

**STATE OF MINNESOTA  
DEPARTMENT OF PUBLIC SERVICE**

**In the Matter of the Proposed Permanent  
Rules of the Minnesota Department of  
Public Service Relating to Once  
Through Cooling Conversion Loans  
(Minn. Rules Ch. 7685)**

**STATEMENT OF NEED  
AND REASONABLENESS**

**August 1993**

**I. INTRODUCTION**

The Commissioner of the Minnesota Department of Public Service (department) proposes to adopt permanent rules relating to once through cooling conversion loans. The purpose of these rules is to establish energy efficiency criteria for the replacement of cooling systems that would be eligible for once through cooling conversion loans. The department began the present rule process on July 20, 1992 by publishing a notice in the State Register soliciting opinions and information from the public on the rules regarding once through cooling energy criteria.

**II. STATEMENT OF DEPARTMENT'S STATUTORY AUTHORITY**

The Commissioner has the authority to adopt the rule as set for in Minnesota Statute 446A.21 subdivision 2(a), which states: "An entity may apply to the Authority for a loan. Within ten days of receipt, the authority must submit the application to the commissioner of public service to determine whether the proposed cooling system meets the energy efficiency criteria of the department. The commissioner of public service shall certify to the authority whether the project meets the applicable energy efficiency criteria. The commissioner of public service shall adopt rules establishing energy efficiency criteria for replacement of cooling systems."

**III. STATEMENT OF NEED:**

These rules are needed to satisfy the statute cited above. The rule making is expected to be completed by the time that money is available for the once through loans. These rules are needed to establish the criteria in judging whether or not the proposed new systems or replacement systems meet the criteria of energy efficiency that the department has established. If the criteria are met then the systems will be eligible for conversion loans under this program.

**IV. STATEMENT OF REASONABLENESS:**

Minnesota Statutes Chapter 14 requires the department to make an affirmative presentation of facts establishing the reasonableness of the proposed rules. This means that the

department will set forth the reasons for the proposal and the reasons must not be arbitrary or capricious. However, to the extent that need and reasonableness are separate, need, must come to mean that a problem exists which requires administrative attention, and reasonableness means that the solution proposed by the department is appropriate. Discussion of the need and reasonableness for each of the proposed rule parts follows.

**7685.0100 Authority and Purpose:**

**Subpart 1 Authority:** The department proposes to reference that statute authorizing this chapter and to state the purpose for the chapter by citing the appropriate statutory reference. The reference to the statutory authority is needed and reasonable for the convenience of users of this chapter.

**Subpart 2 Applicability:** The department proposes that these rules apply to existing systems permitted as once through cooling systems by the Minnesota Department of Natural Resources, Water Division.

This is needed to insure that these rules are applied only to the loan program and are not used by others to establish energy efficiency criteria. This subpart is reasonable because it includes the definition for all parties that would be applying for loans under the once through cooling loan program.

**Subpart 3 Purpose:** The department proposes that these rules establish the energy efficiency requirements for determining eligibility of once through cooling loans.

This section is needed because it quotes the Minnesota Statutes under which the commissioner has the authority to make rules. It is reasonable because it outlines the conditions under which loans can be made through the once through cooling loan program.

**7685.0120 Definitions:** The department proposes that the listed definitions be used in these rules.

A list of definitions is needed for the convenience of the users with this chapter. The definitions are reasonable because they are identical to the definitions of terms used within the heating, ventilation and air conditioning industry in such publications and the American Society of Heating, Cooling and Air Conditioning Engineers 1993 Handbook of Fundamentals.

**7685.0130 Energy Efficiency Criteria:** The department proposes that to be eligible for a once through cooling loan that the system must meet the applicable energy efficiency requirement.

This section is needed in order to define the energy efficiency criteria that the department has established as the requirements for approval of once through cooling loans. This section is

reasonable in that it is establishing standards that have been used by the department previously (as discussed under subpart 1, item A, below) and is taking into consideration new applications that have not previously been addressed by the department.

**Subpart 1 Cooling efficiency:**

**Item A.:** The department proposes that the cooling efficiency of a new centrifugal or screw compressor must not exceed 0.61 kW per ton.

This standard is needed to assure that new equipment of this type being installed is energy efficient. This standard is reasonable because it has been approved by the department in the Conservation Improvement Program (CIP) filings for a number of years (Docket Nos. E002/CIP-91 - 521 and E002/M-90-3607) for chillers using CFC's. Several manufactures have reported to the department that the same performance is now available for chillers using non-CFC refrigerants. The figure is also reasonable because equipment of this efficiency is available from all major manufactures of centrifugal compressors.

**Item B:** The department proposes that the cooling efficiency of previously used (existing) centrifugal compressor must not exceed .70 kW per ton.

