efficient homes will also reduce the costly burden the state now bears for providing weatherization, low-income energy assistance and power cost equalization.

Sincerely,

Emil Notti
Commissioner

Enclosure

bcc: Steve Baden, Conservation, DCD

The Honorable Albert P. Adams
Alaska State House of Representatives
P. O. Box 333
Kotzebue, AK 99752

The Honorable Sam Cotten
Alaska State House of Representatives
Box 296
Eagle River, AK 99577

The Honorable Johne Binkley
Alaska State House of Representatives
P. O. Box 1065
Bethel, AK 99559

The Honorable Mike Davis
Alaska State House of Representatives
P. O. Box 81435
College, AK 99708

The Honorable H.A. Boucher
Alaska State House of Representatives
P. O. Box 111038
Anchorage, AK 99511

The Honorable Jim Duncan
Alaska State House of Representatives
P. O. Box 690
Juneau, AK 9[illegible]2

The Honorable Bette M. Cato
Alaska State House of Representatives
Pouch V
Juneau, AK 99811

The Honorable Steve Frank
Alaska State House of Representatives
1125 Sunset Drive
Fairbanks, AK 99701

The Honorable Donald E. Clocksin
Alaska State House of Representatives
1527 "H" Street
Anchorage, AK 99501

The Honorable John G. Fuller
Alaska State House of Representatives
P. O. Box 689
Nome, AK 99762

The Honorable Virginia M. Collins
Alaska State House of Representatives
2600 Denali Street Suite 501
Anchorage, AK 99503

The Honorable Walt Furnace
Alaska State House of Representatives
P. O. Box 1542
Anchorage, AK 99510

The Honorable Peter Goll
Alaska State House of Representatives
P. O. Box 581
Haines, AK 99827

The Honorable Roger Jenkins
Alaska State House of Representatives
P. O. Box 6727
Anchorage, AK 99502

The Honorable Max F. Gruenberg, Jr.
Alaska State House of Representatives
914 Clay Court
Anchorage, AK 99503

The Honorable Niilo E. Koponen
Alaska State House of Representatives
P. O. Box 252
Fairbanks, AK 99707

The Honorable Ben F. Grussendorf
Alaska State House of Representatives
P. O. Box 928
Sitka, AK 99835

The Honorable Ronald L. Larson
Alaska State House of Representatives
P. O. Box 53
Palmer, AK 99645

The Honorable Alyce A. Hanley
Alaska State House of Representatives
4007 Brentwood Circle
Anchorage, AK 99502

The Honorable Andre Marrou
Alaska State House of Representatives
P. O. Box 1572
Homer, AK 99603

The Honorable Adelheid Herrmann
Alaska State House of Representatives
P. O. Box 63
Naknek, AK 99633

The Honorable Terry Martin
Alaska State House of Representatives
3960 Reka Drive B-6
Anchorage, AK 99508

The Honorable Katherine T. Hurley
Alaska State House of Representatives
P. O. Box 870157
Wasilla, AK 99687

The Honorable M. Mike Miller
Alaska State House of Representatives
P. O. Box 1494
Juneau, AK 99802

The Honorable Mike W. Miller
Alaska State House of Representatives
P. O. Box 55094
North Pole, AK 99705

The Honorable Pat Pourchot
Alaska State House of Representatives
P. O. Box 104836
Anchorage, AK 99510

The Honorable Mike Navarre
Alaska State House of Representatives
P. O. Box E
Kenai, AK 99611

The Honorable Steven Rieger
Alaska State House of Representatives
P. O. Box 110623
Anchorage, AK 99511

The Honorable Drue Pearce
Alaska State House of Representatives
4150 West 88th Avenue
Anchorage, AK 99502

The Honorable John Ringstad
Alaska State House of Representatives
P. O. Box 1848
Fairbanks, AK 99707

The Honorable Fritz Pettyjohn
Alaska State House of Representatives
P. O. Box 110912
Anchorage, AK 99511

The Honorable Richard Shultz
Alaska State House of Representatives
SR 790 Mile 91
Tok, AK 99780

The Honorable Randy E. Phillips
Alaska State House of Representatives
P. O. Box 142
Eagle River, AK 99577

The Honorable John Sund
Alaska State House of Representatives
2504 Second Street
Ketchikan, AK 99901

The Honorable Marco A. Pignalberi
Alaska State House of Representatives
6712 Lunar Drive
Anchorage, AK 99504

The Honorable Mike Szymanski
Alaska State House of Representatives
11920 Johns Road
Anchorage, AK 99515

The Honorable Robin L. Taylor
Alaska State House of Representatives
P. O. Box 1441
Wrangell, AK 99929

The Honorable John B. Coghill
Alaska State Senate
P. O. Box 268
Nenana, AK 99760

The Honorable David W. Thompson
Alaska State House of Representatives
P. O. Box 75
Kodiak, AK 99615

The Honorable Edna DeVries
Alaska State Senate
P. O. Box 321
Palmer, AK 99645

The Honorable Rick Uehling
Alaska State House of Representatives
1526 "K" Street
Anchorage, AK 99501

The Honorable Richard I. Eliason
Alaska State Senate
P. O. Box 143
Sitka, AK 99835

The Honorable Kay Wallis
Alaska State House of Representatives
P. O. Box 267
Fort Yukon, AK 99740

The Honorable Bettye Fahrenkamp
Alaska State Senate
515 Seventh Avenue Room 130
Fairbanks, AK 99701

The Honorable Mitchell E. Abood, Jr.
Alaska State Senate
3102 Northwood Drive
Anchorage, AK 99503

The Honorable Jan Faiks
Alaska State Senate
6060 Yukon Drive
Anchorage, AK 99516

The Honorable Don Bennett
Alaska State Senate
P. O. Box 2801
Fairbanks, AK 99707

The Honorable Frank R. Ferguson
Alaska State Senate
Box 131
Kotzebue, AK 99752

The Honorable Paul Fischer
Alaska State Senate
Box 784
Soldotna, AK 99669

The Honorable Bill Ray
Alaska State Senate
P. O. Box V
Juneau, AK 99811

The Honorable Vic Fischer
Alaska State Senate
600 Barrow
Anchorage, AK 99501

The Honorable Patrick Rodey
Alaska State Senate
2335 Lord Baranof
Anchorage, AK 99503

The Honorable Rick Halford
Alaska State Senate
Box 190
Chugiak, AK 99567

The Honorable John C. Sackett
Alaska State Senate
Box 11
Ruby, AK 99768

The Honorable Joe Josephson
Alaska State Senate
1526 "F" Street
Anchorage, AK 99501

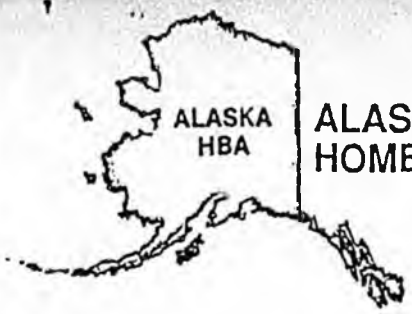
The Honorable Arliss Sturgulewski
Alaska State Senate
2957 Sheldon Jackson Street
Anchorage, AK 99508

The Honorable Tim Kelly
Alaska State Senate
283 Muldoon Rd. Station Box 76
Anchorage, AK 99504

The Honorable Fred F. Zharoff
Alaska State Senate
P. O. Box 405
Kodiak, AK 99615

The Honorable Jalmar M. Kerttula
Alaska State Senate
Box Z
Palmer, AK 99645

The Honorable Robert H. Ziegler, Sr.
Alaska State Senate
307 Bawden Street
Ketchikan, AK 99901



ALASKA STATE
HOMEBUILDERS ASSOCIATION

November 12, 1987

Outline of Response

State of Alaska Energy Conservation Standard for New Residential Buildings

The following is an outline of the primary reasons why the Alaska State Homebuilders Association is opposed to the implementation of the "Energy Conservation Standard for New Residential Buildings" promulgated by the Department of Community and Regional Affairs. A great deal of detailed analysis and factual information has been generated by the builders since these standards were proposed. While all of the detail is not presented here, each of the positions stated is supported by data that can be provided.

There are five broad areas where the Alaska State Homebuilders Association can demonstrate that the Energy Conservation Standard will have a negative impact on the public's health, safety and welfare. They are:

I. Cost of Construction (Housing Cost)
II. Environmental Quality Problems
III. Lack of Training
IV. No Coordinated Implementation Program
V. No Long-term Amortization - Cost vs Benefit

I. Cost of Construction
   A. Will add $4,000 to $5,000 to the cost of a $110,000 home in developed areas
      1. More in Bush areas
      2. More in homes without forced air heat
      3. Air-to-air heat exchanger will be necessary to help mitigate environmental problems
      4. State's estimates of cost are unrealistic
   B. Appraisers will not show added value to homes
   C. Thus financing institutions will not finance additional costs
   D. The additional cost will have to be covered:
      1. By the builder through reduced return (There is almost no return already.)
      2. By the homebuyer with additional $4,000 to $5,000 down payment (They cannot and will not do this.)

II. Environmental Quality Problems
   A. A "tight" house does not "breathe"
      1. Stale air is recycled - not enough fresh air introduced
      2. Scandinavians have recognized this problem after years of building "tight" homes
   B. Moisture builds up in air and on interior structural components
      1. Over a few years, wood rots
      2. Mildew and mold become problems, especially in damp climate and/or season

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II. B. 3. Bacteria builds up in ducts and on interior surfaces
4. Radon problems are exacerbated
5. State suggests "open window"!!
C. Liability associated with environmental problems is significant
1. Who is liable?
a. Building failures
b. Health risks
c. Increased costs
2. If the State regulates, the State assumes a portion of the liability

III. Lack of Training
A. Virtually no one is "trained" in the Energy Conservation Standards
1. No method of informing and training builders
2. Commercial lenders are not aware and cannot evaluate costs; will create confusion
3. Appraisers are not aware and have no method of evaluation
B. No program for training is contemplated
C. No broad "public awareness" program is planned
D. Everyone involved in the housing industry is left to "bump into" these standards

IV. No Implementation/Enforcement Program
A. Regulations do not provide for enforcement
B. Legislation does not provide for enforcement
C. No financial institutions involved in enforcement
1. Alaska Housing Finance Corporation is not interested in enforcement
2. Department of Community and Regional Affairs is not involved in housing in developed areas
3. Rural/[illegible] areas present significantly different implementation because of vastly different financial programs
D. If some one does decide to require outside inspection/report, that will add another $500 to the cost of the home
E. Department of Community and Regional Affairs suggests self-certification
1. Alaska Housing Finance Corporation opposes
2. No training!

V. Increased Costs Cannot Be Amortized by Energy Savings
A. Department of Community and Regional Affairs used thirty year amortization
B. Average loan is in effect less than seven years
C. To amortize the additional "up front" $5,000 would require energy savings of $50 to $100 per month assuming "cost of money" at 6%
D. This clearly will not happen, especially in developed areas

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The serious problems outlined above demonstrate that the "public good" is not served by these regulations. The Alaska State Homebuilders Association proposes the following:

I. Delay implementation of the Energy Conservation Standard for New Residential Buildings for two years. This can be done administratively through a moratorium or revocation, or it can be done by the legislature.

II. During the two years, accomplish the following review and make amendments if necessary.
   A. Resubmit the issue to the legislature to evaluate the original legislative intent in light of significant changes in:
      1. The State's economy
         a. Reduced financial resources of State to administer/train/enforce the program
         b. Depressed realistic values
         c. Reduced population growth and housing starts
      2. Lack of "spiraling energy costs"
      3. Lack of "oil shortage"
      4. Other voluntary programs available
         a. Alaska Craftsman Home Program
         b. Energy Rated Homes
      5. On-going improvements in building techniques and codes
   B. If legislature determines standards are still required, then amend standards to:
      1. Only implement where direct fuel/energy subsidies are paid by the State, and;
      2. Where energy costs are high relative to rest of State
      3. Do not implement in developed areas where energy costs are relatively low, or;
      4. Building codes are in effect
   C. Complete a Statewide comparative cost/benefit analysis including:
      1. Comparative energy costs
      2. Comparative energy savings projected in 1987 dollars
      3. Comparative construction costs
      4. Analysis of ability of homebuyers and/or building industry to absorb cost
      5. Determine, on an area-by-area basis, how long it will take to amortize the added costs
      6. Utilize the above information to determine where the standards are cost effective and benefit the home buyer

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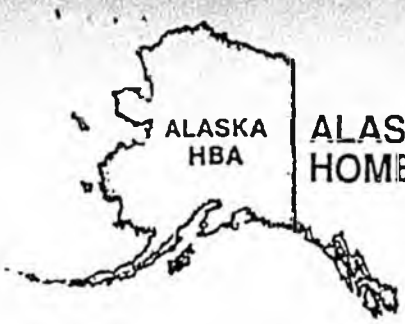

ALASKA STATE
HOMEBUILDERS ASSOCIATION

II. D. Develop a Comprehensive Implementation Program that includes:
1. An equitable method of enforcement that recognizes different regional characteristics
2. A broadly based information and training program targeting all elements of the housing industry

This program needs to be evaluated to determine if it is in the public's best interest. The Alaska State Homebuilders Association has demonstrated that, as currently constituted, it is not. Without that determination, it is of no value to the State of Alaska.

Thank you.

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Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

The Honorable Jan Faiks
President, Alaska State Senate
3111 C Street
Anchorage, Alaska 99503

Dear Senator Faiks:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

David Hoffman, Commissioner
Department of Community & Regional Affairs
State of Alaska
Box B
Juneau, Alaska 99811

Dear Commissioner Hoffman:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

pt Steve Baden

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Mr. Don Markle
Alaska Craftsman Home Program
2221 East Northern Lights Blvd
Anchorage, Alaska 99508

Dear Mr. Markle:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Ray Price, Jr.
Special Assistant
Office of the Governor
Box A
Juneau, Alaska 99811

Dear Mr. Price:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Betty Cook
Alaska Housinc Finance Corporation
P.O. Box 101020
Anchorage, Alaska 99510

Dear Ms. Cook:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Larry Taylor
2028 Otter
Anchorage, Alaska 99504

Dear Mr. Taylor:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Gregory L. Jones, President
Alaska Diversified Properties
Box 190769
Anchorage, Alaska 99519-0769

Dear Mr. Jones:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

Alaska State Legislature

SENATOR
ARLISS STURGULEWSKI
Chairman, Senate Community and Regional Affairs Committee
Vice-Chairman, Senate Judiciary Committee
Member, Senate Resources Committee

2957 SHELDON JACKSON STREET
ANCHORAGE, ALASKA 99508

While in Juneau
P. O. BOX V
JUNEAU, ALASKA 99811
(907) 465-3818

Senate

29 October 1987

Mr. Peter Poray
Municipality of Anchorage
Box 196650
Anchorage, Alaska 99519-6650

Dear Mr. Poray:

I am looking forward to your attendance at a meeting to discuss state energy conservation standards for new residential buildings, the Energy Homes for Alaska plans, and the Craftsman Home program.

Issues of concern have been raised by the Homebuilders Association regarding the increased costs of homes resulting from compliance with state energy standards. Questions have also been raised about implementation of the program and the interrelationship among the three programs.

Again, I look forward to seeing you at this meeting. An agenda is attached.

Sincerely yours,

Arliss Sturgulewski
Alaska State Senator

C Party

call for.

MEMORANDUM

DATE: 10/20/87

TO: Ron Watts

FROM: J. Sipman

COPY: Committee members

SUBJECT: Final Draft SB 300 (A) and SB 300 (B) [Substitute Bills]

Subsequent to our last meeting, I met with Walt Gardner to revise our final draft of the proposed substitute bill(s) as directed.

This final draft consists of the two parts discussed, the (A) part addresses code consolidation and the (B) part covers the state licensing..

Altho some committee members are not happy with this approach of submitting the two parts, it should be made clear that these two parts are not to be separated when it is submitted to Senator Faiks office, the APDC affiliated members or the Legislature. If and when the Legislature has its public hearing on the substitute Bill(s), that is when the decision is to be made whether the licensing part is dropped. [Dropping final draft SB 300 (B) before submittal to anyone was not, I believe, the intent of this year's committee.]

I might add there is now some confusion on my part as to the purpose of the past several months work in drafting this proposed substitute bill:

1. The purpose of drafting a new bill;
2. Substituting the new draft for the old one;
3. What groups either approve (if any) or oppose (if any), by name, SB 300 (A) and/or SB 300 (B).

With these questions in mind, I respectfully request that you call for a Committee meeting as soon as possible, poll those attending if the final draft substitute is approved or not, if approved submit to APDC member groups for their approval or not, and then and only then, depending on APDC consensus, submit it to Senator Faiks office through Alexis.

To expedite response I am distributing copies to the active members of the Committee directly.

James Sipman

IN THE SENATE BY FAIKS

SENATE BILL 300 (A)

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE-FIRST SESSION

A BILL

For an Act entitled: "An Act relating to building design, construction, and safety codes; consolidating building regulations; and transfering certain functions to the Department of Public Safety."

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

ARTICLE 1. ADOPTION OF CODES

Section 1. CODES ADOPTED.

Until suspended or repealed as authorized by this Section, the following shall be prescribed by the Department as the minimum standards for the State of Alaska, effective upon adoption:

A. Uniform Administrative Code (ICBO)

B. Uniform Building Code (ICBO)

C. Uniform Fire Code (ICBO)

D. Uniform Mechanical Code (ICBO)

E. Uniform Plumbing Code (ICBO)

F. Uniform Solar Energy Code (IAPMO)

G. Uniform Swimming Pool, Spa and Hot Tub Code (IAPMO)

H. Uniform Sign Code (ICBO)

I. Uniform Code for the Abatement of Dangerous Buildings (ICBO)

J. Uniform Federal Accessible Standards (U. S. Gov't.)

K. Energy Conservation in New Buildings (ASHREA/IES-90 A, B, C.)

L. National Electric Code (ANSI/NFPA 70)

M. National Electrical Safety Code (ANSI C2)

N. Safety Code for Elevators and Escalators (ANSI/ASME A17.1)

O. Boiler Construction Code (ASME)

P. Recreational Devices (Trams only B77.1)

Section 2. EFFECTIVE DATE OF CODES.

The Department shall adopt the above Codes and Standards as minimum requirements by the end of the calender year following the year in which the first printing of the latest edition of Codes and Standards is first published.

Section 3. AMENDMENTS TO CODES.

The Department may make provisions to modify, amemd or delete provisions of the Codes and Standards to conform to certain conditions that exist in the State of Alaska.

Section 4. CODE ADOPTION AND ENFORCEMENT BY MUNICIPALITIES AND LOCAL JURISDICTIONS.

(a) Building design, construction and safety codes adopted by the Department under this chapter are not intended to duplicate or preempt administration or enforcement of building design, construction, and safety codes by municipalities, or local jurisdictions.

(b) A home rule or general law municipality may prescribe by ordinance, rule, or order, standards that are not less stringent than those established by the Department under authority of this chapter.

(c) If a home rule or general law minicipality elects to adopt Codes and Standards, they must adopt those listed in Article 1, Section 1.

ARTICLE 2. BUILDING REGULATIONS BOARD

Section 1. CREATION OF BUILDING REGULATIONS BOARD.

Sec. 18.60.935. BUILDING REGULATIONS BOARD. (a) A Building Regulations Board is established in the Department of Public Safety.

(b) The Board shall consist of eleven persons appointed by the governor for a term of three years. The persons appointed to the Board shall have knowledge, experience and training in matters related to building construction and building service equipment. Members of the Board serve without compensation but are entitled to travel expenses and per diem established for Boards under AS 39.20.180.

(c) The Board shall consist of the following:

General Contractor (Commercial)

General Contractor (Residential)

Architect (Commercial Speciality)

Architect (Residential Speciality)

Civil Engineer (Structural Speciality)

Mechanical Engineer

Mechanical Contractor

Electrical Engineer

Electrical Administrator

Fire Protection Consultant

Public Member

(d) The Administrative Official is an ex-officio member of the board and shall serve as secretary to the Board. The Administrative official is not a voting member of the Board.

(e) The Board shall:

(1) provide assistance in interpretations of building, construction, and safety codes enforced by the Department;

(2) recommend modifications of codes enforced by the Department;

(3) serve as a board of appeals under AS 18.60.940;

(4) adopt regulations under AS 44.62 governing conduct of the Board and procedures for appeals to the Board.

Section 2. APPEALS.

Section 18.60.940 Appeals to the Building Regulation Board.

(a) A person aggrieved under this chapter or AS 18.70 by an order or act of the Department may appeal to the Building Regulations Board for a hearing:

(1) An appeal must be filed in writing within 15 calendar days of the Department's action or order.

(2) The Board shall convene within 35 calendar days of appeal date, unless the appellant desires a later date, and shall issue written notice to all interested parties at least 15 calendar days prior to the hearing date;

(3) The Board shall render a decision at the conclusion of the hearing and shall issue a confirming written decision within 15 days of hearing date.

