ORDINANCE NO. 2022-24

BE IT ORDAINED, that the Catawba County Code of Ordinances, Chapter 8, be amended as follows:

Chapter 8 Buildings and Building Regulations, Article IV-Building Code Council and Building Code, Section 143

Sec. 8-1. Building Code Adopted.

Pursuant to the provisions of G.S. 143, Article 9, entitled Building Code Council and Building Code, the North Carolina State Building Code is hereby adopted as the law governing and applying to building, general remodeling, and construction of all kinds in the County. Appendix B (Fire Flow Requirements for Buildings) and Appendix C (Fire Hydrant Locations and Distribution) of the North Carolina State Building Code: Fire Prevention Code are also hereby adopted.
(Ord. No. 2015-03, 3-16-2015)
State law reference(s)—Building code and building code council, G.S. 143-136 et seq.; state building code applicable throughout the state, G.S. 143-138(e).

Secs. 8-2—8-15. Reserved.

[Seal]

_____
C. Randall Isenhower, Chairman
Catawba County Board of Commissioners

Attest:

_____
Dale R. Stiles, Clerk to the Board
Catawba County Board of Commissioners

MEMORANDUM

TO: Catawba County Board of Commissioners

FROM: Jennifer Lowrance, Deputy Fire Marshal

DATE: November 7, 2022

RE: Adoption of North Carolina State Building Code: Fire Prevention Code Appendices B and C, and Amendments to Catawba County Code of Ordinance Chapter 8

Request

The Policy and Public Works Subcommittee requests the Board of Commissioners:

- Adopt the North Carolina State Building Code: Fire Prevention Code Appendix B (Fire Flow Requirements for Buildings) and Appendix C (Fire Hydrant Locations and Distribution), and
- Amend Chapter 8 of the Catawba County Code of Ordinances to include these appendices and remove Section 8-2.

Background

The North Carolina Building Code referenced in G.S. 143-138 includes the Fire Prevention Code, which is currently enforced by the Fire Marshal's Office. Section 101.2.1 of the Fire Prevention Code requires appendices be adopted by the local governing authority having jurisdiction (in this case, the Board of Commissioners), and subsequently be approved by the Building Code Council in order to be enforceable.

Appendices B and C include requirements for additional safety measures to related to fire flow and fire hydrant locations.

- Appendix B provides fire flow requirements. Examples include residential housing developments apartment complexes, and industrial buildings requiring sprinkler systems. These would be required to maintain a certain water flow to meet the system demand.
- Appendix C addresses fire hydrant locations. Currently in residential areas, hydrants are required every 750 feet. Appendix C will reduce that distance to between 200 and 500 feet, based on fire flow requirements. By reducing the distance requirement for hydrants, fire apparatus will have better access to water supplies, which reduces the need for water shuttles (which require additional specialized apparatus), and may reduce insurance rates for citizens.

The Cities of Hickory, Conover, and Newton have adopted these appendices and received approval from the Building Code Council to enforce them.

In reviewing Chapter 8 in reference to the Fire Code, staff determined Section 8-2 is no longer applicable and requests it be removed from the Code of Ordinances because the Rehabilitation Code is now included in the Existing Building Code section of the North Carolina State Building Code.

Below are the proposed text amendments to Chapter 8:

Sec. 8-1. Building code adopted.

Pursuant to ~~T~~the provisions of G.S. 143, ~~a~~Article 9, entitled Building Code Council and Building Code, the North Carolina State Building Code is~~are~~ hereby adopted as the law~~s~~ governing and applying to building, general remodeling, and construction of all kinds in the ~~c~~County. Appendix B (Fire Flow Requirements for Buildings) and Appendix C (Fire Hydrant Locations and Distribution) of the North Carolina State Building Code: Fire Prevention Code are also hereby adopted.

(Ord. No. 2015-03, 3-16-2015)

State law reference(s)—Building code and building code council, G.S. 143-136 et seq.; state building code applicable throughout the state, G.S. 143-138(e).

