

State Maps and Prescriptive Packages

April 2000

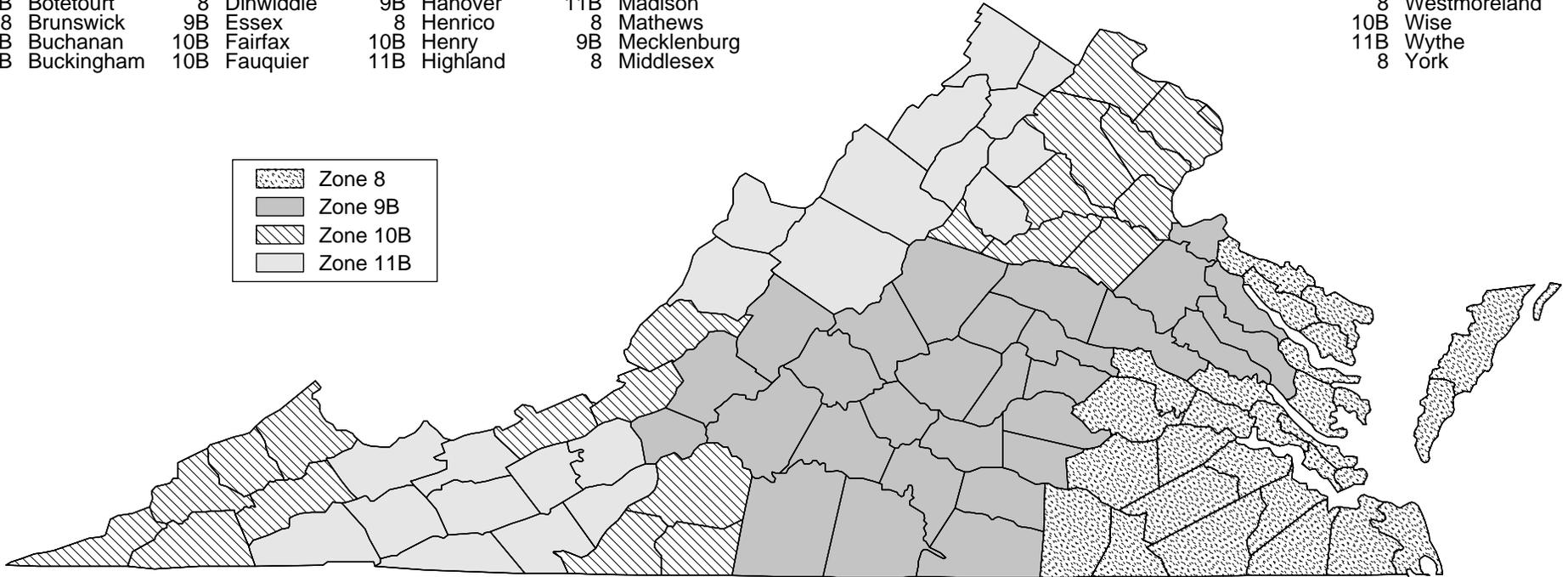
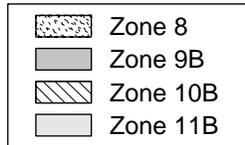
The State Maps and Prescriptive Packages contain supporting materials that are needed when using the Envelope and Mechanical Compliance Guides. Insulation and other building envelope requirements and some mechanical system requirements vary by climate. The State Maps divide the United States into 33 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.