(b) In cases where time urgency is a factor, the Appellant may request the Administrative Offical convene a Hearing Committee to render a decision within 8 days of the appeal date:

(1) The Hearing Committee shall consist of a minimum of three Building Regulations Board members, two of whom must be knowledgable in the discipline relating to the appeal.

(2) The decision of the Hearing Committee shall be rendered verbally at the conclusion of the hearing followed by a written confirmation within 8 calendar days.

(c) A decision of the Hearing Committee or the Building Regulations Board may only be appealed in writing to Superior Court within 30 days of the Committee's or Board's verbal decision.

ARTICLE 3.

CONSOLIDATION OF STATE FUNCTIONS DEALING WITH BUILDING REGULATIONS AND ENFORCEMENT OF BUILDING CODES.

Section 1. CONSOLIDATION.

(a) The following existing Codes and Standards shall be consolidated into the Department of Public Safety:

BUILDING CODE	STATUTE	REGULATIONS	STANDARDS ENFORCED
ASME Boiler/Pressure	AS 18.60.180	08 AAC.010-900	ASME Boiler & Pressure Vessel Code
Electrical Safety	AS 18.60.580	08 AAC 70.010-090	National Electric and National Electrical Safety Code.
Elevator Safety	AS 18.60.800	08 AAC 77.005-905	Safety Code for Elevators, Dumbwaiter,Escalators and Moving Walks ANSI/ASME A17.1
Plumbing Code	AS 18.60.705	08 AAC 63.010-030	Uniform Plumbing Code
Recreational Devices	AS 05.20.010	13 AAC 15.160-320	Safety Code for Aerial Passenger Tramways B-77.1 UBC, NFPA 101
High Voltage Lines	AS 18.60.670	None	
Certificates of Fitness	AS 18.62.010	08 AAC 90.010-900	NEC & NESC.

Contractors Licensing	AS 08.18.011	12 AAC 21.010-300	Construction Contractors
Electrical Administrators	AS 08.40.010	12 AAC 02.010-900	NEC & NESC
Architects, Engineers and Land Surveyor's	AS 08.48.011	12 AAC 36.010-250	Professional Licensing
Fire Prevention	AS 18.70.010	13 AAC 50.010-080	Parts of:UBC, UFC NEC, Parts of NFPA Standards from Volume 1,3,4,6&7.
	AS 18.72.010	13 AAC 51.010-060	Fireworks
		13 AAC 52.010-040	Fire Services
		13 AAC 55.010-150	General Provisions
Architectural Barriers Act	AS 35.10.015	17 AAC 50.010	ANSI A117.1

Section 2. FEES.

(a) A fee structure shall be established by the Department for services rendered and permits issued.

(b) AS 08.01.065(d) is amended to read:

"(d) The commissioner of Administration shall separately account for permit and occupational licensing fees deposited in the general fund by <u>each</u> [the] department. The annual estimated balance in the account may be used by the legislature to make appropriations to the <u>appropriate</u> <u>department</u> to carry out <u>its</u> [the] activities <u>under</u> <u>this</u> <u>title</u> [of the Division of Occupational Licensing]."

****END OF SB 300(A)***

[Editor's note: See attached companion bill <u>SB 300 (B)</u> for licensing legislation.]

IN THE SENATE BY FAIKS

SENATE BILL 300 (B)

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE-FIRST SESSION

A BILL

For an Act entitled: "An Act relating to the establishment and consolidation of licensing and related functions of design professionals, construction trades, building permit plan reviewers and construction field inspectors; and transfering certain functions to the Department of Public Safety."

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

ARTICLE 1. LICENSING OF TRADES AND PROFESSIONS

Section 1. Establishment and consolidation of licensing.

(a) Licensing and support functions for all related design professionals, construction trades, plan reviewers and field inspectors shall be consolidated or establishe in the Department of Public Safety.

(b) The Department shall set licensing standards, hold examinations, issue certificates, establish registration and renewal fees to administer and insure compliance with this chapter.

Section 2. ARCHITECTS, ENGINEERS AND LAND SURVEYORS BOARD.

(a) AS 08.48.011(a) is amended to read:

"[There is created the] A State Board of Registration for Architects, Engineers, and Land Surveyors is established <u>in the Department of Public Safety.</u> The Board shall adminsiter the provisions of this chapter and comply with the Administrative Procedure Act (AS 44.62)."

(b) AS 08.48.071(a) is amended to read:

"The following record of the board's proceedings and of all applications for registration or authorization shall be kept by the Department [of Commerce and Economic Development] under AS 08.01.050:

(1) the name, age and last known address of each applicant;

(2) the date of application;

(3) the place of business of the applicant;

(4) the educations, experience and other qualifications;

(5) the type of examination required;

(6) whether or not the application was rejected;

(7) whether or not a certificate of registration or authorization was granted or endorsed;

(8) the date of the action of the board;

(9) other action taken by the board;

(10) other information that [which] may be considered necessary by the board.

(c) AS 08.48.071(e) is amended to read:

"(e) The Department [of Commerce and Economic Development] shall, under AS 08.01.050, preserve the records under (a) of this section for the previous five years."

(d) AS 08.48.071 (f) is amended to read:

"(f) The Department [of Commerce and Economic Development] shall assemble statistics relating to the performance of its staff and the performance of the board, including, but not limited to,

(1) the number of architects, engineers and land surveyors registered over a five year period;

(2) the rate of passage of examinations administered by the board;

(3) the number of persons making application for registration as a

professional architect, engineer, or land surveyor over a five year period;

(4) an account of registration fees collected under AS 08.48.201(b);

(5) a measure of correspondence workload of any licensing examiner employed by the Department to carry out this chapter."

(e) AS 08.48.265 is amended to read:

"Section 08.48.265. FEES. The Department [of Commerce and Economic Development] shall set fees under AS 08.01.065 for examination, registrations, certificates of authorizations, and renewals of a certificate."

Section 3. ELECTRICAL EXAMINERS BOARD

(a) A State Board of Electrical Examiners is established in the Department of Public Safety.

(b) The Board shall consist of three members appointed by the Governor for a term of three years. Two members shall be electrical administrators and the third shall be a public member knowledgeable in experience and training in matters related to building construction or building service equipment. Members of the Board serve without compensation but are entitled to travel expenses and per diem established for Boards under AS 39.20.180.

(c) The Administrative Official is an ex-officio member of the Board and shall serve as secretary to the Board. The Administrative Official is not a voting member of the Board.

(d) The Board shall:

Adopt regulations subject to the Administrative Procedure Act (AS 44.62), relating to the examination and licensing of electrical administrators, establishing of the continued competency of the applicant for license renewal and reinstatement, and the suspension or revocation of licenses.

****END OF SB 300(B)****

PROPOSAL

TO

STATE ENERGY OFFICE
DIRECTORS
AND
PROGRAM MANAGERS

FOR SUPPORT
OF

ENERGY RATED HOMES™
"THE UNIFORM HOME ENERGY RATING SYSTEM"

AS A STATE

RESIDENTIAL ENERGY CONSERVATION PROGRAM

AND
AS PART OF

NATIONAL HOUSING POLICY

Submitted by

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September 11, 1987

Members, Standing Committee on Energy
National Association of Home Builders
15th and M Streets, N.W.
Washington, D.C. 20005

Dear Energy Committee Members:

For the past several years the Arkansas Home Builders Association has followed closely and has actively participated in a number of programs related to Energy Rated Homes and their home energy rating concept. The experience of our members thus far would indicate that this program represents a viable concept that deserves the support of our industry and our national trade association, the National Association of Home Builders. Our interest in the Energy Rated Homes program has prompted the AHBA Board of Directors to take action at their September 9, 1987 meeting that would encourage NAHB to embrace this concept in three specific areas.

1. NAHB should consider lending its support to a uniform home energy rating system that is voluntary in nature and is administered by the various segments of the shelter industry.
2. NAHB should consider endorsement of the idea that an Energy Rating and Improvements Worksheet be offered all home buyers utilizing FHA, VA or FmHA insured financing, and that the cost of the rating should be allowed to be included as a part of the total mortgage amount.
3. NAHB should consider accepting a position on the ERHA (Energy Rated Homes of America) Board of Directors, and through this position play an active role in the direction and operation of the ERHA programs.

Members of the Arkansas Home Builders Association are active participants in the activities of Energy Rated Homes of Arkansas, and the AHBA is on record as supporting this concept. We feel that the same type of support at the national level could be of significant benefit to the entire industry and to prospective home buyers throughout America. With this thought in mind, we would ask the Committee's consideration of the measures outlined in this letter.

Sincerely,

G.L. "Bill" Bosley
President

Bruce Blackall
Executive Director

FOR USE ONLY AS ENERGY ADDENDUM TO STANDARD APPRAISAL REPORT (FHLMC/FNMA)

ENERGY RATED HOMES RATING SHEET

B 11711

The Uniform System of Evaluating and Rating Home Energy Efficiency.

The potential energy efficiency of this house is evaluated and rated as follows:

Use in: South Central Alaska

Year built	File No
Loan no	
Borrower	
Address	
City WASILLA	State AK Zip
Census tract	Map Reference
Tax parcel no	
Lender/client	
Previous Serial Number	Date
Energy Rater	Date
Appraiser	Date

1

TRI LEVEL WITH ½ SLAB
TRI LEVEL WITH CRAWLSPACE

2 HEATED FLOOR AREA 1898 SQUARE FEET

Includes basement when basement is heated and lived in

3 ENVELOPE EFFICIENCY or how well the living space keeps heat in.

CHECK HOUSE TYPE		LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	
CEILING	W. SLAB	0.0	21.0	23.0	24.0	24.5	
CEILING	W. CRAWL	0.0	15.0	16.5	(17.0)	17.5	17
WALLS		0.0	19.5	(23.0)	25.0	25.5	23
FLOOR	W. SLAB	0.0	2.5	3.0	3.5	4.0	
~~FLOOR~~ BG wall	W. CRAWL	0.0	6.0	(8.5)	10.0	11.0	8.5
WINDOWS		0.0	5.5	7.0	(8.5)	9.5	8.5
AIR LEAKAGE	W. SLAB	0.0	7.0	13.0	16.0	19.0	
AIR LEAKAGE	W. CRAWL	0.0	7.0	(13.5)	16.5	20.0	13.5

Use E in Step 4

TOTAL 70.5 E ENVELOPE

SCORE

4 SOLAR GAIN or how well the living space is heated by sunlight

South Window Area	Mass For Heat Storage	26.	55.	69.	76.	
30 sq.ft.	NO	3.5	2.0	1.5	1.0	1.0
60 sq.ft.	NO	7.0	3.5	2.5	2.0	2.0
90 sq.ft.	NO	10.0	5.0	4.0	3.0	2.5
120 sq.ft.	NO	13.0	6.0	4.5	4.0	3.0
60 sq.ft.	YES	0.0	4.0	3.0	2.5	2.5
120 sq.ft.	YES	0.0	6.5	5.0	4.0	3.5
180 sq.ft.	YES	0.0	9.0	7.0	5.5	5.0
240 sq.ft.	YES	0.0	11.0	8.0	6.5	5.5

SCORE is zero for no solar gain

72 E + S
Use for Step 7 & 9 with Energy Use Table in Appendix D

1.5 S SOLAR

5 COOLING ENERGY Not included in rating for this region

Prevention of Overheating
- [ ] Overheating not a problem
- [ ] Overheating possibly a problem
- [ ] Overheating is a problem

Prevention Measures
- [ ] Window shading or roof overhangs
- [ ] Ventilation through opening windows
- [ ] Mechanical ventilation or cooling device

N/A C COOLING

6 WATER HEATER

Location of water heater: ☐ inside ☑ unheated basement, crawl space or garage ☐ outside

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
0.0	0.5	1.5	2.0	3.0

Fuel Type: ☐ electric ☑ gas ☐ oil

Ø W WATER

7 SPACE HEATING EFFICIENCY

Select correct table by using E + S score from Step 4

E + S less than 25 LOW	MED	HIGH		E + S greater than 25 LOW	MED	HIGH
0.0	13.5	23.5	OIL	0.0	4.0	6.5
0.0	16.0	27.0	GAS	0.0	(4.5)	7.5
0.0	16.0	0.0	ELECTRICITY	0.0	4.5	0.0
0.0	19.5	33.0	WOOD	0.0	5.5	9.5

Wood Fuel
- [ ] Primary fuel (no other heating system, see Appendix E)
- [ ] Secondary

Energy Efficient Devices
- [ ] Automatic setback thermostat
- [ ] Zoned thermostat control
- [ ] Other energy saving devices

Gas utility (name) ENSTAR Electric utility (name) MEA

4.5 H SPACE HEATER

8 UNIFORM ENERGY RATING*

This is an energy efficiency potential rating which rates the potential of this house to use energy efficiently assuming average size and typical energy use

0-13	14-17	18-29	30-43	44-58	59-72	73-79	80-85	86-88	89-99
★	★+	★★	★★+	★★★	★★★+	★★★★	★★★★+	★★★★★	★★★★★+
						✓			
BELOW AVERAGE		FAIR		GOOD		EFFICIENT		VERY EFFICIENT	

Appraisers use word rating (e.g. EFFICIENT) on appraisal form.

TOTAL SCORE (E + S + C + W + H)

76.5

RATING

9 ENERGY PURCHASED*

Energy Use (Use E + S from Step 4 and Appendix D) / Efficiency (see back of this page or Appendix E) = Purchased Energy

MBtu/yr - Efficiency	Gas	Electric	Oil
Space Heating (211) ÷ (.6) =	351.67		---
Garage Heating (see Energy Use Table)	19		
Water Heating (23) ÷ (.65)	35.38		
Light & Appliances (see back)			
Total Energy Purchased (MBtu/yr)*	406.05	25	

10 ENERGY COST*

Purchased Energy × Cost (see Appendix F) = Energy Cost

Total gas	406	MBtu/yr ×	2.90	$/MBtu =	1177	$/yr
Total electricity	25	MBtu/yr ×	30.15	$/MBtu =	754	$/yr
Total oil		MBtu/yr ×		$/MBtu =		$/yr

TOTAL APPROX. ANNUAL ENERGY COST*: 1931 $/yr

*The estimated energy cost for this house is to be used for comparison only. Actual use will be higher or lower from this estimate depending upon occupants' use, weather conditions and utility rates in effect at the time.

WRI 901 3/86

Efficiency Descriptors for Rating Each Building Component

Use to Complete Corresponding Sections on Front (Reverse) Page

(Detailed Descriptors in Desk Manual, Appendix A, B, and C)

Applicability: South Central Alaska (Anchorage area)

3 ENVELOPE EFFICIENCY

R-Values shown here are for the insulation only. See Appendix C of the Desk Manual for thickness of various insulation types.

	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
CEILING	R-0	R-19	R-30	R-38	R-60
WALL Above Grade	R-0	R-11	R-19	R-25	R-31
WALL Concrete Above Ground or as a Foundation	R-0	R-5	R-10	R-15	R-20
FLOOR Exposed	R-0	R-11	R-19	R-30	R-38
FLOOR Slab On Grade	R-0	R-5	R-10	R-15	R-20
WINDOWS	single metal	double metal	double wood or equiv.	triple or equiv.	quad or equiv.
AIR LEAKAGE	Leaking, no weather-stripping	Some weather-stripping (W/S)	Careful W/S and some caulking. Has wall and attic infiltration barriers ~~and arctic entry.~~	Careful W/S and caulking. A careful continuous infiltration barrier plus switch plate gaskets ~~and arctic entry.~~	Level 4 plus ventilation control equipment and an arctic entry.

6 WATER HEATER

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Standard unwrapped	Low flow fixtures or flow restrictors installed	Wrapped, or Energy Efficient, or "demand" water heater	Level 3 plus pipes wrapped, heat trap and bottom board installed	Level 4 plus either heat pump water heater or solar preheater

WATER HEATER EFFICIENCY (for use in Step 9)

NATURAL GAS		ELECTRICITY		OIL	
0.60	Old, installed before 1975	1.00	Typical water heater	0.65	Typical
0.65	New, more efficient, installed after 1975	1.00	Instant "demand"		
0.90	Instant "demand"				

7 SPACE HEATER EFFICIENCY

	HEATING SYSTEMS	SEASONAL EFFICIENCY*	± ADJUSTMENTS	= TOTAL ADJUST EFFICIENCY	HEATING SYSTEM EFFICIENCY LEVELS
Natural Gas	Forced Air Systems:		Subtract for thickness of duct insulation: 0" 1" 3"	.60	.85 High
	0.85 Pulse/Condensate (90%)*				.80 High
	0.80 Recuperative (85%)				.75 High
	0.75 Draft Induction (80%)		−.10 −.05 −0.0		.70 Medium
	0.70 New, after 1970 w. elect. ignit. (75%)				.65 Medium
	0.65 '75-'80 w. electronic ignition (70%)				.60 Medium
	0.60 old, before 1975 (65%)		+.10 elect. ignition (on old)		.55 Low
	0.55 conversion into old system (60%)				.50 Low
	Hydronic Systems:		Subtract for thickness of pipe insulation: 0" ½" 1"		.45 Low
	0.85 New Boiler (after 1980) (90%)*				
	0.70 Old boiler (before 1980) (75%)		−.10 −.05 −0.0		
	0.55 Old cast iron (60%)				
Electricity	0.85 Central forced air		Subtract for thickness of duct insulations: 0" 1" 3"		above 1.0 High
	0.95 Radiant panels or cables		−.10 −.05 −0.0		1.00 Medium
	1.00 Baseboard (air convection, oil or water filled, or individual forced air units)				0.95 Medium
					.90 Low
	1.50 Heat pump, air-to-air installed before 1980				.85 Low
	1.70 Heat pump, air-to-air, installed after 1980				.80 Low
	1.95 Heat pump, ground source				
Oil	Forced Air Systems:		Subtract for thickness of duct insulation: 0" 1" 3"		
	0.90 Condensate (95%)		−.10 −.05 −0.0		.90 High
	0.80 New with flame retention burner (85%)		+.05 Delay timer		.85 High
	0.70 after 1975 w/o retention burner (75%)		+.05 Vent damper		.80 High
	0.65 Old, before 1975 (70%)		+.10 retention burner (on old)		.75 Medium
	0.60 Very old, before 1965 (65%)		−.05 for unmaintained		.70 Medium
					.65 Medium
	Hydronic Systems:		Subtract for thickness of pipe insulation: 0" ½" 1"		.60 Low
	0.80 Boiler w. retention burner (after 1975) (85%)		−.10 −.05 −0.0		.55 Low
	0.65 Old boiler (before 1975) (70%)		+.10 retention burner (on old)		.50 Low
					.45 Low
Wood	See Appendix E				

*The efficiency numbers on the far left are the seasonal efficiencies that take into consideration the cycling on and off of the furnace, jacket loss, and average seasonal variations. The numbers in parenthesis are the "steady state" efficiencies that are for use as a reference only.

9 LIGHTS AND APPLIANCES

Square Feet Heated Floor Area	MBtu/yr
Less than 1500	22
1500 to 3500	25
over 3500	30

10

NOTE: In high wind areas, the annual cost estimate may be slightly higher than that given in Step 10 as a result of the wind's impact on the home's heating load.

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Mortgage

100 Main Street
Little Rock, AR 72201
501-374-7827

ENERGY RATED HOMES ARKANSAS

"The uniform system of evaluating and rating home energy efficiency"

DATE: September 15,1987

TO: State Energy Office Directors and Program Managers

FROM: Ron Hughes, Director, Energy Rated Homes™

"Selling efficiency in houses has turned into a lying contest!", a prominent builder in Little Rock recently stated. "Builders do not want regulation but need 'standards'. There is no commonly accepted way to distinguish efficiency in housing."

Other common problems with energy in housing include:

> Affordable housing should be available to more Americans-- affordable both to purchase and to live in!
>
> Efficient houses cost more to build but rarely get higher appraisals than inefficient homes because the buying public can't tell the difference.
>
> Lenders require uniformity and resist incorporating local energy "marketing" and efficiency rating programs into the underwriting process.

A uniform home energy rating system that rates efficiency, projects energy costs and could be used by lenders, appraisers, realtors, and builders is the first step towards addressing these issues. State energy offices are in a key position to implement such a system!

Energy Rated Homes of America™ (ERHA™) has been developed over the past five years for this very purpose. ERHA™ is supported by leaders of the National Association of Home Builders (NAHB), Mortgage Bankers of America (MBA), the Mortgage Insurance Companies of America (MICA), and the secondary mortgage market.

To date, ERH™ has been developed for Washington, Alaska, Vermont, and Arkansas. We ask state energy offices to support our efforts both nationally and locally to:

1. Include the Uniform Home Energy Rating System (voluntary and run by the shelter industry --builders, lenders, appraisers, realtors, and utilities) in upcoming national housing policy legislation, and

2. An Energy Rating and Improvements Recommendation be *offered* to *all* home buyers under VA, FHA, and FmHA, and the cost of the energy rating be included as part of the first mortgage (instead of adding to closing costs), and

3. Provide local startup funding for Energy Rated Homes™ in your state.

This is an ideal bi-partisan, public/private sector partnership with no long-term administrative responsibilities to the state. This is an opportunity for a cooperative effort of state government(s), builders, lenders, appraisers, realty agents, utilities, and state housing finance agencies. This is a win-win for everyone! This next year is a window of opportunity. Make a commitment NOW to work together to make this happen for us all!

