

1 Department of Public Service

2 Energy Division

3

4 Adopted Permanent Rules Relating to Once-Through Cooling System;

5 Energy Efficiency

6

7 Rules as Adopted

8 7685.0100 AUTHORITY, APPLICABILITY, AND PURPOSE.

9 Subpart 1. Authority. The commissioner is authorized by
10 Minnesota Statutes, section 446A.21, subdivision 2, to establish
11 energy efficiency criteria for replacement cooling systems.

12 Subp. 2. Applicability. This chapter applies to all
13 applications for loans for replacement of once-through cooling
14 systems with environmentally acceptable cooling systems under
15 Minnesota Statutes, section 446A.21.

16 Subp. 3. Purpose. Loans for replacement of once-through
17 cooling systems with environmentally acceptable cooling systems
18 under Minnesota Statutes, section 446A.21, must not be approved
19 unless the system complies with the energy efficiency criteria
20 of part 7685.0130.

21 7685.0120 DEFINITIONS.

22 Subpart 1. Scope. The definitions in this part apply to
23 parts 7685.0100 to 7685.0140.

24 Subp. 2. CFC. "CFC" means a chlorofluorocarbon
25 refrigerant.

26 Subp. 3. Commissioner. "Commissioner" means the
27 commissioner of public service.

28 Subp. 4. Cooling efficiency. "Cooling efficiency" means
29 an expression of energy or energy performance in items A to C.

30 A. Kilowatts per ton (kW/ton) is the total electrical
31 input (kW) divided by the net cooling capacity (in tons).

32 B. Coefficient of performance is the net cooling
33 capacity divided by the energy input rate, when both are
34 expressed in the same unit of measure.

35 C. One ton of cooling capacity equals 12,000 Btu per

1 hour, or 3.516 kilowatts.

2 Subp. 5. **Once-through cooling system.** "Once-through
3 cooling system" means a once-through system that has been issued
4 a permit by the Department of Natural Resources to use in excess
5 of 5,000,000 gallons of water annually from a groundwater source.

6 Subp. 6. **Once-through system.** "Once-through system" means
7 a space heating, ventilation, air conditioning (HVAC), or
8 refrigeration system used for any type of temperature or
9 humidity control application, using groundwater that circulates
10 through the system and is then discharged without reusing it for
11 a higher priority purpose.

12 7685.0130 ENERGY EFFICIENCY CRITERIA.

13 Subpart 1. **Cooling efficiency.** All systems must meet the
14 cooling efficiency criteria established in this subpart.

15 A. The cooling efficiency of a new centrifugal or
16 rotary screw chiller must be 0.61 kW/ton or less (or equivalent
17 if other energy sources are used) at standard rating conditions
18 specified in ARI Standard 550-1992.

19 B. The cooling efficiency of a previously used
20 (existing) centrifugal or rotary screw chiller that has been
21 rebuilt or modified must be 0.70 kW/ton or less (or equivalent
22 if other energy sources are used) at standard rating conditions
23 specified in ARI Standard 550-1992.

24 C. The coefficient of performance of a new absorption
25 chiller must be at least 0.90 at standard rating conditions
26 specified in ARI Standard 560-1992.

27 D. The cooling efficiency of district cooling systems
28 must be at least one kW/ton based on seasonal performance of the
29 district coding system.

30 Subp. 2. **Noncompliance of CFC systems.** A system using CFC
31 refrigerants does not comply with the energy efficiency criteria
32 of this part.

33 Subp. 3. **Cooling efficiency certification.** The cooling
34 efficiency of a system must be certified by a mechanical
35 engineer registered in Minnesota using data provided by the

1 equipment manufacturer.

2 7685.0140 INCORPORATIONS BY REFERENCE.

3 Subpart 1. Incorporated items. The standards in items A
4 and B are incorporated by reference.

5 A. ARI Standard 550-1992, Standard for Centrifugal
6 and Rotary Screw Water-Chilling Packages.

7 B. ARI Standard 560-1992, Standard for Absorption
8 Water Chilling and Water Heating Packages.

9 Subp. 2. Availability. The standards incorporated by
10 reference are available for public inspection at the Minnesota
11 State Law Library and through the Minitex interlibrary loan
12 system. In addition, ARI standards are available through the
13 Air-Conditioning & Refrigeration Institute, 4301 North Fairfax
14 Drive, Suite 425, Arlington, VA 22203.