BENTON COUNTY IOWA 2026
MULTI-JURISDICTIONAL HAZARD MITIGATION PLAN



Including the Cities of Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, and Walford.

Table of Contents

Contents

Executive Summary 10
SECTION 1 12
INTRODUCTION AND PROFILE 12
PLANNING AREA PROFILE AND CAPABILITIES 12
Geography 14
Rivers, Streams, and Watersheds of Benton County 16
History 20
Climate 21
Population Demographics and Housing Information Including Special Needs Populations 23
Income 26
OCCUPATIONS AND EMPLOYMENT OF BENTON COUNTY RESIDENTS 29
ECONOMIC DEVELOPMENT 30
BENTON COUNTY PROPERTY VALUES and INVENTORY of ASSETS 31
BENTON COUNTY HISTORICAL PROPERTIES 39
BENTON COUNTY BUSINESSES, INDUSTRIES, AND COMMERCE 40
AGRICULTURE IN BENTON COUNTY 41
BENTON COUNTY TRANSPORATION SYSTEMS 42
Emergency Services of Benton County 46
BENTON COUNTY EDUCATION SYSTEMS 48
FLOOD and NATIONAL FLOOD INSURANCE PROGRAM (NFIP) INFORMATION 50
REPETITIVE LOSS PROPERTIES 51
Benton County Government 52
Benton County Parks and Recreation Areas 53
CRITICAL ASSETS OF BENTON COUNTY 57
LAND USE 57
COMMUNITY PROFILES 58
ATKINS 58
BELLE PLAINE 69
BLAIRSTOWN 78
GARRISON 86

KEYSTONE 94
LUZERNE 102
MOUNT AUBURN 109
NEWHALL 116
NORWAY 124
SHELLSBURG 132
URBANA 141
VAN HORNE 150
VINTON 159
WALFORD 170
BENTON COUNTY UNINCORPORATED 178
SECTION 2 187
PLANNING PROCESS 187
Participants 187
Background 189
Purpose 189
Scope 190
Stakeholders 191
Public Review and Feedback 192
Authority 192
Funding 193
Planning Process 193
Previous Hazard Mitigation Planning 196
SECTION 3 197
HAZARD ANALYSIS 197
PAST DISASTERS AND DISASTER DECLARATIONS 206
HAZARD PROFILES 208
SECTION 4 277
RISK ASSESSMENT 277
SECTION 5 305
MITIGATION STRATEGY 305
Hazard Mitigation Plan Goals 305
CITY OF ATKINS MITIGATION STRATEGY 2026 347

CITY OF BELLE PLAINE MITIGATION STRATEGY 2026 350
CITY OF BLAIRSTOWN MITIGATION STRATEGY 2026 354
CITY OF GARRISON MITIGATION STRATEGY 2026 357
CITY OF KEYSTONE MITIGATION STRATEGY 2026 360
CITY OF LUZERNE MITIGATION STRATEGY 2026 363
CITY OF MOUNT AUBURN MITIGATION STRATEGY 2026 366
CITY OF NEWHALL MITIGATION STRATEGY 2026 368
CITY OF NORWAY MITIGATION STRATEGY 2026 371
CITY OF SHELLSBURG MITIGATION STRATEGY 2026 373
CITY OF URBANA MITIGATION STRATEGY 2026 376
CITY OF VAN HORNE MITIGATION STRATEGY 2026 379
CITY OF VINTON MITIGATION STRATEGY 2026 382
CITY OF WALFORD MITIGATION STRATEGY 2026 386
BENTON COUNTY HAZARD MITIGATION STRATEGY 2026 389
SECTION 6 394
PLAN MAINTENANCE 394
APPENDIX A – GLOSSARY 397
APPENDIX B – SCHOOL DISTRICTS 407
BELLE PLAINE COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY 408
BENTON COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY 411
VINTON-SHELLSBURG COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY 414
CENTER POINT-URBANA COMMUNITY SCHOOL DISTRICT MITGATION SUMMARY 419
APPENDIX C – UTILITIES 420
VINTON MUNICIPAL ELECTRIC UTILITY HAZARD MITIGATION PLAN 420
VINTON MUNICIPAL COMMUNICATIONS UTILITY HAZARD MITIGATION PLAN 426
APPENDIX D – MEETING INFORMATION 428
APPENDIX E – PUBLIC FEEDBACK 434
APPENDIX F – STAKEHOLDER FEEDBACK 438
APPENDIX G – RESOLUTIONS 439

Tables

Table 1: Monthly Record Average Temperatures and Precipitation for Cedar Rapids, Iowa (the nearest National Weather Reporting Service for Benton County)..... 22
Table 2: Population and housing demographics for Benton County 23
Table 3: Majority of House Construction by Decade for Benton County Cities 24
Table 4: Summary of Housing Values for Benton County as Provided by the US Census Bureau, 2020..... 25
Table 5: Benton County 2020 Household Income 26
Table 6: Benton County Households by Income..... 27
Table 7: People with Disabilities in Benton County..... 28
Table 8: Occupations Engaged in by those in the Labor Force in Benton County..... 29
Table 9: Number of Residential Properties and Total Value of Residential Properties in Benton County by City and Township Jurisdiction 32
Table 10: Number of Commercial Enterprises and Total Value of Commercial Enterprises in Benton County by City and Township Jurisdiction 33
Table 11: Number of Industrial Enterprises and Total Value of Industrial Enterprises in Benton County by City and Township Jurisdiction 34
Table 12: Taxable Values of Agricultural Land and Structures in Benton County..... 35
Table 13: Insured Values of Municipal Properties in Benton County on July 1, 2020 and July 1, 2025..... 36
Table 14: Tax Exempt Properties of Benton County. These properties do not have a value assigned to them. 37
Table 15: Summary Values of All Properties in Benton County by Jurisdiction..... 38
Table 16: Benton County Properties on the National Register of Historic Places..... 39
Table 17: Business and Industrial Enterprises in Benton County 2013 and 2020 40
Table 18: Benton County School Systems 48
Table 19: Atkins Population Change Statistics 1960-2020 60
Table 20: Atkins Projected Population Change 2020-2050..... 60
Table 21: Vulnerable Populations in the City of Atkins; 2010-2020..... 60
Table 22: Belle Plaine Population Change Statistics 1960-2020 70
Table 23: Belle Plaine Projected Population Change 2020-2050 71
Table 24: Vulnerable Populations in the City of Belle Plaine 2010 and 2020 71
Table 25: Blairstown Population Change Statistics 1960-2020 79
Table 26: Blairstown Projected Population Change 2020-2050..... 80
Table 27: Vulnerable Populations in the City of Blairstown 2010 and 2020..... 80
Table 28: Garrison Population Change Statistics 1960-2020 87
Table 29: Garrison Projected Population Change 2020-2050 87
Table 30: Vulnerable Populations in the City of Garrison 2010 and 2020..... 88
Table 31: Keystone Population Change Statistics 1960-2020 95
Table 32: Keystone Projected Population Change 2020-2050 96
Table 33:Vulnerable Populations in the City of Keystone 2010 and 2020 96
Table 34: Luzerne Population Change Statistics 1960-2020 103

Table 35: Luzerne Projected Population Change 2020-2050 104
Table 36: Vulnerable Populations in the City of Luzerne 2010 and 2020 104
Table 37: Mount Auburn Population Change Statistics 1960-2020..... 110
Table 38: Mount Auburn Projected Population Change 2020-2050.....111
Table 39: Vulnerable Populations in the City of Mount Auburn 2010 and 2020 111
Table 40: Newhall Population Change Statistics 1960-2020 117
Table 41: Newhall Projected Population Change 2020-2050 117
Table 42: Vulnerable Populations in the City of Newhall 2010 and 2020..... 118
Table 43: Norway Population Change Statistics 1960-2020..... 125
Table 44: Norway Projected Population Change 2020-2050 126
Table 45: Vulnerable Populations in the City of Norway 2010 and 2020 126
Table 46: Shellsburg Population Change Statistics 1960-2020 133
Table 47: Shellsburg Projected Population Change 2020-2050 134
Table 48: Vulnerable Populations in the City of Shellsburg 2010 and 2020 134
Table 49: Urbana Population Change Statistics 1960-2020 142
Table 50: Urbana Projected Population Change 2020-2050 143
Table 51: Vulnerable Populations in the City of Urbana 2010 and 2020..... 143
Table 52: Van Horne Population Change Statistics 1960-2020 151
Table 53: Van Horne Projected Population Change 2020-2050 152
Table 54: Vulnerable Populations in the City of Van Horne 2010 and 2020..... 152
Table 55: Vinton Population Change Statistics 1960-2020..... 160
Table 56: Vinton Projected Population Change 2020-2050 161
Table 57: Vulnerable Populations in the City of Vinton 2010 and 2020 161
Table 58: Walford Population Change Statistics 1960-2020..... 171
Table 59: Walford Projected Population Change 2020-2050..... 172
Table 60: Vulnerable Populations in the City of Walford 2010 and 2020 172
Table 61: Participation in the Planning Process 194
Table 62: Record of Review/Summary 195
Table 63: Sinkhole Hazard Areas of Iowa..... 198
Table 64: Extreme Heat Effects..... 213
Table 65: Benton County Flash Flood Events and Losses 217
Table 66: Benton County Flood Events and Losses..... 218
Table 67: Historical Thunderstorms by Jurisdiction as reported by the NCDC 245
Table 68: Historical Thunderstorms by Jurisdiction as reported by the NCDC 246
Table 69: Hail Size Chart..... 249
Table 70: TORRO Hail Scale..... 250
Table 71: Historical Tornadoes by Jurisdiction..... 253
Table 72: Fujita Scale and Enhanced Fujita Scale 256
Table 73: Beaufort Scale 257
Table 74: Fire Deaths in Iowa in the Past Five Years 270
Table 75: Overall Summary of Vulnerability by Jurisdiction 279
Table 76: Potential Structural Losses, Unincorporated Benton County 281
Table 77: Potential Structural Losses, Atkins..... 281

Table 78: Potential Structural Losses, Belle Plaine 282
Table 79: Potential Structural Losses, Blairstown 282
Table 80: Potential Structural Losses, Garrison 282
Table 81: Potential Structural Losses, Keystone 282
Table 82: Potential Structural Losses, Luzerne 283
Table 83: Potential Structural Losses, Mount Auburn 283
Table 84: Potential Structural Losses, Newhall 283
Table 85: Potential Structural Losses, Norway 284
Table 86: Potential Structural Losses, Shellsburg 284
Table 87: Potential Structural Losses, Urbana 284
Table 88: Potential Structural Losses, Van Horne 285
Table 89: Potential Structural Losses, Vinton 285
Table 90: Potential Structural Losses, Walford 285
Table 91: Atkins Potential 100 Year Flood Losses 286
Table 92: Belle Plaine Potential 100 Year Flood Losses 287
Table 93: Blairstown Potential 100 Year Flood Losses 287
Table 94: Garrison Potential 100 Year Flood Losses 287
Table 95: Keystone Potential 100 Year Flood Losses 288
Table 96: Luzerne Potential 100 Year Flood Losses - No flood hazard area 288
Table 97: Mount Auburn Potential 100 Year Flood Losses - No flood hazard area 288
Table 98: Newhall Potential 100 Year Flood Losses 289
Table 99: Norway Potential 100 Year Flood Losses 289
Table 100: Shellsburg Potential 100 Year Flood Losses 289
Table 101: Urbana Potential 100 Year Flood Losses 290
Table 102: Van Horne Potential 100 Year Flood Losses 290
Table 103: Vinton Potential 100 Year Flood Losses 290
Table 104: Vinton Potential 500 Year Flood Losses 291
Table 105: Walford Potential 100 Year Flood Losses 291
Table 106: Benton County Unincorporated Potential 100 Year Flood Losses 291
Table 107: Benton County Total Potential 100 Year Flood Losses 292
Table 108: Economic Impact of Loss of Wastewater Services 295
Table 109: Economic Impact of Loss of Electrical Services Per Day 297
Table 110: Economic Impact of Loss of Water Services Per Day 301

Figures

Figure 1: Benton County Planning Area 12
Figure 2: Map of Benton County 13
Figure 3: Benton County Elevations 15
Figure 4: Rivers and streams of Benton County. Provided by Benton County NRCS. .. 16
Figure 5: Major watersheds of Benton County 17
Figure 6: Watersheds of the Middle Cedar Watershed and Middle Iowa Watershed in Benton County. 18
Figure 7: Middle Cedar and Middle Iowa Watershed in Benton County. 19
Figure 8: Benton County Farm to Market Roads 43
Figure 9: Major Highways and Interstates of Benton County 44
Figure 10: Rail lines of Benton County. 45
Figure 11: Park and Recreation Areas of Benton County 53
Figure 12: Atkins in 2018 58
Figure 13: Atkins Population Change 1960-2020 59
Figure 14: Belle Plaine in 2018 69
Figure 15: Belle Plaine Population Change 1960-2020 70
Figure 16: Blairstown in 2018 78
Figure 17: Blairstown Population Change 1960-2020 79
Figure 18: Garrison in 2018 86
Figure 19: Garrison Population Change 1960-2020 87
Figure 20: Keystone in 2018 94
Figure 21: Keystone Population Change 1960-2020 95
Figure 22: Luzerne in 2018 102
Figure 23: Luzerne Population Change 1960-2020 103
Figure 24: Mount Auburn 2018 109
Figure 25: Mount Auburn Population Change 1960-2020 110
Figure 26: Newhall in 2018 116
Figure 27: Newhall Population Change 1960-2020 117
Figure 28: Norway in 2018 124
Figure 29: Norway Population Change 1960-2020 125
Figure 30: Shellsburg in 2018 132
Figure 31: Shellsburg Population Change 1960-2020 133
Figure 32: Urbana in 2018 141
Figure 33: Urbana Population Change 1960-2020 142
Figure 34: Van Horne in 2018 150
Figure 35: Van Horne Population Change 1960-2020 151
Figure 36: Vinton in 2018 159
Figure 37: Vinton Population Change 1960-2020 160
Figure 38: Walford in 2018 170
Figure 39: Walford Population Change 1960-2020 171
Figure 40: United States Earthquake Zones 199

Figure 41: Benton County Dams 200
Figure 42: U.S. Drought Monitor 209
Figure 43: USDM Historical Conditions for Benton County 2000-Present 210
Figure 44: Heat Index 213
Figure 45: Legend for All Flood Maps 219
Figure 46: Benton County Unincorporated 100-Year Flood Hazard Areas 219
Figure 47: Atkins 100-Year Flood Hazard Areas 220
Figure 48: Belle Plaine 100-Year Flood Hazard Areas 221
Figure 49: Blairstown 100-Year Flood Hazard Areas 222
Figure 50: Garrison 100-Year Flood Hazard Areas 223
Figure 51: Keystone 100-Year Flood Hazard Areas 224
Figure 52: Luzerne 100-Year Flood Hazard Areas 225
Figure 53: Mount Auburn 100-Year Flood Hazard Areas 226
Figure 54: Newhall 100-Year Flood Hazard Areas 227
Figure 55: Norway 100-Year Flood Hazard Areas 228
Figure 56: Shellsburg 100-Year Flood Hazard Areas 229
Figure 57: Urbana 100-Year Flood Hazard Areas 230
Figure 58: Van Horne 100-Year Flood Hazard Areas 231
Figure 59: Vinton 100-Year Flood Hazard Areas 232
Figure 60: Walford 100-Year Flood Hazard Areas 233
Figure 61: Wildfire Hazard Potential 2023 237
Figure 62: Average Annual Winter Storm Property Damage 1996-2017 239
Figure 63: Thunderstorm Diagram 243
Figure 64: Hail Events: 1996-2022, Iowa Hazard Mitigation Plan 247
Figure 65: Tornado Diagram 252
Figure 66: Tornado Risk Areas of the United States 254
Figure 67: Pipelines in Benton County 261
Figure 68: PSAF Example with Previous Pandemic Events 266
Figure 69: Iowa DOT Crash Severity by Year 274
Figure 70: Benton County Rail Lines 275
Figure 71: Iowa Critical Infrastructure/Key Resources 293

Executive Summary

Generally, the first question asked when communities begin the process of preparing a Multi-Jurisdictional Hazard Mitigation Plan is very simply, “What is a Hazard Mitigation Plan and what is its intended purpose?” First, it is imperative to define precisely what the term mitigation entails. One definition of the term is stated effectively by the Federal Emergency Management Agency (FEMA) as “Mitigation is defined as any sustained action taken to reduce or eliminate long-term risk to human life and property from a hazard event. Mitigation, also known as prevention (when done before a disaster), encourages long-term reduction of hazard vulnerability. The goal of mitigation is to decrease the need for response as opposed to simply increasing the response capability. “ (www.fema.gov).

The Benton County Multi-Jurisdictional Hazard Mitigation Plan was prepared for the incorporated and unincorporated areas of Benton County in response to the Disaster Mitigation Act of 2000 (DMA 2000). DMA 2000 requires states and local governments to prepare hazard mitigation plans in order to remain eligible to receive federal funds made available in the wake of a Presidential Disaster Declaration. It is important to remember that mitigation funds are distinct from response and recovery funds available from state and federal sources intended for immediate disaster relief. To produce a DMA 2000 compliant plan, municipalities must document their hazard mitigation planning process and identify hazards, potential losses, and mitigation needs, goals, and strategies.

With that definition in mind, a mitigation plan is a document that is intended to accomplish several things. First, through the planning process, the hazards that pose a risk to the community are identified. Second, hazards will be assessed based on their historic patterns of occurrence, their future probability of occurrence, where they might affect the planning area, to what extent, what parts of the community are most likely to be affected, and what are their potential consequences.

Once the assessment is completed, a list of current and historic mitigation efforts is compiled and discussed. Through this discussion, areas that can be improved upon are identified and developed into “mitigation actions.” Early in the planning process, meeting attendees will identify broad goals that briefly state what the plan should attempt to accomplish. Each mitigation action should, if implemented, work toward one of more of the goals in the plan. A mitigation action may suggest continuing a current mitigation effort or propose an entirely new project.

When implemented appropriately, mitigation projects may save lives, reduce property damage, and be both cost effective and environmentally sound. This, in turn, can reduce the enormous cost of disasters to property owners and all levels of government. In addition, mitigation can protect critical community facilities, reduce exposure to liability, and minimize community disruption.

The original Benton County Multi-Jurisdictional Hazard Mitigation Plan was prepared by Emergency Management Consultant Steve Meyer in 2011. The plan included unincorporated Benton County, the City of Atkins, the City of Belle Plaine, the City of Blairstown, the City of Garrison, the City of Keystone, the City of Luzerne, the City of Mt. Auburn, the City of Newhall, the City of Norway, the City of Shellsburg, the City of Urbana, the City of Van Horne, the City of Vinton, the Benton Community School District, the Center Point-Urbana School District, the Vinton-Shellsburg School District, and the Vinton Municipal Electric Utility. All of these jurisdictions participated in the planning process for the 2016 and 2021 revisions to the Benton County Multi-Jurisdictional Hazard Mitigation Plan. In addition, a special appendix (Appendix E) was added to address the mitigation needs of the Vinton Municipal Electric Utility. The 2016 and 2021 plan updates were also prepared by Emergency Management Consultant Steve Meyer.

The Mitigation Strategy section of this plan details the 21 mitigation actions that were determined by the planning committee. These actions were incorporated into each individual jurisdiction mitigation strategy as detailed in the Mitigation Strategy section.

A table summarizing the changes made to the plan can be found in Appendix G.

This 2026 update to the Benton County Multi-Jurisdictional Hazard Mitigation Plan was completed by Robyn Reese of Emergency Planning & Consulting, LLC. This update will address the data limitations noted in the 2021 update including 2020 US Census Data, the COVID19 Pandemic, and up to date property values.

As a general observation in previous plan updates as well as with this 2026 plan update, populations and population dynamics of the county have not changed substantially since 2010 with the exception of the ongoing residential development in the eastern communities of the county.

It is also worth noting that the multi-year COVID19 Pandemic did impact all of Benton County and its impact is seen in the limited ability of communities to work on and complete identified mitigation measures during the past five years.

SECTION 1

INTRODUCTION AND PROFILE

PLANNING AREA PROFILE AND CAPABILITIES

An important step in the planning process was to develop a community profile for each city and the unincorporated area participating in the multi-jurisdictional hazard mitigation planning process. This required the planning team to research climate and weather, geography, land use, and other conditions that impact the jurisdictions or can be influenced by hazards present in the planning area. This information is utilized throughout the plan to identify hazard risk areas and other vulnerabilities. This section provides a general profile of Benton County followed by descriptions of each of the jurisdictions participating in this plan.

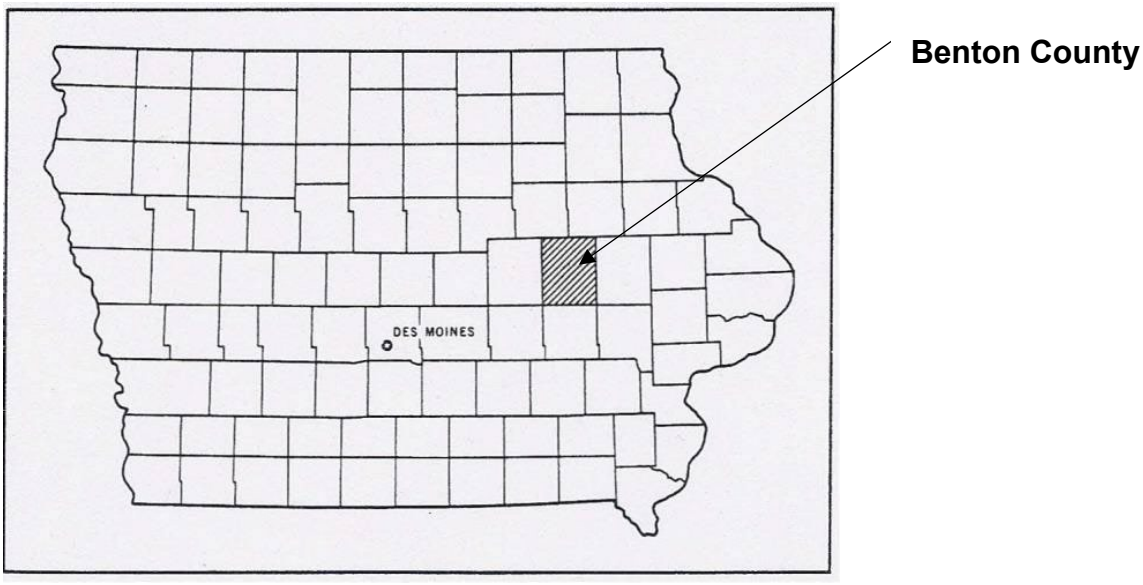


Figure 1: Benton County Planning Area

Incorporated communities of Benton County include Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mt. Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, and Walford. The county also has 20 townships: Bruce, Cedar, Harrison, Polk, Benton, Taylor, Jackson, Monroe, Homer, Big Grove, Eden Canton, Kane, Union, Eldorado, Fremont, Florence, St. Clair, Leroy, and Iowa.

Counties contiguous to Benton County include Black Hawk County (northwest), Buchanan County (northeast), Linn County (east), Iowa County (south), and Tama County (west).

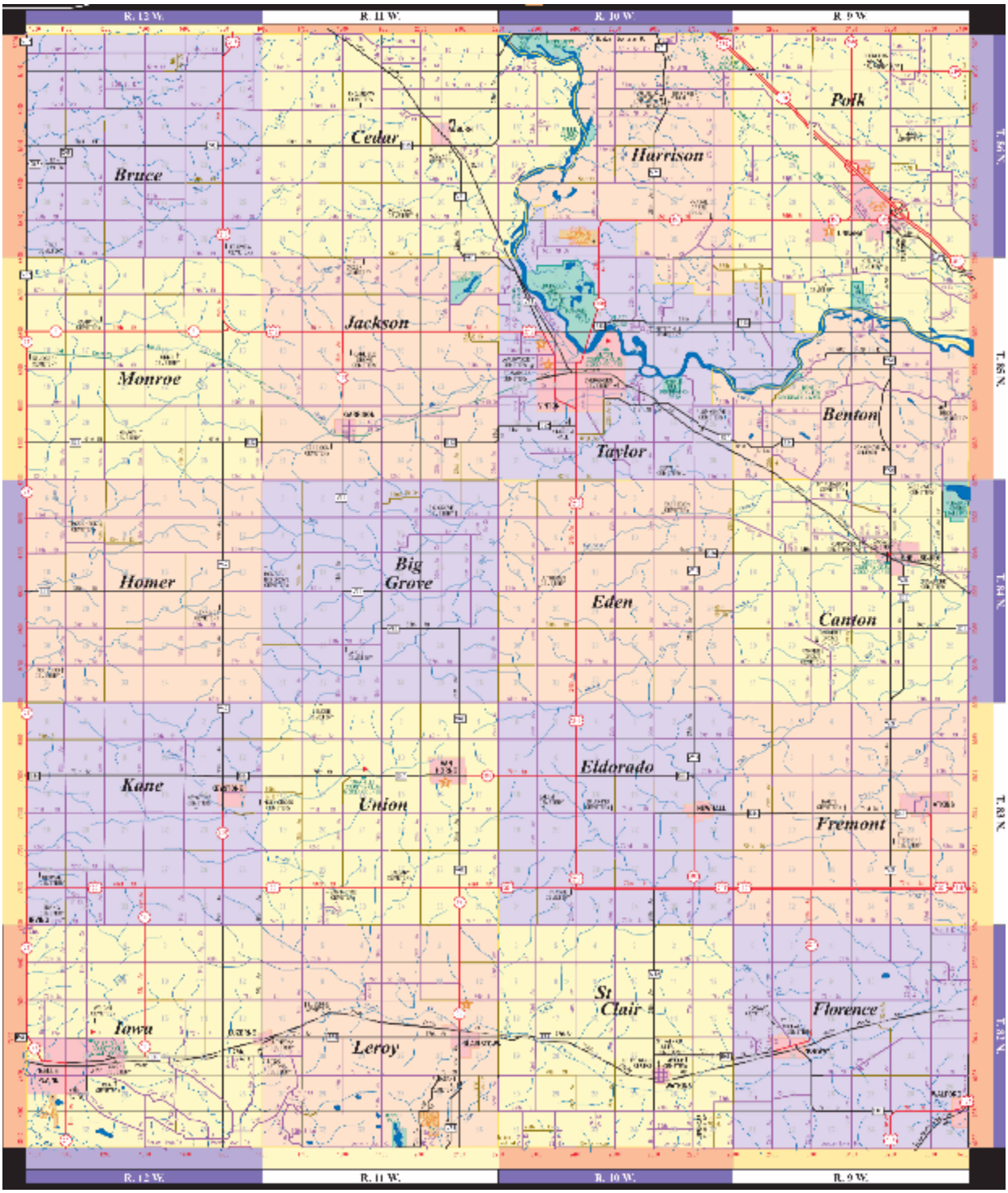


Figure 2: Map of Benton County

Geography

Benton County is in east-central Iowa (fig.1). It is rectangular and is about 30 miles from north to south and 24 miles from east to west. According to the US Census Bureau, Benton County has a total area of 459,800 acres, or 718 square miles of which 716 square miles is land and 2 square miles is water.

The county has about 82% of its land in farms with 74% cropland, 2.5% pastureland, 2% woodland, and 3% other. The remaining 18% of the county land is outside of agriculture and includes roads and residential areas. Corn for grain and seed, soybeans, cattle, and hogs, are the principal farm products.

Benton County is on a loess-covered glacial till plain. The soils in the dominantly gently sloping and moderately sloping areas formed in loess and till under prairie vegetation. The soils in the steeper areas formed in loess and till under trees. The county has some of the richest agricultural soils in the world.

The highest areas in the county are located in Polk and Jackson townships and are 1,050 feet to 1,100 feet above sea level. The lowest areas are on bottom land along the Cedar River at the Benton-Linn County line and on the Iowa River bottom. The elevation of these areas is 700 feet to 750 feet above sea level. The relief is stronger along the Cedar River and in the southern part of the county. It is less pronounced in the west-central part of the county.

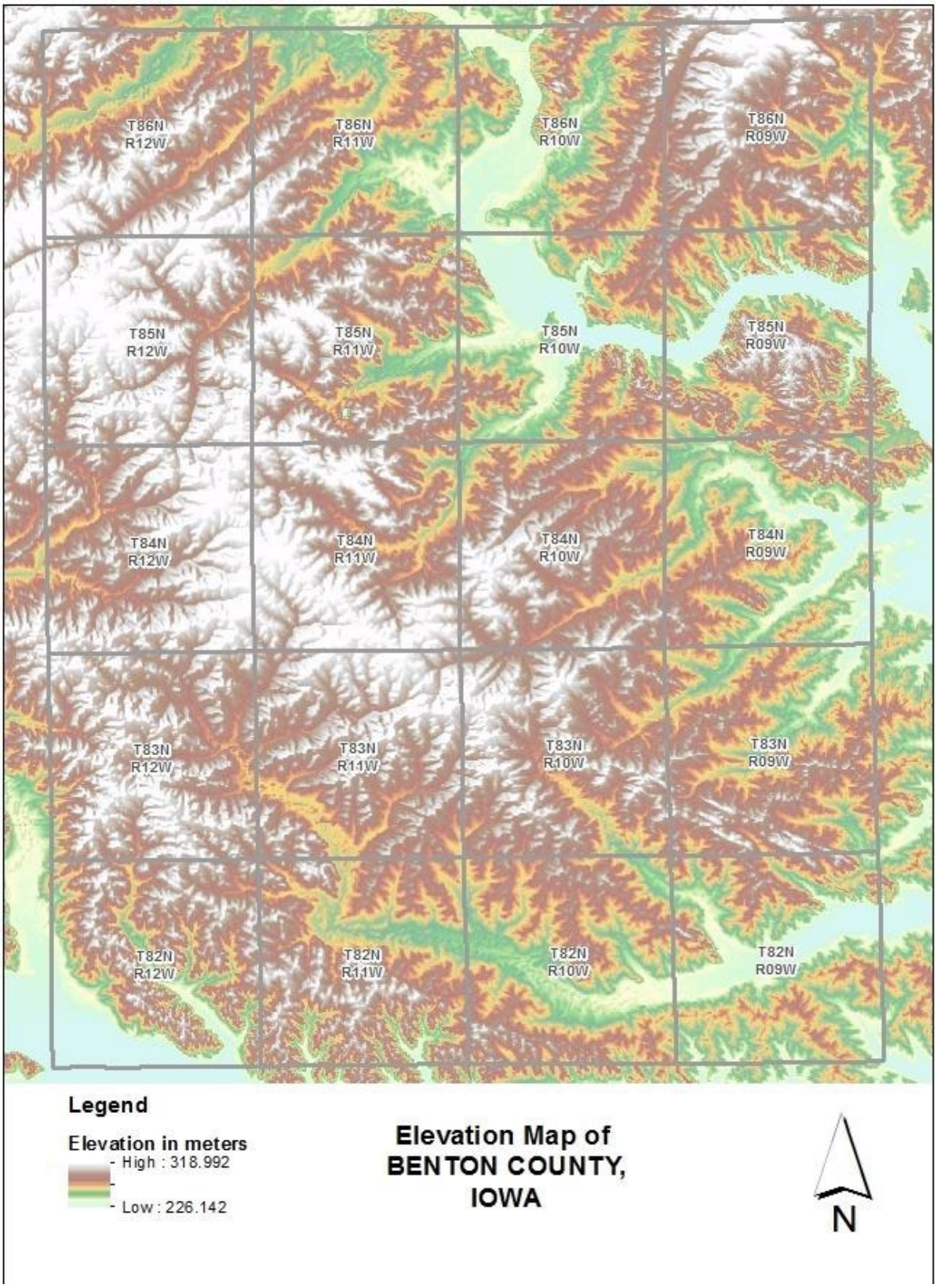


Figure 3: Benton County Elevations

Rivers, Streams, and Watersheds of Benton County

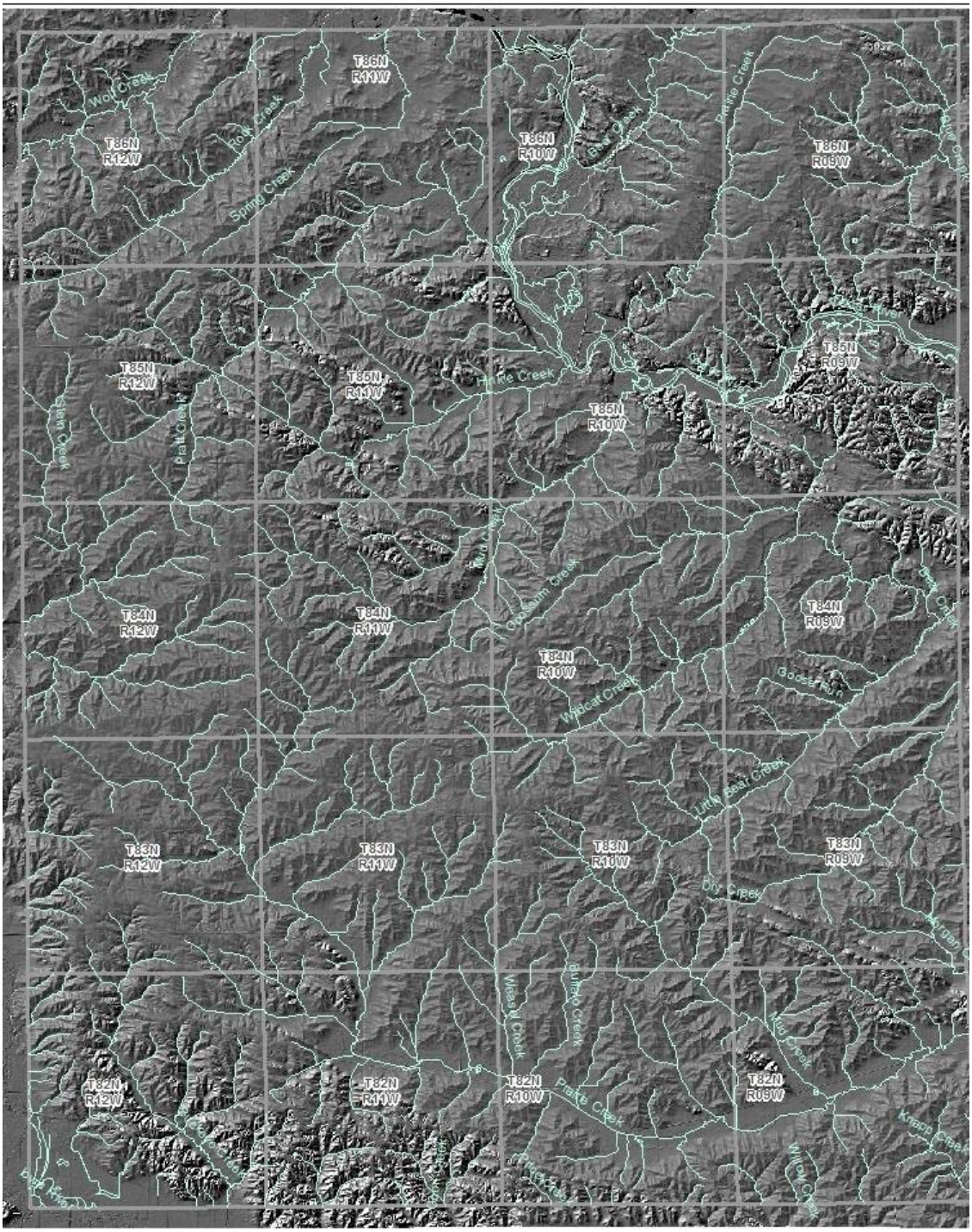


Figure 4: Rivers and streams of Benton County. Provided by Benton County NRCS.