Why have a *Uniform* Home Energy Rating System?

You say you already have a rating system? Who doesn't!!

Hundreds have been tried by states, cities, utilities, and venders. They go by names like (to name a few!) Energy Saver Homes, Energy Saver House, Super Saver, Energy Idea Home, Double E, Super Double E, R-2000, E-300, E-7, Common Sense, Good Cents, Super Good Cents, Best Home, 100 Plus Program, Energy Management Construction Homes, Energy Action Homes, Fuel Efficiency Award Homes, Energy Efficiency Excellence Award Homes, Energy Efficient Structures, Energy Wise Homes, Gold Homes, Silver Homes, Platinum Homes, Home Energy Scorecards, Energy Efficiency Potential Homes, HERS, Energy Stars, Austin Stars, Home Heating Performance Rating, Home Heating Index, SAVE Home, High Energy Performance Labeled, Five Star Homes, Three Star Homes, Lennox Logic, Slide Rules, Energy Addendum, Arkansas Stories, Audit Wheels, Payback Plus, Manufactured Home Energy Value Award, Energy Conquest, Power Saver, Thermal Crafted, Energy Qualified, Excellence in Energy, Energy Checked, Energy Saving Plan, Watt Count, Watt Saver, and many, many others, including our favorite name, Hug 'n Snug.

Need we say more about the value of a *uniform* home energy rating system?

Why Energy Rated Homes™ (ERH™)?

ERH™ is not just another vendor. ERH™ is different. ERH™ is the only unbiased, nonprofit, home energy rating system designed to be the national uniform system and meet the needs of all housing-related industries. The manner in which ERH™ addresses the following items is evidence of how well this system has been designed for this purpose:

1. **Unbiased**
   Likened to the "underwriters lab" of the housing industry, ERH™ provides an unbiased evaluation, rating and energy use/cost projections. Most rating systems are self-serving; ERH™ is not. ERH™ sells no products and has no vested interest. Inspections and ratings are performed by trained, unbiased third-parties, nonprofits, and/or approved appraisers.

2. **Voluntary**
   Improving efficiency in housing can be accomplished by either legislating efficiency or voluntary, market-driven incentives. The shelter industry prefers a voluntary system like ERH™. The housing industry is prepared to provide efficiency to the extent that the public demands it. But this approach will work only if (1) the public is made aware of the rating system and, (2) the cost to support the system is not a burden to industry or the consumer. This can work best if the program is available nationally in a better position to influence policy changes within VA, FHA, and FmHA.

3. **Uniform**
   Mortgage loans are bought and sold around the country. Uniformity is important to lenders. ERH™ is uniform in format and methodology but specific to local issues, climates, and house types. This meets industries need for uniformity yet allows latitude for local needs which will vary around the country.

4. **Accepted by the secondary market**
Fannie Mae and Freddie Mac have worked with the ERH™ staff since the beginning of the program five years ago. ERH™ began at the request of lenders and appraisers who needed a way of dealing with energy efficiency in the loan process.

5. **Industry owned and operated**
Rights to the Energy Rated Homes ™ system are owned by a national nonprofit, Energy Rated Homes of America (ERHA™). As a necessary step towards national implementation, ERHA™ was recently incorporated to purchase the rights to the ERH™ system from Western Resources Institute (WRI) in Seattle, WA. WRI developed the rating system over the past five years with the intention of turning the program over to industry.

6. **Standards**
ERH™ provides standards developed through technical committees of housing industries in each state. These standards are in line with the National Association of Home Builders' Thermal Performance Guidelines (TPGs)'s and reflect local climate, house types, and other local issues.

7. **Technically accurate yet easy to understand**
These two items are almost contradictory. ERH™ has solved this with a separate rating sheet for each house type in each climate zone (to keep calculations at a minimum while maintaining accuracy) and a consistent 100 point system with corresponding "stars" for different levels of efficiency. The stars are all the consumer really needs to understand.

Each point in the 100 point ERH™ system represents about one-percent of potential energy savings. The more points, the more "stars". One Star is "poor", Two Star is "fair", Three Star is "good", Four Star is "efficient", and Five Star is "very efficient". There are pluses in between (i.e. Four Star Plus) which allow an efficiency scale spanning ten levels of efficiency.

8. **Scaled rating system**
Scaled ratings differ from "prescriptive systems" which require certain specific measures to be included before getting a stamp of "efficient". The ERH™ system allows builders more options. It is the total points that are important. Builders can choose their most cost-effective strategy to amass the necessary points for the rating they want.

9. **Tested**
ERH™ has been developed, revised, and field-tested in five states so far (Washington, Oregon, Alaska, Vermont, and Arkansas)

Refining and expanding the rating system to address local issues, climate and housing types of each new state presents a recurring opportunity to improve on the ERH™ system. New ideas continue to surface, be tested and incorporated into the system which have made ERH™ uniquely locally specific while retaining a uniform methodology and format important to industry and national implementation.

10. **Public/private sector partnership**
ERH™ is an excellent public/private sector partnership. Local start-up costs have been born by state energy offices and lending institutions around the

country with operations of the program turned over to the housing industry. Bonneville Power Administration funded initial ERH™ development at the request of the Northwest Power Planning Council.

The needs of state energy offices are met with a system like this that can provide market-driven incentives for efficiency without legislating efficiency levels. With an independent, nonprofit third-party operating the program, ongoing administrative responsibilities to the state are avoided and better industry participation is assured.

Support can be found within all sectors of the housing industry. This is a rare win-win for all.

11. **Housing industry program**
ERH™ has been developed at the request and with full participation of the housing-related industries. Boards of nonprofits offering the ERH™ system, technical committees, and steering committees have been composed almost entirely of representatives of the housing industry .

12. **Housing data bank**
It is important to track the correlation of selling price to efficiency levels in order to show efficient houses sell for more money (once the buying public can tell the difference). This can justify higher appraisals for "efficient" houses.

There is also statistical information in such a data bank of value to both states and industry.

13. **Referral service**
ERH™ can offer to the public a referral service of both new home builders who have built at least one Four Star (efficient) house and for energy improvement contractors for existing (older) houses where ratings have been performed and improvements have been recommended to the homeowners.

A "lead generation" service for energy improvement contractors may be a way to encourage improvements following a rating. This could be a boost to the retrofit market. This component is still in the discussion stage awaiting interest from a participating state to help develop the concept.

14. **Air quality testing**
ERH™ can perform air quality testing upon request. This has become a concern as we have tightened up houses. An independent third party inspection and a referral list of builders and "house doctors" specializing in measures for improving air quality, benefit both the builders and the home owners.

15. **Thermal Performance Guidelines (TPGs)**
The National Association of Home Builders' TPGs are in line with ERH™ efficiency levels. Although the TPGs do not currently address such items as HVAC efficiency and air infiltration, TPG houses generally fall in the range of (Good) Three Star Plus to (Efficient) Four Star Plus depending on how HVAC efficiency and air infiltration are handled by the builder.

16. **Quality control**
Quality control of the ERH™ rating system has been a priority since it's inception. ERH™ will continue to make every effort to maintain the integrity of the system and welcome any suggestion on how to improve these efforts.

17. **Rates old and new homes**
A new house today is an old house tomorrow. A uniform rating system is important for consistency for lenders, the secondary market, and the public. This can assist builders by showing generally higher efficiency levels for new construction. The difference can help remodelers gain business for energy improvements. Energy escrow accounts for improvements as part of a first mortgage at time of sale can help realtors sell less efficient homes.

The ERH™ rating scale has a range capable of rating anywhere from an older home with low-efficient components to a house of the future built today where the thermal qualities may exceed "most cost-effective estimates" of the TPGs.

18. **Fuel blind**
The ERH™ efficiency rating is based on relative BTU savings compared to a "baseline house".

ERH™ first rates the thermal envelope, HVAC efficiency, water heating efficiency, and other miscellaneous energy items to determine the rating. Then the rater looks at fuel type and energy costs to estimate dollar operating costs.

When comparing points for efficiencies (and energy savings) of HVAC equipment, the rater compares electric to electric (i.e. heat pump to electric resistance heat), high-efficiency gas to lower-efficiency gas furnaces, and treats oil and wood in a similar fashion.

Because the ERH™ rating system has no vested interest in promoting one energy source over another, the public perception and credibility of a home rating, energy cost projections, and suggested improvements are enhanced.

19. **Utility involvement**
Utilities can benefit from the credibility of independent, third-party inspections by tying direct-marketing and/or conservation incentives to the ERH™ program. The rating system is uniform; the incentives offered by a utility can be tailored to the utilities specific needs. A utility can save money in audit staff and marketing/conservation program development.

"Build a Four Star house and include such-and-such equipment and we will pay for the rating plus we'll do such-and-such," a utility can offer a builder. A utility can suggest to a customer irate over high bills to get an ERH™ rating and improvements recommendations and the utility can offer direct cash incentives for energy improvements to lower the bill. This would be a real service to customers!

20. **Prioritizes improvements**
Suggested recommendations on the ERH™ Improvements (Recommendations) Worksheet, are prioritized by comparing the typical

dollar cost of the improvement per point gained (and energy saved). For the owner of an older home, this translates into dollar savings.

ERH™ uses the same methodology for new homes and provides for a second inspection for builders wishing to improve or add energy features to upgrade an efficiency rating. ERH™ wants builder's homes to rate as high as possible!

21. **Air leakage testing**
When rating a house, ERH™ provides for verification of air leakage by blower doors, AIMS, or other accepted methods for infiltration/air leakage testing

22. **Sustainable**
Ongoing costs of operating the system are now covered by fees for ratings, training, and/or memberships. Common usage will generate enough cash flow for ERH™o be self-supporting. Utilities supporting the ERH™ system can pay for ratings as part of marketing programs and rate-base the cost.

It will sometimes be in the interest of the home buyer to pay for the rating. To prevent this being an added closing cost, the cost could be added to the home's appraised value and/or part of the mortgage loan amount. This requires policy decisions with VA, FHA, FmHA, and the secondary market that are likely if this uniform system is part of national housing policy.

23. **First-time home buyers**
A Harvard/MIT Joint Study of the effect of the ERH™ system in five major cities showed *significant* increases in the number of buyers who could qualify for home ownership with qualifying ratio adjustments by lenders for efficient homes. Most were first-time home buyers! This is very important considering the number of first-time homebuyers has declined for the past six years.

The very fact that more potential buyers could qualify for efficient home ownership serves a great social purpose while boosting to the economy.

24. **Win-win for all**
ERH™ benefits all sectors of the housing industry and the public alike. It is a rare "win-win" opportunity. Builders can quantify the higher levels of efficiency of their houses. Lenders and realtors can qualify more buyers with ratio adjustments for efficiency. Appraisers have a better tool for judging and adding value for efficiency. Mortgage underwriters have a better tool for predicting utility cost. The secondary market has more secure mortgages with a clearer energy-cost picture.

Buyers have continued to express a willingness to pay more for efficiency if they can tell the difference. With energy efficient mortgages (EEM's), buyers can get extra money for energy improvements as part of a first mortgage. This will help the buyer and seller of less efficient houses while benefitting remodelers and building suppliers as well.

The ERH™ Future

1. Almost everyone feels a home energy rating system is a good idea but no one wants to pay for it. Added closing costs are a deterrent to ratings at time of sale.

   Ongoing costs of operating the system are currently paid out of fees earned for ratings and underwritten by states. Other possibilities include rate-basing the cost to utilities, rating cost added to appraised value, and/or part of total mortgage amount.

   If ERH™ were part of national housing policy legislation, it would make it more possible for the cost of ratings to be allowed as part of the total mortgage for buyers under VA, FMHA, and FHA. With energy improvement loans or energy escrow accounts at the time of sale, the cost of the rating should be included as one of the energy improvement measures and included in the total loan amount.

2. There are many "energy efficient house" programs around the country. All want recognition by lenders. Some are good; some are not. ERHA™ could serve Fannie Mae, Freddie Mac, VA, FHA, FmHA, etc. to make equivalency determinations of other rating systems.

3. Public perception is crucial. Independent third-party verification would add credibility to existing state, industry, or utility programs.

   For instance, a utility offering a marketing program could have the local nonprofit could make the inspection for compliance. The house might be advertised as a "Four Star Good Cents" house or a "Five Star Good Cents" house for those that have exceeded minimum requirements. A similar application could be made to private vendor programs like Watt-Count with a "Five Star Watt-Count" house. Equivalency with local HBA programs could emerge as "Four Star Gold" or "Five Star Platinum" houses if local associations so choose. A gas utility might have a "Five Star Energy Wise" home.

4. ERHA™ could be the energy component of the Home Owner Warranty (HOW) program. Or, ERH™ could stand alone and have a similar relationship to NAHB that HOW now enjoys.

5. If VA is really committed to efficiency, the rating and additional money for energy improvements should at least be *offered* to *every* veteran buying a home, and the cost of the rating/inspection should be rolled into the total mortgage amount along with money for energy improvements. Let's start with VA, and the same should apply to FHA and FmHA.

6. If DOE is really committed to energy efficiency in housing, market-driven standards, and the government getting out of industry's business, perhaps DOE should consider funding national implementation of this program and turning it over to the shelter industry.

The Energy Rated Homes™ System

Over the years, ERH™ has developed a total package to include technical development, training, marketing, and administration. ERH™ can provide everything needed to make the system available to any locale.

a. Technical Development

The ERH™ system provides for consistency in the technical methodology for developing rating sheets around the country with assistance from local technical committees. ERH™ addresses different local issues, climates and house types with each new state that joins the system. This offers an opportunity to further fine-tune and improve our rating software methodology and appraiser rating sheets.

b. Training

Training is provided for ERH™ raters, appraisers, mortgage underwriters, and local operators of the ERH™ system. Builder seminars are available upon request and usually focus on how to build a Four Star house at least cost.

c. Marketing

All the states that join the system share in the marketing materials developed by each one. Marketing materials developed to date include logos, newsletters, TV spots, radio spots, industry slide shows and videos, yard signs, counter-top consumer brochures for homes on the market, industry brochures, magazine articles about ERH™ from trade publications such as "Mortgage Banking", the Federal Home Loan Bank's "Outlook" magazine, news clippings, etc.

d. Operations

ERH™ provides a national organization to operate the program and provide quality control. Internally the ERH™ system is currently operating more as a partnership of participating states with diverse approaches to making the uniform system available.

For instance, Vermont can insist on a rating for any loans for energy improvements made through the Vermont Housing Finance Agency. Arkansas focuses more on new construction and works through builders and utilities. Alaska is geared more to lenders and ratings are offered as an addendum to structural inspections.

There is strength in this cooperative process. Incorporating and testing local innovations help improve the system for us all.

Energy Rated Homes of America™

The Energy Rated Homes (ERH™) system has been over five years in the making. ERH™ was initially developed by Western Resources Institute(WRI), a nonprofit in Seattle, WA. WRI owned the rights to the ERH™ system.

Incorporation of a national nonprofit to own the rights to the ERH™ program under the direction of the shelter industry was an important and necessary step for national implementation.

In the spring of 1987, the Board of Directors of Energy Ratings, Incorporated (ERI) d.b.a. Energy Rated Homes of Arkansas in Little Rock agreed to assume the:

1. Role of the ERH™ national office.

2. Responsibility of transitioning the ERH™ program over to industry.

ERHA™ was incorporated in Arkansas July 16, 1987. Arkansas was chosen for several reasons. The Arkansas ERH™ staff recognized the importance of national implementation of the program. The Arkansas Energy Office had demonstrated vision and commitment, and the Arkansas program had necessary support of leaders of all sectors of the local housing industry. An added bonus was recent legislation in Arkansas protecting officers and directors of nonprofits from litigation (a legitimate concern however unlikely).

Board of Directors

ERHA™ was set up to ultimately be directed by representatives of national associations of builders, lenders, appraisers, realty agents and utilities. For the present incorporation period, however, the startup Board includes:

Ron Hughes	Director Energy Rated Homes of Arkansas
Doug Lathrop	Director of Single Family Homes Vermont Housing Finance Agency
Walter Nixon	President, Board of Directors Energy Rated Homes of Arkansas
Dana Nixon	Attorney Energy Rated Homes of America
Evan Brown	ERH™ Technical Director Secretary, Board of Directors Western Resources Institute

The more permanent ERHA™ Board is expected to be convened from industry in late 1987 or early 1988. At a minimum this Board is expected to include someone from NAHB, MBA, and MICA, and each of the currently participating states. Associations of realtors, appraisers, and the Alliance to Save Energy in Washington D.C. have also been suggested as board members.

Energy Rated Homes of America™
Industry Steering Committee

The ERHA™ National Steering Committee to date has been composed of leaders in the shelter industry. The steering committee includes John Teutsch, president-elect of the Mortgage Bankers of America, Earl Corkett, president-elect of the Mortgage Insurance Companies of America, Dave Smith and Harry Pryde, two past presidents of the National Home Builders Association, Bill Thomas, Executive Vice President of Freddie Mac, David Maxwell, Chairman of the Board of Fannie Mae, and a number of other distinguished industry leaders (see the back of the attached brochure: "Can An Energy Rating Save You Money?").

At the advice of our Executive Committee, the Steering Committee for this next phase is being restructured somewhat to also include Congressional leaders, with an interest in energy policies and conservation, to assist us with our efforts towards national implementation.

Implementing the Energy Rated Homes™ System

One of the first questions to ask is who will administer and direct Energy Rated Homes™ in your state. There are a number of advantages to having a nonprofit run by a board of housing related industries operate the program. In this case, the nonprofit would serve as the "local operator" of ERH™. If an appropriate nonprofit does not already exist, it can either simply be established up front or the appropriate directors may surface during the first few months work and the nonprofit be established then.

The core staff of the nonprofit will typically consist of a Director, an Office Manager, and a Chief Rater. A marketing director may be added full or part-time. Additional raters may be added from around the state.

Until the nonprofit takes over, an initial "coordinator" can take the lead. This may be a temporary position or someone who will later serve as director of the nonprofit. This should probably be a private sector person as opposed to a utility or state government employee. ERH™ will have more impact and better initial industry cooperation if is perceived as an industry program - which it is.

The first task is to gather the necessary information to begin development of the rating sheets. This information will include:

Determining the different climate zones.

Determining the most prominent house types (there are seven in Arkansas and fourteen in Alaska)).

Determining the typical or "base line" house based on census data, surveys, and building patterns through the years.

Determining the utility rates of all utility companies in the state so that an annual utility cost of a new house can be projected.

Building a data base of energy audits, both paper audits and metered information about actual energy consumption of the different housing types in different climate zones.

Beginning the consensus process to determine the most appropriate "levels" of efficiency for the various items that are addressed in the rating. (See back of the sample rating sheet enclosed.)

Determine what percentage of a home's utility bill typically goes for heating, air conditioning, water heating, and base load, depending on level of efficiency and climate zone.

Gathering this information may take two months. It will require making the acquaintance and getting the cooperation of the state energy office, the utilities, the Public Service Commission, and the state Home Builders Association, etc. It is a good opportunity to begin to assemble the steering committee and technical committee for the program.

Once this information is gathered, the technical staff of Energy Rated Homes™ can begin development of the rating sheets. This will take several months as the rating sheets will require revisions and fine tuning until they are agreed upon by the industry. Builders, utilities and state energy agency will be most interested in this aspect of the program and will probably comprise the core of a state's "technical committee." Once this is done, attention can be given to the other players in the program. A working relationship should be established with the state and local associations of mortgage lenders, appraisers, homebuilders, realtors, utilities, Public Service Commission, energy office, and the state finance development agency/corporation. Add HUD, VA, and FmHA and you get some idea of the scope of the program.

The technical review committee for the rating sheets should be identified. The goal will be consensus among the parties as to "levels" and relative value of different aspects of the rating sheet (i.e insulation, window treatment, infiltration, HVAC efficiencies, etc.)

Work towards getting endorsements and support from state associations plus housing industry individuals well known and respected in their field. We will have already started to identify individuals who might serve on the state steering committee. Since this is an industry program of and for the housing industry, the state steering committee serves an important function of oversight and guidance. During this "get acquainted" stage, the coordinator/director is explaining the program, establishing credibility and asking for advice, direction, support, and the names of other individuals who should be contacted.

By the third month, local staffers/raters need to be targeted around the state so they, too, can begin to make the rounds to solicit the support of key players in their target area. This is a learning process where these people begin to understand how the system works, and gain experience in dealing with the different industries and individuals who are key to the program's success.

The local operator receives the initial "start-up" package which includes an operations manual, marketing package, etc. The computer program to run program may still be in development. Training begins for them.