~~**Sec. 8-2. North Carolina Rehabilitation Code adopted.**~~

~~In accordance with the provisions of Senate Bill 633, enacted and ratified during the North Carolina General Assembly's 2001 session, the 2002 edition including all subsequent amendments of the North Carolina Rehabilitation Code (NCRC) is hereby adopted by reference as fully as though set forth herein.~~

~~(1) All laws and clauses of laws in conflict herewith are hereby repealed to the extent of said conflict.~~

~~(2) If this section or application thereof to any person or circumstance is held invalid, such invalidity shall not affect other provisions or applications of the section, which can be given separate effect, and to this end the provisions of this section are declared be severable.~~

~~(3) This section shall be enforced as provided in G.S. 153A-123 or as provided in this Code. All criminal sanctions shall be the maximum allowed by law.~~

~~(4) This section shall become effective on the first day of January 2004.~~

~~(Ord. No. 2015-03, 3-16-2015)~~

Secs. 8-~~3~~2—8-15. Reserved.

Recommendation

The Policy and Public Works Subcommittee recommends the Board of Commissioners:

- Adopt the North Carolina State Building Code: Fire Prevention Code Appendix B (Fire Flow Requirements for Buildings) and Appendix C (Fire Hydrant Locations and Distribution), and
- Amend Chapter 8 of the Catawba County Code of Ordinances to include these appendices and remove Section 8-2.

APPENDIX B

FIRE-FLOW REQUIREMENTS FOR BUILDINGS

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

SECTION B101
GENERAL

B101.1 Scope. The procedure for determining fire-flow requirements for buildings or portions of buildings hereafter constructed shall be in accordance with this appendix. This appendix does not apply to structures other than buildings.

SECTION B102
DEFINITIONS

B102.1 Definitions. For the purpose of this appendix, certain terms are defined as follows:

FIRE-FLOW. The flow rate of a water supply, measured at 20 pounds per square inch (psi) (138 kPa) residual pressure, that is available for fire fighting.

FIRE-FLOW CALCULATION AREA. The floor area, in square feet (m^2), used to determine the required fire flow.

SECTION B103
MODIFICATIONS

B103.1 Decreases. The fire chief is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

B103.2 Increases. The fire chief is authorized to increase the fire-flow requirements where conditions indicate an unusual susceptibility to group fires or conflagrations. An increase shall not be more than twice that required for the building under consideration.

B103.3 Areas without water supply systems. For information regarding water supplies for fire-fighting purposes in rural and suburban areas in which adequate and reliable water supply systems do not exist, the *fire code official* is authorized to utilize NFPA 1142 or the *International Wildland-Urban Interface Code.*

SECTION B104
FIRE-FLOW CALCULATION AREA

B104.1 General, The fire-flow calculation area shall be the total floor area of all floor levels within the *exterior walls*, and under the horizontal projections of the roof of a building, except as modified in Section B 104.3.

B104.2 Area separation, Portions of buildings which are separated by *fire walls* without openings, constructed in accordance with the *International Building Code*, are allowed to be considered as separate fire-flow calculation areas.

B104.3 Type IA and Type III construction. The fire-flow calculation area of buildings constructed of Type IA and Type 1B construction shall be the area of the three largest successive floors.

Exception: Fire-flow calculation area for open parking garages shall be determined by the area of the largest floor.

SECTION B105
FIRE-FLOW REQUIREMENTS FOR BUILDINGS

B105.l One- and two-family dwellings, Group R-3 and R-4 buildings and townhouses. The minimum fire-flow and flow duration requirements for one- and two-family *dwellings*, Group R-3 and R-4 buildings and townhouses shall be as specified in Tables B105.1 (1) and B105.1 (2).

lllOS.2 Buildings other than one- and two-family dwellings, Group R-3 and R-4 buildings and townhouses, The minimum fire-flow and flow duration for buildings other than one- and two-family *dwellings*, Group R-3 and R-4 buildings and townhouses shall be as specified in Tables B 105.2 and B105.1(2).

TABLE B105.1 (1)
REQUIRED FIRE-FLOW FOR ONE• AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

FIRE-FLOW CALCULATION AREA (square feet}	AUTOMATIC SPRINKLER SYSTEM (Design Standard)	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
0-3,600	No automatic sprinkler system	1,000	1
3,601 and greater	No automatic sprinkler system.	Value in Table B105.1(2)	Duration in Table B105.1 (2) at the required fire-flow rate
0-3,600	Section 903.3.1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	500	½
3,601 and greater	Section 903.3. 1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code*	½ value in Table B105.1 (2)	I

For SI: l square foot = 0.0929 m^2, I gallon per minute= 3.785 L/m.

