

Minnesota Attorney General: Administrative Rules Proceedings

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Version 3
August 20, 2018

Our File No. 1040

RULE REVIEW CHECKLIST

DATE RULE RECEIVED 6-20-84
DATE FOR REVIEW 7-2-84
DATE DUE 7-10-84

Adopted w/a hearing ✓
Adopted w/o hearing
Temporary rule

Approved 7-10-84 Disapproved Returned to Agency

Resubmitted Due
Approved Disapproved Returned to Agency

Date filed w/Secretary of State 7-10-84 Revisor approved 6.22.84 disapproved

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✓ Rule as Adopted

✓ Rule as Proposed See SR.

✓ Order Adopting 5.30.84 Date combined with FofF

✓ Notice of Intent to Solicit Outside Opinion SR. 12/12.83.

✓ Order for rulemaking
2.28.84 date of Hearing

N/A Certificate of Board's Authorizing Resolution

✓ Notice of rulemaking
✓ Sufficiency includes small biz statement

✓ Affidavit of Mailing Notice or rulemaking
1.23.84 At least 30 days prior to hearing/adoption

? Mailing list Certificate 20 days before mailing

✓ Publication in State Register
1.23.84 At least 30/~~20~~ days prior to hearing/~~adoption~~

✓ Hearing Examiner's Report

✓ Chief Hearing Examiner's Report(s)
✓ 4.18.84 Approving H.E.'s Report
✓ 6.12.84 Approving agency action

✓ Agency's Findings of Fact combined with Order Adopting

N/A LCRAR Report or agency Affidavit

N/A Certificate of Board's Resolution Adopting Rules

N/A Order Approving Incorporation by Reference

✓ Statement of Need and Reasonableness

N/A Petition for Adoption of a Rule

✓ Record (includes transcript or tape, exhibits, comments received by agency, requests for a hearing, and other relevant materials)

✓ Certificate of Compliance w/Rulemaking Procedures

✓ Affidavit of Mailing Notice of Submission to Attorney General
six days before submission to AG.

✓ Notice of Submission to the Attorney General

SF-00006-02

STATE OF MINNESOTA

DEPARTMENT ATTORNEY GENERAL

Office Memorandum

TO DUANE R. HARVES, Chief
Administrative Law Judge
Attn: TOM BARRETT/Special Assist. Attorney General

DATE: 7/10/84

FROM MARTHA J. CASSERLY
Special Assistant
Attorney General

PHONE: 296-4692

SUBJECT: In the Matter of the Amendment of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units.

Enclosed herewith are the rules you have submitted for approval. These rules have been approved by this office and filed with the Secretary of State. Please note that they have not been filed with the State Register. This must be done promptly by your agency.

Upon receipt and before transmittal to your agency, however, it is important that you recheck these rules as to:

1. Affixation of stamps of the Attorney General and Secretary of State;

2. Coverage by these stamps of all rules submitted; and

3. Inclusion of all pages to the rules in the approved set.

If you have any questions in this regard, please contact me.

Encs.

cc: Ms. Kathy Burek
Mr. Duane Harves

MJC: sa

AG copy

Department of Energy and Economic Development

Adopted Amendments of Rules Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units

Rules as Adopted

6 MCAR S 2.2501 Authority and purpose.

A. Authority. The department's authority to adopt these rules is contained in Minnesota Statutes, sections ~~116J.07, clause (i),~~ ~~116J.08, clause (a),~~ 116J.09, clause (h); 116J.10, clause (a); and 116J.27. HE 18

B. Purpose. The purpose of 6 MCAR SS 2.2501-2.2510 is to establish a program requiring mandatory minimum energy efficiency standards for rental buildings, procedures for energy evaluations, and the certification of evaluators.

6 MCAR S 2.2502 Definitions.

A. Scope. For the purposes of 6 MCAR SS 2.2501-2.2510, the following terms have the meanings given them.

B. Accessible. "Accessible" means, for purposes of compliance with 6 MCAR S 2.2503, any area that can be made more energy efficient with the installation of program measures that are not determined to be economically infeasible and which area is exposed, without the removal of permanent parts of the structure.

C. Department. "Department" means the Department of Energy and Economic Development.

D. Apartment building. "Apartment building" means any structure containing dwelling units which are rented.

E. Conditioned space. "Conditioned space" means space within a building that is heated or cooled by an energy using system.

F. Cooling degree day. "Cooling degree day" means a unit, based upon temperature difference and time, used in estimating fuel consumption and specifying nominal cooling load in summer.

For any one day when the mean temperature is more than 65 degrees Fahrenheit, there exist as many cooling degree days as there are Fahrenheit degrees difference in temperature between the mean temperature for the day and 65 degrees Fahrenheit.

G. Economic feasibility. For the purpose of these rules, the test of economic feasibility is met when the savings in energy procurement costs, based on residential energy costs as certified by the commissioner in the State Register, or on local fuel costs, exceed the cost of acquiring and installing each standard, as amortized over the subsequent ten-year period. The costs of acquiring and installing each standard may include the costs of restoring the building to the condition that existed immediately before the standard was installed, costs to install a vapor barrier where determined necessary, and displacement costs of temporary tenant relocation where determined necessary.

H. Energy conservation measure. "Energy conservation measure" means energy-saving physical improvements to the building that are primarily designed to reduce energy consumption including, but not limited to, modifications to the building structure, the heating, ventilating, and air conditioning systems, and the lighting.

I. Caulking. "Caulking" consists of pliable materials used to reduce the passage of air and moisture by filling small gaps located at fixed joints on a building. "Caulking" includes, but existing language is not limited to, materials commonly known as "sealants," "putty," and "glazing compounds."

J. Weatherstripping. "Weatherstripping" consists of narrow strips of material placed over or in movable joints of windows and doors to reduce the passage of air and moisture when the windows and doors are closed.

K. Ceiling or attic insulation. "Ceiling or attic insulation" consists of a material primarily designed to resist heat flow which is installed between the conditioned area of a building and an unconditioned attic. Where the conditioned area of a building extends to the roof, the term "ceiling or attic insulation" also applies to such material used between the

underside and upperside of the roof, or where technically feasible, on the upperside of the roof.

L. Wall and foundation insulation. "Wall and foundation insulation" consists of a material primarily designed to resist heat flow which is installed within or on the walls between conditioned areas of a building and unconditioned areas of a building or the outside.

M. Floor insulation. "Floor insulation" consists of a material primarily designed to resist heat flow which is installed between the first level conditioned area of a building and an unconditioned basement, a crawl space, or the ground beneath it. Where the first level conditioned area of a building is on a ground level concrete slab, the term "floor insulation" also means such material installed around the perimeter of or on the slab. In the case of manufactured homes, the term "floor insulation" also means skirting to enclose the space between the building and the ground.

N. Storm or thermal window. "Storm or thermal window" consists of:

1. a window or glazing material placed outside or inside an ordinary or prime window, creating an insulating air space, to provide greater resistance to heat flow than the prime window alone; or

2. a window unit with improved thermal performance through the use of two or more sheets of glazing material affixed to a window frame to create one or more insulated air spaces. It may also have an insulating frame and sash.

O. Storm or thermal door. "Storm or thermal door" consists of:

1. a second door, installed outside or inside a prime door, creating an insulating air space;

2. a door with enhanced resistance to heat flow through the glass area created by affixing two or more sheets of glazing materials; or

3. a primary exterior door with an R-value of at least two.

P. Rim joist insulation. "Rim joist insulation" consists of a material primarily designed to resist heat flow which is installed along either side of the rim joist.

Q. Fireplace stove. "Fireplace stove" means a chimney-connected, solid fuel-burning stove having part of its fire chamber open to the room.

R. Heating degree day. "Heating degree day" means a unit, based upon temperature difference and time, used in estimating fuel consumption and specifying nominal heating load of a building in winter. For any one day, when the mean temperature is less than 65 degrees Fahrenheit, there exist as many heating degree days as there are Fahrenheit degrees difference in temperature between the mean temperature for the day and 65 degrees Fahrenheit.

S. Positive shut-off. "Positive shut-off" means a manual shut-off device which can be utilized to produce a seal to inhibit the flow of air when a fireplace or fireplace stove is not operating. Examples are damper in fireplace, damper at top of flue, damper in connector pipe, or doors (glass or other) on fireplace or fireplace stove.

T. "R" value. "R" value means the measure of resistance to heat flow through a material or the reciprocal of the heat flow through a material expressed in British thermal units per hour per square foot per degree Fahrenheit at 75 degrees Fahrenheit mean temperature.

U. Residence. "Residence" means any dwelling let to another used for habitation during all or a portion of the months November through April. A residence may be part of a multi-unit building, multi-family dwelling, or multi-purpose building, but "residence" does not include buildings such as hotels, hospitals, motels, dormitories, sanitariums, nursing homes, schools and other buildings used for educational purposes, or correctional institutions. Each dwelling unit in a rental building is a residence. A manufactured home as defined in Minnesota Statutes, section 168.011, subdivision 8, is a residence for purposes of these rules.

V. Rim joist. "Rim joist" means that part of the residential structure between the top of the foundation wall and the sub-floor immediately above the perimeter of the floor joists.

6 MCAR S 2.2503 Minimum energy efficiency standards.

A. Compliance. Under Minnesota Statutes, section 116J.27, subdivisions 1, 2, and 3, all residences constructed prior to January 1, 1976, which are renter occupied during all or a portion of the months of November through April must be in compliance with each applicable standard by the date shown in Exhibit 6 MCAR S 2.2503 A.-1., unless those standards are determined to be economically infeasible. All building owners shall initially determine the economic feasibility of these standards using the calculation procedures adopted by the department. Those determinations are subject to review and final determination by the department.

Exhibit 6 MCAR S 2.2503 A.-1.
Applicable Energy Efficiency Standards
from 6 MCAR S 2.2503 B.

Type of building	Date of applicability		
	January 1, 1980 Standards	July 1, 1983 Standards	July 1, 1985 Standards
Single family	1-2	~~1~~-8 1, 2 or 13, 3-8	1, 2 or 13, ~~and~~ ~~3-12~~ 3, 4, 5, 9, 10, 11, 12
~~Mobile~~ Manufactured home	1-2	~~1~~-8 1, 2 or 13, 3-8	1, 2 or 13, ~~and~~ ~~3-12~~ 3, 4, 5, 9, 10, 11, 12
2-4 unit building	1-2	~~1~~-8 1, 2 or 13, 3-8	1, 2 or 13, ~~and~~ ~~3-12~~ 3, 4, 5, 9, 10, 11, 12
5-11 unit building	1-2	1, 3, 5, 6, 7, 8, and 2 or 13; OR 1, 3, 15, and 2 or 13	1, 3, 5, ~~6, 7,~~ ~~8,~~ 10, 11, 12, and 2 or 13; OR 1, 3, 15, and 2 or 13
12 plus unit building	1-2	1, 3, 5, 6, 7, 8, and 2 or 13; OR 1, 3, 14, and 2 or 13	1, 3, 5, ~~6, 7,~~ ~~8,~~ 10, 11, 12, and 2 or 13; OR 1, 3, 14, and 2 or 13

B. Enumeration. The following are the minimum energy

efficiency standards for existing residences constructed prior to January 1, 1976, that are renter-occupied. The following standards shall be used as indicated in Exhibit 6 MCAR S 2.2503 A.-1.:

1. Install weatherstripping between exterior operable window sash and frames and between exterior doors and frames. Weatherstripping is not required on storm doors or storm windows.

2. Caulk, gasket, or otherwise seal accessible exterior joints between foundation and rim joist; around window and door frames; between wall and roof; between wall panels; at penetrations for utility services through walls, floors, and roofs; and at all other openings in the exterior envelope.

3. Install storm windows on all single glazed exterior window units enclosing conditioned space.

4. Install storm doors on all exterior door openings into conditioned spaces unless a single door, enclosed porch, vestibule, or other appurtenance provides a double door effect or provides an "R" value of two or more.

5. Install positive shut-offs for all fireplaces or fireplace stoves, unless an existing damper provides a positive shut-off.

6. Install insulation in accessible attics or ceilings to achieve a minimum total "R" value of the insulation of R-19. If there is insufficient space for the installation of the recommended "R" value, then the standard must be based on installing insulation to fill the available space while providing for appropriate ventilation.

7. Install insulation in all accessible rim joist areas to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, then the standard must be based on installing insulation to fill the available space.

8. Install insulation in or on accessible walls and floors enclosing conditioned spaces to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, then

the standard must be based on installing insulation to fill the available space.

9. Modify the existing heating system so that it operates at a minimum steady-state efficiency of 75 percent as demonstrated through a flue gas analysis provided for in 6 MCAR S 2.2504 B.4.

10. Install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R" value of the insulation R-38. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space while providing for appropriate ventilation.

11. Install insulation in all rim joist areas to achieve minimum total "R" value of the insulation of R-~~11~~ 19, unless the R-value of the existing insulation is R-11 or more. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space. HE 48-52

12. Install insulation in or on all walls and floors that enclose conditioned spaces to achieve a minimum total "R" value of the insulation of R-11. Walls must include foundation walls of basements, cellars, or crawl spaces. Insulation installed on the exterior of the foundation wall must extend down to two feet below grade level. Insulation installed on the interior or in the foundation wall must be installed from the bottom of the rim joist to the foundation slab or floor. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space.

13. Caulk, gasket, or otherwise seal interior joints between foundation and rim joist, around window and door frames, between wall and ceiling, at joints between wall and trim boards, at cracks on interior surfaces of walls, and at utility penetrations.

14. Install energy conservation measures that have had or are predicted to have a cumulative energy consumption savings of

25 percent. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 25 percent must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13, and 3 of 6 MCAR S 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 25 percent cumulative energy consumption savings.

15. Install energy conservation measures that have a had or are predicted to have cumulative energy consumption savings of 30 percent. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 30 percent must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13, and 3 of 6 MCAR S 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 30 percent cumulative energy consumption savings.

HE 58

6 MCAR S 2.2504 Conducting the evaluation.

A. Disclosure reports. All evaluators shall use a disclosure report approved by the department. Copies of completed disclosure reports must be retained by evaluators for

at least five years. The reports must be available for review by the department. Copies of audits conducted by registered professional engineers, architects, or other persons qualified by the department under 6 MCAR S 2.2503 B.14. and 15. must be submitted to the department within 14 days for review ~~or~~ and approval.

B. General duties of evaluators, registered professional engineers, architects, and other approved qualified persons. Evaluators, registered professional engineers, architects, and other approved qualified persons shall estimate energy savings and installation costs of each applicable standard using the calculation procedures in 6 MCAR S 2.2510. An applicable standard is any standard which can be installed in the residence to meet the minimum energy efficiency standards in 6 MCAR S 2.2503. Evaluators, registered professional engineers, architects, and other approved qualified persons shall:

1. Inspect and take actual measurements of the building shell, and inspect the space heating, space cooling, and water heating equipment. The inspection must include all common areas and at a minimum the following number of units for the building being evaluated. The random selection of units to be included in the sample of units inspected must be done by the evaluator, registered professional engineer, architect, and other approved qualified person.

Size of building	Minimum number of units included in inspection sample
~~1~~-5 1-4 units	all units
5 plus units	5 units + 3 percent of total number of units in the building

2. Base economic calculations on local fuel prices, or on those prices provided by the department, as published in the State Register.

3. Base economic calculations for materials and installation of measures on prices provided by the department. Prices must be made available to interested persons by:

a. publication in the State Register by the department of the most recent contractors and suppliers price survey; or

b. direct mailing by the department of the most recent price survey to certified evaluators; or

c. if the owner contends that the prices provided by the department are not representative of actual costs that would be incurred by installing the measure to comply with the standards, the owner shall obtain at least three bids from bona fide contractors indicating the costs of installing that measure. The lowest bid must then be used in determining whether the standard is economically infeasible.

4. Base any cost and savings estimate for any applicable furnace efficiency modification to a gas or oil furnace or boiler on an evaluation of the steady-state efficiency of the heating system.

a. For oil furnaces or boilers, the steady state efficiency shall be derived by a flue gas analysis of the measured flue gas temperature and carbon dioxide content.

b. For gas furnaces or boilers, the steady state efficiency shall be derived from manufacturer's design data. If the manufacturer's design data are not available at the time of inspection, then a flue gas analysis, as described in a. must be performed.

6 MCAR S 2.2505 Presentation of evaluation and audit results. A copy of the disclosure report or audit must be provided to the owner or the owner's agent. The disclosure report or audit must, at a minimum, contain the following information:

A. An estimate of the total cost for materials and labor of installation by a contractor of each applicable standard addressed in the evaluation.

B. An estimate of the savings in energy costs which would occur during the first year from the installation of each applicable standard addressed by the evaluation.

C. An estimate of the payback period, measured in years, from the energy cost savings of each of the applicable standards installed individually.

D. A disclosure using the following language or similar language: "The procedures used to make these estimates are

consistent with the department's criteria for energy evaluations. However, the actual installation costs you incur and energy cost savings you realize from installing these standards may be somewhat different from the estimates contained in this disclosure report or audit. Although the estimates are based on measurements of your building, they are also based on assumptions which may not be appropriate for your building."

E. A listing of the units of the building that were actually inspected and the date of the inspection, as described in 6 MCAR S 2.2504 B.1.b.

F. The name, address, and telephone number of the person who conducts the inspection and who completed the disclosure report or audit.

6 MCAR S 2.2506 Prohibitions ~~and exemption~~.

~~A. Prohibitions.~~ The evaluator, registered professional engineer, architect, or other approved qualified person shall:

1. not recommend any supplier or contractor to any owner;

2. not endorse the use of specific brand names of materials or products, persons, firms, or contractors which may be used to meet any specific standard;

3. not make any statements relating to the standards which may be interpreted as an endorsement of any specific material or product;

4. not exclude any applicable standards in the presentation of the audit to the owner;

5. provide the owner with a written statement of any interest which he or she or his or her employer has, directly or indirectly, in the sale or installation of any energy conservation measure; and

6. not conduct an evaluation of a building in which he or she has an ownership interest or is employed (other than to conduct the evaluation) by any person having an ownership interest in the building.

~~B. Exemption. If the building is a low rent housing project owned by a public housing agency as defined in Minnesota Statutes, section 462.421, subdivision 12, the energy audit or~~ deleted per F of F 2.h)

~~disclosure report provided for at 6 MCAR S 2.2504 may be provided by an officer, or employee of the agency, if the audit is conducted in accordance with Code of Federal Regulations, title 24, sections 865.301 865.310, if the procedures prescribed in 6 MCAR S 2.2504 are followed, and if the audit includes the standards provided in 6 MCAR S 2.2503. Persons conducting these audits are exempted from the certification requirements of 6 MCAR S 2.2507. However, unless the officer, or employee of the agency, meets the requirements of 6 MCAR S 2.2503 B.14. or 15., they shall not conduct an energy audit for compliance with 6 MCAR S 2.2503 B.14. or 15.~~ deleted per FqF 2. h)

6 MCAR S 2.2507 Qualification procedures for evaluators.

A. Prohibition of discrimination. No person shall be denied the right to become an evaluator on the basis of race, religion, nationality, creed, sex, age or sexual preference.

B. Training.

1. Except as provided in 2. no person is eligible for certification under C. unless he or she has first participated in a training course which has been approved by the department and which covers the subject matter tested in the evaluator certification examination.

2. The following persons may take an appropriate department approved orientation session, in lieu of the requirements of 1.:

a. any HED evaluator certified before July 1, 1981;

b. any person successfully completing an approved 30 hour training course for the HED program prior to July 1, 1981;

c. registered architects and registered engineers with work experience in energy auditing or the design of institutional, commercial, residential or industrial buildings;

d. any person who has six months' energy auditing experience and who has completed 25 energy audits for a nonprofit organization <u>or regulated utility</u>; HE 67

e. members of the American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, the Independent Fee Appraisers, or other associations determined by

the department to have applicable training requirements for their members;

f. certified evaluators for Truth in Housing Programs;

g. building officials certified by the Building Codes Division of the Minnesota Department of Administration.

C. Certification. Only those persons who satisfy all of the following conditions shall be certified:

1. All persons shall take and pass a certification examination conducted by the department. The certification examination must test for the following qualifications:

a. a general understanding of the three types of heat transfer and the effects of temperature and humidity on heat transfer;

b. a general understanding of residential construction terminology and components;

c. a general knowledge of the operation of the heating and cooling systems used in residential buildings, including the need and provision for combustion air;

d. a general knowledge of the different types of each applicable program measure, of the advantages and disadvantages and applications of each, and of the DOE installation standards;

e. the capability to conduct the energy evaluation including: a working knowledge of energy conserving practices, the ability to determine the applicability of each of the program measures, and proficiency in the auditing procedures for each applicable program measure established in 6 MCAR S 2.2504;

f. a working ability to calculate the steady state efficiency of furnaces or boilers; and

g. a working knowledge of building and fire codes related to the installation and safety of wood burning appliances.

2. All persons shall submit a $50 certification fee to the department. However, no certification fee may be charged for certified municipal building officials who are directly employed by a municipality as defined in Minnesota Statutes, section 16.84, subdivision 3; or for employees of public housing

agencies as defined in Minnesota Statutes, section 462.421, subdivision 12; or for employees of private nonprofit community-based organizations, or regulated utilities, when the evaluations are performed as part of the employee's normal job responsibilities. No certification fee may be charged for those persons upgrading their certification who were certified prior to July 1, 1981.

HE 67

3. All persons shall provide evidence satisfactory to the department of liability and of errors and omissions insurance. The minimum value of protection in each category must be $50,000, and the insurance must be of the "occurrence" variety where coverage is based on the date when the evaluation is made. A "claims made" policy with a reporting endorsement of at least five years is also acceptable. Coverage is not required for evaluators who are employed by municipal governments or public housing agencies and who perform evaluations as part of their normal job responsibilities. Certified evaluators who have provided a bond to the state as required by the Building Code Division of the Department of Administration are not required to obtain the protection required by this paragraph until that bond expires. In addition, each insurance policy must:

a. name the state of Minnesota as a coinsured party, and

b. be written by a corporate insurer licensed to do business in the state of Minnesota, or licensed in accordance with Minnesota Statutes, sections 60A.195 to 60A.209.

D. Certification examinations. Examinations must be conducted by the department and offered at the following times:

1. within two days after the completion of each state-sponsored training course or orientation session, or

2. once a month, until June 1982, with a minimum of two examinations per year afterward.

E. Other qualified persons. The department may certify other qualified persons to conduct evaluations pursuant to 6 MCAR S 2.2503 B.14. and 15. These persons shall be certified

HE 91

only if they:

1. have passed the certification examination provided at 6 MCAR S 2.2507 C.1.;

2. have paid the certification fee provided at 6 MCAR S 2.2507 C.2.;

3. have fulfilled the requirements for insurance coverage provided at 6 MCAR S 2.2507 C.3.;

4. have taken additional training that includes the following subject matter:

a. the operation of the various types of heating systems and their controls for multifamily buildings;

b. the operation of heating distribution systems for multifamily buildings; and

c. retrofit strategies for improving the energy efficiency of heating and distribution systems in multifamily buildings; and

5. have passed a certification examination which tests the qualifications needed to conduct an evaluation pursuant to 6 MCAR S 2.2503 B.14. and 15.

HE91

6 MCAR S 2.2508 Recertification of evaluators.

A. Term of certification. Certification is valid for one year.

B. Recertification procedure. Each year, each evaluator shall be recertified. The following procedures must be completed in order for an evaluator to be recertified:

1. Prior to the date of certificate expiration, the evaluator shall attend a recertification course, as required by the department. Successful completion of this course shall recertify the evaluator for the next year. Evaluators not completing the recertification course prior to the expiration date of their certification shall be recertified by completing the recertification course and successfully retaking the certification examination.

2. The recertification course requirements for evaluators must be eliminated for any particular year if the department determines that no changes were made in the program that year.

Certification must then be automatically renewed.

3. Persons requesting recertification shall pay a $25 fee to the energy division of the department.

4. This recertification must occur annually, for the life of the program.

C. Personnel from other states. Any person who is certified to conduct residential conservation service audits in another state is not required to take the training course established in 6 MCAR S 2.2507 B.1., but is required to pass the evaluator certification examination.

6 MCAR S 2.2509 Decertification of evaluators.

A.-D. [Unchanged.]

E. Wrongful acts. Certification must be revoked when reasonable evidence indicates an undisclosed conflict of interest, a violation of these rules, unethical practices, or negligent performance of duties as an evaluator. In any of these instances, the department will, if requested, provide a review to determine whether the revocation was proper. This review must consist of the following procedures:

1. The evaluator shall make a written request for a review to the department.

2. The director of the office of conservation shall determine a time to review the request. The evaluator may present testimony in person or in writing. The evaluator may present witnesses on the evaluator's behalf. Department staff may present written or oral testimony, as well as witnesses.

3. The director of the office of conservation shall make a judgment based on the information presented in the review hearing. That judgment shall be presented in writing to the evaluator within three working days of the review.

F. Failure to report. Certification must be revoked if the reports required in 6 MCAR S 2.2504 A. are not submitted to the department as required.

6 MCAR S 2.2510 Calculation procedures.

The following procedures must be the basis for calculating

energy savings for each standard.

A. Energy conserving measures.

1.-3. [Unchanged.]

4. Furnace efficiency modifications.

a. Replacement furnaces or boilers.

Equation #3. $\Delta E = E_h \left(1 - \frac{N_o}{N_1}\right)$ HE 111, 112

b.-d. [Unchanged.]

5.-21. [Unchanged.]

B. [Unchanged.]

Repealer. Rules of the Department of Administration, 2 MCAR SS 1.16220-1.16230 are repealed.

STATE OF MINNESOTA
DEPARTMENT OF STATE
FILED
JUL 10 1984
Joan Anderson Growe
Secretary of State
1:50 PM

APPROVED AS TO FORM AND LEGALITY
July 10 1984
HUBERT H. HUMPHREY, III
ATTORNEY GENERAL
BY Martha J Cassedy
SPECIAL ASSISTANT ATTORNEY GENERAL

HUBERT H. HUMPHREY, III
ATTORNEY GENERAL

STATE OF MINNESOTA

OFFICE OF THE ATTORNEY GENERAL

ST. PAUL 55155

ADDRESS REPLY TO:
1100 BREMER TOWER
SEVENTH PL. AND MINNESOTA ST.
ST. PAUL, MN 55101
TELEPHONE: (612) 296-9412

June 15, 1984

J. Michael Miles
Assistant Attorney General
204 Administration Building
50 Sherburne Avenue
St. Paul, Minnesota 55155

Dear Mike:

Enclosed for your review as to form and legality, please find the adopted Rules of the Department of Energy and Economic Development amending its Rules governing the Home Energy Disclosure Program and the Minimum Mandatory Energy Efficiency Standards for Residential Rental units.

You will notice that several people have requested notice of submission of these rules to your office for review.

The Department, for budgetary reasons requests that, if possible, your review be completed before the end of June.

Thank you for your attention to this matter.

Very truly yours,

THOMAS J. BARRETT
Special Assistant
Attorney General

Telephone: (612) 296-1265

TJB:jlm
Enclosure

DEED-84-002-AK

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT

In the Matter of the Amendment of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units.

ORDER OF THE CHIEF ADMINISTRATIVE LAW JUDGE

WHEREAS, a hearing was held on February 28, 1984 before Allan W. Klein, an Administrative Law Judge of the State Office of Administrative Hearings, on the above-entitled matter in compliance with the rule-making provisions of Minn. Stat. Ch. 14 (1982 and 1983 Supp.); and

WHEREAS, the Report of Administrative Law Judge made pursuant to Minn. Stat. § 14.50, was issued to the Department of Energy and Economic Development and;

WHEREAS, the Department has now determined to adopt rules; and

WHEREAS, the Department has submitted said rules to the Chief Administrative Law Judge for review pursuant to Minn. Stat. §§ 14.16, 14.51, and 9 MCAR § 2.111; and

WHEREAS, the Chief Administrative Law Judge finds that the final proposed rules are not substantially different from those proposed at the public hearing and that the Department has cured the defects in the rule as required.

NOW, THEREFORE, upon receipt of this Order, the Department has the responsibility of submitting the complete hearing record and the rules as adopted by the Department to the Attorney General and to publish in the State Register if approved by the Attorney General.

Dated: June 12, 1984.

Duane R. Harves

DUANE R. HARVES
Chief Administrative Law Judge

Exhibit B

emphasizing computer technician or computer programmer skills; fluid power mechanics; manufacturing processes applications; or electro-mechanical technology.

Department of Energy and Economic Development

Proposed Amendments of Rules Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units

Order for Hearing

It is ordered this 9th day of January, 1984, that a public hearing be held on the proposed amendments of the rules captioned above in Room 715 of the American Center Building on February 28, 1984, commencing at 9:15 a.m. and continuing until all representatives of associations and other interested groups have had an opportunity to be heard.

It is further ordered that notice of said hearing be given to all persons who have registered their names with the Minnesota Department of Energy and Economic Development for that purpose and be published in the *State Register*.

Mark B. Dayton
Commissioner
Department of Energy and Economic Development

Notice of Hearing

Notice is hereby given that a public hearing will be held pursuant to Minnesota Statutes, 1982, section 14.14, subd. 1. in the above-entitled matter in the American Center Building, Room 715, 150 E. Kellogg Blvd., St. Paul, MN on February 28, 1984 commencing at 9:15 a.m. and continuing until all representatives of associations or other interested groups or persons have had an opportunity to be heard concerning adoption of the rules captioned above. The public hearing will continue on February 29 commencing at 10:00 a.m. only if it is not completed on February 28. Persons interested in presenting testimony should appear on February 28 as there is no assurance that the public hearing will continue on February 29. The hearing will be conducted according to Minn. Stat. § 14.13 to 14.20 and the rules of the Office of Administrative Hearings, 9 MCAR § 2.100-2.113.

At the hearing, statements may be made orally and written material may be submitted and recorded in the hearing record. In addition, written material may be submitted to Hearing Examiner Allan Klein, Office of Administrative Hearings, 400 Summit Bank Building, 310 South 4th Avenue, Minneapolis, Minnesota 55415—telephone (612) 341-7609, either before the hearing or within five working days after the close of the hearing unless the hearing examiner orders the record to remain open for a longer period of time, not to exceed 20 calendar days. The proposed rules are subject to change as a result of the rules hearing process. The Division therefore strongly urges those who may be affected in any manner by the substance of the proposed rules to participate in the rules hearing process.

The Commissioner proposes to amend existing rules relating to the following matters:

1. Deletions of references to the Home Energy Disclosure Program which was eliminated by the 1983 legislature;
2. Amendments to the Minimum Standards for Energy Efficiency for Residential Rental Units that include:

a) a requirement by July, 1985 to insulate attics to R-38, exterior walls to R-11 and foundations to R-11, including previously defined "inaccessible" attics, walls, foundations, and rim joists.

b) a performance option for buildings with 5 or more units as an alternative to the other prescriptive standards.

3. Expand the definition of "economic feasibility" (used to determine the applicability of each standard) to include costs to repair the building to comply with the standards;
4. Adding a minimum steady state efficiency for heating systems for smaller buildings;
5. Dropping storm doors as a standard for larger buildings.

These standards apply to all residential buildings which were built before 1976, and which are renter occupied between the

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months of November to April. These standards do not apply to buildings such as hospitals, schools, dormitories, nursing homes, schools, hotels, motels, or correctional institutions.

Because of the substantial nature of the changes, interested persons are urged to read the attached proposed rules. Copies of the proposed rules are now available and one free copy may be obtained by writing to the Minnesota Department of Energy and Economic Development, Attention: Greg Hubinger, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101—(612) 297-2117. Copies will also be available at the door on the date of the hearing.

In accordance with 1983 Session laws, Chapter 188, which amends Minn. Stat. 14.115, the Department provides notice that these rule amendments may have an impact on small businesses. Minn. Stat. 14.115 subd. 1 define a small business as one that is independently owned and operated, is not dominant in its field, employs fewer than 50 full-time employees or has gross annual sales of less than $4 million. A portion of the public hearing announced today will concern the impact of these rules on small businesses.