The first year, local raters will meet with some regularity for orientation and training. Later, it will be for strategy planning, budget discussions, delivery system improvement, etc. If appropriate, these meetings can rotate around the state to reduce travel and allow operators to look at other operations.

Six months into the process, the main ERH™ office is set up. The computer link is in place and a bulletin board established to send and receive data, messages, mailing lists that are being assimilated, etc. This will be useful in getting comfortable with telecommunicating which will be important if ratings are centrally processed. It is also a convenient way to transfer information between ERH™ programs in different states.

State association conventions take place generally in the summer and fall. The Energy Rated Homes™ system and "how it will help YOU" should be on the program. However, there are many other occasions to present the program at local association meetings. This is important. Here is an opportunity to explain the concept and gain support while getting feedback and suggestions on implementation, acceptable "levels" of efficiency, and identifying the individuals who will take leading roles.

Six months into development, the rating sheets should have the approval of the technical committee and be ready to go to press. The state steering committee should be firmed up. By then it will be time to schedule workshops for appraisers, homebuilders, realtors, and afterwards, even homebuyers (what to look for when buying a house?). Most of these workshops should be offered jointly with state and local associations. By associations co-sponsoring these, it adds credibility to the ERH™ program and begins to buy industry into the system. Industry begins to feel ownership - and rightly so. Meanwhile, the associations are providing a useful service to their members. Local workshops are arranged by the local operators.

Energy Rated Homes™ national and regional staff will lead the first series of workshops. This role is later assumed by local operators or the state associations if they so choose.

Cooperation with the utilities can increase the number of ratings and the impact of the rating system. Rating of existing houses can be called for in response to high heating bills.
Tying into housing development finance money for both purchase and energy improvements can insure additional ratings and visibility.

The program should go public with a splash of media attention. Through local tv and radio talk shows, newspaper articles, and newsletters, the public should now be hearing about the program. Workshops for builders ("How to build a four star house for less") can be scheduled. Builder's plans can be pre-rated and discussed prior to house starts. Blower door infiltration testing will call attention to the program if the testing receives publicity.

A "Parade of Energy Rated Homes" can be scheduled when there are enough houses rated to allow it. This can best be done in conjunction with the homebuilders and real estate associations. Or, "free" introductory ratings can be offered builders in the annual Parade of Homes sponsored by most Home Builders Associations.

During this time, local raters and central office are building the list of participating "members" of the system and starting to promote their services. Energy Rated Homes™ offers a referral service to members. ERH™ will supply homebuyers with the names of participating businesses: builders who build energy efficient houses, realtors who are knowledgeable about energy efficiency, appraisers who are "approved" to rate houses at time of sale, and lenders who work with our program and are willing to adjust guidelines for buyers of energy efficient houses. These businesses are members of the ERH™ system. They have paid their membership fee (if called for), attended the classes, and can help promote the use of the rating system.

As ratings are being processed along with home mortgages, we should be able to begin tracking the selling price differences of energy efficient houses. The housing data bank that evolves will be of real importance. If we can show "efficient" houses sell for more money, appraisers can justify higher appraisals. This will be of real benefit to builders. Builders feel they cannot afford to build a more efficient house without a higher appraisal to cover the added cost of construction. We must first give the buying public a yardstick. Given the means to see the difference, we expect to see higher selling prices for efficient houses.

The national work of ERH of America™ is a boost to local implementation. Acceptance by FannieMae and FreddieMac has already been obtained. Recognition of mortgage insurers is happening. Current work is geared towards allowing the cost of

the rating to be rolled into the total mortgage amount with VA and FHA. In addition, a uniform home energy rating system should be part of national housing policy.

With a partnership of participating states and industries creating and supporting a national uniform system, we can institutionalize energy efficiency. And why not? There is something in it for everyone.

Energy Rated Homes™

Feasibility Study

$6,600

FEASIBILITY STUDY $6,600

If a feasibility study is in order, the following may be helpful:

These figures assume a local contractor would do the organizing of the meetings in one target area. This person should ideally be the same person to implement the program were it to continue.

If our staff spent seven days on the project, two days would be in Little Rock doing preparatory work and whatever consultation was needed as local meetings were being organized. Ron Hughes would make two trips to your state. Meetings should be scheduled with builder, lender, and appraiser association officers and members, as well as the utilities. In each of these meetings, the ERH program, specific issues and questions could be discussed. This would be an opportunity for the local contractor(s) to learn more about the program and how it relates specifically to the different industries.

Meetings with your office staff to discuss industry meetings would be the next step. The local contractor should then schedule follow-up industry meetings to ascertain the level of interest. This would be concluded with a day of follow-up and reporting on our end.

The following budget should cover this preliminary work:

Local contractor

One month @ $2,500/mo	2,500
Travel	500
Telephone/postage	200
Subtotal	$3,200

Energy Ratings, Inc (our nonprofit in Arkansas)

Six days staff @ $40/hr	1,920
Telephone/postage	200
Air fare	800
Per diem ($70/day)	280
Materials (hand-outs)	200
Subtotal	$3,400

The "Energy Rated Homes™ of Your State" Package

Technical development

Technical development includes both appraiser rating sheets with associated materials and local operator, computer generated rating sheets with software development to include as many house types and climate zones as appropriate. Also included are development of utility cost schedules and revisions of desk top manuals for your area.

The development of the rating sheets and computer program is the responsibility of Evan Brown, Technical Director of ERH™. To date, Evan has been responsible for the ERH™ technical development of Washington, Oregon, Alaska, and Arkansas' rating sheets. Actual printing costs of rating sheets are not included in the start-up package.

The computer software is a stand-alone package that will give the local operator a complete rating system. This software program will process the ratings locally. The software will give prompts, check incoming data, process the rating, print the rating sheet on a special preprinted form, and store the information. It will also handle appraiser ratings storage, store local operator information (like which banks have been contacted, etc.), and the program includes all necessary energy use files, utility costs, housing types, etc.

At the end of each month, a computer disc of all the ratings processed that month will be forwarded to the ERH™ national office. This is important for tracking ERH™ work around the country and quality control, and for building our national housing data base. The Federal Home Loan Bank of Seattle has offered its mainframe computer for storing this data.

With a "housing data bank" it is possible to track selling prices of efficient and non-efficient homes. We will hopefully be able to show the added value of efficiency in the marketplace. This will give appraisers the substantiation they require in order to appraise efficient homes for more money. We feel this will prove to be a real incentive to builders to build more efficient houses. It will further benefit appraisers who are currently unable to increase appraisals because of "efficiency".

Local Operator "start-up package"

The start-up package for the local operator will contain virtually everything the local operator/nonprofit will need to implement the program. The package will continually be expanded and updated as new states join, different issues are addressed, and national implementation takes place.

The start-up package is not a static package. This is a continuing process and as new parts are developed locally, they will be added to the package. Most pieces are already developed or adaptable. Some, like the "summary activities reporting forms" are part of the local operator's disc for processing ratings. Some pieces are being reformatted as they are needed. For a more detailed description, see the attached "[illegible]tup package".

Local training

The local operator is provided training as part of this package. Training will include ERH™ system operation, rater training, and "train the trainer" training for conducting similar sessions with builders, underwriters, realtors, and appraisers.

Training for the local operator is typically conducted in your state; or in the case of joint training with another state, may be held elsewhere. Initial training will come from national staff with assistance from local ERH™ operators from around the country.

ERH Partnership of states

Energy Rated Homes of America™ is designed as a partnership of participating states and housing industries that are involved in the program Implicit in this partnership are both benefits and responsibilities. Participating states benefit from this partnership by having access and use of all the development work that has gone into ERH™ to date and in the future.

Collectively, we are in a much better position to leverage a national, uniform rating system into the marketplace in the form of national housing policy and lending guidelines of FHA, VA and the conventional market.

National implementation requires coordination and support of industry associations like the Mortgage Bankers of America, the National Association of Home Builders, the Association of Mortgage Insurers, conventional secondary markets like Fannie Mae, Freddie Mac, plus VA, and FHA. Other agencies and associations with the potential to assist include DOE, the Alliance to Save Energy, the National Association of Energy Office Officials, and the National Council of Governors.

Energy Rated Homes of America™

In July of 1987, agreements were signed between Western Resources Institute (WRI was the original developers of the Energy Rated Homes™ system) and the board of the newly formed Energy Rated Homes of America™ (a national nonprofit chartered in Arkansas) to transition the rights to the system over to Energy Rated Homes of America™ . This was seen as a necessary step towards national implementation of the program.

Energy Rated Homes of America™ agreed to make a good faith effort to pay Western Resources Institute $75,000 for the rights to the system over the following two years. From $10,000 to $12,000 of the $60,000 startup that each new state pays for the initial ERH™ system development and startup package goes to retire this debt to WRI.

Energy Rated Homes of America™ national office

The national office is responsible for national support for the local program and operational assistance to local operators/nonprofits in matters of quality control, trouble-shooting, and regional/national coordination. There is a real demand on national staff for policy, strategy, information, support, and problem solving. Responding promptly to inquiries from states, utilities and the housing industry is necessary.

The national office is also responsible for managing the housing data bank of all homes that have been rated and tracking the correlation between efficiency and market value.

Encouraging additional states to offer the ERH™ system is critical if national implementation is to take place. This helps us all.

Furthermore, the national staff is the link to the national steering committee. The national steering commitee has been a great help to the development of ERH™ to date. These individuals have lent their name and time to this program and can be called on from time to time to assist as specific needs arise. All requests to the national steering committee go through the ERH™ national office.

National funding support

National operation and implementation requires time and money. For now, those funds come from whatever money remains in the $60,000 startup from new states after contractual agreements for technical development, startup package, and training needs are met. In addition, ongoing financial support is supplemented by a percentage (currently 15% in Arkansas and Vermont) of revenues generated from local ratings.

How we continue to support national administration and expanded implementation is a responsibility of the Directors of both Energy Rated Homes of America™ and the ERH™ state programs. All of the states and industries involved in ERH™ should participate in the policy decision making required to sustain and expand the program so that it will be self-supporting and meet the needs of all.

Energy Rated Homes™

Startup Package

A. Administrative

1. ERH™ affiliate agreements for appraisers, lenders, builders, realtors, etc.
2. Operations manual
3. Summary activities reporting forms
4. Instructions for data storage and financial reporting

B. Technical

1. Appraisal rating sheets
2. Utility cost sheets*
3. Energy use sheets (MBtu's for appraisers)
4. Underwriters' benchmark utility costs*
5. Computer disc (local operator rating sheet) for single family (at this time)
6. Rating sheet blanks for computer input
7. Energy improvements worksheet
8. Efficiency improvements cost data sheets *
9. Energy rater field rating evaluations workbook
10. Heating systems efficiency cost-effectiveness worksheet

C. Training

1. Appraiser training kit
   a. "Train the Trainers" video
   b. Training curricula outline
   c. Training transparencies for overhead projectors
   d. Slide presentations
   e. Appraiser training manual
   f. Appraiser competency test
   g. Administrative procedures checklist
   h. Sign-in sheets, example rating sheets, etc.
2. Underwriters training kit
   a. Curricula outline
   b. Video of mortgage bankers presentation ◊
   c. Training transparencies for overhead projectors
   d. Underwriters training manual
   e. Worksheets for underwriters use during training
3. ERH™ Rater training kit
   a. Rater training curricula outline
   b. Rater training video[1]
   c. Rater training manual
   d. Technical competency test
   e. Example rating checklists, improvements analysis, etc.
   f. Energy rater field analysis workbook
   g. Energy rater information/promotional kit
   h. Examples of improvement brochures (local EES, energy office, etc.)
4. Realty company materials
   a. Presentation outline
   b. Example visuals
   c. Example handouts

D. Promotion and Marketing Package

1. Consumer promotional materials for local operator
   a. Rating certificates (single and multi-family)
   b. Cover letter to consumer buying a rating
   c. Cover letter to interested home-owners
   d. Cover letter to builders
   e. ERH™ Buy/Sell promotional brochures ◊
   f. ERH™ remodeling promo ◊
   g. ERH™ yellow page ad
   h. TV spot
   i. Classified newspaper legend
2. Consumer promotional materials - Industry Affiliates
   a. Lender marketing materials (counter cards, stuffers, radio, ad.)
   b. Seller marketing materials (brochures. yard signs, counter cards,etc.)
   c. Realty agent broker materials (brochures, yard signs, counter cards, etc.)

In addition, being a member of the ERH™ system means sharing of materials developed by other ERH™ programs in the future in exchange for additional materials you may wish to develop in your area.

Footnotes:

1 The rater video should be completed by the winter of 1987.

* Designates components requiring information provided by the local operator/consultant or energy office.

◊ Currently being developed.

Energy Rated Homes™

Typical First Year Implementation

Sample Budget and Explanation

This budget has been developed:

•as a general guide of typical costs of ERH™ implementation

•as a companion to ERH™ technical development and startup package costs

•assuming one central office operting the program within the state

•allowing for adjustments based on local economy, needs and resources.

BUDGET
TYPICAL FIRST YEAR START-UP
One Target Zone

In-state staff:		
Director, Chief Rater, Office Manager/Sec		65,500
Salary fringes @ 32%		21,280
Bookkeeping/Annual Audit		1,600
Outside consulting		3,000
Office expenses: main office		
Furnishings (desks, file cabinets, etc)		3,000
Rent @ $400/mo		4,800
Parking		1,080
Postage/Federal Express @ $60/mo		720
Telephone @ $300/mo.		3,600
Copying/printing @ $200/mo		2,400
Office supplies @ $150/mo		1,800
PC Computer, printer, modem and software		5,000
Printing: appraiser rating sheets, local operator rating sheets, improvement worksheets, brochures, stationery, cards, lawn signs, certificates, etc.		7,500
Travel: In-state mileage @ 400 mi/week @ 20¢/mi.		4,000
Lodging/meals 2 days/wk @ $50/day		5,000
Out-of-state travel: Arkansas: 3 trips @ $500 ea.		1,500
Conferences 5 @ $800 ea.		4,000
Books/trade magazines/reference materials		500
Industry association memberships 4 @ $250		1,000
Vacuum door (2 ea.)		5,000
Blower Door calibration equipment		1,500
Seminars/workshops		
Rater training (materials)		2,000
ERH desk-top manuals & training materials:		
realtors:	25 @ $30	3,000
appraisers/underwriters:	20 @ $30	3,000
homebuilders:	200 @ $10	4,000
blower door operation /insulation contractors		2,000
room rental, misc. expense (all sessions)		1,000
Miscellaneous		5,000
Total Start-up Expenses		163,780
Suggested marketing budget		100,000
Total Expenses w/Advertising		273,780

Typical First Year Implementation

The following items are included in the development budget. They are presented as typical implementation costs associated with putting a rating system on the street. Also included are options like blower doors that the state, the local operator, and a local industry committee are encouraged to consider.

In-state staff

It takes at least three people to staff a program like this.

The Director will probably be the person most responsible for getting cooperation and support from lenders, builders, appraisers, realty agents, utilities, and state government - not an easy task. It will usually be helpful with a housing industry that resists "regulation" that the organizer be a private contractor instead of being a state government employee.

An Office Manager is needed to do general books, payroll, mail-outs, process ratings, maintain data base, and discuss the ERH system with callers.

The Rater must be familiar with rating houses, processing ratings, and have good rapport with builders and home-owners. Technical expertise is required and it's a good idea for this person to have gone through the series of industry technical meetings necessary to arrive at the standards reflected in the rating sheets. Fielding questions from builders and home-owners about the technical aspects of the program is common.

Annual audit

This is important and often even necessary if state funds are use to cover the initial cost of operating the program. The IRS requires nonprofits to submit audits periodically to keep their nonprofit status.

Outside consulting

This is useful for specific tasks local staff is unable to deal with. It may be for technical work, research, legal work, training, setting up books, or the office, or a variety of other needs that are unforeseen.

Nonprofit incorporation fees and licenses

Although sample incorporation papers are included in the startup package, they still require filing; there is a charge for this. Also, business licenses are required in most states.

Insurance

Some states have laws protecting directors and officers of nonprofits from suits. If not, the directors of the nonprofit offering a rating system may request "D&O" liability insurance. Insurance should also be obtained to cover a rater accidentally falling through a ceiling (or worse) while rating a house. Fire and/or theft insurance may be a consideration for the ERH office.

Office expenses

These will vary depending on the rent district, access to state surplus, and scrounging ability. The largest hardware cost is probably the computer system(s).

An IBM (or IBM act-alike) computer is the standard for processing ratings and transmitting rating data to and from the national data processing center. This process will provide a data base of value to all participating state programs. A PC is necessary to interface with the Federal Home Loan Bank system which has offered it's mainframe for storage of the data bank .

The IBM computer is used by the Energy Rated Homes representatives to locally generate the "Improvement Worksheets" as well.

The Apple Macintosh is popular within the ERH network. Both the Arkansas and Vermont ERH offices use Mac's for typesetting and layout of the rating sheets, newspaper ads, "Energy Ratings News" newsletter, manuals, data base, etc.. Although not "required" like the IBM to process ratings, the Macintosh is a highly recommended addition if a budget permits.

Travel

There will be a significant amount of local travel involved in networking and soliciting the support of the related industries around the state in order to coordinate this program. There will be a number of speaking opportunities at local and state meetings of housing-related industries.

Besides traveling to the national office from time to time as startup and ongoing needs dictate, a national meeting of local operators should take place once a year. The location may rotate among participating states. This will be a good opportunity to observe other state programs. It is important for all participating states to attend.

Conferences offer an opportunity to both learn and promote the ERH system. For national implementation to occur, ERH should strive to be on the agenda of appropriate conferences as often as possible. Public and industry education is a major piece of our work.

Books/reference materials

The local ERH staff will need to be current in residential conservation and construction practices. Reference materials will be important.

Industry association memberships

It's a good idea for ERH local operators to be members of the local associations of home-builders, appraisers, mortgage bankers, and realtors. A primary responsibility of the ERH operator will be to maintain the support of these organizations and for Energy Rated Homes™ to become a standard part of how these industries do business.

Blower door

This technology is the best we know for determining air infiltration. It is an educational tool for both builders and home-owners. It's an impressive, professional addition to the rating. Arkansas is the first state in the ERH system to use blower doors.

Money is budgeted for calibration equipment with an eye towards promoting blower door technology in the local housing industry. If we are to accept a local HVAC contractor's blower door test results when we perform a rating, we need to know that his/her door and ours is calibrated to a common standard.

Seminars/workshops

After his training, the local operator, with assistance from the ERH national staff, will be responsible for the training of local industry people. Training can be a source of revenue for the local operator. Seminars are not only for industry but the public as well, with classes such as "What to look for when shopping for a house." All the materials a local operator will need for workshops are part of the "start-up package."

An ERH desk-top manual will have already been developed for underwriters and appraisers has part of initial technical development. Underwriter's training takes a half day. Training for appraisers who will do ratings takes a full day. Underwriters and appraisers are charged for this training.

For realtors and home-builders, there is not a "manual" per se. Workshops can be done at local association meetings or at the discretion of the local operator or steering committee. These classes generally cover how to build a four or five star house for the least cost and how to sell energy efficiency (or non-efficiency) in the marketplace using the ERH system.

The first year, Energy Rated Homes' staff can lead these workshops. After that, the state associations of these industries could choose to be responsible for providing their own training.

Marketing

The Energy Rated Homes™ system has already developed (and is continuing to develop) marketing packages around the country. Attached is a one-year marketing plan and budget for Arkansas. It follows an initial $10,000 spent on marketing publications and advertising for a total of around a hundred thousand dollars.

Do not underestimate the importance of marketing. This is a long-term undertaking of public and industry education. It is critical to the success of the program. There will continue to be marketing materials available from other states offering the ERH system. Most of these materials can easily be locally adapted.

Other services

The local rater may offer other services that address local issues so long as there is no conflict of interest. For instance, radon testing is offered in Arkansas; structural inspection of houses is offered by Alaskan raters. Appliance efficiency may be an issue in your area. The important thing is to maintain an independent, non-biased, third party, perspective.

"Energy Rated Homes™"

"Energy Rated Homes™ of Your State"

Total System Startup Package

$60,000

This is a complete package designed to:

•provide the technical work necessary to develop the ERH™ system for your state

•provide a startup package of all technical, administrative, and marketing materials

•provided training for local staff, raters, and local industry

•enable you to become a partner in the uniform ERH™ system

•assist national/regional implementation

The national ERH™ staff and/or the ERH™ nonprofit in Little Rock, Arkansas (Energy Ratings, Inc.™), will be responsible for this work.

The "Energy Rated Homes™ of Your State" Package $60,000

This is a general package designed to provide the technical work and training necessary to develop the system for your state and enable you to become a partner in creating a uniform ERH™ system. It may be necessary to make adjustments for your state. For instance, you may have a need for materials for several target areas and additional training.

The staff of our nonprofit in Little Rock (Energy Ratings,Inc™), can help facilitate this work. We can provide your local operator with training, and the ERH™ technical and promotional components needed to offer the rating system. You will also have use of future materials developed by other ERH™ programs in exchange for sharing future materials you may develop for your area.