Two major drainage systems, the Iowa River and the Cedar River, receive runoff from Benton County. The Cedar River and its tributaries drain nearly 90 percent of the county. Prairie Creek, a major tributary of the Cedar River, drains much of the southern part of the county. The Iowa River, which flows across the southwest corner, drains about 10 percent of the county. The total acres drained in the Middle Cedar Watershed that either includes Benton County or affects Benton County is 397,715 acres. The total acres of drainage in the Middle Iowa Watershed that either includes Benton County or affects Benton County is 104,545 acres.

Watersheds of Benton County are shown in the following three figures.



Figure 5: Major watersheds of Benton County

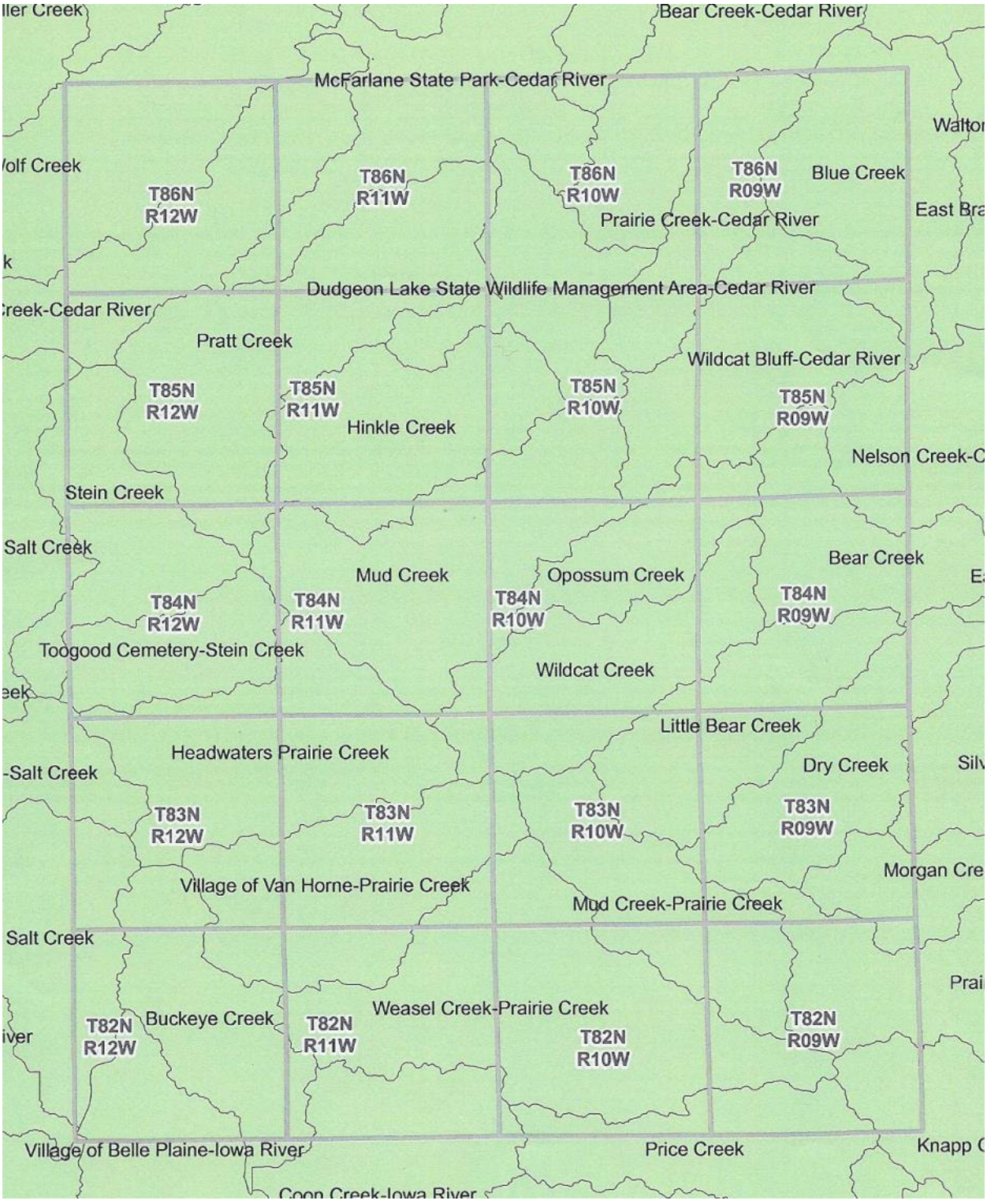


Figure 6: Watersheds of the Middle Cedar Watershed and Middle Iowa Watershed in Benton County.

Map provided by Benton County NRCS.

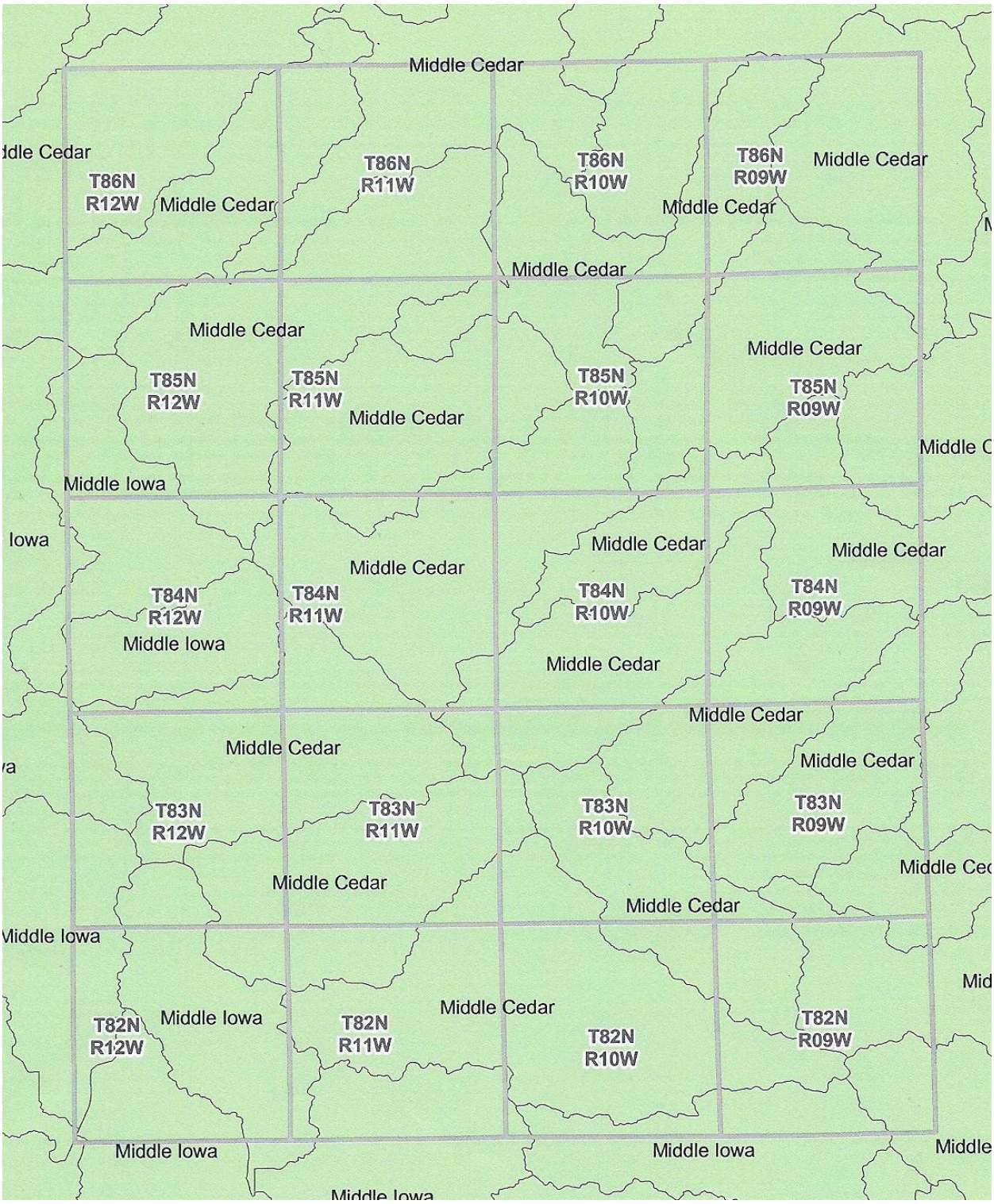


Figure 7: Middle Cedar and Middle Iowa Watershed in Benton County.

Map provided by Benton County NRCS.

History

The area that became Benton County was acquired by the United States as part of the Louisiana Purchase in 1803. The county was named after US Senator Thomas Hart Benton and was organized as Benton County in 1846. The area was first settled in 1839 by two adventurous young men, George Wright and John Smith who built a cabin in Canton Township and cleared some land. Hoosier's Point was the first settlement in Benton County. It eventually became known as Marysville and is today the City of Urbana. The county's first post office was established in Vinton in 1846 and Vinton was selected as the county seat. The county's current courthouse is the third that the county has had and was constructed in 1905. The first courthouse was razed by a fire in 1853. The second courthouse, which was built in the southeastern corner of the current courthouse square, was dedicated in 1856. It was torn down to make room for the current courthouse. In 1865 the population of Benton County had risen to 11,245. By 1900 it was 25, 177. In 1970 the population of the county was 22,885, and the population of Vinton, the county seat, was 4,845. In 1990 the county's population stood at 22,429. In 2000 it was 25,308 and in 2010 it was 26,076. In 2020 the population was 25,575. The county seat of Vinton's population stood at 5,103 in 1990, 5,102 in 2000, 5,257 in 2010 and 4,938 in 2020.

Climate

Benton County lies in east central Iowa and the climate is of the continental type. The climate is marked by a great variation in temperature, humidity, and precipitation with warm, generally moist summers and cold winters. Temperatures vary considerably from season to season and, at time, from day to day.

In winter the average temperature is 22 degrees F, and the average daily minimum temperature is 14 degrees. The lowest temperature on record, which occurred at Vinton on March 1, 1962, is -34 degrees F. In summer the average temperature is 72 degrees F, and the average daily maximum temperature is 84 degrees F. The highest recorded temperature, which occurred at Vinton on July 30, 1955, is 105 degrees F.

The total annual precipitation is 32.28 inches. Of this, 23 inches, or 72 percent, usually falls in April through September, which includes the growing season for most crops. In two years out of ten, the rainfall in April through September is less than 19 inches. The heaviest 1-day rainfall during the period of record was 5.80 inches at Vinton on August 5, 1068. Thunderstorms occur on about 41 days each year, and most occur in summer.

Average seasonal snowfall is 32 inches. The greatest snow depth at any one time during the period of record was 21 inches. On the average of 24 days, at least 1 inch of snow is on the ground. The number of such days varies greatly from year to year.

The average relative humidity in mid-afternoon is about 60 percent. Humidity is higher at night, and the average at dawn is about 84 percent. The sun shines 70 percent of the time possible in summer and 50 percent in winter. The prevailing wind is from the northwest. Average wind speed is highest, 123 miles per hour, in April

Table 1: Monthly Record Average Temperatures and Precipitation for Cedar Rapids, Iowa (the nearest National Weather Reporting Service for Benton County)

(Source: National Weather Service, Quad Cities).

Month	Degrees Fahrenheit		Precipitation	Snowfall
	Low	High	Inches	Inches
January	9.6	27.1	1.05	7.2
February	16.0	33.3	1.10	6.6
March	26.8	46.1	2.23	3.5
April	38	60.2	3.22	1.7
May	49.8	72.4	3.85	Trace
June	59.2	81.7	4.47	0
July	63.4	85.3	4.06	0
August	61.0	82.8	4.23	0
September	52	75.2	3.27	0
October	40.4	63.1	2.21	.1
November	27.9	45.7	2.24	3.0
December	15.3	31.8	1.48	7.3

Population Demographics and Housing Information Including Special Needs Populations

According to the US Census Bureau, the 2020 population estimate for Benton County was 25,575. Population density based on this estimate is about 36 people per square mile (718 total square miles in the county). Thirty-three percent of the county's population resides in the rural un-incorporated area of the county and 67 percent resides in the 14 incorporated cities of Benton County. Populations, population changes, and housing units and housing unit changes for each of the incorporated cities and the unincorporated area of Benton County are provided in Table 2.

Table 2: Population and housing demographics for Benton County

(US Census 2020)

LOCATION	2010 POPULATION	2020 POPULATION	PERCENT CHANGE	2010 HOUSING UNITS	2020 HOUSING UNITS	PERCENT CHANGE
ATKINS	1,670	2,056	23	666	747	12
BELLE PLAINE	2,534	2,330	-8	1,281	1,222	-5
BLAIRSTOWN	692	713	3	299	314	5
GARRISON	371	344	-7	150	153	2
KEYSTONE	622	599	-4	285	278	-2
LUZERNE	96	112	17	34	35	3
MT. AUBURN	150	162	8	56	68	21
NEWHALL	875	876	.1	356	396	11
NORWAY	545	466	-14	260	249	-4
SHELLSBURG	983	961	-27	467	414	-11
URBANA	1,458	1,554	7	487	574	18
VAN HORNE	682	774	13	340	335	-1
VINTON	5,257	4,938	-6	2,248	2,262	.6
WALFORD	1,463	1,366	-7	494	497	.6
Benton County Unincorporated	8,678	8,324	-4	3,656	3232	-12
Benton County-All	26,076	25,575	-2	11,079	11,076	-.02

Families make up 70 percent of the households in Benton County. This includes both married couple families (58 percent) and other families (34 percent). Non-family households make up 30 percent of all households in Benton County. Most of the non-family households were people living alone, but some were comprised of people living in households in which no one was related to the householder.

In 2020, 7.9 percent of the people residing in Benton County were in poverty. Seven percent of related children under the age of 18 years were below poverty level. Twelve percent of people over 65 years of age were below the poverty level.

For people reporting one race alone, 96% was White; .4% was Black or African American; .1% was American Indian and Alaska Native; .3% was Asian; .007% was Native Hawaiian and Other Pacific Islander, and .5% was Other race. Three percent reported two or more races. Two percent of the people in Benton County reported Hispanic.

It is estimated that in 2023 there are 11,095 housing units in Benton County with 9 percent of those being vacant. Of the 10,111 estimated occupied, 91 percent are single units, 6% are multi units, and 3% are estimated to be mobile homes. The majority of occupied housing units do have access to one or more cars, trucks, or vans for private use.

Table 3: Majority of House Construction by Decade for Benton County Cities

	1939 or earlier	1940 to 1949	1950 to 1959	1960 to 1969	1970 to 1979	1980 to 1989	1990 to 1999	2000 to 2009	2010 to 2019	2020 or later
Atkins								X	X	
Belle Plaine	X									
Blairstown	X									
Garrison	X									
Keystone	X									
Luzerne	X									
Mt Auburn	X									
Newhall					X					
Shellsburg	X									
Urbana							X			
Van Horne	X									
Vinton	X									
Walford							X			

As shown on the above table, the majority of housing in many Benton County cities was built more than eighty years ago. This can be significant in hazard mitigation planning as it relates to the level of damage to structures in a hazard event.

Table 4: Summary of Housing Values for Benton County as Provided by the US Census Bureau, 2020

	Median Value For ALL Houses in 2013	Median Value For All Houses in 2020
Atkins	$187,100	$213,300
Belle Plaine	$82,300	$111,600
Blairstown	$93,900	$164,300
Garrison	$59,600	$65,000
Keystone	$93,200	$141,100
Luzerne	$107,800	$153,400
Mt. Auburn	$58,500	$109,400
Newhall	$125,800	$171,500
Norway	$101,200	$155,400
Shellsburg	$119,300	$184,100
Urbana	$145,800	$224,100
Van Horne	$116,700	$169,000
Vinton	$103,100	$146,400
Walford	$214,800	$274,500
Benton County Unincorporated	$131,500	$198,400

It is important to recognize the significant increase in home values across the county as it may directly relate to the ability of communities to recover from a hazard event.

Income

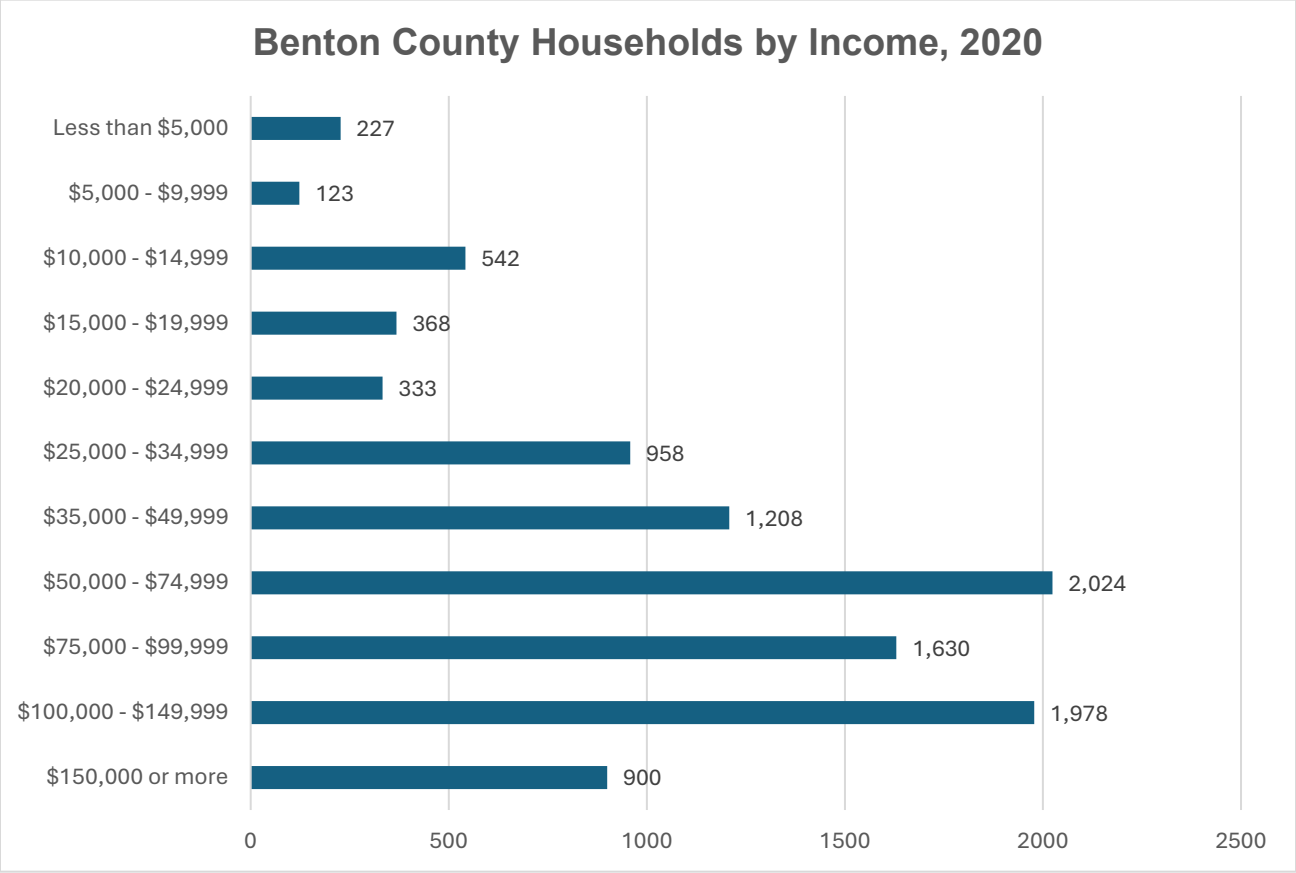
According to the 2020 US Census Bureau information, in 2020, the median household income for all occupied housing units in Benton County was $66, 046, an increase of $9,377 over 2013 and $5,387 below the state average of $71,433. Owner occupied median household income in 2020 for Benton County averaged $66,046 while renter occupied median household income averaged $34,609. It is important that these statistics are recognized in the context of hazard mitigation as it may directly correlate to certain segments of the community being able to recover from a devastating hazard event.

Table 5: Benton County 2020 Household Income

INCOME	OWNER OCCUPIED HOUSING UNITS (8,433 TOTAL)	RENTER OCCUPIED HOUSING UNITS (1,873 TOTAL)	ALL HOUSING UNITS (10,306 TOTAL)
LESS THAN $10,000	215	135	359
$10,000 TO $24,999	812	431	1,243
$25,000 TO $49,999	1,464	388	2,166
$50,000 TO $74,999	1,688	314	2,024
$75,000 TO $99,999	1,531	336	1,630
$100,000 TO $149,999	1,823	99	1,978
$150,000 +	900	155	915
MEDIAN HOUSEHOLD INCOME	$75,383	$34,609	$66,046

Source: US Census Bureau 2020

Table 6: Benton County Households by Income



Total Households: 10,306

Median Household Income: $66,046

According to the US Census Bureau Statistics there are a total of 2,921 people with disabilities in Benton County (11% of the county's population). Benton County Social Services has records of individuals with mental and other disabilities as well as a Hispanic population in the Blairstown area that has language barriers. The Benton County Emergency Management Agency has a database of voluntary registrants with special needs. The once concentrated area of special needs residents in Benton County is the Cedar Valley Ranch, Inc., a privatized care facility for up to 46 special needs people that is located at 2591 61st Street Lane in Vinton, Iowa.

Table 7: People with Disabilities in Benton County

COMMUNITY	NUMBER OF PEOPLE WITH DISABILITIES	% OF POPULATION
Atkins	150	7%
Belle Plaine	268	11%
Blairstown	101	13%
Garrison	37	13%
Keystone	82	14%
Luzerne	14	11%
Mt. Auburn	15	10%
Newhall	135	12%
Norway	53	12%
Shellsburg	79	10%
Urbana	100	7%
Van Horne	55	6%
Vinton	856	17%
Walford	89	7%
Benton County Unincorporated	887	11%
Benton County Total	2,921	11%

Source: US Census Bureau 2020 statistics

OCCUPATIONS AND EMPLOYMENT OF BENTON COUNTY RESIDENTS

In 2020 Census Bureau Statistics state that 13,786 residents of Benton County aged 16 years and over were in the labor force. Of these, 13,472 were employed and 314 were unemployed. Among the most common occupations were Management, professional, and related occupations at 31 percent; Sales and office occupations at 22 percent; Production, transportation, and material moving occupations at 19%; Service occupations at 14 percent; Natural resources, construction and maintenance occupations at 15 percent; and Construction, extraction, maintenance and repair occupations at 17 percent. Eighty-one percent of the people employed were private wage and salary workers; 13 percent were Federal, state, or local government workers; and 7 percent were self-employed. In 2020, for the employment population 16 years and older, the leading industries in Benton County were Educational services, and health care, and social assistance at 22.6 percent and Manufacturing at 17.5%.

Table 8: Occupations Engaged in by those in the Labor Force in Benton County

OCCUPATION		
Civilian employed population 16 years and over	**13,472**	**%**
Management, business, science, and arts occupations	4,082	30.3%
Service occupations	1,895	14%
Sales and office occupations	2,970	22%
Natural resources, construction, and maintenance occupations	2,054	15.2%
Production, transportation, and material moving occupations	2,471	18.3%
INDUSTRY		
Civilian employed population 16 years and over	13,472	%
Agriculture, forestry, fishing and hunting, and mining	636	4.7%
Construction	1,300	9.6%
Manufacturing	2,304	17.5
Wholesale Trade	440	3.3%
Retail Trade	1,326	9.8%
Transportation and warehousing, and utilities	858	6.4%
Information	187	1.4%
Finance and insurance, and real estate and rental leasing	956	7.1%
Professional, scientific, and management, and administrative and waste management services	881	6.5%
Educational services, and health care and social assistance	3,050	22.6%
Arts, entertainment, and recreation, and accommodation and food services	524	3.9%
Other services, except public administration	604	4.5%
Public administration	346	2.6%

Eighty-two percent of Benton County workers drove to work alone in 2020, 7 percent carpooled, less than 0.5 percent took public transportation, and 3 percent used other means. The remaining 6 percent worked at home. Among those who commuted to work, it took them an average of 24.9 minutes to get to work.

ECONOMIC DEVELOPMENT

The primary area of development in Benton County has been residential along the eastern side of the county which is close to the Cedar Rapids metropolitan area and along the I-380 corridor. Beginning in the late 1990's this area began to experience dramatic population growth and new housing construction. According to the Benton Development Group in 2026, this continues to be true however there has started to be a little industrial development on the southern side of the county along the Hwy 30 corridor. This industrial development includes some new development but mainly has been within city limits and within existing buildings.

Benton County funds and maintains the Benton Development Group (BDG) headquartered in Vinton, the County Seat of Benton County. The BDG has one staff person, a full-time director. The BDG is governed by a board of directors consisting of a representative from every community in the county and an appointee of the Benton County Supervisors. Other community development entities in Benton County with full-time directors include Vinton Unlimited (VU) with the City of Vinton and the Belle Plaine Community Development Corporation with the City of Belle Plaine.

BENTON COUNTY PROPERTY VALUES and INVENTORY of ASSETS

The total value of all property in Benton County as of July 1, 2025 was $4,251,351,837. This figure was ascertained using data provided by the Benton County Assessor's Office. Included in this figure are 11,729 residential properties valued at $2,415,076,718; 1,470 commercial enterprises valued at $234,810,602; 46 industries valued at $43,920,200; 420,649,905 acres of agricultural land and structures valued at $703,905,900; and 361 municipal and county owned properties valued at $45,478,500. Property located in the incorporated cities was valued at $1,706,794,945; property located in the rural townships was valued at $2,544,556,892. Detailed data by jurisdiction relative to these property values and assets is summarized in Tables 9-15. All data was provided by the Benton County Assessor's Office.