The Department's authority to amend these rules is contained in Minnesota Statutes, 1982, sections 116J.09, 116J.10, and 116J.27.

The Department first adopted the above-captioned rules on December 13, 1982. The Department proposed amendments to rules on December 27, 1982 which were later withdrawn on October 31, 1983. Notice of Intent to Solicit Outside Opinions for this rulemaking was published on December 12, 1983.

Minnesota Statutes Ch. 10A requires each lobbyist to register with the Ethical Practices Board within five days after he or she commences lobbying. A lobbyist is defined in Minn. Stat. § 10A.01, Subd. 11 (1979 Supp.) as an individual:

(a) Engaged for pay or other consideration or authorized by another individual or association to spend money, who spends more than five hours in any month or more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials; or

(b) Who spends more than $250, not including his own traveling expenses and membership dues, in any year for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials.

The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, St. Paul, MN 55155, telephone (612) 296-5615.

Notice: Any person may request notification of the date on which the Hearing Examiner's Report will be available, after which date the department may not take any final action on the rules for a period of five working days. Any person may request notification of the date of which the hearing record has been submitted (or resubmitted) to the Attorney General by the department. If you desire to be so notified, you may so indicate at the hearing. After the hearing, you may request notification by sending a written request to the Hearing Examiner (in the case of the Hearing Examiner's Report) or to the department (in the case of the department's submission or resubmission to the Attorney General).

Notice is hereby given that 25 days prior to the hearing, a Statement of Need and Reasonableness will be available for review at the department and at the Office of Administrative Hearings. This Statement of Need and Reasonableness will include a summary of all the evidence and arguments which the department anticipates presenting at the hearing justifying both the need for and reasonableness of the proposed rule or rules. Copies of the Statement of Need and Reasonableness may be obtained from the Office of Administrative hearings at a minimum charge.

Questions about the substance of these rules may be directed to Greg Hubinger, Manager of Residential Programs, Energy Division, 150 E. Kellogg Boulevard, St. Paul, MN 55101, (612) 297-2117. Questions about procedure may be directed to Hearing Examiner Allan Klein, Office of Administrative Hearings, 400 Summit Bank Building, 310 South 4th Avenue, Minneapolis, MN 55415, (612) 341-7609.

Mark B. Dayton
Commissioner
Department of Energy and Economic Development

Rules as Proposed

6 MCAR § 2.2501 Authority and purpose.

A. Authority. The ~~agency's~~ department's authority to adopt these rules is contained in Minnesota Statutes, ~~section 116H.129, as well as 116H.08, clause (a) and 116H.07, clause (i)~~ sections 116J.07, clause (i); 116J.08, clause (a); and 116J.27.

B. Purpose. The purpose of ~~these rules~~ 6 MCAR §§ 2.2501-2.2510 is to establish a program requiring ~~an energy audit to be performed upon the sale of residential structures. The three major components of this program are the establishment of:~~

~~minimum energy efficiency standards for the evaluation of existing residences,~~ mandatory minimum energy efficiency standards for rental buildings ~~and~~, procedures for ~~the~~ energy ~~evaluation disclosure program~~ evaluations, and the certification of evaluators.

6 MCAR § 2.2502 Definitions.

A. Scope. For the purposes of 6 MCAR §§ 2.2501-2.2510, the following terms have the meanings given them.

B. Accessible. "Accessible" means~~:~~.

~~1. For purposes of inspection, any area of the residence which can be evaluated with only the removal of temporary components of the structure. Temporary components include. but are not limited to, electrical plate covers, attic hatch covers, and obstructions in closets which provide access to the area of the residence to be evaluated.~~

~~2.~~ for purposes of compliance with 6 MCAR § 2.2503, any area that can be made more energy efficient with the installation of program measures that are not determined to be economically infeasible and which area is exposed, without the removal of permanent parts of the structure.

C. ~~Agency. "Agency" means the Energy Division of the Department of Energy, Planning, and Development~~ Department. "Department" means the Department of Energy and Economic Development.

D. Apartment building. "Apartment building" means any structure containing ~~two or more residential~~ dwelling units which are rented.

E. ~~Community based organization. "Community based organization" means an organization which has a demonstrated community involvement such that the organization has a history of energy or related community service in a specific service area.~~

~~F.~~ Conditioned space. "Conditioned space" means space within a building that is heated or cooled by an energy using system.

~~G.~~ F. Cooling degree day. "Cooling degree day" means a unit, based upon temperature difference and time, used in estimating fuel consumption and specifying nominal cooling load in summer. For any one day when the mean temperature is more than 65 degrees Fahrenheit, there exist as many cooling degree days as there are Fahrenheit degrees difference in temperature between the mean temperature for the day and 65 degrees Fahrenheit.

~~H.~~ G. Economic feasibility. For the purpose of these rules, the test of economic feasibility is met when the savings in energy procurement costs, based on residential energy costs as certified by the commissioner in the *State Register*, or on local fuel costs, exceed the cost of acquiring and installing each ~~individual program measure~~ standard, as amortized over the subsequent ten-year period. The costs of acquiring and installing each standard may include the costs of restoring the building to the condition that existed immediately before the standard was installed, costs to install a vapor barrier where determined necessary, and displacement costs of temporary tenant relocation where determined necessary.

~~I.~~ H. Energy conservation measure. "Energy conservation measure" means ~~any of the following measures in a residential building:~~ energy-saving physical improvements to the building that are primarily designed to reduce energy consumption including, but not limited to, modifications to the building structure, the heating, ventilating, and air conditioning systems, and the lighting.

~~1.~~ I. Caulking. "Caulking ~~consisting~~" consists of pliable materials used to reduce the passage of air and moisture by filling small gaps located at fixed joints on a building~~, underneath baseboards inside a building, in exterior walls at electric outlets, around pipes and wires entering a building, and around dryer vents and exhaust fans in exterior walls~~. "Caulking" includes, but is not limited to, materials commonly known as "sealants," "putty," and "glazing compounds."

~~2.~~ J. Weatherstripping. "Weatherstripping ~~consisting~~" consists of narrow strips of material placed over or in movable joints of windows and doors to reduce the passage of air and moisture when the windows and doors are closed.

~~3. furnace efficiency modifications consisting of:~~

~~a. a furnace or boiler, including a heat pump, which replaces an existing furnace or boiler of the same fuel type and which reduces the amount of fuel consumed due to an increase in combustion efficiency, improved heat generation, or reduced heat losses.~~

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~~b. a furnace replacement burner (oil) which atomizes the fuel oil, mixes it with air, and ignites the fuel air mixture, and is an integral part of an oil-fired furnace or boiler including the combustion chamber, and uses less oil than the device it replaces.~~

~~c. an automatically operated damper installed in a gas fired furnace (often called a vent damper) which is installed downstream from the drafthood and conserves energy by substantially reducing the flow of heated air through the chimney when the furnace is not in operation.~~

~~d. an electrical or mechanical ignition device which, when installed in a gas-fired furnace or boiler, automatically ignites the gas burner and replaces a gas pilot light.~~

~~4. a central air conditioner which replaces an existing central air conditioner of the same fuel type and which reduces the amount of fuel consumed due to an increase in efficiency.~~

~~5.~~ K. Ceiling or attic insulation. "Ceiling or attic insulation ~~consisting~~" consists of a material primarily designed to resist heat flow which is installed between the conditioned area of a building and an unconditioned attic. Where the conditioned area of a building extends to the roof, the term "ceiling or attic insulation" also applies to such material used between the underside and upperside of the roof, or where technically feasible, on the upperside of the roof.

~~6.~~ L. Wall and foundation insulation. "Wall and foundation insulation ~~consisting~~" consists of a material primarily designed to resist heat flow which is installed within or on the walls between conditioned areas of a building and unconditioned areas of a building or the outside.

~~7.~~ M. Floor insulation. "Floor insulation ~~consisting~~" consists of a material primarily designed to resist heat flow which is installed between the first level conditioned area of a building and an unconditioned basement, a crawl space, or the ground beneath it. Where the first level conditioned area of a building is on a ground level concrete slab, the term "floor insulation" also means such material installed around the perimeter of or on the slab. In the case of ~~mobile~~ manufactured homes, the term "floor insulation" also means skirting to enclose the space between the building and the ground.

~~8. duct insulation consisting of a material primarily designed to resist heat flow which is installed on a heating or cooling duct in an unconditioned area of a building.~~

~~9. pipe insulation consisting of a material primarily designed to resist heat flow which is installed on a heating, cooling or hot water pipe in an unconditioned area of a building.~~

~~10. water heater insulation consisting of a material primarily designed to resist heat flow which is suitable for wrapping around the exterior surface of the water heater casing.~~

~~11.~~ N. Storm or thermal window. "Storm or thermal window ~~consisting~~" consists of:

~~a.~~ 1. a window or glazing material placed outside or inside an ordinary or prime window, creating an insulating air space, to provide greater resistance to heat flow than the prime window alone; or

~~b.~~ 2. a window unit with improved thermal performance through the use of two or more sheets of glazing material affixed to a window frame to create one or more insulated air spaces. It may also have an insulating frame and sash.

~~12.~~ O. Storm or thermal door. "Storm or thermal door ~~consisting~~" consists of:

~~a.~~ 1. a second door, installed outside or inside a prime door, creating an insulating air space;

~~b.~~ 2. a door with enhanced resistance to heat flow through the glass area created by affixing two or more sheets of glazing materials; or

~~c.~~ 3. a primary exterior door with an R-value of at least two.

~~13. heat reflective and heat absorbing window or door material consisting of a window or door glazing material with exceptional heat absorbing or heat reflecting properties or of reflective or absorptive films and coatings applied to an existing window or door which thereby result in exceptional heat absorbing or heat reflecting properties.~~

~~14. devices associated with electric load management techniques consisting of customer owned or leased devices that control the maximum kilowatt demand of the residence on an electric utility and which are any of the following:~~

~~a. part of a radio, ripple or other utility controlled load switching system located on the customer's premises;~~

~~b. clock controlled load switching devices;~~

~~c. interlocks and other load actuated, load limiting devices; or~~

~~d. energy storage devices with control systems.~~

~~15. clock thermostat consisting of a device which is designed to reduce energy consumption by regulating the demand on the heating or cooling system in which it is installed and which uses:~~

~~a.~~ a ~~temperature control device for interior spaces incorporating more than one temperature control level, and~~

~~b.~~ a ~~clock or other automatic mechanism for switching from one control level to another.~~

~~16.~~ P. Rim joist insulation. "Rim joist insulation ~~consisting~~" consists of a material primarily designed to resist heat flow which is installed along either side of the rim joist.

~~J. Energy conserving practice. "Energy conserving practice" means any of the following measures in a residential building:~~

~~1. furnace efficiency maintenance and adjustments consisting of cleaning and combustion efficiency adjustment of gas or oil furnaces; periodic cleaning or replacement of air filters on forced air heating or cooling systems; lowering the bonnet or plenum thermostats to 80 degrees Fahrenheit on a gas or oil forced air furnace; and turning off the pilot light on a gas furnace during the summer.~~

~~2. nighttime temperature setback by manually lowering the thermostat control setting for the furnace during the heating season to a maximum of 55 degrees Fahrenheit during sleeping hours.~~

~~3. reducing thermostat settings in winter by limiting the maximum thermostat control setting for the furnace to 68 degrees Fahrenheit during the heating season.~~

~~4. raising thermostat setting in summer by setting the thermostat control for an air conditioner to 78 degrees Fahrenheit or higher during the cooling season.~~

~~5. water flow reduction in showers and faucets accomplished by placing a device in a shower head or faucet to limit the maximum flow to three gallons per minute, or replacing existing shower heads or faucets with those having built in provisions for limiting the maximum flow to three gallons per minute.~~

~~6. reducing hot water temperature by manually setting back the water heater thermostat setting to 120 degrees Fahrenheit; and reducing the use of heated water for clothes washing.~~

~~7. reducing energy use when a home is unoccupied by reducing the thermostat setting to 55 degrees Fahrenheit when a home is empty for four hours or longer in the heating season, turning an air conditioner off in the cooling season when no one is home; and lowering the thermostat setting of the water heater when a home is vacant for two days or longer.~~

~~8. plugging leaks in attics, basements, and fireplaces by installing scrap insulation or other pliable materials in gaps around pipes, ducts, fans, or other items which enter the attic or basement from a heated space; installing fireproof material to plug any holes around any damper in a fireplace; and adding insulation to an attic or basement door.~~

~~9. sealing leaks in pipes and ducts by installing caulking in any leak in a heating or cooling duct, tightening or plugging any leaking joints in hot water or steam pipes, and replacement of washers in leaking water valves.~~

~~10. efficient use of shading by using shades or drapes to block sunlight from entering a building in the cooling season, to allow sunlight to enter during the heating season, and to cover windows tightly at night during the heating season.~~

~~K.~~ Q. Fireplace stove. "Fireplace stove" means a chimney-connected, solid fuel-burning stove having part of its fire chamber open to the room.

~~L.~~ R. Heating degree day. "Heating degree day" means a unit, based upon temperature difference and time, used in estimating fuel consumption and specifying nominal heating load of a building in winter. For any one day, when the mean temperature is less than 65 degrees Fahrenheit, there exist as many heating degree days as there are Fahrenheit degrees difference in temperature between the mean temperature for the day and 65 degrees Fahrenheit.

~~M. HED. "HED" means home energy disclosure.~~

~~N.~~ S. Positive shut-off. "Positive shut-off" means a manual shut-off device which can be utilized to produce a seal to inhibit the flow of air when a fireplace or fireplace stove is not operating. Examples are damper in fireplace, damper at top of flue, damper in connector pipe, or doors (glass or other) on fireplace or fireplace stove.

~~O. Program measures. "Program measures" means all energy conservation measures and renewable resource measures included in the minimum energy efficiency standards for existing residences.~~

~~P.~~ T. "R" value. "R" value means the measure of resistance to heat flow through a material or the reciprocal of the heat

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flow through a material expressed in British thermal units per hour per square foot per degree Fahrenheit at 75 degrees Fahrenheit mean temperature.

~~Q. Renewable resource measures. "Renewable resource measures" means the following measures installed in or connected to a residential building:~~

~~1. solar domestic hot water systems (DHW) designed to absorb the sun's energy and to use this energy to heat water for use in a residential building other than for space heating, including thermosiphon hot water heaters.~~

~~2. passive solar space heating and cooling systems that make efficient use of, or enhance the use of, natural forces including solar insolation, winds, nighttime coolness and opportunity to lose heat by radiation to the night sky to heat or cool living space by the use of conductive, convective or radiant energy transfer. Passive solar systems include only:~~

~~a. direct gain glazing systems consisting of south facing panels of insulated glass, fiberglass, or other similar transparent substances that admit the sun's rays into the living space where the heat is retained. Glazing is either double paned, or single paned equipped with movable insulation.~~

~~b. indirect gain systems consisting of panels of insulated glass, fiberglass, or other transparent substances that direct the sun's rays into south facing specifically constructed thermal walls, ceilings, rockbeds, or containers of water or other fluids where heat is stored and radiated.~~

~~c. solaria/sunspace systems consisting of structures of glass, fiberglass or similar transparent material which is attached to the south facing wall of a structure which allows for air circulation to bring heat into the residence and which is able to be closed off from the residential structure during periods of low solar insolation.~~

~~d. window heat gain or loss retardants consisting of mechanisms which significantly reduce summer heat gain or wintertime heat loss through windows by the use of devices such as awnings; insulated rollup shades, external or internal; metal or plastic solar screens; or movable rigid insulation.~~

~~3. wind energy devices that use wind energy to produce energy in any form primarily for use in the residence.~~

~~4. replacement solar swimming pool heaters which are used solely for the purposes of using the sun's energy to heat swimming pool water and which replace a swimming pool heater using electricity, gas or another fossil fuel.~~

~~5. active solar space heating equipment designed to absorb the sun's energy and to use this energy to heat living space by use of mechanically forced energy transfer such as fans or pumps.~~

~~R.~~ U. Residence. ~~"Residence" means any dwelling used for habitation during all or a portion of the months of December through March, or permanently by one or more persons. For rental buildings,~~ "Residence" means any dwelling let to another used for habitation during all or a portion of the months November through April. A residence ~~may be owned or rented and~~ may be part of a multi-unit building, multi-family dwelling, or multi-purpose building, but "residence" ~~shall~~ does not include buildings such as hotels, hospitals, motels, dormitories, sanitariums, nursing homes, schools and other buildings used for educational purposes, or correctional institutions. Each dwelling unit in a rental building ~~shall be considered as~~ is a residence. A ~~mobile~~ manufactured home as defined in Minnesota Statutes, section 168.011, subdivision 8, ~~shall be~~ is a residence for purposes of these rules.

~~S.~~ V. Rim joist. "Rim joist" means that part of the residential structure between the top of the foundation wall and the sub-floor immediately above the perimeter of the floor joists.

~~T. Seasonal efficiency. "Seasonal efficiency" means the calculated efficiency of a heating system based on the estimated peak (tuned up) steady state efficiency corrected for cycling losses.~~

~~U. South facing. "South facing" means plus or minus 45 degrees of true south.~~

6 MCAR § 2.2503 Minimum energy efficiency standards.

A. Compliance. ~~The minimum energy efficiency standards listed in B. shall be applied to residences according to Exhibit 6 MCAR § 2.2503 A. 1. Pursuant to Minnesota Statutes, section 116H.129, subdivisions 5 and 7, the standards listed under "Disclosure at time of sale" shall only be used to evaluate the energy efficiency of existing residences built prior to January 1, 1976, at the time of sale. Time of sale means the time when a written purchase agreement is executed by the buyer, or, in the absence of a purchase agreement, the time of execution of any document providing for the conveyance of a residence. Pursuant to~~ Under Minnesota Statutes, section ~~116H.129~~ 116J.27, subdivisions 1, 2, and 3, all residences constructed prior to January 1, 1976, which are renter occupied during all or a portion of the months of November through April ~~shall have been~~ must be in compliance with ~~standards adopted pursuant to Minnesota Statutes, section 116H.129, subdivision 1 pertaining to caulking and weatherstripping by January 1, 1980~~ each applicable standard by the date shown in Exhibit 6 MCAR § 2.2503 A.-1., unless those standards are determined to be economically infeasible. ~~Effective July 1, 1983, all residences constructed prior to January 1, 1976, which are renter occupied during all or a portion of the months of November through April shall be in~~

~~compliance with all standards listed under mandatory compliance and not determined to be economically infeasible.~~ All building owners shall initially determine the economic feasibility of these standards using the calculation procedures adopted by the ~~ageney~~ department. Those determinations are subject to review and final determination by the ~~ageney~~ department.

Exhibit 6 MCAR § 2.2503 A.-1.
Applicable Energy Efficiency Standards
from 6 MCAR § 2.2503 B.

~~Purpose~~

~~Type of residence~~	~~Disclosure at time of sale~~	~~Mandatory compliance~~
~~Owner-occupied~~		
~~Single family~~	~~Standards 1-4, 9-27~~	~~None~~
~~Mobile home~~	~~Standards 1-4, 9-27~~	~~None~~
~~Condominium building, 2-4 dwelling units~~	~~Standards 1-4, 9-27~~	~~None~~
~~Condominium building, 5 or more dwelling units~~	~~Standards 1-8~~	~~None~~
~~Renter-occupied~~		
~~Single family~~	~~Standards 1-27~~	~~Standards 1-8~~
~~Mobile home~~	~~Standards 1-27~~	~~Standards 1-8~~
~~Apartment building, 2-4 dwelling units~~	~~Standards 1-27~~	~~Standards 1-8~~
~~Apartment building, 5 or more dwelling units~~	~~Standards 1-8~~	~~Standards 1-8~~

Type of building	Date of applicability: January 1, 1980 Standards	July 1, 1983 Standards	July 1, 1985 Standards
Single family	1-2	1-8	1, 2 or 13, and 3-12
Mobile home	1-2	1-8	1, 2 or 13, and 3-12
2-4 unit building	1-2	1-8	1, 2 or 13, and 3-12
5-11 unit building	1-2	1, 3, 5, 6, 7, 8, and 2 or 13; OR 1, 3, 15, and 2 or 13	1, 3, 5, 6, 7, 8, 10, 11, 12, and 2 or 13; OR 1, 3, 15, and 2 or 13
12 plus unit building	1-2	1, 3, 5, 6, 7, 8, and 2 or 13; OR 1, 3, 14, and 2 or 13	1, 3, 5, 6, 7, 8, 10, 11, 12, and 2 or 13; OR 1, 3, 14, and 2 or 13

B. Enumeration. The following ~~shall be~~ are the minimum energy efficiency standards for existing residences constructed prior to January 1, 1976, that are renter-occupied. ~~These~~ The following standards shall be used as indicated in Exhibit 6 MCAR § 2.2503 A.-1.:

1. Install weatherstripping between exterior operable window sash and frames and between exterior doors and frames. Weatherstripping is not required on storm doors or storm windows.

2. Caulk, gasket, or otherwise seal accessible exterior joints between foundation and rim joist; around window and door

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frames; between wall and roof; between wall panels; at penetrations for utility services through walls, floors, and roof; and at all other openings in the exterior envelope.

3. Install storm windows on all single glazed exterior window units enclosing conditioned space.

4. Install storm doors on all exterior door openings into conditioned spaces unless a single door, enclosed porch, vestibule, or other appurtenance provides a double door effect or provides an "R" value of ~~2~~ two or more.

5. Install positive shut-offs for all fireplaces or fireplace stoves, unless an existing damper provides a positive shut-off.

6. Install insulation in accessible attics or ceilings to achieve a minimum total "R" value of the insulation of R-19. If there is insufficient space for the installation of the recommended "R" value, then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space~~,~~ while providing for appropriate ventilation.

7. Install insulation in all accessible rim joist areas to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space.

8. Install insulation in or on accessible walls and floors enclosing conditioned spaces to achieve a minimum total "R" value of the insulation of R-11~~, when there is no insulation in a substantial portion of the exterior walls or floors over an unconditioned space. Accessible walls shall include above grade foundation walls of basements, cellars, or crawl spaces~~. If there is insufficient space for the installation of the recommended "R" value, then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space.

~~9. install insulation in accessible floors over unconditioned spaces and in rim joists to achieve a minimum total "R" value of the insulation of R-19. For slab on grade construction, insulation shall be installed to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space.~~

~~10. install ceiling insulation to achieve a minimum total "R" value of the insulation of R-44 when the existing "R" value of the ceiling insulation, excluding construction materials, is R-30 or less. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space, providing for appropriate ventilation.~~

~~11. install wall and foundation insulation to achieve a minimum total "R" value of the insulation of R-11, when there is no insulation in a substantial portion of the exterior walls or foundation walls. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space.~~

~~12. install insulation to achieve a minimum total "R" value of the insulation of R-5 on all water heaters when the remaining useful life of the heater appears to be three years or greater and space is available around the water heater to install insulation.~~

~~13. install insulation to achieve a minimum total "R" value of the insulation of R-11 on all accessible heating and cooling ducts in unconditioned spaces.~~

~~14. install insulation to achieve a minimum total "R" value of the insulation of R-5 on all accessible heating, cooling or hot water pipes in unconditioned spaces.~~

~~15. install a clock thermostat when the residence has a thermostat on the existing furnace or central air conditioner that is compatible with a clock thermostat.~~

~~16. install a replacement furnace or boiler with a unit of the same fuel type that has a minimum seasonal efficiency of 80 percent, when the existing unit is five years old or older and has a seasonal efficiency of less than 80 percent.~~

~~17. replace the oil burner of an existing furnace or boiler with an oil burner that uses less oil than the device it replaces.~~

~~18. install a vent damper on a gas fired boiler or furnace when the furnace combustion air is taken from a conditioned space.~~

~~19. install an electrical or mechanical ignition system on a gas-fired boiler or furnace, when the furnace or boiler is located in a conditioned space.~~

~~20. replace all or part of the existing central air conditioner that is five years old or older that has an energy efficiency rating of less than 8.2 with one of the same fuel type to obtain an energy efficiency rating of 8.2 or greater.~~

~~21. install load management devices when the electric utility serving the residence offers a residential rate which reflects any difference in the utility's cost of service between peak and off peak periods.~~

~~22. install heat reflective or heat absorbing window and door material when the affected rooms of the residence are air conditioned and the cooling degree days for the region exceed 700.~~

~~23. install a solar domestic hot water system when there is a south facing site that exists on or near the residence that has a prime solar fraction exceeding 0.6.~~

~~24. install a passive solar space heating and cooling system when there is a south facing site that exists on or near the residence that has a prime solar fraction exceeding 0.7.~~

~~25. install an active solar space heating system when there is a south facing site that exists on or near the residence that has a prime solar fraction exceeding 0.8.~~

~~26. install a wind energy system when the region's average annual wind speed is equal to or greater than ten miles per hour and there is sufficient unrestricted access to the wind.~~

~~27. install a solar swimming pool heater where a swimming pool is present and it is heated with electricity, gas or another fossil fuel, and the prime solar fraction exceeds 0.8.~~ Modify the existing heating system so that it operates at a minimum steady-state efficiency of 75 percent as demonstrated through a flue gas analysis provided for in 6 MCAR § 2.2504 B.4.

10. Install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R" value of the insulation R-38. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space while providing for appropriate ventilation.

11. Install insulation in all rim joist areas to achieve minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space.

12. Install insulation in or on all walls and floors that enclose conditioned spaces to achieve a minimum total "R" value of the insulation of R-11. Walls must include foundation walls of basements, cellars, or crawl spaces. Insulation installed on the exterior of the foundation wall must extend down to two feet below grade level. Insulation installed on the interior or in the foundation wall must be installed from the bottom of the rim joist to the foundation slab or floor. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space.

13. Caulk, gasket, or otherwise seal interior joints between foundation and rim joist, around window and door frames, between wall and ceiling, at joints between wall and trim boards, at cracks on interior surfaces of walls, and at utility penetrations.

14. Install energy conservation measures that have had or are predicted to have a cumulative energy consumption savings of 25 percent. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 25 percent must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13, and 3 of 6 MCAR § 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 25 percent cumulative energy consumption savings.

15. Install energy conservation measures that have had or are predicted to have a cumulative energy consumption savings of 30 percent. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 30 percent must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13, and 3 of 6 MCAR § 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 30 percent cumulative energy consumption savings.

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6 MCAR § 2.2504 Conducting the evaluation.

A. Disclosure reports. All evaluators shall use a disclosure report approved by the ~~agency~~ department. ~~One copy of the entire completed report shall be given to the seller of the property. Evaluators shall submit reports as required by the agency.~~ Copies of completed disclosure reports ~~shall~~ must be retained by evaluators for at least five years. The reports ~~shall~~ must be available for review by the ~~agency~~ department. Copies of audits conducted by registered professional engineers, architects, or other persons qualified by the department under 6 MCAR § 2.2503 B.14. and 15. must be submitted to the department within 14 days for review or approval.

B. ~~Recommendations. The evaluator shall determine which of the energy conserving practices should save energy in the residence, and in the written report the evaluator shall make a recommendation regarding each practice.~~

~~C.~~ General duties of evaluators, registered professional engineers, architects, and other approved qualified persons. Evaluators, registered professional engineers, architects, and other approved qualified persons shall estimate energy savings and installation costs of each applicable ~~program measure~~ standard using the calculation procedures in 6 MCAR § 2.2510. An applicable ~~program measure~~ standard is any ~~program measure~~ standard which can be installed in the residence to meet the minimum energy efficiency standards in 6 MCAR § 2.2503. Evaluators, registered professional engineers, architects, and other approved qualified persons shall:

1. Inspect and take actual measurements of the building shell, and inspect the space heating, space cooling, and water heating equipment~~;~~. The inspection must include all common areas and at a minimum the following number of units for the building being evaluated. The random selection of units to be included in the sample of units inspected must be done by the evaluator, registered professional engineer, architect, and other approved qualified person.

Size of building	Minimum number of units included in inspection sample
1-5 units	all units
5 plus units	5 units + 3 percent of total number of units in the building

2. Base economic calculations on local fuel prices, or on those prices provided by the ~~agency~~ department, as published in the *State Register* ~~each August 1 and February 1~~.

3. Base economic calculations for materials and installation of measures on prices provided by the ~~agency~~ department. Prices ~~shall~~ must be made available to ~~evaluators~~ interested persons by:

a. publication in the *State Register* by the ~~agency~~ department of the most recent contractors and suppliers price survey; or

b. direct mailing by the ~~agency~~ department of the most recent price survey to certified evaluators; or

c. if the owner contends that the prices provided by the department are not representative of actual costs that would be incurred by installing the measure to comply with the standards, the owner shall obtain at least three bids from bona fide contractors indicating the costs of installing that measure. The lowest bid must then be used in determining whether the standard is economically infeasible.

4. ~~base calculation procedures for active solar domestic hot water and space heating systems on those contained in the HUD Intermediate Minimum Property Standards Supplement, Solar Heating and Domestic Hot Water Systems 4930.2, 1977 Edition; and~~

~~5.~~ Base any cost and savings estimate for any applicable furnace efficiency modification to a gas or oil furnace or boiler on an evaluation of the ~~seasonal efficiency or the agency published default table, whichever is higher, of the furnace or boiler. Seasonal efficiency shall be calculated on an estimated peak (tuned up) steady-state efficiency corrected for cycling losses as follows:~~ steady-state efficiency of the heating system.

a. For oil furnaces or boilers, the steady state efficiency shall be derived by a flue gas analysis of the measured flue gas temperature and carbon dioxide content.

b. For gas furnaces or boilers, the steady state efficiency shall be derived from manufacturers' design data. If the manufacturer's design data ~~do not exist~~ are not available at the time of inspection, then a flue gas analysis, as described in a. ~~shall~~ must be performed.

~~6. The auditor shall calculate the energy index for the residence using the procedures in 6 MCAR § 2.2510.~~

~~D. Solar water and space heating systems. Every evaluator assessing solar domestic hot water and active solar space heating systems shall include:~~

~~1. an evaluation containing:~~

~~a. the square foot area of the solar collector;~~

~~b. the solar collector characteristics, including glazing materials and other solar collector materials;~~

~~c. any storage system needed, including the capacity of storage;~~

~~d. any freeze protection needed;~~

~~e. the estimated percent of the water heating load to be met by solar energy;~~

~~f. any physical connections needed with existing heating systems;~~

~~g. the annual maintenance costs;~~

~~h. any site preparation needed; or~~

~~2. fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~E. Passive solar space heating systems. Every evaluator assessing passive solar space heating systems shall include the following information:~~

~~1. an evaluation which includes:~~

~~a. a general description and an illustration of the system;~~

~~b. the estimated percent of the maximum heating requirements of the residence that could be met by the system;~~

~~c. the approximate dimensions of the system;~~

~~d. the method employed by the system to store heat, including the heat capacity for heat storage; or~~

~~2. fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~F. Wind energy devices. Every evaluator assessing wind energy devices shall include the following information:~~

~~1. an evaluation which includes:~~

~~a. installation cost estimates, based on the installation costs of a commercially available device with kilowatt ratings appropriate to the level of electricity consumed in the customer's residence;~~

~~b. the evaluator's estimate of the average wind speed at the residence based on data available at the nearest wind measurement station;~~

~~c. the specifications of the device under consideration;~~

~~d. estimates of energy cost savings, based on average yearly wind speeds and the specification of the selected wind device; or~~

~~2. fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~G. Disclosure. A disclosure using the following language or similar language shall be included in any report prepared pursuant to D., E., or F.:~~

~~"The energy cost savings estimates you receive are based on systems which may be somewhat different from the ones you purchase. Also, these estimates were not determined using actual conditions but by using simulated measurements. Therefore, the cost savings we have estimated may be different from the savings which actually occur."~~

6 MCAR § 2.2505 Presentation of evaluation and audit results.

~~Upon completion of the evaluation, the evaluator shall provide the following information in writing to the seller or the seller's agent~~ A copy of the disclosure report or audit must be provided to the owner or the owner's agent. The disclosure report or audit must, at a minimum, contain the following information

A. An estimate of the total cost for materials and labor of installation by a contractor ~~expressed in a range of dollars, within a range of plus or minus 20 percent,~~ of each applicable ~~program measure~~ standard addressed in the evaluation.