Technical Development

Technical development includes both appraiser rating sheets with associated materials and local operator, computer generated rating sheets with software development to include as many house types and climate zones as you deem appropriate. Also included are development of utility cost schedules and revisions of desk top manuals for your area.

The development of the rating sheets and computer program is the responsibility of Evan Brown, Technical Director of ERH™. To date, Evan has been responsible for the ERH™ technical development of Washington, Oregon, Alaska, and Arkansas' rating sheets. (actual printing costs of rating sheets are not included in the start-up package.)

The computer software is a stand-alone package that will give the local operator a complete rating system. This software program will process the ratings locally. The software will give prompts, check incoming data, process the rating, print the rating sheet on a special preprinted form, and store the information. It will also handle appraiser ratings storage, store local operator information (like which banks have been contacted, etc.), and the program includes all necessary energy use files, utility costs, housing types, etc.

Housing Data Bank

At the end of each month, a computer disc of all the ratings processed that month will be forwarded to the ERH™ national office. This is important for tracking ERH™ work around the country, quality control, and for building our national housing data base. The Federal Home Loan Bank of Seattle has offered its mainframe computer for storing this data.

With a "housing data bank" it is possible to track selling prices of efficient and non-efficient homes. We will hopefully be able to show the added value of efficiency in the marketplace. This will give appraisers the substantiation they require in order to appraise efficient homes for more money. We feel this will prove to be a real incentive to builders to build more efficient houses. It will further benefit appraisers who are currently unable to increase appraisals because of higher "efficiency."

Local Operator Start-up Package

The start-up package for the local operator will contain virtually everything a local operator will need to implement the program. The package will continually be

expanded and updated as new states join, different issues are addressed, and national implementation takes place.

The start-up package is broken down as follows:

A. Administrative
   1. ERH™ affiliate agreements for appraisers, lenders, builders, realtors, etc.
   2. Operations manual[1]
   3. Summary activities reporting forms
   4. Instructions for data storage and financial reporting

B. Technical
   1. Appraisal rating sheets
   2. Utility cost sheets*
   3. Energy use sheets (MBtu's for appraisers)
   4. Underwriters' benchmark utility costs*
   5. Computer disc (local operator rating sheet) for single family (at this time)
   6. Rating sheet blanks for computer input
   7. Energy improvements worksheet
   8. Efficiency improvements cost data sheets *
   9. Energy rater field rating evaluations workbook
   10. Heating systems efficiency cost-effectiveness worksheet

C. Training
   1. Appraiser training kit
      a. "Train the Trainers" video
      b. Training curricula outline
      c. Training transparencies for overhead projectors
      d. Slide presentations
      e. Appraiser training manual
      f. Appraiser competency test
      g. Administrative procedures checklist
      h. Sign-in sheets, example rating sheets, etc.
   2. Underwriters training kit
      a. Curricula outline
      b. Video of mortgage bankers presentation ◊
      c. Training transparencies for overhead projectors
      d. Underwriters training manual
      e. Worksheets for underwriters use during training
   3. Energy Rater training kit
      a. Rater training curricula outline
      b. Rater training video[2]
      c. Rater training manual
      d. Technical competency test
      e. Example rating checklists, improvements analysis, etc.
      f. Energy rater field analysis workbook
      g. Energy rater information/promotional kit
      h. Examples of improvement brochures (local EES, energy office, etc.)
   4. Realty company materials
      a. Presentation outline
      b. Example visuals
      c. Example handouts

D. Promotion and Marketing Package

1. Consumer promotional materials for local operator
   a. Rating certificates (single and multi-family)
   b. Cover letter to consumer buying a rating
   c. Cover letter to interested home-owners
   d. Cover letter to builders
   e. ERH™ Buy/Sell promotional brochures ◊
   f. ERH™ remodeling promo ◊
   g. ERH™ yellow page ad
   h. TV spot
   i. Classified newspaper legend
2. Consumer promotional materials - Industry Affiliates
   a. Lender marketing materials (counter cards, stuffers, radio, ad, decals)
   b. Seller marketing materials (brochures, yard signs, counter cards,etc.)
   c. Realty agent broker materials (brochures, decals, star logo, etc.)

The start-up package is not a static package. This is a continuing process and as new parts are developed locally, they will be added to the package. Most pieces are already developed or adaptable. Some, like the "summary activities reporting forms" are part of the local operator's disc for processing ratings. Some pieces are being reformatted as they are needed. The only *significant* piece still being developed is the operations manual.

Footnotes:

[1] The operations manual is outlined and partially developed. This will not be completed for at least six months.

[2] The rater video is planned to be done in Arkansas.

* Designates components requiring information provided by the local operator/consultant or energy office.

◊ Currently being developed.

The local operator is provided training as part of this package. Training will include ERH™ system operation, rater training, and "train the trainer" training for conducting similar sessions with builders, underwriters, realtors, and appraisers.

Local training

Training for the local operator is conducted in your state: or in the case of joint training with another state, held in Arkansas. Initial training will come from national staff with assistance from ERH™ operators around the country

National/regional staff

The national office is responsible for policy and national support for the local program plus operational assistance to local operators in matters of quality control, trouble-shooting, and regional/national coordination.

National and regional support are an integral part of the Energy Rated Homes™ system. This is a valuable service not only while becoming familiar with the program, but to meet the ongoing implementation and support needs that the system can provide. There is a real demand on national staff for policy, strategy, information, support, and problem solving. This is valuable to a local operator.

Furthermore, the national staff is the link to the national steering committee. All requests to the national steering committee should go through the ERH™ national office.
Ron Hughes, Director of Energy Ratings, Inc.™ (d.b.a. Energy Rated Homes™ of Arkansas™), is currently responsible for coordination of the program, training, and initial program presentations to local industry. After start-up, responsibility shifts more to the local operators and the industry associations.

Evan Brown, Technical Director, will provide technical development and assistance as well as rater training.

Local ERH™ staffers from around the country may also assist with training. For instance:

> Phillip Patterson (chief rater for Arkansas) can assist with both technical development and rater training.
>
> Richard Faesey (Vermont Housing Finance Development Authority) would be helpful with your state housing finance development agencies.

The above package does <u>not</u> include

1. Staff and related expenses accrued in information gathering of climate, housing types, utility rates, housing stock, etc., (approximately six months).
2. Technical meetings of your ERH™ staff and local industries to provide the data and feedback needed for technical development.
3. Implementation costs for your local ERH™ staff, office, printing, overhead, advertising, etc.

The Next Step: Implementation

None of the following items are included in the development budget. They are presented as typical implementation costs associated with putting a rating system on the street. Also included are some options like blower doors that the state, the local operator, and a local industry committee may want to consider.

Staff

It seems to take at least three people to staff a program like this.

The director will probably be the person most responsible for getting cooperation and support from lenders, builders, appraisers, realty agents, utilities, and state government - not an easy task. In dealing with a housing that is suspicious of government regulation, it may be best if the organizer is a private contractor instead of being a state government employee.

An office manager is needed to do general books, payroll, mail-outs, process ratings, maintain data base, and discuss the ERH™ system with callers.

The rater must be familiar with rating houses, processing ratings, and have good rapport with builders and home-owners. Technical expertise is required and it's a good idea for this person to have gone through the series of industry technical meetings necessary to arrive at the standards reflected in the rating sheets. Fielding questions from builders and home-owners about the technical aspects of the program is common.

Travel

There will be a significant amount of local travel involved in networking and soliciting the support of the related industries around the state in order to coordinate this program. There will be a number of speaking opportunities at local and state meetings of housing-related industries.

Besides traveling to the national office from time to time as needs dictate, a national meeting of local operators should take place once a year. The location may rotate among participating states. This will be a good opportunity to observe other state programs. It is important for all participating states to attend.

Computer Systems

An IBM (or IBM act-alike) computer is the standard for processing ratings and transmitting rating data to and from the national data processing center. This process will provide a data base of value to all participating state programs.

This computer will also be used by Energy Rated Homes™ representatives to locally generate the "Improvement Worksheets."

The Apple Macintosh is the computer popular within the ERH™ network. There is a request to have Mac's be the "standard" but we are currently obliged to use IBM's (or clones) to interface with the Federal Home Loan Bank system for rating sheets.

Books/reference materials

The local ERH™ staff will need to be current in residential conservation and construction practices. Reference materials will be important.

Industry association memberships

It's a good idea for ERH™ local operators to be members of the local associations of home-builders, appraisers, mortgage bankers, and realtors. A primary responsibility of the ERH™ operator will be to maintain the support of these organizations and for Energy Rated Homes™ to become a standard part of how these industries do business.

Blower door

This technology is the best we know for determining air infiltration. .It is an educational tool for both builders and home-owners. It's an impressive, professional addition to the rating. Arkansas is the first state in the ERH™ system to use blower doors.

Seminars/workshops

After training, the local operator, with assistance from the ERH™ national staff, will be responsible for the training of local industry people. Training can be a source of revenue for the local operator. Seminars are not only for industry but the public as well, with classes such as "What to look for when shopping for a house." All the materials a local operator will need for workshops are part of the "start-up package."

A desk-top manual has been developed for underwriters and appraisers. Underwriters training takes a half day. Training for appraisers who will do ratings (if there are any) takes a full day. Underwriters and appraisers are usually charged for this training.

For realtors and home-builders, there is not a "manual" as such. Workshops can be done at local association meetings or at the discretion of the local operator or steering committee. These classes generally cover how to build a four or five star house for the least cost and how to sell energy efficiency (or non-efficiency) in the marketplace using the ERH™ system.

The first year, Energy Rated Homes'™ staff can lead these workshops. After that, the state associations of these industries could choose to be responsible for providing their own training.

Marketing

The Energy Rated Homes™ system has already developed (and is continuing to develop) marketing packages around the country. Enclosed is a marketing plan and budget developed for Arkansas. In addition, an initial $10,000 was spent on marketing publications and ads for a total first year marketing budget of about a hundred thousand dollars. In conjunction with this media marketing, AEO is developing plans for offering up to 600 no-cost ratings around the state to promote the ERH™ program.

Do not underestimate the importance of marketing. This is a long-term undertaking of public and industry education. It is critical to the success of the program. There are a lot of marketing materials available from other states offering the ERH™ system. Most of these marketing materials can easily be adapted to your area.

Other Issues

The local rater may offer other services that address local issues. For instance, radon testing is offered in Arkansas; structural inspection of houses is offered by Alaska raters. Appliance efficiency may be an issue in your area. The important thing is to maintain an independent, non-biased, third party position with no conflict of interest.

Energy Rated Homes Marketing Proposal, Media & Marketing Plan and Budget, JUNE 1987-1988

Proposal prepared by
Patrick McKelvey
Creative Communication

MARKETING PROPOSAL

Purpose:
To inform and educate five target groups in Arkansas about Energy Rated Homes and how they can benefit from the Rating System in the homebuying process.

Target Groups:
Homeowners, homebuyers, realtors, lenders and builders.

Goal:
To persuade the Target Groups to ask Energy Rated Homes for an energy inspection and rating or, as a lending institution, to participate.

Marketing Strategy:
Energy Rated Homes is an unbiased energy inspection and rating service for real estate similar to the MPG rating for automobiles. Initially, ERH will benefit people who are involved with buying and selling homes, largely an upscale group. With multifamily ratings planned for the future, there is potential for ERH to benefit renters as well.

The Promise & the Benefit:
BUY SMART: get more house for the money, more money for the house... get an Energy Rating!

Substrategies:
An Energy Rated Home can help buyers qualify for more mortgage money. (Benefiting home buyers, builders & lenders)

A low Energy Rating can help homeowners qualify for Energy Efficiency loans. (Benefiting realtors & homeowners)

An Energy Efficient Home provides more comfort at a lower cost of utilities. (Benefiting homeowners and renters)

Initial Market Areas:
1. Metropolitan Central Arkansas
2. Fayetteville/Fort Smith
3. Mountain Home
4. West Memphis

Media Strategies:

Print

A. A series of news stories and press releases that target each of the five groups with appropriate leads... the body copy would then repeat the marketing strategy.

For example: the story targeting realtors might have a headline such as, " ENERGY RATED HOMES AND THE REAL ESTATE MARKET... Stars help sell homes in Arkansas." The story could go on to show how a low rating helped sell a home because it helped the buyer qualify for a low-interest AFDA loan or an Energy Escrow Account to upgrade energy efficiency. Results: a sale for the realtor that might have been missed plus a better home with more comfort for less money for the homebuyer.

The same story directed to homeowners might be headlined, "MORE COMFORT FOR LESS MONEY: an Energy Rating for your home can help you upgrade energy efficiency with low-interest home improvement loans."

Other story angles such as qualifying a buyer for more mortgage money (for lenders, homebuyers) with a high energy rating, or the ease of selling an energy rated home (realtors, builders) work equally well with the news story PR effort.

B. To promote ERH to the buying public, a series of small (1 col x 1 inch) ads should be developed to place in the real estate section of newspapers. For example: 1) BUY SMART: ask for the Energy Rating and count the stars. 2) Energy Rated Homes mean more comfort for less money. 3) Get more house for the money... get an Energy Rated Home.

C. To promote ERH to the trade, a series of twelve 3 col x 10 inch newspaper ads should be developed to honor the builder or realtor of the month who has benefited from the Energy Rating System. For example: (headline) "JOHN CARPENTER BUILDS 5-STAR ENERGY RATED HOMES." (photo of builder in front of house) PICTURE CAPTION: John Carpenter, builder: "My new four and five-star Energy Rated Homes are selling like hotcakes because they are a quality product that homebuyers want."

D. ERH proposes to offer to co-op advertising with builders, realtors and lenders whenever possible. For example ERH could offer to pay 10% of ad cost when the ERH logo is included in the ad.

Television

To create high visibility to the target groups and position ERH with a good identity, a series of TV spots should be developed.

A. Example targeting homeowners: beleaguered homeowner beset by sinister-looking storm window, insulation and siding salesmen, each trying to persuade him his product will save the owner tons of money. In anguish and desperation the homeowner asks, " How can I know what to do?" Answer: "Call Energy Rated Homes... get more comfort for less money. An unbiased Energy Rating can spell out improvements you should make before you spend a lot of money needlessly." These spots (one for summer, one for winter) would run several times a week on network station news slots for a few weeks in late spring and late autumn when homeowners are most conscious of impending high energy bills.

B. A 30-second spot targeting homebuyers should be created to run in conjunction with an Arkansas version of the more general image spot already produced by Alaska ERH. These

should run once a week as a news sponsorship from mid-March through mid-June urging the homebuying public to look for the energy rating.

C. Additionally, a spot should be developed through AETN that promos the participating lenders. "What do First Commercial, Twin City Bank, Arkansas Federal Savings and First Republic Mortgage have in common? The Energy Rated Homes System. It helps buyers qualify for larger mortgages." This could run at any time of the year as a PSA in conjunction with the Alaska-produced spot.

D. Guest appearances on local shows will be sought whenever possible as a vehicle for telling the ERH story. Educational programs on AETN will be developed to promote energy efficiency and the benefits of getting an energy rating.

Radio

Radio talk shows are a good format for explaining the ERH story. Many of the small town radio stations have Trading Post type shows that get good local listenership. Distant cities could be "visited" via telephone interviews.

Although the radio talkshow dealing with real estate or energy rating issues can help tell the ERH story, radio is not recommended at this time as an advertising medium.

Point of Purchase (POP)

A series of mini-workshops on how to buy a house and what to look for should be offered homeowners on a regular basis. The workshop could be promoted during talkshows or AETN-scheduled energy-related shows.

Appropriate countertop brochures describing ERH services should be provided to builders, realtors and lenders for their customers.

Yard signs, rating brochures certificates will be supplied to sellers for homes that have been rated.

Outdoor

An ERH billboard poster depicting the yard sign with copy such as, "BUY SMART! Look for the stars." and the ERH logo should be posted during mid-March through mid-June of 1988.

Research:

A focus group, testing the marketing concepts outlined above, is recommended before the plan is implemented. Such a test can provide valuable information about how the target groups react to the concepts, thus allowing ERH to adjust its strategy, creativity, etc. so that the most efficient use can be made of the marketing budget.

Summary:

ERH proposes to market its product, a standardized, unbiased Home Rating System and Energy Inspection Service, through PR news stories, radio & TV talk shows, advertising in several mediaco-op ads with industry participants, point-of-purchase materials and a series of mini-workshops.

ENERGY RATED HOMES™

INTERPRETING THE RATING SHEET

1. House type- choose appropriate house type in appropriate climate zone

2. Heated Floor Area - square footage is calculated.

3. Envelope Efficiency - is determined by insulation levels, window types and amount of air leakage as listed on the back of the rating sheet. The sum of these values is the envelope efficiency score, which is written in the space at the right of the sheet and called "E". This score is then used to determine which vertical columns to use in #4 and #5a.

4. Solar Gain -

Use the top or bottom section depending on presence or absence of "Mass." Mass refers to a large volume of high density material (like masonry, rock, or water) which is used for heat storage and is located in a direct solar gain area . Most conventional houses do not qualify for "mass" designation.

The square footage of southern glass exposed to the sun is added to one-half of the sum of the eastern and western exposed glass and then divided by the heated floor area. This is the ratio (percentage) of exposed glass to floor. This number is used to decide which row to use. If this number is less than 2% the solar gain score is zero.

Use the E score from #3 to determine which column to use. The intersection of these two is the solar gain score and is written to the right as "S".

5. Cooling Energy -

a. Roof color determines which row to use.
Use E score to select the correct column.
Choose typical (T) or heavy (H) for Mass. ("T" is a typical house with no mass for solar storage. "H" is a house with heavy mass for solar storage.) If the Mass is T, only the value for T is used; if the Mass is H, the the value for H (the number in parenthesis) is added to the T score.
This number is the score for 5a and is written to the right.

b. Divide window area on each side of house by floor area to get factors. Choose four numbers, one for each direction. This gives you the percentage of window to floor area based on orientation.

c. Divide length of <u>southern</u> overhang by the distance from the overhange to the bottom of the most common window. This determines which column to use. Use the same row as used in "% of southern glass".

d. Do the same for skylight area divided by floor area. <u>Subtract</u> this value. Score is calculated [(5a + 5b + 5c) - 5d] and written to the right as "C".

6. Water Heater. Location and fuel type are indicated. Look on back of rating sheet to find correct "level." Points are assigned to the right of line "W".

7. Space Heating/Cooling Efficiency - Look on back to determine equipment efficiency. For gas furnace AFUE rating is used; seasonal performance factors are used for heat pumps; and SEER's for electric cooling equipment. Adjustments are made to the efficiency of the equipment by using directions on back of rating sheet. Determine if efficiency level falls into low, medium, or high category. Select correct type and level on front and write points in "SH" & "SC". Also check off any other energy efficiency devices.

8. Sum of all point totals determines point rating. From total point score, star rating is determined and written into the right-hand column.

9. Energy purchased:

Space Heating - Add "E" and "S". "Envelope Heating" sheet gives MBTU's/year. (Choose column closest to score and row closest to square footage of house; divide by furnace efficiency on back of rating sheet.) Score is written under "Purchased Energy" in correct column (gas or electric).

Cooling - Use "C" score (Section 5). "Cooling Points and Energy Use" sheet is used to convert points to MBTU/year using table. Divide this by efficiency level based on SEER rating on back of rating sheet. This score goes in box under "Purchased Energy."

Water Heating - Use "W" score. At the bottom of "Envelope Heating" sheet, select MBTU from column under score of "W" and the appropriate row. This number is entered under "Purchased Energy."

Lights and Appliances - Lights and appliances energy usage is selected from back of rating sheet, depending on house size.

10. The required MBTU's is multiplied by the cost per MBTU to determine annual energy cost.

House address

_____

_____

Rating _____

Estimated Annual Fuel Cost*_____

Total floor space (sq. ft.) _____

Insulation values:

Ceiling _____

Walls _____

Floor _____

Windows _____

Other _____

Type of heating system _____

Type of air conditioning_____

Type of water heater _____

Certified rater

_____

Address

_____

_____

Date of rating _____

ERH Serial # _____

* The estimated energy cost for this house is to be used for comparison only. Actual use will be higher or lower than this estimate depending on occupant's use, weather conditions and utility rates in effect at the time.

Raise Your Rating with the Improvements Worksheet

Ask for the improvements worksheet that comes with each energy rating. It shows how much the home's energy costs would decrease if certain energy improvements were made. Use this worksheet to determine if it is cost effective to make improvements on this house.

Rating and Referral Service

Perhaps you'd like to compare this home with a house that hasn't been rated. Energy Rated Homes performs house ratings on request. The ERH referral service will help you find real estate agents, homebuilders, appraisers, and bankers who participate in the Energy Rated Homes program. Check with the ERH office in your area to take advantage of these services.

In your area, contact:

Energy Rated Homes of Arkansas
100 North Main
Little Rock, AR, 72201
501-374-7827

printed on recycled paper

SMART BUY.

