

# State Maps and Prescriptive Packages

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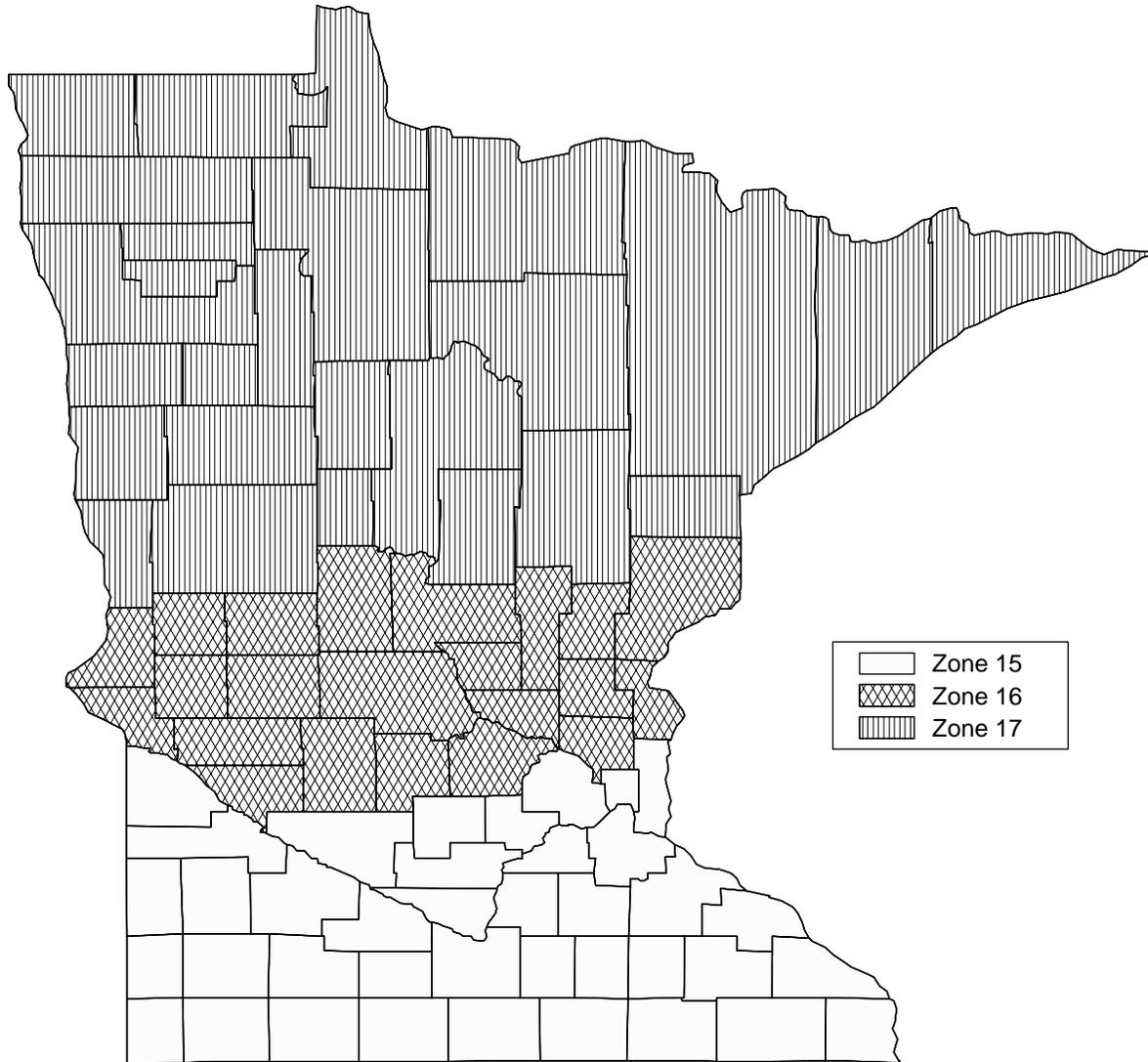
**April 2000**

The State Maps and Prescriptive Packages contain supporting materials that are needed when using the Envelope and Mechanical Compliance Guides. Insulation and other building envelope requirements and some mechanical system requirements vary by climate. The State Maps divide the United States into 33 different climate zones at a county level. Zones are numbered from 1 through 19 (consistent with the IECC and MECcheck climate zones) and have a, b, and c designations to reflect climate differences that affect cooling; e.g., cooling degree days and solar radiation. The climate maps are unchanged from Version 1.

To determine the climate zone to use with your building, locate the map for your state and identify the zone number from the legend or county list.

To determine insulation and other building envelope requirements, find the prescriptive package number corresponding to your climate zone. The *Envelope Compliance Guide* employs a package approach that requires all components in your design to meet or exceed the prescribed efficiency levels contained in the prescriptive package. If you find the prescriptive packages too constraining, consider using the COMcheck-EZ software, which allows tradeoffs among building envelope components.