B. ~~an estimate of the total cost of installation by the owner expressed in a range of dollars, within a range of plus or minus 20 percent, of each applicable program measure addressed in the evaluation; however, the evaluator shall not provide an~~

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~~estimate to an owner of the cost of installation by the owner of replacement central air conditioners, wall insulation, furnace efficiency modifications, devices associated with load management techniques, or wind energy devices.~~

~~C.~~ An estimate of the savings in energy costs ~~expressed in a range of dollars, within a range of plus or minus 20 percent,~~ which would occur during the first year from the installation of each applicable ~~program measure~~ standard addressed by the evaluation.

~~D.~~ C. An estimate of the payback period, measured in years, from the energy cost savings of each of the applicable ~~program measures~~ standards installed individually.

~~E.~~ D. A disclosure using the following language or similar language: "The procedures used to make these estimates are consistent with the ~~Department of Energy, Planning, and Development~~ department's criteria for ~~residential~~ energy ~~audits~~ evaluations. However, the actual installation costs you incur and energy cost savings you realize from installing these ~~measures~~ standards may be somewhat different from the estimates contained in this ~~audit report~~ disclosure report or audit. Although the estimates are based on measurements of your ~~house~~ building they are also based on assumptions which may not be appropriate for your ~~household~~ building."

~~F. sample calculations of the effect of the federal and state energy tax incentives on the cost to the owner of installing one applicable energy conservation program measure and one applicable renewable resource program measure.~~

~~G. if the evaluation is of rental property, a separate list of those improvements necessary to bring the residence into compliance with Minnesota Statutes, section 116H.129, subdivision 3.~~

E. A listing of the units of the building that were actually inspected and the date of the inspection, as described in 6 MCAR § 2.2504 B.1.b.

F. The name, address, and telephone number of the person who conducts the inspection and who completed the disclosure report or audit.

6 MCAR § 2.2506 Prohibitions and exemption.

A. ~~Recommendations and endorsements~~ Prohibitions. The evaluator, registered professional engineer, architect, or other approved qualified person shall:

1. not recommend ~~or discuss~~ any supplier, or contractor ~~or lender~~ to any owner. ~~The evaluator shall;~~

2. not endorse the use of specific brand names of materials or products, persons, firms, or contractors which may be used to meet any specific standard. ~~The evaluator shall;~~

3. not make any statements relating to the standards which may be interpreted as an endorsement of any specific material or product.

~~B. Exclusion of measures. The evaluator shall:~~

4. not exclude any applicable ~~program measures~~ standards in the presentation of the audit to the owner.

~~C. Costs of certain products. The evaluator shall not include in the written evaluation costs or energy cost savings of installing any product which is not defined as a program measure.~~

~~D. Required disclosure. The evaluator shall:~~

5. provide the owner with a written statement of any interest which ~~the evaluator~~ he or she or ~~the evaluator's~~ his or her employer has, directly or indirectly, in the sale or installation of any ~~program~~ energy conservation measure~~, or in the sale of the residence to be evaluated.~~; and

6. not conduct an evaluation of a building in which he or she has an ownership interest or is employed (other than to conduct the evaluation) by any person having an ownership interest in the building.

B. Exemption. If the building is a low rent housing project owned by a public housing agency as defined in Minnesota Statutes, section 462.421, subdivision 12, the energy audit or disclosure report provided for at 6 MCAR § 2.2504 may be provided by an officer, or employee of the agency, if the audit is conducted in accordance with Code of Federal Regulations, title 24, sections 865.301-865.310, if the procedures prescribed in 6 MCAR § 2.2504 are followed, and if the audit includes the standards provided in 6 MCAR § 2.2503. Persons conducting these audits are exempted from the certification requirements of 6 MCAR § 2.2507. However, unless the officer, or employee of the agency, meets the requirements of 6 MCAR § 2.2503 B.14. or 15., they shall not conduct an energy audit for compliance with 6 MCAR § 2.2503 B.14. or 15.

6 MCAR § 2.2507 Qualification procedures for evaluators.

A. Prohibition of discrimination. No person shall be denied the right to become an evaluator on the basis of race, religion, nationality, creed, sex, age or sexual preference.

B. Training.

1. Except as provided in 2. no person ~~shall be~~ is eligible for certification ~~pursuant to~~ under C. unless he or she has first participated in a training course which has been approved by the ~~agency~~ department and which covers the subject matter tested in the evaluator certification examination.

2. The following persons ~~shall be permitted to~~ may take an appropriate ~~agency~~ department approved orientation session, in lieu of the requirements of 1.:

a. any HED evaluator certified before July 1, 1981;

b. any person successfully completing an approved 30 hour training course for the HED program prior to July 1, 1981;

c. registered architects and registered engineers with work experience in energy auditing or the design of institutional, commercial, residential or industrial buildings;

d. any person who has six months' energy auditing experience and who has completed 25 energy audits for a nonprofit organization;

e. members of the American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, the Independent Fee Appraisers, or other associations determined by the ~~agency~~ department to have applicable training requirements for their members;

f. certified evaluators for Truth in Housing Programs;

g. building officials certified by the Building Codes Division of the Minnesota Department of Adminstration.

C. Certification. Only those persons who satisfy all of the following conditions shall be certified:

1. All persons ~~must~~ shall take and pass a certification examination conducted by the ~~agency~~ department. The certification examination ~~shall~~ must test for the following qualifications:

a. a general understanding of the three types of heat transfer and the effects of temperature and humidity on heat transfer;

b. a general understanding of residential construction terminology and components;

c. a general knowledge of the operation of the heating and cooling systems used in residential buildings, including the need and provision for combustion air;

d. a general knowledge of the different types of each applicable program measure, of the advantages and disadvantages and applications of each, and of the DOE installation standards;

e. the capability to conduct the ~~HED~~ energy evaluation including: a working knowledge of energy conserving practices, the ability to determine the applicability of each of the program measures, and proficiency in the auditing procedures for each applicable program measure established in 6 MCAR § 2.2504;

f. a working ability to calculate the steady state efficiency of furnaces or boilers; and

g. ~~an understanding of the nature of solar energy and its residential applications including: insolation, shading, heat capture and transport, and heat transfer for hot water;~~

~~h. an understanding of the nature of wind energy and its residential applications including: wind availability, effects of obstruction, wind capture, power generation, and interfaces with residential and utility power lines; and~~

~~i.~~ a working knowledge of building and fire codes related to the installation and safety of wood burning appliances.

2. All persons shall submit a $50 certification fee to the ~~Energy Division, Department of Energy, Planning, and Development~~ department. However, no certification fee ~~shall~~ may be charged for certified municipal building officials who are directly employed by a municipality as defined in Minnesota Statutes, section 16.84, subdivision 3,; or for employees of public housing agencies as defined in Minnesota Statutes, section 462.421, subdivision 12; or for employees of private nonprofit community-based organizations, when the evaluations are performed as part of the employee's normal job responsibilities. No certification fee ~~shall~~ may be charged for those persons upgrading their certification who were certified prior to July 1, 1981.

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3. All persons shall provide evidence satisfactory to the ~~agency~~ department of liability and of errors and omissions insurance. The minimum value of protection in each category ~~shall~~ must be $50,000, and the insurance ~~shall~~ must be of the "occurrence" variety where coverage is based on the date when the evaluation is made. A "claims made" policy with a reporting endorsement of at least five years is also acceptable. Coverage ~~shall~~ is not ~~be~~ required for evaluators who are employed by municipal governments or public housing agencies and who perform evaluations as part of their normal job responsibilities. Certified evaluators who have provided a bond to the state as required by the Building Code Division of the Department of Administration ~~shall~~ are not ~~be~~ required to obtain the protection required by this paragraph until that bond expires. ~~Bonds shall not be renewed for the purposes of the HED program.~~ In addition, each insurance policy ~~shall~~ must:

a. name the state of Minnesota as a coinsured party, and

b. be written by a corporate insurer licensed to do business in the state of Minnesota, or licensed in accordance with Minnesota Statutes, sections 60A.195 to 60A.209.

D. Certification examinations. Examinations ~~shall~~ must be conducted by the ~~agency~~ department and offered at the following times:

1. within two days after the completion of each state-sponsored training course or orientation session, or

2. once a month, until June 1982, with a minimum of two examinations per year afterward.

6 MCAR § 2.2508 Recertification of evaluators.

A. Term of certification. Certification ~~shall be~~ is valid for one year.

B. Recertification procedure. Each year, each evaluator shall be recertified. The following procedures ~~shall~~ must be completed in order for an evaluator to be recertified~~.~~:

1. Prior to the date of certificate expiration, the evaluator shall attend a recertification course, as required by the ~~agency~~ department. Successful completion of this course shall recertify the evaluator for the next year. Evaluators not completing the recertification course prior to the expiration date of their certification shall be recertified by completing the recertification course and successfully retaking the certification examination.

2. The recertification course requirements for evaluators ~~shall~~ must be eliminated for any particular year if the ~~agency~~ department determines that no changes were made in the ~~HED~~ program that year. Certification ~~shall~~ must then be automatically renewed.

3. Persons requesting recertification shall pay a $25 fee to the energy division of the department ~~of Energy, Planning, and Development~~.

4. This recertification ~~shall~~ must occur annually, for the life of the program.

C. Personnel from other states. Any person who is certified to conduct residential conservation service audits in another state ~~shall~~ is not ~~be~~ required to take the training course established in 6 MCAR § 2.2507 B.1., but ~~shall be~~ is required to pass the evaluator certification examination.

6 MCAR § 2.2509 Decertification of evaluators.

A.-D. [Unchanged.]

E. Wrongful acts. Certification ~~shall~~ must be revoked when reasonable evidence indicates an undisclosed conflict of interest, a violation of these rules, unethical practices, or negligent performance of duties as an evaluator. In any of these instances, the ~~agency~~ department will, if requested, provide a review to determine whether the revocation was proper. ~~Such a~~ This review ~~shall~~ must consist of the following procedures:

1. The evaluator shall make a written request for a review to the ~~agency~~ department.

2. The ~~manager~~ director of the office of conservation ~~division~~ shall determine a time to review the request.

~~a.~~ The evaluator may present testimony in person or in writing.

~~b.~~ The evaluator may present witnesses on the evaluator's behalf.

~~c. Agency~~ Department staff may present written or oral testimony, as well as witnesses.

3. The ~~manager~~ director of the office of conservation ~~division~~ shall make a judgment based on the information presented in the review hearing. That judgment shall be presented in writing to the evaluator within three working days of the review.

F. Failure to report. Certification ~~shall~~ must be revoked if the reports required in 6 MCAR § 2.2504 A. are not submitted to the ~~agency~~ department as ~~requested~~ required.

6 MCAR § 2.2510 Calculation procedures.

The following procedures ~~shall~~ must be the basis for calculating energy savings for ~~program measures~~ each standard.

A. Energy conserving measures.

1.-3. [Unchanged.]

4. Furnace efficiency modifications.

a. Replacement furnaces or boilers.

Equation #3. ~~$\Delta E = E_h \frac{1 - N_o}{N_1}$~~

$$\Delta E = E_o \frac{1 - N_o}{N_1}$$

$$DE = E_h \left(1 - \frac{No}{N_1}\right.$$

b.-d. [Unchanged.]

5.-21. [Unchanged.]

B. [Unchanged.]

Repealer. Rules of the Department of Administration, 2 MCAR §§ 1.16220-1.16230 are repealed.

Board of Nursing

Proposed New Rules Identified as 7 MCAR §§ 5.4000-5.4006 Establishing Criteria for and A Listing of Advanced Nursing Programs for Certified Registered Nurse Anesthetists and Certified Nurse Midwives

Notice of Intent to Adopt Rules without a Public Hearing

NOTICE IS HEREBY GIVEN that the Minnesota Board of Nursing (hereinafter "Board") proposes to promulgate 7 MCAR §§ 5.4000-5.4006 of the Rules of the Minnesota Board of Nursing relating to criteria for programs of advanced study for Certified Registered Nurse Anesthetists and Certified Nurse Midwives and listing current programs which fulfill those criteria. A copy of the proposed rules is attached.

The Board has determined that these proposed rules will be noncontroversial in nature. Therefore, the Board has elected to follow the procedures set forth in Minn. Stat. §§ 14.21 through 14.28 (1982) which provide for an expedited process for the adoption of noncontroversial administrative rule changes without the holding of a public hearing. The rules are proposed to comply with Minn. Laws 1983, ch. 221, § 2, Subd. 3a.

The public is hereby advised that:

1. There is a period of 30 days in which to submit comment on the proposed rule;

2. No public hearing will be held on this matter unless seven or more persons make a written request for hearing within the 30 day comment period;

3. All comments and any written requests for a public hearing shall be submitted to Joyce M. Schowalter, Executive Secretary, Minnesota Board of Nursing, 717 Delaware Street Southeast, Minneapolis, Minnesota 55414;

4. The proposed rules may be modified if modifications are supported by the data and views submitted, and do not result in a substantial change in the proposed language;

5. Authority to adopt these rules is contained in Minn. Laws 1983, Ch. 221, § 2, Subd. 3a. Additionally, a Statement of Need

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RECEIVED
FEB 1 1984
ADMINISTRATIVE HEARINGS

Department of Energy and Economic Development
Energy Division

Outside Opinion Sought Regarding Proposed Amendments to Rules Governing the Home Energy Disclosure Program and Mandatory Energy Efficiency Standards for Residential Rental Units

Notice is hereby given that the State of Minnesota is seeking information or opinion from sources outside the Department in preparing to amend rules governing energy standards for rental property and the Home Energy Disclosure Program. The promulgation of these rules is authorized by Minn. Stat. 116J.10.

The Department requests information and comments concerning the subject matter of these rules. Interested or affected parties may submit comments or statements of information orally or in writing. Comments should be directed to:

Greg Hubinger
Manager of Residential Programs
Energy Division
Department of Energy and Economic Development
150 East Kellogg Blvd.
St. Paul, MN 55101
(612) 297-2117

All statements of information and comments shall be accepted during this rule making procedure. Any written material received by the Department shall become part of the record in the event that the rules are promulgated.

Mark B. Dayton, Commissioner
Department of Energy and Economic Development

Department of Finance
Financial Management and Capital Budget
Debt Management

Notice of Maximum Interest Rate for Municipal Obligations, December, 1983

Pursuant to Laws of Minnesota 1982, Chapter 523, Commissioner of Finance, Gordon M. Donhowe, announced that the maximum interest rate for municipal obligations in the month of December will be eleven (11) percent per annum. Obligations which are payable wholly or in part from the proceeds of special assessments or which are not secured by general obligations of the municipality may bear an interest rate of up to twelve (12) percent per annum.

For further information, contact:

Peter Sausen, Director
Debt Management
Department of Finance
State of Minnesota
309 Administration bldg.
50 Sherburne Ave.
St. Paul, MN 55155
(612) 296-8372

Office of the Secretary of State

Notice of Vacancies in Multi-Member State Agencies

Notice is hereby given to the public that vacancies have occurred in multi-member state agencies, pursuant to Minn. Stat. 15.0597, subd. 4. Application forms may be obtained at the Office of the Secretary of State, 180 State Office Building, St. Paul 55155-1299; (612) 296-2805. Application deadline is January 3, 1984.

MINNESOTA DEPARTMENT OF ENERGY
AND ECONOMIC DEVELOPMENT

980 AMERICAN CENTER BUILDING
150 EAST KELLOGG BOULEVARD
ST. PAUL, MINNESOTA 55101
(612) 296-6424

OFFICE OF THE COMMISSIONER

RECEIVED
JAN 12 1984
ADMINISTRATIVE HEARINGS

In the matter of the proposed amendments of Rules of the Minnesota Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units.

ORDER FOR HEARING

It is ordered this 9th day of January, 1984, that a public hearing be held on the proposed amendments of the rules captioned above in Room 715 of the American Center Building on February 28, 1984, commencing at 9:15 a.m. and continuing until all representatives of associations and other interested groups have had an opportunity to be heard.

It is further ordered that notice of said hearing be given to all persons who have registered their names with the Minnesota Department of Energy and Economic Development for that purpose and be published in the State Register.

State of Minnesota

Mark B. Dayton
Commissioner
Department of Energy and Economic Development

MINNESOTA DEPARTMENT OF ENERGY
AND ECONOMIC DEVELOPMENT

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150 EAST KELLOGG BOULEVARD
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(612) 296-6424

OFFICE OF THE COMMISSIONER

RECEIVED
JAN 25 1984
ADMINISTRATIVE
HEARINGS

In the Matter of the Amendment of
Rules of the State Department of
Energy and Economic Development
Governing the Home Energy Disclosure
Program and the Minimum Energy Efficiency
Standards for Residential Rental Units

NOTICE OF HEARING

Notice is hereby given that a public hearing will be held pursuant to Minnesota Statutes, 1982, section 14.14. subd. 1. in the above-entitled matter in the American Center Building, Room 715, 150 E. Kellogg Blvd., St. Paul, MN on February 28, 1984 commencing at 9:15 a.m. and continuing until all representatives of associations or other interested groups or persons have had an opportunity to be heard concerning adoption of the rules captioned above. The public hearing will continue on February 29 commencing at 10:00 a.m. only if it is not completed on February 28. Persons interested in presenting testimony should appear on February 28 as there is no assurance that the public hearing will continue on February 29. The hearing will be conducted according to Minn Stat § 14.13 to 14.20 and the rules of the Office of Administrative Hearings, 9 MCAR § 2.100-2.113.

At the hearing, statements may be made orally and written material may be submitted and recorded in the hearing record. In addition, written material may be submitted to Hearing Examiner Allan Klein, Office of Administrative Hearings, 400 Summit Bank Building, 310 South 4th Avenue, Minneapolis, Minnesota 55415 -- telephone (612) 341-7609, either before the hearing or within five working days after the close of the hearing unless the hearing examiner orders the record to remain open for a longer period of time, not to exceed 20 calendar days. The proposed rules are subject to change as a result of the rules hearing process. The Division therefore strongly urges those who may be affected in any manner by the substance of the proposed rules to participate in the rules hearing process.

The Commissioner proposes to amend existing rules relating to the following matters:

1. Deletions of references to the Home Energy Disclosure Program which was eliminated by the 1983 legislature;
2. Amendments to the Minimum Standards for Energy Efficiency for Residential Rental Units that include:
   a) a requirement by July, 1985 to insulate attics to R-38, exterior walls to R-11 and foundations to R-11, including previously defined "inaccessible" attics, walls, foundations, and rim joists.
   b) a performance option for buildings with 5 or more units as an alternative to the other prescriptive standards.
3. Expand the definition of "economic feasibility" (used to determine the applicability of each standard) to include costs to repair the building to comply with the standards;
4. Adding a minimum steady state efficiency for heating systems for smaller buildings;

5. Dropping storm doors as a standard for larger buildings.

These standards apply to all residential buildings which were built before 1976, and which are renter occupied between the months of November to April. These standards do not apply to buildings such as hospitals, schools, dormitories, nursing homes, schools, hotels, motels, or correctional institutions.

Because of the substantial nature of the changes, interested persons are urged to read the attached proposed rules. Copies of the proposed rules are now available and one free copy may be obtained by writing to the Minnesota Department of Energy and Economic Development, Attention: Greg Hubinger, 980 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101 -- (612) 297-2117. Copies will also be available at the door on the date of the hearing.

In accordance with 1983 Session laws, Chapter 188, which amends Minn. Stat. 14.115, the Department provides notice that these rule amendments may have an impact on small businesses. Minn. Stat. 14.115 subd. 1 define a small business as one that is independently owned and operated, is not dominant in its field, employs fewer than 50 full-time employees or has gross annual sales of less than $4 million. A portion of the public hearing announced today will concern the impact of these rules on small businesses.

The Department's authority to amend these rules is contained in Minnesota Statutes, 1982, sections 116J.09, 116J.10, and 116J.27.

The Department first adopted the above-captioned rules on December 13, 1982. The Department proposed amendments to rules on December 27, 1982 which were later withdrawn on October 31, 1983. Notice of Intent to Solicit Outside Opinions for this rulemaking was published on December 12, 1983.

Minnesota Statutes Ch. 10A requires each lobbyist to register with the Ethical Practices Board within five days after he or she commences lobbying. A lobbyist is defined in Minn. Stat. S 10A.01. Subd. 11 (1979 Supp.) as an individual:

(a) Engaged for pay or other consideration or authorized by another individual or association to spend money, who spends more than five hours in any month or more than $250, not including his own travel expenses and membership dues, in any year, for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials; or

(b) Who spends more than $250, not including his own traveling expenses and membership dues, in any year for the purpose of attempting to influence legislative or administrative action by communicating or urging others to communicate with public officials.

The statute provides certain exceptions. Questions should be directed to the Ethical Practices Board, 41 State Office Building, St. Paul, MN 55155, telephone (612) 296-5615.

Notice: Any person may request notification of the date on which the Hearing Examiner's Report will be available, after which date the department may not take any final action on the rules for a period of five working days. Any person may request notification of the date of which the hearing record has been submitted(or resubmitted)

to the Attorney General by the department. If you desire to be so notified, you may so indicate at the hearing. After the hearing, you may request notification by sending a written request to the Hearing Examiner (in the case of the Hearing Examiner's Report) or to the department (in the case of the department's submission or resubmission to the Attorney General).

Notice is hereby given that 25 days prior to the hearing, a Statement of Need and Reasonableness will be available for review at the department and at the Office of Administrative Hearings. This Statement of Need and Reasonableness will include a summary of all the evidence and arguments which the department anticipates presenting at the hearing justifying both the need for and reasonableness of the proposed rule or rules. Copies of the Statement of Need and Reasonableness may be obtained from the Office of Administrative hearings at a minimum charge.

Questions about the substance of these rules may be directed to Greg Hubinger, Manager of Residential Programs, Energy Division, 150 E. Kellogg Boulevard, St. Paul, MN 55101, (612) 297-2117. Questions about procedure may be directed to Hearing Examiner Allan Klein, Office of Administrative Hearings, 400 Summit Bank Building, 310 South 4th Avenue, Minneapolis, MN 55415, (612) 341-7609.

per MBD

Mark B. Dayton
Commissioner
Department of Energy and Economic Development

DEED-84-002-AK

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT

In the Matter of the Amendment of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units.

REPORT OF THE HEARING EXAMINER

The above-entitled matter came on for hearing before Allan W. Klein, Hearing Examiner, on February 28, 1984, in St. Paul.

This Report is part of a controversial rules hearing proceeding held pursuant to Minn. Stat. §§ 14.13 through 14.20 to determine whether the Agency has fulfilled all relevant substantive and procedural requirements, whether the proposed rules are needed and reasonable, and whether or not the rules, as modified, are substantially different from those originally proposed.

Members of the Department panel appearing at the hearing included: Tony Perpich, John Armstrong, Greg Hubinger, and Mary Faegerson. Special Assistant Attorney General Thomas Barrett appeared on behalf of the Department of Energy and Economic Development (hereinafter the "Department" or "Agency").

The Department must wait at least five working days before taking any final action on the rules; during that period, this Report must be made available to all interested persons upon request.

Pursuant to the provisions of Minn. Stat. § 14.15, subd. 3 (1982), as amended by Minn. Laws 1983, Ch. 210, § 6, this Report has been submitted to the Chief Hearing Examiner for his approval. If the Chief Hearing Examiner approves the findings of this Report, he will advise the Department of actions which will correct the defects and the Department may not adopt the rule until the Chief Hearing Examiner determines that the defects have been corrected. However, in those instances where the Chief Hearing Examiner identifies defects which relate to the issues of need or reasonableness, the Department may either adopt the Hearing Examiner's recommendations to cure the defects or, in the alternative, if the Department does not elect to adopt the recommendations, it may submit the proposed rule to the Legislative Commission to Review Administrative Rules for the Commission's advice and comment. Provisions relating to this submission to the Commission may be found in Minn. Stat. § 14.15, subd. 4 (1982), as amended by Minn. Laws 1983, Ch. 210, § 7.

If the Department elects to adopt the recommendations of the Hearing Examiner and makes no other changes and the Chief Hearing Examiner determines that the defects have been corrected, then the Department shall submit the rule to the Attorney General for review of form and legality. If the Department makes changes in the rule other than those recommended by the Hearing Examiner, then it shall submit the rule, with the complete record, to the Chief Hearing Examiner for a review of the changes before adopting it and submitting it to the Attorney General. Procedures relating to this subsequent review by the Chief Hearing Examiner are set forth in Minn. Stat. § 14.16 (1982).

When the Department submits the rule to the Attorney General, it shall give notice on the day of submission to all persons who requested that they be informed of the submission to the Attorney General.

Based upon all the testimony, exhibits and written comments, the Hearing Examiner makes the following:

Procedural Requirements

1. On January 3, with a revision on January 12 , the Department filed the following documents with the Chief Hearing Examiner:

(a) A copy of the proposed rules.
(b) The Order for Hearing.
(c) The Notice of Hearing proposed to be issued.
(d) A Statement of the number of persons expected to attend the hearing and estimated length of the Agency's presentation.

2. On January 23, 1984, a Notice of Hearing and a copy of the proposed rules were published at 8 State Register 1717.

3. On January 23, 1984, the Department mailed the Notice of Hearing to all persons and associations who had registered their names with the Department for the purpose of receiving such notice.

4. On February 1, 1984, the Department filed the following documents with the Hearing Examiner:

(a) The Notice of Hearing as mailed.
(b) The Agency's certification that its mailing list was accurate and complete.
(c) The Affidavit of Mailing the Notice to all persons on the Agency's list.
(d) The Statement of Need and Reasonableness.
(e) The names of personnel who will represent the Agency at the hearing together with the names of any other witnesses solicited by the Agency to appear on its behalf.
(f) A copy of the State Register containing the proposed rules.
(g) All materials received following a Notice of Intent to Solicit Outside Opinion published at 8 State Register 1405, dated Monday, December 12, 1983.

The documents were available for inspection at the Office of Administrative Hearings from the date of filing to the date of the hearing.

5. The record remained open through March 9, 1984, for the receipt of written comments and statements, the period having been extended by order of the Hearing Examiner to 10 calendar days following the hearing.

Nature and History of Proposed Rules

6. These amendments deal with two separate programs: (1) an energy audit disclosure at the time of sale for residences, and (2) minimum mandatory energy efficiency standards for residential rental units.

7. In 1977, the legislature directed the Department of Administration to develop standards for existing rental housing.

8. In 1979, the Department of Administration did adopt rules.

9. In 1981, the program was transferred to the Department of Energy and Economic Development.

10. In 1982, the Department adopted temporary rules, and then permanent rules, both of which were generally consistent with the earlier rules of the Department of Administration. The permanent rules were adopted at 7 State Register 922, dated December 13, 1982.

11. In December of 1982, the Department also published Notice of Intent to Amend Rules Without a Public Hearing at 7 State Register 984. Those amendments dealt with the rental standards component of the program. Significant interest and numerous comments were received by the Department, and the Department determined to take no action to adopt those amendments as published. On October 31, 1983, the Department withdrew the proposals. 8 State Register 994.

12. During the 1983 legislative session, the legislature abolished the Home Energy Disclosure Program, and made certain changes to the Department's responsibilities. Laws 1983 C. 301, §§ 124-133 and § 235. Therefore, the Department determined to delete all references to the Home Energy Disclosure Program in these rules. The rules (if amended as proposed) will thus relate only to the mandatory energy standards for rental housing. They are, however, being amended herein to adopt a number of changes in the rental standards.

Statutory Authority

13. Minn. Stat. § 116J.27, subd. 1 (1982) provides, in part, as follows:

> The commissioner shall adopt rules containing minimum energy efficiency standards for existing residences. The standards shall be appropriate for evaluation of the energy efficiency of each major type of residential housing

including, but not limited to, one to four family dwellings, apartment buildings, manufactured homes, condominium buildings, and type of ownership. The standards shall be economically feasible in that the resultant savings in energy procurement costs, based on current and projected average residental energy costs in Minnesota . . . will exceed the cost of the energy conserving requirements amortized over the ten-year period subsequent to the incurring of the cost. . . .

14. Subdivision 3 of that statute provides that effective July 1, 1983, all residences which are renter-occupied during all or a portion of the months of November through April shall be in compliance with all applicable energy efficiency standards.

15. In addition, Minn. Stat. § 116J.10(a) does empower the Commissioner to "adopt rules . . . as necessary to carry out the purposes of §§ 116J.05 to 116J.30 . . . "

16. In Minn. Stat. §§ 116J.09(h), the Commissioner is charged with designing and implementing a state program for the conservation of energy, including but not limited to, general commercial, industrial and residential areas.

17. The Examiner finds that Minn. Stat. § 116J.27 and 116J.10 do provide statutory authority to adopt these proposed amendments.

Rule-by-Rule Analysis

18. Rule 2501 contains a statement of authority and purpose. The Examiner notes, however, that paragraph A. contains outdated references to statutes. These references should be corrected prior to the adoption of the rule. The Examiner believes that the correct insertions are 116J.09(h) and 116J.10(a). Correcting the erroneous statutory citations does not effect the substance of the rule, and the Examiner finds that the rule, as corrected, is both needed and reasonable. corrected p. 1

19. Rule 2502 contains definitions.

20. Paragraph B. of the rule defines the word "accessible". The definition used to include (under existing rules) two paragraphs: Paragraph 1. having to do with inspections, and Paragraph 2. having to do with actual standards.

21. In this proceeding, the agency is proposing to delete Paragraph 1., leaving only what used to be labeled Paragraph 2.. That paragraph is not proposed to be changed.

22. The Crow Wing County COACT recommended that the language of the remaining paragraph be changed. COACT wanted the concept of "accessibility" to include areas "that can be insulated with any moderate technology available". They further recommended that in order to avoid hardship resulting from this change, there should be a 90 day delay before implementation.

23. In order to understand the impact of this proposal, it is necessary to understand the structure of one of the operative rules. Rule 2503 provides for a phased-in implementation schedule for various types of energy conservation measures. The rule also provides that different measures shall apply to different types of buildings. A table setting forth the applicable dates, types of buildings, and required measures is contained in Exhibit 6 MCAR § 2.2503 A.1. This table was corrected by a handout which the Department distributed at the hearing, but for purposes of dealing with the COACT comment, the correction is not material.

According to the table, a large apartment building (defined as 12 or more units) must, by January 1, 1983, have installed insulation in accessible attics or ceilings to achieve a minimum "R" value of R-19, with certain exceptions. As an alternative, the apartment building may also comply with a "performance standard" which is not relevant to this question.

The table goes on to provide that by July 1, 1985, the same apartment building must install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R" value of R-38, with certain exceptions. As an alternative, the "performance standard" may be met. In the 1985 standard, there is no concept of "accessible", so the Crow Wing comment would have no applicability. By deleting the limitation of accessibility for the 1985 standard, the Department has achieved the same goal sought by the Crow Wing comment.

24. The Examiner is not sure whether or not the Crow Wing group recognized the difference between the 1983 and 1985 standards, particularly the fact that "accessibility" will not be applied in 1985. When the agency was explaining its proposed changes (before the Crow Wing group arrived at the hearing), it explained that eliminating the concept of "accessibility" from certain of the rules applicable in 1985 was a major change from the existing rules. The Crow Wing group and the agency are both aiming at the same problem, but if the definition contained in Paragraph 2502 B. were changed as recommended by the group, that would have the practical effect of pushing forward the change recommended by the agency from 1985 to the effective date of these rules.

