

Editing notes from November 12, 2021 Energy Ad Hoc committee meeting:

The edits contained in this document were made to the text of the 2021 IECC, in order to draft up the proposed 2024 NC Energy code.

Added text = Underlined

Deleted text = ~~strike through~~

Sections not shown were unaltered. Some original, unedited text is shown for context to the reader.

These are draft edits; the ad hoc committee will revisit sections as required to coordinate changes made in other chapters and other code volumes of the NC Code. The majority of the edits in this document are striking out climate zones that do not apply to NC.

~~No changes prior to this section - DED~~

SECTION C104 FEES

~~**C104.1 Fees.** A permit shall not be issued until the fees prescribed in Section C104.2 have been paid, nor shall an amendment to a permit be released until the additional fee, if any, has been paid.~~

~~**C104.2 Schedule of permit fees.** A fee for each permit shall be paid as required, in accordance with the schedule as established by the applicable governing authority.~~

~~**C104.3 Work commencing before permit issuance.** Any person who commences any work before obtaining the necessary permits shall be subject to an additional fee established by the *code official* that shall be in addition to the required permit fees.~~

~~**C104.4 Related fees.** The payment of the fee for the construction, *alteration*, removal or demolition of work done in connection to or concurrently with the work or activity authorized by a permit shall not relieve the applicant or holder of the permit from the payment of other fees that are prescribed by law.~~

~~**C104.5 Refunds.** The *code official* is authorized to establish a refund policy. Deleted~~

SECTION C107 VALIDITY

C107.1 General. If a portion of this code is held to be illegal or void, such a decision shall not affect the validity of the remainder of this code.

~~Chair to verify with Administrative Code Committee there is no conflict. If it is covered in the Admin code, this section may be struck out - DED~~

SECTION C109 STOP WORK ORDER

C109.1 Authority. Where the *code official* finds any work regulated by this code being performed in a manner contrary to the provisions of this code or in a dangerous or unsafe manner, the *code official* is authorized to issue a stop work order.

C109.2 Issuance. The stop work order shall be in writing and shall be given to the owner of the property, the owner's authorized agent or the person performing the work. Upon issuance of a stop work order, the cited work shall immediately cease. The stop work order shall state the reason for the order and the conditions under which the cited work is authorized to resume.

C109.3 Emergencies. Where an emergency exists, the *code official* shall not be required to give a written notice prior to stopping the work.

C109.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be subject to fines established by the authority having jurisdiction.

Chair to verify with Administrative Code Committee there is no conflict. If it is covered in the Admin code, this section may be struck out - DED

SECTION C110 BOARD OF APPEALS

C110.1 General. In order to hear and decide appeals of orders, decisions or determinations made by the *code official* relative to the application and interpretation of this code, there shall be and is hereby created a board of appeals. The *code official* shall be an ex officio member of said board but shall not have a vote on any matter before the board. The board of appeals shall be appointed by the governing body and shall hold office at its pleasure. The board shall adopt rules of procedure for conducting its business, and shall render all decisions and findings in writing to the appellant with a duplicate copy to the *code official*.

C110.2 Limitations on authority. An application for appeal shall be based on a claim that the true intent of this code or the rules legally adopted thereunder have been incorrectly interpreted, the provisions of this code do not fully apply or an equally good or better form of construction is proposed. The board shall not have authority to waive requirements of this code.

C110.3 Qualifications. The board of appeals shall consist of members who are qualified by experience and training and are not employees of the jurisdiction.

Chair to verify with Administrative Code Committee there is no conflict. If it is covered in the Admin code, this section may be struck out - DED

CHAPTER 2 [CE] DEFINITIONS

(This chapter will be revisited as necessary after reviewing remainder of chapters – DED)

User note:

About this chapter: Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code. Chapter 2 performs this function by stating clearly what specific terms mean for the purposes of the code.

This was inserted to indicate an amendment to the 2018 NCECC

2018 NC Energy Code

Chapter 2 Definitions. (200901 Item B-20)

AIR-IMPERMEABLE INSULATION. An insulation having an air permeance equal to or less than 0.02 L/s-m² at 75 Pa pressure differential tested according to ASTM E2178 or E283 at the thickness applied.

The delayed effective date of this Rule is January 1, 2022.

The Statutory authority for Rule-making is G. S. 143-136; 143-138

Revisit above definition added by BCC Amendment for air-impermeable after editing/reviewing Chapter 4 - DED

FENESTRATION. Products classified as either skylights or vertical fenestration.

Skylights. Glass or other transparent or translucent glazing material installed at a slope of less than 60 degrees (1.05 rad) from horizontal, including unit skylights, tubular daylighting devices and glazing materials in solariums, sunrooms, roofs, greenhouses and sloped walls.

Vertical fenestration. Windows that are fixed or operable, opaque doors, glazed doors, glazed block and combination opaque and glazed doors composed of glass or other transparent or translucent glazing materials and installed at a slope of not less than 60 degrees (1.05 rad) from horizontal.

Revisit later – after envelope review - DED

CHAPTER 3 [CE] GENERAL REQUIREMENTS

User note:

About this chapter: Chapter 3 addresses broadly applicable requirements that would not be at home in other chapters having more specific coverage of subject matter. This chapter establishes climate zone by US counties and territories and includes methodology for determining climate zones elsewhere. It also contains product rating, marking and installation requirements for materials such as insulation, windows, doors and siding.

SECTION C301 CLIMATE ZONES

C301.1 General. *Climate zones* from Figure C301.1 or Table C301.1 shall be used for determining the applicable requirements from Chapter 4. Locations not indicated in Table C301.1 shall be assigned a *climate zone* in accordance with Section C301.3.

C301.2 Warm Humid counties. In Table C301.1, Warm Humid counties are identified by an asterisk.

TABLE C301.1

NORTH CAROLINA CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY COUNTY
CLIMATE ZONES, MOISTURE REGIMES, AND WARM-HUMID DESIGNATIONS BY STATE, COUNTY AND TERRITORY^a

a. Key: A – Moist, B – Dry, C – Marine. Absence of moisture designation indicates moisture regime is irrelevant. Asterisk (*) indicates a Warm Humid location.

US STATES
ALABAMA
3A-Autauga*
2A-Baldwin*
3A-Barbour*
3A-Bibb
3A-Blount
3A-Bullock*
3A-Butler*
3A-Calhoun
3A-Chambers
3A-Cherokee
3A-Chilton
3A-Choctaw*
3A-Clarke*
3A-Clay
3A-Cleburne
2A-Coffee*
3A-Colbert
3A-Conecuh*

3A Coosa
2A Covington*
3A Crenshaw*
3A Cullman
2A Dale*
3A Dallas*
3A DeKalb
3A Elmore*
2A Escambia*
3A Etowah
3A Fayette
3A Franklin
2A Geneva*
3A Greene
3A Hale
2A Henry*
2A Houston*
3A Jackson
3A Jefferson
3A Lamar
3A Lauderdale
3A Lawrence
3A Lee
3A Limestone
3A Lowndes*
3A Macon*
3A Madison
3A Marengo*
3A Marion
3A Marshall
2A Mobile*
3A Monroe*
3A Montgomery*
3A Morgan
3A Perry*

3A Pickens
3A Pike*
3A Randolph
3A Russell*
3A Shelby
3A St. Clair
3A Sumter
3A Talladega
3A Tallapoosa
3A Tuscaloosa
3A Walker
3A Washington*
3A Wilcox*
3A Winston
ALASKA
7 Aleutians East
7 Aleutians West
7 Anchorage
7 Bethel
7 Bristol Bay
8 Denali
7 Dillingham
8 Fairbanks North Star
6A Haines
6A Juneau
7 Kenai Peninsula
5C Ketchikan Gateway
6A Kodiak Island
7 Lake and Peninsula
7 Matanuska-Susitna
8 Nome
8 North Slope
8 Northwest Arctic
US STATES—continued

ALASKA (continued)
5C Prince of Wales Outer Ketchikan
5C Sitka
6A Skagway Hoonah Angoon
8 Southeast Fairbanks
7 Valdez Cordova
8 Wade Hampton
6A Wrangell Petersburg
7 Yakutat
8 Yukon Koyukuk
ARIZONA
5B Apache
3B Cochise
5B Coconino
4B Gila
3B Graham
3B Greenlee
2B La Paz
2B Maricopa
3B Mohave
5B Navajo
2B Pima
2B Pinal
3B Santa Cruz
4B Yavapai
2B Yuma
ARKANSAS
3A Arkansas
3A Ashley
4A Baxter
4A Benton
4A Boone
3A Bradley
3A Calhoun
4A Carroll

3A-Chicot
3A-Clark
3A-Clay
3A-Cleburne
3A-Cleveland
3A-Columbia*
3A-Conway
3A-Craighead
3A-Crawford
3A-Crittenden
3A-Cross
3A-Dallas
3A-Desha
3A-Drew
3A-Faulkner
3A-Franklin
4A-Fulton
3A-Garland
3A-Grant
3A-Greene
3A-Hempstead*
3A-Hot Spring
3A-Howard
3A-Independence
4A-Izard
3A-Jackson
3A-Jefferson
3A-Johnson
3A-Lafayette*
3A-Lawrence
3A-Lee
3A-Lincoln
3A-Little River*
3A-Logan

