

State Maps and Prescriptive Packages

April 2000

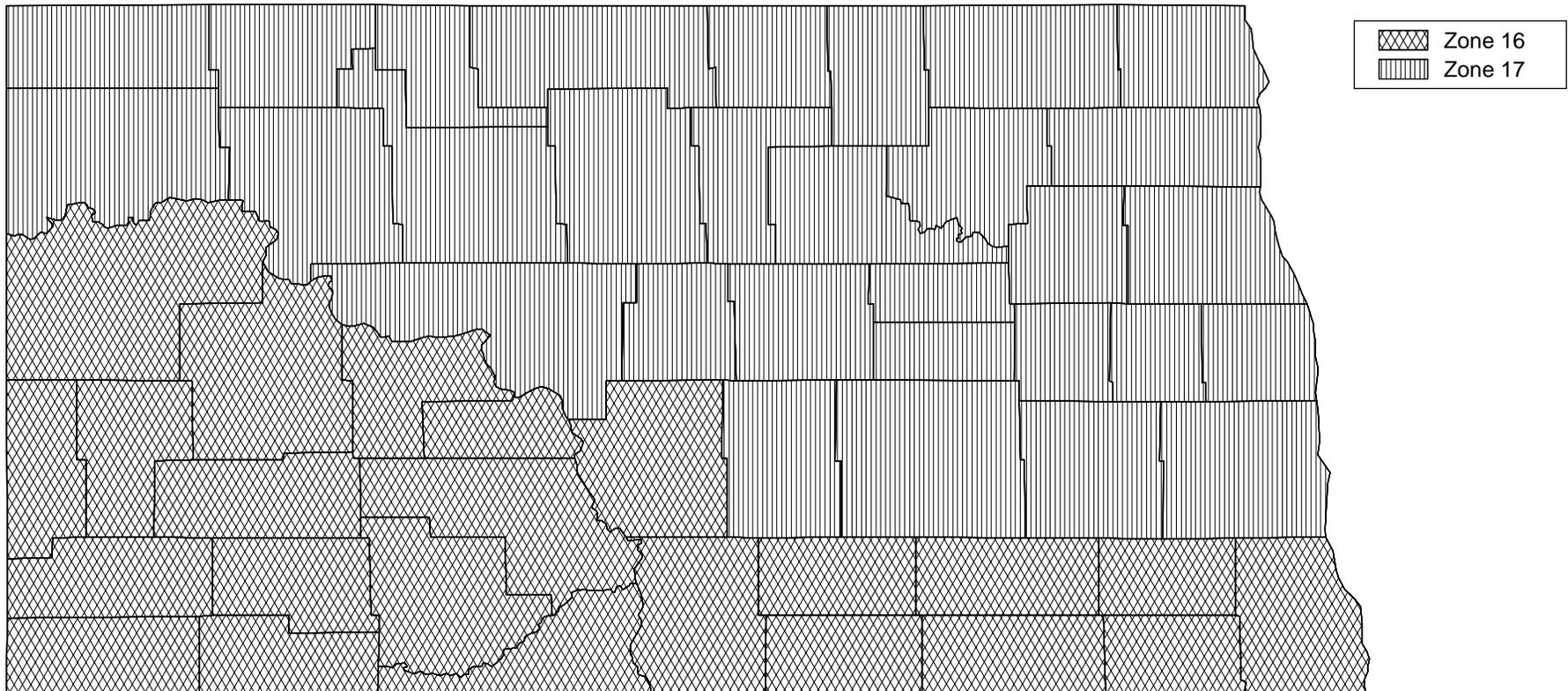
The State Maps and Prescriptive Packages contain supporting materials that are needed when using the Envelope and Mechanical Compliance Guides. Insulation and other building envelope requirements and some mechanical system requirements vary by climate. The State Maps divide the United States into 33 different climate zones at a county level. Zones are numbered from 1 through 19 (consistent with the IECC and MEC*check* 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 COM*check-EZ* software, which allows tradeoffs among building envelope components.

NORTH DAKOTA

Zone	County	Zone	County	Zone	County	Zone	County	Zone	County	Zone	County	Zone	County
16	Adams	16	Burleigh	16	Emmons	17	Kidder	16	Mercer	17	Ramsey	17	Sheridan
17	Barnes	17	Cass	17	Foster	16	La Moure	16	Morton	16	Ransom	16	Sioux
17	Benson	17	Cavalier	16	Golden Valley	16	Logan	17	Mountrail	17	Renville	16	Slope
16	Billings	16	Dickey	17	Grand Forks	17	Mchenry	17	Nelson	16	Richland	16	Stark
17	Bottineau	17	Divide	16	Grant	16	Mcintosh	16	Oliver	17	Rolette	17	Steele
16	Bowman	16	Dunn	17	Griggs	16	Mckenzie	17	Pembina	16	Sargent	17	Stutsman
17	Burke	17	Eddy	16	Hettinger	17	Mclean	17	Pierce			17	Towner
												17	Traill
												17	Walsh
												17	Ward
												17	Wells
												17	Williams



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
Walls (a,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
Windows												
<i>Maximum Solar Heat Gain Coefficient</i>	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} 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
Skylight (Limit 3% of Roof Area)												
<i>Maximum U-Factor</i>	0.6			0.6			0.6			0.6		
Roof												
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
Floor												
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
Slab Edge or Basement Walls												
<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/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 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			
Walls (a,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
Windows															
<i>Maximum Solar Heat Gain Coefficient</i>	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} Projection	No Projection	^{§.25} Projection	^{§.5} 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
Skylight (Limit 3% of Roof Area)															
<i>Maximum U-Factor</i>	0.6			0.6			0.6			0.6					
Roof															
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
Floor															
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
Slab Edge or Basement Walls															
<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/ft² 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.