# MINNESOTA



Zone	County	Zone	County
17	Aitkin	17	Marshall
16	Anoka	15	Martin
17	Becker	15	Mcleod
17	Beltrami	16	Meeker
16	Benton	16	Mille Lacs
16	Big Stone	16	Morrison
15	Blue Earth	15	Mower
15	Brown	15	Murray
17	Carlton	15	Nicollet
15	Carver	15	Nobles
17	Cass	17	Norman
16	Chippewa	15	Olmsted
16	Chisago	17	Otter Tail
17	Clay	17	Pennington
17	Clearwater	16	Pine
17	Cook	15	Pipestone
15	Cottonwood	17	Polk
17	Crow Wing	16	Pope
15	Dakota	15	Ramsey
15	Dodge	17	Red Lake
16	Douglas	15	Redwood
15	Faribault	15	Renville
15	Fillmore	15	Rice
15	Freeborn	15	Rock
15	Goodhue	17	Roseau
16	Grant	15	Scott
15	Hennepin	16	Sherburne
15	Houston	15	Sibley
17	Hubbard	17	St Louis
16	Isanti	16	Stearns
17	Itasca	15	Steele
15	Jackson	16	Stevens
16	Kanabec	16	Swift
16	Kandiyohi	16	Todd
17	Kittson	16	Traverse
17	Koochiching	15	Wabasha
15	Lac Qui Parle	17	Wadena
17	Lake	15	Waseca
17	Lake Of The Woods	15	Washington
15	Le Sueur	15	Watonwan
15	Lincoln	17	Wilkin
15	Lyon	15	Winona
17	Mahnomen	16	Wright
		15	Yellow Medicine

COMcheck-EZ™ Prescriptive Packages

Climate Zone 15

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)		
	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing
<b>Walls (a,b)</b>												
Framed <i>Minimum Cavity R-Value (c)</i>	NA	13	11	NA	13	11	NA	13	11	NA	13	13
Any Spacing <i>Minimum Continuous R-Value (d)</i>	NA	3	0	NA	3	0	NA	3	0	NA	7	4
CMU, 8 in. or greater <i>Minimum Cavity R-Value</i>	NA	11	11	NA	11	11	NA	11	11	NA	13	11
with Integral Insulation(e) <i>Minimum Continuous R-Value</i>	5	0	0	5	0	0	5	0	0	5	0	0
All Other <i>Minimum Cavity R-Value</i>	NA	11	11	NA	11	11	NA	13	11	NA	13	11
Masonry Walls(f) <i>Minimum Continuous R-Value</i>	5	0	0	5	0	0	6	0	0	6	3	0
<b>Windows</b>												
<i>Maximum Solar Heat Gain Coefficient</i>	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection
<i>Maximum U-Factor</i>	Any	Any	Any	0.5	0.6	0.7	0.5	0.6	0.7	0.4	0.5	0.7
	0.7	0.7	0.7	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
<b>Skylight (Limit 3% of Roof Area)</b>												
<i>Maximum U-Factor</i>	0.6			0.6			0.6			0.6		
<b>Roof</b>												
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	19		25	19		25	23		30	23		30
Concrete Slab or Deck <i>Minimum R-Value</i>	20		25	20		25	24		30	24		30
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	19		NA	19		NA	23		NA	23		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	20		30	20		30	24		X	24		38
	20		X	20		X	24		X	24		NA
<b>Floor</b>												
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	22		25	22		25	22		25	22		25
Concrete Slab or Deck <i>Minimum R-Value</i>	23		30	23		30	23		30	23		30
	22		NA	22		NA	22		NA	22		NA
<b>Slab Edge or Basement Walls</b>												
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation		
	0			8			8			8		

Notes:

- (a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.
- (b) Where values are shown for both cavity and continuous insulation, both requirements must be met.
- (c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.
- (d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undiminished by compression or bridging.
- (e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

- (f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft2 or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages

Climate Zone 16

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)		
	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing
<b>Walls (a,b)</b>												
Framed <i>Minimum Cavity R-Value (c)</i>	NA	13	11	NA	13	11	NA	13	13	NA	13	13
Any Spacing <i>Minimum Continuous R-Value (d)</i>	NA	3	0	NA	3	0	NA	3	0	NA	14	7
CMU, 8 in. or greater <i>Minimum Cavity R-Value</i>	NA	11	11	NA	11	11	NA	13	11	NA	13	13
with Integral Insulation(e) <i>Minimum Continuous R-Value</i>	5	0	0	5	0	0	6	0	0	10	3	0
All Other <i>Minimum Cavity R-Value</i>	NA	11	11	NA	13	11	NA	13	13	NA	13	13
Masonry Walls(f) <i>Minimum Continuous R-Value</i>	5	0	0	9	3	0	9	3	0	9	3	3
<b>Windows</b>												
<i>Maximum Solar Heat Gain Coefficient</i>	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection
<i>Maximum U-Factor</i>	0.7	Any	Any	0.7	Any	Any	0.5	0.6	0.7	0.4	0.5	0.7
	0.6	0.6	0.6	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4
<b>Skylight (Limit 3% of Roof Area)</b>												
<i>Maximum U-Factor</i>	0.6			0.6			0.6			0.6		
<b>Roof</b>												
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	19		25	23		30	23		30	23		30
Concrete Slab or Deck <i>Minimum R-Value</i>	20		25	24		30	24		30	24		30
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	19		NA	23		NA	23		NA	23		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	20		30	24		X	24		X	24		38
	20		X	24		X	24		X	24		NA
<b>Floor</b>												
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	22		25	22		25	22		25	22		25
Concrete Slab or Deck <i>Minimum R-Value</i>	23		30	23		30	23		30	23		30
	22		NA	22		NA	22		NA	22		NA
<b>Slab Edge or Basement Walls</b>												
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation		
	8			8			8			8		