This standard is needed to assure that equipment of this type which is to remain in service is energy efficient. This valuable is reasonable in that it is obtainable by rebuilding an existing centrifugal chiller when it is converted from a Chloro fluoro carbon (CFC) machine to a non-CFC machine. This is a lower efficiency than that required for a new machine, however, it is reasonable when it is compared to the efficiency such a machine would have had when it was originally installed. It is necessary and reasonable that the old equipment which is to continue in service be rebuilt and modified to allow this efficiency.

**Item C:** The department proposes that the cooling efficiency performance of a new absorption chiller must not be less than 0.9.

This standard is needed to assure that replacement equipment of this type is energy efficient. This value is reasonable in that it is obtainable by every major manufacturer. This figure will allow the owners of buildings to replace their old systems with an absorption chiller. The COP requirement can be met by both steam fired and gas fired units.

**Item D:** The department proposes that the cooling efficiency of district cooling systems must not exceed 1.0 kW per ton.

This standard is needed to assure that replacement systems of this type are energy efficient. This higher energy consumption figure is reasonable because a district cooling system includes all of the equipment in the system including piping pumping losses and represents an annual efficiency value. The previously listed unit efficiencies include only the efficiency of the chiller at full load steady state conditions and do not take into account the energy consumed by

the remote units such as cooling towers and pumps. It is reasonable to allow a slightly high number for the district cooling systems because their part load conditions are more efficient than those of individual chiller. The efficiencies listed for the chiller are at 100% load. The efficiencies at lower capacities are normally lower.

**Subpart 2 Non compliance of CFC Systems:** The department proposes that the use of CFC systems be disallowed from the once through cooling loan program. The exclusion of CFC systems is needed to avoid subsidizing CFC equipment that has negative environmental impact. It is also needed because the statute requires that: "The Authority shall provide loans, including no-interest loans, to public and private entities for the capital costs incurred for the replacement of once-through cooling systems with environmentally acceptable cooling systems." In addition, the manufacture of CFC's is illegal after 1995. In fact the major manufacture of R-11 has elected to phase out the manufacture of this CFC refrigerant 1 year earlier than required. Furthermore, two of the major manufactures of centrifugal chillers have already suspended the production of chillers using CFC's. The normal lifetime of this type of equipment is approximately 20 years; it is therefore reasonable to ban units that are using a refrigerant which will be in critical supply within 2 years.

**Subpart 3 Cooling efficiency certification:** The department proposes that the cooling efficiency of replacement cooling systems regulated by this chapter must be certified by a mechanical engineer registered in the State of Minnesota.

This requirement is needed to insure that the calculations and system design is in accordance with good engineering practice. It is also needed to ensure that the data presented accurately reflect the new system design. This information will determine if the system will qualify for the loan. It is a reasonable request, in that the seal of a registered engineer adds credibility to the calculations. It is reasonable that these calculations be based on information provided by the equipment manufacture. The equipment manufacturer has access to this information and it is reasonable that the calculation be as accurate as possible using the best available data.

#### **7685.0140 Incorporations By Reference**

The Department proposes to adopt by reference two standards produced by the Air Conditioning and Refrigeration Institute.

Adoption of these standards is needed because the standards are proposed to be referenced in this chapter. It is also needed to define the conditions under which the equipment is rated so that there is a uniform basis for establishing the energy efficiency criteria. The adoption is reasonable because the Air Conditioning and Refrigeration Institute is the recognized authority for performance testing of equipment in the heating ventilating and air conditioning Industry.

## V. SMALL BUSINESS CONSIDERATIONS IN RULE MAKING

Minnesota Statute § 14.115, subdivision 2 (1992) requires the department, when proposing rules which may affect small business, to consider the following methods for reducing the impact on small businesses:

- (a) the establishment of less stringent compliance or reporting requirements for small businesses;
- (b) the establishment of less stringent schedules or deadlines for compliance or reporting requirements for small businesses;
- (c) the consolidation or simplification of compliance or reporting requirements for small businesses;
- (d) the establishment of performance standards for small businesses to replace design or operational standards required in the rule and;
- (e) the exemption of small businesses from any or all requirements of the rule.

The department has evaluated the effect of the proposed rules on small businesses and has considered each of the methods listed above for reducing the impact of the rules on small businesses. The adoption of these rule amendments will not affect small businesses in Minnesota.

Since Chapter 7685 contains no reporting requirements, the portions of Minn. Stat. § 14.115, subd. 2 (a), (b) and (c) pertaining to reporting and are not applicable.

Part 7695.0130 includes several significant performance standards in conformance with Minn. Stat. § 14.115, subd. 2 (d).

Part 7685.0130 contains compliance requirements mandatory for all persons in the State. Less stringent standards could not be adopted for small businesses because the department's enabling legislation requires that standards apply to all replacement HVAC equipment, regardless of the size of business.

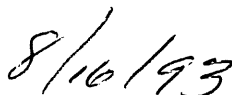
Chapter 7685 contains no deadlines.