This house rated by:

ENERGY RATED HOMES
ARKANSAS™

ENERGY RATED HOMES™

Introducing Energy Rated Homes™

Now, for the first time, the energy efficiency of homes throughout the nation can be evaluated and rated according to the same criteria.

This is made possible with a new rating system called Energy Rated Homes.

It's a voluntary system that's widely recognized and now being used by banks, realty companies, builders and others throughout the housing industry.

Similar to the EPA mileage rating for cars, the Energy Rated Homes System can be used to compare the energy efficiency of one home with another, regardless of its age or style.

As a result, you receive an independent, non-biased home evaluation that can help you buy smarter, sell faster and qualify more easily for a home loan.

Make a better home buying decision.

An Energy Rating tells you the efficiency of such things as the furnace, water heater, air conditioning system, insulation, and other energy features of the home.

It tells the current approximate annual energy costs of the home, and can show you how much those costs would be reduced if certain energy saving improvements were made. That helps you determine whether it's cost efficient to buy a home with the idea of adding improvements later.

All things considered, you are able to make a more informed, better buying decision.

Qualify for a home loan more easily.

Obviously, the more energy efficient a home is, the lower its heating and other energy costs will be Consequently, more of a buyer's monthly income is available for mortgage payments. This can help you qualify for a home loan more easily, and often for a larger loan.

What about a home that's less energy efficient? If its rating shows potential for energy savings, your bank may write a combination mortgage/escrow loan, increasing the loan amount by what it would cost to make the needed improvements.

This gives you the funds to make immediate improvements which can increase the value of the home, while decreasing its annual energy costs.

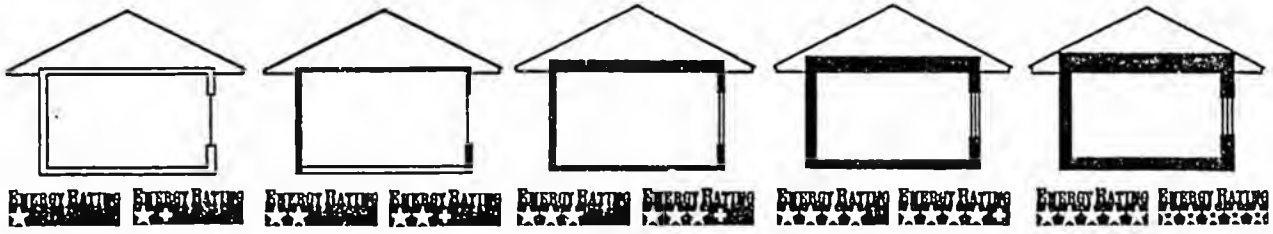
Rating a Home with the Five Star System

The energy rating system measures and gives points for insulation, ventilation, tightness, heating & cooling equipment efficiencies, water heater efficiency and solar gain. Low scores in some areas can be offset by higher scores in other areas.

A star rating is then assigned that corresponds to the house's total points.

Older homes without many energy improvements generally rank 1 to 2 stars. New home construction usually ranks in the 3-star range or higher. Five star ratings are more difficult to achieve and 5-star plus houses are truly exceptional and require state of the art techniques. It takes 4 stars to be appraised "energy efficient" and 5 stars to be scored "very efficient."

Most houses can be upgraded at least one level by uncomplicated measures such as insulating, caulking, wrapping the water heater or heating/cooling improvements.



from MORTGAGE BANKING

May, 1985

THE ENERGY FACTOR IN THE MARKET EQUATION

John M. Teutsch, Jr., CMB
James R. Faulstich

Leading members of the mortgage banking, thrift and allied industries in the Pacific Northwest have been successful in developing a national, non-regulatory model for voluntarily incorporating residential energy efficiency into the market place. The resulting industry-controlled program is called *The Shelter Industry Energy Rated Homes™ Program*. The program meets the needs of all sectors of the housing industry concerned with the financing, sale and construction of residential properties by providing a reliable, uniform system of evaluating and rating a home's energy efficiency—the uniform energy rating system.

Several important program "bottom-line" benefits may accrue to the industry. A Joint Center for Urban Studies (Harvard/MIT) report points to the potential for this program to significantly increase the number of American families that could qualify for homeownership should the program be broadly subscribed to by the mortgage lending and thrift industries.

Perhaps of equal importance, Energy Rated Homes™ is truly an industry energy initiative that is a market-oriented, incentive approach to dealing with energy concerns in housing.

With this program, the real estate finance industry has an opportunity to take the lead in developing a private sector approach to dealing with a significant national problem.

Background

Since 1973, various governmental, legislative and utility efforts have focused on promoting energy efficiency in the housing sector. By and large, mortgage lenders have been philosophically supportive of the national need to conserve energy. Still, several past efforts at incorporating energy efficiency into the market seemed to many in the industry either wrong-headed or inappropriate. Indeed, instead of focusing past efforts on a coordinated market incentive approach to energy efficiency, much time and effort seemed spent on the development of national building energy codes and other such efforts to regulate the market.

It was not until the early 1980s that a true market solution to the problem was developed. The impetus for such a solution was the agreement on the part of the major secondary market lenders—the Federal Home Loan Mortgage Corporation and the Federal National Mortgage Association (Freddie Mac and Fannie Mae)—to allow increased ratio adjustments for homes identified as energy efficient. Such secondary market support gave primary lenders, for the first time, the incentive needed to begin to consider the energy (utility) costs of a home.

It is within this context that lenders with mortgage operations located throughout the western states came together to begin the development of a program to consistently and uniformly consider energy costs in the mortgage loan, appraisal, realty sales and construction processes. The Shelter Industry Energy Rated Homes Program exists due to efforts of numerous industry members who worked in committees to develop relevant materials and procedures.[1]

Industry subcommittees dealing with the underwriting, appraisal, training and marketing issues involved hundreds of industry members and included representatives from government energy agencies in "Shelter Industry Committees." Western states, from Wyoming to Idaho, Oregon and Washington and most recently Alaska, participated. Technical and administrative support was provided by the non-profit Western Resources Institute, an offshoot of the Western Resources Center at the University of Washington in Seattle, Washington. Major financial support for the development of the program came from the Bonneville Power Administration, State Energy Agencies in Washington and Oregon and Pacific Power and Light Company, a utility company with operations throughout the northwest states.

Overall, the program committees provided the input pilot testing for the program, which is now used by 19 major mortgage lenders and is approved by both Freddie Mac and Fannie Mae and actively supported and endorsed by the

continued

ILLUSTRATION BY STEPHEN WAGNER

Twelfth District Federal Home Loan Bank of Seattle in its eight member states.

A "common energy language": uniform energy rating

The complex task of developing and testing materials that can now serve as a common energy language for the entire shelter industry took three years. The program includes over 20 linked elements. In the financial sector, materials have been developed that allow appraisers to undertake a reliable energy rating analysis as part of the appraisal process. Uniform Energy Rating Sheets, instructional manuals and training curricula for appraisers have been used and tested in the training of over 400 appraisers. The energy rating (an addendum to the single-family residential appraisal report) uses house types similar to Marshall and Swift's housing categories. The rating forms, which take 20 minutes to fill out, provide the appraiser and the underwriter who reviews the appraisal with a tremendous amount of information not only about the energy characteristics of the house, but also on its possible energy consumption and annual energy costs.

John M. Teutsch, Jr., CMB, is president and chief executive officer of Rainier Financial Services Company, the real estate financing and insurance subsidiary of Rainier Bancorporation in Seattle, Washington. He has been employed in the mortgage banking industry since 1955. Currently Mr. Teutsch is chairman of the Mortgage Bankers Association of America's Legislative Committee and a member of MBA's Board of Governors.

James R. Faulstich is president of the Federal Home Loan Bank of Seattle. Prior to that, he was vice president of the National Association of Independent Insurers, Chicago, responsible for legislative and regulatory liaison and policy development, a post he held for eight years. Faulstich is a member of the Steering Committee of the Federal Home Loan Bank Presidents' Conference and a member of the Executive Committee of the Federal Home Loan Bank System Training Center.

ith this program, the real estate finance industry has an opportunity to take the lead in developing a private sector approach to dealing with a significant national problem."

Underwriter Committees representing major mortgage lenders and mortgage insurance companies worked with area Mortgage Bankers Associations and Savings Leagues to develop training manuals and curricula useful to lenders. The materials provide underwriters with the information they need to be able to understand the appraisal energy rating addendum and to use the information to make appropriate ratio adjustments for credit-worthy buyers of energy efficient homes. Included in the underwriting training materials are estimates of "typical" or "average" utility costs for each housing type that can be compared with the cost estimates from the energy addendum rating sheet.

However, a uniform energy rating system that could be used successfully within the financial sector of the industry only dealt with part of the problem. A direct link with the consumer was needed. To fully integrate a common energy language within all sectors of the market place, materials and procedures needed to be developed that would allow not only for the "post-sale," energy analysis of a home, but also for a "pre-sale" energy rating. A method was needed for those who wished to market the energy efficiency of a property.

To meet this need, a marketing committee worked closely with the marketing firm of Meyers, Wolfe, Kilgore and Sutter Inc. to develop a comprehensive marketing approach to the consumer.

A consumer research program was launched with the support of the marketing research department of Pacific First Federal Savings and Loan and the Federal Home Loan Bank of Seattle staff. Four focus groups made up of potential homebuyers were held. The results of the market research showed a favorable impression of the program, especially with first-time homebuyers, with strong consumer support for the independent nature of the program. From these sessions, the marketing committee gleaned the information needed to develop an effective, lender-driven consumer marketing program that would allow participating lenders to market their involvement in energy efficient lending practices.

The name of the marketing program is *Energy Rated Homes™*. Participating lenders use a common logo/window decal and point-of-sale materials. Thi logo and other marketing materials, including joint radio spots and newspaper ads, are now in the planning stages for use in program market areas.

Local and state Boards of Realtors and Homebuilders Associations have also cooperated in supporting education for their members on the significance of The Uniform Energy Rating (there are five levels of rating, from one to five stars—a five-star rating is the highest or most energy-efficient), on how to identify a highly rated home, and on the potential mortgage qualifying benefits available to buyers or sellers of highly energy efficient houses.

Finally, to meet consumer demands for a "pre-sale" rating, a system has been established to provide consumers with an energy rating sheet similiar to the appraisal energy addendum. Consumers also receive an energy improvements worksheet that prioritizes the most cost-effective energy improvements in the home, and sellers are given Energy Rated Homes marketing materials for use in the sale of the home. Th pre-sale consumer ratings as well a training for energy raters are administered by the Western Resources Institute, which will play a role somewhat

continued

similar to Underwriters Laboratory in providing the industry with administrative and technical support for the program.

Program benefits

While it is apparent that each of the different sectors of the housing industry benefits from the program, committee members felt that a thorough analysis was needed to understand the broader effect of the program, should it be implemented nationwide. To undertake such an analysis, the Joint Center for Urban Studies was commissioned to review the possible benefits of the program.

While the Joint Center study has yet to be completed, the second progress report of the study, issued in late December 1984, shows impressive figures relating to the impact of the program in five major urban mortgage markets around the country. These conclusions, while tentative, suggest a significant benefit to the industry and the home buying public, should the Shelter Industry Energy Rated Homes™ Program be implemented in the areas studied.

Specifically, using 1979 data, the study suggests the widespread adoption of the program in Seattle, Washington, results in a potential increase of 1,765 rental households becoming homeowners in 1979. This represents an increase of 11.1 percent over the actual level of homebuying in Seattle that year (1979).

Similiar calculations were prepared for four other metropolitan areas in 1979—Hartford, Connecticut; Houston, Texas; Portland, Oregon; and Chicago, Illinois. Potential new homebuyers ranged from 704 in Hartford (a 26.7 percent increase over actual levels) to 6,335 in Chicago (a 22.5 percent increase). Increases for Portland totaled 2,144 new households and for Houston 3,688 new households. In all four cities, married households whose head is between 25 and 39 years of age are the most affected by the program. In Hartford, Portland and Chicago there appears to be a stronger impact on lower-income groups ($15,000-$17,500 and $17,500-$20,000) than on higher income households.

While the study is yet to be completed, the benefits identified are impressive not only for their economic impact but also for their social impact in allowing more American families of lower incomes to qualify for home ownership.

In addition to general industry and public benefits there are added benefits for individual sectors of the industry. The integration of a uniform energy rating and evaluation system benefits sellers of existing homes and builders of new energy efficient homes who can use the Uniform Energy Rating in the marketing of homes. Buyers benefit by knowing more accurately the potential costs of energy and the greatest value they can get in housing. Realty brokers and agents also benefit by using the uniform energy rating in the sale of new and used homes, and appraisers benefit by being able to consistently evaluate the market response to energy efficiency in residential property valuation. Underwriters benefit by being able to better estimate the impact of efficiency on the purchaser's long-run ability to meet mortgage obligations on the property. Lastly, the mortgage and thrift industries benefit by contributing to national energy efficiency, while at the same time providing a program that can help American homeowners, buyers and sellers to more easily own and operate a home.

Future prospects

Although the major training and procedural elements of the program are now in place, the marketing element of the program is now being introduced to homebuyers and sellers in the Seattle and Tacoma, Washington, markets. As mentioned, subscribing lenders become participating members of the Energy Rated Homes™ program. With appropriate marketing support, market research suggests that the homebuying and selling public will come to expect member banks of Energy Rated Homes™ to care about the energy efficiency concerns of new homebuyers and remodelers interested in second mortgage loans. From a lender standpoint, participation means that lenders require a uniform energy rating addendum completed by an appraiser certified in the use of the

continued

uniform rating system. Underwriters, too, are trained with special emphasis on recognizing the impacts of a home's energy characteristic on annual energy costs.

Undertaking the implementation of the program requires coordinated efforts among industry participants. It is in this area that state and local Mortgage Banking Associations and Savings Leagues need to be especially active. For although the Shelter Industry Program is one of the very few that is a "win-win" for all sectors of the housing and finance industries, to be successful it needs the leadership and guidance of the mortgage finance industry.

A lender's responsibility goes beyond bottom-line issues. He or she must also look to developing non-regulatory and voluntary models for helping achieve broader goals. The Harvard and M.I.T. Joint Center research indicated that this program can provide significant benefit to the mortgage banking and thrift industries. But beyond these are the benefits that come from helping promote national energy efficiency needs, while at the same time (as an industry) cooperatively helping to make housing more affordable for American families. The end result of this effort can only be positive. Providing consumers with more information about their choices in housing will create a better informed buyer and a more efficient marketplace. □

[1]*Besides the authors, among those involved in the program are Lawrence Connel, former Administrator of the National Credit Union Administration and now President of Washington Mutual Savings Bank; Jack Creighton Jr., President, real estate division for Weyerhaeuser—Shelter Division; Harry Pryde, immediate past President of the National Association of Homebuilders; the late Jim Frank, former President of the Society of Real Estate Appraisers; John Ellis, President of Puget Sound Power and Light; Robert Golliver, President of Washington Natural Gas. Doris Anderson, Vice Presider Oregon Association of Realtors and natio board member for the National Association of Realtors (NAR). Lyn Gaines, Vice President, Washington Association of Realtors and a national board member for NAR.*

Home Financiers Need Their Own Energy Rating System

by Gerald J. Levy

At a time when many issues divide the housing finance industry, there is at least one subject—energy—that is bringing national leaders of savings institutions, secondary mortgage market firms, private mortgage insurance agencies, mortgage bankers, real estate salespeople, and builders together into a common effort.

The effort, called Energy Rated Homes™, is aimed at the adoption of a uniform energy evaluation and rating system for use in real estate sales and mortgage lending. Not only the nation at large, but also the housing finance and related industries and companies, will benefit from the system through increased sales and loan volume.

The national steering committee is co-chaired by Kenneth J. Thygerson, chief executive officer, Imperial Corporation of America, San Diego, California, and John Teutsch Jr., chairman and chief executive officer, Rainier Financial Services, Seattle, Washington. The committee also includes the current or past presidents or chairmen of major industry trade associations, secondary mortgage market organizations, two federal home loan banks, and many other leading primary lenders, builders, and realty executives.

Background and Support

Why are so many of those in the business of housing America concerned with energy conservation at a time when energy prices have fallen, interest rates are down, and the national spotlight seems to be focused elsewhere? The answer is simple: just as interest rates are bound to rise sooner or later, so too are energy prices. And when that happens, the housing finance and related industries need to be in a much better position than they are in today to gauge the effects—both positive and negative—that rising energy costs will have on home ownership.

Those of us who remember the oil prices of the late 1970s and early 1980s perceive a clear need for a trusted, uniform standard by which to evaluate a home's energy efficiency. The number of government-run, utility-sponsored, and private energy programs in the country is mind-boggling. Most of us in housing finance have opted to stay out of the issue entirely rather than deal with the myriad rules and regulations associated with different programs. The result is a tremendous number of energy-related programs created and aimed at the home mortgage and real estate sales industries, and very few, if any, programs generated within the housing finance industry as a whole.

The Energy Rated Homes coalition of secondary and primary lenders, mortgage insurers, real estate professionals, and builders set out to design a workable method of incorporating energy efficiency that would be industry controlled and tailored to meet our needs for a nonbiased, nonregulatory, standard system. Beginning in 1981, through the efforts of the Society of Real Estate Appraisers' chapter in Seattle, Washington, and secondary market representatives of federal and other agencies, a system was developed that would incorporate an energy factor into every aspect of real estate sales and mortgage lending.

Four components make up the system: a technical energy rating form for use (with regional climate and utility cost adjustments) as an addendum to the standard appraisal required by the Federal National Mortgage Association (Fannie Mae) and the Federal Home Loan Mortgage Corporation (Freddie Mac); training materials for underwriters, loan officers, appraisers, and real estate agents; marketing materials, including television and radio spots, for use by participating real estate companies, builders, and lenders; and public information materials for use in marketing or sales.

The system, now in the initial stages of operation at test sites in Vermont, Arkansas, and Alaska, is administered jointly by the 30-member steering committee and the Western Resources Institute, a nonprofit spinoff from the University of Washington (Seattle). As the project moves forward, a national foundation will be formed to take over long-term administration and operation.

Using Energy to Make Loans

The Energy Rated Homes system allows the thrift industry, for the first time, to use energy considerations comprehensively and consistently in underwriting and marketing loans. How? Participating lenders—along with participating realty companies, builders, and multiple listing services—offer home buyers an energy evaluation and improvements analysis as part of the loan package. (The home buyer pays a fee for the service.)

The energy evaluation looks at a number of features: the insulation of the ceilings, floors, walls, and windows; caulking and weatherstripping; solar energy use or potential use; and the hot-water, heating, and cooling systems. Each of these is rated for efficiency on a 1-to-100-point scale; then the house is given an overall

Gerald J. Levy, past chairman of the United States League of Savings Institutions, is chairman of Guaranty Savings & Loan Association, Milwaukee, Wisconsin.

energy efficiency rating on a 1-to-5-star scale, with 5 stars meaning high efficiency.

The analysis also supplies an estimate of the annual energy cost of a house. The difference between that cost and comparable average energy costs for the area translates the house's energy efficiency into dollars saved per month. That figure can be used to justify expanded debt-to-income and debt-to-payment ratios for energy-efficient homes, under the rationale that purchasers of energy-efficient properties will have increased residual income from their energy cost savings that can be applied to the loan. For example, to qualify for a fixed-rate, 30-year $108,000 mortgage at 12 percent, with a loan-to-value ratio of 90 percent, a would-be buyer of a house with a two-star rating would have to have a monthly gross income of $4,949. If the house's rating were five stars, that would-be buyer would qualify for the loan with a monthly gross income of $4,650.

The improvements analysis can be used to justify energy improvement loans —either incorporated with the mortgage or as a seller buydown—that can make the home buyer eligible for the expanded qualifying ratios. Energy Rated Homes program operators—usually nonprofit entities set up for the purpose —provide reinspection services to participating lenders to certify that the improvements have been completed and that the dwelling does indeed meet the energy-rating level needed to justify the higher debt-to-income ratio.

Benefits to the Industry

Lenders can use the plan to help draw energy-conscious home buyers to them, to help qualify trade-up and refinancing customers for larger loans, to help low-income, first-time buyers qualify for homes they normally would not qualify for, and to attract customers for home improvement loans that can be used to improve the energy efficiency of the borrower's home. And lenders need not fear having to keep such loans in portfolio. Although secondary market ratios have tightened somewhat for standard mortgages, both Fannie Mae and Freddie Mac have energy loan policies that allow lenders to use the Energy Rated Homes system. (Fannie Mae's policy allows a 2 percent increase in the debt-to-income ratio, while Freddie Mac's policy allows up to a 4 percent increase.) Secondary market lenders also allow the escrowing of energy loan funds so that energy improvements can be made up to 120 days after closing.