25. The Examiner finds that the agency's proposed rule may stand without change, for a number of reasons. First of all, since it is not being changed from the existing rule, it is not "fair game" for comment in this proceeding. Secondly, even if one assumes that the Crow Wing County group knew very well what it was doing by proposing the change, the Examiner finds that the agency's proposal is reasonable because it allows a much greater time for persons to perform the work (approximately 15 months) than would Crow Wing COACT's proposal (three months). Also, the Examiner would have to find the

adoption of the Crow Wing proposal to be a "substantial change" because it would affect not only attic and ceiling insulation, but also rim joist insulation, wall insulation and floor insulation. Obviously, these are substantial matters, so that the amount of time available to complete them is crucial.

26. Rule 2502 H. defines the term "energy conservation measure" to mean:

> Energy-saving physical improvements to the building that are primarily designed to reduce energy consumption including, but not limited to, modifications to the building structure, the heating, ventilating, and air conditioning systems, and the lighting.

27. The North Star Chapter of the Sierra Club pointed out that the above-quoted definition replaces a long list of specific measures which appear in the existing rule. While some of those measures are retained, others are deleted entirely. The thrust of the Club's comment was that the above-quoted definition, and the items which are retained, give a misleading impression that the state does not acknowledge renewable energy solutions, such as solar, to be acceptable energy solutions. The comment stated that the best way to avoid this implication would be to develop an extensive appendix to the definition, listing specific technologies, both traditional and renewable. In the absence of such an appendix, however, the comment urged that the rules should incorporate an acknowledgement that renewable energy solutions, such as solar, are recognized as acceptable energy solutions.

28. The agency's Statement of Need and Reasonableness (hereinafter "SONAR") has noted that deletions of references to renewable resource measures throughout the rules are a result of the elimination of the Home Energy Disclosure Program noted above.

29. The Examiner finds that the agency has justified its deletions as needed and reasonable. The new definition, quoted earlier, is very broad: it does not exclude renewable resource improvements. While they are not given the emphasis that they were given under the rules applicable to the Home Energy Disclosure Program, they are in no way excluded from use in the residential rental unit program. Moreover, one of the most important concepts of these rules is the allowance of a "performance standard" to be used in lieu of specific measures. As will be discussed more fully in connection with that concept, a number of building owners testified that they already comply with the performance standard because they have already done a substantial amount of work on their buildings, including some who specifically cited solar, and other renewable resource measures. In other words, if a building owner chooses to install a renewable resource measure (and take advantage of attendant tax benefits, if applicable), it can be used to satisfy these rules on a par with more traditional insulation measures. Should the Department agree with the comment that some explicit recognition is appropriate, it may insert such recognition either in this paragraph or in another appropriate paragraph, to clarify that renewable resource measures may be used if the owner chooses. not inserted

30. Rule 2503 sets forth minimum energy efficiency standards, and constitutes the operative "guts" of the rules. This is the rule that contains the table of specific standards discussed earlier. Both at the hearing, and in its post-hearing comments, the Department proposed changes to the rule. Each of these will be examined in some detail below.

31. At the hearing, the Department noted that the table contains standards for "mobile homes". These standards are exactly the same as those for single-family homes and small (2-4 unit) buildings. The Department noted that the governing statute, Minn. Stat. § 116J.27, subd. 2(a) defines the term "residence", for purposes of that section, to include a manufactured home, but makes no mention of the term "mobile home". The agency thus proposed to change the term "mobile home" to "manufactured home" in the definition of "residence" in the rules (Rule 2502 U.) and also, to be consistant, it proposed to change "mobile home" to "manufactured home" in the table as well. so changed P.S.

The "manufactured home" statute cited in both the rules and the agency's statute separates the concepts of "manufactured home" and "house trailer". Minn. Stat. § 168.011, subd. 8 contains two separate definitions. A "manufactured home" is a trailer or semi-trailer which is designed, constructed, and equipped for use as a human dwelling place or living quarters, but it does not include for a "house trailer". A "house trailer" is defined in terms of maximum width and maximum length, but otherwise, the definition is the same as that for "manufactured home". The Examiner interprets these definitions to mean that a small unit is a "house trailer" but if its size exceeds the statutory limitations, it becomes a "manufactured home".

32. It is appropriate for the agency to make the change in the table proposed at the hearing. The statute which is the most relevant source of statutory authority for these rules explicitly states that a manufactured home, as defined in § 168.011, subd. 8, shall be considered a residence for purposes of this section. The term "mobile home", which used to appear in the definitions contained in the rules, as well as the table, may or may not be, a "manufactured home". It is clear that the legislature intended these rules to cover "manufactured homes" as defined. Therefore, the Examiner finds that the proposed change is both needed and reasonable, and does not constitute a substantial change. The rules as published did make the change in the definition section, and the agency seeks to modify the table to make it consistent. In light of Minn. Stat. § 116J.27, subd. 2(a), there should be no surprise at this change.

33. Another change proposed by the Department at the hearing was to eliminate certain standards which were indicated to be required by July 1, 1985. This change is the result of a number of comments submitted to the the agency, which are illustrated by a comment from the North Star Chapter of Sierra Club. That comment pointed out that under the table, as published in the State Register, there was confusion and apparent conflict between Paragraphs B.6. and B.10. of Rule 2503 because the former requires attic and ceiling insulation to R-19, while the latter requires it to R-38. The Sierra Club thought this was a proofreading oversight. However, the agency explained that a number of persons had pointed out that many of the 1985 standards set

forth in the table appeared to be contradictory. To pharaphrase the agency (for simplicity's sake), the table, as published, appeared to require a building owner to comply with both the requirement in Paragraph B.6. that accessible attics or ceilings be insulated to R-19, as well as the requirement in B.10. that all ceilings or attics (regardless of accessiblity) be insulated to R-38. At the hearing, the agency proposed to delete the reference to Paragraph B.6. in the 1985 part of the table because it was logically included within the requirement of Paragraph B.10. In other words, a person complying with R-38 insulation thoughout an attic or ceiling (without being limited by accessibility) would automatically have complied with only R-19 in accessible places. Therefore, to avoid the confusion raised by the Sierra Club and others, the agency is proposing to simply eliminate the reference to Paragraph B.6. from the table. This explanation covers a number of similar eliminations from the 1985 standards.

34. The Examiner believes that the agency's proposed changes have been justified as both needed and reasonable. A number of persons were confused, and these changes will eliminate that confusion. Also, the Examiner does not believe that the changes constitute "substantial change" because the Notice of Hearing specifically mentioned that the standards which would be applicable in 1985 would include insulation requirements for previously defined "inaccessable" attics, wall, foundations, and rim joists. The Notice highlighted this change, and the agency mentioned it as one of the major changes in these rules when it presented its opening statement at the hearing.

35. At the hearing, the agency also pointed out that there was an error in the table as published in the State Register, but that this error was not contained in the Revisor's copy of the rule, which was the version mailed to all persons on the Department's list and to others who requested a copy of the rule. This error affects the 1985 standards applicable to single-family rental units only. The State Register indicated that the following standards were applicable in 1985:

1, 2, or 13, and 3-12.

The Revisor's version mailed to all interested persons indicated the following standards were applicable in 1985:

1, 2 or 13, and 3-12.

The only difference between the two is that the State Register placed a comma after the number "2" which did not belong there.

An examination of the other standards in that column would raise questions for the ordinary person, as none of the other lines in the table had such a format. In addition, the entry at issue is confusing with the comma present. There would be no certain way to read the table with the comma present. There are at least two ways in which it could be read, but neither one of them makes much sense.

36. The Examiner does not believe that any person could have reasonably been mislead by this error. No person reacted when the agency described it at the hearing, nor did the Examiner receive any comments after the hearing referring to it. The placement of the comma rendered the list confusing and uncertain. An examination of the other lists in the table would raise questions for a reasonable person. The Examiner does not believe that publication of the mistake constitutes an obstacle to correction. The Department ought to correct the error.

37. In post-hearing comments, the agency proposed yet another change to the table. This change relates to the 1983 standards for the categories of single-family, manufactured homes, and 2-4 unit buildings. As published and presented at the hearing, the 1983 standards required owners to caulk, gasket or otherwise seal accessible exterior joints between the foundation and rim joist; around window and door frames; between walls and roofs; between wall panels; at penetrations for utility services; and at all other openings in the exterior envelope of the building.

Under the change now proposed by the Department, owners would have the option of complying with that requirement or complying with a requirement that they caulk, gasket, or otherwise seal interior joints of the same nature as the list described in the first requirement, with the exception that this second option would not require caulking "all other openings in the exterior envelope". In summary, the agency has proposed to give owners the option of either caulking and sealing exterior joints or caulking and sealing interior joints.

The agency's justification for this proposal is that this option is consistent with the option afforded owners of larger buildings, and is also consistent with the 1985 standards. Those 1985 standards do grant owners of all buildings (both large and small) the option of using either interior caulking or exterior caulking.

38. The Examiner sees no reason not to give the owners the option of caulking either on the interior or exterior. Owners who have already caulked the exterior will have already complied with the 1983 standard, and there will be no requirement for them to caulk on the interior as well. Rather, the proposed change will only give those owners who have not yet caulked the option of either caulking on the inside or outside of the building envelope. Since the proposal expands the options available to an owner, and since the same optional procedure proposed for larger buildings (and for all buildings in the 1985 standards) drew no comments, the Examiner sees no reason not to allow the agency to grant owners of smaller buildings the same option which it is granting to owners of larger buildings. The proposed change has been justified as both needed and reasonable and does not constitute a "substantial change".

39. Paragraph B.9. of Rule 2503 will require the owners of single-family, manufactured home, and small (2-4 unit) buildings to modify their existing heating systems so that they operate at a minimum steady state efficiency of 75 percent as demonstrated through a flue gas analysis.

40. The West Hennepin Human Services Planning Board recommended that this rule be changed to require a steady state efficiency of 95 percent. The Energy Resource Center stated that the 75 percent requirement would not cause any hardship for building owners: if the tested efficiency were that low, furnace or boiler work would be a prudent decision.

41. In its SONAR, the agency stated that considerable research and information on small buildings now is available due to the implementation of the Minnesota Energy Conservation Program, which is the program whereby major utilities provide energy audits to their residential customers. According to the agency, those audits generally indicate that the average existing steady state efficiency is approximately 75 percent for gas systems, and 73 percent for oil heating systems. The agency believed that for those buildings that do not currently operate at the 75 percent requirement, a low cost tuneup would generally increase the efficiency of the system by 2 or 3 percent, which in most cases would enable the building to meet the standard. In a footnote, the agency pointed out that a spot check of a few local heating contractors indicates that a tuneup can generally be accomplished for approximately $75 for gas heating systems, and $90 for oil heating systems. The footnote also contains a simple payback calculation with the payback ranging between .7 and 6.8 years.

In post-hearing comments, the agency responded to the West Hennepin proposal by stating that while an increase to 95 percent was possible, the Department had no data to indicate that such efficiencies were generally achieveable. Neither does it have adequate data on the payback period. The Department views the 75 percent level as a "minimum standard", but views the 95 percent level as an "optimum standard". The Department pointed out that the statute (Minn. Stat. § 116J.27, subd. 1) authorized the Commissioner to adopt rules containing "minimum energy efficiency standards". The Department did not believe that the 95 percent level would qualify as a "minimum" standard, and thus, was not in favor of adopting the West Hennepin proposal.

42. The Examiner finds that the agency's original proposal has been justified as both needed and reasonable. Without adequate data, the Examiner cannot find that a 95 percent level would be reasonable, nor does he know the impact of the change to know whether or not it would constitute a "substantial change".

43. Paragraph B.10. of the rules has already been described. It is the requirement which will be imposed upon all types of units in 1985 to install insulation in all ceilings or attics to a minimum of R-38. It is not limited to "accessible" spaces.

44. The West Hennepin Human Services planning Board recommended that this be increased to R-44.

45. In the SONAR, the agency justified its R-38 value based upon the Energy Code of the State Building Code, and upon a simple payback calculation. For those structures which have no attic insulation, the payback ranges between 1.5 and 2.3 years, depending upon the amount of heat used. For structures with an existing amount of insulation equal to R-11, the payback

period is 5.3 to 8.2 years. For structures within an existing R-15, the payback is between 6.1 and 9.4 years. However, for structures with an existing R-19, the payback ranges between 8.1 and 12.4 years.

The lead-in section to Rule 2503 provides that residences which meet certain conditions must comply with all applicable standards unless those standards are determined to be economically infeasible. Rule 2502 G. defines economic feasibility to be when the savings in energy procurement cost exceed the cost of acquiring and installing the standard amoritized over the subsequent 10-year perid. Therefore, if an owner calculates a payback period of 12.4 years (as contemplated by one of the Department's calculations noted earlier), the owner would not have to comply with the full R-38 standard. This 10-year payback limitation applies to all of the standards in the rules.

46. In response to the West Hennepin recommendation to change R-38 to R-44, the Department staff found that such a standard would not generally be cost-effective. The payback ranged from 9.9 years to 14.2 years for attics already insulated at R-19. The Department calculated that for only the most inefficient buildings would the R-44 standard be cost-effective. This would allow most buildings to escape the operation of the standard, and having it in the rule would just create confusion.

47. Based upon the data supplied by the agency, the Examiner finds that the agency has justified its R-38 requirement. Unless and until new data is available regarding energy costs and the cost of insulating, there is no justification for increasing it to R-44.

48. Paragraph B.11. requires all buildings to install insulation in all rim joist areas to R-11 by 1985. Again, West Hennepin urged that that be increased, to R-19. They stated that this was the generally recommended level.

49. In its SONAR, the agency presented a payback calculation for the R-11 proposal, showing that the payback periods ranged from 2.0 to 8.1 years.

50. In post-hearing comments, the Department presented a payback analysis of the R-19 proposal. The paybacks range from 2.2 years to 13.0 years. The worst payback (which ranged from 8.1 to 13.1) occurred in the case of a building with inaccessible rim joists and existing insulation levels equal to R-3.5. Although the standard does not distinguish between accessible and inaccessible rim joists, requiring installation for all, the agency included a substantial inaccessible cost factor in its calculations to account for the cost of getting to the rim joists, and then restoring the building to its original condition after the insulation had been installed.

Based upon these calculations, the agency indicated its acceptance of West Hennepin's proposal to increase the rim joist insulation standard from R-11 to R-19. Foreseeing a question about substantial change, the agency pointed out that the marginal cost of installing the higher R value insulation ranged from $15 for a duplex, to $65 for a 26-unit building. The agency believed that such costs were so minimal that the change would not be a "substantial change". changed p.7

51. The existing rule required R-11. The rule as originally proposed required R-11 for all buildings by 1983, and reaffirmed the R-11 requirement for all buildings in 1985. The cost figures cited above are the marginal difference costs between insulating to R-11 and insulating to R-19. In other words, if an owner had not done any rim joist insulating, those would be the additional costs of insulating to R-19 as opposed to R-11. However, the Examiner is concerned about persons who have already insulated to R-11 to comply with the existing rule, who checked the rules as proposed and found no change, did not attend the hearing, and now would be surprised to discover the new requirement. For inaccessible rim joists, there is a fair amount of trouble which must be gone to to open up a wall to get access to the rim joists, and then replace the wall.

52. Based upon the foregoing, the Examiner finds that for buildings which already have R-11 insulation around inaccessible rim joists, the proposed change to R-19 does constitute a substantial change. However, for buildings which do not yet have at least R-11, and for all building where the rim joists are accessible, the proposed change to R-19 is not a substantial change. The Examiner finds that the Department has justifed the need for and reasonableness of the proposed rule, as amended by the West Hennepin change. It is reasonable to require R-19 around all rim joists. In summary, the agency may make the proposed change to R-19, but the rule must indicate that it does not apply in the case of a building with inaccessible rim joists which are already insulated to R-11 or more.

53. Paragraph B.12 of the proposed rule would require all buildings, by 1985, to install insulation to R-11 in or on all walls and floors that enclose conditioned spaces, including foundation walls of basements, cellars, or crawl spaces. Insulation may be installed on the exterior of the foundation wall so long as it extends 2 feet below grade level. Insulation may be installed on the interior, or in, the foundation wall so long as it extends from the rim joist to the foundation slab or floor.

54. The Public Housing Agency of the City of St. Paul submitted an "article" from the January, 1984, issue of "Concrete Construction", which indicates that basement walls can be damaged by frost pressure, and that the potential for frost damage is greatly increased by wall insulation. The "article", however, is actually a letter to the editor. The letter to the editor is in response to an earlier statement by the American Concrete Institute. The editor's response to the letter was to forward it to the American Concrete Institute, which will take it into account when revising its complete report.

55. The Examiner finds that the tentative nature of this information does not refute the concept of basement insulation. If the appropriate technical committee of the American Concrete Institute (or other expert groups) does agree with the letter's author that there is a problem, then it would be appropriate for the agency to further investigate the matter. But at this stage, the potential objection is too tentative to declare the agency's proposal unreasonable. The agency presented convincing justification for its initial proposal, and while substantial evidence regarding structural failure would cast doubt upon the wisdom of proceeding with it, at the present time the Examiner finds the Agency's proposal to be both needed and reasonable.

56. Paragraphs B.14. and B.15. present a marked departure from the other 13 standards. These two paragraphs (B.14. and B.15.) set forth the "performance standards" referenced earlier. Essentially, they provide owners with an option; owners can either comply with all of the prescriptive standards as required in the table, or they can comply by installing any combination of energy conservation measures that save either 25 or 30 percent (depending upon which of the two paragraphs is applicable) of the energy used in a prior season. These performance standards "give credit" to energy conservation improvements which have already been made, going back to the 1973-74 heating season. For example, if the base line consumption (for a normal year) is "X", and the most recent heating season's consumption (adjusted to a normal year) is 10 percent less than that, the owner may comply with these rules by making whatever changes he or she chooses to save an additional 15 percent (or 20 percent, depending on which performance standard applies). There are a number of conditions and exceptions to this, some of which will be discussed below, but the basic idea is that if an owner has already made improvements which have resulted in energy savings, he or she need only make such additional improvements as are necessary to achieve the specified percentage savings.

57. The performance options are available only for mid- and larger size buildings (5-11 units and 12 or more units). The 25 percent standard applies to 12 or more unit buildings, while the 30 percent standard applies to the midsize (5-11 unit) buildings.

58. At the hearing, the Department noted that a typographical error in the rule created an unintended variation between paragraphs 14. and 15. Based upon language occurring near the end of the two paragraphs, the Examiner accepts the Department's explanation that this was a typographical error. The Department may correct the error by inserting the proposed language in the first sentence of paragraph 15 to make it identical to the first sentence of Paragraph 14 (except for the difference in percentages). It does not result in a substantial change.

59. In the SONAR, the Department stated that a 1980 Minnesota Housing Finance Agency study calculated energy savings that would result from the imposition of all of the prescriptive standards proposed in earlier sections of this rule. The study indicated that a building with 12 or more units would save 25 percent if all cost-effective measures prescribed in the rule were properly installed. Midsized units would achieve a 30 percent savings under the same conditions.

The Department contends that making these performance standards available as an option will allow owners to install whatever measures they choose (within limitations) to achieve energy savings. The Department stated that it had recognized the fact that any reasonably sized list of prescriptive standards may not represent the most cost-effective measures which could achieve a given savings goal for a specific building. In other words, to achieve an energy savings of 30 percent, the most cost-effective measures in building A will probably not be the most cost-effective measures for building B.

60. Both of these optional performance standards drew praise from commentators, and there were no adverse comments on either of them.

61. The Examiner finds the agency has justified including the proposals as both needed and reasonable.

62. Rule 2507 sets forth qualification procedures for evaluators. It contains an application procedure, a training requirement, and a certification procedure (including an examination).

63. Minnesota Power submitted a written comment questionning whether or not it will be called upon to deliver evaluations proposed in these rules. It stated that since 1981, it has been offering the Minnesota Energy Conservation Service Program to its residential customers, and in addition, is now participating in the development of the Commercial and Apartment Conservation Service Program which is scheduled for implementation in late 1984. It stated that it employs 25 certified MECS auditors who have completed over 2300 MECS energy audits. It has spent over $74,000 since 1980 in training it's auditors (nearly $3,000 per auditor). It believes that it's trained and experienced energy auditors should be excused from the training course described in Paragraph B.1. of this rule and also be exempted from paying the $50 certification fee to the Department. It pointed out that these changes would put it's auditors on a par with other exempt groups already listed in the rule.

64. In response, the agency stated that utilities will be required to conduct audits of rental units, but not under these rules. Rather, the agency stated, it is the MECS' rules which will require utility auditors to determine compliance with the "rental standards" which are the standards contained in these rules. The agency went on to say that there is no requirement, nor is there any intention to, require utility auditors to be certified under these proposed rules because the training and examination procedures for auditors under the MECS' rules and evaluators under these rules, are virtually identical. The agency stated that so long as the utility auditors are conducting the inspections of rental units in their capacity as a utility employee conducting energy audits (and not moonlighting), no further certification or fees will be required.

65. The MECS Program is restricted by its own rules to buildings that contain at least one, but not more than 4, dwelling units. Minn. Rule 4150.0100, Subp. 21. It does, therefore, include duplexes and buildings that contain not more than 4 dwelling units. One of the rules under that program provides that <u>if</u> a MECS audit is of a rental property, when the audit is presented it <u>must</u> include a separate list of those improvements necessary to bring the residence into compliance with Minn. Stat. 116H.129, subd. 3 (1978). That statute is the very statute which requires that, effective July 1, 1983, all residences which are renter-occupied during the winter months must be in compliance with applicable energy efficiency standards (these rules). Therefore, a MECS audit of a 1-4 unit rental property must include information set forth in the rules under consideration. However, an audit of a property of 5 or more units is not, by definition, a MECS audit, and so therefore, Rule 4510.1500, Subp. 2 D. does not apply.

66. The Examiner believes that the agency's post-hearing comment is correct only with regard to work done under the MECS program. That program only extends to buildings of 4 units or smaller. It would seem that if a person, who is employed by a utility as a MECS auditor, were requested to perform an evaluation of a larger building under these rules, that person would not be exempt from certification and fee payment. The agency's intent that these persons be exempt is not contained in the rules. Therefore, the Examiner finds that there is an omission from these rules which must be supplied. The rules regarding certification and training are found to be unreasonable unless they exempt utility employees who are certified MECS auditors pursuant to Minn. Rule 4150.5200.

67. In order to cure this defect, the agency may either follow the suggestions of Minnesota Power set forth in their letter, which would affect rules 2507 B.2.d. and C.2., or the agency may use some other procedure to accomplish the same end.

68. Rule 2505 B. provides a limited exemption from a few rules for buildings which are part of a low-rent housing project owned by public housing agency as defined in Minn. Stat. § 462.421, subd. 12.

69. The scope of this exemption was the dominant issue of dispute at this hearing. Essentially, a number of public housing agencies, along with the Minnesota Legislative Committee of the National Association of Housing and Redevelopment Officials ("NAHRO"), urged that public housing owned and operated by a public housing agency should, in essence, be totally exempt from the operation of these rules. More specifically, the most recent version of the Association's alternative language for this rule would provide that Rule 2503 (the rule that requires compliance with the standards) would not apply to any building owned by PHA or HRA as part of a low-income public housing project if the building is subject to certain HUD rules; provided, however, that to the extent that monies are available from HUD for the purpose of complying with the standards described in 2503, then the PHA shall implement the standards. In addition, the alternative language proposed would exempt the buildings from the evaluation procedures of Rule 2504. The alternative would further allow PHA officers or employees to provide audits or disclosure reports, and that evaluations may be conducted in accordance with certain specified federal rules, rather than state rules. Finally, the amendment would allow the persons conducting the audits to be exempted from the certification requirements of Rule 2507.

70. While the NAHRO alternative deals with a number of different topics, the most important is the exemption from the energy efficiency standards.

71. The arguments put forward by NAHRO in favor of its alternative are:

(1) Since the units at issue are already subject to federal standards which require audits and the installation of conservation measures as monies are available, persons living in those units are already protected from the evils sought to be prevented by these rules.

(2) A great deal of money has already been spent on energy conservation since 1972-73 (more than $22 million in the last three years alone). Thus, a great deal of energy conservation work has already taken place.

(3) Rent charged for public housing may not exceed 30 percent of an individual's income, regardless of the cost of operating the building. Therefore, PHAs are in the unique position of not being able to increase rents to cover the costs of any improvements which might be required as a result of these rules being applied to them.

(4) The limitation on the amount of rent that can be charged also places a limitation upon the rental income of the agency. If an agency can reduce energy costs by installing conservation measures, it will reduce its own costs of operating the building, and thereby reduce the "spread" between rental income and operating costs.

(5) The limitation on the amount of rent that can be charged protects tenants from energy cost increases.

(6) Any violation of the statute or any rule thereunder, is punishable by a civil penalty of not more than $10,000 for each violation. Minn. Stat. § 116J.30, subd. 3 (1982). Since it will be impossible for all of the low-rent public housing units in Minnesota to be in compliance with State standards by July 1, 1985, such fines may be levied. Some PHAs will be unable to pay the fines and therefore, there will probably legal actions precipitated by the fines. Even if a particular agency is able to pay the fine, it will only take money away from essential services to the tenants who are served.

72. In post-hearing comments, the agency summarized its objection to the primary exemption sought by NAHRO by stating the following:

(1) The Department has clear authority to establish standards appropriate for each type of rental ownership.

(2) The federal rules requiring audits and installation of cost-effective measures do not constitue a standards program because they are required only as funds are available, and there is no other external mechanism to ensure that any PHA unit will ever meet any standard, state or federal.

(3) The federal rules requiring the audits and installation of measures could be rescinded by HUD at anytime. The current federal administration has not been supportive of energy conservation programs, and Minnesota ought not to rely on the federal government to actively promote, finance, or enforce conservation.

(4) Because the new state standards do not become effective for another 15 months, PHAs have ample time to make the few remaining improvements which they allege would be needed in order to comply with these rules. One HUD representative testified that he believed over 90 percent of the units are in compliance with the standards already.

73. The statute authorizing the standards and requiring compliance with them provides that the Commissioner shall adopt rules containing minimum energy efficiency standards which shall be appropriate for evaluating the energy efficiency of "each major type of residential housing" including, but not limited to, 1-4 family dwellings, apartment buildings, manufactured homes, condominium buildings, "and type of ownership".

The statutory definition of "residence" does include multi-dwelling buildings, but specifically excludes certain buildings, such as hotels, hospitals, motels, dormitories, sanitariums, schools, correctional institutions, and others. While it is unclear what is meant by including the term "type of ownership" in a list of major types of residential housing, it is clear that the legislature could have included low-income public housing in the list of buildings which are excluded from this program. The statute does exclude nine specific types of buildings, but does not exclude PHA properties.

The Examiner concludes there is no statutory basis for exempting them, but that under the "type of ownership" provision, there is statutory authority for assuring that the standards applicable to them are "appropriate for evaluation of the[ir] energy efficiency".

74. At the hearing, there were a number of persons who spoke about specific problems which have been encountered by PHA tenants, including a St. Paul residence with no insulation. In post-hearing comments, the Legal Services Advocacy Project provided copies of press releases from the Minneapolis Community Development Agency announcing that it will not evict residents of its public housing units who have been cutoff from utility service for failure to keep up with heating bills, citing approximately 70 units which had been disconnected. As part of the resolution of this problem, the Minneapolis agency planned to perform energy audits of its public housing units to determine if improvements were needed, as well as using utilities' resources to educate tenants about energy conservation. That same submission also included a thorough discussion of utility allowances for PHA tenants and a copy of an amended complaint filed in a Federal District Court class action

on behalf of tenants of the Red Wing Housing and Redevelopment Authority. This complaint essentially alleges that the utility allowances adopted by that authority have been unreasonably small in light of actual consumption. While this lawsuit has not yet been resolved, it does provide support for questionning NAHRO's assertion that low income public housing tenants are "shielded" from high energy costs.

75. The Duluth Community Action Program, Inc., stated that it is involved with the City's Low-Income Weatherization Program, and has weatherized many Duluth HRA-owned units. It has found them to be far below minimum standards.

76. The Chair of the Duluth Energy Council wrote that it would be hypocritical to require private building owners to improve inefficient buildings, while allowing public projects to remain in violation of the standards, and therefore opposed any exemption for public housing.

77. The Mayor of the City of Duluth concurred with this position, noting that public housing tenants are not able to absorb the higher energy costs which accrue to residents of inefficient buildings, and consistency argued in favor of no exemptions.

78. The Duluth HRA, however, wrote that since 1979, it had spent $1.35 million of HUD funds to install energy conservation measures on 640 of the 1218 low-rent public housing units which it operates. It stated, however, that if these rules were imposed upon it and other housing authorities across the state, they would result in a "serious and potential devastating effect upon our ability to operate within budgets". It also noted that due to lack of sufficient funds, it would be unable to meet the State's requirements, and therefore it would be subject to the statutory penalty, which, if imposed in full, would leave no alternative but to reduce essential services.

79. The above-findings reflect a summary of numerous comments submitted both at the hearing, and after, by many agencies, groups and persons on both sides of this issue.

80. There is no question but that many public housing agencies have expended considerable amounts of money on energy conservation measures. This was amply demonstrated in the record by statements from individual agencies, as well as data supplied NAHRO. In fact, in a document prepared by the Council of Large Public Housing Authorities, comparisons of heating consumption per unit per degree day for April and October amply demonstrated that Minneapolis and St. Paul (the only two Minnesota agencies included in the survey) consistently outperformed large public housing agencies in other parts of the country in terms of energy efficiency. This comparision reflected data from different years ranging between 1978 and 1981. Therefore, it does not reflect any further efficiency improvements made after 1981, which, based on other testimony, have been substantial.

81. The Examiner finds, based upon consideration of the record as a whole, that the agency, and others supporting the agency's view, have justified both the need for and the reasonableness of not exempting PHAs and HRAs from Rule 2503.

82. NAHRO also proposed that audits or disclosure reports may be provided by an officer, or employee of the PHA or HUD, and may be conducted in accordance with Title 24, CFR, §§ 865.301-865.310.

83. The agency had originally proposed an exemption which would have allowed the audit or disclosure report to be provided by an officer or employee of a PHA or HRA if (1) it were conducted in accordance with the federal rules, (2) the procedures in Rule 2504 were followed, and (3) the audit included the standards provided in Rule 2503.

The agency's SONAR stated that this exemption for public housing was provided because of the required federal audits, and would permit PHA's to use their own staff to do the audits in the same manner that they are permitted to do so under the federal rule. The agency stated that allowing the audit to be conducted under the federal program (as long as the standard calculation procedures, required measures, and prices are used) would avoid duplicaton and unnecessry expenditures by PHAs.

84. Following the hearing (and receipt of NAHRO's most recent proposed amendment), the agency submitted post-hearing comments which recommended changes to its original proposed exemption. The Agency now recommends that the audit or disclosure report would be acceptable if it were "conducted" by an officer or employee of the PHA or HRA, rather than "provided" by them, as earlier proposed. In justifying this change, the agency stated that it was needed in order to clarify that the audit must be conducted by the officer or employee, rather than having the audit conducted by someone else and given to the PHA, which would then "provide" it to the Agency. The agency feared that a PHA might mistakenly conclude that a non-certified individual could condut the audit for an officer or an employee, who could then "provide" the audit for the PHA.

85. There is no question but that the State program is different from the HUD program. While their over all goal is the same, the specifics of implementation and standards to be applied are different. NAHRO prepared a lengthy list of differences, to which the agency responded. There is certainly an advantage to avoiding duplicative audits, but the State is entitled to see that units within its jurisdiction do meet state standards. In light of the broad range of persons whom the agency will allow to conduct its evaluations, it is certainly reasonable to include PHA and HRA officers and employees to conduct evaluations. The Examiner finds that the agency has also justified its proposal that the evaluations must be conducted according to state procedures and state standards.

86. The final matter of contention between NAHRO and the Department relates to the the extent to which officers or employees of PHAs or HRAs are exempted from certification requirements.