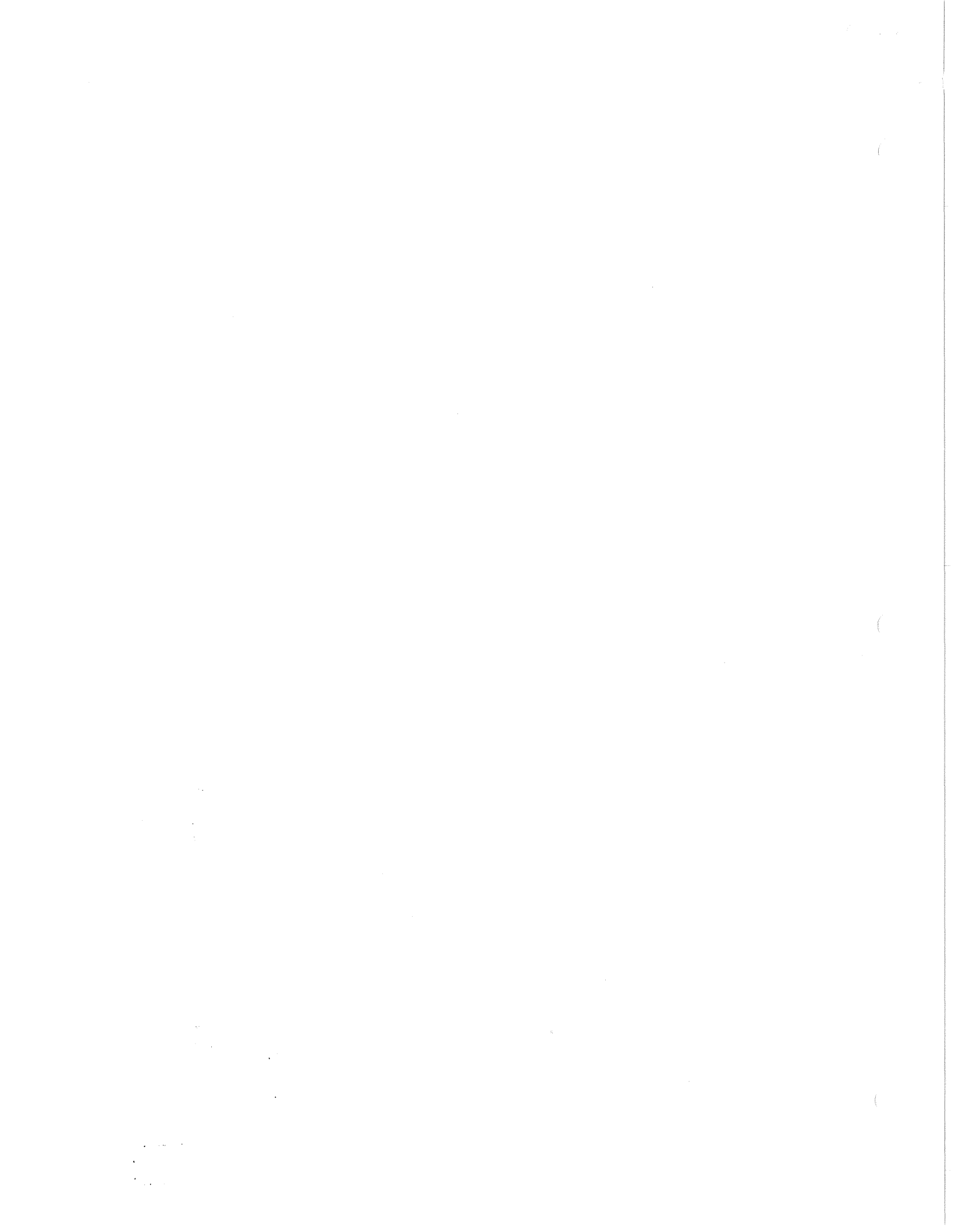
In regard to item (e) above, department concludes that since small businesses will not be significantly affected by adoption of this chapter, there is no reason to exempt them from any or all requirements of the chapter.

## VI. CONCLUSION

On the basis of the foregoing, the proposed Minnesota Rules Chapter 7685 are both needed and reasonable.

  
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Krista L. Sanda, Commissioner  
Department of Public Service

  
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Dated



DEPARTMENT: Public Service / Energy Division

STATE OF MINNESOTA

## Office Memorandum

DATE: August 25, 1993

TO: ✓ Maryanne Hruby, Legislative Commission to Review Administrative Rules  
Dennis Ahlers, Department of Public Service, Attorney General's OfficeFROM: Narv Somdahl 

PHONE: 7-2313

SUBJECT: Once Through Cooling System Efficiency Rulemaking (Minn. Rules Ch. 7685)

Enclosed for your file is a copy of the signed Statement of Need and Reasonableness prepared for a proposed rule to be published in the State Register on 30 August 1993. The end date for the comment period of this rulemaking is 1 October 1993.

**The Legislative Commission to  
Review Administrative Rules**

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