VIRGINIA

Zone County	Zone County	Zone County	Zone County	Zone County	Zone County	Zone County	Zone County
8 Accomack	9B Campbell	11B Floyd	8 Isle Of Wight	11B Montgomery	10B Orange	10B Prince William	10B Scott
9B Albemarle	9B Caroline	9B Fluvanna	8 James City	8 Nansemond	11B Page	11B Pulaski	11B Shenandoah
10B Alleghany	11B Carroll	10B Franklin	9B King And Queen	9B Nelson	10B Patrick	11B Rappahannock	11B Smyth
9B Amelia	8 Charles City	11B Frederick	9B King George	8 New Kent	9B Pittsylvania	8 Richmond	8 Southampton
9B Amherst	9B Charlotte	10B Giles	8 Northampton	9B Powhatan	9B Roanoke	9B Roanoke	10B Spotsylvania
9B Appomattox	8 Chesterfield	8 Gloucester	9B King William	8 Northumberland	9B Prince Edward	9B Rockbridge	10B Stafford
10B Arlington	11B Clarke	9B Goochland	8 Lancaster	8 Lee	8 Prince George	11B Rockingham	8 Surry
11B Augusta	10B Craig	11B Grayson	10B Lee	9B Nottoway		10B Russell	8 Sussex
11B Bath	10B Culpeper	10B Greene	10B Loudoun				11B Tazewell
9B Bedford	9B Cumberland	8 Greenville	9B Louisa				11B Warren
11B Bland	10B Dickenson	9B Halifax	9B Lunenburg				11B Washington
9B Botetourt	8 Dinwiddie	9B Hanover	11B Madison				8 Westmoreland
8 Brunswick	9B Essex	8 Henrico	8 Mathews				10B Wise
10B Buchanan	10B Fairfax	10B Henry	9B Mecklenburg				11B Wythe
9B Buckingham	10B Fauquier	11B Highland	8 Middlesex				8 York



Independent Cities

Zone City	Zone City	Zone City	Zone City	Zone City	Zone City	Zone City	Zone City
10B Alexandria	10B Clifton Forge	10B Fairfax	8 Hampton	10B Manassas	10B Norton	8 Richmond	8 Suffolk
9B Bedford	8 Colonial Heights	10B Falls Church	11B Harrisonburg	10B Manassas Park	8 Petersburg	9B Roanoke	8 Virginia Beach
11B Bristol	10B Covington	8 Franklin	8 Hopewell	10B Martinsville	8 Poquoson	9B Salem	11B Waynesboro
9B Buena Vista	9B Danville	10B Fredericksburg	9B Lexington	8 Newport News	8 Portsmouth	9B South Boston	8 Williamsburg
9B Charlottesville	8 Emporia	11B Galax	9B Lynchburg	8 Norfolk	11B Radford	11B Staunton	11B Winchester
8 Chesapeake							

COMcheck-EZ™ Prescriptive Packages

Climate Zone 8

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)												
Framed Any Spacing <i>Minimum R-Value</i>	NA	11	11	NA	13	11	NA	13	11	NA	13	11
CMU, 8 in. or greater with Integral Insulation(b) <i>Minimum R-Value</i>	5	11	11	5	11	11	5	11	11	5	11	11
All Other Masonry Walls(c) <i>Minimum R-Value</i>	5	11	11	6	13	11	6	13	11	6	13	11
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>	Any	Any	Any	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
	Any	Any	Any	0.7	0.7	0.7	0.5	0.5	0.5	0.5	0.5	0.5
Skylight (Limit 3% of Roof Area)												
<i>Maximum U-Factor</i>	0.8			0.8			0.8			0.8		
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>	14		19	19		25	19		25	19		25
Concrete Slab or Deck <i>Minimum R-Value</i>	15		19	20		25	20		25	20		25
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	14		NA	19		NA	19		NA	19		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	15		25	20		30	20		30	20		30
	15		X	20		X	20		X	20		38
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>	9		11	9		11	9		11	9		11
Concrete Slab or Deck <i>Minimum R-Value</i>	10		11	10		11	10		11	10		11
	9		NA	9		NA	9		NA	9		NA
Slab Edge or Basement Walls												
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation		
	0			0			0			0		

Notes:

- (a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.
- (b) 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.
- (c) 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 9b

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	11	11	NA	11	11	NA	13	11	NA	13	13
Any Spacing <i>Minimum Continuous R-Value (d)</i>	NA	0	0	NA	0	0	NA	0	0	NA	5	3
CMU, 8 in. or greater <i>Minimum Cavity R-Value</i>	NA	11	11	NA	11	11	NA	11	11	NA	11	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	0	0
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>	Any	Any	Any	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
	Any	Any	Any	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
Skylight (Limit 3% of Roof Area)												
<i>Maximum U-Factor</i>	0.8			0.8			0.8			0.8		
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>	15		19	19		25	19		25	19		25
Concrete Slab or Deck <i>Minimum R-Value</i>	16		19	20		25	20		25	20		25
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	15		NA	19		NA	19		NA	19		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	16		25	20		30	20		30	20		30
	16		X	20		X	20		X	20		38
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>	11		13	11		13	11		13	11		13
Concrete Slab or Deck <i>Minimum R-Value</i>	12		13	12		13	12		13	12		13
	12		NA	12		NA	12		NA	12		NA
Slab Edge or Basement Walls												
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation		
	0			0			0			0		