3A Lonoke
4A Madison
4A Marion
3A Miller*
3A Mississippi
3A Monroe
3A Montgomery
3A Nevada
4A Newton
3A Ouachita
3A Perry
3A Phillips
3A Pike
3A Poinsett
3A Polk
3A Pope
3A Prairie
3A Pulaski
3A Randolph

US STATES—continued
ARKANSAS (continued)
3A Saline
3A Scott
4A Searcy
3A Sebastian
3A Sevier*
3A Sharp
3A St. Francis
4A Stone
3A Union*
3A Van Buren
4A Washington
3A White
3A Woodruff

3A-Yell
CALIFORNIA
3C-Alameda
6B-Alpine
4B-Amador
3B-Butte
4B-Calaveras
3B-Colusa
3B-Contra-Costa
4C-Del Norte
4B-El Dorado
3B-Fresno
3B-Glenn
4C-Humboldt
2B-Imperial
4B-Inyo
3B-Kern
3B-Kings
4B-Lake
5B-Lassen
3B-Los Angeles
3B-Madera
3C-Marin
4B-Mariposa
3C-Mendocino
3B-Merced
5B-Modoc
6B-Mono
3C-Monterey
3C-Napa
5B-Nevada
3B-Orange
3B-Placer
5B-Plumas

3B-Riverside
3B-Sacramento
3C-San-Benito
3B-San-Bernardino
3B-San-Diego
3C-San-Francisco
3B-San-Joaquin
3C-San-Luis-Obispo
3C-San-Mateo
3C-Santa-Barbara
3C-Santa-Clara
3C-Santa-Cruz
3B-Shasta
5B-Sierra
5B-Siskiyou
3B-Solano
3C-Sonoma
3B-Stanislaus
3B-Sutter
3B-Tehama
4B-Trinity
3B-Tulare
4B-Tuolumne
3C-Ventura
3B-Yolo
3B-Yuba
COLORADO
5B-Adams
6B-Alamosa
5B-Arapahoe
6B-Archuleta
4B-Baca
4B-Bent
5B-Boulder
5B-Broomfield

6B-Chaffee
5B-Cheyenne
7-Clear-Creek
6B-Conejos
6B-Costilla
5B-Crowley
US STATES—continued
COLORADO (continued)
5B-Custer
5B-Delta
5B-Denver
6B-Dolores
5B-Douglas
6B-Eagle
5B-Elbert
5B-El-Paso
5B-Fremont
5B-Garfield
5B-Gilpin
7-Grand
7-Gunnison
7-Hinsdale
5B-Huerfano
7-Jackson
5B-Jefferson
5B-Kiowa
5B-Kit-Carson
7-Lake
5B-La-Plata
5B-Larimer
4B-Las-Animas
5B-Lincoln
5B-Logan
5B-Mesa

7 Mineral
6B Moffat
5B Montezuma
5B Montrose
5B Morgan
4B Otero
6B Ouray
7 Park
5B Phillips
7 Pitkin
4B Prowers
5B Pueblo
6B Rio Blanco
7 Rio Grande
7 Routt
6B Saguache
7 San Juan
6B San Miguel
5B Sedgewick
7 Summit
5B Teller
5B Washington
5B Weld
5B Yuma
CONNECTICUT
5A (all)
DELAWARE
4A (all)
DISTRICT OF COLUMBIA
4A (all)
FLORIDA
2A Alachua*
2A Baker*
2A Bay*
2A Bradford*

2A Brevard*
1A Broward*
2A Calhoun*
2A Charlotte*
2A Citrus*
2A Clay*
2A Collier*
2A Columbia*
2A DeSoto*
2A Dixie*
2A Duval*
2A Escambia*
2A Flagler*
2A Franklin*
2A Gadsden*
2A Gilchrist*
2A Glades*
2A Gulf*
2A Hamilton*
2A Hardee*
2A Hendry*
2A Hernando*
2A Highlands*
2A Hillsborough*
2A Holmes*
2A Indian River*
2A Jackson*
US STATES—continued
FLORIDA (continued)
2A Jefferson*
2A Lafayette*
2A Lake*
2A Lee*
2A Leon*

2A Levy*
2A Liberty*
2A Madison*
2A Manatee*
2A Marion*
2A Martin*
1A Miami-Dade*
1A Monroe*
2A Nassau*
2A Okaloosa*
2A Okeechobee*
2A Orange*
2A Osceola*
1A Palm Beach*
2A Pasco*
2A Pinellas*
2A Polk*
2A Putnam*
2A Santa Rosa*
2A Sarasota*
2A Seminole*
2A St. Johns*
2A St. Lucie*
2A Sumter*
2A Suwannee*
2A Taylor*
2A Union*
2A Volusia*
2A Wakulla*
2A Walton*
2A Washington*
GEORGIA
2A Appling*
2A Atkinson*
2A Bacon*

2A Baker*
3A Baldwin
3A Banks
3A Barrow
3A Bartow
3A Ben Hill*
2A Berrien*
3A Bibb
3A Bleckley*
2A Brantley*
2A Brooks*
2A Bryan*
3A Bulloch*
3A Burke
3A Butts
2A Calhoun*
2A Camden*
3A Candler*
3A Carroll
3A Catoosa
2A Charlton*
2A Chatham*
3A Chattahoochee*
3A Chattooga
3A Cherokee
3A Clarke
3A Clay*
3A Clayton
2A Clinch*
3A Cobb
2A Coffee*
2A Colquitt*
3A Columbia
2A Cook*

3A-Coweta
3A-Crawford
3A-Crisp*
3A-Dade
3A-Dawson
2A-Decatur*
3A-DeKalb
3A-Dodge*
3A-Dooly*
2A-Dougherty*
3A-Douglas
2A-Early*
2A-Echols*
2A-Effingham*
US STATES—continued
GEORGIA (continued)
3A-Elbert
3A-Emanuel*
2A-Evans*
3A-Fannin
3A-Fayette
3A-Floyd
3A-Forsyth
3A-Franklin
3A-Fulton
3A-Gilmer
3A-Glascock
2A-Glynn*
3A-Gordon
2A-Grady*
3A-Greene
3A-Gwinnett
3A-Habersham
3A-Hall
3A-Hancock

3A Haralson
3A Harris
3A Hart
3A Heard
3A Henry
3A Houston*
3A Irwin*
3A Jackson
3A Jasper
2A Jeff Davis*
3A Jefferson
3A Jenkins*
3A Johnson*
3A Jones
3A Lamar
2A Lanier*
3A Laurens*
3A Lee*
2A Liberty*
3A Lincoln
2A Long*
2A Lowndes*
3A Lumpkin
3A Macon*
3A Madison
3A Marion*
3A McDuffie
2A McIntosh*
3A Meriwether
2A Miller*
2A Mitchell*
3A Monroe
3A Montgomery*
3A Morgan

3A Murray
3A Muscogee
3A Newton
3A Oconee
3A Oglethorpe
3A Paulding
3A Peach*
3A Pickens
2A Pierce*
3A Pike
3A Polk
3A Pulaski*
3A Putnam
3A Quitman*
3A Rabun
3A Randolph*
3A Richmond
3A Rockdale
3A Schley*
3A Screven*
2A Seminole*
3A Spalding
3A Stephens
3A Stewart*
3A Sumter*
3A Talbot
3A Taliaferro
2A Tattnall*
3A Taylor*
3A Telfair*
3A Terrell*
2A Thomas*
2A Tift*
2A Toombs*
3A Towns

US STATES—continued
GEORGIA <i>(continued)</i>
3A-Treutlen*
3A-Troup
3A-Turner*
3A-Twiggs*
3A-Union
3A-Upson
3A-Walker
3A-Walton
2A-Ware*
3A-Warren
3A-Washington
2A-Wayne*
3A-Webster*
3A-Wheeler*
3A-White
3A-Whitfield
3A-Wileox*
3A-Wilkes
3A-Wilkinson
2A-Worth*
HAWAII
1A (all)*
IDAHO
5B-Ada
6B-Adams
6B-Bannock
6B-Bear-Lake
5B-Benewah
6B-Bingham
6B-Blaine
6B-Boise
6B-Bonner

6B-Bonneville
6B-Boundary
6B-Butte
6B-Camas
5B-Canyon
6B-Caribou
5B-Cassia
6B-Clark
5B-Clearwater
6B-Custer
5B-Elmore
6B-Franklin
6B-Fremont
5B-Gem
5B-Gooding
5B-Idaho
6B-Jefferson
5B-Jerome
5B-Kootenai
5B-Latah
6B-Lemhi
5B-Lewis
5B-Lincoln
6B-Madison
5B-Minidoka
5B-Nez-Perce
6B-Oneida
5B-Owyhee
5B-Payette
5B-Power
5B-Shoshone
6B-Teton
5B-Twin-Falls
6B-Valley
5B-Washington

ILLINOIS
5A-Adams
4A-Alexander
4A-Bond
5A-Boone
5A-Brown
5A-Bureau
4A-Calhoun
5A-Carroll
5A-Cass
5A-Champaign
4A-Christian
4A-Clark
4A-Clay
4A-Clinton
4A-Coles
5A-Cook
4A-Crawford
4A-Cumberland
5A-DeKalb
5A-De-Witt
US STATES—continued
ILLINOIS (continued)
5A-Douglas
5A-DuPage
5A-Edgar
4A-Edwards
4A-Effingham
4A-Fayette
5A-Ford
4A-Franklin
5A-Fulton
4A-Gallatin
4A-Greene

