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Requirements for New Home Furnace Installations and Furnace Replacements

2020 MINNESOTA RESIDENTIAL ENERGY CODE

CHAPTER 1322

Section R403.5.17 Climatic Design Conditions

- A. HVAC equipment shall be sized according to ACCA Manual S or an equivalent method, based on the building's heating and cooling calculations by using ASHRAE Handbook of Fundamentals or ACCA Manual J. Oversizing of heating equipment shall not exceed 40 percent of the calculated load requirements and oversizing of cooling equipment shall not exceed 15 percent of the calculated load requirements.

The climatic design conditions in the Minneapolis / St Paul area (climate zone 6A) are:

Summer Db 88 degrees F

Winter Db -15 degrees F

Section R403.1 Controls

A programmable thermostat shall be provided when the primary heating system is a forced-air furnace. The thermostat shall include the capability to maintain temperatures down to 55 degrees F. or up to 85 degrees F. The thermostat shall initially be programmed with a heating set point no higher than 70 degrees F. and a cooling temperature set point no lower than 78 degrees F.

Furnace replacements require whole house heat loss calculations. New home furnace installations require room by room heat loss calculations and mechanical ventilation (mandatory). The mechanical ventilation system must be balanced within +/- 10% of the system's design.

SECTION R403.5.2 OF THE 2020 MINNESOTA RESIDENTIAL ENERGY CODE

Two methods can be used for calculating the ventilation rate:

1. $(\text{cfm}) = (0.02 \times \text{square feet of conditioned space}) + [15 \times (\text{number of bedrooms} + 1)]$
2. See Table R403.5.2

**TABLE R403.5.2
NUMBER OF BEDROOMS**

	1	2	3	4	5	6 ²
Conditioned space ¹ (in sq ft)	Total/ Continuous	Total/ Continuous	Total/ Continuous	Total/ Continuous	Total/ Continuous	Total/ Continuous
1000–1500	60/40	75/40	90/45	105/53	120/60	135/68
1501-2000	70/40	85/43	100/50	115/58	130/65	145/73
2000-2500	80/40	95/48	110/55	125/63	140/70	155/78
2501-3000	90/45	105/53	120/60	135/68	150/75	165/83
3001-3500	100/50	115/58	130/65	145/73	160/80	175/88
3501-4000	110/55	125/63	140/70	155/78	170/85	185/93
4001-4500	120/60	135/68	150/75	165/83	180/90	195/98
4501-5000	130/65	145/73	160/80	175/88	190/95	205/103
5001-5500	140/70	155/78	170/85	185/93	200/100	215/108
5501-6000 ²	150/75	165/83	180/90	195/98	210/105	225/113

1. Conditioned space includes the basement and conditioned crawl spaces.
2. If conditioned space exceeds 6000 sq. ft. or there are more than 6 bedrooms, use Equation R403.5.2.

Note:

- All new homes are required to provide kitchen exhaust as per table 403.1.1. The minimum exhaust rates 25 cfm continuous or 100 cfm intermittent.
- All new homes require radon mitigation systems. Permits and inspections are required.