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 10b

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)												
Framed Any Spacing <i>Minimum R-Value</i>	NA	11	11	NA	11	11	NA	11	11	NA	11	11
CMU, 8 in. or greater with Integral Insulation(b) <i>Minimum R-Value</i>	5	11	11	5	11	11	5	11	11	5	11	11
All Other Masonry Walls(c) <i>Minimum R-Value</i>	5	11	11	5	11	11	5	11	11	5	11	11
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>	Any	Any	Any	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
	Any	Any	Any	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Skylight (Limit 3% of Roof Area)												
<i>Maximum U-Factor</i>	0.8			0.8			0.8			0.8		
Roof	Continuous Insulation or Roof Cavity Insulation			Continuous Insulation or Roof Cavity Insulation			Continuous Insulation or Roof Cavity Insulation			Continuous Insulation or Roof Cavity Insulation		
All-Wood Joist/Truss <i>Minimum R-Value</i>	17		19	19		25	19		25	19		25
Nonwood Joist/Truss <i>Minimum R-Value</i>	18		25	20		25	20		25	20		25
Concrete Slab or Deck <i>Minimum R-Value</i>	17		NA	19		NA	19		NA	19		NA
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	18		30	20		30	20		30	20		30
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	18		X	20		X	20		X	20		30
Floor	Continuous Insulation or Cavity Insulation			Continuous Insulation or Cavity Insulation			Continuous Insulation or Cavity Insulation			Continuous Insulation or Cavity Insulation		
All-Wood Joist/Truss <i>Minimum R-Value</i>	12		19	12		19	12		19	12		19
Nonwood Joist/Truss <i>Minimum R-Value</i>	13		19	13		19	13		19	13		19
Concrete Slab or Deck <i>Minimum R-Value</i>	13		NA	13		NA	13		NA	13		NA
Slab Edge or Basement Walls	Insulation											
<i>Minimum R-Value</i>	0											

Notes:

- (a) For walls next to unconditioned spaces, use the Low Fenestration Area wall requirements.
- (b) 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.
- (c) 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 11b

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	11	11	NA	11	11	NA	11	11	NA	13	11
Any Spacing <i>Minimum Continuous R-Value (d)</i>	NA	0	0	NA	0	0	NA	0	0	NA	3	0
CMU, 8 in. or greater <i>Minimum Cavity R-Value</i>	NA	11	11	NA	11	11	NA	11	11	NA	11	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	11	11	NA	11	11
Masonry Walls(f) <i>Minimum Continuous R-Value</i>	5	0	0	5	0	0	5	0	0	5	0	0
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>	Any	Any	Any	0.5	0.6	0.7	0.4	0.5	0.6	0.3	0.4	0.5
	Any	Any	Any	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.5
Skylight (Limit 3% of Roof Area)												
<i>Maximum U-Factor</i>	0.8			0.8			0.8			0.8		
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>	18		25	19		25	23		30	23		30
Concrete Slab or Deck <i>Minimum R-Value</i>	19		25	20		25	24		30	24		30
Metal Purlin with Thermal Break <i>Minimum R-Value</i>	18		NA	19		NA	23		NA	23		NA
Metal Purlin without Thermal Break <i>Minimum R-Value</i>	19		30	20		30	24		X	24		30
	19		X	20		X	24		X	24		38
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>	14		19	14		19	14		19	14		19
Concrete Slab or Deck <i>Minimum R-Value</i>	15		19	15		19	15		19	15		19
	15		NA	15		NA	15		NA	15		NA
Slab Edge or Basement Walls												
<i>Minimum R-Value</i>	Insulation			Insulation			Insulation			Insulation		
	0			0			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.
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- (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.

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- 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.