5A Grundy
4A Hamilton
5A Hancock
4A Hardin
5A Henderson
5A Henry
5A Iroquois
4A Jackson
4A Jasper
4A Jefferson
4A Jersey
5A Jo Daviess
4A Johnson
5A Kane
5A Kankakee
5A Kendall
5A Knox
5A Lake
5A La Salle
4A Lawrence
5A Lee
5A Livingston
5A Logan
5A Macon
4A Macoupin
4A Madison
4A Marion
5A Marshall
5A Mason
4A Massac
5A McDonough
5A McHenry
5A McLean
5A Menard
5A Mercer

4A-Monroe
4A-Montgomery
5A-Morgan
5A-Moultrie
5A-Ogle
5A-Peoria
4A-Perry
5A-Piatt
5A-Pike
4A-Pope
4A-Pulaski
5A-Putnam
4A-Randolph
4A-Richland
5A-Rock Island
4A-Saline
5A-Sangamon
5A-Schuyler
5A-Scott
4A-Shelby
5A-Stark
4A-St. Clair
5A-Stephenson
5A-Tazewell
4A-Union
5A-Vermilion
4A-Wabash
5A-Warren
4A-Washington
4A-Wayne
4A-White
5A-Whiteside
5A-Will
4A-Williamson

5A Winnebago
5A Woodford
INDIANA
5A Adams
5A Allen
4A Bartholomew
5A Benton
5A Blackford
5A Boone
4A Brown
US STATES—continued
INDIANA (continued)
5A Carroll
5A Cass
4A Clark
4A Clay
5A Clinton
4A Crawford
4A Daviess
4A Dearborn
4A Decatur
5A De Kalb
5A Delaware
4A Dubois
5A Elkhart
4A Fayette
4A Floyd
5A Fountain
4A Franklin
5A Fulton
4A Gibson
5A Grant
4A Greene
5A Hamilton
5A Hancock

4A Harrison
4A Hendricks
5A Henry
5A Howard
5A Huntington
4A Jackson
5A Jasper
5A Jay
4A Jefferson
4A Jennings
4A Johnson
4A Knox
5A Kosciusko
5A LaGrange
5A Lake
5A LaPorte
4A Lawrence
5A Madison
4A Marion
5A Marshall
4A Martin
5A Miami
4A Monroe
5A Montgomery
4A Morgan
5A Newton
5A Noble
4A Ohio
4A Orange
4A Owen
5A Parke
4A Perry
4A Pike
5A Porter

4A Posey
5A Pulaski
4A Putnam
5A Randolph
4A Ripley
4A Rush
4A Scott
4A Shelby
4A Spencer
5A Starke
5A Steuben
5A St. Joseph
4A Sullivan
4A Switzerland
5A Tippecanoe
5A Tipton
4A Union
4A Vanderburgh
5A Vermillion
4A Vigo
5A Wabash
5A Warren
4A Warriek
4A Washington
5A Wayne
5A Wells
5A White
5A Whitley
IOWA
5A Adair
5A Adams
US STATES—continued
IOWA (continued)
5A Allamakee
5A Appanoose

5A Audubon
5A Benton
6A Black Hawk
5A Boone
5A Bremer
5A Buchanan
5A Buena Vista
5A Butler
5A Calhoun
5A Carroll
5A Cass
5A Cedar
6A Cerro Gordo
5A Cherokee
5A Chickasaw
5A Clarke
6A Clay
5A Clayton
5A Clinton
5A Crawford
5A Dallas
5A Davis
5A Decatur
5A Delaware
5A Des Moines
6A Dickinson
5A Dubuque
6A Emmet
5A Fayette
5A Floyd
5A Franklin
5A Fremont
5A Greene
5A Grundy

5A Guthrie
5A Hamilton
6A Hancock
5A Hardin
5A Harrison
5A Henry
5A Howard
5A Humboldt
5A Ida
5A Iowa
5A Jackson
5A Jasper
5A Jefferson
5A Johnson
5A Jones
5A Keokuk
6A Kossuth
5A Lee
5A Linn
5A Louisa
5A Lucas
6A Lyon
5A Madison
5A Mahaska
5A Marion
5A Marshall
5A Mills
6A Mitchell
5A Monona
5A Monroe
5A Montgomery
5A Muscatine
6A O'Brien
6A Osceola
5A Page

6A Palo Alto
5A Plymouth
5A Pocahontas
5A Polk
5A Pottawattamie
5A Poweshiek
5A Ringgold
5A Sae
5A Scott
5A Shelby
6A Sioux
5A Story
5A Tama
5A Taylor
5A Union
5A Van Buren
5A Wapello
US STATES—continued
IOWA (continued)
5A Warren
5A Washington
5A Wayne
5A Webster
6A Winnebago
5A Winneshiek
5A Woodbury
6A Worth
5A Wright
KANSAS
4A Allen
4A Anderson
4A Atchison
4A Barber
4A Barton

4A Bourbon
4A Brown
4A Butler
4A Chase
4A Chautauqua
4A Cherokee
5A Cheyenne
4A Clark
4A Clay
4A Cloud
4A Coffey
4A Comanche
4A Cowley
4A Crawford
5A Decatur
4A Dickinson
4A Doniphan
4A Douglas
4A Edwards
4A Elk
4A Ellis
4A Ellsworth
4A Finney
4A Ford
4A Franklin
4A Geary
5A Gove
4A Graham
4A Grant
4A Gray
5A Greeley
4A Greenwood
4A Hamilton
4A Harper
4A Harvey

4A Haskell
4A Hodgeman
4A Jackson
4A Jefferson
5A Jewell
4A Johnson
4A Kearny
4A Kingman
4A Kiowa
4A Labette
4A Lane
4A Leavenworth
4A Lincoln
4A Linn
5A Logan
4A Lyon
4A Marion
4A Marshall
4A McPherson
4A Meade
4A Miami
4A Mitchell
4A Montgomery
4A Morris
4A Morton
4A Nemaha
4A Neosho
4A Ness
5A Norton
4A Osage
4A Osborne
4A Ottawa
4A Pawnee
5A Phillips

4A Pottawatomie
4A Pratt
5A Rawlins
4A Reno
US STATES—continued
KANSAS (continued)
5A Republic
4A Rice
4A Riley
4A Rooks
4A Rush
4A Russell
4A Saline
5A Scott
4A Sedgewick
4A Seward
4A Shawnee
5A Sheridan
5A Sherman
5A Smith
4A Stafford
4A Stanton
4A Stevens
4A Sumner
5A Thomas
4A Trego
4A Wabaunsee
5A Wallace
4A Washington
5A Wichita
4A Wilson
4A Woodson
4A Wyandotte
KENTUCKY
4A (all)

LOUISIANA
2A Acadia*
2A Allen*
2A Ascension*
2A Assumption*
2A Avoyelles*
2A Beauregard*
3A Bienville*
3A Bossier*
3A Caddo*
2A Calcasieu*
3A Caldwell*
2A Cameron*
3A Catahoula*
3A Claiborne*
3A Concordia*
3A De Soto*
2A East Baton Rouge*
3A East Carroll
2A East Feliciana*
2A Evangeline*
3A Franklin*
3A Grant*
2A Iberia*
2A Iberville*
3A Jackson*
2A Jefferson*
2A Jefferson Davis*
2A Lafayette*
2A Lafourche*
3A La Salle*
3A Lincoln*
2A Livingston*
3A Madison*

3A Morehouse
3A Natchitoches*
2A Orleans*
3A Ouachita*
2A Plaquemines*
2A Pointe-Coupee*
2A Rapides*
3A Red-River*
3A Richland*
3A Sabine*
2A St. Bernard*
2A St. Charles*
2A St. Helena*
2A St. James*
2A St. John the Baptist*
2A St. Landry*
2A St. Martin*
2A St. Mary*
2A St. Tammany*
2A Tangipahoa*
3A Tensas*
2A Terrebonne*
3A Union*
2A Vermilion*
3A Vernon*
US STATES—continued
LOUISIANA (continued)
2A Washington*
3A Webster*
2A West-Baton-Rouge*
3A West-Carroll
2A West-Feliciana*
3A Winn*
MAINE
6A Androscoggin

7-Aroostook
6A-Cumberland
6A-Franklin
6A-Hancock
6A-Kennebec
6A-Knox
6A-Lincoln
6A-Oxford
6A-Penobscot
6A-Piscataquis
6A-Sagadahoe
6A-Somerset
6A-Waldo
6A-Washington
6A-York
MARYLAND
5A-Allegany
4A-Anne-Arundel
4A-Baltimore
4A-Baltimore (city)
4A-Calvert
4A-Caroline
4A-Carroll
4A-Cecil
4A-Charles
4A-Dorchester
4A-Frederick
5A-Garrett
4A-Harford
4A-Howard
4A-Kent
4A-Montgomery
4A-Prince-George's
4A-Queen-Anne's