TABLE B105.1 (2)
REFERENCE TABLE FOR TABLES 8105.1(1) AND B105.2

FIRE-FLOW CALCULATION AREA (square feet)					FIRE-FLOW (gallons per minute)b	FLOW DURATION (hours)
Type IA and 1B[a]	Type IIA and IIIA[a]	Type IV and V-A[a]	Type IIB and IIIB[a]	Type V-B[a]		
0-22,700	0-12,700	0-8,200	0-5,900	0-3,600	1,500	2
22,701-30,200	12,701-17,000	8,201-10,900	5,901-7,900	3,601-4,800	1,750	
30,201-38,700	17,001-21,800	l0,901-12,900	7,901-9,800	4,801-6,200	2,000	
38,701-48,300	21,801-24,200	12,901-17,400	9,801-12,600	6,201-7,700	2,250	
48,301-59,000	24,201-33,200	17,401-21,300	12,601-15,400	7,701-9,400	2,500	
59,001-70,900	33,201-39,700	21,301-25,500	15,401-18,400	9,401-11,300	2,750	
70,901-83,700	39,701-47,100	25,501-30,100	18,401-21,800	11,301-13,400	3,000	3
83,701-97 ,700	47,l01-54,900	30,101-35,200	21,801-25,900	13,401-15,600	3,250	
97,701-112,700	54,901-63,400	35,201-40,600	25,901-29,300	15,601-18,000	3,500	
112,701-128,700	63,401-72,400	40,601-46,400	29,301-33,500	18,001-20,600	3,750	
128,701-145,900	72,401-82,100	46,401-52,500	33,501-37,900	20,601-23,300	4,000	4
145,901-164,200	82, l01-92,400	52,501-59,100	37,901-42,700	23,301-26,300	4,250	
164,201-183,400	92,401-103,100	59,101-66,000	42,701-47,700	26,301-29,300	4,500	
183,401-203,700	103,101-114,600	66,001-73,300	47,701-53,000	29,301-32,600	4,750	
203,701-225,200	114,601-126,700	73,301-81,100	53,001-58,600	32,601-36,000	5,000	
225,201-247,700	126,701-139,400	81,l01-89,200	58,601-65,400	36,001-39,600	5,250	
247,701-271,200	139,401-152,600	89,201-97,700	65,401-70,600	39,601-43,400	5,500	
271,201-295,900	152,601-166,500	97,701-106,500	70,601-77,000	43,401-47,400	5,750	
295,901-Greater	166,501-Greater	106,501-115,800	77,001-83,700	47,401-51,500	6,000	
-	-	115,801-125,500	83,701-90,600	51,501-55,700	6,250	
-	-	125,501-135,500	90,601-97,900	55,701-60,200	6,500	
-	-	135,501-145,800	97,901-106,800	60,201-64,800	6,750	
-	-	145,801-156,700	l06,801-113,200	64,801-69,600	7,000	
-	-	156,701-167,900	113,201-121,300	69,601-74,600	7,250	
-	-	167,901-179,400	121,301-129,600	74,601-79,800	7,500	
-	-	179,401-191,400	129,601-138,300	79,801-85,100	7,750	
-	-	191,401-Greater	138,301-Greater	85, 101-Greater	8,000	

For SI: l square foot= 0.0929 m2, I gallon per minute= 3.785 L/m, 1 pound per square inch= 6.895 kPa,

Types of construction are based on the International *Building Code.*

a. Measured at 20 psi residual pressure.

TABLE B105.2
REQUIRED FIRE-FLOW FOR BUILDINGS OTHER THAN ONE- AND TWO-FAMILY DWELLINGS, GROUP R-3 AND R-4 BUILDINGS AND TOWNHOUSES

AUTOMATIC SPRINKLER SYSTEM {Design Standard}	MINIMUM FIRE-FLOW (gallons per minute)	FLOW DURATION (hours)
No automatic sprinkler system	Value in Table B105.1(2)	Duration in Table B105.1(2)
Section 903.3.1.1 of the *International Fire Code*	25% of the value in Table B105.1(2)[a]	Duration in Table B105.1(2) at the reduced flow rate
Section 903.3.1.2 of the *International Fire Code*	25% of the value in Table B105.l(2)[a]	Duration in Table B105.1(2) at the reduced flow rate

For SI; 1 gallon per minute= 3.785 L/m.
a. The reduced Fire-flow shall be not less than 1,000 gallons per minute.
b. The reduced Fire-flow shall be not less than l,500 gallons per minute.