Table 9: Number of Residential Properties and Total Value of Residential Properties in Benton County by City and Township Jurisdiction

	NUMBER OF RESIDENTIAL PROPERTIES JULY 1, 2020	VALUE OF RESIDENTIAL PROPERTIES JULY 1, 2020	NUMBER OF RESIDENTIAL PROPERTIES JULY 1, 2025	VALUE OF RESIDENTIAL PROPERTIES JULY 1, 2025
ATKINS	745	$152,546,200	798	$233,585,263
BELLE PLAINE	1,227	$76,887,400	1,210	$129,895,512
BLAIRSTOWN	369	$33,458,700	362	$52,858,000
GARRISON	206	$7,194,500	207	$10,162,700
KEYSTONE	284	$28,054,100	286	$47,970,069
LUZERNE	83	$2,363,900	82	$4,345,500
MT. AUBURN	89	$3,570,200	92	$7,568,400
NEWHALL	385	$49,669,100	398	$71,995,908
NORWAY	265	$25,606,500	264	$43,394,368
SHELLSBURG	477	$52,807,000	492	$80,636,829
URBANA	620	$84,853,800	656	$140,231,633
VAN HORNE	309	$36,741,100	305	$51,336,100
VINTON	2,013	$210,415,276	2078	$335,504,700
WALFORD	365	$66,705,500	365	$97,248,300
CITIES TOTAL	7,437	$830,909,276	7,595	$1,306,733,281
BENTON	528	$84,100,800	559	$148,900,700
BIG GROVE	94	$12,873,000	88	$23,358,800
BRUCE	121	$21,343,200	120	$35,957,100
CANTON	301	$60,835,000	305	$93,632,100
CEDAR	307	$25,699,900	337	$41,971,500
EDEN	115	$18,352,600	109	$31,784,800
ELDORADO	127	$19,783,800	128	$34,729,300
FLORENCE	192	$38,723,700	194	$58,042,447
FREMONT	284	$62,486,500	276	$97,887,700
HARRISON	177	$26,473,800	181	$46,301,700
HOMER	94	$12,938,500	92	$22,198,400
IOWA	204	$29,524,800	205	$45,190,300
JACKSON	124	$19,618,400	126	$34,790,800
KANE	111	$16,331,400	104	$28,633,600
LEROY	174	$28,831,000	177	$51,639,100
MONROE	95	$14,958,900	93	$22,722,200
POLK	354	$66,644,500	358	$103,430,050
ST. CLAIR	176	$26,745,400	174	$43,043,600
TAYLOR	382	$68,542,900	402	$114,347,640
UNION	112	$19,871,200	106	$29,781,600
TOWNSHIPS TOTAL	4,072	$674,679,300	4,134	$1,108,343,437
COUNTY TOTAL	11,509	$1,505,588,576	11,729	$2,415,076,718

Table 10: Number of Commercial Enterprises and Total Value of Commercial Enterprises in Benton County by City and Township Jurisdiction

	NUMBER OF COMMERCIAL ENTERPRISES JULY 1,2020	TOTAL VALUE JULY 1, 2020	NUMBER OF COMMERCIAL ENTERPRISES JULY 1, 2025	TOTAL VALUE JULY 1, 2025
ATKINS	53	$3,779,550	60	$6,607,537
BELLE PLAINE	203	$19,918,100	215	$29,794,408
BLAIRSTOWN	70	$4,304,100	69	$6,694,700
GARRISON	36	$725,100	34	$991,000
KEYSTONE	48	$6,866,250	47	$8,337,831
LUZERNE	12	$438,300	12	$604,100
MT. AUBURN	20	$231,800	16	$307,100
NEWHALL	66	$4,163,000	57	$5,684,892
NORWAY	44	$2,140,400	46	$3,965,832
SHELLSBURG	60	$3,996,050	68	$6,988,172
URBANA	76	$22,990,900	85	$34,332,767
VAN HORNE	72	$6,091,700	70	$11,601,600
VINTON	378	$47,309,584	393	$73,400,800
WALFORD	26	$2,809,300	27	$3,788,700
CITIES TOTAL	1,164	$125,764,134	1,199	$193,099,439
BENTON	8	$263,100	10	$1,026,400
BIG GROVE	5	$1,699,150	5	$2,378,200
BRUCE	7	$174,200	6	$215,000
CANTON	13	$688,350	11	$827,200
CEDAR	12	$470,100	14	$680,500
EDEN	4	$180,800	4	$297,500
ELDORADO	13	$592,500	14	$1,041,800
FLORENCE	10	$890,450	10	$1,107,053
FREMONT	23	$6,813,800	22	$10,364,200
HARRISON	5	$112,400	6	$432,600
HOMER	5	$229,750	5	$298,000
IOWA	16	$1,081,200	15	$1,487,000
JACKSON	15	$977,750	14	$1,148,200
KANE	18	$2,398,550	16	$3,576,100
LEROY	19	$1,772,600	20	$2,265,500
MONROE	11	$387,600	11	$665,200
POLK	30	$4,651,200	32	$6,575,650
ST. CLAIR	17	$1,017,900	18	$1,479,000
TAYLOR	23	$2,060,800	26	$3,992,360
UNION	15	$1,398,800	12	$1,853,700
TOWNSHIPS TOTAL	269	$27,915,000	271	$41,711,163
COUNTY TOTAL	1,433	$153,679,134	1,470	$234,810,602

Table 11: Number of Industrial Enterprises and Total Value of Industrial Enterprises in Benton County by City and Township Jurisdiction

	NUMBER OF INDUSTRIAL ENTERPRISES JULY 1, 2020	INDUSTRIAL ENTERPRISES VALUE JULY 1, 2020	NUMBER OF INDUSTRIAL ENTERPRISES JULY 1, 2025	INDUSTRIAL ENTERPRISES VALUE JULY 1, 2025
ATKINS	0	$0		
BELLE PLAINE	11	$7,482,300	11	$9,555,700
BLAIRSTOWN	2	$162,400	2	$221,100
GARRISON	0	$0	0	$0
KEYSTONE	0	$0	0	$0
LUZERNE	0	$0	0	$0
MT. AUBURN	0	$0	0	$0
NEWHALL	0	$0	0	$0
NORWAY	0	$0	0	$0
SHELLSBURG	2	$79,700	2	$94,900
URBANA	7	$1,753,300	7	$2,634,100
VAN HORNE	1	$124,300	1	$169,500
VINTON	14	$10,046,100	14	$11,443,900
WALFORD	0	$0	0	$0
CITIES TOTAL	37	$19,648,100	37	$24,119,200
BENTON	1	$493,700	1	$682,500
BIG GROVE	0	$0	0	$0
BRUCE	0	$0	0	$0
CANTON	0	$0	0	$0
CEDAR	0	$0	0	$0
EDEN	0	$0	0	$0
ELDORADO	1	$63,500	1	$91,000
FLORENCE	2	$7,378,000	3	$11,731,900
FREMONT	2	$3,284,100	2	$4,904,800
HARRISON	0	$0	0	$0
HOMER	0	$0	0	$0
IOWA	1	$4,600	1	$7,200
JACKSON	0	$0	0	$0
KANE	0	$0	0	$0
LEROY	1	$828,000	1	$2,383,600
MONROE	0	$0	0	$0
POLK	0	$0	0	$0
ST. CLAIR	0	$0	0	$0
TAYLOR	0	$0	0	$0
UNION	0	$0	0	$0
TOWNSHIPS TOTAL	9	$12,051,900	9	$19,801,000
COUNTY TOTAL	46	$31,700,000	46	$43,920,200

Table 12: Taxable Values of Agricultural Land and Structures in Benton County

	NUMBER OF AGRICULTURAL TAXABLE ACRES JULY 1, 2020	VALUE OF LAND ONLY JULY 1, 2020	TOTAL ACTUAL VALUE LAND AND STRUCTURES JULY 1, 2020	NUMBER OF AGRICULTURAL TAXABLE ACRES JULY 1, 2025	VALUE OF LAND ONLY JULY 1, 2025	TOTAL ACTUAL VALUE LAND AND STRUCTURES JULY 1, 2025
BENTON	12,195.030	$10,564,800	$10,899,300	12,138.560	$15,974,200	$16,741,500
BIG GROVE	22,377.240	$39,754,000	$41,034,900	22,347.260	$60,974,800	$63,988,100
BRUCE	22,012.210	$38,589,700	$39,887,100	22,008.120	$59,006,800	$61,595,400
CANTON	20,584.460	$33,256,300	$34,543,300	20,573.900	$50,932,600	$53,802,500
CEDAR	26,051.080	$41,856,700	$43,396,700	25,877.630	$63,515,400	$66,516,600
EDEN	21,885.570	$39,647,500	$40,938,400	21,889.700	$60,893,100	$63,802,200
ELDORADO	21,590.850	$38,753,700	$40,052,300	21,579.990	$59,528,200	$62,422,900
FLORENCE	21,469.080	$35,451,800	$36,857,900	21,505.520	$54,294,800	$57,571,500
FREMONT	21,013.230	$35,975,500	$37,198,200	21,010.235	$55,181,900	$58,167,700
HARRISON	15,302.310	$19,203,000	$20,103,100	15,153.060	$28,863,400	$30,706,400
HOMER	21,972.980	$41,347,500	$42,844,300	21,969.198	$63,367,900	$66,164,600
IOWA	18,418.136	$25,786,000	$26,329,800	18,311.320	$39,244,900	$40,712,600
JACKSON	21,685.880	$35,766,300	$36,788,500	21,656.610	$54,749,400	$56,931,800
KANE	21,278.870	$39,135,700	$41,031,300	21,183.334	$59,737,000	$64,166,300
LEROY	21,167.950	$29,141,000	$31,001,800	21,160.780	$44,455,200	$48,821,500
MONROE	21,990.760	$40,188,700	$41,467,600	22,004.250	$61,698,200	$64,105,300
POLK	25,488.860	$37,181,000	$39,153,700	25,255.555	$55,859,900	$59,897,100
ST. CLAIR	22,003.630	$37,795,000	$38,795,700	22,001.790	$57,780,900	$60,570,800
TAYLOR	18,427.650	$23,830,100	$24,624,300	18,257.953	$36,228,800	$37,877,900
UNION	21,507.390	39,384,100	$40,835,100	21,435.780	$60,275,600	$63,672,400
TOWNSHIPS TOTAL	418,423.166	$682,608,400	$707,783,300	417,320.545	$1,042,553,000	$1,098,235,100
CITIES TOTAL	3,563.570	$5,165,300	$6,122,600	3,329.360	$8,060,700	$8,888,000
COUNTY TOTAL	421,986.736	$688,223,700	$713,905,900	420,649.905	$1,050,613,700	$1,107,115,100

Table 13: Insured Values of Municipal Properties in Benton County on July 1, 2020 and July 1, 2025

(includes municipal properties located within and outside of incorporated areas)

	MUNICIPAL PROPERTIES JULY 1, 2020	TOTAL PROPERTY VALUE	MUNICIPAL PROPERTIES JULY 1, 2025	TOTAL PROPERTY VALUE
ATKINS	21	$2,617,800	21	$3,185,800
BELLE PLAINE	36	$5,498,800	37	$7,069,600
BLAIRSTOWN	15	$763,100	15	$1,059,000
GARRISON	27	$497,500	26	$617,400
KEYSTONE	21	$2,396,800	20	$1,125,300
LUZERNE	2	$164,600	2	$226,500
MT. AUBURN	4	$92,900	4	$128,100
NEWHALL	13	$1,063,100	13	$1,339,200
NORWAY	12	$672,500	11	$836,900
SHELLSBURG	16	$752,300	18	$964,000
URBANA	11	$737,700	13	$837,700
VAN HORNE	21	$1,848,700	21	$2,394,100
VINTON	78	$8,434,100	77	$11,045,200
WALFORD	8	$1,200,500	8	$1,455,500
BENTON COUNTY	96	$11,529,000	75	$13,194,200
COUNTY & MUNICIPAL OWNED TOTAL	381	$38,269,400	361	$45,478,500

Table 14: Tax Exempt Properties of Benton County. These properties do not have a value assigned to them.

CITIES	NUMBER OF EXEMPT PROPERTIES JULY 1, 2020	NUMBER OF EXEMPT PROPERTIES JULY 1, 2025
ATKINS	29	28
BELLE PLAINE	57	58
BLAIRSTOWN	21	18
GARRISON	19	19
KEYSTONE	20	17
LUZERNE	5	5
MT. AUBURN	11	9
NEWHALL	20	18
NORWAY	21	20
SHELLSBURG	29	32
URBANA	27	28
VAN HORNE	34	31
VINTON	146	144
WALFORD	14	11
TOWNSHIPS		
BENTON	10	8
BIG GROVE	5	4
BRUCE	4	4
CANTON	14	12
CEDAR	11	12
EDEN	3	3
ELDORADO	10	10
FLORENCE	8	7
FREMONT	8	6
HARRISON	16	16
HOMER	5	4
IOWA	25	24
JACKSON	12	11
KANE	31	10
LEROY	13	12
MONROE	12	8
POLK	21	20
ST. CLAIR	8	9
TAYLOR	28	30
UNION	42	8
TOTAL EXEMPT PROPERTIES	739	656
BENTON COUNTY	73	71

Table 15: Summary Values of All Properties in Benton County by Jurisdiction

(includes valuation of electric, gas, transmission, and distribution type properties)

	TOTAL PROPERTY VALUES ALL PROPERTY JULY 1, 2020	TOTAL PROPERTY VALUES ALL PROPERTY JULY 1, 2025
ATKINS	$167,990,342	$252,086,965
BELLE PLAINE	$133,175,232	$204,346,353
BLAIRSTOWN	42,328,148	$64,779,101
GARRISON	$10,585,158	$14,562,652
KEYSTONE	$40,835,715	$63,382,752
LUZERNE	$4,523,261	$7,168,743
MT. AUBURN	$4,977,217	$9,368,347
NEWHALL	$59,696,911	$84,626,936
NORWAY	$35,087,337	$55,671,985
SHELLSBURG	$63,033,460	$94,863,770
URBANA	$116,886,366	$186,591,648
VAN HORNE	$55,463,303	$79,752,473
VINTON	$319,616,380	$482,606,920
WALFORD	$74,754,423	$106,986,300
CITIES TOTAL	$1,128,953,253	$1,706,794,945
BENTON	$99,833,409	$173,774,487
BIG GROVE	$59,942,703	$94,018,030
BRUCE	$75,549,861	$111,890,086
CANTON	$111,758,607	$164,481,866
CEDAR	$75,843,564	$116,357,143
EDEN	$69,750,140	$106,161,097
ELDORADO	$71,899,218	$124,673,851
FLORENCE	$101,034,046	$146,993,997
FREMONT	$116,440,615	$178,392,980
HARRISON	$50,404,424	$81,918,580
HOMER	$57,901,309	$90,616,067
IOWA	$70,553,631	$103,886,088
JACKSON	$83,208,765	$118,069,953
KANE	$74,662,790	$115,892,385
LEROY	$77,155,143	$121,723,559
MONROE	$69,288,642	$102,906,338
POLK	$124,283,376	$184,877,008
ST. CLAIR	79,971,737	$128,277,817
TAYLOR	$108,828,502	$172,881,603
UNION	$73,098,187	$106,763,857
TOWNSHIPS TOTAL	$1,651,408,669	$2,544,556,892
COUNTY TOTAL ALL PROPERTIES	$2,780,361,922	$4,251,351,837

BENTON COUNTY HISTORICAL PROPERTIES

Benton County has 16 properties that are on the National Register of Historic Places. This is one additional property since the 2020 Plan Update. The only structure located in any flood hazard area is the Shellsburg Pearl Street Bridge over Bear Creek. Following is a list of the 16 properties.

Table 16: Benton County Properties on the National Register of Historic Places

PROPERTY	ADDRESS	CITY	DATE LISTED
Belle Plaine Historic District	Belle Plaine, Iowa	Belle Plaine	10/16/2013
Central Vinton Residential Historic District	Roughly bounded by 2nd & D Avenues, W. 13th & W. 6th Streets	Vinton	11/21/2012
Benton County Courthouse	E. 4th Street	Vinton	10/08/1976
Burlington Cedar Rapids & Northern Passenger Station	612 Second Ave.	Vinton	12/06/1990
Herring Hotel	718 13th St.	Belle Plaine	12/31/2008
Iowa Canning Company Seed House Building	201 1st Ave.	Vinton	03/12/2012
James Greer McQuilkin Round Barn (cattle barn)	CR D56	Eagle Center	06/30/1986
Preston's Station Historic District	402 4th Ave.	Belle Plaine	09/21/2020
Frank G. Ray House & Carriage House	912 1st Ave.	Vinton	12/10/1982
Round Barn (hog barn)	Bruce Township Section 3 Off US Hwy 218	Eagle Center	06/30/1986
Sankot Motor Company	807 13th St.	Belle Plaine	07/28/1995
Shellsburg Bridge	Pearl Street over Bear Creek	Shellsburg	06/25/1998
Upper Stone Schoolhouse	E of Vinton	Vinton vicinity	07/07/1983
Vinton Public Library	510 2nd Ave.	Vinton	05/23/1983
Youngville Café	2409 73rd Street	Watkins	02/01/2007
Frank E. and Katie Zalesky (Cherveny House)	802 9th Ave.	Belle Plaine	04/10/2012

BENTON COUNTY BUSINESSES, INDUSTRIES, AND COMMERCE

According to statistics provided by the US Census Bureau, Benton County there was 529 business and industrial enterprises in Benton County in 2021. These enterprises generated a total of $18,345,000 in commerce according the US Census Bureau. Table 17 summarizes these enterprises.

Table 17: Business and Industrial Enterprises in Benton County 2013 and 2020

Commercial or Business Enterprise Type	Number of Establishments 2013	Receipts ($1,000) 2013	Number of Establishments 2020	Receipts ($1000) 2020
Utilities	7	123		
Construction	284	11,701	170	16,138
Manufacturing	23	595	26	42,653
Wholesale Trade	36	1,388	34	26,069
Retail Trade	280	8,356	78	22,215
Transportation and warehousing	115	11,462	39	6,374
Information	14	759	11	3,347
Finance and insurance	63	2,055	38	11,278
Real estate and rental and leasing	117	3,891	12	636
Professional, scientific, and technical services	131	2,057	24	3,309
Administrative and Support and Waste Mgt. and Remediation Srvcs	145	1,992	20	4,220
Educational Services	26	170	3	747
Health care and social assistance	203	2,895	57	31,737
Arts, entertainment, and recreation	79	908	8	787
Accommodation and food services	17	613	32	4,136
Other services (except public administration)	277	5,648	67	4,866

AGRICULTURE IN BENTON COUNTY

Because of the capability of the soils in Benton County and the climatic conditions, agricultural crops and livestock are the backbone of the economy of Benton County and have been since it became a county in 1846.

United States Department of Agriculture Statistics indicates that in 2022 the county had 1,090 farms totaling 377,259 acres or 82% of the land area of the county. The average size of a Benton County Farm is 346 acres. Ninety-two percent of the farms in Benton County are family farms.

Market value of all crops	$340,534,000
Market value of all livestock	$109,155,000
Market value of greenhouse& nursery, floriculture, sod	$1,347,000
Total market value of all farm products	$449,688,000

No. of all cattle and calves in Benton County	25,000 (2024)
No. of beef cows in Benton County	5,700
No. of milk cows in Benton County	4,500
All hogs and pigs in Benton County	117,999 (2022)

Corn acres in Benton County	184,000 (2024)
Soybean acres in Benton County	152,000 (2023)
Hay acres in Benton County	9,941 (2022)

BENTON COUNTY TRANSPORATION SYSTEMS

Highways and Roads

Interstate 380/Iowa Highway 27 crosses the northeastern corner of Benton County. Two major highways extend across the county. U.S. Highway No. 30 traverses the southern half of the county. U.S. Highway No. 218 extends east and north across the county. Several state highways and hard surfaced county roads connect these major highways to the smaller communities. Most other roads are hard surfaced or are surfaced with crushed limestone or gravel. State Highways in Benton County include Iowa Highway 8, Iowa Highway 21 and Iowa Highway 150. Benton County has 1,330 miles of rural roads maintained by Benton County Secondary Roads including 97 miles or rural primary, 216 miles of paved/hard surface secondary roads, 924 miles of rock surface secondary roads, 93 miles of earth (dirt) surface secondary roads.

Figure 8: Benton County Farm to Market Roads

Map provided by Iowa Department of Transportation (DOT).

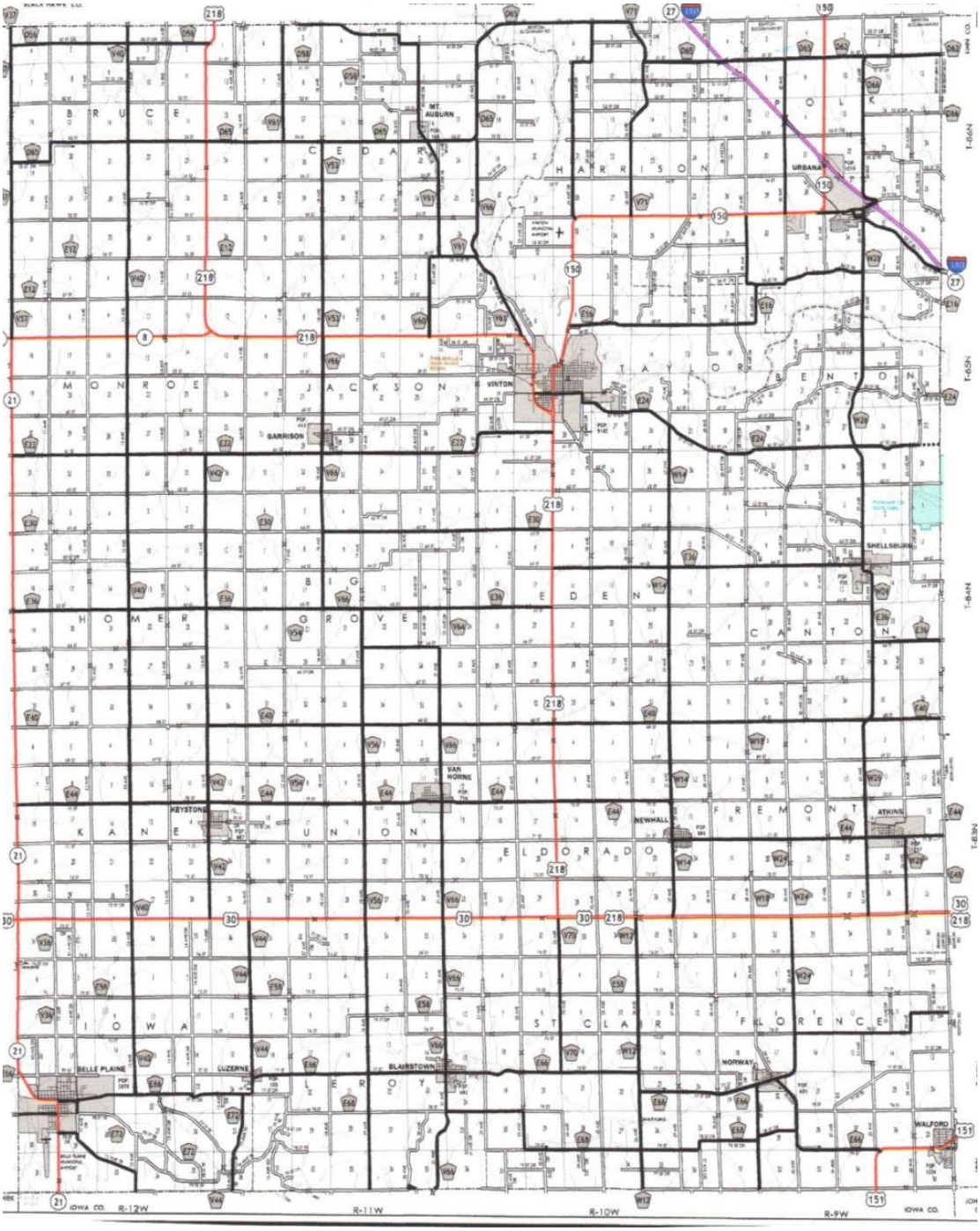
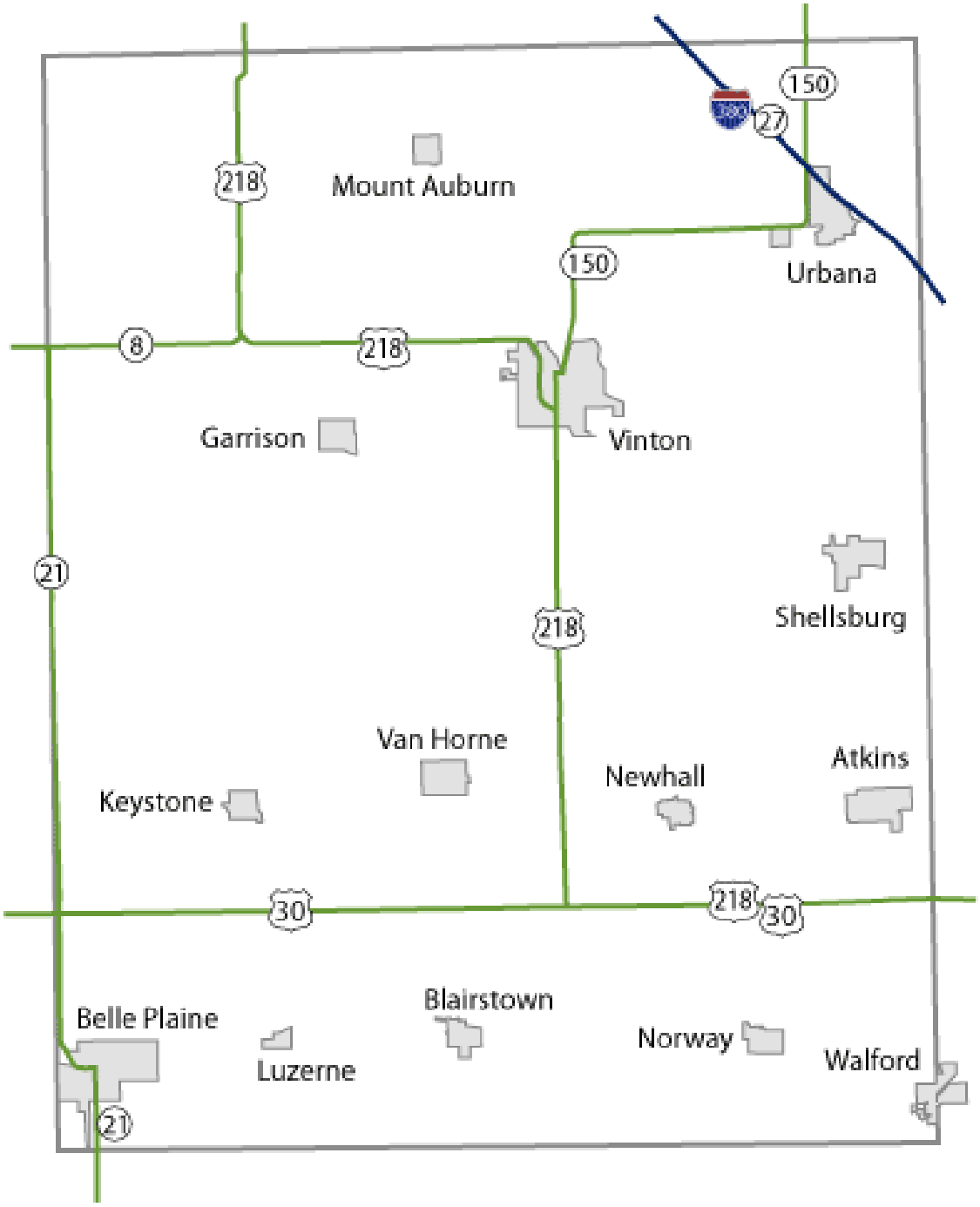


Figure 9: Major Highways and Interstates of Benton County

Map provided by Iowa DOT.



Railroads

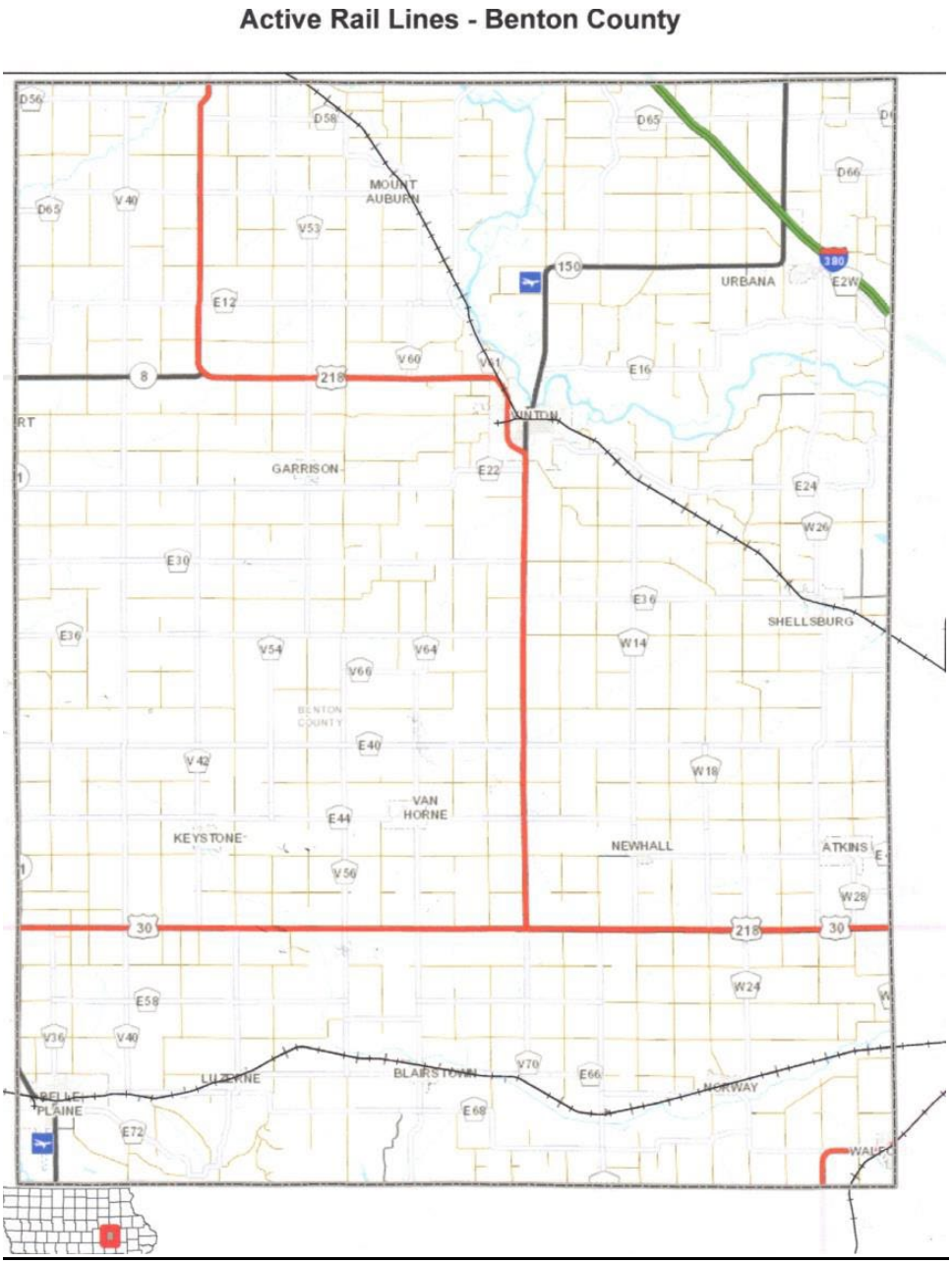


Figure 10: Rail lines of Benton County.

Image provided by Iowa Department of Natural Resources (DNR).

Benton County has three railroads. Nearly 100 trains per day cross the county from east to west on 24 miles of track through the Cities of Belle Plaine, Blairstown, and Norway on a busy double rail line operated by the Union Pacific Railroad. The Iowa Northern Railroad (owned by Canadian National) passes two trains daily over 25 miles of track through Mt. Auburn, Vinton, and Shellsburg. Two miles of track operated by the Cedar Rapids-Iowa City Railroad pass through Walford in the southeast corner of the county.

Airports

Benton County has two airports domiciled within the county's boundaries, the Belle Plaine Airport near Belle Plaine and the Vinton Veterans Memorial Airport near Vinton. Both have 4,000 feet long runways.

Emergency Services of Benton County

Emergency Management Agency

The Benton County Emergency Management Agency, headquartered at 213 2nd Avenue in Vinton, is governed by a commission comprised of the Mayors from each of the jurisdictions in the County or their designees, a representative of the Benton County Sheriff's Department and a representative of the Benton County Board of Supervisors. The agency currently has one full-time staff person, the Emergency Management Coordinator and one volunteer who assists in the office. The Emergency Management Agency works in conjunction with local fire, rescue, police, and government officials to draft and implement workable emergency action plans in the community. Furthermore, the Agency helps coordinate the monthly testing of outdoor warning sirens in the County that can be activated remotely.

Law Enforcement

Two communities in Benton County maintain their own police departments: the City of Belle Plaine, and the City of Vinton. The remainder of the communities contract with the Benton County Sheriff's Office for law enforcement services except the City of Walford who contracts with the Linn County Sheriff's Office. The Benton County Sheriff's Office is located in Vinton and maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

HAZMAT Services

A regional Hazardous Materials Team is contracted to assist Benton County with a hazardous materials event or catastrophe. The Linn County Hazardous Materials Team is located within fifteen minutes of Atkins and assists Benton County fire departments with hazard materials emergency procedures, training, and response. This contract reduces the risk of additional injury, contamination, and property damage in an event involving a hazardous materials release or spill.

Fire Departments

Benton County receives fire protection from 13 domiciled fire departments in Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, and Vinton. Staffing of these departments are entirely volunteers. The fire departments of Benton County are all signatory to a county-wide mutual aid agreement making the services of all departments in the county available to each other in the event of a major fire or emergency. Fire departments in neighboring counties with territory in Benton County include Brandon, Dysart, Fairfax, La Porte City, and Walker.

Emergency Medical Services

Emergency Medical Services in Benton County include first responder services in Atkins, Blairstown, Garrison, Keystone, Mt. Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, and Walford (Fairfax Fire Department). Ambulance services include Blairstown, Belle Plaine, and North Benton in Vinton. Emergency medical service providers in neighboring counties that also provide service to Benton County include Brandon First Responders, Dysart Ambulance Service, Elberon Ambulance Service, Hiawatha Ambulance Service, La Porte City Ambulance Service, and Area Ambulance Service in Cedar Rapids.

BENTON COUNTY EDUCATION SYSTEMS

In Benton County in 2020, almost 95 percent of people 25 years and older had at least graduated from high school and a little more than 20 percent had a bachelor's degree or higher. Approximately 5 percent did not graduate from high school.

According to the 2020 US Census Bureau, the population in Benton County enrolled in K-12 school is 4,482. Nursery school and preschool enrollment was 414. College, undergraduate, and graduate school enrollment was 696.

K-12 Education

Table 18 lists the school systems and schools in Benton County for the 2024-2025 school year. The information was provided by the Iowa Department of Education website and each school district. Additionally, there are students who reside in Benton County but attend schools in adjacent counties who are not accounted for in this table.

The public school systems of Benton County include the Belle Plaine Community School District with two schools, 472 students, and 44 full time teachers; Benton Community School District with five schools, 1,614 students, and 111 full-time teachers; Center Point -Urbana School District Middle School in Urbana with 275 students and 27 full-time teachers, and Vinton-Shellsburg Community School District with four schools, 1,558 students, and 126 full-time teachers. Central Lutheran School in Newhall is the county's only private school. The school system has one building and 178 students.

SCHOOLS IN BENTON COUNTY, IOWA			
School	**Students**	**Teachers**	**Grades**
Belle Plaine Community School District			
Belle Plaine Junior/Senior High	205	19	9-12
Longfellow Elementary School	267	23	PK-6
Benton Community School District			
Benton Community Senior High	473		9-12
Benton Community Middle School	235		7-8
Atkins Elementary	394		PK-3
Keystone Elementary	176		PK-3
Norway Intermediate	336		4-6
Center Point-Urbana Community School District			
Center-Point Urbana Intermediate School	275	27	3-5
Vinton-Shellsburg Community School District			
Vinton-Shellsburg High School	414		9-12
Vinton-Shellsburg Middle School	331		6-8
Tilford Elementary School	544		PK-4
Shellsburg Elementary School	269		PK-5
Central Lutheran School			
Central Lutheran School	178		PK-8

Table 18: Benton County School Systems

Higher Education

Kirkwood Community College is a community college serving seven counties in Iowa. The college is named for Samuel J. Kirkwood, an Iowa governor and U.S. Senator in the late 19th century. Kirkwood's main campus is located east of Kirkwood Boulevard in Cedar Rapids. In Benton County, Kirkwood maintains a building in Belle Plaine and Vinton. Students at the Benton County facilities can take high school GED classes, college credit classes and other classes via ICN, online, or from in person instructors at these facilities.