4A-Somerset
4A-St. Mary's
4A-Talbot
4A-Washington
4A-Wisconsin
4A-Worcester
MASSACHUSETTS
5A (all)
MICHIGAN
6A-Alcona
6A-Alger
5A-Allegan
6A-Alpena
6A-Antrim
6A-Arenac
6A-Baraga
5A-Barry
5A-Bay
6A-Benzie
5A-Berrien
5A-Branch
5A-Calhoun
5A-Cass
6A-Charlevoix
6A-Cheboygan
6A-Chippewa
6A-Clare
5A-Clinton
6A-Crawford
6A-Delta
6A-Dickinson
5A-Eaton
6A-Emmet
5A-Genesee
6A-Gladwin

6A Gogebie
6A Grand Traverse
5A Gratiot
5A Hillsdale
6A Houghton
5A Huron
5A Ingham
5A Ionia
6A Iosco
6A Iron
6A Isabella
US STATES—continued
MICHIGAN (continued)
5A Jackson
5A Kalamazoo
6A Kalkaska
5A Kent
7 Keweenaw
6A Lake
5A Lapeer
6A Leelanau
5A Lenawee
5A Livingston
6A Luce
6A Mackinac
5A Macomb
6A Manistee
7 Marquette
6A Mason
6A Mecosta
6A Menominee
5A Midland
6A Missaukee
5A Monroe

5A Montcalm
6A Montmorency
5A Muskegon
6A Newaygo
5A Oakland
6A Oceana
6A Ogemaw
6A Ontonagon
6A Osceola
6A Oscoda
6A Otsego
5A Ottawa
6A Presque Isle
6A Roscommon
5A Saginaw
5A Sanilac
6A Schoolcraft
5A Shiawassee
5A St. Clair
5A St. Joseph
5A Tuscola
5A Van Buren
5A Washtenaw
5A Wayne
6A Wexford
MINNESOTA
7 Aitkin
6A Anoka
6A Becker
7 Beltrami
6A Benton
6A Big Stone
6A Blue Earth
6A Brown
7 Carlton

6A Carver
7 Cass
6A Chippewa
6A Chisago
6A Clay
7 Clearwater
7 Cook
6A Cottonwood
7 Crow Wing
6A Dakota
6A Dodge
6A Douglas
6A Faribault
5A Fillmore
6A Freeborn
6A Goodhue
6A Grant
6A Hennepin
5A Houston
7 Hubbard
6A Isanti
7 Itasea
6A Jackson
6A Kanabec
6A Kandiyohi
7 Kittson
7 Koochiching
6A Lac qui Parle
7 Lake
7 Lake of the Woods
6A Le Sueur
6A Lincoln
US STATES—continued
MINNESOTA (continued)

6A Lyon
7 Mahnomen
7 Marshall
6A Martin
6A McLeod
6A Meeker
6A Mille Laes
6A Morrison
6A Mower
6A Murray
6A Nicollet
6A Nobles
7 Norman
6A Olmsted
6A Otter Tail
7 Pennington
7 Pine
6A Pipestone
7 Polk
6A Pope
6A Ramsey
7 Red Lake
6A Redwood
6A Renville
6A Rice
6A Rock
7 Roseau
6A Scott
6A Sherburne
6A Sibley
6A Stearns
6A Steele
6A Stevens
7 St. Louis
6A Swift

6A-Todd
6A-Traverse
6A-Wabasha
7-Wadena
6A-Waseca
6A-Washington
6A-Watonwan
6A-Wilkin
5A-Winona
6A-Wright
6A-Yellow-Medicine
MISSISSIPPI
3A-Adams*
3A-Alcorn
3A-Amite*
3A-Attala
3A-Benton
3A-Bolivar
3A-Calhoun
3A-Carroll
3A-Chickasaw
3A-Choctaw
3A-Claiborne*
3A-Clarke
3A-Clay
3A-Coahoma
3A-Copiah*
3A-Covington*
3A-DeSoto
3A-Forrest*
3A-Franklin*
2A-George*
3A-Greene*
3A-Grenada

2A Hancock*
2A Harrison*
3A Hinds*
3A Holmes
3A Humphreys
3A Issaquena
3A Itawamba
2A Jackson*
3A Jasper
3A Jefferson*
3A Jefferson-Davis*
3A Jones*
3A Kemper
3A Lafayette
3A Lamar*
3A Lauderdale
3A Lawrence*
3A Leake
3A Lee
US STATES—continued
MISSISSIPPI (continued)
3A Leflore
3A Lincoln*
3A Lowndes
3A Madison
3A Marion*
3A Marshall
3A Monroe
3A Montgomery
3A Neshoba
3A Newton
3A Noxubee
3A Oktibbeha
3A Panola
2A Pearl River*

3A Perry*
3A Pike*
3A Pontotoc
3A Prentiss
3A Quitman
3A Rankin*
3A Scott
3A Sharkey
3A Simpson*
3A Smith*
2A Stone*
3A Sunflower
3A Tallahatchie
3A Tate
3A Tippah
3A Tishomingo
3A Tunica
3A Union
3A Walthall*
3A Warren*
3A Washington
3A Wayne*
3A Webster
3A Wilkinson*
3A Winston
3A Yalobusha
3A Yazoo
MISSOURI
5A Adair
5A Andrew
5A Atchison
4A Audrain
4A Barry
4A Barton

4A-Bates
4A-Benton
4A-Bollinger
4A-Boone
4A-Buchanan
4A-Butler
4A-Caldwell
4A-Callaway
4A-Camden
4A-Cape Girardeau
4A-Carroll
4A-Carter
4A-Cass
4A-Cedar
4A-Chariton
4A-Christian
5A-Clark
4A-Clay
4A-Clinton
4A-Cole
4A-Cooper
4A-Crawford
4A-Dade
4A-Dallas
5A-Daviess
5A-DeKalb
4A-Dent
4A-Douglas
3A-Dunklin
4A-Franklin
4A-Gasconade
5A-Gentry
4A-Greene
5A-Grundy
5A-Harrison

4A Henry
4A Hickory
5A Holt
4A Howard
4A Howell
US STATES—continued
MISSOURI (continued)
4A Iron
4A Jackson
4A Jasper
4A Jefferson
4A Johnson
5A Knox
4A Laelege
4A Lafayette
4A Lawrence
5A Lewis
4A Lincoln
5A Linn
5A Livingston
5A Macon
4A Madison
4A Maries
5A Marion
4A McDonald
5A Mercer
4A Miller
4A Mississippi
4A Moniteau
4A Monroe
4A Montgomery
4A Morgan
4A New Madrid
4A Newton

5A Nodaway
4A Oregon
4A Osage
4A Ozark
3A Pemiscot
4A Perry
4A Pettis
4A Phelps
5A Pike
4A Platte
4A Polk
4A Pulaski
5A Putnam
5A Ralls
4A Randolph
4A Ray
4A Reynolds
4A Ripley
4A Saline
5A Schuyler
5A Scotland
4A Scott
4A Shannon
5A Shelby
4A St. Charles
4A St. Clair
4A St. Francois
4A St. Louis
4A St. Louis (city)
4A Ste. Genevieve
4A Stoddard
4A Stone
5A Sullivan
4A Taney
4A Texas

4A-Vernon
4A-Warren
4A-Washington
4A-Wayne
4A-Webster
5A-Worth
4A-Wright
MONTANA
6B-(all)
NEBRASKA
5A-(all)
NEVADA
4B-Carson-City-(city)
5B-Churchill
3B-Clark
4B-Douglas
5B-Elko
4B-Esmeralda
5B-Eureka
5B-Humboldt
5B-Lander
4B- Lincoln
4B-Lyon
4B-Mineral
4B-Nye
5B-Pershing
US STATES—continued
NEVADA (continued)
5B-Storey
5B-Washoe
5B-White-Pine
NEW HAMPSHIRE
6A-Belknap
6A-Carroll

5A-Cheshire
6A-Coos
6A-Grafton
5A-Hillsborough
5A-Merrimaek
5A-Rockingham
5A-Strafford
6A-Sullivan
NEW JERSEY
4A-Atlantie
5A-Bergen
4A-Burlington
4A-Camden
4A-Cape-May
4A-Cumberland
4A-Essex
4A-Gloucester
4A-Hudson
5A-Hunterdon
4A-Mercer
4A-Middlesex
4A-Monmouth
5A-Morris
4A-Ocean
5A-Passaie
4A-Salem
5A-Somerset
5A-Sussex
4A-Union
5A-Warren
NEW MEXICO
4B-Bernalillo
4A-Catron
3B-Chaves
4B-Cibola

5B Colfax
4B Curry
4B DeBaca
3B Doña Ana
3B Eddy
4B Grant
4B Guadalupe
5B Harding
3B Hidalgo
3B Lea
4B Lincoln
5B Los Alamos
3B Luna
5B McKinley
5B Mora
3B Otero
4B Quay
5B Rio Arriba
4B Roosevelt
5B Sandoval
5B San Juan
5B San Miguel
5B Santa Fe
3B Sierra
4B Socorro
5B Taos
5B Tarrant
4B Union
4B Valencia
NEW YORK
5A Albany
5A Allegany
4A Bronx
5A Broome