87. In both its original and final proposal, the agency exempted such persons from the certificaton requirements of Rule 2507 for routine evaluations, but provided that unless they were certified, they could not conduct an audit for compliance with the performance standards contained in Rule 2503 B.14. or 15.

88. In the SONAR, the Agency stated that use of the performance standards will require an audit by a highly trained technical individual. The agency also stated that an audit by an unbiased individiual is the sole method by which an owner should be allowed to avail himself of this standard. The agency would not, for example, allow manufacturer's claims of energy savings to be relied on. The agency has proposed that audits for these sections may conducted only by a registered professional engineer or architect, or "other person determined qualified by the Department". In its SONAR, the agency stated that because energy conservation is a relatively new field, there are some individuals who have not become professional engineers or architects but are, however, as capable as most engineers or architects to provide sophisticated energy audits.

89. Neither the rule nor the statute gives any detail regarding how these "other persons", may become approved.

90. The Examiner finds the agency has failed to sufficiently limit its discretion in approving "other qualified persons". While the Examiner agrees that there are persons other than registered engineers and architects who are qualified to perform the measurements required by paragraphs B.14 and B.15, the lack of detail regarding their approval results in a determination that the phrase may not be adopted.

91. In order to cure this defect, the agency must delete the provisions allowing for "other person determined qualified by the Department" or it must set forth a procedure for determining qualifications. so set forth p. 14, 15

92. The NAHRO alternative for Rule 2506 B. makes no mention of special provisions for compliance with Paragraph B.14. and B.15. with regard to which classes of persons may conduct audits for compliance with those two paragraphs. That is logical in light of the fact that under the NAHRO alternative, PHA or HRA buildings would be totally exempt from Rule 2503. Since it has been previously determined that the buildings will not be exempt, a question remaines as to whether officers or employees of PHAs or HRAs should be allowed to conduct the paragraph B.14. and B. 15. audits. deleted p. 11, 12

93. The logic supporting allowing only certain persons to conduct these specialized audits in the case of privately owned buildings applys with equal force to publicly owned buildings. Absent additional evidence regarding the qualifications and abilities of PHA and HRA officers and employees to conduct the specialized audits, it is found that the agency's proposal which would exclude them from doing so has been justified as both needed and reasonable.

94. NAHRO, on behalf of the PHAs and HRAs, also requested exemption from Rule 2504's procedures to be followed in connection with compliance evaluations. The agency responded that this portion of the rule is essential to ensure that an audit is comprehensive, and that standard procedures are used to determine compliance.

95. For reasons to be stated in connection with a discussion of the number of units to be evaluated, the Examiner finds that the agency has documented the need for and reasonableness of applying this provision to PHAs and HRAs in the same manner that it is applied to other buildings.

96. Rule 2504 deals with the evaluation procedure, including requirements for disclosure reports and general duties of evaluators.

97. Paragraph A of that rule deals with disclosure reports. At the hearing, the Department proposed a change from the rule as published. The last sentence of the proposed rule required that copies of certain audits must be submitted to the Department within 14 days "for review or approval". The proposed change would have the audits be submitted "for review and approval".

98. In the handout distributed at the hearing, the Department explained that this modification was designed to clarify its original intent, which was to ensure its ability to monitor the quality of these audits, and to have corrections made if they are necessary. The Department argued that having responsibility for both review and approval is needed to ensure program quality and accuracy.

99. There is no other mention in the rules of the concept of departmental "approval" of audit results. There is, however, a procedure for decertification of evaluators which provides for decertification based upon a number of factors, including negligent performance of duties. It also provides for revocation if the audit reports required by Rule 2504 A. are not submitted to the Department as required.

100. The Examiner finds that the proposed change has been justified as both needed and reasonable. There is no point in having audits submitted (with failure to submit being grounds decertification) if nothing is to be done with them. As with the other changes proposed by the Department at the hearing, the change was set forth in a written handout available at the hearing, and was noted by the Department in its opening statement. There was no question or objection raised to it, either at the hearing or in writing. The Examiner finds it is not a substantial change. changed p.9

101. Paragraph B.1. of Rule 2504 sets forth procedures to be used during the evaluation. As originally proposed, the paragraph required that all units be evaluated if the building had between 1 and 5 units, but if the building had 5 or more units, then 5 units plus 3 percent of the total number of units had to be evaluated.

102. In its post-hearing comments, the agency noted that this breakdown did not make sense because a 5-unit building appeared to fit in both categories. The agency proposes that the rule be revised so that all units must be evaluated if the building has between 1 and 4-units, but if it has 5 or more units, then the "5 units plus 3 precent" provision would apply. This change would coincide with categories established in the table of Rule 2503 A-1, which provides a break point between 1-4 unit buildings, 5-11 unit buildings. as revised p.9

103. The Examiner finds that the agency has justified the need and reasonableness of this proposed change. It makes no sense to leave ambiguity in the rule with regard to a 5-unit building. Additionally, as a practical matter, there is no substance to the change, because a 5-unit building must have all 5 units evaluated under both the rule as originally proposed and under this clarification. Therefore, it is not a substantial change.

104. In connection with Paragraph B.1., the Crow Wing County COACT group proposed that all units should be audited and that there should not be any provision for "5 units plus 3 percent".

105. In its Statement of Need and Reasonableness, the agency stated that it is unnecessary to inspect every unit in a large building. It stated that the Energy Division has conducted numerous inspections of buildings for compliance with the standards, and found that compliance differs little from unit to unit. Therefore, the agency argues, a requirement to inspect only a random sample is reasonable and is needed in order to keep auditing costs as low as possible.

106. This same concept was raised during the NAHRO presentation by a representative from the Minneapolis Community Development Agency, who stated that they were near the end of their second round of audits, having completed 97 percent of them. One of the reasons they wanted exemption from the state program was to avoid doing audits all over again.

107. In a letter to the Examiner, dated February 15, the Public Housing Agency of the City of St. Paul presented a more expansive presentation of this problem. They pointed out that HUD had accepted audits of representative samples of a development, so long as every different type of unit in that development was audited. For example, at Roosevelt Homes, the St. Paul PHA audited representative units in 5 different types of buildings. There were a total of 56 buildings, but only 5 different types. In total, there were 314 units in these buildings. In order to comply with the HUD requirements, the St. Paul agency audited only 12 reprentative samples, while the State would require an audit of 286 units under the "5 unit plus 3 percent" provision. The St. Paul agency stated that it was an unwise expenditure of public funds to require audits on so many almost identical apartments which were built at the same time and under the same plans and specifications.

108. The Agency's proposed rules do not require that any unit be audited. Rather, the statute requires that all units shall be in compliance with the standards. A different subsection requires that upon request of the owner, an evaluator shall inspect any residence and report the degree to which it complies with the standards. Therefore, if an owner is satisifed that he or she is already in compliance, or if a representative sample of units are audited (like St. Paul) and the owner becomes satisfied of compliance, there is no requirement either in the statute or in the rules that every unit be audited.

109. The Examiner finds that the agency's proposal, which does not require the auditing of every unit, has been justified as needed and reasonable.

110. The Examiner does not believe that the Crow Wing group's comment was aimed at the same problem presented by St. Paul PHA. The St. Paul problem arises because they have a number of buildings which are the same. For example, the Roosevelt Homes data presented by the City indicates they have 17 Type "D" buildings, and the implication, at least, is that they are all the same. If this rule did contain some auditing requirement, then the Examiner

might find that it would be unreasonable to require all 17 buildings to undergo the same number of audits. But since these rules do not require it, and since they do leave to the discretion of the owner how many audits are needed, if any, the Examiner does not accept the suggestion that the rule is unreasonable. The statute requires that all units must be in compliance. It is the owner who will have to decide how much auditing is needed to be relatively certain that all units do comply.

111. Rule 2510 sets forth calculation procedures. In paragraph A.4.a., there is an equation which is labeled "Equation #3". At the hearing, the agency stated that a typographical error occurred when the rules were adopted in 1982, and that this error was supposed to be corrected in the proposed rules. However, the proposed correction as printed is also faulty. In the handout presented at the hearing, the agency set forth the correct form of the equation and the agency's representative called attention to the change in his opening statement. There was no comment on the proposed change either at the hearing or during the comment period.

112. The Examiner finds that it is appropriate to correct the equation, and that the corrected equation should be substituted in the rules. It is not a substantial change.

Based upon the foregoing Findings of Fact, the Hearing Examiner makes the following:

CONCLUSIONS

1. That the Department gave proper notice of the hearing in this matter.

2. That the Department has fulfilled the procedural requirements of Minn. Stat. § 14.14, subds. 1, 1a and 2 (1982), as amended by Minn. Laws Ch. 210, § 4 and Ch. 301, § 64, and all other procedural requirements of law or rule.

3. That the Department has demonstrated its statutory authority to adopt the proposed rules and has fulfilled all other substantive requirements of law or rule within the meaning of Minn. Stat. §§ 14.05, subd. 1, 14.15, subd. 3, as amended by Minn. Laws 1983, Ch. 210, § 6, and 14.50 (i) and (ii) (1982), except as noted at Finding 90.

4. That the Department has documented the need for and reasonableness of its proposed rules with an affirmative presentation of facts in the record within the meaning of Minn. Stat. §§ 14.14, subd. 2 and 14.50 (iii) (1982), except as noted at Finding 66.

5. That the amendments and additions to the proposed rules which were suggested by the Department after publication of the proposed rules in the State Register do not result in rules which are substantially different from the proposed rules as published in the State Register within the meaning of Minn. Stat. § 14.15, subd. 3 (1982), as amended by Minn. Laws 1983, Ch. 210, § 6, and 9 MCAR §§ 2.110 A. and 2.111 (1980 Ed.), with the exception noted at Finding 52.

6. That the Hearing Examiner has suggested action to correct the defects cited in Conclusions 3 and 4 as noted at Findings 66 and 90.

7. That due to Conclusions 3, 4 and 5, this Report has been submitted to the Chief Hearing Examiner for his approval pursuant to Minn. Stat. § 14.15, subd. 3 (1982), as amended by Minn. Laws 1983, Ch. 210, § 6.

8. That any Findings which might properly be termed Conclusions and any Conclusions which might properly be termed Findings are hereby adopted as such.

9. That a finding or conclusion of need and reasonableness in regard to any particular rule subsection does not preclude and should not discourage the Department from further modification of the proposed rules based upon an examination of the public comments, provided that no substantial change is made from the proposed rules as originally published, and provided that the rule finally adopted is based upon facts appearing in this rule hearing record.

Based upon the foregoing Conclusions, the Hearing Examiner makes the following:

RECOMMENDATION

It is hereby recommended that the proposed rules be adopted except where specifically otherwise noted above.

Dated this 17th day of April, 1984.

Allan W. Klein

ALLAN W. KLEIN
Hearing Examiner

DEED-84-002-AK

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT

In the Matter of the Amendment of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units.

REPORT OF THE CHIEF HEARING EXAMINER

The above-entitled matter came on for review by the Chief Hearing Examiner pursuant to the provisions of Minn. Stat. § 14.15, subds. 3 and 4 (1982), as amended by Minn. Laws 1983, Ch. 210, §§ 6 and 7, which provide:

> Subd. 3. Finding of substantial change. If the [hearing examiner's] report contains a finding that a rule has been modified in a way which makes it substantially different from that which was originally proposed, or that the agency has not met the requirements of sections 14.13 to 14.18 it shall be submitted to the chief hearing examiner for approval. If the chief hearing examiner approves the finding of the hearing examiner, the chief hearing examiner shall advise the agency and the revisor of statutes of actions which will correct the defects. The agency shall not adopt the rule until the chief hearing examiner determines that the defects have been corrected.
>
> Subd. 4. Need or reasonableness not established. If the chief hearing examiner determines that the need for or reasonableness of the rule has not been established pursuant to section 14.14, subdivision 2, and if the agency does not elect to follow the suggested actions of the chief hearing examiner to correct that defect, then the agency shall submit the proposed rule to the legislative commission to review administrative rules for the commission's advice and comment. The agency shall not adopt the rule until it has received and considered the advice of the commission. However, the agency is not required to delay adoption longer than 30 days after the commission's receipt of the agency's submission. Advice of the commission shall not be binding on the agency.

Based upon a review of the record in this proceeding, the Chief Hearing Examiner hereby approves the Report of the Hearing Examiner in all respects.

In order to correct the defects enumerated by the Hearing Examiner, the agency shall either take the action recommended by the Hearing Examiner or reconvene the rule hearing if appropriate. If the agency chooses to reconvene the rule hearing, it shall do so as if it is initiating a new rule hearing, complying with all substantive and procedural requirements imposed on the agency by law or rule.

If the agency chooses to take the action recommended by the Hearing Examiner, it shall, prior to submitting the rules to the Attorney General for review, submit to the Chief Hearing Examiner a copy of the rules as initially published in the State Register, a copy of the rules as proposed for final adoption in the form required by the State Register for final publication, and a copy of the agency's Findings of Fact and Order Adopting Rules. The Chief Hearing Examiner will then make a determination as to whether the defects have been corrected and whether the modifications in the rules are substantial changes.

Should the agency make changes in the rules other than those recommended by the Hearing Examiner, it shall also, prior to submitting the rule to the Attorney General, submit the complete record to the Chief Hearing Examiner for a review in regard to substantial changes.

Dated: April 18, 1984.

Duane R. Harves

DUANE R. HARVES
Chief Hearing Examiner

In the Matter of the Proposed Adoption of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units

AFFIDAVIT OF MAILING NOTICE OF SUBMISSION TO THE ATTORNEY GENERAL

STATE OF MINNESOTA)
) ss.
COUNTY OF RAMSEY)

Melanie Neitzel, being first duly sworn, deposes and says:

That on the 14th day of June, 1984, in the City of St. Paul, County of Ramsey, State of Minnesota, she served the attached Notice of Submission to the Attorney General by depositing in the State of Minnesota Central Mail System for first class mailing (or) in the United States mail at said City of St. Paul, a copy thereof, properly enveloped, with postage prepaid, to all persons and associations at the addresses listed on the attached list of persons who requested notice that the hearing record has been submitted to the Attorney General.

Melanie Neitzel

Subscribed and sworn to before me
this 14th day of JUNE, 1984.

Dennis M. Devereaux

DENNIS M. DEVEREAUX
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
My Comm. Expires April 1, 1988

STATE OF MINNESOTA

DEPARTMENT OF ENERGY AND ECONOMIC DEVELOPMENT

In the Matter of the Proposed Adoption of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Energy Efficiency Standards for Residential Rental Units

NOTICE OF SUBMISSION TO THE ATTORNEY GENERAL

Pursuant to your request and in accordance with Minnesota Statutes, section 14.16 (1982):

PLEASE TAKE NOTICE that the above-captioned rules have been submitted to the Office of the Attorney General on this date, June 14, 1984, for review as to form and legality. Pursuant to Minnesota Rules 2000.0700 subd. 2, the Attorney General will retain the rules for at least 10 calendar days after receipt to allow any person or association to comment on the legality of the rules, after which that Office will complete its review. If you desire to comment on the legality of the above-captioned rules, you should direct your comments to the Office of the Attorney General, 204 State Administration Building, 50 Sherburne Avenue, Saint Paul, Minnesota 55155, telephone (612)296-1288. Please note that the above-cited rule of the Attorney General also provides that a copy of any written comments submitted to the Attorney General must be submitted simultaneously to this agency.

If you are interested in determining what changes, if any, were made in the proposed rules after the hearing and or publication in the State Register and before submission to the Attorney General you may contact Greg Hubinger, DEED/Energy Division, 900 American Center Building, 150 E. Kellogg Blvd., St. Paul, MN 55101.

Tony Perpich
Deputy Commissioner
Energy Division
Department of Energy and
Economic Development

Exhibit

In the Matter of the Proposed Adoption
of the Rules of the Minnesota Department
of Energy and Economic Development amending
the Home Energy Disclosure Program and the
Minimum Mandatory Energy Efficiency Standards
for Residential Rental Housing

AFFIDAVIT
OF MAILING

RECEIVED
FEB 1 1984
ADMINISTRATIVE
HEARINGS

STATE OF MINNESOTA]
] ss.
COUNTY OF RAMSEY]

Melanie Neitzel, being first duly sworn, deposes and says:

That on the 23rd day of January, 1984, at the City of St. Paul, County of Ramsey, State of Minnesota, she served the attached Notice of Public Hearing by depositing in the State of Minnesota Central Mail System for first class mailing at said City of St. Paul, a copy thereof, properly enveloped, with postage prepaid, on all persons and associations who have requested that their names be placed on file with the Minnesota Department of Energy and Economic Development for the purpose of receiving notice of the proposed adoption of rules by this Department.

Melanie Neitzel

Subscribed and sworn to before me
this 25th day of JANUARY, 1984.

Dennis M. Devereaux

DENNIS M. DEVEREAUX
NOTARY PUBLIC-MINNESOTA
RAMSEY COUNTY
My Comm. Expires April 1, 1988

If you wish to be notified when the Hearing Examiner's Report is available, please put your name and address on one of the envelopes supplied.

RULE HEARING REGISTER

PLEASE PRINT CLEARLY

NAME	REPRESENTING	COMPLETE ADDRESS	TELEPHONE	CHECK HERE IF YOU WISH TO MAKE A STATEMENT AT THE HEARING	CHECK HERE IF YOU WISH TO BE NOTIFIED BY THE AGENCY WHEN THE HEARING RECORD HAS BEEN SUBMITTED TO THE ATTORNEY GENERAL
STAN E KEHL	Nat'l Assoc of Housing & Redev Authority	470 Pillsbury Center Mpls 55402	338-1177	✓	✓
DONALD SCHNEIDER	NAHRO, MHRA, EGF	P.O. Box 439, East Grand Forks MN 56721	218-773-2371	✓	✓
Cheryl Josephs	HRA of St. Cloud	619 MAIN Germain St. St. Cloud MN 56301	252-0380	✓	✓
Willie ENGLISH	ST PAUL TENANTS UNION	1064 MARSHALL AVE ST PAUL MN 55104	645-3946	✓	✓ ●
Tena Swanson	Advocacy Project	300 Minnesota Bldg St. P. 55101	222-3749		✓
Lisa McNaughton	St Paul Tenants Union	500 Laurel Ave St Paul 55102	224-6538		✓
Mary Weigenant	Red Wing H.R.A	433 W 4th Red Wing 55066	388-7571	✓	✓
David Schulz	Winona HRA	165 E. 4th St., Winona, MN 55987	454-3665	✓	✓
Paul NEUMANN	Mpls Comm. Dev/Always	217 S. 3rd St.	348-2511	✓	
Bruce Johnson	Northern States Power Co	414 N. Collet Mall Mpls Mn 55401	330-6879	✓	✓
Morris Manning	Amherst Wilder Foundation (Housing Sources)	919 Jackson, St. Paul 55104	642-4051	✓	✓
AINARS RODINS	U.S. DEPT OF H.U.D	220 S. 2ND ST MPLS 55401	349-3204		●
PAUL LOWERY	Public Hsg Agency of St Paul	380 Bremer BLDG	298-4483	✓	✓
DAN LARSON	DEPT. OF HOUSING & URBAN DEV	220 S 2nd St MPLS 55401	349-3197	✓	✓
MICHAEL MCALISTER	RAMSEY ACTION PROGRAMS	3220 LABORE RD VADNAIS HEIGHTS 55110	482-7749		✓
Jim Reinhold	State of MN. VA Program	690 American Center Bldg	297-2589		
Bruce Lacey	Metropolitan Housing Service	4100 Vernon Ave S. St. Louis Park 55416	920 5533	✓	✓
KERMIT MAHAN	AUSTIN Housing and Redevelopment	200 1st AVE NE. AUSTIN 55912	433-1866	✓	✓

HG-00048-01

If you wish to be notified when the Hearing Examiner's Report is available, please put your name and address on one of the envelopes supplied.

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JOAN ARCHER	MN MANU. HOUSING ASSN	222 E LITTLE CANADA RD ST PAUL 55117	482-8875	✓	✓
MIKE GRAVEL	RAMSY ACTION PROGRAMS	509 S. BLEY ST. ST. PAUL, MN 55101	227-8954		✓

HG-00048-01

State of Minnesota
Department of Energy and Economic Development
Energy Division

In the Matter of Proposed
Amendments To Rules Governing
the Home Energy Disclosure
Program and the Mandatory
Energy Efficiency Standards
for Residential Rental Units
6 MCAR § 2.2501-2.2510

STATEMENT OF NEED AND
REASONABLENESS

History

The Department is proposing amendments to the existing rules in order to incorporate several changes that are needed to make them more effective, and to reflect legislative changes to the statute governing the program. These rules govern two separate programs; one establishing an energy audit disclosure at the time of sale for residences, the other establishing minimum mandatory energy efficiency standards for residential rental units.

The original legislation for these two programs was adopted in 1977, and the program was implemented by the Department of Administration. In 1981 the responsibilities for the programs were transferred to the Energy Agency. The Agency proposed administrative rules governing the program on November 16, 1981, adopted temporary rules to implement them immediately in January 1982, and adopted permanent rules on December 13, 1982. Those adopted rules generally were consistent with the ones adopted earlier by the Department of Administration, with the exception of the statutory requirement that the audit be expanded to be consistent with the energy audits provided by major utilities under the National Energy Conservation Policy Act of 1978.

On December 27, 1981 the Energy Division of the Department of Energy, Planning and Development proposed amendments to the Rental Standards component of the rules. Those proposed amendments were based on extensive comments received by the Department regarding the need to improve the standards to make them more meaningful and effective. For instance, one proposed amendment was to require that all walls and attics of rental units be insulated, whether or not they were "accessible" as defined in the existing standards. Research has shown that since the standards were first developed, energy costs have increased significantly enough so that insulating all attics and walls was cost-effective, as defined by the statute creating the program.

The publication of the Notice of Intent to amend the rules in December generated significant interest and the Energy Divison received numerous comments. Many of the suggestions received were well-founded, and the Division took no action to adopt those amendments as published. Those amendments were later withdrawn, and the notice published in the State Register on October 31, 1983.

The second major objective of these rule amendments is to delete all references to the Home Energy Disclosure (HED) Program which was abolished by the 1983 Legislature, Chapter 301, Section 125. The effect of the deletion of rule

references to that program will be to leave intact only those rules referring to the mandatory energy standards for rental housing.

Process

These rule amendments were developed with the assistance of several organizations operating as an informal advisory committee. Drafts of the rules were distributed for review and comment, with significant changes incorporated at each step. In addition several meetings were held with various participants to receive input. Those persons and organizations are:

Jack Horner	Minnesota Multi Housing Association
Tom Warner	Minnesota Multi Housing Association
Steve Swanson	Legal Advocacy Project
Tim Thompson	Southern Minnesota Regional Legal Service, Inc.
Karen Swenson	City of St. Paul
Valdi Stefanson	St. Paul Energy Resource Center
Sheldon Strom	Minneapolis Energy Coordination Office
Chris Copp	Minneapolis Energy Coordination Office
Iric Nathanson	Mineapolis Community Development Agency
Russ Harju	St. Paul Public Housing Agency
Barbara Grossman	St. Paul Public Housing Agency
Murray Casserly	Minnesota Housing Finance Agency
Susan Haugen	Minnesota Housing Finance Agency
Michael Noble	Natural Resources Corporation

Each proposed rule amendment will be cited in bold face, and will indicate the proposed changes from the existing rule through strike outs and underlining. Following each provision, the Department will provide for the need and reasonableness of the change for that section.

5/B J.10 (a) ↑ J.08 (i)

Amendments

6 MCAR § 2.2501 Authority and purpose

A. Authority. The ~~agency's~~ department's authority to adopt these rules is contained in Minn. Stat. § ~~116H.129~~ 116J.27, as well as ~~116H.08~~ 116J.08, clause (a) and ~~116H.07~~ 116J.07, clause (i).

The change in name from "agency" to "Department and the change in the references to the statutory authority is proposed to reflect the merging of the Energy Division into the Department of Energy and Economic Development and the revision of the statutes by the Revisor in 1982.

B. Purpose. The purpose of ~~these rules~~ 6 MCAR §§ 2.2501-2.2510 is to establish a program requiring ~~an energy audit to be performed upon the sale of residential structures. The three major components of this program are the establishment of: minimum energy efficiency standards for the evaluation of existing residences~~ mandatory minimum energy efficiency standards for rental buildings, ~~and~~ procedures for ~~the~~ energy evaluations, ~~disclosure program~~ and the certification of evaluators.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

6 MCAR § 2.2502 Definitions.

A. Scope. For the purposes of 6 MCAR §§ 2.2501-2.2510, the following terms have the meanings given them.

~~A.~~B. Accessible. "Accessible" means:

~~1. For purposes of inspection, any area of the residence which can be evaluated with only the removal of temporary components of the structure. Temporary components include, but are not limited to, electrical plate covers, attic hatch covers and obstructions in closets which provide access to the area of the residence to be evaluated.~~

~~2.~~ for purposes of compliance with 6 MCAR § 2.2503, any area that can be made more energy efficient with the installation of program measures that are not determined to be economically infeasible and which area is exposed, without the removal of permanent parts of the structure.

This section is to be deleted in order to essentially place the same requirements on evaluators as there are on energy auditors in the Minnesota Energy Conservation Service.

G. Economic feasibility. For the purpose of these rules, the test of economic feasibility is met when the savings in energy procurement costs, based on residential energy costs as certified by the commissioner ~~or the director~~ in the State Register, or on local fuel costs, exceed the cost of acquiring and installing each ~~individual program measure~~ standard as amortized over the subsequent ten-year period. The costs of acquiring and installing each standard may include the costs of restoring the building to the condition that existed immediately before the standard was installed, costs to install a vapor barrier where determined necessary, and displacement costs of temporary tenant relocation where determined necessary.

The phrase "or the director" is deleted to reflect that the Energy Agency is now a Division of the Department of Energy and Economic Development.

The phrase "individual program measure" is deleted and the word "standard" inserted to reflect that these rules refer to mandatory standards for rental housing rather than program measures which were evaluated for residences at the time of sale.

The final sentence of this section, which is amended language to the rule, permits additional costs to be incorporated into the determination whether the installation of a particular standard is cost-effective as required by Minn. Stat. 116J.27, Subd. 1. Because the scope of the standards is being broadened to require insulating of all walls, attics, and rim joists in a residential building (not just "accessible" assemblies which is provided for in the current rules) additional costs will be borne by the landlord. The Department has conducted analyses of the costs of insulating these previously defined "inaccessible" assemblies and determined that these improvements are cost-effective as defined by the Statute. The need and reasonableness of each of these will be described in the appropriate section. However, in improving

the energy efficiency of these assemblies, the existing building condition will be marred. For example, holes may be drilled through sheet rock or plaster, or exterior siding removed to install insulation in walls. Thus, an owner must be able to restore the building to its original condition so as not to face a lower-valued building due to compliance with the standards. It is reasonable that unless it is cost effective to install the insulation and restore the assembly to the condition existing immediately before, the owner should not be required to comply with that standard.

In addition, the Department proposes to permit the cost of a vapor barrier, where needed, into the calculation of cost-effectiveness. A major tenet of improving the energy efficiency of a structure is to reduce energy consumption without jeopardizing the structural integrity of the building. Thus, appropriate ventilation is provided for in the insulation of attics (see 6 MCAR § 2.2503 B6) in order to prevent moisture from accumulating, freezing, melting, and rotting the joists. A vapor barrier is routinely required in order to avoid such condensation problems. Again, it is reasonable to install a vapor barrier where one is needed, as determined by the professional judgment of the evaluator, in order to maintain the structural integrity of the building.

Finally the Department proposes to permit, where necessary, the costs to temporarily re-house tenants that might result from installing a standard. Thus, if it is only cost-effective to insulate a wall by blowing insulation into the cavity through holes in the sheetrock, it may be necessary to place the tenant in another unit for a short time. Those costs, necessary to comply with the standards, are reasonable to include in the calculation of cost-effectiveness of the standards.

H. Energy conservation measure. "Energy conservation measure" means ~~any of the following measures in a residential building:~~ energy-saving physical improvements to the building that include but are not limited to modifications to the building structure, heating, ventilating, and air conditioning systems, and lighting that are primarily designed to reduce energy consumption.

This definition is revised to reflect that the term no longer refers to measures recommended by an evaluator of a residence at the time of sale. The term is now defined to include those physical modifications which an owner can make in order to comply with 6 MCAR § 2.2503 B 14 and 15. The definition follows standard industry practice, and describes generally the areas which can be improved that result in energy consumption savings.

I. Caulking. "Caulking" ~~consisting~~ consists of pliable materials used to reduce the passage of air and moisture by filling small gaps located at fixed joints on a building~~, underneath baseboards inside a building, in exterior walls at electric outlets, around pipes and wires entering a building, and around dryer vents and exhaust fans in exterior walls~~. Caulking includes, but is not limited to, materials commonly known as "sealants," "putty," and "glazing compounds."

This definition is revised to delete references to the placement of caulking and limit the section to the definition of the term. The placement of caulking is delineated in the standards at 6 MCAR § 2.2503 B 2 and 13.

~~3. Furnace efficiency modifications consisting of:~~

~~a. A furnace or boiler, including a heat pump, which replaces an existing furnace or boiler of the same fuel type and which reduces the amount of fuel consumed due to an increase in combustion efficiency, improved heat generation, or reduced heat losses.~~

~~b. A furnace replacement burner (oil) which atomizes the fuel oil, mixes it with air, and ignites the fuel-air mixture, and is an integral part of an oil-fire furnace or boiler including the combustion chamber, and uses less oil than the device it replaces.~~

~~c. An automatically operated damper installed in a gas-fired furnace (often called a vent damper) which is installed downstream from the drafthood and conserves energy by substantially reducing the flow of heated air through the chimney when t~~

~~8. Duct insulation consisting of a material primarily designed to resist heat flow which is installed on a heating or cooling duct in an unconditioned area of a building.~~

~~9. Pipe insulation consisting of a material primarily designed to resist heat flow which is installed on a heating, cooling or hot water pipe in an unconditioned area of a building.~~

~~10. Water heater insulation consisting of a material primarily designed to resist heat flow which is suitable for wrapping around the exterior surface of the water heater casing.~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

~~13. Heat reflective and heat absorbing window or door material consisting of a window or door glazing material with exceptional heat absorbing or heat-reflecting properties or of reflective or absorptive films and coatings applied to an existing window or door which thereby result in exceptional heat-absorbing or heat-reflecting properties.~~

~~14. Devices associated with electric load management techniques consisting of customer-owned or leased devices that control the maximum kilowatt demand of the residence on an electric utility and which are any of the following:~~

~~a. Part of a radio, ripple or other utility controlled load switching system located on the customer's premises;~~

~~b. Clock-controlled load switching devices;~~

~~c. Interlocks and other load-actuated, load limiting devices; or~~

~~d. Energy storage devices with control systems.~~

~~15. Clock thermostat consisting of a device which is designed to reduce energy consumption by regulating the demand on the heating or cooling system in which it is installed and which uses:~~

~~a. A temperature control device for interior spaces incorporating more than one temperature control level, and~~

~~b. A clock or other automatic mechanism for switching from one control level to another.~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

~~M. Program measures. "Program measures" means all energy conservation measures and renewable resource measures included in the minimum energy efficiency standards for existing residences.~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

~~P.~~U. Residence. ~~"Residence" means any dwelling used for habitation during all or a portion of the months of December through March, or permanently by one or more persons. For rental buildings,~~ "Residence" means any dwelling let to another used for habitation during all or a portion of the months November through April. A residence ~~may be owned or rented and~~ may be part of a multi-unit building, multi-family dwelling, or multi-purpose building, but "residence" ~~shall~~ does not include buildings such as hotels, hospitals, motels, dormitories, sanitariums, nursing homes, schools and other buildings used for educational purposes, or correctional institutions. Each dwelling unit in a rental building ~~shall be considered as~~ is a residence. A ~~mobile~~ manufactured home as defined in Minn. Stat. § 168.011, subd. 8, ~~shall be~~ is a residence for purposes of these rules.