Notes:

- (a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.
- (b) Where values are shown for both cavity and continuous insulation, both requirements must be met.
- (c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.
- (d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undiminished by compression or bridging.
- (e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.

- (f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft<sup>2</sup> or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.

- "NA" indicates the category is not applicable.
- A minimum R-value of zero indicates no insulation is required.
- "Any" indicates any available product will comply.
- "X" indicates no complying option exists in the prescriptive packages.

COMcheck-EZ™ Prescriptive Packages

Climate Zone 17

Envelope Component	Low Fenestration Area (0-10% Window-Wall Ratio)			Medium Fenestration Area (10%-25% Window-Wall Ratio)			High Fenestration Area (25%-40% Window-Wall Ratio)			Very High Fenestration Area (40%-50% Window-Wall Ratio)					
	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing	No Framing	Metal Framing	Wood Framing			
<b>Walls (a,b)</b>															
Framed <i>Minimum Cavity R-Value (c)</i>	NA	13	13	NA	13	13	NA	13	13	NA	13	13	NA	13	13
Any Spacing <i>Minimum Continuous R-Value (d)</i>	NA	3	0	NA	3	0	NA	4	3	NA	4	3	NA	14	14
CMU, 8 in. or greater <i>Minimum Cavity R-Value</i>	NA	13	11	NA	13	11	NA	13	13	NA	13	13	NA	13	13
with Integral Insulation(e) <i>Minimum Continuous R-Value</i>	6	0	0	6	0	0	10	4	3	14	10	7	14	10	7
All Other <i>Minimum Cavity R-Value</i>	NA	13	11	NA	13	13	NA	13	13	NA	13	13	NA	13	13
Masonry Walls(f) <i>Minimum Continuous R-Value</i>	6	0	0	9	3	0	10	4	3	14	10	7	14	10	7
<b>Windows</b>															
<i>Maximum Solar Heat Gain Coefficient</i>	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection	No Projection	<sup>§.25</sup> Projection	<sup>§.5</sup> Projection
<i>Maximum U-Factor</i>	0.7	Any	Any	0.7	Any	Any	0.7(g)	Any(g)	Any(g)	0.4	0.5	0.7	0.4	0.5	0.7
	0.5	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4
<b>Skylight (Limit 3% of Roof Area)</b>															
<i>Maximum U-Factor</i>	0.6			0.6			0.6			0.6					
<b>Roof</b>															
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation	Continuous Insulation	or	Roof Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	23		30	23		30	23		30	23		30	23		30
Concrete Slab or Deck <i>Minimum R-Value</i>	24		30	24		30	24		30	24		30	24		30
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	23		NA	23		NA	23		NA	23		NA	23		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	24		X	24		X	24		X	24		X	24		38
	24		X	24		X	24		X	24		X	24		NA
<b>Floor</b>															
All-Wood Joist/Truss <i>Minimum R-Value</i>	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation	Continuous Insulation	or	Cavity Insulation
Nonwood Joist/Truss <i>Minimum R-Value</i>	22		25	22		25	22		25	22		25	22		25
Concrete Slab or Deck <i>Minimum R-Value</i>	23		30	23		30	23		30	23		30	23		30
	22		NA	22		NA	22		NA	22		NA	22		NA
<b>Slab Edge or Basement Walls</b>															
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation					
	8			8			8			8					

Notes:

- (a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.
- (b) Where values are shown for both cavity and continuous insulation, both requirements must be met.
- (c) Cavity insulation is insulation between framing members or furring strips and does not refer to integral insulation in CMUs.
- (d) Continuous insulation is insulation that is continuous across structural members, and its effectiveness is undiminished by compression or bridging.
- (e) Integral insulation in concrete masonry units may be perlite, vermiculite, or other insulating material. Minimum R-values are in addition to insulation in CMU voids.
- (f) Use of the Other Masonry Walls category is restricted to walls weighing 35 lb/ft<sup>2</sup> or more; lightweight masonry veneers and unfilled CMUs <8 in. in thickness do not qualify.
- (g) For buildings over 3 stories in height, the maximum SHGC shall be 0.60.
  - "NA" indicates the category is not applicable.
  - A minimum R-value of zero indicates no insulation is required.
  - "Any" indicates any available product will comply.
  - "X" indicates no complying option exists in the prescriptive packages.