5A-Cattaraugus
5A-Cayuga
5A-Chautauqua
5A-Chemung
6A-Chenango
6A-Clinton
5A-Columbia
5A-Cortland
6A-Delaware
5A-Dutchess
5A-Erie
6A-Essex
6A-Franklin
US STATES—continued
NEW YORK (continued)
6A-Fulton
5A-Genesee
5A-Greene
6A-Hamilton
6A-Herkimer
6A-Jefferson
4A-Kings
6A-Lewis
5A-Livingston
6A-Madison
5A-Monroe
6A-Montgomery
4A-Nassau
4A-New-York
5A-Niagara
6A-Oneida
5A-Onondaga
5A-Ontario
5A-Orange
5A-Orleans

5A Oswego
6A Otsego
5A Putnam
4A Queens
5A Rensselaer
4A Richmond
5A Rockland
5A Saratoga
5A Schenectady
5A Schoharie
5A Schuyler
5A Seneca
5A Steuben
6A St. Lawrence
4A Suffolk
6A Sullivan
5A Tioga
5A Tompkins
6A Ulster
6A Warren
5A Washington
5A Wayne
4A Westchester
5A Wyoming
5A Yates
NORTH CAROLINA
3A Alamance
3A Alexander
5A Alleghany
3A Anson
5A Ashe
5A Avery
3A Beaufort
3A Bertie

3A Bladen
3A Brunswick*
4A Buncombe
4A Burke
3A Cabarrus
4A Caldwell
3A Camden
3A Carteret*
3A Caswell
3A Catawba
3A Chatham
3A Cherokee
3A Chowan
3A Clay
3A Cleveland
3A Columbus*
3A Craven
3A Cumberland
3A Currituck
3A Dare
3A Davidson
3A Davie
3A Duplin
3A Durham
3A Edgecombe
3A Forsyth
3A Franklin
3A Gaston
3A Gates
4A Graham
3A Granville
3A Greene
3A Guilford
3A Halifax
US STATES—continued

NORTH CAROLINA <i>(continued)</i>
3A Harnett
4A Haywood
4A Henderson
3A Hertford
3A Hoke
3A Hyde
3A Iredell
4A Jackson
3A Johnston
3A Jones
3A Lee
3A Lenoir
3A Lincoln
4A Macon
4A Madison
3A Martin
4A McDowell
3A Mecklenburg
4A Mitchell
3A Montgomery
3A Moore
3A Nash
3A New Hanover*
3A Northampton
3A Onslow*
3A Orange
3A Pamlico
3A Pasquotank
3A Pender*
3A Perquimans
3A Person
3A Pitt
3A Polk

3A Randolph
3A Richmond
3A Robeson
3A Rockingham
3A Rowan
3A Rutherford
3A Sampson
3A Scotland
3A Stanly
4A Stokes
4A Surry
4A Swain
4A Transylvania
3A Tyrrell
3A Union
3A Vance
3A Wake
3A Warren
3A Washington
5A Watauga
3A Wayne
3A <u>4A</u> Wilkes
3A Wilson
4A Yadkin
5A Yancey
NORTH DAKOTA
6A Adams
6A Barnes
7 Benson
6A Billings
7 Bottineau
6A Bowman
7 Burke
6A Burleigh
6A Cass

7 Cavalier
6A Dickey
7 Divide
6A Dunn
6A Eddy
6A Emmons
6A Foster
6A Golden Valley
7 Grand Forks
6A Grant
6A Griggs
6A Hettinger
6A Kidder
6A LaMoure
6A Logan
7 McHenry
6A McIntosh
6A McKenzie
6A McLean
6A Mercer
US STATES—continued
NORTH DAKOTA (continued)
6A Morton
6A Mountrail
7 Nelson
6A Oliver
7 Pembina
7 Pierre
7 Ramsey
6A Ransom
7 Renville
6A Richland
7 Rolette
6A Sargent

6A-Sheridan
6A-Sioux
6A-Slope
6A-Stark
6A-Steele
6A-Stutsman
7-Towner
6A-Traill
7-Walsh
7-Ward
6A-Wells
6A-Williams
OHIO
4A-Adams
5A-Allen
5A-Ashland
5A-Ashtabula
4A-Athens
5A-Auglaize
5A-Belmont
4A-Brown
4A-Butler
5A-Carroll
5A-Champaign
5A-Clark
4A-Clermont
4A-Clinton
5A-Columbiana
5A-Coshocton
5A-Crawford
5A-Cuyahoga
5A-Darke
5A-Defiance
5A-Delaware
5A-Erie

5A Fairfield
4A Fayette
4A Franklin
5A Fulton
4A Gallia
5A Geauga
4A Greene
5A Guernsey
4A Hamilton
5A Hancock
5A Hardin
5A Harrison
5A Henry
4A Highland
4A Hocking
5A Holmes
5A Huron
4A Jackson
5A Jefferson
5A Knox
5A Lake
4A Lawrence
5A Licking
5A Logan
5A Lorain
5A Lucas
4A Madison
5A Mahoning
5A Marion
5A Medina
4A Meigs
5A Mercer
5A Miami
5A Monroe

5A Montgomery
5A Morgan
5A Morrow
5A Muskingum
5A Noble
5A Ottawa
5A Paulding
US STATES—continued
OHIO (continued)
5A Perry
4A Pickaway
4A Pike
5A Portage
5A Preble
5A Putnam
5A Richland
4A Ross
5A Sandusky
4A Scioto
5A Seneca
5A Shelby
5A Stark
5A Summit
5A Trumbull
5A Tuscarawas
5A Union
5A Van Wert
4A Vinton
4A Warren
4A Washington
5A Wayne
5A Williams
5A Wood
5A Wyandot
OKLAHOMA

3A-Adair
4A-Alfalfa
3A-Atoka
4B-Beaver
3A-Beckham
3A-Blaine
3A-Bryan
3A-Caddo
3A-Canadian
3A-Carter
3A-Cherokee
3A-Choctaw
4B-Cimarron
3A-Cleveland
3A-Coal
3A-Comanche
3A-Cotton
4A-Craig
3A-Creek
3A-Custer
4A-Delaware
3A-Dewey
4A-Ellis
4A-Garfield
3A-Garvin
3A-Grady
4A-Grant
3A-Greer
3A-Harmon
4A-Harper
3A-Haskell
3A-Hughes
3A-Jackson
3A-Jefferson

3A Johnston
4A Kay
3A Kingfisher
3A Kiowa
3A Latimer
3A LeFlore
3A Lincoln
3A Logan
3A Love
4A Major
3A Marshall
3A Mayes
3A McClain
3A McCurtain
3A McIntosh
3A Murray
3A Muskogee
3A Noble
4A Nowata
3A Okfuskee
3A Oklahoma
3A Okmulgee
4A Osage
4A Ottawa
3A Pawnee
3A Payne
3A Pittsburg
3A Pontotoc
US STATES—continued
OKLAHOMA (continued)
3A Pottawatomie
3A Pushmataha
3A Roger Mills
3A Rogers
3A Seminole

3A Sequoyah
3A Stephens
4B Texas
3A Tillman
3A Tulsa
3A Wagoner
4A Washington
3A Washita
4A Woods
4A Woodward
OREGON
5B Baker
4C Benton
4C Clackamas
4C Clatsop
4C Columbia
4C Coos
5B Crook
4C Curry
5B Deschutes
4C Douglas
5B Gilliam
5B Grant
5B Harney
5B Hood River
4C Jackson
5B Jefferson
4C Josephine
5B Klamath
5B Lake
4C Lane
4C Lincoln
4C Linn
5B Malheur

4C Marion
5B Morrow
4C Multnomah
4C Polk
5B Sherman
4C Tillamook
5B Umatilla
5B Union
5B Wallowa
5B Wasco
4C Washington
5B Wheeler
4C Yamhill
PENNSYLVANIA
4A Adams
5A Allegheny
5A Armstrong
5A Beaver
5A Bedford
4A Berks
5A Blair
5A Bradford
4A Bucks
5A Butler
5A Cambria
5A Cameron
5A Carbon
5A Centre
4A Chester
5A Clarion
5A Clearfield
5A Clinton
5A Columbia
5A Crawford
4A Cumberland

4A-Dauphin
4A-Delaware
5A-Elk
5A-Erie
5A-Fayette
5A-Forest
4A-Franklin
5A-Fulton
5A-Greene
5A-Huntingdon
5A-Indiana
5A-Jefferson
5A-Juniata
5A-Lackawanna
US STATES—continued
PENNSYLVANIA (continued)
4A-Lancaster
5A-Lawrence
4A-Lebanon
5A-Lehigh
5A-Luzerne
5A-Lycoming
5A-McKean
5A-Mercer
5A-Mifflin
5A-Monroe
4A-Montgomery
5A-Montour
5A-Northampton
5A-Northumberland
4A-Perry
4A-Philadelphia
5A-Pike
5A-Potter

5A Schuylkill
5A Snyder
5A Somerset
5A Sullivan
5A Susquehanna
5A Tioga
5A Union
5A Venango
5A Warren
5A Washington
5A Wayne
5A Westmoreland
5A Wyoming
4A York
RHODE ISLAND
5A (all)
SOUTH CAROLINA
3A Abbeville
3A Aiken
3A Allendale*
3A Anderson
3A Bamberg*
3A Barnwell*
2A Beaufort*
3A Berkeley*
3A Calhoun
3A Charleston*
3A Cherokee
3A Chester
3A Chesterfield
3A Clarendon
3A Colleton*
3A Darlington
3A Dillon
3A Dorchester*