FLOOD and NATIONAL FLOOD INSURANCE PROGRAM (NFIP) INFORMATION

The Benton County Assessor's Office using the most recent DFIRM floodplain maps for Benton County (December 20, 2019) has determined the following data regarding properties within the 100=year floodplain for all watersheds in Benton County.

- Total number of agricultural properties in flood plain areas is 2,059 with a total assessed value of $521,343,700 including land, agricultural outbuildings, and dwellings. The dwelling value on these properties is $90,590,400. Agricultural outbuildings on these properties have an assessed value of $13,966,900.
- Residential properties in flood plain areas of the county total 1,131 with a value of $199,692,200.
- There are 138 commercial properties with an assessed value of $55,441,400 and 14 industrial properties with an assessed value of $12,678,070 within the floodplain areas of Benton County.
- Additionally, there are 245 properties that are tax exempt, municipally or county owned within Benton County floodplain areas.
- All of Benton County has been mapped for floodplains with DFIRM maps developed on December 20, 2019 with updates in 2021 and a Mud Creek update in 2023.

Community Identification Numbers (also known as CID) for the communities of Benton County are as follows:

190548 Atkins
190015 Belle Plaine
190845 Benton County
190320 Blairstown
190321 Garrison
190602 Keystone
190281 Luzerne
190785 Mount Auburn
190626 Newhall
190632 Norway
190319 Shellsburg
190672 Urbana
190673 Van Horne
190016 Vinton
190820 Walford

The City of Vinton is the only area of Benton County with a delineated 500-year flood zone. The area contains 1 agricultural property valued at $16,600; 19 commercial properties valued at $3,492,100, and 39 residential properties valued at $8,724,100.

NFIP Status: In Benton County, the jurisdictions of Atkins, Belle Plaine, Blairstown, Garrison, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, Walford, and Benton County participate in the NFIP. The communities of Keystone, Luzerne, and Mount Auburn do not participate in NFIP.

According to the NFIP (National Flood Insurance Program) statistics there were a total of 85 flood insurance policies in force in all of Benton County on 12/31/2025. These policies were as follows:

Community Name	Policies In-Force	Total Coverage	Total Written Premiums
Benton County	17	$ 3,882,000	$ 19,087
Atkins	4	$ 1,120,000	$ 3,354
Belle Plaine	0	$ 0	$ 0
Blairstown	1	$ 146,000	$ 562
Newhall	1	$ 304,000	$ 962
Norway	2	$ 652,000	$ 2,849
Shellsburg	2	$ 700,000	$ 1,885
Urbana	1	$ 1,000,000	$ 3,394
Vinton	52	$12,119,000	$ 80,612
Walford	5	$ 1,203,000	$ 3,848
County Total	85	$21,126,000	$116,553

NFIP statistics show that 90 claims for flood insurance losses had been filed in Benton County from 1980 to 2024. The total payment for all claims was $2,124,050.63. The highest number of claims filed and total amount paid was in 2008 with 37 claims totaling $1,171,858.10. The second highest year for Benton County flood insurance loss claims was 2016.

REPETITIVE LOSS PROPERTIES

Officials of the Iowa Department of Natural Resources (IDNR) report that as of February 17, 2026 there are five repetitive loss structures in Benton County. The one in the City of Vinton is a non-residential structure. The four located in unincorporated Benton County are residential structures. IDNR reports there are no severe repetitive loss properties in Benton County.

Benton County Government

There are 99 counties in Iowa ranging in population from 3,704 residents (Adams County) to approximately 492,401 residents (Polk County), according to the 2020 US Census Bureau. All 99 counties operate under the elective board of supervisor form of government. Historically, the role of counties has been to serve as an administrative arm of the state – maintaining records, providing courts and law enforcement, building roads, assisting the mentally ill, immunizing children, assessing property, collecting taxes, and conducting elections. Counties still perform these functions, as well as others.

In Benton County, the elected officials are three county supervisors, the sheriff, recorder, treasurer, attorney, and auditor.

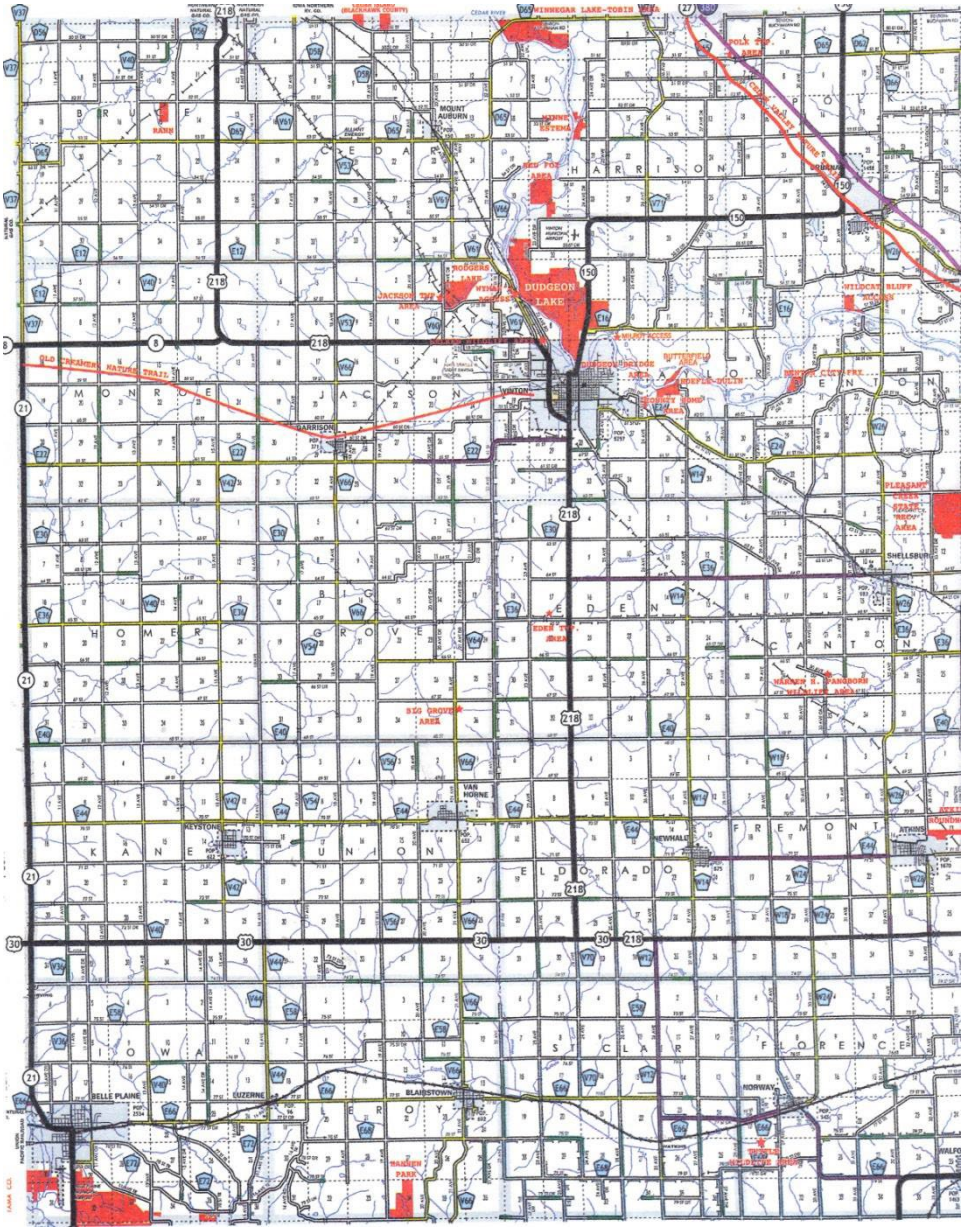
In total Benton County has 135 full-time and 41 part-time employees of its departments and services. County departments include:

Assessor
Attorney
Auditor
Board of Supervisors
Conservation
Emergency Management
Environmental Health
Human Resources
IT/GIS
Land Use
Public Health
Recorder
Roadside Management
Secondary Roads
Sheriff
Social Services
Solid Waste/Landfill
Transportation
Treasurer
Veteran’s Affairs & General Assistance

Benton County Parks and Recreation Areas

Benton County has an extensive system of municipal, county, and state parks that provide a broad array of outdoor recreational opportunities. Every community in the county has at least one park area of some sort. Some communities such as Atkins, Belle Plaine, Newhall, and Vinton have two or more parks. Periods of heavy use for the parks is during the summer months. On weekend of heaviest use, several thousand people county-wide will be using the parks and campgrounds of the county.

Figure 11: Park and Recreation Areas of Benton County



Benton County Conservation has a nature center, the Rodgers Park Nature Center located at 5718 20th Avenue Drive, Vinton.

The major Parks and Recreation areas managed by Benton County Conservation Commission include:

Benton City-Fry Recreation Area (River Park
5899 29th Ave. Dr.
Vinton, IA 52349

- 25 acre river park
- 15 Campsites (14 with electricity; 1 primitive)
- Pit Restroom
- Drinking water
- Boat ramp
- Fishing
- Fishing shore and river
- Picnic areas
- Shleters/pavilion
- Playground
- Hunting access during season (excluding campground)

Cedar Valley Nature Trail

10-mile trail in northeast Benton County on abandoned railway. The trail is part of a 51-mile trail from metro Cedar Rapids to Cedar Falls/Waterloo. Opportunities on the trail include walking, running, biking, photography, nature study, and snowmobiling (allowed in the winter north of County Home Road). It was established in 1977 and maintained by Linn County Conservation.

Hannen Lake Park
1949 Benton Iowa Rd.
Blairstown, IA 52209

- 218 acre park
- 73 campsites (57 with electricity, 16 without electricity)
- 3 Shower facilities
- Cedar Cabin
- 40 acre fishing lake
- Boat ramp for electric motor only
- Kayak/canoe launch
- Fishing piers and jetties (2 are ADA accessible)
- Swimming beach (no lifeguard on duty)
- Picnic areas
- 2 Shelters

Hoefle-Dulin Recreation Area (River Park)
5901 27th Ave.
Vinton, IA 52349

- 46 acre river park
- 11 Campsites (9 with electricity, 3 without electricity)
- Pit toilet
- Drinking water
- Boat ramp
- Fishing
- Picnic areas
- Hiking trails
- Hunting permitted during season (excluding campground)

Minne Estema Park
5261 24th Ave. Drive
Vinton, IA 52349

- 76 acre park
- 12 Campsites (10 with electricity, 2 without electricity)
- Pit toilet
- Drinking water
- Boat ramp
- Shelter/Pavilion
- Picnic areas
- Hunting access, excluding campground, September 15-May 15

Winegar and Tobin Wildlife Area (aka: Mt. Auburn Boat Launch)
5033 22nd Ave.
Brandon, IA 52210

- 467 acre Game Management Area
- Fishing
- Boat ramp
- Picnic areas
- Hiking trails
- Hunting access, September 15-May 1
- Equestrian trail use area
- Wild Rose Cabin

Old Creamery Nature Trail

15 mile walking/hiking/biking trail from Vinton to Garrison located on an abandoned Rock Island Rail Line.

Polk Township Wildlife Area
2819 51st Street
Brandon, IA 52210

- 12 acre park: Day use (no overnight camping)
- 7 acre lake
- Boat ramp
- Fishing (shoreline and boat)
- Picnic areas
- Nature appreciation (native wildflowers)
- No swimming

Rodgers Park
2113 57th Street Trail
Vinton, IA 52349-9434

- 207 peaceful acres
- 52 full-service campsites, overlooking the scenic lake
- 5 non-electric campsites
- 5 walk-in tent sites
- Shower house
- 21 acre lake
- Swimming beach
- Fishing piers
- Boat ramp (electric or non-motorized)
- Picnic areas
- Grilling garden
- New playground
- Enclosed and open shelter facilities
- Over 5 miles of quiet hiking trails

Wildcat Bluff Recreation Area
3139 57th Street Trail
Center Point, IA 52213

- 131 acre recreational area
- 26 Campsites (23 with electricity, 3 without electricity)
- 5 walk-in tent campsites
- 21-hole Disc Golf Course
- Miles of wooded, peaceful hiking trails
- Boat launch for river access
- Fishing
- Picnic areas
- Wildcat Pavilion
- Playground

- The Den (rental house)
- Hunting permitted after September 15 – May 15, excluding campground

Other wildlife and recreational areas managed by Benton County Conservation include: Atkins Round House area (83 acres, 7051 Benton/Linn Road, Atkins), Big Grove Township Wildlife Area (1-acre, 67th St & 21st Ave., Van Horne), Cherveny Wildlife Area (7 acres, 19th Avenue, Van Horne), County Care Facility Wildlife Area (25th Ave. Drive, Vinton), Jackson Township Wildlife Area (1-acre, 20th Ave. Drive & 57th St., Vinton), Pangborn Wildlife Area (15 acres, Shellsburg), Selken Wildlife Area (2.5 acres, Vinton), Tuttle Wildlife Area (2 acres, Norway), Vinton Boat Ramp (2 acres, Vinton), Wyman Memorial Park (5 acres, 5702 22nd Ave., Mt. Auburn).

State Parks and Recreation Areas:

Dudgeon Lake Game Area: North of Vinton along the Cedar River. 1,257 acres owned by the Iowa DNR. Hunting, fishing, hiking, and boat ramp access are among the features. Target range available.

Pleasant Creek State Recreation Area: East of Shellsburg. 410 acre lake with its surrounding area developed as a muti-use recreational activity. Swimming, beach, picnicking, hiking, camping, horseback and snowmobile trails are available. This lake was an emergency coolant reservoir for the Duane Arnold Nuclear Power Plant.

CRITICAL ASSETS OF BENTON COUNTY

The State of Iowa Homeland Security and Emergency Management (HSEM) lists 34 facilities in Benton County as critical assets. For security reasons, HSEM does not release information on the location or nature of these facilities.

LAND USE

Benton County has an Agricultural Land Preservation ordinance which identifies the unincorporated county land as agricultural and requires approval and permitting for any non-conforming land use. The county also has a Subdivision ordinance and a Nuisance ordinance. New development in the county unincorporated area that does not meet agricultural definitions must go through the designated process for approval.

Benton County has added a GIS department since the previous plan update however the unincorporated county is considered agricultural and does not have land use zoned areas.

COMMUNITY PROFILES

ATKINS



Figure 12: Atkins in 2018

Atkins is located at 41º59’41”N 91º51’40”W. According to the US Census Bureau, the city has a total area of 1.1 square miles, all of its land in Sections 13 and 14 of Fremont Township in Benton County, Iowa. The first Atkins Town Council meeting was held May 17, 1917. A petition for incorporation of the town was filed on May 31, 1917. Atkins was once an important railroad town, as it was exactly halfway between Omaha and Chicago. In 1882 the railroad came to Atkins. In 1969, passenger service was halted by the railroad and on December 8, 1978, the last freight train passed through. The City is part of the Benton Community School District. It has a public library, a volunteer fire department, and a first responder EMS service. Benton County Road E44 passes through the community and connects it to US Highway 30 just two miles south of the city.

The City of Atkins has seen rapid residential growth in population at an estimated 2.2% per year since the 2020 US Census. The estimated population today is 2,347. As of the census of 2020, there were 2,056 people, 756 households, and 625 families residing in the city. There are currently 780 housing units. The community is predominantly white

and 41% of households have children under the age of 18 living in them. The average family size is 3.0 and the stable median age in the city is approximately 37 years. The median household income is $115,625 and the employment rate is at 76%. 31.5% of households have one or more people 60 years of age or over. 96% of housing units are one unit structures and nearly 96% of housing units are owner occupied. The poverty rate is very low at 3.2%.

The community built a new city hall and library in 2012. A new water treatment plant was built in 2016. A new wastewater treatment facility was built in 2017. A new fire station was completed in February 2026.

The City of Atkins has 13 facilities valued at $18.5M, none of which are located in a flood zone.

Due to its proximity to Cedar Rapids, the City of Atkins has undergone substantial development in recent times. The 1990 census placed the city's population at 637. In 2000 it stood at 977, in 2010 at 1,670, and at 2020 it stood at 2,056.

Figure 13: Atkins Population Change 1960-2020

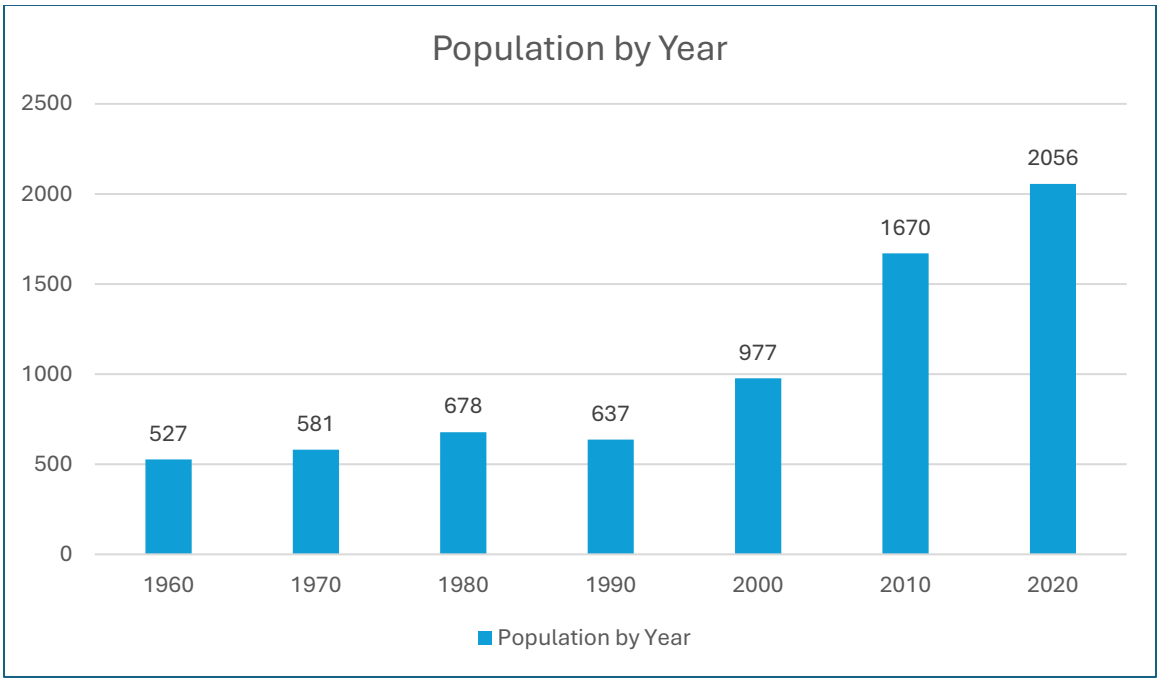


Table 19: Atkins Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	527	n/a	n/a
1970	581	54	10.2%
1980	678	97	16.7%
1990	637	-41	-6.0%
2000	977	340	53.4%
2010	1,670	693	70.9%
2020	2,056	386	23.1%
Average (1960-2020)		**1,529/6 =255**	**168.3%/6 = 28%**

Table 20: Atkins Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**1,899**	**2,154**
2030	**2,128**	**2,779**
2040	**2,357**	**3,585**
2050	**2,586**	**4,625**

Table 21: Vulnerable Populations in the City of Atkins; 2010-2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Atkins	522	31	166	10	754	36.7	238	11.6
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The city is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The city also has one full time City Manager and City Clerk, three full time public works staff, three library staff, and a utility billing clerk.

Codes, Ordinances, and Plans

The City of Atkins has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 94 – Public Water Well Protection
Chapter 145 – Dangerous Buildings
Chapter 150 – Building Numbering
Chapter 151 – Trees
Chapter 155 – Building Code (IBC 2003)
Chapter 157 – Storm Drainage
Chapter 158 – Sign Code
Chapter 165 – Zoning Regulations, including the Sign Code
Chapter 166 – Subdivision Regulations
Chapter 160 – Flood Plain Regulations (added in 2019)

The City of Atkins also has a Comprehensive plan that was developed in 2006 and a Capital Improvements Plan that is under development.

Streets

The City of Atkins has approximately 81 blocks and 13.5 miles of streets. The street surfaces are seal coated, asphalt, or concrete. The city's three public works employees take care of street maintenance for the city.

Water and Water Treatment

Water supply for the City of Atkins is supplied by two active wells with a total capacity of 660 gallons per minute. The city has two above ground water storage towers holding a maximum of 190,000 gallons of water. The city constructed a new 500 gallon per minute reverse osmosis water treatment plant at 400 Main Avenue. The plant has a new emergency backup power generator. Average daily water usage for the City of Atkins is 100,000 gallons. The City of Atkins has three public works employees that are the city's Water Department. The City of Atkins is in compliance with IDNR Well field protection requirements.

Wastewater Treatment

The City of Atkins has an Aero-mod Mechanical Plant located at 50 Railroad Street that was constructed in 2017. The wet weather design flow of the facility is 990,000 gallons of water per day. The City of Atkins has two public works employees that are the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Atkins contracts for law enforcement services with the Benton County Sheriff's office for coverage of approximately 25 hours per week. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Atkins receives fire protection from the Atkins Fire Department. The department is staffed with a maximum of 30 volunteers and maintains a fleet of four vehicles for firefighting and rescue operations. The department averages 35 alarms per year in the city and the surrounding rural district. The fire departments in Benton County and neighboring Linn County have formed a county-wide mutual aid agreement, making the services of an additional 25 fire departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical service for the City of Atkins is provided by the Atkins First Responders. The service is the initial primary emergency medical service provider for the 32 square mile area Atkins Fire District. The EMT non-transport level service is staffed with 16 volunteers trained to the First Responder, Emergency Medical Technician, or Paramedic level. The service responds to an average of 100 calls a year. Emergency medical transport service for the City of Atkins is provided by the Area Ambulance Service headquartered in Cedar Rapids.

Emergency Management

The City of Atkins works with the Benton County Emergency Management Agency for services include planning, preparedness, mitigation, response, recovery, training, and exercise for disaster events in the city and county. The Benton County Emergency Management Coordinator works out of the Agency office in Vinton but is available to assist with resource coordination during and following an event impacting the city.

Utilities

Natural Gas Provider: Mid America Energy

Electricity: Alliant Energy

Telecommunications: Atkins Telephone Co. (ATC)

Cable TV: Atkins Telephone Co. (ATC)

Water and Sewer: City of Atkins

Trash Collection: S&J Sanitation of Marengo, IA

Business and Industry

The City of Atkins is home to fifteen businesses and no industries. The Benton County Community School District, Atkins Elementary School, is the city's largest employer with 21 employees. The other two largest employers in the city are the Atkins Savings Bank with 9 employees and the Atkins Lumber Company with 8 employees.

Employment

According to the US Census Bureau in 2020 the largest number of employed residents of the City of Atkins were working in the industry of educational services, and health care and social assistance. This was followed by those working in the manufacturing industry. The least number of residents are working in the fields of agriculture, forestry, fishing and hunting, and mining. The employment rate for the population of the City of Atkins was 76% in 2020. The current unemployment rate is 2.4%.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities could impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk. The following were identified as critical facilities in the City of Atkins:

Facilities *essential* to the health and welfare of the entire population, especially following a hazard event:

Atkins City Hall/Library, 480 3rd Ave., Atkins, IA 52206
Atkins Fire Station, 451 2nd Ave.., Atkins, IA 52206

Emergency Shelters

Atkins American Legion Hall, 89 Main Ave., Atkins, IA 52206
Atkins Fire Station, 451 2nd Ave., Atkins, IA 52206
Atkins City Hall/Library 480 3rd Ave., Atkins, IA 52206

Transportation Systems

County Roads E-44

Lifeline Utility Systems

City of Atkins Water Treatment Plant 400 Main Ave., Atkins, IA 52006
City of Atkins City Wells 105 2nd Ave. & 400 Main Ave., Atkins, IA 52006
City of Atkins Wastewater Treatment Plant, 50 Railroad St., Atkins, IA
City of Atkins Public Water Department 111 1st St., Atkins. IA 52006
City of Atkins Lift Station, 11 Northview Ave. Atkins, IA 52206
City of Atkins Water Tower, 404 Main Avenue, Atkins, IA 52006
City of Atkins Water Tower-Pump Control , 174 1st St., Atkins, IA 52006

Vulnerable Population Centers

Benton Community Schools Atkins Elementary Center 217 4th Ave., Atkins,
Early Beginnings Daycare 402 Cardinal Ave., Atkins, IA 52206
Atkins Senior Housing, Parkview Apartments, 323 2nd Ave., Atkins, IA

Financial Institutions

Atkins Savings Bank & Trust, 97 Main Ave., Atkins, IA

Food Suppliers

Bobby T's 96 Main Ave., Atkins, IA 52206
The Depot Express 188 Parkridge Road, Atkins, IA 52206
Casey's General Store 401 Stonebrook Dr, Atkins, IA 52206
Dollar General 402 Stonebrook Dr, Atkins, IA 52206

Hardware Stores

Atkins Lumber Co. 81 First Ave., Atkins, IA 52206

Gas & Fuel

The Depot Express 188 Partridge Road, Atkins, IA 52206
Casey's General Store 401 Stonebrook Dr, Atkins, IA 52206

Pharmaceutical Drug Suppliers

Atkins Pharmacy 401 Cardinal Ave, Atkins, IA 52206

Healthcare Facilities

Atkins Family Medical Clinic 401 Cardinal Ave., Atkins, IA 52206
Atkins Pharmacy 401 Cardinal Ave., Atkins IA 52206

Funeral Homes

None

Veterinary Clinics

None

Development Trends

The City of Atkins is one of those cities along the eastern side of Benton County where the county's growth is occurring. The city's population has more than tripled since 1990 when the city's population stood at 637 to 2,056 in 2020. The city has seen an approximate growth of 2.2% in population each year since the 2020 US Census. The estimated population today is 2,347. Projections are that the city's population will

continue to increase. Primary growth areas have been in developments on the city's east, south, and west side.

The City of Atkins does not report any plans to annex more land for the city at this time. In the last ten years the city has constructed a new public works building, a new City Hall/Community Center, and a new Fire Station.

Single-family new house construction in Atkins, Iowa (www.city-data.com):

1997: 14 buildings, average cost: $ 11,000

1998: 16 buildings, average cost: $105,000

1999: 11 buildings, average cost: $145,000

2000: 17 buildings, average cost: $185,000

2001: 14 buildings, average cost: $186,900

2002: 18 buildings, average cost: $182,200

2003: 23 buildings, average cost: $183,000

2004: 37 buildings, average cost: $200,300

2005: 36 buildings, average cost: $188,600

2006: 37 buildings, average cost: $212,600

2007: 18 buildings, average cost: $163,600

2008: 12 buildings, average cost: $223,800

2009: 10 buildings, average cost: $212,300

2010: 5 buildings, average cost: $215,000

2011: 10 buildings, average cost: $245,100

2012: 13 buildings, average cost: $232,700

2013: 13 buildings, average cost: $229,300

2014: 7 buildings, average cost: $315,100

2015: 15 buildings, average cost: $250,000

2016: 16 buildings, average cost: $255,300

2017: 19 buildings, average cost: $241,200

2018: 11 buildings, average cost: $266,800

2019: 11 buildings, average cost: $266,800

2020: 6 buildings, average cost: $258,300

2021: 5 buildings, average cost: $153,600

2022: 3 buildings, average cost: $341,700

2023: 5 buildings, average cost: $269,000

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City also has fewer properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Atkins include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Atkins has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code ordinance, Storm Drainage ordinance, Zoning Regulations, Subdivision Regulations, and Flood Plain Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Atkins is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Atkins participates in the National Flood Insurance Program. The city does have an adopted Flood Plain Regulation that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the city Building Official as the manager/administrator of the Flood Plain Regulations.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Atkins Fire Department
  EMS: Atkins First Responders and Area Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- EMA Indoor Warning System receiver in elementary school building
- Various ordinances for community safety and cleanliness
- Backup generator installed at new Fire Station on January 15, 2026.
- City funded new backup generator for the American Legion Building so it can remain an emergency shelter.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Develop and enhance local emergency operations plan. *Ongoing*
- Maintain and support community and county public safety and emergency service departments. *Ongoing*
  - *New Fire Station was built in 2025 after previous station was destroyed in 2020 Derecho event.*
- Develop community emergency shelters. *Ongoing*
  - *New backup generator provided by City to American Legion Building at 89 Main Avenue as it is an emergency shelter.*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Maintain electronic resource directory of local resources. *No longer a priority.*
- Encourage construction of tornado safe rooms. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority.*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Develop and enhance local emergency operations plan.
- Maintain and support community and county public safety and emergency service departments.
- Encourage citizen disaster preparedness.
- Develop community emergency shelters.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. Purchase and install backup generator for City Hall.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Encourage construction of tornado safe rooms.
- Compliance with the National Flood Insurance Program regulations.

BELLE PLAINE

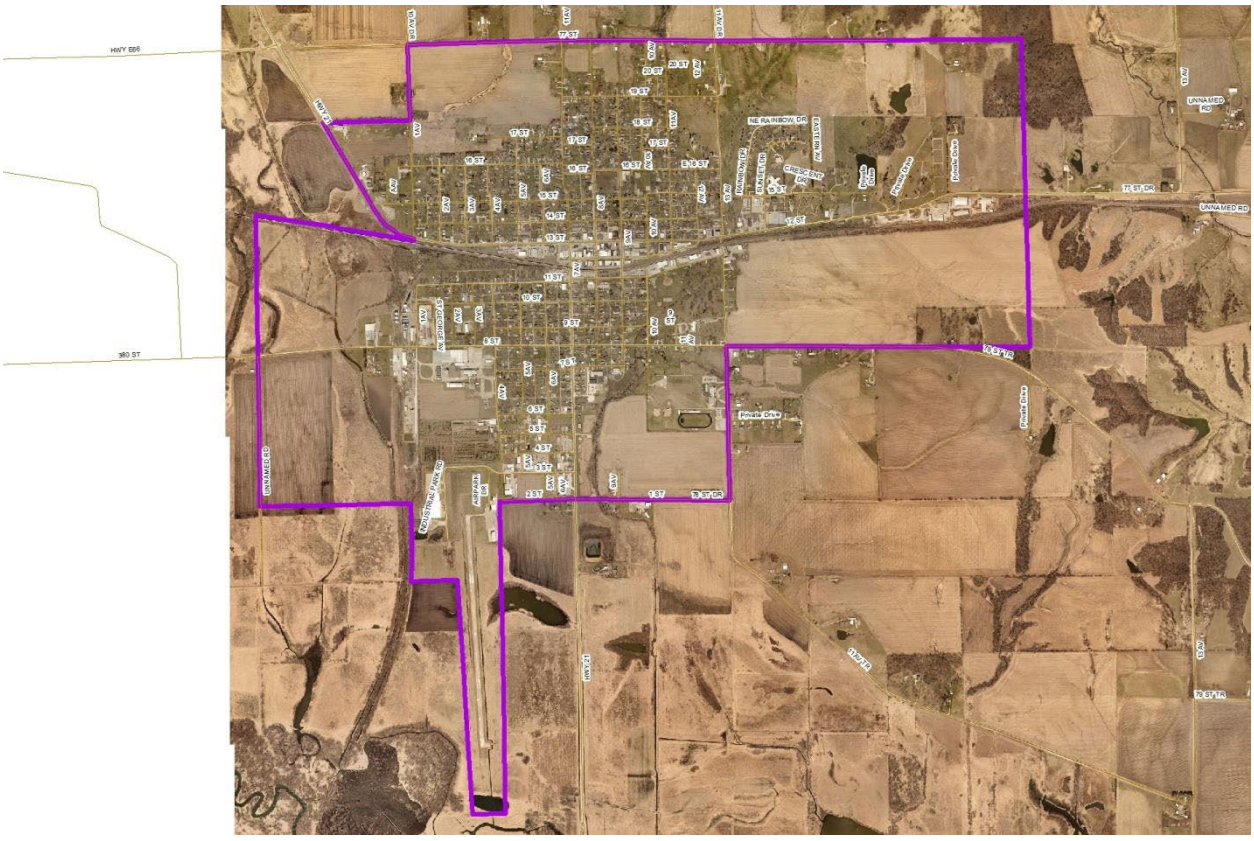


Figure 14: Belle Plaine in 2018

Belle Plaine is the second largest city in Benton County and is located in southwest corner of the county at 41º53’48”N 92º16’39”W. According to the United States Census Bureau, the city has a total of 3.23 square miles, of which, 3.22 square miles are land and 0.01 square miles are water. The City is located two miles north of the Iowa River on both the historic Lincoln Highway and the cross country tracks of the Union Pacific Railroad. The City of Belle Plaine was founded in 1862 with the extension of the railroad and its growth played a significant role in the rapid growth of the City in the late 1800’s. The railroad brought mail, supplies, and passengers to the City. Land was purchased so quickly that a town square, typical in most towns of this era, was never established.