The phrases deleted in this section referred only to requirements for the Home Energy Disclosure Program which was abolished by 1983 Session Laws Chapter 301.

The phrase "let to another" is added to more clearly define the meaning of a rental unit, which is the only type of structure now encompassed by the rules. The phrase "let to another" is the standard definition describing the relationship between a tenant and a landlord.

~~R. Seasonal efficiency. "Seasonal efficiency" means the calculated efficiency of a heating system based on the estimated peak (tuned-up) steady state efficiency corrected for cycling losses.~~

~~S. South facing. "South facing" means plus or minus 45 degrees of true south.~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

6 MCAR § 2.2503 Minimum energy efficiency standards.

A. Compliance. ~~The minimum energy efficiency standards listed in B, shall be applied to residences according to Exhibit 6 MCAR § 2.2503A.-1. Pursuant to Minn. Stat. § 116H.129, subds. 5 and 7, the standards listed under "Disclosure at time of sale" shall only be used to evaluate the energy efficiency of existing residences built prior to January 1, 1976, at the time of sale. Time of sale means the time when a written purchase agreement is executed by the buyer, or, in the absence of a purchase agreement, the time of execution of any document providing for the conveyance of a residence.~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

~~Pursuant to~~ under Minn. Stat. § ~~116H.129~~ 116J.27, subds. 1, 2 and 3, all residences constructed prior to January 1, 1976, which are renter occupied during all or a portion of the months of November through April ~~shall have been~~ must be in compliance with ~~standards adopted pursuant to Minn. Stat. § 116H.27, subd. 1 pertaining to caulking and weatherstripping by January 1, 1980,~~ each applicable standard by the date shown in Exhibit 6 MCAR § 2.2503 A.1, unless those standards are determined to be economically infeasible. ~~Effective July 1, 1983, all residences constructed prior to January 1, 1976, which are renter occupied during all or a portion of the months of November through April shall be in compliance with all standards listed under mandatory compliance and not determined to be economically infeasible.~~

In this section, the changes to the references to the statutes have been made to reflect the revision in 1982 of the state statutes.

The phrase "be in compliance with each applicable standard by the date shown in Exhibit 6 MCAR 2.2503 A.1" has been developed to minimize confusion about the applicability of the standards. The existing language refers to the different dates of applicability and is difficult to understand. The revision to the Exhibit will more easily describe what standards apply. The remaining phrases in this paragraph are then unnecessary and are therefore deleted.

Exhibit 6 MCAR § 2.2503 A.-1.
Applicable Energy Efficiency Standards
from 6 MCAR § 2.2503 B.

~~Type of residence~~ ~~Disclosure at time of sale~~ ~~Purpose Mandatory compliance~~

~~Owner occupied~~

~~Single family~~ ~~Standards 1-4, 9-27~~ ~~None~~

~~Mobile home~~ ~~Standards 1-4, 9-27~~ ~~None~~

~~Condominium building, 2-4 dwelling units~~ ~~Standards 1-4, 9-27~~ ~~None~~

~~Condominium~~

Type of building	Date of applicability		
	January 1, 1980	July 1, 1983	July 1, 1985
	Standards	Standards	Standards
Single family	1-2	1-8	1,2, or 13 and 3-12
Mobile home	1-2	1-8	1,2, or 13 and 3-12
2-4 unit building	1-2	1-8	1,2, or 13 and 3-12
5-11 unit building	1-2	1,3,5,6,7,8, and 2 or 13; OR 1,3,15, and 2 or 13	1,3,5,6,7,8,10,11, 12, and 2 or 13; OR 1,3,15, and 2 or 13
12 plus unit building	1-2	1,3,5,6,7,8, and 2 or 13; OR 1,3,14, and 2 or 13	1,3,5,6,7,8,9,10,11 12, and 2 or 13; OR 1,3,14, and 2 or 13

The proposed exhibit shows which energy standards apply to each kind of renter-occupied residence, and the date that each standard is effective.

Under "Types of Residence" five categories of rental housing are specified. These relate to commonly used practices of describing Minnesota's rental housing stock. Minn. Stat. 116J.27, Subd. 1 provides for the authority to establish standards appropriate for major types of rental housing.

The categories of "5-11 unit building" and "12 plus unit building" are used to describe midsize and large multi family buildings. These categories also reflect standard industry practice, and are similar to categories developed in a major research project that reviewed the rental standards in 1981. That report, "A Study of Energy Conservation in

Rental Housing" used the categories of single family, duplex, 3-4 units, 5-9, 10-19, 20-49, and 50+ units[1]. For purposes of these standards, the categories were consolidated into larger groups reflecting the similarities between groups, the relative frequency of each type, the building construction configuration, and feasibility of retrofitting the various building assemblies. The dates of applicability for the various standards are listed across the top of the exhibit. The January 1, 1980 and July 1, 1983 dates are provided specifically for at Minn. Stat. 16J.27, Subd. 3. The July 1, 1985 date has been established to permit owners additional time in order to comply with the modified standards that are now proposed. Minn. Stat. 116J.27, Subd. 3 provides that "Effective July 1, 1983, all residences which are renter occupied during all or a portion of the months November through April shall be in compliance with all applicable energy efficiency standards." (underlining added) Because the Department is provided the authority to establish all applicable standards, it is enabled to adopt new standards that meet the cost-effectiveness criteria provided for in Subd. 1. See Minn. Stat. 116J. 10(a). However, in order to enable owners of multi-family buildings a reasonable opportunity to make the necessary modifications in order to comply, the Department has proposed an effective date 18 months in the future, or July 1, 1985. In accordance with the principle of providing owners a reasonable time period to bring their buildings into compliance, additional requirements have not been included in the July 1, 1983 compliance date column.

The need for and reasonableness of each new or modified standard will be presented under the explanation of that standard.

B. Enumeration. The following ~~shall be~~ are the minimum energy efficiency standards for existing residences constructed prior to January 1, 1976 that are renter occupied. ~~These~~ The following standards shall be used as indicated in Exhibit 6 MCAR § 2.2503 A.-1.

The phrase "that are renter occupied" has been added to clarify that these mandatory standards apply only to buildings which are renter occupied.

6. Install insulation in accessible attics or ceilings to achieve a minimum total "R" value of the insulation of R-19. If there is insufficient space for the installation of the recommended "R" value, then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space, while providing for appropriate ventilation.

The phrase "or ceilings" has been added to clarify that insulation is required to be installed in either the attic or the ceiling, depending on the type of building construction. For example, insulation could be installed on top of the floor boards in an attic, or underneath those floor boards (between the joists) but immediately above the "ceiling" of the conditioned space below. Therefore, the phrase has been added to

clearly indicate to owners of the requirements to insulate between the conditioned and unconditioned spaces above a residence.

The phrase "recommended by the evaluator" is deleted and the word "standard" added to reflect that these rules no longer apply to recommended actions to an owner of a residence at the time of sale, but are mandatory energy efficiency standards.

The phrase "while providing for appropriate ventilation" has been added to indicate that when complying with these standards, owners should install the insulation according to standard industry practices. In order to ensure that any moisture that escapes from the conditioned space of the building is evaporated, ventilation of this attic or ceiling space is essential. In addition ventilation of this area will prevent the roof from being warmed, resulting in melting of snow on the roof, which can result in roof damage and leaks to the interior.

7. Install insulation in all accessible rim joist areas to achieve minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space.

The phrase "recommended by the evaluator" is deleted and the word "standard" added to reflect that these rules no longer apply to recommended actions to an owner of a residence at the time of sale, but are mandatory energy efficiency standards.

8. Install insulation in or on accessible walls and floors enclosing conditioned spaces to achieve a minimum total "R" value of the insulation of R-11~~, when there is no insulation in a substantial portion of the exterior walls or floors over an unconditioned space. Accessible walls shall include above grade foundation walls of basements, cellars, or crawl spaces.~~ If there is insufficient space for the installation of the recommended "R" value, then the ~~recommendation by the evaluator shall~~ standard must be based on installing insulation to fill the available space.

The phrase "or on" walls is added to reflect that technology has progressed substantially since the standards were first developed in 1978. The construction industry now has a wide variety of products available that can be applied to the surface of an assembly that can increase its energy efficiency. These products incorporate surface treatments to make the insulation resistent to weather, or deterioration by caretakers or occupants of the building. For example, wall insulation products include a stucco or plaster finish that would resist rain, damage by maintenance equipment such as lawnmowers, or kicking by children. Because these products are widely commercially available, they are included in the standards as a requirement. Because each of the standards is dependent on the 10 year cost-effectiveness

test provided for in the statute, an owner would not be required to install this insulation if it did not have a simple payback of 10 years or less.

The deletion of the phrase providing for installing insulation only when there was none in a substantial portion of the walls is proposed to eliminate confusion. It has always been unclear whether the phrase meant if some percentage of the wall areas (perhaps one or two rooms) were insulated, if the owner would be exempt from requirements to insulate the remaining walls. Or, it could be interpreted that if there were a 3 inch thick wall cavity and 1 inch of wall insulation were present, if the owner would have to insulate the remaining two inches.

By deleting this clause, owners would be required to insulate those accessible wall or floor cavities whether or not some insulation were already present, if it could be installed cost-effectively. If the owner could insulate those remaining assemblies and receive energy cost savings that would result in a payback of less than ten years, then the owner should be required to comply with the standard.

The sentence providing for insulation of above grade foundation walls is proposed for deletion. First, a requirement to insulate this assembly - a major source of heat loss in apartment buildings - is proposed as a new standard at 6 MCAR 2.2503 B.12. The Department is proposing delaying the implementation of this standard to facilitate the development of policies for application of this type of insulation. Several issues need to be resolved regarding the application of foundation insulation near driveways and sidewalks, behind shrubbery, and around gas mains and water pipes. In addition, the current standard is not very effective since it only requires insulation to grade level, and does not differentiate between interior and exterior applications. Those distinctions result in significant differences in energy savings, and must be clarified. The new standard does rectify these issues.

The phrase "recommended by the evaluator" is deleted and the word "standard" added to reflect that these rules no longer apply to recommended actions to an owner of a residence at the time of sale, but are mandatory energy efficiency standards.

~~9. Install insulation in accessible floors over unconditioned spaces and in rim joists to achieve a minimum total "R" value of the insulation of R-19. For slab on grade construction, insulation shall be installed to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space.~~

9. Modify the existing heating system so that it operates at a minimum steady state efficiency of 75% as demonstrated through a flue gas analysis provided for in 6 MCAR 2.2504 B.4.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in Standard 9 establishes a minimum operating efficiency for heating plants. This standard, to be effective in July, 1985 applies only to 1-4 unit buildings. There is considerable research and information on this size structure due to the implementation of the Minnesota Energy Conservation Service Program (MECS) where major utilities provide energy audits to their residential customers. Those audits generally indicate that the average existing steady state efficiency is approximately 76% for gas systems and 73% for oil heating systems. (Electric systems operate at 100% efficiency, and propane systems are comparable to natural gas). Thus, most 1-4 unit residences heating with gas will already comply with the standard, as will most oil heated structures. For those buildings that do not currently operate at the minimum efficiency requirements, a low cost tune up will generally increase the efficiency of the system 2 or 3%, which in most cases will enable the building to meet the standard.

Research completed recently by the Department of Economic Security found that replacement of the burner mechanism in an oil furnace, at a cost of approximately $500 would increase the efficiency to about 80% and have a payback of about 2 years, well under the 10 years payback provided for in the statute. Because these improvements are cost effective as defined by the statute, it is reasonable to include this standard. Specific examples of the application of this standard is included as a footnote.[2] The establishment of this standard is reasonable since it effectively serves as a minimum standard by eliminating those heating systems that are extremely inefficient. Because the standard is easily implemented, has relatively low costs and results in significant energy savings, it is needed as one component of the minimum standards program. In order to achieve maximum benefits, both the envelope (ie attic, wall, and foundation insulation) and the heating system need to be treated.

~~10. Install ceiling insulation to achieve a minimum total "R" value of the insulation of R 44 when the existing "R" value of the ceiling insulation, excluding construction materials, is R-30 or less. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space, providing for appropriate ventilation.~~

10. Install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R" value of the insulation R-38. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space, while providing for appropriate ventilation.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in this standard is parallel to standard #6 in requiring insulation in attics and ceilings. There are two major differences. First, insulation is required in all attics and ceilings. The phrase "accessible" has been dropped because it is now cost-effective to insulate most attics, whether or not it was previously possible to do so without the costs of removing a permanent part of the structure. Because energy costs have risen so dramatically since the standards were first proposed, it is now generally cost-effective (as defined by the statute) to insulate the attic or ceiling and repair the building to its condition existing before the insulation was installed.[3]

The second change is to increase the R-value requirement from R-19 to R-38. Again, because energy costs are now so high, it is cost-effective to insulate to the higher R-value. Although there is a diminishing return to insulating a building (ie. adding the first few inches of insulation will save more energy than adding the last few inches) the energy cost savings of insulating an attic to R-38 will result in a 10 year payback or less. Those owners who installed R-19 insulation to comply with the standard #6 which was required in July, 1983 will also be required to add another R-19 to reach the R-38 since that improvement is also generally cost-effective.[4] The selection of R-38 as the minimum R-value was made to coincide with the Energy Code of the State Building Code.

~~11. Install wall foundation insulation to achieve a minimum total "R" value of the insulation of R-11, when there is not insulation in a substantial portion of the exterior walls or foundation walls. If there is insufficient space for the installation of the recommended "R" value, then the recommendation by the evaluator shall be based on installing insulation to fill the available space.~~

11. Install insulation in all rim joist areas to achieve minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in this section is parallel to that of standard #7, with one modification. That change is to require that insulation be installed in the rim joist cavity regardless whether it is "accessible" or not as defined by the previously adopted standard #7. Instead, compliance with the standard will rely on whether the rim joist can be insulated to R-11 cost-effectively; that is, whether it will have a payback of 10 years or less.[5]

This new standard, which requires insulation in the same area called for in existing standard #7, is needed to make the standards program effective. Because the need for and reasonableness of insulating the rim joist cavity per se has already been established (the existing standard was established in the 1980 rule making), requiring previously inaccessible rim joists to be insulated is an issue of cost-effectiveness. Because this building assembly represents an area of significant heat loss, and it is cost-effective to insulate it, the standard is both needed and reasonable.

~~12. Install insulation to achieve a minimum total "R" value of the insulation of R-5 on all water heaters when the remaining useful life of the heater appears to be three years or greater and space is available around the water heater to install insulation.~~

12. Install insulation in or on all walls and floors that enclose conditioned spaces to achieve a minimum total "R" value of the insulation of R-11. Walls must include foundation walls of basements, cellars, or crawl spaces. Insulation installed on the exterior of the foundation wall must extend down to two feet below grade level. Insulation installed on the interior or in the foundation wall must be installed from the bottom of the rim joist to the foundation slab or floor. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in this section is parallel to that of standard number 8 with several modifications.

First, the standard requires insulation of all walls and floors, regardless whether they were previously defined as "accessible" by the existing standard #8. Since standard #8 was adopted, energy prices have increased so that walls and floors can be insulated by removing a permanent part of the structure (such as drilling holes in the siding or plaster) and repairing it, and result in a 10 year payback or less.[6] Because owners can now include those repair costs in the calculation of cost-effectiveness, it is reasonable to require compliance with this standard.

The other modification from the existing standard 8 is a clarification of the requirements for foundation insulation. The existing language of standard 8 required insulation of the above grade foundation wall. Research completed since the adoption of that standard has found that such a requirement was not very effective in reducing heat loss through that building assembly. First, a significant amount of heat is conducted through the foundation through the first two feet below the ground surface. (The first two feet below grade are significantly affected by outdoor air temperatures, while below that level, the ground temperature is generally more stable.) By insulating to two feet below grade, a

significant amount of heat loss is reduced, resulting in considerable energy savings. Although the costs of digging around a foundation increase the overall costs considerally (especially in comparison to insulating only to grade level) the payback is less than 10 years.[7]

The other clarification on foundation insulation requires that if the foundation is insulated on the interior, that the entire foundation wall be insulated down to the slab or floor of the structure. If the wall were only insulated on the interior to grade level (or even to two feet below grade required for exterior insulation) the remainder of that uninsulated wall will function as a heat sink. The uninsulated portion will absorb heat, conduct it through the masonry (behind the insulation) where it will be conducted to the colder ground on the exterior. Thus, insulating only to grade or to two feet below grade is ineffective, and it is necessary, for the standard to be effective, to insulate to the slab on the interior. It is cost-effective to insulate this assembly.[8]

~~13. Install insulation to achieve a minimum total "R" value of the insulation of R-11 on all accessible heating and cooling ducts in unconditioned spaces.~~

13. Caulk, gasket or otherwise seal interior joints between foundation and rim joist, around window and door frames, between wall and ceiling, at joints between wall and trim boards, at cracks on interior surfaces of walls, and at utility penetrations.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in this section calls for caulking of the interior openings of a building envelope, which is parallel to standard #2 which calls for caulking on the exterior openings of a building envelope.

This standard is added to increase the effectiveness of the standards generally in reducing air infiltration through the building envelope, a major source of heat loss for residential structures. Infiltration is also a major cause of drafts within a unit, which reduces comfort levels for tenants.

Although standard #2 calls for exterior caulking, which should reduce infiltration through the building envelope, it is generally impossible to seal every crack on the exterior because there are an infinite number of minute gaps, holes and cracks. However, the interior surfaces of a building generally present far fewer joints and cracks. Interior caulking of trim around windows, doors, and baseboards will significantly reduce infiltration since these areas are the only sources of entry into the conditioned space. Thus, while there is an infinite number of possible entry areas for infiltration on the exterior, there is a very finite number on the interior. As shown in Exihibit 2.2503 A-1, the owner of a rental building is offered the option of either complying

with standard #2 requiring exterior caulking, or with this standard which requires interior caulking. Owners already in compliance with standard #2 will not be required to do additinal caulking. Caulking these interior areas will very effectively reduce infiltration, and is cost-effective.[9]

Another major reason that this standard is needed is to reduce the migration of moist warm air through interior cracks in the envelope. This warm moist air will condense as it meets colder surfaces within the wall cavity, and will cause the insulation and framing members to get wet. The insulating value of the insulation will be reduced, and the wetness may eventually cause the frame to rot. The requirement of this standard, then, will result in cost-effective energy savings, increase comfort levels for tenants, maintain the effectiveness of the insulation, and minimize the possibility of moisture migration and rot. The standard is therefore needed and reasonable.

~~14. Install insulation to achieve a minimum "R" value of the insulation of R-5 on all accessible heating, cooling or hot water pipes in unconditioned spaces.~~

14. Install energy conservation measures that have had or are predicted to have a cumulative energy consumption savings of 25%. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 25% must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13 and 3 of 6 MCAR § 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 25% cumulative energy consumption savings.

~~15. Install a clock thermostat when the residence has a thermostat on the existing furnace or central air conditioner that is compatible with a clock thermostat.~~

15. Install energy conservation measures that have a cumulative energy consumption savings of 30%. These energy conservation measures must be designated in an energy audit conducted by a registered professional engineer or architect or other person determined qualified by the department. The annual energy consumption savings of 30% must be based on verified energy consumption, normalized to the average number of heating degree days reported by the nearest National Oceanographic and Atmospheric Administration recording station, for any heating season from 1973-1974 to the present. The energy audit must indicate whether the building complies with standards 1, 2, or 13 and 3 of 6 MCAR § 2.2503 B. If the building is not in compliance with those standards, the predicted energy consumption savings resulting from the installation of those standards may be included in the 30% cumulative energy consumption savings.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language in this section provides for two new standards which, because they are parallel, are discussed jointly. Standard 14 applies to 5-11 unit buildings, while standard 15 applies to 12+ unit buildings.

These two standards represent a marked departure from the other 13 standards, which are prescriptive in nature. These new performance standards are provided as an option for owners; they can choose to comply with the prescriptive standards as required in Exhibit 6 MCAR 2.2503 A-1, or they can choose to comply by installing energy conservation measures that save 25% or 30%. By providing this option, owners have greater flexibility in complying with the standards, and may be able to do so more cost-effectively than by installing the prescriptive standards.

Because the program establishing the standards has an overall goal of saving energy in rental housing, development of a performance standard is an important mechanism to support cost-effective energy conservation improvements.

The Department has long recognized that there are other improvements to multi-family buildings that may be more cost-effective than compliance with the prescriptive standards. Until now however, there has not been an effective mechanism to incorporate that information into the rental standards requirements. The development of a performance criterion will give credit to landlords who install or have installed other energy conservation measures in their buildings.

Although standards 14 and 15 are presented as performance options, compliance with standards 1, 2, or 13 and 3 is still required. Inclusion of these standards as part of the 25% or 30% savings is required for several reasons.

First, the requirements for standards 1 and 2 or 13 (caulking and weatherstripping) are specifically provided for in Minn. Stat. 116J.27, subd. 3. The Department is mandated to continue to include them in any standards program. Second, the first two standards have been in effect since 1980, so landlords should already be in compliance. Third, calculations by the Department indicate that these standards are among the most cost-effective options available for owners, since the payback is generally two years or less. Fourth, a secondary goal of the standards is to increase the level of comfort for tenants. Requirements for caulking, weatherstripping and storm windows have the greatest impact on infiltration and drafts. Reduction of infiltration then will lead to increased comfort levels for renters. Finally, in most areas where cities have housing maintenance codes, storm windows are mandated as a measure to reduce deterioration of primary windows from the weather. Owners would therefore generally be required to have storm windows anyway. The requirement to comply with the first 3 standards, as one part of the performance standards, is therefore both reasonable and necessary.

The selection of 25% and 30% energy savings for 12+ unit buildings and 5-11 unit buildings respectively is based on the 1980 MHFA study. That analysis calculated the energy savings that would result from different sized buildings complying with the prescriptive standards. Thus, the 25% option is what 12+ unit buildings would have saved if they complied with the prescriptive standards.[10] If owners of these buildings can install other cost-effective, (or more cost-effective) measures, then the goal of the program is also achieved. Similarly, the 30% savings requirement for 5-11 unit buildings is what would have been saved if they complied with the prescriptive standards.[12] These two groupings were established since they are representative of the major types of residential rental housing in Minnesota.

A performance standard was not established for 1-4 unit buildings for several reasons. First, use of a performance standard entails an energy audit by a highly trained technical individual. Owners of these smaller buildings would not likely be able to afford these services. Second, significantly more research has already been conducted on smaller residential buildings that corroborates the cost-effectiveness of installing these prescriptive measures. Finally, because of the limitations of construction practices, there are fewer alternatives for owners to install that save energy as cost-effectively as those measures required in the standards. In contrast, larger buildings can be improved through modifications to the heating distribution system, which is virtually non-existent in small buildings.

In order to determine which energy conservation measures can be installed to meet the 25% or 30% energy consumption savings, the standard requires an energy audit to be conducted by one of three types of professionals. An energy audit by an unbiased individual is the sole method by which an owner can use this optional standard. Reliance on manufacturer's claims of energy savings for particular products, for example, are not sufficiently reliable for a specific installation in a particular building.

The three groups of professionals include Registered Professional Engineers, Architects, and other persons determined qualified by the Department. The first two groups have, as conditions to become certified or registered, requirements for mastery of knowledge in energy conservation. The training requisites for these two groups include studies in thermodynamics, heat transfer principles, and the use of sophisticated evaluation tools.

The Department also proposes to permit other persons, qualified by the Department, to conduct these energy audits. Because energy conservation is a relatively new field, and even more so in terms of multi family housing, there are some individuals who have become experts in this field, but have not met the requirements to become a Professional Engineer or Architect. These individuals are as capable as most Engineers or Architects in providing these energy audits.

A critical element in complying with the 25% and 30% energy consumption savings is the establishment of the base line from which the savings are measured. The proposed rule provides for the use of data from any heating season from 1973-1974 to the present for use as that base. In other words, if a building consumed "x" amount of energy in the 1973-1974 heating season, and the building consumed "x-15%" in the 1981-82 heating season, the owner is given credit for 15% savings. In order to eliminate the effect of either unseasonably warm or cold weather, the rule also provides that the consumption must be normalized. Normalization will convert the consumption of any heating season (either warmer or colder) to a normal season, a standard calculation technique, which will permit comparisons from one heating season to another.

Two types of data are needed to develop this normalized base line consumption. First is the verified fuel consumption records for the building. Copies of utility bills, invoices or other documentation of fuel consumption is mandatory. If this data is not available for a particular heating season, another season must be used as the base year. The other data, heating and cooling degree figures, are routinely available from National Oceonographic and Atmospheric Administration recording stations, which are located throughout the state. These data are often frequently published in local newspapers.

To comply with this standard, if the owner chooses this option over the prescriptive standards, an owner must obtain an energy audit from one of the professional groups already described. The energy audit will develop an energy consumption base line, and compare it to consumption for the most recent year. If the base line consumption is "x", and the consumption for the most recent heating season is x-25% (or x-30% for the 5-11 unit group), and the building complies with standards 1, 2, or 13 and 3, then the building is in compliance with the statutory requirements.

If the most recent heating season consumption is x-10% (meaning that the owner must save an additional 15% [or 20% if it is a 5-11 unit building] in order to comply) then the owner must install one or more energy conservation measures designated in the energy audit to achieve the additional incremental savings. If the building is not in compliance with standards 1, 2, or 13 and 3, the predicted savings from reaching compliance can be included in the 25% or 30% savings.

The Department contends that the availability of this standard as an option to larger multi-family buildings is both needed to achieve optimal cost-effective retrofits to comply with the statutory mandate, and a reasonable method to realize that goal. The flexibility to install other measures recognizes that there are other cost effective energy conservation measures that will save energy just as effectively as the presciptive standards.

15. Install a clock thermostat when the residence has a thermostat on the existing furnace or central air conditioner that is compatible with a clock thermostat.

16. Install a replacement furnace or boiler with a unit of the same fuel type that has a minimum seasonal efficiency of 80 percent, when the existing unit is five years old or older and has a seasonal efficiency of less than 80 percent.

17. Replace the oil burner of an existing furnace or boiler with an oil burner that uses less oil than the device it replaces.

18. Install a vent damper on a gas fired boiler or furnace when the furnace combustion air is taken from a conditioned space.

19. Install an electrical or mechanical ignition system on a gas fired boiler or furnace, when the furance or boiler is located in a conditioned space.

20. Replace all or part of the existing central air conditioner that is five years old or older that has an energy efficiency rating of less than 8.2 with one of the same fuel type to obtain an energy efficiency rating of 8.2 or greater.

21. Install load management devices when the electric utility serving the residence offers a residential rate which reflects any difference in the utility's cost of service between peak and off-peak periods.

22. Install heat reflective or heat absorbing window and door material when the affected rooms of the residence are air conditioned and the cooling degree days for the region exceed 700.

23. Install a solar domestic hot water system when there is a south-facing site that exists on or near the residence that has a prime solar fraction exceeding 0.6.

24. Install a passive solar space heating and cooling system when there is a south-facing site that exists on or near the residence that has a prime solar fraction exceeding 0.7.

25. Install an active solar space heating system when there is a south-facing site that exists on or near the residence that has a prime solar fraction exceeding 0.8.

26. Install a wind energy system when the region's average annual wind speed is equal to or greater than ten miles per hour and there is sufficient unrestricted access to the wind.

27. Install a solar swimming pool heater where a swimming pool is present and it is heated with electricity, gas or another fossil fuel, and the prime solar fraction exceeds 0.8.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

6 MCAR § 2.2504 Conducting the evaluation.

A. Disclosure reports. All evaluators shall use a disclosure report approved by the ~~agency~~ department. Copies of completed disclosure reports must be retained by evaluators for at least five years. The reports must be available for review by the ~~agency~~ department. Copies of audits conducted by registered professional engineers, architects or other persons qualified by the department pursuant to 6 MCAR § 2.2503 B14 and 15 must be submitted to the Department within 14 days for review and approval.

The change from "agency" to "department" is needed to indicate the merger of the Agency into the Department of Energy and Economic Development.

The requirement of Engineers, Architects and other qualified individuals to submit copies of their audits for final review and aproval is needed to assure control by the Department of the standards program. The review of these audits by technical staff will ensure that the audits are thorough, comprehensive, accurate and unbiased. If there is a question, Department staff can arrange to meet the auditor and review the calculations.

~~B. Recommendations. The evaluator shall determine which of the energy conserving practices should save energy in the residence, and in the written report the evaluator shall make a recommendation regarding each practice.~~

~~C.~~B. General duties of evaluators, registered professional engineers, architects, and other approved qualified persons. Evaluators, registered professional engineers, architects, and other approved qualified persons shall estimate energy savings and installation costs of each applicable ~~program measure~~ standard using the calculation procedures in 6 MCAR § 2.2510. An applicable ~~program measure~~ standard is any ~~program measure~~ standard which can be installed in the residence to meet the minimum energy efficiency standards in 6 MCAR § 2.2503. Evaluators, Registered Professional Engineers, Architects, and other approved qualified persons shall:

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The language adding engineers, architects and other qualified persons is needed to ensure that these professionals conduct their audits for compliance with the rental standards in the same way as is done by evaluators. Because the calculation procedures are standard ASHRAE calculations, the industry practice, it is reasonable to require that all audits be done in a uniform fashion.

1. Inspect and take actual measurements of the building shell, and inspect the space heating, space cooling, and water heating equipment; Inspect all

common areas and at a minimum the following number of units for the building being evaluated. The random selecting of units to be included in the representative sample of units inspected shall be done by the evaluator, Registered Professional Engineers, Architects, and other approved qualified persons.

Size of building	Minimum number of units included in inspection sample
1-5 units	all units
5 plus units	5 units + 3% of total number of units in the building

This section has been added to establish a formal mechanism for evaluating and conducting audits of apartment buildings. In order to ensure that the inspection covers the entire building, specific provisions are included to examine common areas and a randomly selected sample of the individual units. Unless a representative inspection is completed, a thorough and accurate evaluation is impossible to develop, and compliance with the standards may be erroneously concluded.

At the same time, it is unnecessary to inspect every unit in a building. The Energy Division has conducted numerous inspections of buildings for compliance with the standards, and found that compliance differs little from unit to unit. Therefore a requirement to inspect only a random sample is reasonable, and needed in order to keep auditing costs as low as possible.

2. Base economic calculations on local fuel prices, or on those prices provided by the ~~agency~~ department, as published in the State Register. ~~each August 1 and February 1.~~

3. Base economic calculations for materials and installation of measures on prices provided by the ~~agency~~ department. Prices must be made available to interested persons ~~evalutors~~ by:

a. Publication in the State Register by the ~~agency~~ department of the most recent contractors and suppliers price survey; or

b. Direct mailing by the ~~agency~~ department of the most recent price survey to certified evaluators~~.~~; or

The deletion of "agency" and addition of "department is needed to reflect the merger of the agency to the Department of Energy and Economic Development.

The deletion of the specific date requirements for publication of fuel prices in the State Register is proposed to enable the Department to provide these prices concurrently with materials and labor costs for installations of measures. This information is available for all

interested persons, not just evaluators, so the clause has been modified to reflect that public availability of this data.

c. if the owner contends that the prices provided by the department are not representative of actual costs that would be incurred by installing the measure to comply with the standards, the owner shall obtain at least three bids from bonafide contractors indicating the costs of installing that measure. The lowest bid must then be used in determining whether the standard is economically infeasible.

This section has been added to permit owners a means of appeal if they believe that the evaluation for compliance does not accurately reflect the circumstances for a particular building. The prices used by evaluators are those provided for at 6 MCAR 2.2504 B3, which the Department develops through a statewide survey of contractors. Those prices are by necessity averages, which cannot account for every possibility in every building. Because those prices are used in the calculation of the payback, if it is less than 10 years the standard must be installed. In some cases, an unusual circumstance might cause an owner to have to pay significantly more than the average price to comply with a standard, causing the actual payback to be longer than that predicted in the audit. To permit the owner an appeal, the owner can obtain 3 bonafide bids, a standard industry practice and present them to the evaluator. That lowest price can be used by the evaluator to recalculate the payback to determine whether the owner needs to comply with that standard. This provision is needed to protect owners from having to install standards that are not cost-effective, and is a reasonable method to permit an alternative way to conduct that calculation.