3A Edgefield
3A Fairfield
3A Florence
3A Georgetown*
3A Greenville
3A Greenwood
3A Hampton*
3A Horry*
2A Jasper*
3A Kershaw
3A Lancaster
3A Laurens
3A Lee
3A Lexington
3A Marion
3A Marlboro
3A McCormick
3A Newberry
3A Oconee
3A Orangeburg
3A Pickens
3A Richland
3A Saluda
3A Spartanburg
3A Sumter
3A Union
3A Williamsburg
3A York
SOUTH DAKOTA
6A Aurora
6A Beadle
5A Bennett
5A Bon Homme
6A Brookings

6A Brown
US STATES—continued
SOUTH DAKOTA (continued)
5A Brule
6A Buffalo
6A Butte
6A Campbell
5A Charles Mix
6A Clark
5A Clay
6A Codington
6A Corson
6A Custer
6A Davison
6A Day
6A Deuel
6A Dewey
5A Douglas
6A Edmunds
6A Fall River
6A Faulk
6A Grant
5A Gregory
5A Haakon
6A Hamlin
6A Hand
6A Hanson
6A Harding
6A Hughes
5A Hutchinson
6A Hyde
5A Jackson
6A Jerauld
5A Jones
6A Kingsbury

6A Lake
6A Lawrence
6A Lincoln
5A Lyman
6A Marshall
6A McCook
6A McPherson
6A Meade
5A Mellette
6A Miner
6A Minnehaha
6A Moody
6A Pennington
6A Perkins
6A Potter
6A Roberts
6A Sanborn
6A Shannon
6A Spink
5A Stanley
6A Sully
5A Todd
5A Tripp
6A Turner
5A Union
6A Walworth
5A Yankton
6A Ziebach
TENNESSEE
4A Anderson
3A Bedford
4A Benton
4A Bledsoe
4A Blount

4A Bradley
4A Campbell
4A Cannon
4A Carroll
4A Carter
4A Cheatham
3A Chester
4A Claiborne
4A Clay
4A Coe
3A Coffee
3A Crockett
4A Cumberland
3A Davidson
3A Decatur
4A DeKalb
4A Dickson
3A Dyer
3A Fayette
4A Fentress
3A Franklin
3A Gibson
US STATES—continued
TENNESSEE (continued)
3A Giles
4A Grainger
4A Greene
3A Grundy
4A Hamblen
3A Hamilton
4A Hancock
3A Hardeman
3A Hardin
4A Hawkins
3A Haywood

3A Henderson
4A Henry
3A Hickman
4A Houston
4A Humphreys
4A Jackson
4A Jefferson
4A Johnson
4A Knox
4A Lake
3A Lauderdale
3A Lawrence
3A Lewis
3A Lincoln
4A Loudon
4A Macon
3A Madison
3A Marion
3A Marshall
3A Maury
4A McMinn
3A McNairy
4A Meigs
4A Monroe
4A Montgomery
3A Moore
4A Morgan
4A Obion
4A Overton
3A Perry
4A Pickett
4A Polk
4A Putnam
4A Rhea

4A Roane
4A Robertson
3A Rutherford
4A Scott
4A Sequatchie
4A Sevier
3A Shelby
4A Smith
4A Stewart
4A Sullivan
4A Sumner
3A Tipton
4A Trousdale
4A Unicoi
4A Union
4A Van Buren
4A Warren
4A Washington
3A Wayne
4A Weakley
4A White
3A Williamson
4A Wilson
TEXAS
2A Anderson*
3B Andrews
2A Angelina*
2A Aransas*
3A Archer
4B Armstrong
2A Atascosa*
2A Austin*
4B Bailey
2B Bandera
2A Bastrop*

3B Baylor
2A Bee*
2A Bell*
2A Bexar*
3A Blanco*
3B Borden
2A Bosque*
3A Bowie*
US STATES—continued
TEXAS (continued)
2A Brazoria*
2A Brazos*
3B Brewster
4B Briscoe
2A Brooks*
3A Brown*
2A Burleson*
3A Burnet*
2A Caldwell*
2A Calhoun*
3B Callahan
1A Cameron*
3A Camp*
4B Carson
3A Cass*
4B Castro
2A Chambers*
2A Cherokee*
3B Childress
3A Clay
4B Cochran
3B Coke
3B Coleman
3A Collin*

3B Collingsworth
2A Colorado*
2A Comal*
3A Comanche*
3B Concho
3A Cooke
2A Coryell*
3B Cottle
3B Crane
3B Crockett
3B Crosby
3B Culberson
4B Dallam
2A Dallas*
3B Dawson
4B Deaf Smith
3A Delta
3A Denton*
2A DeWitt*
3B Dickens
2B Dimmit
4B Donley
2A Duval*
3A Eastland
3B Ector
2B Edwards
2A Ellis*
3B El Paso
3A Erath*
2A Falls*
3A Fannin
2A Fayette*
3B Fisher
4B Floyd
3B Foard

2A Fort Bend*
3A Franklin*
2A Freestone*
2B Frio
3B Gaines
2A Galveston*
3B Garza
3A Gillespie*
3B Glascock
2A Goliad*
2A Gonzales*
4B Gray
3A Grayson
3A Gregg*
2A Grimes*
2A Guadalupe*
4B Hale
3B Hall
3A Hamilton*
4B Hansford
3B Hardeman
2A Hardin*
2A Harris*
3A Harrison*
4B Hartley
3B Haskell
2A Hays*
3B Hemphill
3A Henderson*
US STATES—continued
TEXAS (continued)
1A Hidalgo*
2A Hill*
4B Hockley

3A Hood*
3A Hopkins*
2A Houston*
3B Howard
3B Hudspeth
3A Hunt*
4B Hutchinson
3B Irion
3A Jack
2A Jackson*
2A Jasper*
3B Jeff Davis
2A Jefferson*
2A Jim Hogg*
2A Jim Wells*
2A Johnson*
3B Jones
2A Karnes*
3A Kaufman*
3A Kendall*
2A Kennedy*
3B Kent
3B Kerr
3B Kimble
3B King
2B Kinney
2A Kleberg*
3B Knox
3A Lamar*
4B Lamb
3A Lampasas*
2B La Salle
2A Lavaca*
2A Lee*
2A Leon*

2A Liberty*
2A Limestone*
4B Lipscomb
2A Live Oak*
3A Llano*
3B Loving
3B Lubbock
3B Lynn
2A Madison*
3A Marion*
3B Martin
3B Mason
2A Matagorda*
2B Maverick
3B McCulloch
2A McLennan*
2A McMullen*
2B Medina
3B Menard
3B Midland
2A Milan*
3A Mills*
3B Mitchell
3A Montague
2A Montgomery*
4B Moore
3A Morris*
3B Motley
3A Nacogdoches*
2A Navarro*
2A Newton*
3B Nolan
2A Nueces*
4B Ochiltree

4B Oldham
2A Orange*
3A Palo Pinto*
3A Panola*
3A Parker*
4B Parmer
3B Pecos
2A Polk*
4B Potter
3B Presidio
3A Rains*
4B Randall
3B Reagan
2B Real
3A Red River*
3B Reeves
US STATES—continued
TEXAS (continued)
2A Refugio*
4B Roberts
2A Robertson*
3A Rockwall*
3B Runnels
3A Rusk*
3A Sabine*
3A San Augustine*
2A San Jacinto*
2A San Patricio*
3A San Saba*
3B Schleicher
3B Scurry
3B Shackelford
3A Shelby*
4B Sherman
3A Smith*

3A-Somervell*
2A-Starr*
3A-Stephens
3B-Sterling
3B-Stonewall
3B-Sutton
4B-Swisher
2A-Tarrant*
3B-Taylor
3B-Terrell
3B-Terry
3B-Throckmorton
3A-Titus*
3B-Tom-Green
2A-Travis*
2A-Trinity*
2A-Tyler*
3A-Upshur*
3B-Upton
2B-Uvalde
2B-Val-Verde
3A-Van-Zandt*
2A-Victoria*
2A-Walker*
2A-Waller*
3B-Ward
2A-Washington*
2B-Webb
2A-Wharton*
3B-Wheeler
3A-Wichita
3B-Wilbarger
1A-Willacy*
2A-Williamson*

2A-Wilson*
3B-Winkler
3A-Wise
3A-Wood*
4B-Yoakum
3A-Young
2B-Zapata
2B-Zavala
UTAH
5B-Beaver
5B-Box Elder
5B-Cache
5B-Carbon
6B-Daggett
5B-Davis
6B-Duchesne
5B-Emery
5B-Garfield
5B-Grand
5B-Iron
5B-Juab
5B-Kane
5B-Millard
6B-Morgan
5B-Piute
6B-Rich
5B-Salt Lake
5B-San Juan
5B-Sanpete
5B-Sevier
6B-Summit
5B-Tooele
6B-Uintah
5B-Utah
6B-Wasatch