Belle Plaine was in the world spotlight in 1886 with the accidental discovery of the Jumbo Well. An attempt at digging a new well erupted into an untamable geyser spewing 3,400 gallons per minute for 14 months. Many claimed the water’s unique mixture of minerals had medicinal uses.

In 1894, a devastating fire destroyed most of the business district. The community united and within five months celebrated the reconstructed Belle Plaine with the theme “From Ashes to Elegance” showing true community spirit.

As of the US Census of 2020, there were 2,330 people, 1,059 households, and 646 families in the city. There are 1,212 housing units. The community is predominantly white and 20.3% have children under the age of 18 years living in them. The average family size is 2.76 and the median age in the city is 44.4 years. The median household income is $31,973 and the employment rate is 63.1%. 42.1% of households have one or more people 60 years of age or over. 85% of housing units are one unit structures and 79.8% of housing units are owner occupied.

Figure 15: Belle Plaine Population Change 1960-2020

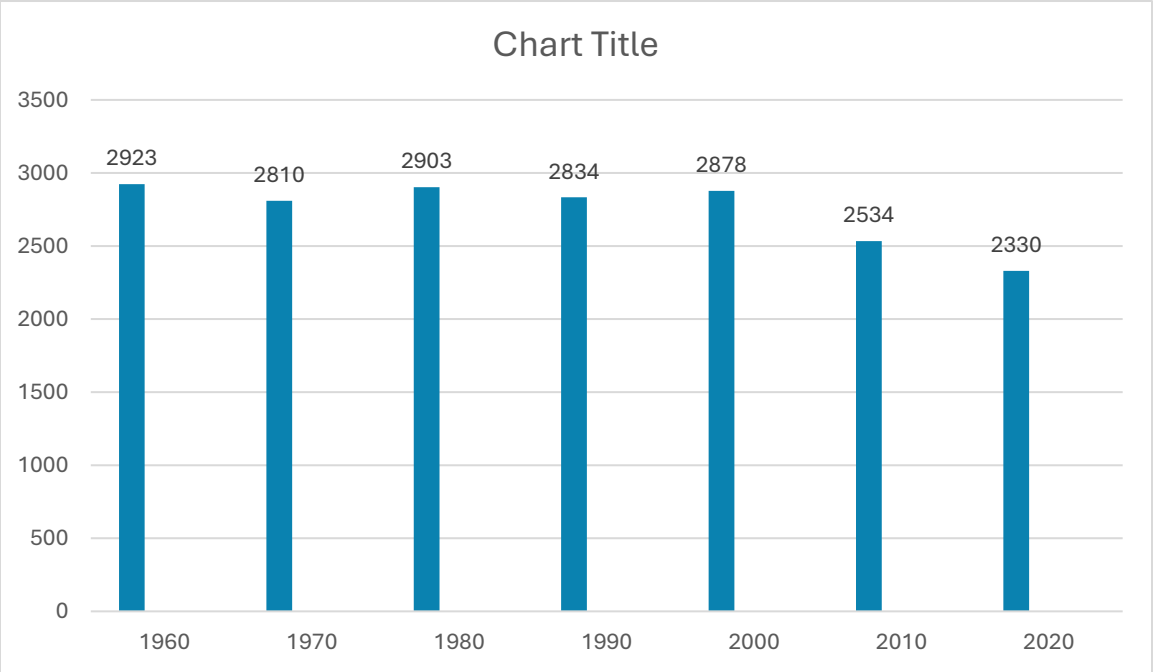


Table 22: Belle Plaine Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	2,923	n/a	n/a
1970	2,810	-113	-3.9%
1980	2,903	93	3.3%
1990	2,834	-69	-23.7%
2000	2,878	44	15.5%
2010	2,534	-344	-12%
2020	2,330	-204	-8%

Table 23: Belle Plaine Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**2,436**	**2,468**
2030	**2,338**	**2,404**
2040	**2,240**	**2,341**
2050	**2,142**	**2,280**

Table 24: Vulnerable Populations in the City of Belle Plaine 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Belle Plaine	595	23	483	19	0	0	171	7.3
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Belle Plaine is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City has a full time city administrator, 13 full time staff, and 8 part-time employees.

Codes, Ordinances, and Plans

The City of Belle Plaine currently has a Development Ordinance, which includes provisions for the establishment and enforcement of both Zoning and Subdivision Ordinance regulations. In addition, the City also has and enforces a local Floodplain Ordinance and has a floodplain management plan and drainage ordinance. The City of Belle Plaine has adopted and enforces the 2000 edition of the International Residential Building Code. The city has updated its Comprehensive Plan and does have a Capital Improvements Plan.

Streets

The City of Belle Plaine has approximately 150 blocks and 30 miles of streets. The street surfaces are concrete, seal coated, and black top. The city's public works employee manages street care for the city.

Water and Water Treatment

The Belle Plaine water system has a capacity of 750,000 gallons per day (GPD). This is the elevated storage capacity for the one municipal water tower. Average daily consumption of water has ranged from 165,000 GPD in the winter to 180,000 GPD in the summer. Peak demand at any one time is less than 200,000 GPD. Average daily use per capita is approximately 135 gallons per day.

Wastewater Treatment

The City's wastewater treatment plant has excess capacity for future growth. The current average daily load is approximately 350,000 gallons daily (GPD). Projected loads based on the population growth should not reach 500,000 GPD. The projected total may increase if the industrial park is fully developed within the life of this plan. However, the treatment facility has a capacity of 1.75 million GDP. A flow equalization basin was added in 2019 with a capacity of 4.6 million gallons.

Emergency Services

Law Enforcement

The City of Belle Plaine has its own police department. The department has five full time officers, which includes a full time Chief of Police, four full time officers, and several reserve officers.

Fire Department

The City of Belle Plaine receives fire protection from the Belle Plaine Fire Department. The department is staffed with 40 dedicated members and maintains a fleet of six vehicles for firefighting and rescue operations. The department averages 60 alarms per year in the city and the surrounding rural district comprising 75 square miles.

Emergency Medical Services

Emergency medical services for the City of Belle Plaine is provided by the Belle Plaine Area Ambulance Service. This private service is the initial primary emergency medical service provider for the 75 square mile area of the Belle Plaine Fire District. The service is both a Basic and Advanced Life Support Transport Service and is staffed with about 30 employees. The service has two full time directors and responds to an average of 450 calls for service a year.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: Windstream, USA Communications, Mediacom

Cable TV: Mediacom, USA Communications, Dish, Direct TV

Business and Industry

The City of Belle Plaine is home to approximately 150 businesses. Belle Plaine Community Schools is the city's largest employer.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk. The Planning Committee identified the following critical facilities:

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Belle Plaine City Hall – 1207 8th Avenue
Belle Plaine Fire Station – 504 13th Street
Belle Plaine Police Station – 1207 8th Avenue
Belle Plaine Community Center – 1309 5th Avenue (Emergency Shelter)
Belle Plaine Area Ambulance Service – 1308 ½ 13th Street
US Post Office – 1008 13th Street

Transportation Systems

Highway 21
County Road E-66

Lifeline Utility Systems

City of Belle Plaine Wells (5)
City of Belle Plaine Wastewater Treatment Plant – 7874 11th Avenue
City of Belle Plaine Public Works Department – 806 3rd Avenue

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Belle Plaine Junior High School/High School – 610 13th Avenue
Longfellow Elementary School – 707 7th Street
Ark Academy – 308 7th Avenue
Kid's Kingdom Preschool – 1523 Sunset Drive
Belle Plaine Specialty Care – 1505 Sunset Drive

Financial Institutions

Chelsea Savings Bank – 601 13th Street
Midwest One Bank – 802 13th Street

Food Suppliers

Country Food Pride - 1206 7th Avenue
Dollar Fresh– 509 13th Street
Town & Country Wholesale – 1102 12th Street

Hardware Store
Belle Plaine Hardware – 827 12th Street

Gas & Fuel
Casey's General Store – 907 13th Street
Conoco Zip Mart – 702 13th Street
Grieder's Standard – 701 13th Street

Prescription Drug Suppliers
Hartig Drug – 810 12th Street

Healthcare Facilities
Jones Regional Medical Center/Unity Point Clinic – 105 9th Avenue
Athletico Physical Therapy – 509 13th Street
Walter Family Chiropractic – 502 8th Street
Belle Plaine Chiropractic – 732 12th Street
Kingdom Dental – 804 12th Street

Funeral Service
Hrabak-Neuhaus Funeral & Cremation Service – 1704 7th Avenue

Veterinary Service
Countryside Vet Clinic – 3622 Hwy 21

Development Trends

Single-family new house construction in Belle Plaine, Iowa (www.city-data.com)

1997: 6 buildings, average cost: $ 83,000
1998: 6 buildings, average cost: $ 83,000
1999: 6 buildings, average cost: $ 90,000
2000: 5 buildings, average cost: $ 95,000
2001: 5 buildings, average cost: $ 95,000
2002: 4 buildings, average cost: $ 95,000
2003: 1 building, cost: $ 60,000
2004: 2 buildings, average cost: $112,000
2005: 4 buildings, average cost: $110,300
2006: 1 building, cost: $100,000
2007: 1 building, cost: $110,000
2008: 2 buildings, average cost: $110,000
2009: 1 building, cost: $110,000
2010: 3 buildings, average cost: $110,000
2011: 3 buildings, average cost: $110,000
2012: 3 buildings, average cost: $110,000
2013: 4 buildings, average cost: $110,000
2014: 4 buildings, average cost: $110,000
2015: 4 buildings, average cost: $110,000
2016: 4 buildings, average cost: $110,000

2017: 4 buildings, average cost: $110,000
2018: 3 buildings, average cost: $110,000
2019: 3 buildings, average cost: $110,000
2022: 3 buildings, average cost: $320,000
2023: 2 buildings, average cost: $275,000
2024: 3 buildings, average cost: $300,000

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City also has fewer properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Belle Plaine include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail/air, and radiological event.

Current Mitigation Activities and Measures

- Emergency Services:
  - Law: Belle Plaine Police Department
  - Fire: Belle Plaine Fire Department
    - New SCBAs were acquired
    - Updated fire truck has been ordered
  - EMS: Belle Plaine Ambulance
  - Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Electricity required outdoor warning siren
- EMA Indoor Warning System receiver in all school buildings and extended care facility
- Various ordinances for community safety and cleanliness

Capabilities to Support Mitigation Strategy

The City of Belle Plaine has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code, Development Ordinance that includes Zoning and Subdivision regulations, a Floodplain Ordinance, a Floodplain Management Plan, Drainage Ordinance, and a Comprehensive Plan that support mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources within the city as well as access to the county emergency management agency. However, the City of Belle Plaine

is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Belle Plaine participates in the National Flood Insurance Program. The city does have an adopted Floodplain Ordinance and Floodplain Management Plan that meet the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted ordinance identifies the City Administrator as the manager/administrator of the Floodplain Ordinance.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
    - Community Center backup generator – *Complete*
    - Fire Department backup generator – *Complete*
    - Wellfield backup generator - *Ongoing*
- Public Awareness *Ongoing (combine with other public awareness measure)*
- Develop and enhance local emergency operations plan. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Improve outdoor warning system. *Complete – purchased two additional warning sirens to give the community a total of four*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority, will refer to county public health.*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Continue HAZMAT agreements and support regional HAZMAT Teams.
- Encourage citizen disaster preparedness.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Public Awareness.
- Develop and enhance local emergency plan.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Improve safety at rail crossings.
- Support the state's plan to raise Highway 21 south of Belle Plaine to help prevent water from going over highway.
- Continue working on North Wetland project to prevent so much runoff going straight to Salt Creek and instead holding it near our wellfield to replenish our aquifers.
- Compliance with National Flood Insurance Program regulations.

BLAIRSTOWN

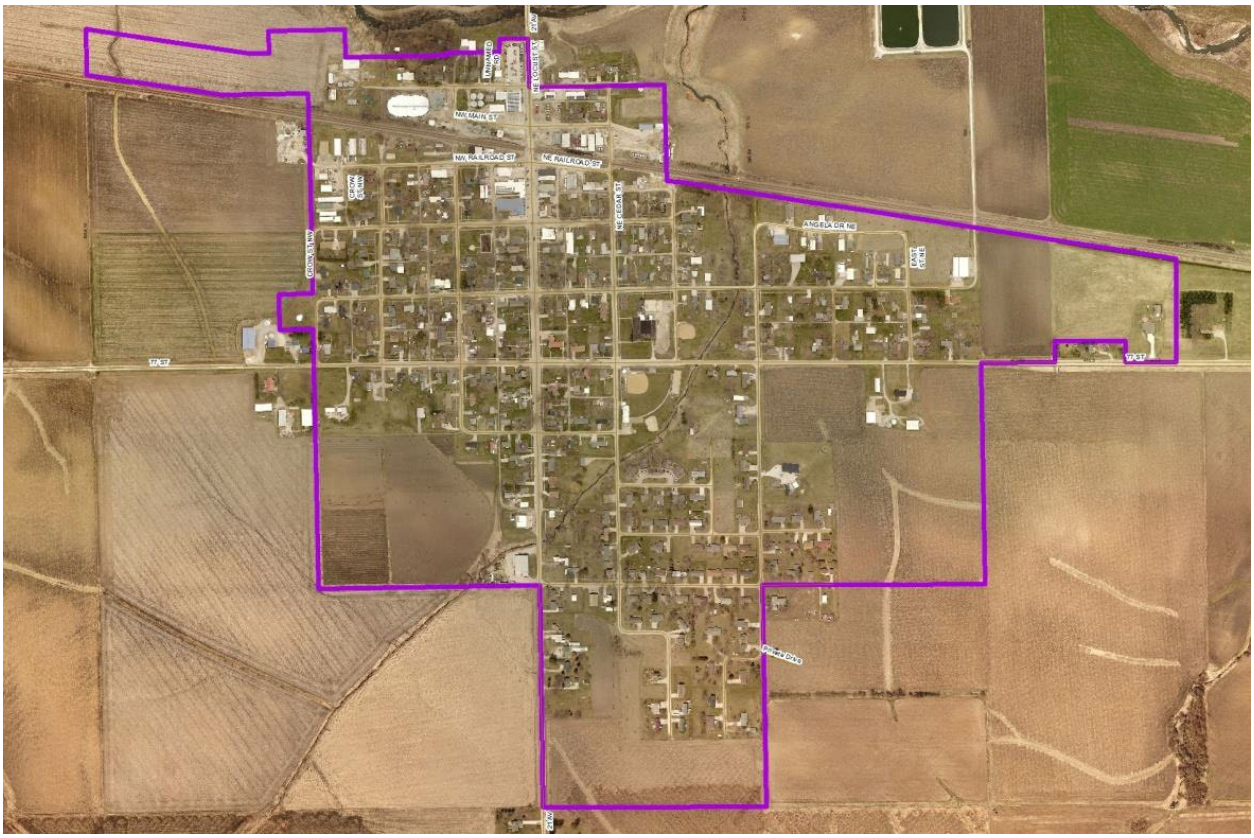


Figure 16: Blairstown in 2018

Blairstown is located at 41º54’25”N 92º5’0”W in Sections 13, 14, 23, and 24 of Leroy Township in Benton County, Iowa. According to the United States Census Bureau, the city has a total are of 0.52 square miles, all of which is land.

Blairstown was established in 1860 when millionaire John I. Blair laid a railroad track for the Chicago, Iowa, and Nebraska Railroad to the location that would become Blairstown. The first plat for the city was filed with the Benton County Recorder on May 13, 1862. At the close of that year the population of the city was 10 families. By the end of the Civil War in 1865 the city’s population had swelled to 1,100.

As of the US Census of 2020, there were 713 people, 300 households, and 192 families in the city. There are 314 housing units. The community is predominantly white and 28.0% of households have children under the age of 18 years living in them. The average family size is 2.82 and the median age in the city is 36.2 years. The median household income is $75,714 and the employment rate is 67%. 39.9% of households have one or more people 65 years of age or over. 93.4% of housing units are one unit structures and 77.1% of housing units are owner occupied.

Figure 17: Blairstown Population Change 1960-2020

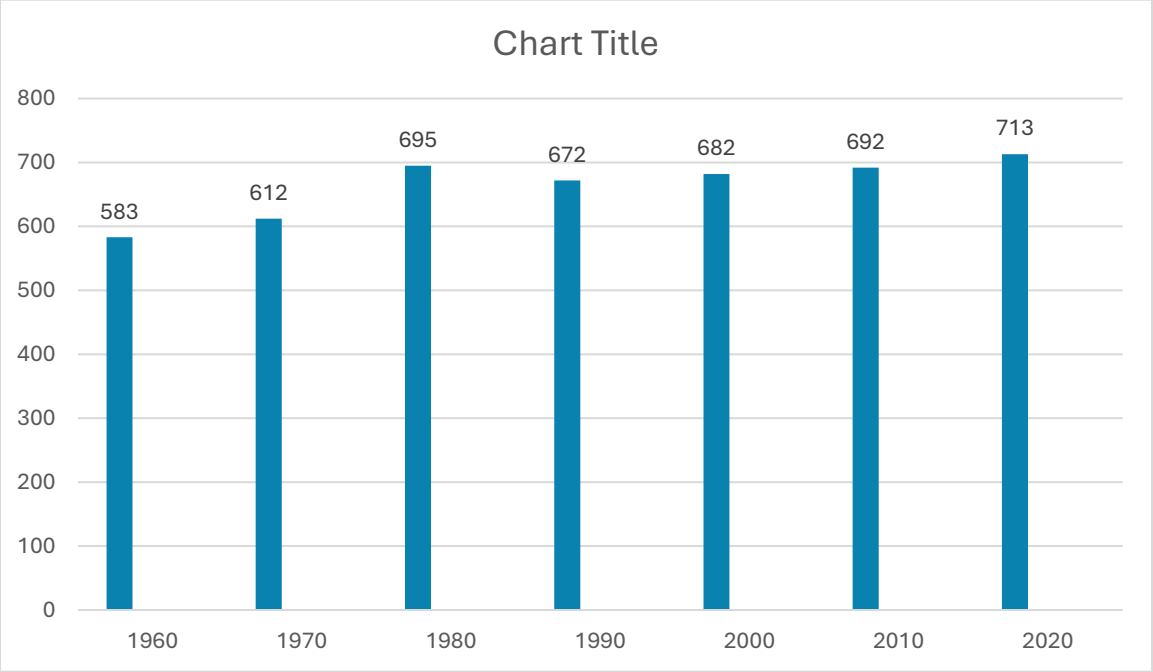


Table 25: Blairstown Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	583	n/a	n/a
1970	612	29	4.9%
1980	695	83	13.5%
1990	672	-23	-3.3%
2000	682	10	1.4%
2010	692	10	1.4%
2020	713	21	3%

Table 26: Blairstown Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**714**	**718**
2030	**736**	**745**
2040	**758**	**773**
2050	**780**	**802**

Table 27: Vulnerable Populations in the City of Blairstown 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Blairstown	178	26	118	17	2	0	164	23
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Blairstown is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City has one part-time city clerk, one full time public works employee, a full time ambulance director, a librarian, and an assistant librarian.

Codes, Ordinances, and Plans

The City of Blairstown has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 94 -Public Water Well Protection
Chapter 145 -Dangerous Buildings
Chapter 150 -Building Numbering
Chapter 151 -Trees
Chapter 155 -Building Code
Chapter 157 -Storm Drainage
Chapter 158 -Sign Code
Chapter 160 -Flood Plain Regulation

Streets

The City of Blairstown has approximately 40 blocks and 8 miles of streets. The street surfaces are seal coated and black top. The city's public works employee manages street care for the city.

Water and Water Treatment

Water supply for the City of Blairstown is supplied by two active wells with a capacity of 150 gallons per minute each. The wells are located at 106 ½ West Street. The city has one above ground water storage tower built in 2002 which holds a maximum of 150,000 gallons of water. The city's water treatment plant is also located at 106 ½ West Street and is an iron removal and chlorination system that has the capacity of 220,000 gallons per day. The water supply system now has backup electrical power generator. The City of Blairstown's public works employee is the city's Water Department.

Wastewater Treatment

The City of Blairstown has a three cell aerated lagoon system on the northeast corner of the city. The system was constructed in 1970 and has a capacity of 400,000 gallons per day. There is one lift station for the lagoon. The system now has UV treatment and a backup electrical power generator. The City of Blairstown's public works employee is the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Blairstown contracts for law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 18 hours per week, or 936 hours per year. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Blairstown receives fire protection from the Blairstown Fire Department. The department is staffed with 18 dedicated members and maintains a fleet of five vehicles for firefighting and rescue operations. The department averages 25 alarms per year in the city and the surrounding rural district comprising 70 square miles. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Blairstown is provided by the Blairstown Ambulance Service. This nonprofit volunteer service is the initial primary emergency medical service provider for the 70 square mile area of the Blairstown Fire District. The service also provides emergency medical service response to neighboring communities and surrounding rural areas for the communities of Norway, Watkins, Luzerne, and Newhall in southern Benton County. The provisional paramedic level service is staffed with 25 volunteers trained to the Emergency Medical Technician or Paramedic level. The service

has a full time paid director and responds to an average of 175 calls for service a year.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: Coon Creek Telephone Company, USA Communications, Mediacom

Cable TV: Mediacom, Coon Creek Telephone Company, USA Communications, Dish, Direct TV

Business and Industry

The City of Blairstown is home to approximately 15 businesses. Rabe Hardware is the city's largest employer with 15 employees. Other largest employers in the city are Nutrien Ag Solutions, and Stony Creek Marble Products.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Blairstown City Hall – 305 Locust Street NW
Blairstown Fire Station – 109 Spruce Street NW
Blairstown Ambulance Service – 205 Main Street NE
U.S. Post Office – 311 Locust Street NW

Emergency Shelters

Blairstown Community Building – 305 Locust Street NW
Blairstown American Legion Hall – 102 Benton Street NE
Blairstown Fire Station – 109 Spruce Street NW

Transportation Systems

Highway 82
County Roads E-66 and V-66

Lifeline Utility Systems

City of Blairstown Water Treatment Plant – 106 ½ West Street
City of Blairstown City Wells: 106 ½ West Street
City of Blairstown Wastewater Treatment Plant –NE of town
City of Blairstown Public Works Department

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

None

Financial Institutions
Benton County State Bank – 212 Locust Street NE

Food Suppliers
Btown Express: 502 Locust Street NE

Hardware Store
Rabe Hardware – 317 Locust Street NW

Gas & Fuel
Kimm Oil Company – 604 Locust Street NE
BTown Express – 502 Locust Street NE

Prescription Drug Suppliers
None

Healthcare Facilities
Walter Family Chiropractic – 105 ½ Locust Street SE Ste B

Funeral Service
Phillips Funeral Home – 108 Fremont Street SE

Veterinary Service
None

Development Trends

Single-family new house construction in Blairstown, Iowa (www.city-data.com)

1997: 2 buildings, average cost: $ 90,000
1998: 3 buildings, average cost: $ 96,000
1999: 3 buildings, average cost: $136,700
2000: 1 buildings, average cost: $175,000
2001: 4 buildings, average cost: $ 88,800
2002: 2 buildings, average cost: $ 87,500
2003: 2 buildings, average cost: $125,000
2004: 1 buildings, average cost: $129,600
2005: 1 buildings, average cost: $150,000
2007: 1 building, cost: $100,000
2009: 1 building, cost: $ 70,000

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City has the same number of properties in the 100-year flood hazard area as reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Blairstown include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Blairstown has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code ordinance, Storm Drainage ordinance, and a Flood Plain Regulations ordinance that support mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Blairstown is a very small rural community and these resources are much more limited than those of a larger urban community.

NFIP Participation

The City of Blairstown participates in the National Flood Insurance Program. The city does have an adopted Flood Plain Regulations ordinance that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted ordinance identifies the City Clerk as the manager/administrator of the Floodplain Ordinance.

Current Mitigation Activities and Measures

- Emergency Services:
  - Law: Benton County Sheriff's Department
  - Fire: Blairstown Fire Department
  - EMS: Blairstown Ambulance
  - Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- Various ordinances for community safety and cleanliness
- Addition of backup electrical power generator for water supply system
- Addition of backup electrical power generator for wastewater system

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Develop community emergency shelters. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority – will use county public health planning and equipment.*
- Emergency/disaster response training and exercises for emergency responders and key county and community leaders. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Encourage citizen disaster preparedness.
- Develop community emergency shelters.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Emergency disaster response training and exercises for emergency responders and key county and community leaders.
- Improve safety at rail crossings.
- Compliance with National Flood Insurance Program regulations.

GARRISON

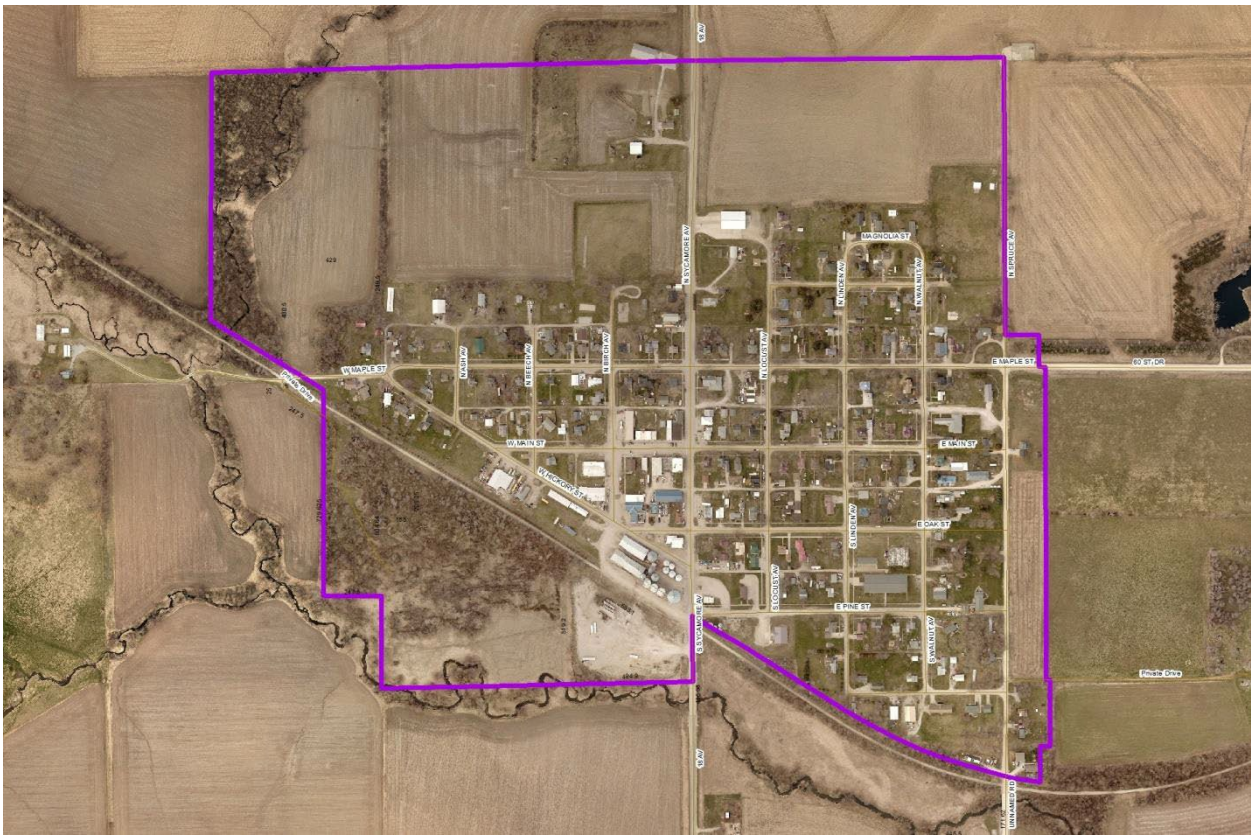


Figure 18: Garrison in 2018

The City of Garrison in central Benton County, is located at 42º8’37”N 92º8’35”W. According to the United States Census Bureau, the city has a total area of 0.25 square miles, all of which is land. The City of Garrison had its beginnings in 1873 when the town of Benton was laid out on the farm of Jonathon and Susan Barkdoll. The railroad reached the town in 1873 and in 1877 the town’s name was changed to Garrison. The City of Garrison was incorporated in 1883. In 1911 a three block area, nearly the entire business district of the city was destroyed by fire. In 1961 a tornado struck the city and killed two people at the Methodist Church. On July 11, 2011 a Derecho Windstorm caused extensive damage to the entire city, destroying the city’s library and Emergency Services Building. Both were rebuilt.

As of the US Census of 2020, there were 344 people, 133 households, and 91 families in the city. There are 153 housing units. The community is predominantly white and 18.4% of households have children under the age of 18 years living in them. The average family size is 2.75 and the median age in the city is 38 years. The median household income is $42,788 and the employment rate is 60.8%. 64% of households have one or more people 65 years of age or over. 89.6% of housing units are one unit structures and 76% of housing units are owner occupied.

Figure 19: Garrison Population Change 1960-2020

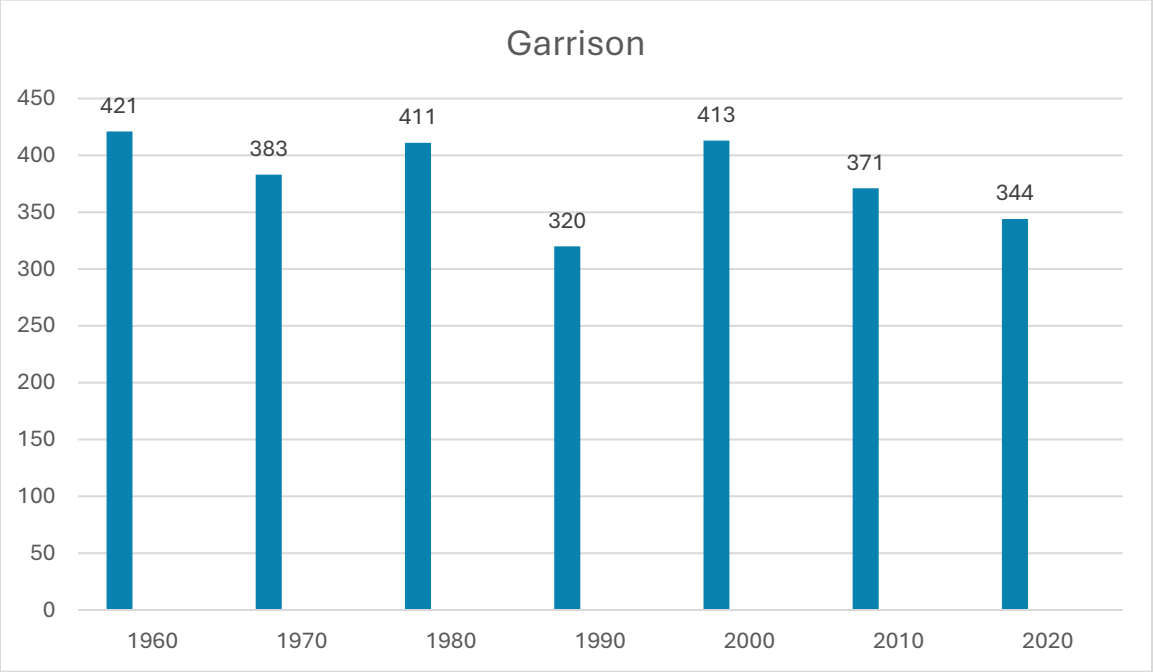


Table 28: Garrison Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	421	n/a	n/a
1970	383	-38	-9%
1980	411	28	7.3%
1990	320	-91	-22.1%
2000	413	93	29.1%
2010	371	-42	-10.2%
2020	344	-27	-7.2%

Table 29: Garrison Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**361**	**367**
2030	**351**	**363**
2040	**341**	**359**
2050	**331**	**355**

Table 30: Vulnerable Populations in the City of Garrison 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Garrison	91	24.5	23	6	1	.29	34	9.8
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Garrison is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City has one part-time city clerk, one part time public works employee, and a part time librarian.

Codes, Ordinances, and Plans

The City of Garrison has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 100 -Storm Drainage
Chapter 145 -Dangerous Buildings
Chapter 150 -Building Regulations
Chapter 153 -Trees
Chapter 158 -Property Maintenance
Chapter 160 – Flood Plain Management

Streets

The City of Garrison has approximately 20 blocks and 6 miles of streets. The street surfaces are gravel, seal coated and black top. The city's public works employee manages street care for the city.