B105.3 Water supply for buildings equipped with an automatic sprinkler system. For buildings equipped with an approved *automatic sprinkler system*, the water supply shall be capable of providing the greater of:

1. The *automatic sprinkler system* demand, including hose stream allowance.
2. The required fire-flow.

SECTION B106
REFERENCED STANDARDS

ICC	IBC-I5	International Building Code	B104.2, Tables B105.1 (1) and B105.2
ICC	IFC-15	International Fire Code	B103.3
ICC	IWUIC-I5	International Wildland-Urban Interface Code	Table B105.1(1)
ICC	IRC-15	International Residential Code	B103.3
NFPA	1142-12	Standard on Water Supplies for Suburban and Rural Fire Fighting	

APPENDIX C

FIRE HYDRANT LOCATIONS AND DISTRIBUTION

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance

SECTION C101
GENERAL

C101.1 Scope. In addition to the requirements of Section 507.5.1 of the *International Fire Code,* fire hydrants shall be provided in accordance with this appendix for the protection of buildings, or portions of buildings, hereafter constructed or moved into the jurisdiction.

SECTION C102
NUMBER OF FIRE HYDRANTS

C102.1 Minimum number of fire hydrants for a building, The number of fire hydrants available to a building shall be not less than the minimum specified in Table C102.1.

SECTION C103
FIRE HYDRANT SPACING

C103.1 Hydrant spacing, Fire apparatus access roads and public streets providing required access to buildings in accordance with Section 503 of the *International Fire Code* shall be provided with one or more fire hydrants, as determined by Section C102.1. Where more than one fire hydrant is required, the distance between required fire hydrants shall be in accordance with Sections C103.2 and C103.3.

C103.2 Average spacing. The average spacing between fire hydrants shall be in accordance with Table C102.1.

Exception: The average spacing shall be permitted to be increased by 10 percent where existing fire hydrants provide all or a portion of the required number of fire hydrants.

C103.3 Maximum spacing. The maximum spacing between fire hydrants shall be in accordance with Table C102.1.

SECTION C104
CONSIDERATION OF EXISTING FIRE HYDRANTS

C104.1 Existing fire hydrants. Existing fire hydrants on public streets are allowed to be considered as available to meet the requirements of Sections C102 and C103. Existing fire hydrants on adjacent properties are allowed to be considered as available to meet the requirements of Sections Cl02 and C103 provided that a fire apparatus access road extends between properties and that an easement is established to prevent obstruction of such roads.

TABLE C102.1
REQUIRED NUMBER ANO SPACING OF FIRE HYDRANTS

FIRE-FLOW REQUIREMENT (Gpm)	MINIMUM NUMBER OF HYDRANTS	AVERAGE SPACING BETWEEN HYDRANTS [a,b,c,f,g] (feet)	MAXIMUM DISTANCE FROM ANY POINT ON STREET OR ROAD FRONTAGE TO A HYDRANT [d,f,g]
1,750 or less	1	500	250
2,000-2,250	2	450	225
2,500	3	450	225
3,000	3	400	225
3,500-4,000	4	350	210
4,500-5,000	5	300	180
5,500	6	300	180
6,000	6	250	150
6,500-7,000	7	250	150
7,500 or more	8 or more	200	120

For SI: I foot= 304.8 mm, I gallon per minute= 3.785 Lim.

a. Reduce by 100 feet for dead-end streets or roads.

b. Where streets are provided with median dividers that cannot be crossed by fire fighters pulling hose lines, or where arterial streets are provided with four or more traffic lanes and have a traffic count of more than 30,000 vehicles per day, hydrant spacing shall average 500 feet on each side of the street and be arranged on an alternating basis.

c. Where new water mains are extended along streets where hydrants are not needed for protection of structures or similar fire problems, fire hydrants shall be provided at spacing not to exceed l,000 feet to provide for transportation hazards.

d. Reduce by 50 feet for dead-end streets or roads.

e. One hydrant for each 1,000 gallons per minute or fraction thereof.

f. A 50-percent spacing increase shall be permitted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Fire Code.*

g. A 25-percent spacing increase shall be pem1itted where the building is equipped throughout with an approved automatic sprinkler system in accordance with Section 903.3.1.2 or 903.3. 1.3 of the *International Fire Code* or Section P2904 of the *International Residential Code,*

SECTION C105
REFERENCED STANDARDS

ICC	IFC-15	International Fire Code	C101.l, C103.l, Table C102.l
ICC	IRC-I5	International Residential Code	Table C102.1