3B-Washington
5B-Wayne
US STATES—continued
UTAH <i>(continued)</i>
5B-Weber
VERMONT
6A (all)
VIRGINIA
4A (all except as follows:)
5A-Alleghany
5A-Bath
3A-Brunswick
3A-Chesapeake
5A-Clifton Forge
5A-Covington
3A-Emporia
3A-Franklin
3A-Greensville
3A-Halifax
3A-Hampton
5A-Highland
3A-Isle of Wight
3A-Mecklenburg
3A-Newport News
3A-Norfolk
3A-Pittsylvania
3A-Portsmouth
3A-South Boston
3A-Southampton
3A-Suffolk
3A-Surry
3A-Sussex
3A-Virginia Beach
WASHINGTON

5B-Adams
5B-Asotin
5B-Benton
5B-Chelan
5C-Clallam
4C-Clark
5B-Columbia
4C-Cowlitz
5B-Douglas
6B-Ferry
5B-Franklin
5B-Garfield
5B-Grant
4C-Grays Harbor
5C-Island
4C-Jefferson
4C-King
5C-Kitsap
5B-Kittitas
5B-Klickitat
4C-Lewis
5B-Lincoln
4C-Mason
5B-Okanogan
4C-Pacific
6B-Pend Oreille
4C-Pierce
5C-San Juan
4C-Skagit
5B-Skamania
4C-Snohomish
5B-Spokane
6B-Stevens
4C-Thurston
4C-Wahkiakum

5B-Walla-Walla
4C-Whatecom
5B-Whitman
5B-Yakima
WEST VIRGINIA
5A-Barbour
4A-Berkeley
4A-Boone
4A-Braxton
5A-Brooke
4A-Cabell
4A-Calhoun
4A-Clay
4A-Doddridge
4A-Fayette
4A-Gilmer
5A-Grant
4A-Greenbrier
5A-Hampshire
5A-Hancock
5A-Hardy
5A-Harrison
4A-Jackson
US STATES—continued
WEST VIRGINIA (continued)
4A-Jefferson
4A-Kanawha
4A-Lewis
4A-Lincoln
4A-Logan
5A-Marion
5A-Marshall
4A-Mason
4A-McDowell

4A Mercer
5A Mineral
4A Mingo
5A Monongalia
4A Monroe
4A Morgan
4A Nicholas
5A Ohio
5A Pendleton
4A Pleasants
5A Pocahontas
5A Preston
4A Putnam
4A Raleigh
5A Randolph
4A Ritchie
4A Roane
4A Summers
5A Taylor
5A Tucker
4A Tyler
4A Upshur
4A Wayne
4A Webster
5A Wetzel
4A Wirt
4A Wood
4A Wyoming
WISCONSIN
5A Adams
6A Ashland
6A Barron
6A Bayfield
6A Brown
6A Buffalo

6A Burnett
5A Calumet
6A Chippewa
6A Clark
5A Columbia
5A Crawford
5A Dane
5A Dodge
6A Door
6A Douglas
6A Dunn
6A Eau Claire
6A Florence
5A Fond du Lac
6A Forest
5A Grant
5A Green
5A Green Lake
5A Iowa
6A Iron
6A Jackson
5A Jefferson
5A Juneau
5A Kenosha
6A Kewaunee
5A La Crosse
5A Lafayette
6A Langlade
6A Lincoln
6A Manitowee
6A Marathon
6A Marinette
6A Marquette
6A Menominee

5A Milwaukee
5A Monroe
6A Oconto
6A Oneida
5A Outagamie
5A Ozaukee
6A Pepin
6A Pierce
6A Polk
6A Portage
US STATES—continued
WISCONSIN (continued)
6A Price
5A Racine
5A Richland
5A Rock
6A Rusk
5A Sauk
6A Sawyer
6A Shawano
6A Sheboygan
6A St. Croix
6A Taylor
6A Trempealeau
5A Vernon
6A Vilas
5A Walworth
6A Washburn
5A Washington
5A Waukesha
6A Waupaca
5A Waushara
5A Winnebago
6A Wood
WYOMING

6B-Albany
6B-Big Horn
6B-Campbell
6B-Carbon
6B-Converse
6B-Crook
6B-Fremont
5B-Goshen
6B-Hot Springs
6B-Johnson
5B-Laramie
7-Lincoln
6B-Natrona
6B-Niobrara
6B-Park
5B-Platte
6B-Sheridan
7-Sublette
6B-Sweetwater
7-Teton
6B-Uinta
6B-Washakie
6B-Weston
US TERRITORIES
AMERICAN SAMOA
1A (all)*
GUAM
1A (all)*
NORTHERN MARIANA ISLANDS
1A (all)*
PUERTO RICO
1A (all except as follows:)*
2B-Barraquitas
2B-Cayey

VIRGIN ISLANDS

1A (all)*

C301.4 Tropical climate region. ~~The tropical climate region shall be defined as: Deleted.~~

- ~~1. Hawaii, Puerto Rico, Guam, American Samoa, US Virgin Islands, Commonwealth of Northern Mariana Islands; and~~
- ~~2. Islands in the area between the Tropic of Cancer and the Tropic of Capricorn.~~

CHAPTER 4 [CE]

COMMERCIAL ENERGY EFFICIENCY

User note:

About this chapter: Chapter 4 presents the paths and options for compliance with the energy efficiency provisions. Chapter 4 contains energy efficiency provisions for the building envelope, mechanical and water heating systems, lighting and additional efficiency requirements. A performance alternative is also provided to allow for energy code compliance other than by the prescriptive method.

SECTION C401 GENERAL

C401.1 Scope. No changes

C401.2 Application. No changes

C401.2.1 International Energy Conservation Code. Commercial buildings shall comply with one of the following:

1. Prescriptive Compliance. The Prescriptive Compliance option requires compliance with Sections C402 through C406 and Section C408. Dwelling units and sleeping units in Group R-2 buildings without systems serving multiple units shall be deemed to be in compliance with this chapter, provided that they comply with Section R406.
2. Total Building Performance. The Total Building Performance option requires compliance with Section C407.

Exception: Additions, alterations, repairs and changes of occupancy to existing buildings complying with Chapter 5.

C401.2.2 ASHRAE 90.1. Commercial buildings shall comply with the requirements of ANSI/ASHRAE/IESNA 90.1-~~and all approved addenda applying to said standard.~~ The use of Comcheck ASHRAE 90.1-2019 or ComCheck IECC 2021 shall be allowed.

C401.2.2 ASHRAE 90.1. Commercial buildings shall comply with the requirements of ANSI/ASHRAE/IESNA 90.1-~~and approved addenda.~~ The use of COMcheck Web for code version "90.1 (2019) Standard and the appropriate location shall be permitted to demonstrate compliance.

-Suggested edits By Ben Edwards reflected in 2nd C401.2.2 paragraph, after reviewing notes from Nov 12 meeting – Dan Dittman

TABLE C402.1.4

OPAQUE THERMAL ENVELOPE ASSEMBLY MAXIMUM REQUIREMENTS, U-FACTOR METHOD^{a, b}

2021 INTERNATIONAL ENERGY CONSERVATION CODE[®]

CLIMATE ZONE	0 AND 1		2		3		4 EXCEPT MARINE		5 AND MARINE 4		6		7		8	
	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R	All other	Group R
Roofs																
Insulation entirely above roof deck	U-0.048	U-0.039	U-0.039	U-0.039	U-0.039	U-0.039	U-0.032	U-0.032	U-0.032	U-0.032	U-0.032	U-0.032	U-0.028	U-0.028	U-0.028	U-0.028
Metal buildings	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.035	U-0.031	U-0.029	U-0.029	U-0.029	U-0.026	U-0.026
Attic and other	U-0.027	U-0.027	U-0.027	U-0.027	U-0.027	U-0.027	U-0.021	U-0.021	U-0.021	U-0.021	U-0.021	U-0.021	U-0.017	U-0.017	U-0.017	U-0.017
Walls, above grade																
Mass ^e	U-0.151	U-0.151	U-0.151	U-0.123	U-0.123	U-0.104	U-0.104	U-0.090	U-0.090	U-0.080 U-0.071	U-0.080	U-0.071	U-0.071	U-0.071	U-0.037	U-0.037
Metal building	U-0.079	U-0.079	U-0.079	U-0.079	U-0.079	U-0.052	U-0.052	U-0.050	U-0.050	U-0.050	U-0.050	U-0.050	U-0.044	U-0.039	U-0.039	U-0.039
Metal framed	U-0.077	U-0.077	U-0.077	U-0.064	U-0.064	U-0.064	U-0.064	U-0.064	U-0.055	U-0.055	U-0.049	U-0.049	U-0.049	U-0.042	U-0.037	U-0.037
Wood framed and other ^c	U-0.064	U-0.064	U-0.064	U-0.064	U-0.064	U-0.064	U-0.064	U-0.064	U-0.051	U-0.051	U-0.051	U-0.051	U-0.051	U-0.051	U-0.032	U-0.032
Walls, below grade																
Below-grade wall ^e	C-1.140 ^e	C-1.140 ^e	C-1.140 ^e	C-1.140 ^e	C-1.140 ^e C-0.119	C-1.140 ^e C-0.119	C-0.119	C-0.092	C-0.119	C-0.092	C-0.092	C-0.063	C-0.063	C-0.063	C-0.063	C-0.063
Floors																
Mass ^d	U-0.322 ^e	U-0.322 ^e	U-0.107	U-0.087	U-0.074 U-0.064	U-0.074 U-0.064	U-0.057	U-0.051	U-0.057	U-0.051	U-0.051	U-0.051	U-0.042	U-0.042	U-0.038	U-0.038
Joist/framing	U-0.066 ^e	U-0.066 ^e	U-0.033	U-0.033	U-0.033 U-0.032	U-0.033 U-0.032	U-0.033 U-0.026	U-0.033 U-0.026	U-0.033 U-0.026	U-0.033 U-0.026	U-0.027	U-0.027	U-0.027	U-0.027	U-0.027	U-0.027
Slab-on-grade floors																
Unheated slabs	F-0.73 ^e	F-0.73 ^e	F-0.73 ^e	F-0.73 ^e	F-0.73 ^e	F-0.54	F-0.52	F-0.52	F-0.52	F-0.51	F-0.51	F-0.434	F-0.51	F-0.434	F-0.434	F-0.424
Heated slabs ^f	F-0.69	F-0.69	F-0.69	F-0.69	F-0.66	F-0.66	F-0.62	F-0.62	F-0.62	F-0.62	F-0.62	F-0.602	F-0.602	F-0.602	F-0.602	F-0.602
Opaque doors																
Nonswinging door	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31
Swinging door ^h	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37	U-0.37
Garage door < 14% glazing ⁱ	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31	U-0.31