Water and Water Treatment

Water supply for the City of Garrison is supplied by one active well with a capacity of 120 gallons per minute each. The well is located on North Locust Street. There is another reserve well which can be used in an emergency. The city has one above ground water storage tower built in 1940 which holds a maximum of 40,000 gallons of water. The city's water treatment plant is also located on North Locust Street and is an iron removal and chlorination system that has the capacity of 120 gallons per minute. The City of Garrison's public works employee is the city's Water Department.

Wastewater Treatment

The City of Garrison has an aerated lagoon system located southeast of the city along County Road E22. The City of Garrison's public works employee is the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Garrison contracts law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 3 hours per week, or 156 hours per year. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Garrison receives fire protection from the Garrison Volunteer Fire Department. The department is staffed with 25 dedicated volunteers and maintains a fleet of three vehicles for firefighting and rescue operations. The department averages 20 alarms per year in the city and the surrounding rural district comprising 54 square miles. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency. The Garrison Fire Department also has an automatic aid agreement with the Cedar/Mt. Auburn Fire Department to the north.

Emergency Medical Services

Emergency medical services for the City of Garrison is provided by the Garrison First Responders. This service is the initial primary emergency medical service provider for the 54 square mile area of the Garrison Fire District. The service is non-transport and averages 30 calls per year. It is staffed with 10 volunteers trained from first responder through paramedic levels. Transport services are provided by the Dysart and North Benton Ambulance Service.

Utilities

Natural Gas: Northern Natural Gas

Electricity: Alliant Energy

Telecommunications: Keystone Communications

Cable TV: Keystone Communications

Business and Industry

The City of Garrison is home to approximately 5 businesses. J&R Enterprises, with 5 employees, is the city's largest employer.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Garrison Emergency Service's Building/Fire Station – 205 North Sycamore Avenue
Garrison City Office – 201 East Pine Street
Garrison Public Works Building – 109 South Birch Street
U.S. Post Office – 102 Pine Street

Emergency Shelters

Garrison Fire Station – 205 North Sycamore Avenue
Garrison Library – 201 East Pine Street
St. Mark's Lutheran Church – 101 North Walnut Street

Transportation Systems

Highway 198

Lifeline Utility Systems

City of Garrison Water Treatment Plant – 204 North Locust Street
City of Garrison City Wells: 204 North Locust Street
City of Garrison Wastewater Treatment Plant – 500 South Spruce Avenue
City of Garrison Public Works Department – 109 South Birch Street
City of Garrison Lift Station – 6085 18th Avenue Drive

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Kozy Kountry Apartments – 300 East Pine Street

Financial Institutions

None

Food Suppliers

Hitchin Post: 202 South Sycamore Avenue

Hardware Store

None

Gas & Fuel

FS Fuel Stop – Highway 198 South

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

Single-family new house construction in Garrison, Iowa (www.city-data.com)

2018: 1 building, cost: $250,000
2019: 1 building, cost: $250,000
2023: 1 building, cost: $343,500

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City also about the same number of properties in the 100-year flood hazard area as reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Garrison include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Garrison has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Regulations, Storm Drainage ordinance, and a Flood Plain Management ordinance that support mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Garrison is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Garrison participates in the National Flood Insurance Program. The city does have an adopted Flood Plain Management ordinance that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted ordinance identifies the City Clerk as the manager/administrator of the Floodplain Ordinance.

Existing Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Garrison Fire Department
  EMS: Garrison First Responders and North Benton Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren installed 2011
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Develop and enhance local emergency operations plan. *Ongoing*
- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Develop and enhance local emergency operations plan.
- Maintain and support community and county public safety and emergency service departments.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Encourage citizen disaster preparedness.
- Continue HAZMAT agreements and support regional HAZMAT teams.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages to include permanently mounted generators at the lift station and well pump house.
- Planning and medical equipment to support human disease and pandemic response.
- Compliance with the National Flood Insurance Program regulations.

KEYSTONE

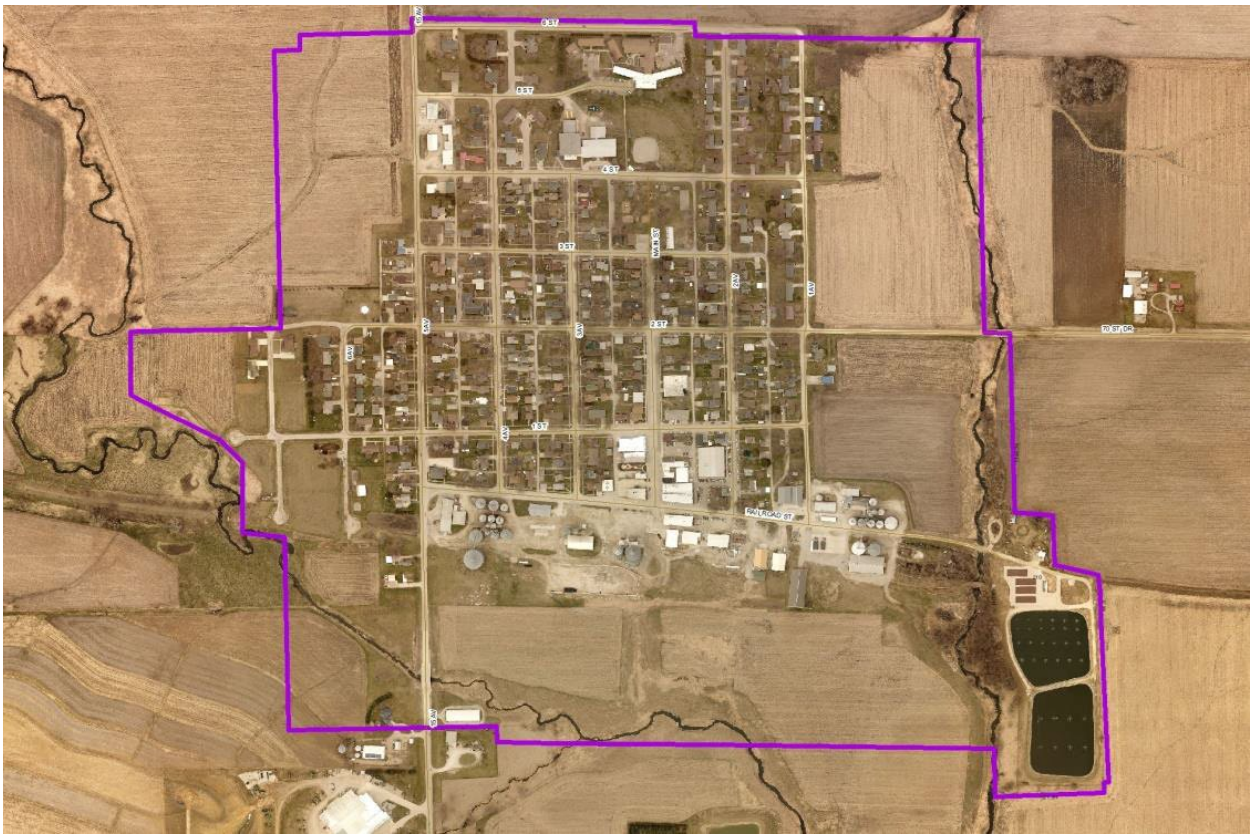


Figure 20: Keystone in 2018

Keystone is located at 42º00’03”N 92º11’55”W in Sections 13 and 14 or Kane Township in Benton County, Iowa. According to the United States Census Bureau, the city has a total area of 0.45 square miles, all of which is land, The city was established in 1881 with the arrival of the Milwaukee and St. Paul Railroad that brought supplies to a pioneer settlement at the location. The city was incorporated in January of 1884.

As of the US Census of 2020, there were 599 people, 248 households, and 161 families in the city. There are 278 housing units. The community is predominantly white and 31.5% of households have children under the age of 18 years living in them. The average family size is 2.84 and the median age in the city is 46 years. The median household income is $56,250 and the employment rate is 53.2%. 16.5% of households have one or more people 65 years of age or over. 91.5% of housing units are one unit structures and 68.7% of housing units are owner occupied.

Figure 21: Keystone Population Change 1960-2020

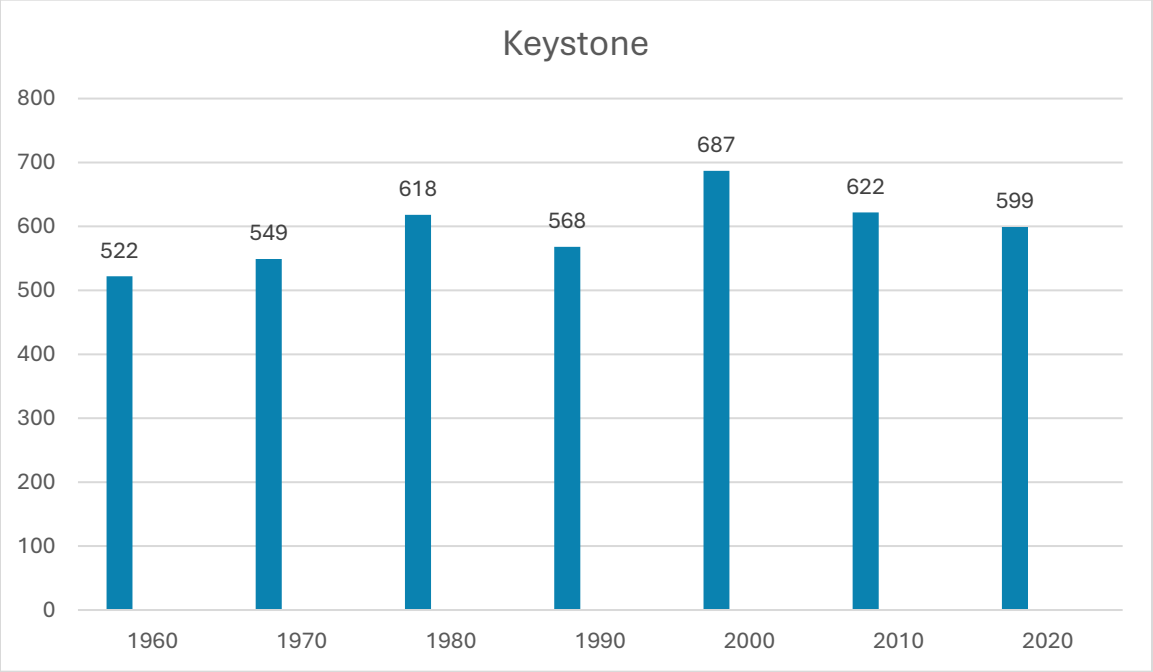


Table 31: Keystone Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	522	n/a	n/a
1970	549	27	5%
1980	618	69	12.5%
1990	568	-50	-8%
2000	687	119	20.9%
2010	622	-65	-9.4%
2020	599	-23	-3.6%

Table 32: Keystone Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**642**	**648**
2030	**662**	**675**
2040	**682**	**703**
2050	**702**	**732**

Table 33:Vulnerable Populations in the City of Keystone 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Keystone	149	24	152	24	3	.5	111	18.5
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Keystone is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City has one part-time city clerk, one full time public works employee, a librarian, and assistant librarian.

Codes, Ordinances, and Plans

The City of Keystone has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 145 -Dangerous Buildings
Chapter 147 -Public Water Well Protection
Chapter 150 -Trees
Chapter 155 -Building and Land Use Regulations
Chapter 97 -Storm Drainage – Use of public sewers

Streets

The City of Keystone has approximately 28 blocks and 8 miles of streets. The street surfaces are seal coated and black top. The city's public works employee manages street care for the city.

Water and Water Treatment

Water supply for the City of Keystone is supplied by two active wells with a capacity of 120 gallons per minute each. The wells are located at 403 2nd Street and 111 6th Avenue. The city has one above ground water storage tower built in 2007 which holds a maximum of 150,000 gallons of water. The city's water treatment plant is also located at 403 2nd Street and is an iron removal and chlorination system that has the capacity of 120 gallons per minute. The City of Keystone's public works employee is the city's Water Department.

Wastewater Treatment

The City of Keystone has an aerated lagoon system located at 90 Railroad Street. The system was constructed in 2003 and has a capacity of 400,000 gallons per day. The City of Keystone's public works employee is the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Keystone contracts for law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 5 hours per week, or 260 hours per year. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Keystone receives fire protection from the Keystone Volunteer Fire Department. The department is staffed with 14 dedicated volunteers and maintains a fleet of five vehicles for firefighting and rescue operations. The department averages 30 alarms per year in the city and the surrounding rural district comprising 70 square miles. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Keystone is provided by the Keystone First Responders. This service is the initial primary emergency medical service provider for the 70 square mile area of the Keystone Fire District. The service is non-transport and averages 100 calls per year. Transport services are provided by the Belle Plaine Ambulance Service.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: Keystone Communications

Cable TV: Keystone Communications

Business and Industry

The City of Keystone is home to approximately 25 businesses. The Keystone Care Center is the city's largest employer with 125 employees. Other large employers in the city are P & K Midwest and Benton Community Schools Keystone Elementary School PK-3.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Keystone City Hall – 208 1st Street
Keystone Fire Station – 208 1st Street
U.S. Post Office – 102 Pine Street

Emergency Shelters

Keystone Turner Hall – 91 2nd Avenue
St. John's Lutheran Church – 201 4th Avenue

Transportation Systems

County Road V42

Lifeline Utility Systems

City of Keystone Water Treatment Plant – 403 4th Avenue
City of Keystone City Wells – 403 2nd Street and 111 6th Avenue
City of Keystone Wastewater Treatment Plant – 90 Railroad Street
City of Keystone Public Works Department – 214 Railroad Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Keystone Elementary School PK-3 – 280 4th Street
Keystone Care Center – 250 5th Street
Keystone Care Center Senior Suites – 250 5th Street
Parkview Apartments – 300 5th Street

Financial Institutions
Keystone Savings Bank – 81 Main Street

Food Suppliers
Keystone Mini Mart: 407 5th Avenue
Keystone Turner Hall – 91 2nd Avenue
Main Street Bakery – 92 Main Street

Hardware Store
Pippert Hardware – 91 Main Street

Gas & Fuel
Keystone Mini Mart – 407 5th Avenue

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
Phillips Funeral Homes – 92 5th Avenue

Veterinary Service
Keystone Veterinary Clinic – 76 Main Street

Development Trends

Single-family new house construction in Keystone, Iowa (www.city-data.com)

1997: 2 buildings, average cost $ 90,300
1999: 1 building, cost $101,700
2001: 1 building, cost $150,000
2002: 1 building, cost $156,800
2003: 1 building, cost $200,000
2004: 1 building, cost $125,000
2005: 1 building, cost $250,000
2010: 2 buildings, average cost $250,000
2018: 3 buildings, average cost $ 26,700
2019: 1 building, cost $300,000
2020: 1 building, cost $400,000
2023: 2 buildings, average cost $250,000

Even with a slight decrease in population, the City's vulnerability to hazards may have increased slightly as a result of changes in development. The City has a greater number of properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Keystone include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Keystone has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building and Land Use Regulations and a Storm Drainage ordinance that support mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Keystone is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Keystone does not participate in the National Flood Insurance Program.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Keystone Fire Department
  EMS: Keystone First Responders and Elberon Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren
- EMA Indoor Warning System receiver in elementary school building and extended care facility
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*

- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
    - *All city critical facilities have backup generators except Well #2*
- Improve outdoor warning system. *Complete*
    - *City has a signed maintenance contract with a company that will maintain the system. Monthly testing is done with Benton County.*
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*

<u>New Mitigation Measures for this Plan Update</u>

- Maintain and support community and county public safety and emergency service departments.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Encourage citizen disaster preparedness.
- Develop and enhance local emergency operations plan.
- Install backup power source on remaining critical infrastructure (Well #2) to keep critical facilities operational during prolonged power outages.
- Planning and medical equipment to support human disease and pandemic response.

LUZERNE

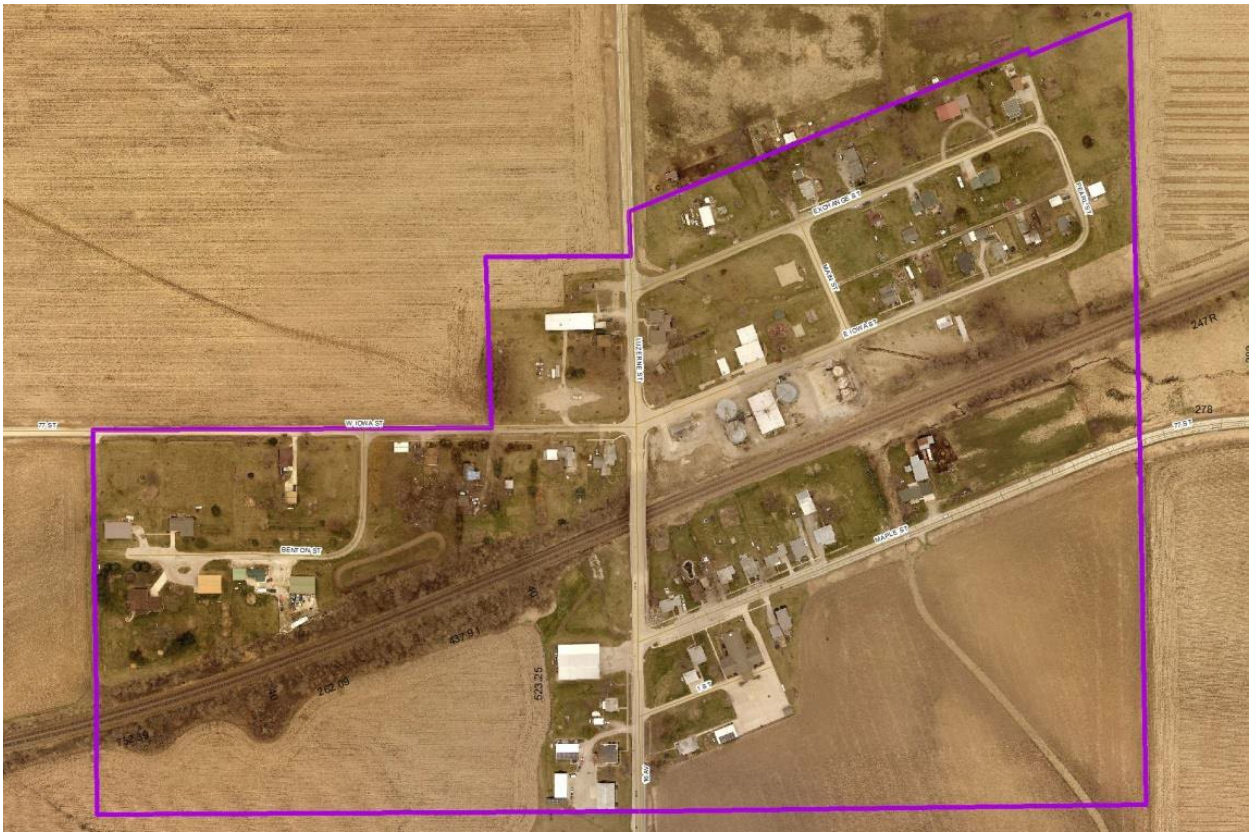


Figure 22: Luzerne in 2018

Luzerne is located at 41º54’22”N 92º10’49”W. According to the United States Census Bureau, the city has a total area of 0.12 square miles, of which all is land. The city is the smallest incorporated city of Benton County and is located in Sections 13 and 24 of Iowa Township and Sections 18 and 19 of Leroy Township. The city traces its first records of settlement to 1856. Its plat was recorded and the city was officially incorporated on April 17, 1868. By 1869 the town had grown to 40 buildings, including a church and schoolhouse. The city’s “parentage” is owed to the Chicago and Northwestern Railway Company which struck a line though the area in 1867. The rail line today is a very active line of the Union Pacific Railroad that passes through the center of the city.

As of the US Census of 2020, there were 112 people, 31 households, and 29 families in the city. There are 35 housing units. The community is predominantly white and 56.5% of households have children under the age of 18 years living in them. The average family size is 2.90 and the median age in the city is 33 years. The median household income is $75,208 and the employment rate is 66%. 45.7% of households have one or more people 60 years of age or over. 87% of housing units are one unit structures and 93.5% of housing units are owner occupied.

Figure 23: Luzerne Population Change 1960-2020

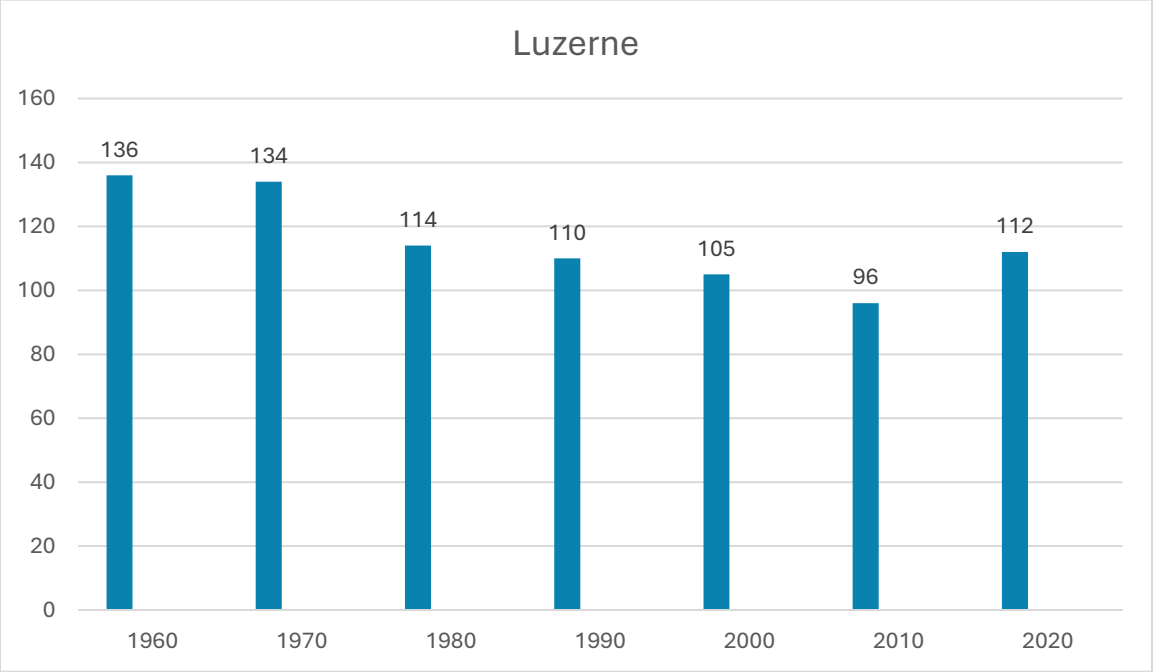


Table 34: Luzerne Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	136	n/a	n/a
1970	134	-2	-1.4%
1980	114	-20	-14.9%
1990	110	-4	-3.5%
2000	105	-5	-4.5%
2010	96	-9	-8.6%
2020	112	16	-1.6%

Table 35: Luzerne Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**88**	**90**
2030	**80**	**84**
2040	**72**	**79**
2050	**64**	**74**

Table 36: Vulnerable Populations in the City of Luzerne 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Luzerne	18	19	8	8	3	2.6	4	3.5
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Luzerne is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has a part-time city clerk, which is an appointed position. General operations of city services is conducted by one part-time public works employee and volunteer assistance.

Codes, Ordinances, and Plans

The City of Luzerne has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 146 -Manufactured, Mobile, and Modular Homes
Chapter 50 – Code for the Abatement of Unsafe Buildings and Equipment

The City of Luzerne also has a zoning ordinance.

Streets

The City of Luzerne has approximately 10 blocks and has 1.5 miles of streets, all of which are seal coated. The city's public works employee manages street care for the city.

Water and Water Treatment

The City of Luzerne has no water treatment facility. All residents either have their own wells or receive water from the Poweshiek Rural Water Association headquartered at 125 Industrial Drive, Brooklyn, IA.

Wastewater Treatment

The City of Luzerne has no wastewater treatment facility. All residents have their own private septic systems.

Emergency Services

Law Enforcement

The City of Luzerne contracts law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed .5 hours per week, or 26 hours per year. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Luzerne receives fire protection from the Luzerne Fire Department. The department is staffed with 16 dedicated volunteers and maintains a fleet of three vehicles for firefighting and rescue operations. The department averages 17-19 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Luzerne is provided by the Belle Plaine and Blairstown Ambulance Services located four and five miles from the city respectively. Both services maintain a staff of volunteer EMS responders along with a paid director. The Belle Plaine service maintains two ambulances. The Blairstown ambulance service has one ambulance. Blairstown First Responders is a new entity recently added by the Blairstown Fire Department to fill the gap when both the Belle Plaine and Blairstown Ambulance Services are out on a call.

Utilities

Electricity: Alliant Energy

Telecommunications: resident personal choice

Cable TV: resident personal choice

Business and Industry

The City of Luzerne is home to approximately 5 businesses.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Luzerne Fire Station and City Hall – 114 East Iowa Street
St. Paul's Lutheran Church – 107 Maple Street

Emergency Shelters

Luzerne Fire Station and City Hall – 114 East Iowa Street
St. Paul's Lutheran Church – 107 Maple Street

Transportation Systems

County Road E66
Union Pacific Rail Line

Lifeline Utility Systems

Poweshiek Rural Water Association – 125 Industrial Drive, Brooklyn, IA
City of Luzerne Public Works Department – 114 East Iowa Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Happy House Day Care – 111 West Iowa Street

Financial Institutions

None

Food Suppliers

None

Hardware Store

None

Gas & Fuel

None

Prescription Drug Suppliers

None

Healthcare Facilities

None

Funeral Service

None

Veterinary Service

None

Development Trends

According to the US Census Bureau, there have been an estimated 23 structures built since 1960 in the City of Luzerne. Eleven of these structures were built in 2014 or later.

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development.

Key Issues

Natural hazards potentially impacting the City of Luzerne include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Luzerne has a number of existing capabilities to support mitigation strategy. The city does have a zoning ordinance that supports mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Luzerne is a very small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Luzerne does not participate in the National Flood Insurance Program.

Current Mitigation Activities and Measures

- Emergency Services:
  - Law: Benton County Sheriff's Department
  - Fire: Luzerne Fire Department
  - EMS: Belle Plaine Ambulance, Blairstown Ambulance, Blairstown First Responders
  - Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Electricity required outdoor warning siren
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Develop and enhance local emergency operations plan. *Ongoing*
- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Establish Community Emergency Response Teams (CERT). *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Improve outdoor warning system. *Ongoing*
- Obtain equipment to help mitigate effects of a disaster. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority.*

New Mitigation Measures for this Plan Update

- Develop and enhance local emergency operations plan.
- Maintain and support community and county public safety and emergency services departments.
- Establish Community Emergency Response Teams (CERT).
- Improve public awareness of hazard risks and educate public about measures they can take to protect themselves and their property, including the use of social media.
- Encourage citizen disaster preparedness.
- Obtain equipment to help mitigate effects of a disaster.
    - Consider lease of a 1,000 gallon LP tank to ensure fuel during an emergency/disaster event.
    - Update city snow removal equipment.
- Conduct study on flash flooding that impacts city park and roadway to determine mitigation options.
- Improve safety at rail crossings.
- Provide hazardous materials training to fire departments to include anhydrous ammonia and hazardous materials carried by rail.
- Improve outdoor warning siren system.
    - Consider upgrade of siren and agreement with Benton County to test emergency siren that currently is not being tested.

MOUNT AUBURN

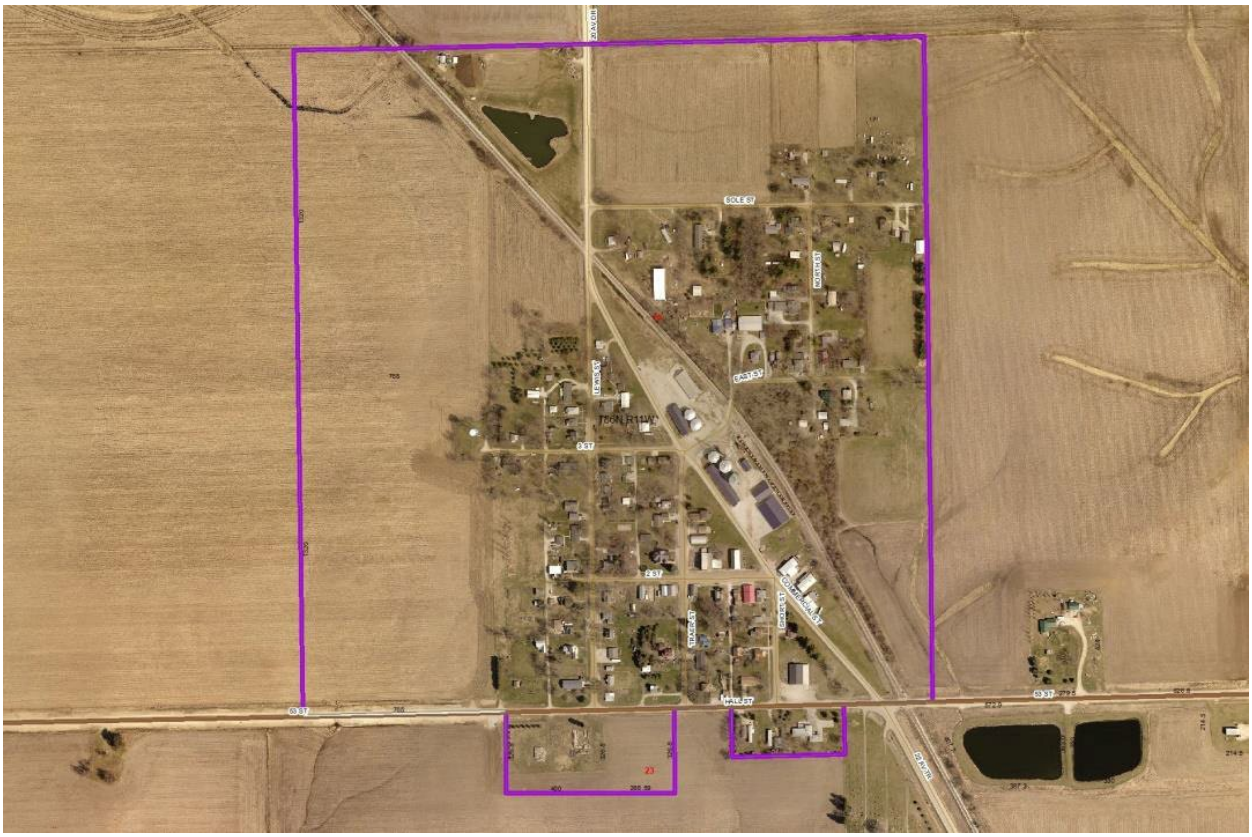


Figure 24: Mount Auburn 2018

Mount Auburn is located at 42º15’26”N 92º5’34”W in Cedar Township in northern Benton County. According to the United States Census Bureau, the city has a total area of 0.28 square miles, all of which is land. The first plat for the town was recorded on June 19, 1871. By 1875, the city had 400 residents.

As of the US Census of 2020, there were 162 people, 61 households, and 50 families in the city. There are 68 housing units. The community is predominantly white and 47.5% of households have children under the age of 18 years living in them. The average family size is 2.62 and the median age in the city is 40.4 years. The median household income is $75,298 and the employment rate is 64.5%. 45.7% of households have one or more people 60 years of age or over. 85.1% of housing units are one unit structures and 86.6% of housing units are owner occupied.