The creation of a standard energy-rating system means that rationality has entered debate on the issue. The value of conservation measures can be clear to all. The potential sales benefits from rationalizing the system, for example, are quite impressive. A recent analysis, commissioned by the Federal Home Loan Bank of Seattle and undertaken by the Joint Center for Housing Studies at Harvard and the Massachusetts Institute of Technology, found a potential increase in qualifying first-time buyers ranging from 11 percent to 21 percent in five U.S. cities (Chicago, Illinois; Hartford, Connecticut; Houston, Texas; Portland, Oregon; and Seattle, Washington). And the reach of the program is broad: the report notes significant possible benefits not only for first-time buyers, but also for trade-up buyers and low-income renters who are potential buyers.

Operating the System

The pilot programs in Vermont, Alaska, and Arkansas are a significant step toward national implementation. They also suggest a pattern for other states.

In the three test cases, the initiative came from either state housing finance agencies or state energy agencies, which have provided seed money. Oversight and implementation support for the program comes from voluntary Energy Rated Homes steering committees in each state.

The Energy Rated Homes of Alaska steering committee, for example, is made up of leaders representing the thrift, mortgage banking, building, real estate sales, and appraisal industries. The committee also includes the director of the Alaska Housing Finance Agency and representatives of public utilities. The steering committee's role is to help Energy Rated Homes local and national staff educate the housing industry about the project; assist in the selection of program operators (in Vermont, for example, the Vermont Housing Finance Agency is considering operating the program as a general service to the housing industry); help the operator to recruit lenders, realty companies, builders, and multiple listing services; and provide oversight to ensure the success of the effort.

The Energy Rated Homes operator markets the system to the housing industry; assists the industry with consumer marketing efforts; and ensures quality control of ratings provided to consumers either through the lender, the lender's appraiser, or the operator's own ratings and improvement worksheets. The operator works with local multiple listing services and monitors the classified sections of local newspapers to integrate information about the energy-rating system into these important consumer information vehicles.

What Thrifts Can Do

Thrifts can be tremendously helpful in the effort to standardize the approach to energy in the mortgage loan process. First, as the system expands into new areas, thrift organizations can endorse the effort at the national level and encourage state savings leagues to become involved in establishing it. State leagues may wish to initiate the program themselves by contacting their respective state housing finance agencies, energy agencies, or the program's national staff in Seattle. Second, thrifts can join the Energy Rated Homes system when it is introduced in their market areas and begin using the system to qualify more buyers.

The Energy Rated Homes system is a winner for all involved. The thrift industry wins because it can qualify more families for home ownership. Realty professionals and builders win because they can use the system to their advantage in selling both older homes that have been renovated for energy efficiency and newer homes, which are, generally speaking, more energy efficient than existing housing. Buyers win because the system means that they can qualify for homes that will cost less to heat in the winter and cool in the summer. And everybody wins because an alliance of housing development and housing finance enterprises is working cooperatively to make better housing more affordable for more Americans. ❑

Energy Rated Homes of Alaska
P.O. Box 100420
Anchorage, AK 99510

ENERGY RATED HOMES
A L A S K A ™

The Uniform System of Evaluating and Rating Home Energy Efficiency.

RECD SEP 22 1987

September 18, 1987

Clay Porter
118 E. International Airport
Anchorage, AK 99518

Dear Mr. Porter,

The following materials are enclosed for your review and use during the upcoming board meeting for the Energy Related Homes of Alaska. This meeting is scheduled for October 7, 1987 at 1:30 p.m.

-- Draft Letter from ERH of Alaska to Commissioner Hoffman

-- Marketing Proposal

-- Assignment of WRI Contracts to ERH of America

-- Highlights from ERHA meeting of August 19, 1987

An agenda for the next meeting will be mailed to you with a reminder of the time and place. Should you have any questions, please contact my office. I look forward to seeing you there.

Sincerely,

Randy Boyd

Randy Boyd
Chairman

RB:kw

Enclosures

Regional Headquarters:
Energy Rated Homes of America
P.O. Box 85477
Seattle, WA 98145-1477

October 26-27, 1987
Egan Convention Center
Anchorage, Alaska

CONFERENCE OBJECTIVES

- Define least-cost planning and what it entails for the utility, the regulatory agency, and the consumer.
- Provide insights and experience on what works and what doesn't.
- Introduce utility planners to perspectives on integrating demand side options into utility resource plans.
- Provide an opportunity for utility, government and consumer representatives to meet formally and informally to discuss experiences and issues.
- Explore the pertinence of a least-cost planning process in Alaska, which has relatively small, public and cooperative utilities, unique electrical distribution systems, and a current surplus capacity.

LEAST COST PLANNING

Least-cost electrical planning strategies have gained considerable attention throughout the country as a means of balancing supply and demand side options in designing a stable energy future. Utilities in states ranging from Alabama to Wisconsin have undertaken demand side strategies through a least-cost planning process. The strategy enables utilities to consider programs which promote electrical efficiencies on an equal basis with new generation capacity. How useful are least-cost planning strategies to Alaska? The purpose of this conference is to define what least-cost planning is, and to examine its relevance to Alaskan utility planning. We have invited representatives of utilities and regulatory agencies, as well as energy analysts, who have been involved in least-cost planning to share their experiences and concerns. In addition, their Alaskan counterparts will discuss what applications there are for Alaska.

WHO SHOULD ATTEND

- Utility General Managers and Planners
- Utility Board Members
- Regulatory Commissioners and Staff
- State and Local Agency Staff
- Energy Specialists
- Consumers
- Legislators
- Utility Consultants
- Public Interest Groups

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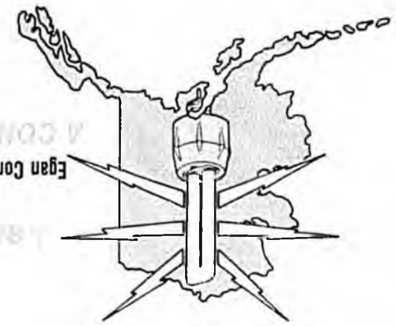
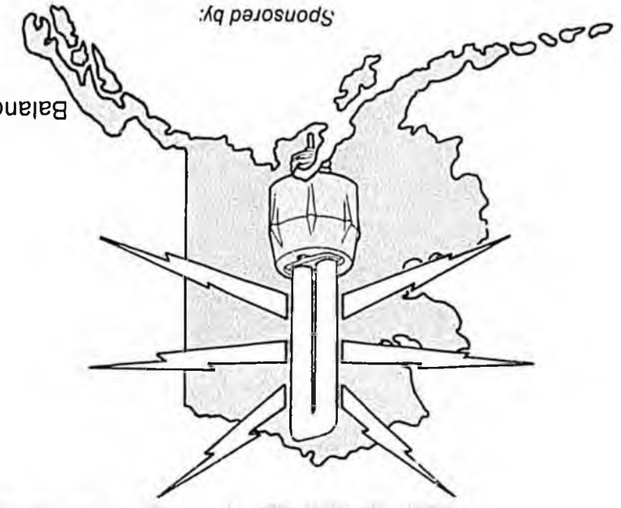
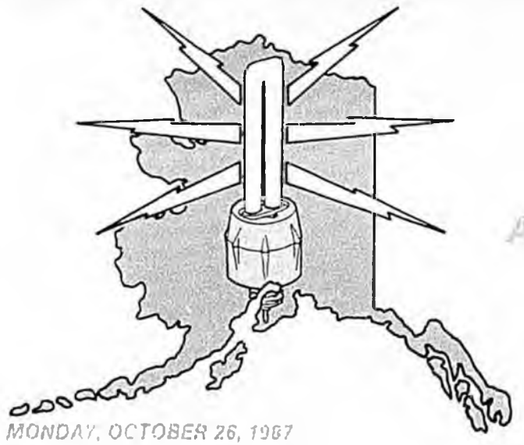


October 26-27, 1987
Egan Convention Center — Anchorage, Alaska



Sponsored by:

Balancing supply and demand side options in planning
for a stable energy future.
Alaska looks at the issues.



Least-Cost Planning

October 26-27, 1987
Egan Convention Center
Anchorage, Alaska

A CONFERENCE FOR ALASKA

MONDAY, OCTOBER 26, 1987

7:45 a.m. OPEN REGISTRATION

8:15 a.m. WELCOME & OPENING REMARKS
David G. Hoffman, Commissioner
Department of Community & Regional Affairs

8:30 a.m. *Larry Lewis: "Perspectives on Utility Planning — Issues and New Directions."* Mr. Lewis is a Senior Project Manager for the Energy Management and Utilization Division at Electric Power Research Institute in Palo Alto California. EPRI was founded in 1972 by the nation's electric utilities to develop and manage a technology program for improving electric power production, distribution and utilization. Mr. Lewis has experience and expertise in demand side and market planning programs in both the private and the public sector. He will give a historical perspective on utility planning, and define least-cost planning.

9:00 a.m. KEYNOTE ADDRESSES
"DIFFERENT PATHS TOWARDS IMPLEMENTATION OF LEAST-COST PLANNING"

Larry Hobart: "Utility Initiated Least-Cost Planning Programs." Mr. Hobart is Executive Director of the American Public Power Association, an organization of publicly owned electric utilities throughout the U.S. He has spoken on the concept of least-cost planning before Congress and at utility conferences nationwide.

Paul Markowitz: "State-Chartered Least-Cost Planning Strategies." Mr. Markowitz is State Program Coordinator with the Energy Conservation Coalition in Washington, D.C. In this capacity, he promotes least-cost electrical planning at the state level, as well as strong federal conservation policies.

10:00 a.m. BREAK

10:15 a.m. "LOOKING AT LEAST-COST PLANNING FROM A UTILITY PERSPECTIVE"
Panel discussion involving utility managers and analysts who are actively dealing with least-cost planning strategies, either through their own initiation or because of state legislation.

MODERATOR:
David Hulchens, Business Director, Alaska Rural Electric Cooperative Association (ARECA)

SPEAKERS:
Mal Dillon, Board Member, Snohomish Public Utility District, Everett, Washington. Snohomish is a publicly owned, winter-peaking utility that is currently integrating least-cost strategies into their planning process. Mr. Dillon is chairman of a committee, composed of utility staff, board members, and consumers, that is addressing the implementation of these strategies.

C. Mac Eddy, Manager, Navopache Electric Cooperative, Lakeside, Arizona. Mr. Eddy has been responsible for many innovative load management programs including budget-billing, off-peak rates, weatherization and heat-pump loans. Navopache Electric Cooperative is participating in the Western Area Power Association "utility matching" program, sharing its experiences with other similar utilities.

SPEAKERS (continued)

Mark Levine: Deputy Program Leader, Energy Analysis Program, Lawrence Berkeley Laboratory. Mr. Levine represents a program which is funded by the Department of Energy to create a national data base on the cost-effectiveness of demand-side options, and to disseminate this information. This program is responsible for the development of analytical tools for evaluating demand-side and supply-side programs and for integrating them to find least-cost solutions to future electric needs.

Eric Hirst: Energy Analyst, Oak Ridge National Laboratory. Mr. Hirst has worked with utilities to integrate supply and demand-side programs. He was most recently a consultant to Puget Power and Light in Washington.

Larry Hobart: American Public Power Association

Larry Lewis: Electric Power Research Association

12:00 p.m. LUNCH

1:00 p.m. "LEAST-COST PLANNING FROM THE REGULATORS PERSPECTIVE"
Panel discussion involving members of public utility commissions from several states that have developed different styles of least-cost planning regulation.

MODERATOR:
Susan Knowles: Commissioner, Alaska Public Utilities Commission

SPEAKERS:
Steven Wiel: Commissioner, Nevada Public Service Commission. In 1983, the State of Nevada enacted a Utility Resource Planning Act which requires major electric utilities to submit fully-integrated, long-range resource plans every two years to the PSC, demonstrating that all aspects of their future energy needs have been considered. Mr. Wiel, as one of three commissioners responsible for plan evaluation and enforcement, is in great demand as a speaker who will realistically present the "highs and lows" of this law from the regulatory perspective.

Paul Galen: Manager, Policy Analysis and Research Division, Illinois Commerce Commission. In 1985, the Illinois General Assembly revised the Illinois Public Utilities Act to require least-cost energy planning by electric and natural gas utilities. The ICC was given the authority to determine the precise form, scope and content of the plans. Mr. Galen has been responsible for conducting hearings and workshops to identify the issues of greatest importance in the design and implementation of the least-cost planning process. His final report includes conceptual, methodological content, procedural and policy considerations.

Jerry Mendl, Director, Systems Planning, Wisconsin Public Service Commission. Mr. Mendl has been involved in the regulatory aspect of Wisconsin's long range utility resource planning legislation since its adoption in 1975. He has drafted a least-cost planning primer for state regulatory agencies, soon to be published by the National Association of Regulatory Utility Commissioners.

Jim Lazar, Consulting Economist, Olympia, Washington. Mr. Lazar has completed studies on utility rate reform, resource allocation and energy conservation program design. He has appeared as an expert witness before numerous utility regulatory commissions in the Pacific Northwest. Of particular interest is his work on the role of utility conservation programs during a period of surplus capacity.

Monday, October 26 (continued)

2:00 p.m. CONSUMER'S ROLE IN LEAST COST PLANNING
Panel discussion on the role consumers can play in developing least-cost planning programs.

MODERATOR:
Jeff Bohman: Executive Director, Alaska Public Interest Research Group (ASPIRG)

SPEAKERS:
Joe Wellinghoff: Nevada Consumer Advocate. Mr. Wellinghoff is responsible for representing utility ratepayers before the state public service commission and other state and federal agencies. He drafted the Utility Resource Planning Act which Nevada enacted in 1983.

Fred Schwartz, Scenario, Ontario, Canada. Mr. Schwartz started and managed the Remote Power Unit for the Ministry of Energy in Ontario, including the province's small hydro program, wind and diesel hybrid program, remote housing, and demand-side efficiency programs. He produced the first Canadian remote community energy data base, and has been involved in diesel efficiency programs, and the development and marketing of energy efficient programs for communities, government and institutions.

Paul Markowitz: Energy Conservation Coalition

3:45 p.m. BREAK

4:00 p.m. UTILITY PLANNING IN ALASKA
A panel discussion on the Alaska experience in utility planning.

MODERATOR:
Robert Hosten: President, Board of Directors, Matanuska Electric Association

SPEAKERS:
Richard Newland: General Manager, Chugach Electric Association
Brad Reeve: President, Board of Directors, Kotzebue Electric Association
David Stone: Vice President, Alaska Electric Light & Power Company
Robert Le Resche: Executive Director, Alaska Power Authority
Ted Moninski: Executive Director, Alaska Public Utilities Commission
Joel Rothberg: Staff Attorney, Alaska Consumer Advocacy Program

5:00 p.m. DOES THIS MAKE SENSE IN ALASKA?
This panel will synthesize the general concepts of least-cost planning and Alaska utility planning experience, in an attempt to evaluate the role least-cost planning could have in Alaska.

MODERATOR:
Mary Hakkinen, Director, Division of Policy, Office of the Governor

PANELISTS:
Peg Tileston: Member, Board of Directors, Chugach Electric Association
Phil Kaluza: Member, Board of Directors, Nome Joint Utility Systems
Jeff Bohman: Executive Director, Alaska Public Interest Research Group
Steve Shows: Member, Board of Directors, Glacier Highway Electric Association
Ronald Bergh: Member, Board of Directors, Golden Valley Electric Association
Carolyn Guess: Chairperson, Alaska Public Utilities Commission
Neil Davis: Chairman, Alaska Power Authority Board
David G. Hoffman: Commissioner, Alaska Department of Community and Regional Affairs
Kay Brown: Alaska State Representative
Steve Frank: Alaska State Representative
Jack Coghill: Alaska State Senator

6:00 p.m. RECEPTION
Hosted by the Alaska Rural Electric Cooperative Association

TUESDAY, OCTOBER 27, 1987

"LEAST-COST PLANNING — A HANDS-ON APPROACH"
In-depth exploration of issues raised in the first day's session.

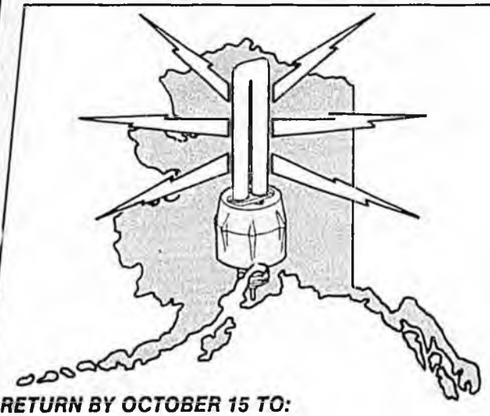
A. *"Utility Experience:"* How to set up and implement a utility least-cost planning process.

B. *"Analytic Tools For Least-Cost Planning:"* Noted national utility analysis introduce methodologies of least-cost planning.

C. *"Regulatory Experience:"* How to incorporate least-cost planning considerations into the regulatory process.

HOTELS

There are many hotels in close proximity to the conference site. The Sheffield Anchorage Hotel will offer a government rate of $54/night to conference participants. The hotel is located within easy walking distance of the Egan Convention Center. To make reservations, call (907) 276-7676, and be sure to say you are participating in the State of Alaska Least-Cost Planning Conference and want the government rate.



Least-Cost Planning
October 26-27, 1987
Egan Convention Center
Anchorage, Alaska
A CONFERENCE FOR ALASKA

PRE-REGISTRATION:
NOTE: The Conference is free, but there is limited seating available.

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ORGANIZATION _____

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RETURN BY OCTOBER 15 TO:

Steve Baden
Department of Community & Regional Affairs
949 E. 36th, Suite 403
Anchorage, AK 99508

Introduced: 5/15/87
Referred: Community & Regional Affairs and Finance

5-1191A

Funding Information
General Fund $7,965,000
Other Funds -0-
$7,965,000

BY ELLIS, KOPONEN, MENARD, ULMER, DAVIDSON, LARSON AND DAVIS

IN THE HOUSE

HOUSE BILL NO. 319

IN THE LEGISLATURE OF THE STATE OF ALASKA

FIFTEENTH LEGISLATURE - FIRST SESSION

A BILL

For an Act entitled: "An Act making special appropriations for the Alaska energy efficient home program; and providing for an effective date."

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

* Section 1. The sum of $1,615,000 is appropriated from the general fund to the University of Alaska, cooperative extension service, for preparation and implementation of the Alaska energy efficient home program and for instrumentation and data base development for the program.

* Sec. 2. The sum of $1,400,000 is appropriated from the general fund to the University of Alaska for development of a portable, instrumented test shelter and for research activities of the Alaska energy efficient home program that have been approved by the board of directors of the program.

* Sec. 3. The sum of $450,000 is appropriated from the general fund to the Department of Community and Regional Affairs to develop and distribute educational information for the general public regarding the Alaska energy efficient home program.

* Sec. 4. The sum of $4,500,000 is appropriated from the general fund to the Alaska energy efficient home equity fund (AS 44.47.370) in the Department of Community and Regional Affairs for the purposes of the fund.

* Sec. 5. The appropriations made by this Act lapse into the general fund June 30, 1992.

* Sec. 6. This Act takes effect on the effective date of an Act passed by the Fifteenth Alaska State Legislature that establishes the Alaska Home Equity Fund.

LOAN PROGRAM FOR NEW HOMES DRAFT 9/10/87

Contact: Don Markle
Cooperative Extension Service
2221 E. Northern Lights Suite 240
Anchorage, Alaska 99508

Program Description

— Zero interest loans are given to people who build new homes to standard set by the Alaska Craftsman Home Program and have those homes certified to meet those standards.
— Lending Limits for new home loans may not exceed the lesser of
1. $6,000; times the regionalization factor as determined by the State Weatherization program or
2. $2.50 x the Houses Heated interior Square Footage times the regionalization factor.
— On September 1, 1991 the lending limits will change to
1. $4,500 x regionalization factor; or
2. $1.87 x the Houses Heated interior square footage x the regionalization factor.
— Loans are only eligible for permanent homes greater than 600 square foot in size.
— Loan Terms for New Homes are that the loan is due upon sale, title transfer or refinancing of the home. Alternatively the homeowner may choose to pay the loan back in a 15 year amortization.
— Dispersement of proceeds to be upon presentation of Alaska Craftsman Home Certificate and registration.
— Assumptions will be allowed on 15 year amortized loans only.
— Subordination requests will be considered if the amount subordinated plus the loan amount is less than the assessed tax value of the property.
— All loans will be secured by a Deed of Trust against the property receiving the improvements.
— Refinancing is allowed only under the 15 year amortization program otherwise loans come due.
— The project must be completed and ready for inspection 120 days after loan is closed. Inspection will be done by Energy Rated Home Program to ACHP standards for new homes. The standard requires an air leakage test below 1.5 air changes an hour at 50 Pascals, ventilation certification that mechanical ventilation will supply 1/2 air change per hour and a 95% or higher rating in the energy rated home program.
— The builder must have received training in the Alaska Craftsman Home Program prior to construction.
— Alaska Craftsman Home Program standards are regionalized.

LOAN PROGRAM FOR RENOVATION OF HOMES – DRAFT 9/10/87

Contact: Don Markle
Cooperative Extension Service
2221 E. Northern Lights Suite 240
Anchorage, Alaska 99508

Program Description

– Zero interest loans are given to people who renovate homes to new state thermal standards and have those homes certified to meet those standards by the Alaska Craftsman Home Program .