For SI: 1 pound per square foot = 4.88 kg/m², 1 pound per cubic foot = 16 kg/m³.

ci = Continuous Insulation, NR = No Requirement, LS = Liner System.

- Where assembly *U*-factors, *C*-factors and *F*-factors are established in ANSI/ASHRAE/IESNA 90.1 Appendix A, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table, and provided that the construction, excluding the cladding system on walls, complies with the appropriate construction details from ANSI/ASHRAE/IESNA 90.1 Appendix A.
- Where *U*-factors have been established by testing in accordance with ASTM C1363, such opaque assemblies shall be a compliance alternative where those values meet the criteria of this table. The *R*-value of continuous insulation shall be permitted to be added to or subtracted from the original tested design.
- Where heated slabs are below grade, below-grade walls shall comply with the *U*-factor requirements for above-grade mass walls.
- "Mass floors" shall be in accordance with Section C402.2.3.
- ~~These *C*-, *F*- and *U*-factors are based on assemblies that are not required to contain insulation. Not used.~~
- The first value is for perimeter insulation and the second value is for full, under-slab insulation.
- "Mass walls" shall be in accordance with Section C402.2.2.
- Swinging door *U*-factors shall be determined in accordance with NFRC-100.
- Garage doors having a single row of fenestration shall have an assembly *U*-factor less than or equal to 0.44 in Climate Zones 0 through 6 and less than or equal to 0.36 in Climate Zones 7 and 8, provided that the fenestration area is not less than 14 percent and not more than 25 percent of the total door area.

TABLE C402.1.3

OPAQUE THERMAL ENVELOPE INSULATION COMPONENT MINIMUM REQUIREMENTS, R-VALUE METHOD¹

CLIMATE ZONE	0-AND-4		2		3		4 EXCEPT MARINE		5 AND-MARINE-4		6		7		8	
	All-other	Group-R	All-other	Group-R	All other	Group R	All other	Group R	All other	Group R	All-other	Group-R	All-other	Group-R	All-other	Group-R
Roofs																
Insulation entirely above roof deck	R-20ei	R-25ei	R-25ei	R-25ei	R-25ci	R-25ci	R-30ci	R-30ci	R-30ci	R-30ci	R-30ei	R-30ei	R-35ei	R-35ei	R-35ei	R-35ei
Metal buildings ^b	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-19+ R-11LS	R-25+ R-11LS	R-30+ R-11LS	R-30+ R-11LS	R-30+ R-11LS	R-25+ R-11LS	R-25+ R-11LS
Attic and other	R-38	R-38	R-38	R-38	R-38	R-38	R-49	R-49	R-49	R-49	R-49	R-49	R-60	R-60	R-60	R-60
Walls, above grade																
Mass ^f	R-5.7ei*	R-5.7ei*	R-5.7ei*	R-7.6ei	R-7.6ci	R-9.5ci	R-9.5ci	R-11.4ci	R-11.4ci	R-13.3ei R-15ci	R-13.3ei	R-15.2ei	R-15.2ei	R-15.2ei	R-25ei	R-25ei
Metal building	R-13+ R-6.5ei	R-13+ R-6.5ei	R-13+ R-6.5ei	R-13+ R-13ei	R-13+ R-6.5ci	R-13+ R-13ci	R-13+ R-13ci	R-13+ R-14ci	R-13+ R-14ci	R-13+ R-14ci	R-13+ R-14ei	R-13+ R-14ei	R-13+ R-17ei	R-13+ R-19.5ei	R-13+ R-19.5ei	R-13+ R-19.5ei
Metal framed	R-13+ R-5ei	R-13+ R-5ei	R-13+ R-5ei	R-13+ R-7.5ei	R-13+ R-7.5ci	R-13+ R-7.5ci	R-13+ R-7.5ci	R-13+ R-7.5ci	R-13+ R-10ci	R-13+ R-10ci	R-13+ R-12.5ei	R-13+ R-12.5ei	R-13+ R-12.5ei	R-13+ R-15.6ei	R-13+ R-18.8ei	R-13+ R-18.8ei
Wood framed and other	R-13+ R-3.8ei or R-20	R-13+ R-3.8ei or R-20	R-13+ R-3.8ei or R-20	R-13+ R-3.8ei or R-20	R-13+ R-3.8ci or R-20	R-13+ R-3.8ci or R-20	R-13+ R-3.8ci or R-20	R-13+ R-3.8ci or R-20	R-13+ R-7.5ci or R-20 + R-3.8ci	R-13+ R-7.5ci or R-20 + R-3.8ci	R-13+ R-7.5ei or R-20 + R-3.8ei	R-13+ R-7.5ei or R-20 + R-3.8ei	R-13+ R-7.5ei or R-20 + R-3.8ei	R-13+ R-7.5ei or R-20 + R-3.8ei	R-13+ R-18.8ei	R-13+ R-18.8ei
Walls, below grade																
Below-grade wall ^d	NR	NR	NR	NR	NR R-7.5ci	NR R-7.5ci	R-7.5ci	R-10ci	R-7.5ci	R-10ci	R-10ei	R-15ei	R-15ei	R-15ei	R-15ei	R-15ei
Floors																
Mass ^e	NR	NR	R-6.3ei	R-8.3ei	R-10ei R-12.5ci	R-10ei R-12.5ci	R-14.6ci	R-16.7ci	R-14.6ci	R-16.7ci	R-16.7ei	R-16.7ei	R-20.9ei	R-20.9ei	R-23ei	R-23ei
Joist/framing	R-13	R-13	R-30	R-30	R-30 ^e	R-30 ^e	R-30 R-38	R-30 R-38	R-30 R-38	R-30 R-38	R-38	R-38	R-38	R-38	R-38	R-38
Slab-on-grade floors																
Unheated slabs	NR	NR	NR	NR	NR	R-10 for 24" below	R-15 for 24" below	R-15 for 24" below	R-15 for 24" below	R-20 for 24" below	R-20 for 24" below	R-20 for 24" below	R-20 for 48" below	R-20 for 48" below	R-20 for 48" below	R-25 for 48" below
Heated slabs ^e	R-7.5 for 12" below+ R-5 full slab	R-7.5 for 12" below+ R-5 full slab	R-7.5 for 12" below+ R-5 full slab	R-7.5 for 12" below+ R-5 full slab	R-10 for 24" below+ R-5 full slab	R-10 for 24" below+ R-5 full slab	R-15 for 24" below+ R-5 full slab	R-15 for 24" below+ R-5 full slab	R-15 for 36" below+ R-5 full slab	R-15 for 36" below+ R-5 full slab	R-15 for 36" below+ R-5 full slab	R-20 for 48" below+ R-5 full slab	R-20 for 48" below+ R-5 full slab	R-20 for 48" below+ R-5 full slab	R-20 for 48" below+ R-5 full slab	R-20 for 48" below+ R-5 full slab

For SI: 1 inch = 25.4 mm, 1 pound per square foot = 4.88 kg/m², 1 pound per cubic foot = 16 kg/m³.

ci = Continuous Insulation, NR = No Requirement, LS = Liner System.

a. Assembly descriptions can be found in ANSI/ASHRAE/IESNA 90.1 Appendix A.

b. Where using R-value compliance method, a thermal spacer block shall be provided, otherwise use the U-factor compliance method in Table C402.1.4.

c. R-5.7ei is allowed to be substituted with concrete block walls complying with ASTM C90, ungrouted or partially grouted at 32 inches or less on center vertically and 48 inches or less on center horizontally, with ungrouted cores filled with materials having a maximum thermal conductivity of 0.44 Btu-in/h-ft²-°F. Steel floor joist systems shall be insulated to R-38.

d. Where heated slabs are below grade, below-grade walls shall comply with the exterior insulation requirements for heated slabs.

e. "Mass floors" shall be in accordance with Section C402.2.3.

f. "Mass walls" shall be in accordance with Section C402.2.2.

Ended here 11/12/2021 – Ad Hoc Committee, DED