~~4. Base calculation procedures for active solar domestic hot water and space heating systems on those contained in the HUD Intermediate Minimum Property Standards Supplement. Solar Heating and Domestic Hot Water Systems 4930.2, 1977 Edition; and~~

~~5.~~4. Base any cost and savings estimate for any applicable furnace efficiency modfication to a gas or oil furnace or boiler on an evaluation of the ~~seasonal efficiency or the agency published default table, whichever is higher, of the furnace or boiler. Seasonal efficiency shall be calculated on an estimated peak (tuned-up) steady state efficiency corrected for cycling losses as follows:~~ steady-state efficiency of the heating system.

The original language of this section is deleted since it refers only to the Home Energy Disclosure Program which has been eliminated by the 1983 Legislature.

The language requiring that the efficiency of a heating system be based on the steady-state efficiency has been adopted since it is that figure that is directly derived from a flue gas analysis described in a and b that follow. The steady state efficiency calculation is a common standard in the heating appliance industry.

a. For oil furnaces or boilers, the steady state efficiency shall be derived by a flue gas analysis of the measured flue gas temperature and carbon dioxide content.

b. For gas furnaces or boilers, the steady state efficiency shall be derived from manufacturer's design data. If the manufacturer's design data ~~do not exist,~~ are not available at the time of the inspection, then a flue gas analysis, as described in a. must be performed.

The phrase "do not exist" is replaced by the new language requiring that the data be available to clarify earlier confusion by evaluators. Under the old language, it was possible to argue that the required design data did exist, but it was not available on-site. Without that data, an evaluator cannot make the required determination, so it is reasonable to provide that the data be available at the time of inspection.

~~D. Solar water and space heating systems. Every evaluator assessing solar domestic hot water and active solar space heating systems shall include:~~

~~1. An evaluation containing:~~

~~a. The square foot area of the solar collector;~~

~~b. The solar collector characteristics, including glazing materials and other solar collector materials;~~

~~c. Any storage system needed, including the capacity of storage;~~

~~d. Any freeze protection needed;~~

~~e. The estimated percent of the water heating load to be met by solar energy;~~

~~f. Any physical connections needed with existing heating systems;~~

~~g. The annual maintenance costs;~~

~~h. Any site preparation needed; or~~

~~2. Fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~E. Passive solar space heating systems. Every evaluator assessing passive solar space heating systems shall include the following information:~~

~~1. An evaluation which includes:~~

~~a. A general description and an illustration of the system;~~

~~b. The estimated percent of the maximum heating requirements of the residence that could be met by the system;~~

~~c. The approximate dimensions of the system;~~

~~d. The method employed by the system to store heat, including the heat capacity for heat storage; or~~

~~2. Fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~F. Wind energy devices. Every evaluator assessing wind energy devices shall include the following information:~~

~~1. An evaluation which includes:~~

~~a. Installation cost estimates, based on the installation costs of a commercially available device with kilowatt ratings appropriate to the level of electricity consumed in the customer's residence;~~

~~b. The evaluator's estimate of the average wind speed at the residence based on data available at the nearest wind measurement station;~~

~~c. The specifications of the device under consideration;~~

~~d. Estimates of energy cost savings, based on average yearly wind speeds and the specification of the selected wind device; or~~

~~2. Fact sheets developed by the agency that provide the information in 1. for a typical residence.~~

~~G. Disclosure. The following disclosure shall be included in any report prepared pursuant to D., E., or F.:~~

~~"The energy cost savings estimates you receive are based on systems which may be somewhat different from the ones you purchase. Also, these estimates were not determined using actual conditions but by using simulated measurements. Therefore, the cost savings we have estimated may be different from the savings which actually occur."~~

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

6 MCAR § 2.2505 Presentation of evaluation and audit results. ~~Upon completion of the evaluation, the evaluator shall provide the following information in writing to the seller or the seller's agent:~~ A copy of the disclosure report or audit shall be provided to the owner or the owner's agent. The disclosure report or audit must, at a minimum, contain the following information:

This section is modified slightly to specify that the written information provided to the owner is a copy of the actual disclosure report or audit. This change is reasonable since it minimizes any confusion about what precisely the owner can expect to receive.

A. An estimate of the total cost for materials and labor of installation by a contractor ~~expressed in a range of dollars, within a range of plus or minus 20 percent~~ of each applicable ~~program measure~~ standard addressed in the evaluation.

The deletions in this section refer to price ranges required under the now eliminated Home Energy Disclosure Program.

~~B. An estimate of the total cost of installation by the owner expressed in a range of dollars, within a range of plus or minus 20 percent, of each applicable program measure addressed in the evaluation; however, the evaluator shall not provide an estimate to an owner of the cost of installation by the owner of replacement central air conditioners, wall insulation, furnace efficiency modifications, devices associated with load management techniques, or wind energy devices.~~

~~C.~~B. An estimate of the savings in energy costs ~~expressed in a range of dollars, within a range of plus or minus 20 percent~~, which would occur during the first year from the installation of each applicable ~~program measure~~ standard addressed by the evaluation.

~~D.~~C. An estimate of the payback period, measured in years, from the energy cost savings of each of the applicable ~~program measures~~ standards installed individually.

~~E.~~D. The following disclosure: "The procedures used to make these estimates are consistent with the ~~Minnesota Energy Agency~~ department's criteria for ~~residential~~ energy ~~audits~~ evaluations. However, the actual installation costs you incur and energy cost savings you realize from installing these ~~measures~~ standards may be somewhat different from the estimates contained in this ~~audit report~~ disclosure report or audit. Although the estimates are based on measurements of your ~~house~~ building, they are also based on assumptions which may not be appropriate for your ~~household~~ building."

The deletions in these sections refer to the now eliminated Home Energy Disclosure Program, while the new language clarifies that the Energy Agency is a Division of the Department of Energy and Economic Development. References to "evaluation" and "measures" are changed to "disclosure report" and "standards" to reflect the elimination of the HED Program.

~~F. Sample calculations of the effect of the federal and state energy tax incentives on the cost to the owner of installing one applicable energy conservation program measure and one applicable renewable resource program measure.~~

E. A listing of the units of the building that were actually inspected, and the date of the inspection, as described in 6 MCAR § 2.2504 B.1.b.

The language deleted in this section refers to the eliminated HED Program. The new language requires listing of the actual units

inspected (required at 6 MCAR 2.2504 B1b). It is reasonable for the owner to receive a listing of the units inspected, and necessary for the record so that the Department can monitor compliance.

~~G. If the evaluation is of rental property, a separate list of those improvements necessary to bring the residence into compliance with Minn. Stat. § 116H.129, subd. 3.~~

F. The name, address, and telephone number of the person who conducted the inspection and who completed the disclosure report or audit.

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language is added to ensure that the owners, and any others who review the audit or disclosure report, may be aware who conducted that audit. Such a requirement is essential for monitoring purposes, and to ensure that only approved or qualifed persons provide these reports.

6 MCAR § 2.2506 Prohibitions and exemption.

A. ~~Recommendations and endorsements.~~ Prohibitions. The evaluator, registered professional engineer, architect, or other approved qualified person shall:

1. not recommend ~~or discuss~~ any supplier~~,~~ or contractor ~~or lender~~ to any owner.

2. not endorse the use of specific brand names of materials or products, persons, firms, or contractors which may be used to meet any specific standard.

3. not make any statements relating to the standards which may be interpreted as an endorsement of any specific material or product.

~~B. Exclusion of measures. The evaluator shall~~

4. not exclude any applicable ~~program measures~~ standards in the presentation of the audit to the owner.

~~C. Costs of certain products. The evaluator shall not include in the written evaluation costs or energy cost savings of installing any product which is not defined as a program measure.~~

~~D. Required disclosure. The evaluator shall~~

5. provide the owner with a written statement of any interest which ~~the evaluators~~ he or she or ~~the evaluator's~~ his or her employer has, directly or

indirectly, in the sale or installation of any ~~program~~ energy conservation measure ~~or in the sale of the residence to be evaluated~~; and

6. not conduct an evaluation of a building in which he or she has an ownership interest or is employed (other than to conduct the evaluation) by any person having an ownership interest in the building.

This section is reorganized to make it more understandable for those conducting the audits and evaluations. Language is added to require that the other professionals authorized to conduct audits comply with these minimum standards to remain unbiased in their work. The deleted language refers only to the HED Program which has been eliminated.

The new language refering to the prohibition of ownership interest is needed to prevent conflicts of interest to ensure that the disclosure reports and audits are unbiased.

B. Exemption. If the building is a low rent housing project owned by a public housing agency as defined in Minnesota Statutes, section 462.421, subdivision 12, the energy audit or disclosure report provided for at 6 MCAR § 2.2504 may be provided by an officer, or employee of the agency, if the audit is conducted in accordance with Code of Federal Regulations, title 24, sections 865.301-836.310, if the procedures prescribed in 6 MCAR § 2.2504 are followed, and if the audit includes the standards provided in 6 MCAR § 2.2503. Persons conducting these audits are exempted from the certification requirements of 6 MCAR § 2.2507. However, unless the officer or employee of the agency meets the requirements of 6 MCAR § 2.2503 B.14. or 15., they shall not conduct an energy audit for compliance with 6 MCAR § 2.2503 B.14. or 15.

This exemption for public housing is provided because these public housing agencies are required by federal rule to conduct audits and install certain energy conservation measures. The exemption permits the public housing agencies to use their own staff to do the audits, since they are permitted to do so under the federal rule. Allowing the audit conducted under the federal program (as long as the standard calculation procedures, required measures, and prices are used) will avoid duplication and unnecessary expenditures by these agencies.

6 MCAR § 2.2507 Qualification Procedures for evaluators

B. Training

1. Except as provided in 2. no person ~~shall be~~ is eligible for certification ~~pursuant to~~ under C. unless he or she has first participated in a training course which has been approved by the ~~agency~~ department and which covers the subject matter tested in the evaluator certification examination.

2. The following persons ~~shall be permitted to~~ may take an appropriate ~~agency~~ department approved orientation session, in lieu of the requirements of 1.

e. Members of the American Institute of Real Estate Appraisers, the Society of Real Estate Appraisers, the Independent Fee Appraisers or other asso-

ciations determined by the ~~agency~~ department to have applicable training requirements for their members;

C. Certification

1. All persons must take and pass a certification examination conducted by the ~~agency~~ department. The certification examination must test for the following qualifications:

e. The capability to conduct the ~~HED~~ energy evaluations including: a working knowledge of energy conserving practices, the ability to determine the applicability of each of the program measures, and proficiency in the auditing procedures for each applicable program measure established in 6 MCAR § 2.2504;

~~g. An understanding of the nature of solar energy and its residential applications including: insolation, shading, heat capture and transport, and heat transfer for hot water;~~

~~h. An understanding of the nature of wind energy and its residential applications including: wind availability, effects of construction, wind capture, power generation, and interfaces with residential and utility power lines; and~~

~~i.~~g. A working knowledge of building and fire codes related to the installation and safety of wood burning appliances.

2. All persons shall submit a $50 certification fee to the ~~Minnesota Energy Agency~~ department. However, no certification fee shall be charged for certified municipal building officials who are directly employed by a municipality as defined in Minn. Stat. § 16.84, subd. 3, or for employees of public housing agencies as defined in Minnesota Statutes, section 462.421, subdivision 12; or for employees of private non-profit community-based organizations, when the evaluations are performed as part of the employee's normal job responsibilities.

3. All persons shall provide evidence satisfactory to the ~~agency~~ department of liability and of errors and omissions insurance. The minimum value of protection in each category shall be $50,000, and the insurance shall be of the "occurrence" variety where coverage is based on the date when the evaluation is made. A "claims made" policy with a reporting endorsement of at least five years is also acceptable. Coverage shall not be required for evaluators who are employed by municipal governments or public housing agencies, ~~and~~ who perform evaluations as part of their normal job responsibilities. Certified evaluators who have provided a bond to the state as required by the Building Code Division of the Department of Administration shall not be required to obtain the protection required by this paragraph until that bond expires. ~~Bonds shall not be renewed for the purposes of the HED program.~~ In addition, each insurance policy shall:

D. Certification examination. Examinations shall be conducted by the ~~agency~~ department and offered at the following times:

The deletions in this section refer only to the Home Energy Disclosure Program, eliminated in July 1983 in Chapter 301, 1983 Session Laws.

The new language permitting evaluators of public housing agencies to also be exempted from insurance and certification requirements is added to minimize costs to these agencies as they comply with the standards. Employees of these agencies are generally covered by blanket agency policies similar to municipal employees, so this requirment would be redundant and unreasonable.

1. Prior to the date of certificate expiration, the evaluator shall attend a recertification course, as required by the ~~agency~~ department. Successful completion of this course shall recertify the evaluator for the next year. Evaluators not completing the recertification course prior to the expiration date of their certification shall be recertified by completing the recertification course and sucessfully retaking the certification examination.

2. The recertification course requirements for evaluators shall be eliminated for any particular year if the ~~agency~~ department determines that no changes were made in the ~~HED~~ Program that year. Certification shall then be automatically renewed.

3. Persons registering for recertification shall pay a $25 fee to the Energy Division of the Department.

~~3.~~4. This recertification shall occur annually, for the life of the program.

The word "agency" is changed to Department to reflect the merger of the agency fo the Department of Energy and Economic Development.

B. Training. Certification shall be revoked for any ~~HED~~ evaluator certified before July 1, 1981, who does not successfully complete the appropriate training course required in 6 MCAR § 2.2507 B., and the certification examination required in 6 MCAR § 2.2507 C.1.

E. Wrongful acts. Certification shall be revoked when reasonable evidence indicates an undisclosed conflict of interest, a violation of these rules, unethical practices, or negligent performance of duties as an evaluator. In any of these instances, the ~~agency~~ department will, if requested, provide a review to determine whether the revocation was proper. Such a review shall consist of the following procedures:

1. The evaluator shall make a written request for a review to the ~~agency~~ department.

2. The ~~manager~~ director of the office of conservation ~~division~~ shall determine a time to review the request.

c. ~~Agency~~ Department staff may present written or oral testimony, as well as witnesses.

3. The ~~manager~~ director of the office of conservation ~~division~~ shall make a judgment based on the information presented in the review hearing. That judgment shall be presented in writing to the evaluator within three working days of the review.

F. Failure to report. Certification shall be revoked if the reports required in 6 MCAR § 2.2504 A. are not submitted to the ~~agency~~ department as ~~requested~~ required.

6 MCAR § 2.2510 Calculation procedures. The following procedures shall be the basis for calculating energy savings for ~~program measures~~ each standard.

The changes in this section reflect the merger of the agency into the Department of Energy and Economic Development, and that the rules refer only to mandatory rental standards, not to measures disclosed at the time of sale under the HED Program.

Under failure to report, the rule has been changed to enable the Department to require reports rather than to simply request them. Without that authority, the Department's ability to review and monitor the disclosure reports provided by the evaluators is extremely limited. This change is needed to effectively implement the program.

4. Furnace efficiency modifications

a. Replacement furnaces or boilers

Equation #3 - ~~$E = E_0 (1 - \frac{N_0}{N_1})$~~

$$E = E_0 \left(1 - \frac{N_0}{N_1}\right)$$

The existing formula is stricken and the new formula added to correct a typographical error in the adoption of the existing rule.

IMPACT ON SMALL BUSINESS

The legislature, in Session Laws 1983, Chapter 188, requires an agency proposing new rules to consider the impact those rules would have on small businesses. Minn. Stat. 14.115 Subd. 1 is amended to define a small business as an entity that is "independently owned and operated, is not dominant in its field, and either employs fewer than 50 full time employees or has gross annual sales of less than $4,000,000." The statute requires the agency to consider methods of reducing the impact of the rule by a variety of methods, including less stringent compliance or reporting requirements, less stringent schedules, simplification of compliance requirements, the establishment of performance standards to replace design standards, or total exemption.

The rules as proposed by the Department will have a dramatic impact on the energy consumption of residential rental housing in Minnesota. The proposals to eliminate the loophole "accessible" from the standards for attic and wall insulation will, for example, require substantially greater number of rental units to be insulated. A 1980 study by the Minnesota Energy Agency found that almost 100% of all walls were considered "inaccessible," and therefore, were exempted from the standard. The Department recognizes that owners of rental property, whether small businesses or not, will face additional costs as they comply with the upgraded standards.

It is the Department's position that the proposed rule amendments are essential to effectively implement legislative intent. With the adoption of Minn. Stat. 116J.27 in 1977, the legislature clearly indicated its belief that meaningful, cost-effective standards be established to overcome the substantial barriers that cause rental housing to be energy inefficient. These proposed rules closely follow that intent by relying on the statutory provision that a standard be required only in those circumstances where the energy cost savings are sufficient to pay for the cost of installing the standard in 10 years or less. Because the Department has followed that legislative criterion, owners of rental housing who install the required standards will realize immediate reductions in fuel consumption, and that those savings will pay for the costs incurred installing the standards.

Although the statute only requires the Department to consider the impact on small businesses, it is apparent to the Agency that data are not available which indicate who owners of rental property are. However, it is the belief of the Department that the vast majority of the landlords whose rental units are covered by the statute would be included under the definition of a small business. Since almost half of Minnesota's rental housing stock is comprised of buildings with 4 units or less, it is likely that most owners would be defined as a small business opertion with 50 or fewer employees, or gross annual sales less than $4 million.

Minn. Stat. 14.115 subdivision 2(a) calls for an agency to consider the establishment of less stringent compliance or reporting requirements for small businesses. As noted earlier, the Department developed the upgraded standards to closely follow legislative direction of only establishing standards which pay back in 10 years or less. These minimum energy efficiency standards are minimums, and are substantially less than what would be required under building codes if the building were to be built now. For example, the recently upgraded Energy Code, effective in January, 1984 requires walls to be insulated to R-19, while these rental standards require insulation of walls to only R-11. The Department was cognizant during the development of these proposed rules that the standards would generally apply to owners who are considered small businesses. In developing the standards, the Department worked very closely with the Minnesota Multi Housing Association, an organization that represents landlords across the state. An energy committee was established, partly to provide on-going input to the Department in establishing meaningful and workable rules. That committee frequently cited issues that would affect the small business owner, and worked with the Department to resolve them.

The proposed rule does not provide for mandatory reporting requirements, so consideration of less stringent provisions for reporting was not necessary.

Subdivision 2(b) calls for less stringent schedules or deadlines for small businesses. The Department recognizes that small business operators may especially have greater needs for time to be able to comply with the new standards. The Department considered establishing the effective date of the new standards to take place on the date of adoption of the rule, since it has been the experience of the Energy Division that landlords tend to wait until the standards become effective (or even later) before taking actions to comply with the rule. However, after lengthy discussions with the Multi Housing Association and

others, the Department proposes in the rule to delay the effective date until July 1985. That delay provides owners, mostly small business, almost 18 months to comply.

In addition, the Department is committing itself to more actively publicize the standards, and to provide technical assistance to owners seeking to comply. In the past, due to extremely limited staffing and resources, the Department has not been as successful as possible in informing owners about the standards.

Subdivision 2(c) requires the consideration of simplification or consolidation of compliance or reporting requirements in any proposed rule. A major focus of the Department in developing the proposed rule was to establish meaningful and relevant standards for the wide variety of rental housing types. The rental housing sector is broadly variant, from small structures of 1-4 units (comprising almost half of the covered units) to large complexes with hundreds of rental units. To ensure that the standards were as relevant as possible, the categories of buildings were expanded from four to five to more accurately mesh with the distinctive energy use pattern of buildings under 12 units and those buildings with more.

Those categories are also more differentiated than under the old rule. For example, requirements for storm doors are deleted for larger buildings when Division analysis indicated that installing them was not generally cost-effective. Similarly, requirements for minimum steady state efficiencies are only provided for small structures since they are less expensively tuned than large heating systems in bigger buildings.

The effect of these two changes is to simplify the standards for any given building. An owner can, by using the chart identified as Exhibit 6 MCAR 2.2503 A-1, immediately know which standards apply to his or her building.

Subdivision 2(d) requires consideration of performance standards in lieu of design or operational standards. The Energy Division has long understood that performance standards are the optimal methodology for the incorporation of energy efficiency levels in buildings. For example, the Energy Code, applicable to new construction, establishes an "energy budget" which permits a designer to make trade-offs between various building components.

Unfortunately, data does not yet exist that would permit the Department to establish a minimum "miles per gallon" equivalent for existing rental buildings. Such a system is highly preferred since it credits owners of buildings who have taken other actions, different from those established in this rule, to conserve energy.

However, the Department has developed, after considerable consultation with the Multi Housing Association, a "quasi performance standard." Standards 14 and 15 explicitly establish performance standards of 25% and 30% energy consumption savings that if achieved by the installation of other energy conservation measures, are equivalent to complying with the prescriptive standards. By establishing these performance standards owners can comply with the rules by installing other measures that may be less expensive, more appropriate, and more cost-effective than those required in the prescriptive standards.

Subdivision 2(e) requires consideration of exemption of small business owners from the rule. As noted earlier, it is the Department's belief that the majority of all rental housing owners in the state would be defined as small business operators, and thus subject to consideration of this statutory provision. However, the legislature established its clear intent that rental housing be made more energy efficient through the adoption of minimum energy efficiency standards. Exempting the majority of those owners of that housing from the standards because they are small businesses would negate that intent. The Department has instead worked in other ways to minimize the impact the rules would have. By delaying the effective date, by establishing standards relevant to the various rental housing types to simplify compliance and by establishing performance standards, the Department has worked diligently to limit the negative impact on all owners of rental housing. Finally, the implementing of these standards will result in substantial reduction in the energy consumption of these buildings, improving cash flows. Unlike other codes, compliance actions with these standards actually pay for themselves and result in net profit increases.

The Department has carefully analyzed each standard to determine that it is cost-effective, that is, as defined by the statute, the installation of the standard would pay for itself in energy cost savings in ten years or less. Below is a summary of the costs and savings of complying with each new standard for three representative rental housing types.

The three typical housing types are:

A. A duplex with average energy consumption of 363.4 mm BTU/year, with an average steady state efficiency of 71% for gas and 70% for oil fired heating systems. In determining the cost-effectiveness of complying with the additional standards, it is assumed that the heating system efficiency has been increased to 75%, as required in Standard #9.

B. A six unit building with average energy consumption, with an average steady state efficiency of 75%.

C. A twenty-six unit building with average energy consumption and an average steady state efficiency of 75%.

The costs and savings for complying with the new standards are:

Standard 9 Minimum steady state efficiency of 75% for heating systems (only for 1-4 unit buildings).

		Costs	Annual Savings
Increase efficiency from 72% to 75%	(gas)	$75	$ 82
	(oil)	$90	$107
Increase efficiency from 70% to 75%	(gas)	$100	$144
	(oil)	$115	$187

Standard 10
Example (a) Increase attic insulation to R-38 in an accessible attic.

		Building Type		
		Duplex	5 unit	20 unit
Attic area		1425 ft^2	2070 ft^2	5310 ft^2
Steady state efficiency		75%	75%	75%
Existing R-value		R-15	R-15	R-15
Insulation costs		$557	$809	$2076
Annual energy cost savings	(gas)	$68	$98	$253
	(oil)	$74	$108	$277

Example (b) Install insulation in inaccessible attic from R-15 to R-38. Include repair costs to cut hole in gable end to blow in insulation.

Insulation costs		$584	$849	$2177
Energy cost savings	(gas)	$68	$98	$253
	(oil)	$74	$108	$277

Standard 11 Install insulaton in inaccesible rim joists to R-11. Remove existing ceiling tile, install R-11 batt of insulation and replace tile.

		Duplex	6 unit building	26 unit building
Perimeter length		155 ft.	364 ft.	680 ft.
Insulation cost		$217	$510	$952
Annual Energy Cost Savings	(gas)	$35	$67	$170
	(oil)	$38	$73	$185

Standard 12

Example (a) Insulate inaccessible above grade exterior walls. The existing wall has insulation with an R-value of 3.5. The heating system efficiency is 75%.

		Duplex	6 unit building	26 unit building
Wall construction type		wood siding	wood siding	stucco siding
Average wall area		1202 ft^2	2547 ft^2	10,376 ft^2
Cost to insulate		$901	$1910	$11,414
Energy Cost Savings	(gas)	$133	$282	$1,147
	(oil)	$145	$307	$1,251

Example (b) Insulate interior foundation walls to R-11.

	Duplex	6 unit building	26 unit building
Wall area above grade	310 ft^2	728 ft^2	1040 ft^2
below grade	1085 ft^2	910 ft^2	1760 ft^2
Cost to insulate	$2302	$2702	$4620
Energy cost savings (gas)	$1357	$1683	$2827
(oil)	$1466	$1824	$3062

Standard 13 Caulk interior cracks

Estimated length of cracks (feet)

Area	Duplex	6 unit building	26 unit building
Foundation/rim joist	155	182	0 (masonry)
Window frames	212	686	2222
Door frames	68	34	34
Wall and baseboard	310	546	1360
Other cracks	20	60	260
Utility penetrations	3	3	3
Total crack length	768	1329	3879

Assume ½ of crack length is 1/32" wide and ½ of crack length is 1/16" wide.

Cost to caulk		$499	$864	$2521
Annual energy cost savings	(gas)	$267	$462	$1349
	(oil)	$299	$517	$1507

Standard 14 Install energy conservation measures that reduce energy consumption by 25%.

Assume:
Building type: 26 units
Heating system: Gas designed hot water heat

1973-74 annual space heating use = 23,418 therms
1973-74 space heating cost at 1983 prices = $13,255
25% of 1973-74 space heating = $3,314
75% of 1973-74 space heating = $9,941
1982-83 space heating costs = $12,725

Measure	Cost to install	Estimated % savings	Revised space heating costs
12 Thermostatic valves	$660	2%	$12,471
Outdoor reset	$450	20%	$ 9,976
Boiler tuneup	$160	4%	$9,577

Savings from installation of these 3 measures exceeds 25% of consumption.

Standard 15 Install energy conservation measures that reduce consumption by 30%.

Assume:
Building type: 6 units
Heating system: Oil fired hot water with a steady state efficiency of 70%.
1973-74 space heating consumption = 5,810 therms
Energy costs at 1983 fuel cost = $3,281
30% of fuel costs = $984
70% of fuel costs = $2,297
1982-83 heating cost = $3,150

Measure	Cost to install	Estimated $ savings or % savings	Revised space heating costs
Interior caulk	$864	$517	$2,633
Flame retention burner	$500	14%	$2,264

The installation of these 2 measures reduced consumption to below 70% of the original consumption levels, so that at least a 30% reduction is achieved.

Summary

By providing these examples of costs and savings of complying with the standards for 3 different representative building types, it is hoped that rental property owners will have an idea what the costs and benefits of complying with the standards are. While it is impossible to describe every circumstance for every building type, these examples provide a sample for small business owners of the costs of these rules. It is important to note that the energy savings that result are significant, and will result in improved cash flow in a fairly short time.

FOOTNOTES

[1]A Study of Energy Conservation in Rental Housing, Riter, Suppes, Plautz - Architects Ltd. Minnesota Housing Finance Agency, Jaunary 1979. p. D.8.

[2]Standard 9 requires that owners of renter occupied residential buildings "modify the existing heating system so that it operates at a minimum steady state efficiency of 75% as demonstrated through a flue gas analysis."

Since a tune up of the heating system can improve the stedy state efficiency 2-3%, then a 4% energy savings can be achieved by increasing the efficiency of a heating system from 72% to 75%. (As indicated in 6 MCAR § 2.2510 the energy savings resulting from improvement in furnace efficiency may be calculated using equation #3: $\Delta E = E_h (1 - \frac{N_0}{N_1})$. The % savings in energy would, therefore, be calculated:

$$\% \text{ savings} = (1 - \frac{N_0}{N_1}) \times 100)$$

A spot check of a few local heating contractors indicates that a tune up of the heating system can generally be accomplished for approximately $75 for gas heating systems and $90 for oil heating systems.

The total energy savings for a specific building due to an increase in steady state efficiency depends on the size of the original heating bill. If the sample of weatherized houses studied by Bakke, Kapp, Ballow and McFarlin under contract with the Department of Economic Security is representative of one to four unit buildings in Minnesota, annual heating energy use may range from 50 to 450 million BTU, and average around 150 million BTU. Energy savings due to efficiency improvements then, may range from 2 to 18 million BTU per year.

The simple payback for this improvement in these types of buildings for gas and oil heating are shown in the table below. The three types of buildings are low energy users (50 million BTU/year), average energy users (150 million BTU/year), and high energy users (450 million BTU/year).

Table 1 Simple Payback for Heating system efficiency improvements (in years)

	50×10^6 BTU	150×10^6 BTU	450×10^6 BTU
Oil fired system (72% to 75%)	5.9	2.0	.7
Gas fired system (72% to 75%)	6.8	2.3	.8

The simple payback (SPB) is calculated using the following equation:

$$SPB = \frac{C}{\Delta E \times F} \qquad \text{equation \#a}$$

where:

SPB = The simple payback.
C = The cost of the retrofit measure.
ΔE = The quantity of annual energy savings in appropriate energy units such as hundreds of cubic feet of natural gas, gallons of fuel oil or millions of BTU.
F = The cost per unit of fuel. For this example a cost of $5.66 per million BTU of gas and $7.36 per million BTU of oil were used.

As shown in Table 1, the simple payback for improving the steady state efficiency of a heating system may range from 6.8 years for a building with a 50 million BTU/year average heating load and heated with a gas fired heating system to .7 years for a building with a 450 million BTU/year heating load and heated with an oil fired heating system.

The impact of this standard will be greatest in buildings with high heating energy use such as older, larger 4-plex buildings with high infiltration rates or poorly balanced heating systems.

[3]Standard 10 requires that owners of rental property install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R" value of insulation of R-38. If there is insuffiicient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space while providing for appropriate ventilation."

Several factors influence the cost-effectiveness of adding attic insulation. These include the existing level of insulation, the cost of adding insulation, the cost of the fuel saved, and the seasonal efficiency of the heating system. The energy saving impact of adding insulation decreases with each inch of added insulation; that is, the first six inches of insulation saves more energy than

the next six inches. Since the efficiency of the heating system determines the amount of energy which needs to be supplied in order to satisfy a given demand, the efficiency of the heating system will influence the total energy savings resulting from added insulation. The cost of achieving a given "R" value varies depending on the insulating technique used. Also the cost of a given quantity of energy depends on the type of fuel used to supply that energy. These costs, in turn, influence the cost-effectiveness of installing insulation in ceilings or attics.

The impact of various levels of seasonal efficiency and costs of fuels may be combined in a factor called the Heating Cost Factor (HCF):

$$HCF = \frac{D \times 20.4 \times F \times TCF}{N \times V} \qquad \text{equation \#b}$$

where:

HCF = The Heating Cost Factor.
D = The heating degree days (8159 heating degree days are used for this example).
F = The cost per unit of fuel ($5.66 per million BTU for gas and $7.36 per million BTU for oil).
TCF = The factor showing deviation from normally assumed indoor temperature. (For this example no deviation from normal is assumed, therefore TCF = 1).
N = The seasonal efficiency of the furnace.
V = The heating value of a unit of fuel.

Four levels of Heating Cost Factors are considered in this example. A lowest HCF case, highest HCF case and two cases which include heating systems which meet standard 9 with a steady state efficiency of 75% for gas and oil fired systems. These heating cost factors are listed below including the assumed description of the system. (SS refers to steady state efficiency while SE refers to seasonal efficiency of the heating system.)