– Loans for renovation of existing homes may not exceed the lesser of

1. $10,000 times the regionalization factor for the area as determined by the State weatherization office.

2. an amount, as determined by the actual cost of labor and materials for each category, which is documented by invoices, bids or contract; or

3. an amount, as determined by an acceptable energy improvement payback calculation, which is equal to the total estimated energy savings attributable to the energy conservation improvement over a fifteen–year period following the purchase, construction, or installation of the energy conservation improvement.

– Loans are only eligible for permanent homes greater than 600 square foot in size.

– Loan Terms for New Homes are that the loan is due upon sale, title transfer or refinancing of the home. Alternatively the homeowner may choose to pay the loan back in a 15 year amortization.

– 50% of loan proceeds will be disbursed to the applicant as documented and supported by labor and material estimates submitted when the loan application is approved. This documentation must clearly describe the items being purchased. In addition, within 180 days after the loan has been approved the applicant must produce a certification of renovation from the Energy Rated Home Program certifying that renovation has met minimal state thermal standards, ventilation requirements and infiltration standards, the State will then disperse the remaining 50% of the loan proceeds.

– Assumptions will be allowed on 15 year amortized loans only.

– Subordination requests will be considered if the amount subordinated plus the loan amount is less than the assessed tax value of the property.

– All loans will be secured by a Deed of Trust against the property receiving the improvements.

– Refinancing is allowed only under the 15 year amortization program otherwise loans come due.

Alaska HOUSING FINANCE CORPORATION

P.O. Box 101020, Anchorage, Alaska 99510

TO: ALL SELLER/SERVICERS

DATE: November 21, 1986
(Memo #86-42)

FROM: Dr. Ronald D. Lehr RDL
Executive Director

Betty M. Cook BMC
Mortgage Operations Director

MORTGAGE DEPARTMENT

Changes

2. Energy Efficiency Evaluation/Underwriting
Contact: Wayne Mundy, Review Appraiser

If a property is energy efficient, higher income ratios may be allowed. The underwriter should include in the loan submission (or purchase package for delegated files) a copy of the Rating Sheet completed by an appraiser or agent approved by Energy Rated Homes of Alaska. The underwriting analysis by the Seller should consider the impact utility charges have on the borrower's ability to meet their financial obligations, in particular the monthly housing expense. An energy efficient property results in lower utility charges allowing the borrower to apply more income to the housing expense, thereby allowing higher ratios. When underwriting a loan secured by property that is rated Good or above, the following percentages may be added to the allowable income ratios.

Good to efficient rating	1% maximum
Very efficient rating	2% maximum

Freddie max up to 40/0 max Fannie up to 2%

If the Approximate Annual Energy Costs compared against the Benchmark Utility Costs indicate the homeowner will save an exceptional amount of money each month because of reduced utility costs, the lender may choose to use the alternate formula below to calculate the maximum ratio adjustment. In no event may the maximum ratio adjustment exceed 2%.

$$\left(\begin{array}{c}\text{Net Monthly}\\ \text{Energy Savings}\end{array}\right) - \$50 \div \text{Gross Monthly Income} = \text{Maximum Ratio Adjustment}$$

Only appraisers, underwriters, and agents trained and approved by Energy Rated Homes of Alaska will be considered acceptable for preparing any related documentation for ratio adjustments. The list of approved participants must be obtained from Energy Rated Homes of Alaska.

FOR USE ONLY AS ENERGY ADDENDUM TO STANDARD APPRAISAL REPORT (FHLMC/FNMA)

ENERGY RATED HOMES RATING SHEET

B 11711

The Uniform System of Evaluating and Rating Home Energy Efficiency.

The potential energy efficiency of this house is evaluated and rated as follows:

Use in: South Central Alaska

Year built | File No

Loan no

Borrower

Address

City WASILLA State AK Zip

Census tract | Map Reference

Tax parcel no

Lender/client

Previous Serial Number | Date

Energy Rater | Date

Appraiser | Date

1 TRI LEVEL WITH ½ SLAB
TRI LEVEL WITH CRAWLSPACE

2 HEATED FLOOR AREA 1898 SQUARE FEET
Includes basement when basement is heated and lived in

3 ENVELOPE EFFICIENCY or how well the living space keeps heat in.

CHECK HOUSE TYPE		LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5	
CEILING	W. SLAB	0.0	21.0	23.0	24.0	24.5	
CEILING	W. CRAWL	0.0	15.0	16.5	(17.0)	17.5	17
WALLS		0.0	19.5	(23.0)	25.0	25.5	23
FLOOR	W. SLAB	0.0	2.5	3.0	3.5	4.0	
FLOOR BC where	W. CRAWL	0.0	6.0	(8.5)	10.0	11.0	8.5
WINDOWS		0.0	5.5	7.0	(8.5)	9.5	8.5
AIR LEAKAGE	W. SLAB	0.0	7.0	13.0	16.0	19.0	
AIR LEAKAGE	W. CRAWL	0.0	7.0	(13.5)	16.5	20.0	13.5

Use E in Step 4 TOTAL 70.5 E ENVELOPE

4 SOLAR GAIN or how well the living space is heated by sunlight

South Window Area | Mass For Heat Storage | 26. | 55. | 69. | 76.

30 sq.ft.	NO	3.5	2.0	1.5	1.0	1.0
60 sq.ft.	NO	7.0	3.5	2.5	2.0	2.0
90 sq.ft.	NO	10.0	5.0	4.0	3.0	2.5
120 sq.ft.	NO	13.0	6.0	4.5	4.0	3.0
48 60 sq.ft.	YES	0.0	4.0	3.0	1.5 2.5	2.5
120 sq.ft.	YES	0.0	6.5	5.0	4.0	3.5
180 sq.ft.	YES	0.0	9.0	7.0	5.5	5.0
240 sq.ft.	YES	0.0	11.0	8.0	6.5	5.5

SCORE is zero for no solar gain

72 E + S
Use for Step 7 & 9 with Energy Use Table in Appendix D

1.5 S SOLAR

5 COOLING ENERGY Not included in rating for this region

Prevention of Overheating
- ☐ Overheating not a problem
- ☐ Overheating possibly a problem
- ☐ Overheating is a problem

Prevention Measures
- ☐ Window shading or roof overhangs
- ☐ Ventilation through opening windows
- ☐ Mechanical ventilation or cooling device

N/A C COOLING

6 WATER HEATER

Location of water heater: ☐ inside ☑ unheated basement, crawl space or garage ☐ outside

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
0.0	0.5	1.5	2.0	3.0

Fuel Type: ☐ electric ☑ gas ☐ oil

0 W WATER

7 SPACE HEATING EFFICIENCY

Wood Fuel
- ☐ Primary fuel (no other heating system, see Appendix E)
- ☐ Secondary

Energy Efficient Devices
- ☐ Automatic setback thermostat
- ☐ Zoned thermostat control
- ☐ Other energy saving devices

Select correct table by using E + S score from Step 4

E + S less than 25

	LOW	MED	HIGH
	0.0	13.5	23.5
	0.0	16.0	27.0
	0.0	16.0	0.0
	0.0	19.5	33.0

E + S greater than 25

	LOW	MED	HIGH
OIL	0.0	4.0	6.5
GAS	0.0	(4.5)	7.5
ELECTRICITY	0.0	4.5	0.0
WOOD	0.0	5.5	9.5

Gas utility (name) ENSTAR Electric utility (name) MEA

4.5 H SPACE HEATER

8 UNIFORM ENERGY RATING*

This is an energy efficiency potential rating which rates the potential of this house to use energy efficiently assuming average size and typical energy use

0-13	14-17	18-29	30-43	44-58	59-72	73-79	80-85	86-88	89-99
★	★★	★★	★★★	★★★	★★★★	★★★★	★★★★★	★★★★★	★★★★★
						✓			
BELOW AVERAGE		FAIR		GOOD		EFFICIENT		VERY EFFICIENT	

Appraisers: use word rating (e.g. EFFICIENT) on appraisal form

TOTAL SCORE (E + S + C + W + H)

76.5 RATING

9 ENERGY PURCHASED*

Energy Use (Use E + S from Step 4 and Appendix D) ÷ Efficiency (see back of this page or Appendix E) = Purchased Energy

MBtu/yr ÷ Efficiency	Gas	Electric	Oil
Space Heating (211 ÷ .6) :	351.67		
Garage Heating (see Energy Use Table)	19		
Water Heating (23 ÷ .65) :	35.38		
Lights & Appliances (see back)			
Total Energy Purchased (MBtu/yr)*	406.05	25	

10 ENERGY COST*

Purchased Energy X Cost (see Appendix F) = Energy Cost

Total gas	406 MBtu/yr ×	2.90 $/MBtu =	1177	$/yr
Total electricity	25 MBtu/yr ×	30.15 $/MBtu =	754	$/yr
Total oil	MBtu/yr ×	$/MBtu =		$/yr
TOTAL APPROX. ANNUAL ENERGY COST*			1931	$/yr

* The estimated energy cost for this house is to be used for comparison only. Actual use will be higher or lower from this estimate depending upon occupants' use, weather conditions and utility rates in effect at the time.

WRI 901 3/86

Efficiency Descriptors for Rating Each Building Component

Use to Complete Corresponding Sections on Front (Reverse) Page

(Detailed Descriptors in Desk Manual, Appendix A, B, and C)

Applicability: South Central Alaska (Anchorage area)

3 ENVELOPE EFFICIENCY

R-Values shown here are for the insulation only. See Appendix C of the Desk Manual for thickness of various insulation types.

	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
CEILING	R-0	R-19	R-30	R-38	R-60
WALL Above Grade	R-0	R-11	R-19	R-25	R-31
WALL Concrete Above Ground or as a Foundation	R-0	R-5	R-10	R-15	R-20
FLOOR Exposed	R-0	R-11	R-19	R-30	R-38
FLOOR Slab On Grade	R-0	R-5	R-10	R-15	R-20
WINDOWS	single metal	double metal	double wood or equiv.	triple or equiv.	quad or equiv.
AIR LEAKAGE	Leaking, no weather-stripping	Some weather-stripping (W/S)	Careful W/S and some caulking. Has wall and attic infiltration barriers ~~and arctic entry~~.	Careful W/S and caulking. A careful continuous infiltration barrier plus switch plate gaskets ~~and arctic entry~~.	Level 4 plus ventilation control equipment and an arctic entry.

6 WATER HEATER

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5
Standard unwrapped	Low flow fixtures or flow restrictors installed	Wrapped, or Energy Efficient, or "demand" water heater	Level 3 plus pipes wrapped, heat trap and bottom board installed	Level 4 plus either heat pump water heater or solar preheater

WATER HEATER EFFICIENCY (for use in Step 9)

NATURAL GAS		ELECTRICITY		OIL	
0.60	Old, installed before 1975	1.00	Typical water heater	0.65	Typical
0.65	New, more efficient, installed after 1975	1.00	Instant "demand"		
0.90	Instant "demand"				

7 SPACE HEATER EFFICIENCY

Fuel	HEATING SYSTEMS / SEASONAL EFFICIENCY*	± ADJUSTMENTS	= TOTAL ADJUST EFFICIENCY	HEATING SYSTEM EFFICIENCY LEVELS
Natural Gas	Forced Air Systems: 0.85 Pulse/Condensate (90%)* 0.80 Recuperative (85%) 0.75 Draft Induction (80%) 0.70 New, after 1970 w. elect. ignit. (75%) 0.65 '75-'80 w. electronic ignition (70%) 0.60 old, before 1975 (65%) 0.55 conversion into old system (60%) Hydronic Systems: 0.85 New Boiler (after 1980) (90%)* 0.70 Old boiler (before 1980) (75%) 0.55 Old cast iron (60%)	Subtract for thickness of duct insulation 0" 1" 3" -.10 -.05 -0.0 +.10 elect. ignition (on old) Subtract for thickness of pipe insulation 0" ½" 1" -.10 -.05 -0.0	.60	.85 High .80 High .75 High .70 Medium .65 Medium .60 Medium .55 Low .50 Low .45 Low
Electricity	0.85 Central forced air 0.95 Radiant panels or cables 1.00 Baseboard (air convection, oil or water filled, or individual forced air units) 1.50 Heat pump, air-to-air installed before 1980 1.70 Heat pump, air-to-air, installed after 1980 1.95 Heat pump, ground source	Subtract for thickness of duct insulations 0" 1" 3" -.10 -.05 -0.0	______	above 1.0 High 1.00 Medium 0.95 Medium .90 Low .85 Low .80 Low
Oil	Forced Air Systems: 0.90 Condensate (95%) 0.80 New with flame retention burner (85%) 0.70 after 1975 w/o retention burner (75%) 0.65 Old, before 1975 (70%) 0.60 Very old, before 1965 (65%) Hydronic Systems: 0.80 Boiler w. retention burner (after 1975) (85%) 0.65 Old boiler (before 1975) (70%)	Subtract for thickness of duct insulation 0" 1" 3" -.10 -.05 -0.0 +.05 Delay timer +.05 Vent damper +.10 retention burner (on old) -.05 for unmaintained Subtract for thickness of pipe insulation 0" ½" 1" -.10 -.05 -0.0 +.10 retention burner (on old)	______	.90 High .85 High .80 High .75 Medium .70 Medium .65 Medium .60 Low .55 Low .50 Low .45 Low
Wood	See Appendix E			

*The efficiency numbers on the far left are the seasonal efficiencies that take into consideration the cycling on and off of the furnace, jacket loss, and average seasonal variations. The numbers in parenthesis are the "steady state" efficiencies that are for use as a reference only.

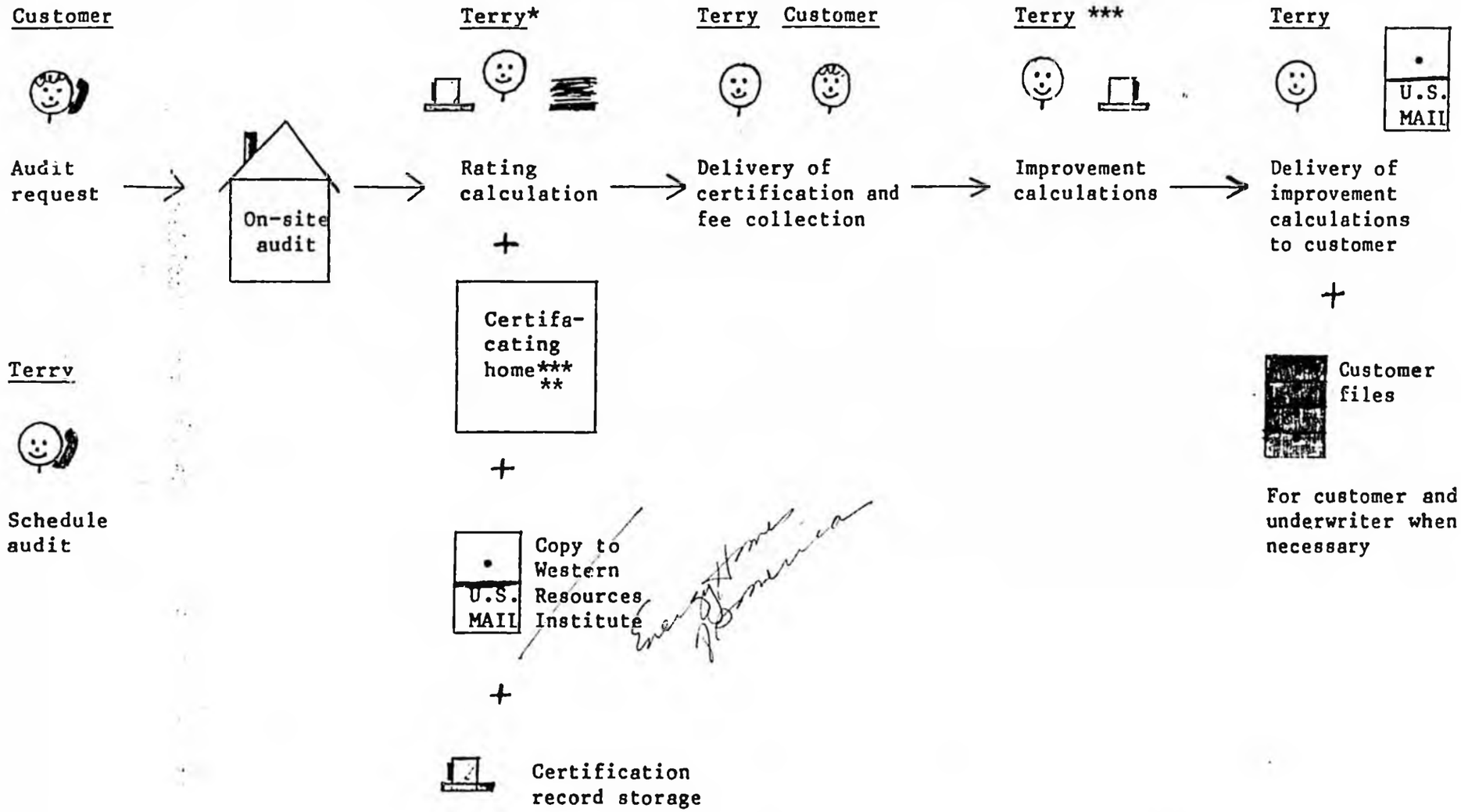
9 LIGHTS AND APPLIANCES

Square Feet Heated Floor Area	MBtu/yr
Less than 1500	22
1500 to 3500	25
over 3500	30

10

NOTE: In high wind areas, the annual cost estimate may be slightly higher than that given in Step 10 as a result of the wind's impact on the home's heating load.

ENERGY RATING PROCESS
DIRECT TASKS PAID FOR BY $165 RATING FEE



* Quality control audits of real estate appraiser and builder rating site visits required on 10% of homes.

** Receive real estate appraiser calculations and record certifications.

*** Improvement ratings on real estate appraiser calculation require Terry to do an on-site visit prior to doing improvement calculations.

Check out Alaska's Craftsman Home plan

Richard Seifert

Inside and Out

Last year in February I described a relatively new construction education program that was a cooperative effort of the Extension Service, state Department of Community and Regional Affairs, and the Alaska State Home Builders Association. This program was designed to educate builders and owner-builders about the best available technologies for building energy efficient, affordable, healthful homes for Alaskans. It has had a year of experience now under its belt, and I thought I would take this opportunity to bring you up-to-date on what's happening with that program.

In October of 1987, the 24 volunteer trainers who give the workshops in teams of two, were brought together in Anchorage to criticize the first year of the program, air their grievances, laud their successes, and generally try to improve the educational program for the next year.

With the state financial and housing situation what it is, one of the problems the program has is money. The funding for the program's operation comes from Exxon Overcharge Monies, a very special pot of funds from which the Energy Extension Service and energy conservation programs in Alaska are funded this year. The Alaska Craftsman Home Program is one of those that qualifies for that program. However, most of that money will disappear by fiscal 1990. Consequently the Alaska Craftsman Home Program is going to the Legislature to ask for an appropriation, one time only, to fully develop its four-phase program.

Phases one and two, which involved educating the trainers and then going out and actually publishing a manual and building an educational network, have been well accomplished. A continuation of the two-day ACHP workshop is anticipated over the next few months for Fairbanks.

The program has made rather valiant progress in the face of the very difficult housing and financial climate which the state presently faces. More than 200 people have taken the ACHP workshops in communities all around the state from Ketchikan to Barrow. Several Alaska Craftsman qualifying houses have been built, although since certification and record-keeping on the fuel use of these houses is part of Phase 3, there really isn't a track record established for how well these homes do yet. One of the things that the funding request to the Legislature will do is to allow Phase 3 to proceed and to establish all the performance records of the program for the future.

One of the problems the program has had to face is how to motivate builders and owner-builders to build to a voluntary goal of energy efficiency in the face of increasing costs and decreasing markets, while at the same time repossession homes for much cheaper values are becoming increasingly available. The attitude we present is one of optimism: we believe the only product that is going to sell a new home this year is something that is new and improved.

That, the Alaska Craftsman Home is. It includes an integral ventilation system, usually with air-to-air heat exchange, and a high integrity air vapor barrier with very low air leakage, which can only be achieved successfully and hopefully in combination with the ventilation system. It also includes very high levels of insulation, top quality windows and good site considerations and "climatically tuned" insulation levels. That means that a house in Ketchikan which is an Alaska Craftsman Home is not the same house that is an ACHP home in Fairbanks.

It's a difficult time to be promoting a construction and energy-efficiency building program. Oil costs are modestly increasing, interest rates are on the rise, and the market in Alaska is abysmal. However, we do believe there are people out there in the market who want and will buy a better quality, energy-efficient home if, in fact, it doesn't cost any more to the purchaser or the contractor. In order to accomplish this, the ACHP program proposes a $5,000 incentive program per house to cover the incremental costs of building to the Alaska Craftsman Thermal Efficiency goal.