Figure 25: Mount Auburn Population Change 1960-2020

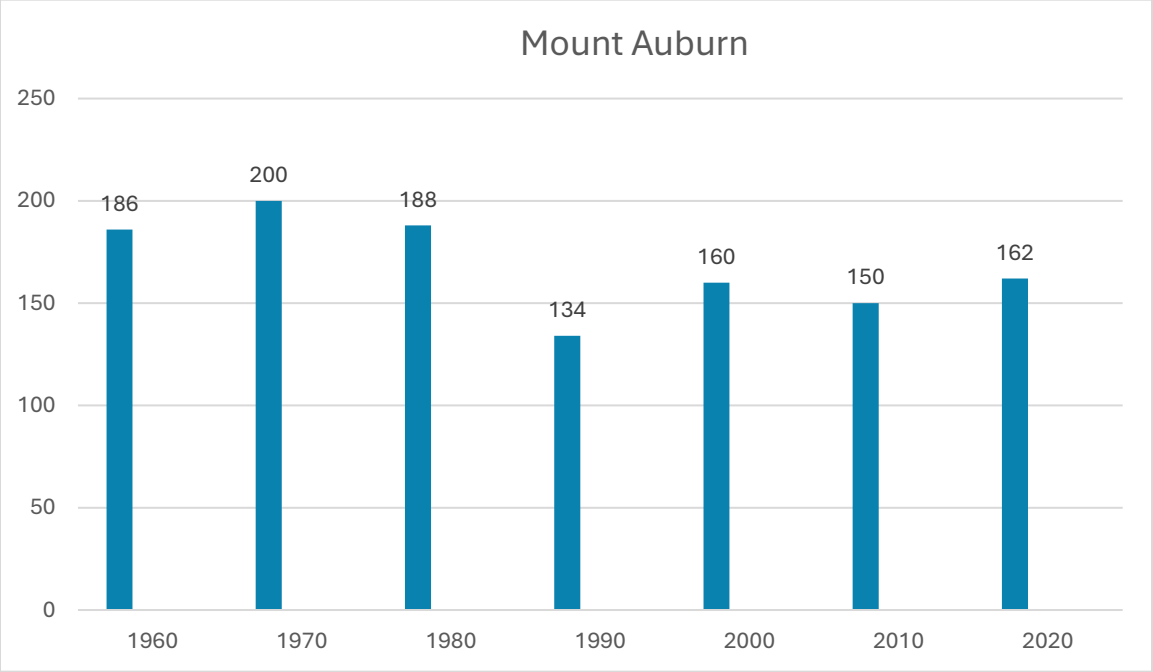


Table 37: Mount Auburn Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	186	n/a	n/a
1970	200	14	7.5%
1980	188	-12	-6%
1990	134	-54	-28.7%
2000	160	26	19.4%
2010	150	-10	-6%
2020	162	12	8%

Table 38: Mount Auburn Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**143**	**146**
2030	**136**	**142**
2040	**129**	**138**
2050	**122**	**134**

Table 39: Vulnerable Populations in the City of Mount Auburn 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Mount Auburn	36	24	24	16	0	0	2	1.2
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Mount Auburn is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has one part-time city clerk and one part-time public works employee.

Codes, Ordinances, and Plans

The City of Mount Auburn has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 94 – Public Water Well Protection
Chapter 145 - Dangerous Buildings
Chapter 150 - Building Numbering
Chapter 151 – Trees
Chapter 155 - Building Code
Chapter 157 – Storm Damage
Chapter 158 – Sign Code
Chapter 165 – Zoning Regulations, including the Sign Code
Chapter 166 – Subdivision Regulations

Streets

The City of Mount Auburn has approximately 15 blocks and 3 miles of streets. The street surfaces are seal coated, black top, and gravel. The city's public works employee manages street care for the city.

Water and Water Treatment

Water supply for the City of Mount Auburn is supplied by two active wells with a capacity of 150 gallons per minute each. The city has one above ground water storage tower built in the 1980's which holds a maximum of 50,000 gallons of water. The city's water treatment plant is located on Hall Street and is an iron removal and chlorination system that has a capacity of 100,000 gallons per day. The City of Mount Auburn's public works employee is the city's Water Department.

Wastewater Treatment

The City of Mount Auburn has an aerated gravity fed lagoon system southeast of the city. The system was upgraded to add another cell in 2008 and has a capacity of 200,000 gallons per day. The City of Mount Auburn's public works employee is the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Mount Auburn contracts law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 2 hours per week, or 104 hours per year. The Benton County Sheriff's Office, headquartered in Vinton, 8 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Mount Auburn receives fire protection from the Cedar/Mount Auburn Fire & EMS Department. The department is staffed with 20 dedicated volunteers and maintains a fleet of three vehicles for firefighting, rescue, and EMS operations. The department averages 12 alarms per year in the city and the surrounding rural district comprising 36 square miles. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Mount Auburn is provided by the North Benton Ambulance Services, in Vinton, eight miles away. The provisional paramedic level service is staffed with 15 volunteers and a full time director trained to the Emergency Medical Technician or Paramedic level. The service responds to over 1,000 calls for service a year.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: Alpine Communications

Cable TV: Alpine Communications

Business and Industry

The City of Mount Auburn is home to 1 business, Hendryx Electric. The business employs 5 part and full time employees.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Mount Auburn City Hall – 202 2nd Street
Cedar/Mount Auburn Fire Station – 203 2nd Street

Emergency Shelters
Cedar Hall – 202 2nd Street
Cedar/Mount Auburn Fire Station – 203 2nd Street

Transportation Systems
County Road V65

Lifeline Utility Systems
City of Mount Auburn Water Treatment Plant – 300 Hall Street
City of Mount Auburn City Wells – 300 Hall Street & 3rd Street
City of Mount Auburn Wastewater Treatment Plant
City of Mount Auburn Public Works Department – 301 2nd Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
None

Financial Institutions
None

Food Suppliers
None

Hardware Store
None

Gas & Fuel
None

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

According to the US Census Bureau, there have been an estimated 24 structures built since 1960 in the City of Mount Auburn. None of these structures were built after 2009.

Even with slight population growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development.

Key Issues

Natural hazards potentially impacting the City of Atkins include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Mount Auburn has a number of existing capabilities to support mitigation strategy. The city does have zoning and subdivision regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the City has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Mount Auburn is a very small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Mount Auburn does not participate in the National Flood Insurance Program.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Cedar Mount Auburn Fire Department

EMS: Mount Auburn First Responders and North Benton Ambulance
Haz-Mat: Linn County Hazardous Materials Team – Technician Level

- StormReady Community
- Electricity required outdoor warning siren
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Develop community emergency shelters. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority.*
- Improve outdoor warning system. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Develop and enhance local emergency operations plan.
- Encourage citizen disaster preparedness.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Develop community emergency shelters.
- Improve outdoor warning system.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Improve safety at rail crossings.

NEWHALL

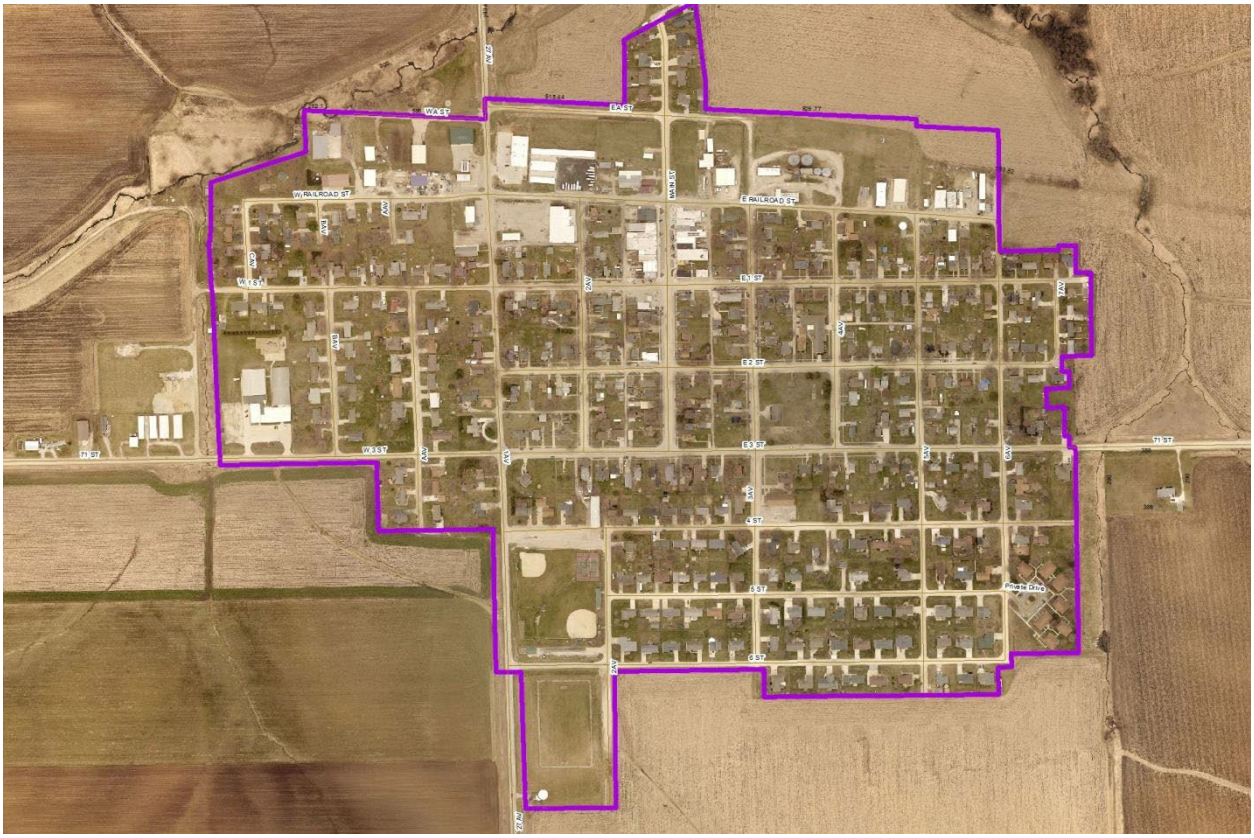


Figure 26: Newhall in 2018

Newhall is located at 41º59’38”N 91º57’59”W. According to the United States Census, the city has a total area of 0.32 square miles, all of which is land in Sections 13,14,23, and 24 of Eldorado Township in Benton County. The town site of Newhall was settled in the summer of 1881 with the building of the Chicago Milwaukee and Saint Paul Railroad west from Marion, Iowa. Newhall grew rapidly and by March 1882 the town had four general stores, two blacksmith shops, lumberyards, one hardware store, an implement dealer, a hotel with a saloon, and about 150 residences. The town was incorporated in 1912.

As of the US Census of 2020, there were 876 people, 392 households, and 239 families in the city. There are 396 housing units. The community is predominantly white and 33.7% of households have children under the age of 18 years living in them. The average family size is 2.97 and the median age in the city is 38.8 years. The median household income is $59,167 and the employment rate is 62.8%. 38.7% of households have one or more people 60 years of age or over. 83.3% of housing units are one unit structures and 75.3% of housing units are owner occupied.

Figure 27: Newhall Population Change 1960-2020

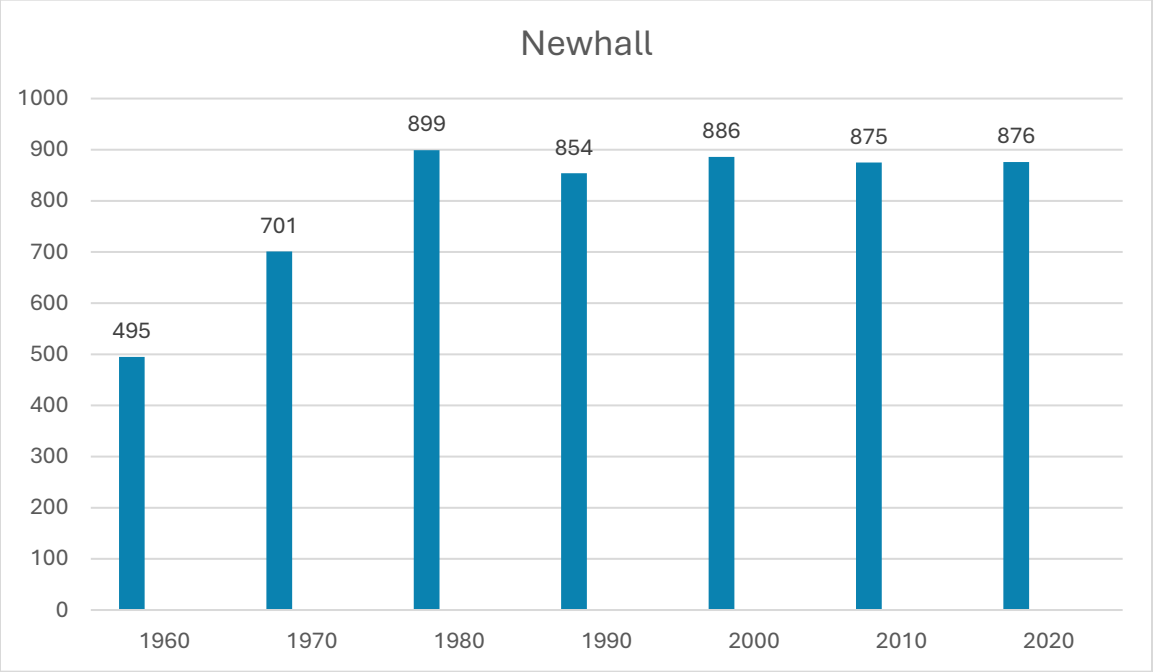


Table 40: Newhall Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	495	n/a	n/a
1970	701	206	41.6%
1980	899	198	28.2%
1990	854	-45	-5%
2000	886	32	3.7%
2010	875	-11	-1.2%
2020	876	1	0.1%

Table 41: Newhall Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**951**	**993**
2030	**1027**	**1127**
2040	**1103**	**1279**
2050	**1179**	**1452**

Table 42: Vulnerable Populations in the City of Newhall 2010 and 2020

Area	2010				2020			
	<18	%	>64	%	<18	%	>64	%
Newhall	224	26	153	17	4	0.45	162	18.5
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Newhall is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has one full time city clerk and two full time public works employees.

Codes, Ordinances, and Plans

The City of Newhall has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 145 - Dangerous Buildings
Chapter 150 - Building Regulations; Construction (IBC
Chapter 156 – Subdivision Regulations
Chapter 158 – Zoning Regulations, including the Sign Code

Streets

The City of Newhall has approximately 57 blocks and 32 miles of streets. The street surfaces are seal coated, black top, and gravel. The city's public works employee manages street care for the city.

Water and Water Treatment

Water supply for the City of Newhall is supplied by three active wells with a capacity of 105-135 gallons per minute each. The city has two above ground water storage tower tanks (one tower and one ground) which hold a maximum of 250,000 gallons of water. The city's water treatment plant is located at 11 Fifth Avenue and has a capacity of 140,000 gallons per day. The City of Newhall's public works employees are the city's Water Department.

Wastewater Treatment

The City of Newhall has an aerated gravity fed lagoon system west of the city. The system has 6 cells with a capacity of up to 6 million gallons each. The City of Newhall's public works employees are the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Newhall contracts law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 15 hours per week. The Benton County Sheriff's Office, headquartered in Vinton, 15 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Newhall receives fire protection from the Newhall Fire and Rescue Department. The department is staffed with 27 dedicated volunteers and maintains a fleet of four vehicles for firefighting and rescue operations. The department averages 30 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 13 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Newhall is provided by the Newhall First Responders, headquartered in the Newhall Fire and Rescue Department. The service is the initial primary emergency medical service provider for the 66 square mile area of the Newhall First Responder District. The service is staffed with 15 volunteers all certified as Emergency Medical Technician B. The service responds to an average of 40 calls for service a year. Ambulance transport service to the Newhall First Responder District is provided by the Blairstown Ambulance Service in Blairstown and North Benton Ambulance Services, in Vinton.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: South Slope Cooperative Communications Company located in North Liberty, Iowa and Mediacom.

Cable TV: South Slope Cooperative Communications Company located in North Liberty, Iowa and Mediacom.

Business and Industry

The City of Newhall is home to approximately 44 businesses. The Central Lutheran School is the largest employer in the city.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Newhall City Hall– 11 Second Avenue
Newhall Fire Station – 220 Railroad Street
Newhall Public Works Building – 13 Second Avenue

Emergency Shelters
Newhall Park Pavilion – 206 Third Avenue
Newhall Fire Station – 220 Railroad Street

Transportation Systems
County Road E44
County Road W14
State Highway 287

Lifeline Utility Systems
Water Treatment Plant – 11 Fifth Avenue
City Wells
Wastewater Treatment Plant – west of the city
Public Works Building – 13 Second Avenue

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
Country View Apartments – 500 Sixth Avenue
Central Lutheran School – 10 Third Street
Privatized childcare providers

Financial Institutions
Wells Fargo Bank – 32 Main Street

Food Suppliers
Newhall First Stop – 211 First Street East
Newhall Locker – 19 Main Street
Whisky Tavern – 26 Main Street

Hardware Store
None

Gas & Fuel
Newhall First Stop – 211 First Street East
Linn County Co-op – 2851 71st Street

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

2004: 4 buildings, average cost: $129,600
2003: 2 buildings, average cost: $122,900
2002: 5 buildings, average cost: $ 30,000
2001: 8 buildings, average cost: $111,900
2000: 5 buildings, average cost: $108,200
1999: 7 buildings, average cost: $100,000
1998: 3 buildings, average cost: $ 66,200
1997: 3 buildings, average cost: $ 66,200

According to the US Census Bureau, there have been an estimated 279 structures built since 1960 in the City of Newhall. None of these structures were built after 2009.

The City's vulnerability to hazards has not changed significantly as a result of changes in development. The City also has slightly fewer properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Newhall include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Newhall has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Regulations, Subdivision Regulations, and Zoning Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Newhall is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Newhall participates in the National Flood Insurance Program. The city does have an adopted Floodplain Overlay District Regulation that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the city Zoning Administrator as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Newhall Fire Department
  EMS: Newhall First Responders and North Benton Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Electricity required outdoor warning siren
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Develop community emergency shelters. *Ongoing*
- Construct public tornado safe rooms at vulnerable points. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.

- Develop community emergency shelters.
- Construct public tornado safe rooms at vulnerable points.
- Develop and enhance local emergency operations plans.
- Encourage citizen disaster preparedness.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Planning and medical equipment to support human disease and pandemic response.
- Compliance with the National Flood Insurance Program regulations.

NORWAY



Figure 28: Norway in 2018

Norway is located at 41º54”12”N 91º55’24”W in Sections 17, 19, and 20 of Florence Township in Benton County. According to the United States Census Bureau, the city has a total area of 0.45 square miles, all of which is land. The city was surveyed in 1863 on ground given for the city by Osmond Tuttle. The city was originally known as Florence. In 1865 the city had its first post office. The city was officially incorporated on December 29, 1894.

As of the US Census of 2020, there were 466 people, 229 households, and 127 families in the city. There are 249 housing units. The community is predominantly white and 21% of households have children under the age of 18 years living in them. The average family size is 2.80 and the median age in the city is 48.1 years. The median household income is $63,542 and the employment rate is 67.2%. 46.5% of households have one or more people 60 years of age or over. 93% of housing units are one unit structures and 87.3% of housing units are owner occupied.

Figure 29: Norway Population Change 1960-2020

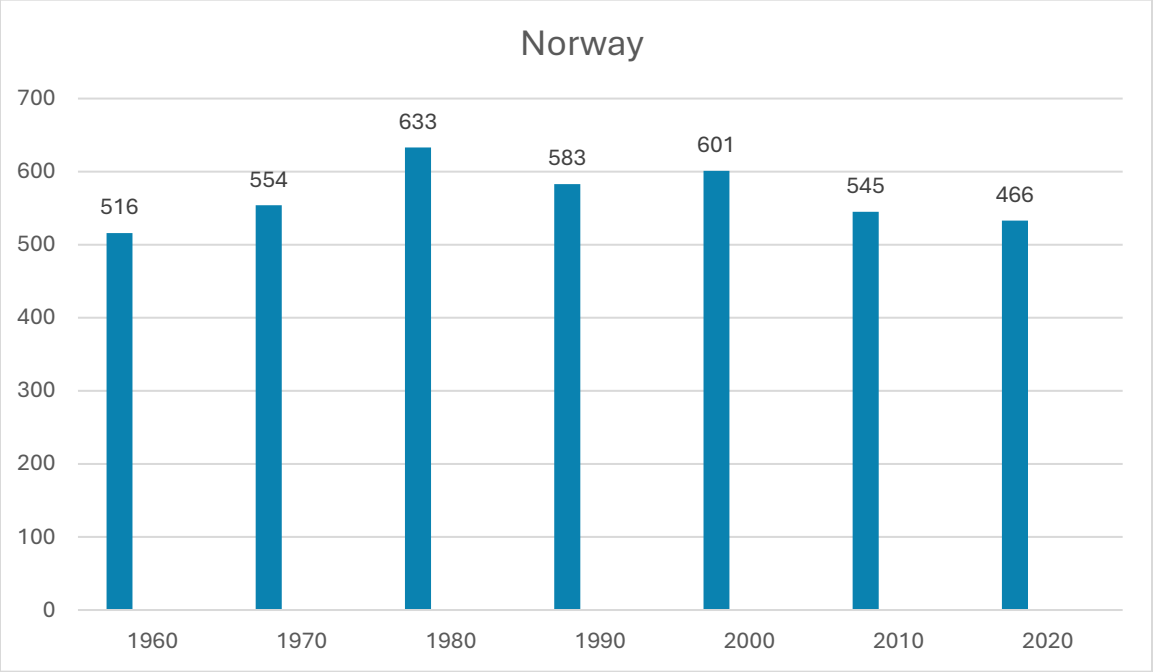


Table 43: Norway Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	516	n/a	n/a
1970	554	38	7.3%
1980	633	79	14.2%
1990	583	-50	-7.9%
2000	601	18	3.1%
2010	545	-56	-9.3%
2020	466	-79	-14.5%

Table 44: Norway Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**551**	**553**
2030	**557**	**561**
2040	**563**	**569**
2050	**569**	**578**

Table 45: Vulnerable Populations in the City of Norway 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Norway	126	23	107	20	4	0.85	64	13.7
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Norway is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has one full time city clerk, which is a hired position. General operation of city services is conducted by one part-time public works employees.

Codes, Ordinances, and Plans

The City of Norway has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 145 - Dangerous Buildings
Chapter 146 – Manufactured, Mobile and Modular Homes
Chapter 155 – Building Regulations (IBC 2018)
Chapter 160 - Flood Plain Management
Chapter 165 – Zoning Regulations

Certain provisions of the Iowa State Building Code promulgated by the State Building Code Commission or the State Fire Marshall as provided by Iowa Code, Chapters 100 and 103A are mandatory and supersede the above standards when they conflict.

Streets

The City of Norway has approximately 44 blocks and 7.5 miles of streets. All streets of the city are seal coated. The city's two public works employee manage street maintenance for the city.

Water and Water Treatment

Water supply for the City of Norway is supplied by the Poweshiek Rural Water Association. Water usage averages 48,000 gallons of water per day. The city has one above ground water storage tower holding a maximum of 100,000 gallons of water. The city has one sand point well that is not hooked up to the city's water supply system. The City uses Ion Environmental Solutions as its water and sewer operator.

Wastewater Treatment

The City of Norway's wastewater treatment facility is located at 7684 30th Avenue. The facility was completely rebuilt in 2018 and has a maximum capacity of 1,014,300 gallons per day and uses one lift station with a Nitrox disinfection system. The City uses Ion Environmental Solutions as its water and sewer operator.

Emergency Services

Law Enforcement

The City of Norway contracts law enforcement services with the Benton County Sheriff's office for coverage that is not to exceed 10 hours per week. The Benton County Sheriff's Office, headquartered in Vinton, 25 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Norway receives fire protection from the Norway Fire and Rescue Department. The department is staffed with 15 dedicated volunteers and maintains a fleet of four vehicles for firefighting and rescue operations. The department averages 20 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 12 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Norway is provided by the Norway First Responders, headquartered in the Norway Fire and Rescue Department. The service is the initial primary emergency medical service provider for the 50 square mile area of the Norway First Responder District. The service is staffed with 15 volunteers all certified as Emergency Medical Technician B. The service responds to an average of 40 calls for service a year. Ambulance transport service to the Norway First Responder District is provided by the Blairstown Ambulance Service in Blairstown.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications: South Slope Cooperative Communications Company located in North Liberty, Iowa and Mediacom.

Cable TV: South Slope Cooperative Communications Company located in North Liberty, Iowa and Mediacom.

Business and Industry

The City of Norway is home to approximately 16 businesses. The Benton Community Schools Norway Elementary Center and Frontier Natural Products Coop located on the city's edge are the largest employers in the city. Frontier Natural Products employs 250 people.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Norway City Hall – 108 E Railroad Street
Norway Fire Station – 105 W Railroad Street

Emergency Shelters

Newhall Fire Station – 220 Railroad Street
Benton Community Schools Norway Elementary Center – 100 School Dr.

Transportation Systems

County Road E66

Lifeline Utility Systems

City Well – 302 Line Street
Wastewater Treatment Plant – 7684 30th Avenue
Street Department – 105 South Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Frontier Natural Products Coop Day Care Center– 3021 78th Street
Benton Community Schools, Norway Elementary Center – 100 School Dr.

Financial Institutions

Bank Iowa – 102 West Railroad Street

Food Suppliers

Depot Express – 117 West Railroad Street
Prairie Creek Saloon – 116 West Railroad Street

Hardware Store
None

Gas & Fuel
Depot Express – 117 West Railroad Street
Linn County Co-op – 2851 71st Street

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

2021: 1 building, cost: $207,800
2019: 1 building, cost: $200,000
2009: 1 building, cost: $118,200
2008: 1 building, cost $118,200
2007: 1 building, cost $118,200
2006: 1 building, cost $118,200
2005: 1 building, cost $118,200
2004: 1 building, cost $100,000
2003: 1 building, cost $125,000
2002: 1 building, cost:$192,000

2001: 1 buildings, average cost: $126,000
2000: 3 buildings, average cost: $129,600
1998: 4 buildings, average cost: $148,800
1997: 4 buildings, average cost: $104,800

According to the US Census Bureau, there have been an estimated 88 structures built since 1960 in the City of Norway. None of these structures were built after 2009.

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City has more properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Norway include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include

animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Norway has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Regulations, Zoning Regulations, and Flood Plain Management that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Norway is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Norway participates in the National Flood Insurance Program. The city does have an adopted Floodplain Management ordinance that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the city Zoning Administrator as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Norway Fire Department
  EMS: Norway First Responders and Blairstown Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- EMA Indoor Warning System receiver in elementary school building
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop and enhance local emergency operations plan. *No longer a priority. We use the county emergency operations plan.*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*

- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Norway Fire Station installed a backup power generator. Our wastewater treatment facility has a backup power generator.*
- Improve outdoor warning system. *Completed*
- Encourage citizen disaster preparedness. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Develop community emergency shelters. *Ongoing*
- Construct public tornado safe rooms at vulnerable points. Ongoing
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority. We use the county public health plan.*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

<u>New Mitigation Measures for this Plan Update</u>

- Maintain and support community and county public safety and emergency service departments.
- Develop and enhance local emergency operations plan.
- Continue HAZMAT agreements and support regional HAZMAT teams.
- Encourage citizen disaster preparedness.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Improve safety at rail crossings.
- Develop community emergency shelters.
- Construct public tornado safe rooms at vulnerable points.
- Compliance with the National Flood Insurance Program regulations.

SHELLSBURG



Figure 30: Shellsburg in 2018

Shellsburg is located at 42º5”35”N 91º52’13”W in Sections 10, 11, 14, and 15 of Canton Township in Benton County. According to the United States Census Bureau, the city has a total area of 0.77 square miles, all of which is land. The city was surveyed in 1854; the third city surveyed in Benton County. In 1856 the city had its first post office and rail service was established to the city in 1869. The city was officially incorporated on 1870.

As of the US Census of 2020, there were 961 people, 385 households, and 267 families in the city. There are 414 housing units. The community is predominantly white and 30.4% of households have children under the age of 18 years living in them. The average family size is 2.67 and the median age in the city is 43.2 years. The median household income is $69,000 and the employment rate is 64.7%. 46.5% of households have one or more people 60 years of age or over. 89.8% of housing units are one unit structures and 82% of housing units are owner occupied.

Figure 31: Shellsburg Population Change 1960-2020

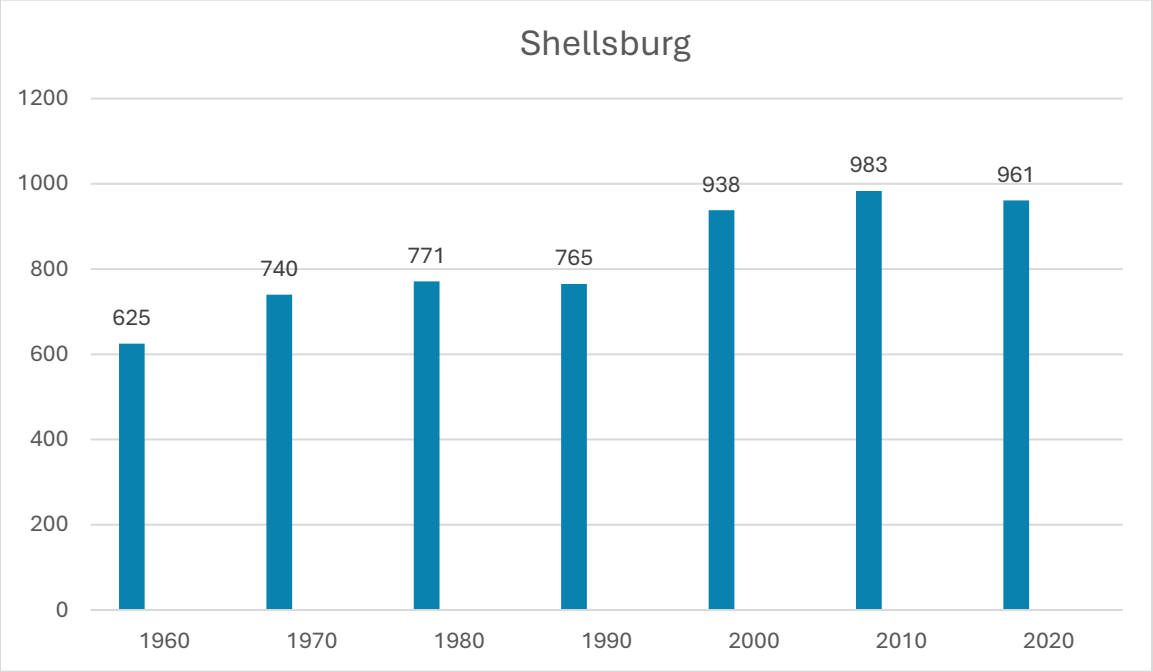


Table 46: Shellsburg Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	625	n/a	n/a
1970	740	115	18.4%
1980	771	31	4.1%
1990	765	-6	-0.77%
2000	938	173	22.6%
2010	983	45	1.1%
2020	961	-22	-2.2%

Table 47: Shellsburg Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**1055**	**1080**
2030	**1127**	**1187**
2040	**1199**	**1305**
2050	**1271**	**1434**

Table 48: Vulnerable Populations in the City of Shellsburg 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Shellsburg	205	21	190	19	7	0.73	72	7.5
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Shellsburg is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has a full time city clerk, which is a hired position. General operation of city services is conducted by two full-time public works employees.

Codes, Ordinances, and Plans

The City of Shellsburg has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 145 – Dangerous Buildings
Chapter 146 – Manufactured and Mobile Homes
Chapter 148 – Protection of Public Water Wells
Chapter 150 – Building Numbering
Chapter 151 – Trees
Chapter 154 – Property Maintenance Regulations
Chapter 156 – Building Permits and Occupancy
Chapter 160 – Floodplain Regulations
Chapter 161 – Building and Other Codes
Chapter 165 – Subdivision Regulations
Chapter 166 – Zoning Regulations

Currently the City is updating their Comprehensive Plan due to new housing development anticipated in the City.

Codes adopted by reference as per Chapter 130 are:

The International Building Code, 2024 Edition
The International Mechanical Code, 2024 Edition
The International Code Council Electrical Code, 2024 Edition
The International Residential Code for One and Two Family Dwellings, 2024 Edition published by the International Code Council
The State Plumbing Code for Iowa promulgated by the Iowa Department of Health and Human Services

Certain provisions of the Iowa State Building Code promulgated by the State Building Code Commission or the State Fire Marshall as provided by Iowa Code, Chapters 100 and 103A are mandatory and supersede the above standards when they conflict.

Streets

The City of Shellsburg currently has approximately 70 blocks and 12 miles of streets. This will be increasing with the anticipated new subdivision in the City. The majority of the street surfaces are seal coated with the rest being cement and asphalt. The city's two public works employees manage street maintenance for the city.

Water and Water Treatment

Water supply for the City of Shellsburg is supplied by two wells, one that is active and the other is inactive and used as a reserve. Water usage averages 70,000 gallons of water per day. The city has one above ground water storage tower holding a maximum of 75,000 gallons of water. A second above ground storage tank holds 214,000 gallons and has solar power capability. Well field protection has been established to a distance of 2,640 feet in circumference for the city's wells. The plant has stand-by power generation capabilities but has no security systems in place. The city's two public works employees are the city's Water Department.