HCF	SS	SE	Fuel	System Characteristics
1.3	80	72	gas	furnace or boiler with vent damper and intermittent ignition device
1.65	75	57	gas	furnace or boiler with no vent damper or intermittent ignition device
1.80	75	68	oil	furnace or boiler
2.08	65	59	oil	furnace or boiler

Insulating inaccessible attics is more expensive than insulating accessible attics. Inaccessible attics may be insulated by cutting a hole in the gable ends

of the attic walls in a sloped roof assembly or cutting holes in the fascia or sides of roof access route in a flat roof assembly and blowing insulation into the attic space. The cost of cutting a hole in the gable and fascia or roof access is estimated to be about $.017 per square foot of attic space. This is an approximate cost since the size of the attic space which can be accessed with one hole depends on the dimensions and design of the attic. Adding insulation by this method cost $.017/ft^2 for the holes plus $.017/ft^2 R for the insulation.

Inaccessible attics are almost always cost-effective to insulate to R-38. The simple payback periods for various levels of existing insulation and for various heating cost factors are shown below.

Simple payback in years for insulating inaccessible attic spaces

Existing insulation R-value	Cost per square foot	HCF=	1.3	1.65	1.80	2.08
0	$.66		2.3	1.8	1.6	1.4
11	$.48		7.6	6.0	5.5	4.8
15	$.41		10.8	8.5	7.8	6.8
19	$.34		13.1	10.3	9.4	8.2

The simple payback is calculated using the following equation:

$$SPB = \frac{C}{\Delta H \times HCF}$$

Where C = cost of installing conservation measure
ΔH = the difference in design heat loss per degree Fahrenheit between the improved condition and the existing condition. (See MCAR6 2.2510)

This equation is derived from equation #a in footnote #2 as follows:

$$SPB = \frac{C}{\Delta E \times F} \qquad \text{equation \#a}$$

As indicated in 6 MCAR 2.2510, equation 3

$$\Delta E = \frac{\Delta H \times D \times 20.4}{N \times V} \qquad \text{equation \#3}$$

Substituting this in equation #C

$$SPB = \frac{C \times N \times V}{\Delta H \times D \times 20.4 \times F} \qquad \text{eqiatopm \#d}$$

Equation d may also be written:

$$SPB = \frac{C}{\Delta H} \times \frac{N \times V}{D \times 20.4 \times F} \qquad \text{equation \#c}$$

From equation #2 in footnote #3

$$HCF = \frac{D \times 20.4 \times F \times TCF}{N \times V} \qquad \text{equation \#b}$$

Rearranging the terms, equation b may also be written:

$$\frac{N \times V}{D \times 20.4 \times F} = \frac{TCF}{HCF} \qquad \text{equation \#f}$$

Substituting in equation e,

$$SPB = \frac{C}{\Delta H} \times \frac{TCF}{HCF} \qquad \text{equation \#g}$$

For this example it is assumed that temperature settings are average and the temperature correction factor equals one. Thus equation g may be written:

$$SPB = \frac{C}{\Delta H \times HCF}$$

In this case, ΔH is calculated using Equation #9 in MCAR 6 2.2510. For example, the simple payback for adding insulation to bring the insulation level up from an existing level of R-15 to R-38 in a building heated with gas and a 75% steady state efficiency furnace with no vent damper or intermittent ignition may be calculated as follows:

$$\Delta H = \left(\frac{1}{R_0} - \frac{1}{R_1}\right) \times A \qquad \text{equation 9}$$

Where:

R_0 = the total R-value of existing insulation and existing construction materials in present condition. (For a building with R-15 insulation, the total R-value including construction materials is R-19.)

R_1 = total R-value of proposed condition to include total recommended R-value of insulation and construction materials. (Including the construction materials, and the insulation, the total R-value for this example is R-42.)

A = area for which additional insulation is being proposed. (Since each square foot of roof which is insulated will provide the same energy savings, the simple payback is calculated for one square foot.)

Thus,

$$\Delta H = \left(\frac{1}{19} - \frac{1}{42}\right) \times 1 = .029$$

Since,

C = \$ .34/ft^2

HCF = 1.65

The simple payback for this conservation measure is:

$$SPB = \frac{.34}{(.029)\ (1.65)} = 7.1 \text{ years}$$

The removal of the word "accessible" from the standards will ensure that most attic spaces will be insulated to R-38.

[4]Standard 10 requires that owners of rental property install insulation in all ceilings or attics between conditioned and unconditioned spaces to achieve a minimum total "R value of insulation of R-38."

Increasing the required R-value in attics or ceilings from R-19 to R-38 means that almost all accessible attics will be required to be insulated to this level. (See footnote #3 for a discussion of inaccessible attics.) The simple payback periods for insulating accessible attics to R-38 for various levels of existing insulation and heat cost factors are shown below:

Simple payback periods for insulating accessible attics to R-38 (in years)

Existing level of insulation	HCF = 1.3	1.65	1.80	2.08
0	2.3	1.8	1.6	1.5
11	8.2	6.5	5.9	5.3
15	9.4	7.4	6.8	6.1
19	12.4	9.8	9.0	8.1

The simple payback periods are calculated using the procedure outlined in footnote 3.

For example, in a building with an existing level of insulation in an accessible attic of R-11 and which is heated with a gas-fired furnace with a steady state efficiency of 75% and no vent damper or intermittent ignition. (i.e. HCF = 1.65) the simple payback may be calculated as follows:

R_0 = R-15 (The construction materials provide an R-4 and the insulation provides R-11)

R_1 = R-42 (R-38 for insulation plus R-4 for the construction materials.)

A = 1 square foot

$\Delta R = 38 - 11 = 27$
$C = \$.017/\text{sq. ft.}/R \times R\text{-}27 = \$.46/\text{sq.ft.}$
$HCF = 1.65$ (See note 3.)

$$SPB = \frac{.46}{(.043)\ (1.65)} = 6.5 \text{ years}$$

[5]Standard 11 requires that owners of residential rental property "install insulation in all rim joist areas to achieve a minimum total "R" value of the insulation of R-11. If there is insufficient space for the installation of the recommended "R" value, the standard must be based on installing insulation to fill the available space."

The factors which influence the cost effectiveness of this measure are the existing level of insulation, whether the rim joist is accessible or inaccessible (i.e. the cost of insulating), and the heat cost factor (i.e. the furnace or boiler seasonal efficiency and the fuel cost.). The cost of insulating accessible rim joists is $.70 per lineal foot (or $.74 per square foot) is indicated by the Department of Energy and Economic Development price survey of contractor installed conservation measures. The cost of insulating inaccessible rim joists is estimated to be $1.40 per linear foot or $1.60 per square foot. The estimate is based on the price survey cost for rim joist insulation ($.70/linear foot) and an estimate of the cost of removing and repairing sections of basement ceiling to get at the rim joist ($.70 per linear foot).

It is cost-effective to install rim joist insulation to R-11 even if the rim joist is inaccessible. The simple payback periods for this measure calculated as demonstrated in footnote 3, are shown below.

Simple payback periods for rim joist insulation (in years).

Existing level of insulation	HCF = 1.3	1.65	1.80	2.08
Accessible				
R-0	3.2	2.5	2.3	2.0
R-3.5	8.1	6.4	5.9	5.1
Inaccessible				
R-0	6.8	5.4	4.9	4.3

For example in a building with no insulation in the rim joists between the first and second floor (i.e. inaccessible rim joists) and which is heated with a gas-fired furnace with a steady state efficiency of 75% and no vent damper or intermittent ignition (i.e. HCF = 1.65) the simple payback for insulating the rim joists may be calculated as follows:

R_0 = The construction materials and air space provide an R-4.
R_1 = The addition of R-11 insulation provides a total R-value of R-15 (11 + 4 = 15)
A = 1 square foot

C = $1.60/sq ft
HCF = 1.65 (See note 3)

$$SPB = \frac{C}{\Delta H \times HCF} = \frac{1.60}{(.18)\ (1.65)} = 5.4 \text{ years}$$

[6]Standard 12 requires that owners of residential rental property "install insulation in or on all walls and floors that enclose conditioned spaces to achieve a minimum total "R" value of the insulation of R-11. Walls must include foundation walls of basements, cellars or crawl spaces.

The factors which influence the cost effectiveness of this measure are the existing level of insulation, the cost of insulating an inaccessible wall cavity and the heating cost factor (i.e. the furnace or boiler seasonal efficiency and the cost of the fuel). According to the Department of Energy and Economic Development 1983 price survey of contractor installed prices for conservation measures, the cost of blowing insulation into an inaccessible wall cavity is $.75/sq. ft. for insulating walls with wood exterior siding or $1.10/sq. ft. for walls with other siding materials such as stucco.

Only in the case where 1" of insulation is already in the walls and a stucco building has an 80% steady state efficiency burner with an intermittent ignition and a vent damper (i.e. HCF = 1.3) is the simple payback for blowing cellulose into a wall cavity greater than 10 years.

Simple payback for adding wall insulation to an inaccessible wall cavity (in years)

Existing R-value	Siding material	Assumed cost per ft^2	HCF			
			1.3	1.65	1.80	2.08
0	wood	$ .75	3.2	2.5	2.3	2.0
3.5	wood	$ .75	8.2	6.5	6.0	5.2
0	stucco	$1.10	4.6	3.6	3.3	2.9
3.5	stucco	$1.10	12.7	10.0	9.1	7.9

A sample calculation for a building heated with a 75% steady state efficiency gas furnace with no intermittent ignition or vent damper and one inch of insulation in the existing walls and stucco exterior follows:

R_0 = R-7.5 (wall construction = R-4, insulation = R-3.5)
R_1 = R-15 (wall construction = R-4, insulation = R-11)

$$\Delta H = \left(\frac{1}{R_0} - \frac{1}{R_1}\right) \times A = \left(\frac{1}{7.5} - \frac{1}{15}\right) \times 1 = .067$$

C = $1.10/sq ft
HCF = 1.65 (see note 3)

$$SPB = \frac{C}{\Delta H \times HCF} = \frac{1.10}{(.067)\ (1.65)} = 10.0 \text{ years}$$

[7]Standard 12 requires that "insulation installed on the exterior of the foundation wall must extend down two feet below grade level."

The factors which influence the cost effectiveness of insulating foundation walls or the exterior are the existing level of insulation, and the heat cost factor. Insulating on the exterior costs $2.25/sq. ft. according to the 1983 price survey of contractor installed prices. The heating cost factor is dependent on the depth below grade to which the insulation is installed. The effective number of degree days to which a wall is exposed varies with the depth below grade. The heating cost factor for below grade construction must then be adjusted by a factor equal to the ratio of the average effective below grade degree days and the average above grade degree days. The average effective below grade degree days are calculated using the Decremented Average Ground Temperature Method developed by Akridge and Poulos at Georgia Institute of Technology. The average effective degree days at a depth of one foot below grade is 5,630 degree days. A depth of one foot is used for calculating the heat loss through the insulated portion of a wall insulated to a depth of 2 feet below grade since this is the average depth below grade for this portion of the wall. The adjustment factor for the heating cost factor is .69 (5630/8159) for one foot below grade. The heating cost factor adjusted for below grade can be calculated by multiplying the above grade heating cost factor by the appropriate adjustment factor:

HCF (below grade) = HCF (above grade) x below grade adjustment factor

For example, if the above grade heating cost factor is 1.3 and the insulating method is to install insulation to a depth of two feet below grade, the average depth below grade of this insulation is one foot and the appropriate adjustment factor is .69. Thus,

HCF (1 ft. below grade) = (1.3) (.69) = .90.

The table below indicates the below grade heating cost factors for one foot below grade and for four different heating cost factors.

Depth below grade	HCF			
0 ft.	1.3	1.65	1.80	2.08
1 ft.	.90	1.14	1.34	1.43

It is always cost effective to insulate foundation walls to 2 feet below grade when the existing wall is uninsulated. However, it is never cost effective if there is R-6 insulation in or on the existing walls. The simple payback periods for insulating uninsulated existing foundation walls below grade are shown in the table below.

For each linear foot of foundation wall insulated in this manner, approximately 2 feet of insulation is installed above grade from the bottom of the siding to the ground and 2 feet extends below ground level. Thus, four square feet of insulation are installed for each linear foot of foundation wall. The calculation of the energy savings must take into account the savings of energy

lost through the above grade portion as well as the below grade portion. Thus, total savings would be calculated as follows:

$$\text{Total Savings} = \Delta H_1 \times HCF_1 + \Delta H_2 \times HCF_2$$

where: ΔH_1= the difference in design heat less per degree Fahrenheit for the above grade portion of the wall.
HCF_1= the Heating Cost Factor for the above grade portion of the wall.
ΔH_2= the difference in design heat loss per degree Fahrenheit for the below grade portion of the wall.
HCF_2= the Heating Cost Factor for the below grade portion of the wall.

The simple payback is then calculated: $SPB = \frac{C}{\Delta H \times HCF_1 + \Delta H_2 \times HCF_2}$

Simple payback for insulating the exterior of foundation walls below grade (in years)

Existing Level of Insulation	HCF above grade / HCF 1 ft. below grade	1.3 / .9	1.65 / 1.14	1.80 / 1.34	2.08 / 1.43
R-0		3.0	2.3	2.1	1.9
R-6		40.9	32.3	28.7	25.6

For example, the simple payback for insulating the uninsulated foundation walls on the exterior on a building heated with a 75% steady state efficiency gas-fired furnace with no vent damper or intermittent ignition may be calculated as follows. For each linear foot of foundation wall, two square feet of insulation are installed above grade and two below. Thus H_1 and H_2 are calculated using the areas of above and below grade wall.

R_0 = R-1.28 (for masonry foundation wall)
R_1 = R-11.48 (R-1.28 for foundation all + R-10.2 for two inches of extruded polystyrene insulation)
A_1 = two square feet
A_2 = two square feet

$$\Delta H_1 = \left(\frac{1}{1.28} - \frac{1}{11.48}\right) \times 2 = 1.39$$

$$\Delta H_2 = \left(\frac{1}{1.28} - \frac{1}{11.48}\right) \times 2 = 1.39$$

C = \$9.00 per linear foot (Four square feet at \$2.25 per square foot.)
HCF_1= 1.65
HCF_2= 1.14

$$SPB = \frac{C}{\Delta H_1 \times HCF_1 + \Delta H_2 \times HCF_2} = \frac{9.00}{(1.39 \times 1.65) + (1.39 \times 1.14)} = 2.3 \text{ years}$$

[8]Standard 12 states that "insulation installed on the interior or in the foundation wall must be installed from the bottom of the rim joist to the foundation slab or floor."

The factors which influence the cost effectiveness of insulating foundation walls on the interior are the existing level of insulation and the heating cost factor. Insulating on the interior by constructing and insulating a frame wall to which gypsum board is applied costs $1.65/ft. according to the 1983 price survey of contractor installed prices. A foundation wall which extends 6 feet below grade has an average depth below grade of three feet and is exposed to an average of 5,123 effective degree days. The heating cost factor for this below grade wall must, therefore, be adjusted. The adjustment factor is the ratio 5123/8159 or .628 (See note 8). The heating cost factors for a foundation wall an average of three feet below grade are shown in the table below.

Depth below grade	HCF			
0 ft.	1.3	1.65	1.80	2.08
3 ft.	.82	1.04	1.22	1.30

It is always cost-effective to insulate a foundation wall on the interior below grade when the existing wall is uninsulated. However, it is never cost effective if there is R-6 insulation in or on the existing walls. The simple payback periods for insulating on the interior of existing foundation walls are shown below:

Existing level of insulation	Simple payback in years for interior foundation insulation			
HCF above grade	1.3	1.65	1.80	2.08
HCF 3 ft.below grade	.82	1.04	1.22	2.80
R-0	2.5	2.01	1.7	1.6
R-6	28.3	22.3	19.5	17.8

For example, the simple payback for insulating the uninsulated foundation walls on the interior of a building heated with a 75% steady state efficiency gas-fired furnace with no vent damper or intermittent ignition may be calculated as follows:

R_0 = R-1.28 (For a 12' masonry foundation wall)
R_1 = R-13.28 (R-1.28 for the masonry wall and R-11 for the insulation + R-1 for the gypsum board and air film)
A_1 = two square feet (above grade wall area)
A_2 = 6 square feet (below grade wall area)

$$\Delta H_1 = \left(\frac{1}{1.28} - \frac{1}{13.28}\right) \times 2 = 1.41$$

$$\Delta H_2 = \left(\frac{1}{1.28} - \frac{1}{13.28}\right) \times 6 - 4.24$$

C = $13.20 per linear foot ($1.65 x 8 feet)
HCF_1 = 1.65
HCF_2 = 1.04

$$SPB = \frac{C}{\Delta H_1 \times HCF_1 + \Delta H_2 \times HCF_2} = \frac{13.20}{(1.41 \times 1.65) + (4.24 \times 1.04)} = 2.0 \text{ years}$$

[9]Standard 13 requires that owners of residential rental property "caulk, gasket or otherwise seal interior joints between foundation and rim joists, around window and door frames, between wall and ceiling, at joints between wall and trimboards, at cracks on interior surfaces of walls, and at utility penetrations."

The factors affecting the cost effectiveness of this measure are the cost of sealing the cracks, the size of the cracks and the heating cost factor. The 1983 price survey of contractor installed prices indicates that caulking costs $.65 per lineal foot of crack. The crack size influences the volume of air which is allowed to pass through and, therefore, the energy cost. Tables found in the Home Energy Disclosure Manual and developed from information in ASHRAE Handbook of Fundamentals give estimates of the volume of air-flow through various size cracks. For this example four sizes of cracks in the building envelope are considered: 1/32", 1/16", 1/8" and 1/4". The estimated volume of air flowing through these cracks is .14, .27, .54 and 1.08 cubic feet per minute per foot of each crack and holes in the building envelope.

It is always cost effective to caulk all cracks with at least 1/32" wide. The simple payback periods for caulking various size cracks in buildings with various heating cost factors are shown below:

Simple payback for caulking (in years)

Crack size	HCF = 1.3	1.65	1.80	2.08
1/32"	3.3	2.6	2.4	2.1
1/16"	1.7	1.4	1.2	1.1
1/8"	.9	.7	.6	.5
1/4"	.4	.3	.3	.3

For example in a building with cracks 1/32" wide and heated by a gas-fired 75% steady state efficiency furnace with no vent damper or intermittent ignition, the simple payback for caulking these cracks may be calculated as follows:

$\Delta H = 1.08\,\Delta I$ (This equation is based on heat loss calculation procedures outlined in ASHRAE Handbook of Fundamentals).
ΔI = cubic feet per minute of air passing through the crack

C = $ .65/lineal foot of crack
HCF = 1.65

$\Delta H = 1.08\ (.14) = .151$

$$SPB = \frac{C}{\Delta H \times HCF} = \frac{.65}{(.151)\ (1.65)} = 2.6 \text{ years}$$

Exhibit B

STATE OF MINNESOTA

COUNTY OF RAMSEY

RECEIVED
FEB 1 1984
ADMINISTRATIVE HEARINGS

CERTIFICATE

In the Matter of the Proposed Adoption of Rules of the Minnesota Department of Energy and Economic Development amending the Home Energy Disclosure Program and the Minimum Mandatory Energy Efficiency Standards for Residential Rental Housing

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I hereby certify that the list of persons, associations, and other interested groups who have requested, pursuant to Minn. Stat. § 15.0412, subd. 4, that their names be placed on file with and maintained by the Minnesota Department of Energy and Economic Development for the purpose of receiving notice of the proposed adoption of rules by this Department is accurate and complete as of 2:00 p.m., this 3rd day of January, 1984.

Mary E Anderson

STATE OF MINNESOTA

Department of Energy and Economic Development

RECEIVED
JUN 4 1984
ADMINISTRATIVE HEARINGS

In the Matter of the Amendment of Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Mandatory Energy Efficiency Standards for Residential Rental Units

FINDINGS OF FACT, CONCLUSIONS, AND ORDER ADOPTING RULES

In 1981, Minnesota Statutes 116J.27 were amended to transfer authority from the Department of Administration to the Department of Energy and Economic Development for implementation of minimum energy standards for rental housing units. A Notice of Intent to Solicit Outside Opinion was published in the State Register on December 12, 1983 at 8 SR 1405.

On January 23, 1984, the Department published the Notice and Order for a Public Hearing regarding these rules at 8 SR 1717 to 1731, and copies were sent to all persons pursuant to Minn. Stat. 14.22. The public hearing was conducted on February 28, 1984. The hearing record was open until March 9, 1984. The Department received the Hearing Examiner's and the Chief Hearing Examiner's Report on April 19, 1984. The Hearing Examiner notified all persons who requested to be notified that the Hearing Examiner's Report was available from the Department. At least five days have lapsed since that notice was provided.

After soliciting outside opinion on the rules, after publishing and mailing the notice of hearing and the proposed rule, after holding the public hearing, and after considering all the evidence upon the records, files and proceedings herein, I make the following:

FINDINGS

1. The Department received numerous written and oral comments during the comment period and during the public hearing suggesting certain changes to the proposed rules. The Department also proposed additional changes that were entered into the hearing record. The proposed rules, as modified by the

recommendations of the Hearing Examiner, are needed and reasonable. Furthermore, the changes from the proposed rules are not substantive in nature.

2. The recommendations provided by the Hearing Examiner in his report which modify the proposed rule are adopted as described below:

a) 6 MCAR 2.2501A.

References to statutory authority are corrected as provided for in the Hearing Examiner's report finding #18. The reference in the proposed rule was to an outdated section of the statute; the adopted rule has been corrected to refer to the appropriate statute.

b) 6 MCAR 2.2507 A.1. (Exhibit).

As provided in the Examiner's report at #32, the phrase "mobile home" is replaced with the phrase "manufactured home." This change is added to be consistent with the rest of the rule, and reflects the statutory change of the definition of this term.

c) 6 MCAR 2.2503 A.1. (Exhibit).

As provided in the Examiner's report at #34, the column under "July 1, 1985" is modified so that the requirement to comply with standards 6, 7, and 8 is deleted. The change is adopted to minimize confusion that might be caused by duplicate standards. Because standards 10, 11 and 12 incorporate the requirements of 6, 7, and 8, deletion of standards 6, 7, and 8 does not constitute a substantive change, and should avoid confusion.

d) 6 MCAR 2.2503 A.1. (Exhibit).

As provided in the Examiner's report at #38, the column under "July 1, 1983" is modified for single family, manufactured homes, and 2-4 unit buildings to permit owners to comply with the standards to <u>either</u> interior <u>or</u> exterior caulk. This change is adopted to make the standards for caulking consistent for all building sizes, as orignially intended. Providing the option to the owner to either caulk on the interior or exterior maximizes flexibility while achieving similar results.

e) 6 MCAR 2.2503 B.10.

As provided in the Examiners report at #52, this standard is modified to require the minimum total R-value of the rim joist insulation be R-19, rather than the R-11 that was originally proposed. Additional language is included to clearly indicate that the higher R-value is only required

when the existing insulation is less than R-11. This change is adopted after a recommendation made at the public hearing to increase the minimum R-values. An analysis by the Department found this suggested standard to be cost-effective, needed and reasonable, and therefore adopts the Hearing Examiner's recommendation.

f) 6 MCAR 2.2503 B.15.

As provided in the Hearing Examiner's report at #58, the Department will modify the adopted rule to correct a typographical error that omitted the clause "had or are predicted to have a ..." By including the language in standards 14 and 15, an unintended variation between these parallel standards is corrected.

g) 6 MCAR 2.2504 B.1.

As provided in the Hearing Examiner's report at #103, the column under "Size of building" is slightly modified by correcting an ambiguity. The first category of "1-5 units" is corrected to "1-4 units" so that each group is mutually exclusive.

h) 6 MCAR 2.2506 B.

This section, entitled "Exemption" is deleted due to action taken by the 1984 legislature. HF 1974 was recently passed, which provides very specific language regarding the procedures under which audits of rental units owned by Public Housing Agencies can be done. Because of the passage of this bill, this section of the rule is redundant and is therefore deleted.

deleted p. 11, 12

i) 6 MCAR 2.2507 B.2.d.

As provided in the Hearing Examiner's report at #67, the Department adopts the finding that utility auditors who have conducted energy audits under the Minnesota Energy Conservation Service program can count that experience in meeting the certification requirements under this rule. Because the training and examination procedure for certification under both programs has been identical, this change is not substantive.

j) 6 MCAR 2.2507 C.2.

As provided in the Hearing Examiner's report at #67, the Department adopts the finding that utility auditors who conduct energy audits as part of their normal job responsibilities be exempted from the certification fee. The Deartment notes, however, that utilities which elect to certify their energy auditors under these rules will have to require those employees

to follow the procedures established under these rules when conducting evaluations of rental units. These procedures are substantially greater than those imposed by the rules governing the MECS program.

k) 6 MCAR 2.2507 E. "Other Qualified Persons."

As provided in the Hearing Examiner's report at #91, the Department proposes to adopt a procedure for determining qualifications of "other qualified persons." The procedure consists of three elements. Items 1-3 requires these persons to meet the same basic criteria as all other evaluators certified under these rules. Item 4 describes the additional knowledge that is required in order to be able to conduct the evaluation of the standards provided at 6 MCAR 2.2503 B.14 and 15, and is similar in structure to knowledge required of all other evaluators. Item 5 requires these persons to pass a certification examination, which is identical to the procedure for all other evaluators.

This new provision is not substantive in nature. First, the mechanism for qualifying these individuals is identical to the established procedure for certifying evaluators in general. Indeed, three of the five requirements are exactly the same as for other evaluators. Second, the provisions for training are precisely those areas of knowledge that are needed to conduct the evaluations for the two performance standards. Finally, it is reasonable and necessary for the Department to test for competence to ensure that these individuals are qualified to perform these evaluations. This provision is similar to that required for evaluators in general at 6 MCAR 2.2507 C.1.

Because this provision is technical in nature, and only clarifies the marginal responsibilities of other "qualified individuals" over "evaluators" in general, this modification is not believed to be substantive. Second, because the requirements are similar to the existing mechanism provided for in the rule, this provision should be adopted by the Department. Finally, by adopting this language, the Department is fulfilling one of the requirements provided by the Hearing Examiner in his report at #91, where the Department "must set forth a procedure for determining qualification." For these reasons, this provision is adopted in the final rule.

l) 6 MCAR 2.2510 A.4.a.

As provided in the Hearing Examiner's report at #112, the Department

is amending the final rule to correct a typographical error. The change is clerical in nature.

Based on the foregoing findings, I make the following:

CONCLUSIONS

1. The Department gave proper notice and conducted a public hearing on these proposed rules.
2. The Department has fulfilled the procedural requirements of Minn. Stat. 14.21-28, and all other procedural requirements of law or rule.
3. The Department has statutory authority to adopt the proposed rule and fulfilled all other substantive requirements of law or rule, within the meaning of the Minnesota Administrative Procedures Act.
4. The Department has demonstrated the Need and Reasonableness of its proposed rules.
5 The Department has adopted in full the Hearing Examiner's Report in the foregoing findings.

ORDER

Notice by the Commissioner for the public hearing regarding these proposed rules was published in the State Register on January 23, 1984 and was sent by United States mail to all persons on the list maintained by the Department pursuant to Minn. Stat. 14.14 subd. 1 on January 23, 1984. After conducting the public hearing on February 28, 1984 and after considering the evidence based upon the hearing record, and the report of the Hearing Examiner and the Chief Hearing Examiner,

NOW, THEREFORE, IT IS ORDERED that these rules identified as Amendments of the Rules of the State Department of Energy and Economic Development Governing the Home Energy Disclosure Program and the Minimum Mandatory Energy Efficiency Standards for Residential Rental Units (6 MCAR 2.2501-2.2510) are adopted this 30th of May, 1984, pursuant to authority invested in me by Minn. Stat. 116J.09(h) and 116.27.

State of Minnesota

Mark B. Dayton
Commissioner
Department of Energy and Economic Development

STATE OF MINNESOTA)
)ss AFFIDAVIT OF SERVICE
COUNTY OF LYON)

Joseph V. Bot, being first duly sworn upon oath, deposes and says:

That at the City of Marshall, County and State aforementioned, on the 12th day of June, 1984, (s)he served the attached Implied Consent Petition by depositing in the United States mail at said city a true an correct copy thereof, properly enveloped, with first class postage prepaid, and addressed to:

Commissioner of Public Safety
ATTN: Implied Consent Petition
108 Transportation Bldg.
John Ireland Blvd.
St. Paul, Minnesota 55155

COPY

Joseph V. Bot
(signature)

Subscribed and sworn to
before me this 12th day
of June, 1984.

Veronica G. McKay
Notary Public or Clerk of Court

Veronica G. McKay
NOTARY PUBLIC – MINNESOTA
LYON COUNTY
My commission expires March 22, 1990

0-500-485-051-924 REVOKE D1 84 C2
KYLE ALLEN OWEN 4-21-81
601 KATHRYN 477749812
MARSHALL MN 56258 42
12-4-61 M HZL 5-10 155 000 04

0170042002
1042097 M
X

J
copies
file

4-19-84 123(3) 6-15-84 Ltr hrg (42)

KYLE ALLEN OWEN 0500485051924
8-29-79 CARELESS 9-20-79 M
*9-25-79 * JUV CT OTTER TAIL CO 20 DAY
SUSP EXP 10-10-79 DL HELD BY
CT
4-24-80 SIGN 4-28-80
5-30-80 01510424 MC106959
6-2-80 WL
4-1-81 ILL/PASS 111335
10-20-81 12930143 EES312
10-20-81 FOLTOOCL 134230
2-15-82 SPEED 206429 M

KYLE ALLEN OWEN 0500485051924
9-21-82 VIS/OBST 229226
10-26-82 DEV 1 M LETTER SENT
3-15-83 30740276 AXP441
3-15-83 UNCODED FAIL TO REPORT ACC
309727
*7-13-83 * SUSP 30 NF 30740276
INS DENIED
8-11-83 PLC SENT
8-15-83 DL SURR D1
9-20-83 REIN DL RETD(RETD)
4-19-84 UNCODED IMPLIED CONSENT (3)

KYLE ALLEN OWEN 0500485051924
4-19-84 41100165 ML54866
*5-21-84 1 REV (5-21-84) 169.123
(4-19-84)APA REQ DL RETDBYPO
-END OF RECORD-

EPARTMENT OF PUBLIC SAFETY

DRIVER AND VEHICLE SERVICES NOTICE

05-11-84

Under the authority of and as directed by the laws of the State of Minnesota your Minnesota driver's license or privilege to operate a motor vehicle is hereby REVOKED EFFECTIVE 05-21-84

REASON FOR WITHDRAWAL:
Operate a motor vehicle while alcohol concentration was .10% or more.

12-04-61 0-500-485-051-924 (3)

On inquiry give name, birth date, Driver License No.

REQUIREMENTS FOR REINSTATEMENT:
* Withdrawal of all privileges effective on above date and to continue for 90 days (over).
* Complete driver exam
* Pay $100 reinstatement fee
* Make application for new license.
* Present evidence of alcohol problem assessment. (see attached)

KYLE ALLEN OWEN
601 KATHRYN
MARSHALL MN 56258
42

(SEE OTHER SIDE) DIRECTOR, DRIVER AND VEHICLE SERVICES

STATE OF MINNESOTA
DEPARTMENT OF ENERGY & ECONOMIC DEVELOPMENT

In the Matter of the Amendment of
Rules of the State Department of
Energy and Economic Development
Governing the Home Energy Disclosure
Program and the Minimum Mandatory
Energy Efficient Standards for
Residential Rental Units

STATEMENT OF COMPLIANCE
RULE MAKING PROCEDURES

I, Special Assistant Attorney General Thomas Barrett, do hereby declare that I have examined these Rules and all related documents and that, based on my examination and my personal familiarity with the applicable procedures, the Administrative Procedure Act, the Rules of the Office of Administrative Hearings, and the Rules of the Attorney General have been followed. Any exceptions are noted below.

Thomas J. Barrett
Special Assistant Attorney General