Wastewater Treatment

The City of Shellsburg's wastewater treatment facility is located at 1100 Homer Street on the city's southeast side. The mechanical system constructed in 2004 at a cost of $2.3 million has a maximum capacity of 395,300 gallons per day and uses a system of two lift stations with backup power. The system also provides wastewater treatment to the Timber Ridge Trailer Court located three miles south of Shellsburg. The plant is surrounded by an eight foot tall security fence. The City of Shellsburg's two public works employees are the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Shellsburg contracts law enforcement services with the Benton County Sheriff's office. The Benton County Sheriff's Office, headquartered in

Vinton, 10 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Shellsburg receives fire protection from the Shellsburg Fire Department. The department is staffed with 20 dedicated volunteers and maintains a fleet of four vehicles for firefighting and rescue operations. The department averages 70 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 12 departments available to the city in the event of a major fire or emergency. Shellsburg Fire Department also has mutual aid agreements with Palo Fire Department and Center Point Fire Department in Linn County.

Emergency Medical Services

Emergency medical services for the City of Shellsburg is provided by the Shellsburg First Responders, headquartered in Shellsburg, Iowa. The private non-profit service is the initial primary emergency medical service provider for the 77 square mile area of the Shellsburg First Responder District. The service is staffed with 13 volunteers including one paramedic, five emergency medical technician B's, and seven first responders. The service responds to an average of 175 calls for service a year. Ambulance transport service to the Shellsburg First Responder District is provided by the Hiawatha Ambulance Service in Hiawatha. The North Benton Ambulance Service in Vinton and the Center Point Ambulance Service in Center Point provide backup services.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications, Cable TV, and Internet: USA Communications in Shellsburg

Business and Industry

The City of Shellsburg is home to approximately 27 businesses. The Shellsburg Center of the Vinton-Shellsburg Schools and USA Communications are the largest employers in the city.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Shellsburg City Hall – 108 Main Street SW
Shellsburg Fire Station – 101 Pearl Street SE
USA Communications – 124 Main Street SW

Emergency Shelters
Shellsburg Masonic Hall – 100 Grove Street NW
Shellsburg American Legion – 114 Main Street SW
Vinton-Shellsburg School – 203 Cottage Street

Transportation Systems
County Roads E36 and W26
Canadian Norther (CN) Railroad

Lifeline Utility Systems
Water Treatment Plant – 102Taylor Street
City Wells – 107 Taylor Street
Wastewater Treatment Plant – 1100 Homer Street SE
Street Department – 108 Main Street SW

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
Vinton-Shellsburg Schools, Shellsburg Center – 203 Cottage Street

Financial Institutions
None

Food Suppliers
Roys Foodland – 105 Pearl Street SE
Shellsburg Quick Stop – 101 Main Street NE
Pearl Street Social Club – 110 Pearl Street SE
Wildcat Golf Course – 100 Wildcat Trail
Cranky Hanks Pizza – 112 Pearl Street SE
The Local Addition Bar – 100 Pearl Street SE

Hardware Store
None

Gas & Fuel
Shellsburg Quick Stop – 101 Main Street NE

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

2023: 1 building, cost: $330,000
2022: 2 buildings, average cost: $171,000
2021: 2 buildings, average cost: $171,000
2020: 2 buildings, average cost: $206,500
2019: 2 buildings, average cost: $206,500
2017: 2 buildings, average cost: $100,000
2016: 4 buildings, average cost: $100,000
2015: 2 buildings, average cost: $125,000
2013: 1 building, cost: $150,000
2010: 1 building, cost: $ 90,000
2009: 2 buildings, average cost: $ 75,000
2008: 1 building, cost $300,000
2007: 4 buildings, average cost: $175,000
2006: 4 buildings, average cost: $150,000
2005: 7 buildings, average cost: $185,700
2004: 10 buildings, average cost: $2,000,000
2003: 6 buildings, average cost: $139,200
2002: 6 buildings, average cost: $202,500
2001: 2 buildings, average cost: $ 82,500
2000: 4 buildings, average cost: $ 68,800
1999: 4 buildings, average cost: $104,000
1998: 6 buildings, average cost: $102,300
1997: 2 buildings, average cost: $ 45,000

According to the US Census Bureau, there have been an estimated 157 structures built since 1960 in the City of Shellsburg. Six of these structures were built between 2010 and 2019. There is a new subdivision being developed on the west side of the City that offers more than 20 lots for sale at the time of this update.

The City of Shellsburg is currently in the process of adopting the Iowa Statewide Urban Design and Specifications (SUDAS) manual.

The City's vulnerability to hazards has not changed significantly as a result of changes in development. The City also has fewer properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Shellsburg include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure

failure, structure fire, terrorism, transportation – highway/road/rail, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Shellsburg has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Permits and Occupancy, Building and Other Codes, Zoning Regulations, Subdivision Regulations, and Floodplain Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Shellsburg is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Shellsburg participates in the National Flood Insurance Program. The city does have an adopted Floodplain Regulation that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the City Clerk as the manager/administrator of the Flood Plain Regulations.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Office
  Fire: Shellsburg Fire Department
  EMS: Shellsburg First Responders and Hiawatha Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- EMA Indoor Warning System receiver in elementary school building and extended care facility
- Various ordinances for community safety and cleanliness
- Alliant Energy has buried most residential lines in the City.
- City has a diesel tank for use during prolonged power outages.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop community emergency shelters. *Ongoing*

- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Develop and enhance local emergency operations plan. *No longer a priority – will use county plan.*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority – will use county public health department plan.*
- Encourage citizen disaster preparedness. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

<u>New Mitigation Measures for this Plan Update</u>

- Maintain and support community and county public safety and emergency service departments.
- Develop community shelters. Purchase and install transfer switch and/or backup generator for school to be used as emergency shelter.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. Purchase and install transfer switch at single local gas station. Purchase portable backup generator that could be utilized as needed in a prolonged power outage.
- Update city equipment for response to disasters and assistance with recovery.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Encourage citizen disaster preparedness. .
- Improve safety at rail crossings.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Compliance with the National Flood Insurance Program regulations.

URBANA

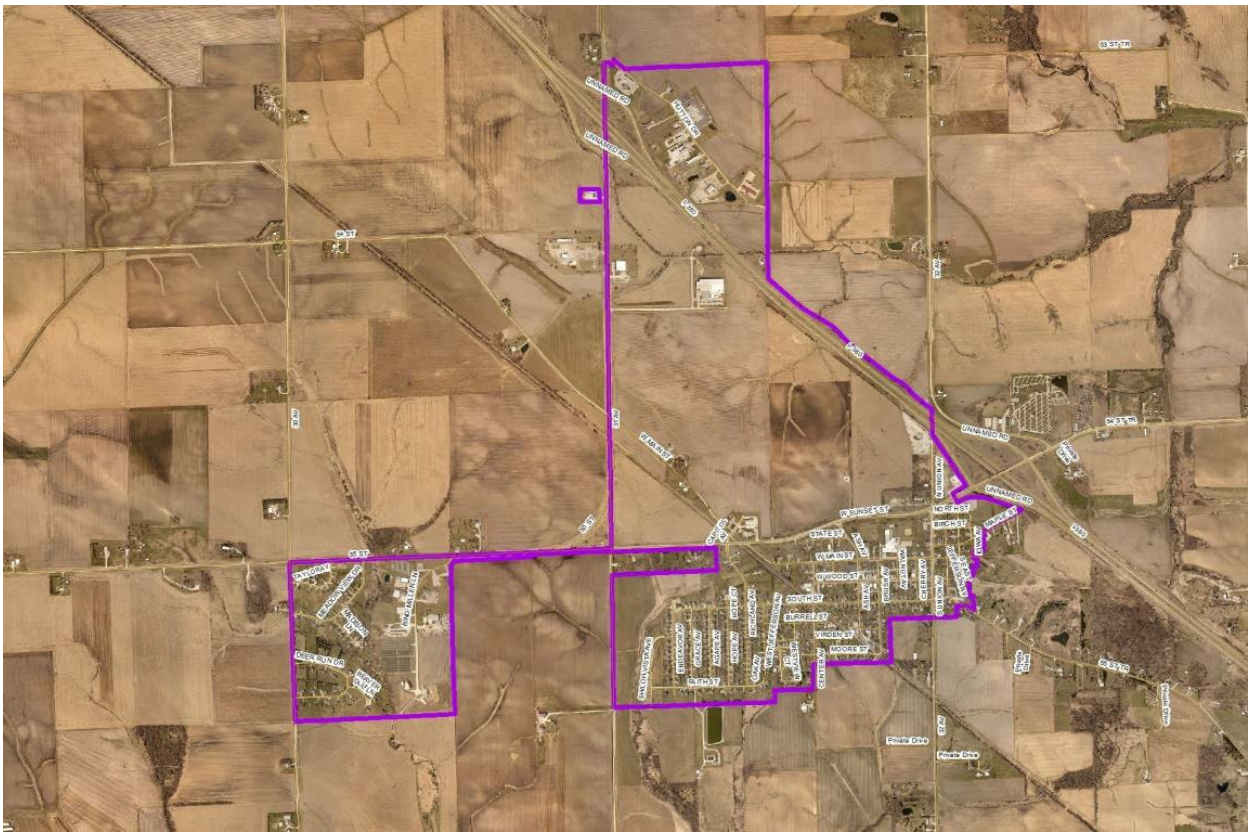


Figure 32: Urbana in 2018

Urbana is located at 42º13”27”N 91º52’41”W in Sections 22, 26, 27, 33, 34, and 35 of Polk Township in Benton County. According to the United States Census Bureau, the city has a total area of 2.20 square miles, all of which is land. Urbana is roughly midway between Cedar Rapids and Waterloo. Interstate 380 and Iowa Highway 150 intersect here.

Urbana is one of the oldest communities in the county. The first recorded incidence of settlers in the area is 1839. The first name of a community in the area was Hoosier’s Point in 1840. That name was changed in 1847 when a town named Marysville was laid out. The first post office was established in the community in 1848. In 1857 the name of the community was changed to Urbana and in 1895 the city was incorporated. In 1887 the city was noted as having a population of 200 people.

As of the US Census of 2020, there were 1,554 people, 554 households, and 417 families in the city. There are 574 housing units. The community is predominantly white and 45.5% of households have children under the age of 18 years living in them. The average family size is 3.33 and the median age in the city is 34.6 years. The median household income is $91,875 and the employment rate is 80.2%. 12.4% of households

have one or more people 60 years of age or over. 94.6% of housing units are one unit structures and 88.7% of housing units are owner occupied.

Figure 33: Urbana Population Change 1960-2020

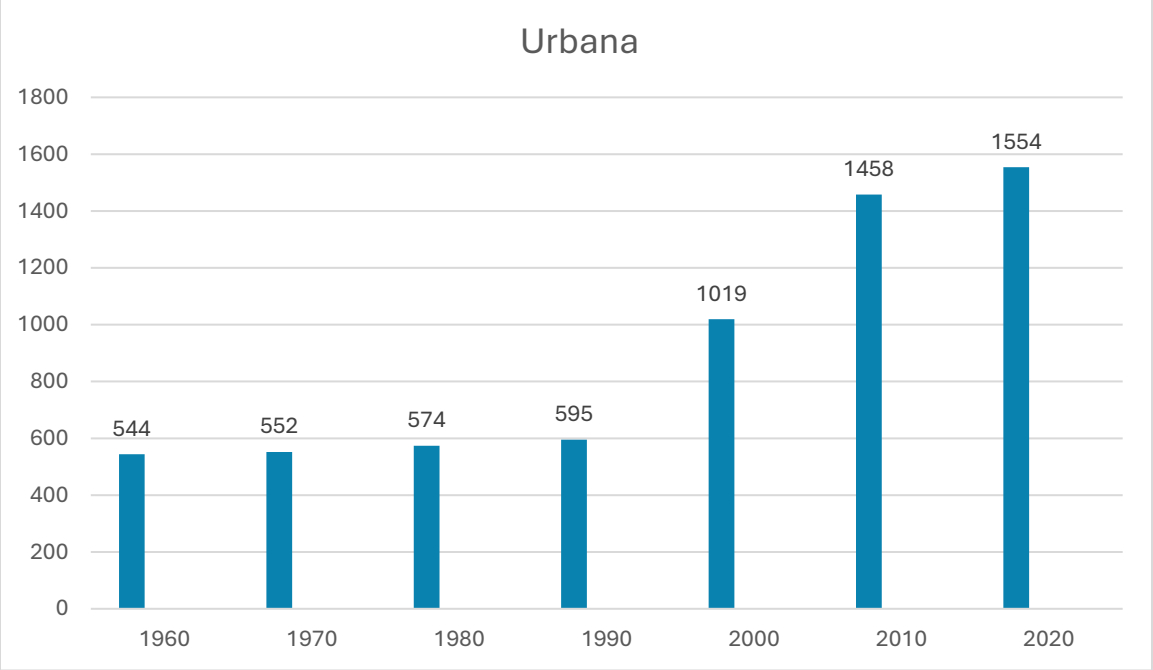


Table 49: Urbana Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	544	n/a	n/a
1970	552	8	1.4%
1980	574	22	4.%
1990	595	21	3.7%
2000	1019	424	71.3%
2010	1458	439	43.1%
2020	1554	96	6.6%

Table 50: Urbana Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**1641**	**1817**
2030	**1824**	**2264**
2040	**2007**	**2821**
2050	**2190**	**3515**

Table 51: Vulnerable Populations in the City of Urbana 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Urbana	470	32	111	8	6	0.39	97	6.2
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Urbana is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has a full time City Administrator/Clerk and a Deputy Clerk/Utility Billing Clerk which are hired positions. General operation of city services is conducted by three full-time public works employees. The city also has a part-time Building Inspector and part-time Library Director.

Codes, Ordinances, and Plans

The City of Urbana has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 94 – Public Water Well Protection
Chapter 145 – Dangerous Buildings
Chapter 150 – Building Numbering
Chapter 151 – Trees
Chapter 155 – Building Code
Chapter 156 – Fences
Chapter 157 – Storm Drainage
Chapter 158 – Sign Code
Chapter 165 – Zoning Regulations
Chapter 166 – Subdivision Regulations
Chapter 168: - Storm Water Management

Codes adopted by reference as per Chapter 155 are:

The International Building Code, 2003 Edition
The International Mechanical Code, 2003 Edition
The International Residential Code for One and Two Family Dwellings, 2003 Edition published by the International Code Council
The International Plumbing Code, 2003 Edition
The National Electrical Code, 2002 Edition

Certain provisions of the Iowa State Building Code promulgated by the State Building Code Commission or the State Fire Marshall as provided by Iowa Code, Chapters 100 and 103A are mandatory and supersede the above standards when they conflict.

Streets

The City of Urbana has approximately 200 blocks and 20 miles of streets. The street surfaces are seal coated, asphalt, or concrete. The city's three public works employees manage street maintenance for the city.

Water and Water Treatment

Water supply for the City of Urbana is supplied by three active wells. Water usage averages 170,000 gallons of water per day. The city has two above ground water storage towers holding a maximum of 200,000 gallons of water in each. The city has an above ground water storage tank that will hold a maximum of 500,000 gallons of water. Well field protection has been established to a distance of 2,640 feet in circumference for the city's wells. Each well is surrounded by an eight feet tall chain link fence with barbed wire across the top. Only one is illuminated by security lights at night. The city's three water treatment plants are located at 507 West Wood Street, 205 East Main Street, and 1211 West Main Street. The plant has stand-by power generation capabilities. The city's three public works employees are the city's Water Department.

Wastewater Treatment

The City of Urbana's wastewater treatment facility is located at 2101 ½ Faith Street. The city uses a combination of lagoons and a mechanically activated sludge plant. The lagoons are capable of handling a maximum of 900,000 gallons of wastewater per day and the mechanical system is capable of processing 498,000 gallons of wastewater per day. The City of Urbana's three public works employees are the city's Wastewater Department.

Emergency Services

Law Enforcement

The City of Urbana has a 28E agreement between the City of Urbana and the Benton County Sheriff's Office providing law enforcement services for the city. The Benton County Sheriff's Office, located in Vinton, 10 miles away, maintains a

staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Urbana receives fire protection from the Urbana Polk Township Fire Department. The department is staffed with 24 dedicated volunteers and maintains a fleet of seven vehicles for firefighting and rescue operations. The department averages 140 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county wide mutual aid agreement, making the services of an additional 12 departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Urbana is provided by the North Benton Ambulance Service, headquartered in Vinton, Iowa. The private non-profit service is the initial primary emergency medical service provider for the 200 square mile area encompassing the communities of Vinton, Garrison, Mt. Auburn, Brandon, Newhall, and Urbana with supplemental coverage to the communities of Shellsburg and Van Horne. The service is staffed with one full time director and 24 volunteers with varying levels of certification ranging from emergency medical technician to paramedic specialist.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy and East Central REC

Telecommunications, Cable TV, and Internet: USA Communications in Urbana.

Business and Industry

The City of Urbana is home to approximately 38 businesses. The Center Point-Urbana Intermediate School, with 43 employees, is the largest employer in the city.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Urbana City Hall – 102 Capitol Avenue
Urbana Emergency Services Building – 102 Capitol Avenue
Urbana Family Practice Clinic – 1002 W Main Street

Emergency Shelters
Urbana Community Center – 102 Capitol Avenue
Don Bosco Hall – 402 Ash Avenue

Transportation Systems
Interstate 380
State Highway 150
County Roads E2W and W26
Sunset Street (former Hwy 363)

Lifeline Utility Systems
City Wells – 205 E Main Street, 507 W Wood Street, and 1211 West Main Street
Wastewater Treatment Plant – 2101 ½ Faith Street
Public Works Department – 2101 ½ Faith Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
Center Point-Urbana Schools, Intermediate School– 202 W Main Street
Daycare providers

Financial Institutions
First Federal Credit Union – 205 Union Avenue North

Food Suppliers
None

Hardware Store
None

Gas & Fuel
Casey's General Store – 5350 Hutton Drive
Casey's General Store – 201 Sunset Street

Prescription Drug Suppliers
LaGrange Pharmacy Urbana – 1002 Main Street West

Healthcare Facilities
Urbana Family Practice Clinic – 1002 W Main Street

Funeral Service
None

Veterinary Service
None

Development Trends

2023: 4 buildings, average cost: $300,000
2022: 2 buildings, average cost: $300,000
2021: 7 buildings, average cost: $350,000

2020: 4 buildings, average cost: $406,300
2019: 9 buildings, average cost: $300,000
2018: 9 buildings, average cost: $275,000
2017: 5 buildings, average cost: $250,000
2016: 3 buildings, average cost: $160,000
2015: 1 building, cost: $200,000
2013: 5 buildings, average cost: $146,500
2012: 1 building, cost: $275,000
2010: 1 building, cost: $120,000
2009: 3 buildings, average cost: $180,000
2008: 5 buildings, average cost: $173,300
2007: 14 buildings, average cost: $154,300
2006: 13 buildings, average cost: $143,900
2005: 25 buildings, average cost: $136,700
2004: 20 buildings, average cost: $128,700
2003: 24 buildings, average cost: $122,900
2002: 19 buildings, average cost: $116,300
2001: 26 buildings, average cost: $108,200
2000: 25 buildings, average cost: $108,200
1999: 25 buildings, average cost: $101,700
1998: 30 buildings, average cost: $101,700
1997: 21 buildings, average cost: $ 90,300

According to the US Census Bureau, there have been an estimated 425 structures built since 1960 in the City of Urbana.

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City has more properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Urbana include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Urbana has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code ordinance, Stormwater Management ordinance, Zoning Regulations, Subdivision Regulations, and Floodplain Management that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and

contract as well as access to the county emergency management agency. However, the City of Urbana is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Urbana participates in the National Flood Insurance Program. The city does have an adopted Floodplain Management that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the City Clerk as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Urbana Polk Township Fire Department
  EMS: North Benton Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- EMA Indoor Warning System receiver in intermediate school building
- Adopted Uniform Building Code, National Electric Code, Uniform Plumbing Code and has a building inspector.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Develop and enhance local emergency operations plan. *No longer a priority. Will use county plan.*
- Develop community emergency shelters. *Ongoing*
- Flood proofing private property and public infrastructure. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Complete. Critical infrastructure within the city has backup power sources.*
- Encourage citizen disaster preparedness. *Ongoing*

- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Continue HAZMAT agreements and support regional HAZMAT teams.
- Develop community emergency shelters.
- Flood proofing private property and public infrastructure.
- Planning and medical equipment to support human disease and pandemic response.
- Encourage citizen disaster preparedness.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Compliance with the National Flood Insurance Program regulations.

VAN HORNE



Figure 34: Van Horne in 2018

Van Horne is located at 42º0”32”N 92º5’20”W in Sections 11, 12, 13, and 14 of Union Township in Benton County. According to the United States Census Bureau, the city has a total area of 0.63 square miles, all of which is land. The community of Van Horne was named after Sir William Cornelius Van Horne (1843-1915), Chicago-Milwaukee Railroad Superintendent. Van Horne was described as the “New Village” in 1883 and was to be an active business center, which it remains today.

As of the US Census of 2020, there were 774 people, 320 households, and 232 families in the city. There are 335 housing units. The community is predominantly white and 35.3% of households have children under the age of 18 years living in them. The average family size is 2.96 and the median age in the city is 39 years. The median household income is $113,342 and the employment rate is 81.9%. 47.2% of households have one or more people 60 years of age or over. 94.4% of housing units are one unit structures and 87.4% of housing units are owner occupied.

Figure 35: Van Horne Population Change 1960-2020

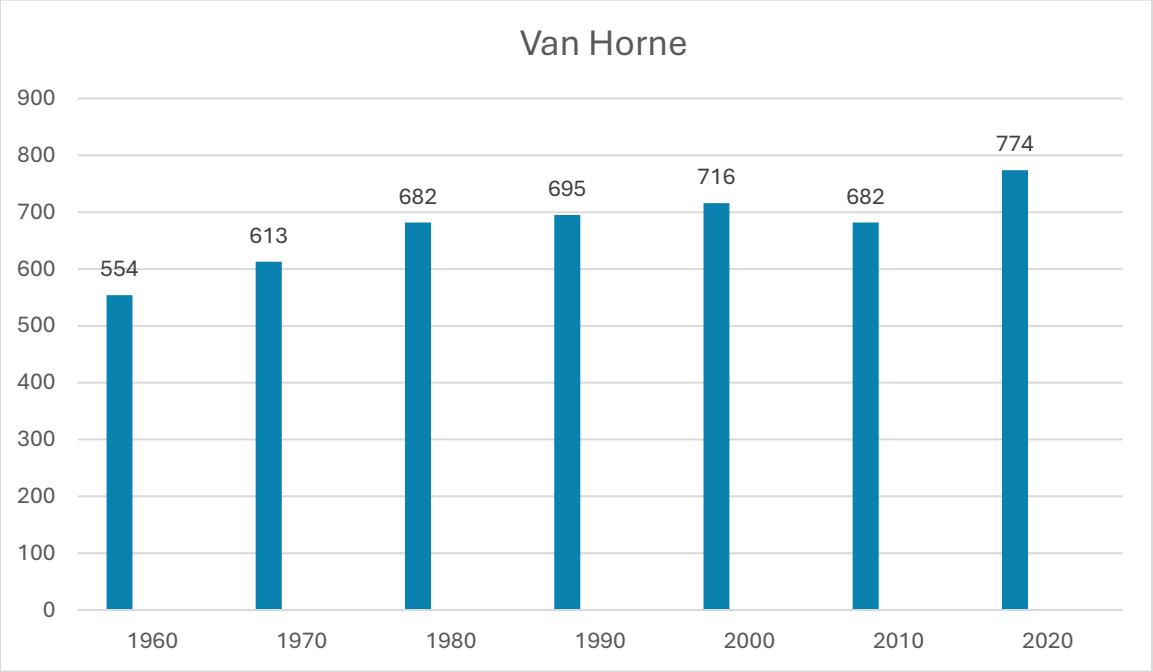


Table 52: Van Horne Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	554	n/a	n/a
1970	613	59	11%
1980	682	69	11%
1990	695	13	1.9%
2000	716	21	3%
2010	682	-34	4.7%
2020	774	92	13.5%

Table 53: Van Horne Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**708**	**712**
2030	**734**	**743**
2040	**760**	**776**
2050	**786**	**810**

Table 54: Vulnerable Populations in the City of Van Horne 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Van Horne	204	28	127	18	317	28	202	18
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Van Horne is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The City also has a full time city clerk, public works director, assistant public works director, library director, 2 library employees, and a janitor.

Codes, Ordinances, and Plans

The City of Van Horne has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 94 – Wells and Private Wells
Chapter 151 – Trees
Chapter 155 – Building Code (Permits)
Chapter 156 – Sign Code
Chapter 165 – Zoning Regulations
Chapter 166 – Subdivision Regulations

Codes adopted by reference as per Chapter 155 are:

The International Building Code, 2003 Edition
The International Mechanical Code, 2003 Edition
The International Residential Code for One and Two Family Dwellings, 2003 Edition published by the International Code Council
The International Plumbing Code, 2003 Edition

The National Electrical Code, 2002 Edition

Certain provisions of the Iowa State Building Code promulgated by the State Building Code Commission or the State Fire Marshall as provided by Iowa Code, Chapters 100 and 103A are mandatory and supersede the above standards when they conflict.

Streets

The City of Van Horne has approximately 40 blocks and 6 miles of streets. The street surfaces are gravel, seal coated, asphalt, or concrete. The city's two public works employees manage street maintenance for the city.

Water and Water Treatment

The City of Van Horne purchases water from the Poweshiek Rural Water Association. The city has one above ground water tower with a capacity of 500,000 gallons.

Wastewater Treatment

Wastewater Treatment for the City of Van Horne is accomplished with a 25 year old extended aeration activated sludge plant located on 11th Street.

Emergency Services

Law Enforcement

Law enforcement for the City of Van Horne is provided by the Benton County Sheriff's Office for coverage that is not to exceed 15 hours per week. Benton County Sheriff's Office, located in Vinton, 20 miles away, maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

Fire Department

The City of Van Horne receives fire protection from the Van Horne Fire Department (VHFD). The department is staffed with 15 dedicated volunteers and maintains a fleet of four vehicles for firefighting and rescue operations; two pumpers/tankers plus a personnel rescue/mobile command vehicle and a wildland firefighting rig. The department responds to an average of 30 fire and emergency alarms annually. The City of Van Horne has an ISO rating of 7 for Fire Protection.

Emergency Medical Services

Emergency medical services for the City of Van Horne is provided by the Van Horne First Responders, headquartered in the Van Horne Emergency Services Building. The service is the initial primary emergency medical service provider for the 51 square mile area of the Van Horne First Responder District. The service is staffed with 8 volunteers all certified as emergency medical technicians. The service responds to an average of 50 calls for service per year. Ambulance

transport service to the Van Horne First Responder District is provided by the North Benton Ambulance Service in Vinton, Iowa.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications, Cable TV, and Internet: Van Horne Cooperative Telephone.

Business and Industry

The City of Van Horne is home to approximately 30 businesses. The Benton Community Schools are the city's largest employer.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Van Horne City Hall – 114 Main Street
Van Horne Emergency Services Building – 98 Main Street
Van Horne Family Medical – 205 Main Street

Emergency Shelters
Van Horne Emergency Services Building – 98 Main Street

Transportation Systems
County Roads V66 and E44

Lifeline Utility Systems
Van Horne Sewer Plant – Section 11, Township 83N, R11 W
Van Horne Water Plant – not currently in operation

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
Benton Community Middle School – 600 1st Street
Benton Community High School – 600 1st Street
Early Beginnings Day Care – 98 3rd Avenue

Financial Institutions
Chelsea Savings Bank – 101 1st Street

Food Suppliers
The Depot – 100 1st Street
Crooked Antler – 107 Main Street

Hardware Store
None

Gas & Fuel
New Century Farm Service – 806 1st Avenue
The Depot – 100 1st Street
Nutrien Ag Solutions – 200 1st Avenue

Prescription Drug Suppliers
Cornerstone Apothecary – 122 Main Street

Healthcare Facilities
Van Horne Family Medical– 205 Main Street

Funeral Service
None

Veterinary Service
None

Development Trends

2006: 1 building, cost: $120,000
2005: 1 building, cost: $120,000
2004: 1 building, cost: $120,000
2003: 1 building, cost: $120,000
2002: 3 buildings, average cost: $111,700
2001: 1 building, cost: $123,00
2000: 1 building, cost: $150,000
1999: 1 building, cost: $105,000

According to the US Census Bureau, there have been an estimated 194 structures built since 1960 in the City of Van Horne.

Even with community growth, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City has about the same number of properties in the 100-year flood hazard area as reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Van Horne include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Van Horne has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code ordinance, Storm Drainage ordinance, Zoning Regulations, Subdivision Regulations, and Flood Plain Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Van Horne is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Van Horne participates in the National Flood Insurance Program. The city does have an adopted Floodplain Management Ordinance that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the City Clerk as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Van Horne Fire Department
  EMS: Van Horne First Responders and North Benton Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning siren with message capability
- EMA Indoor Warning System receiver in all school buildings
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Encourage construction of tornado safe rooms. *Ongoing*

- Develop community emergency shelters. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Emergency/disaster response training and exercises for emergency responders and key community and county leaders.
- Develop and enhance local emergency operations plan.
- Continue HAZMAT agreements and support regional HAZMAT teams.
- Encourage construction of tornado safe rooms.
- Develop community emergency shelters.
- Planning and medical equipment to support human disease and pandemic response.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Compliance with the National Flood Insurance Program regulations.

VINTON

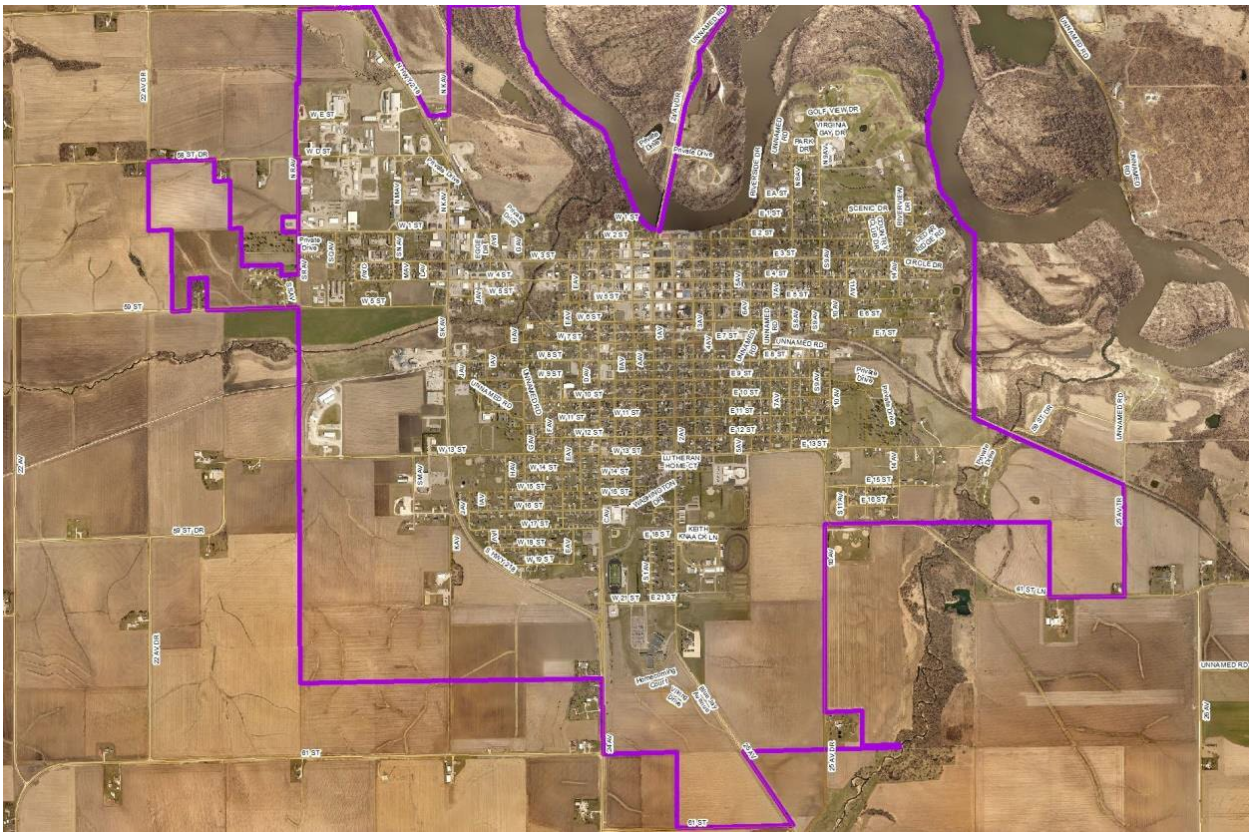


Figure 36: Vinton in 2018

Vinton is located at 42º9”51”N 92º1’34”W in Taylor Township in Benton County. According to the United States Census Bureau, the city has a total area of 4.83 square miles, of which 4.74 square miles is land and 0.09 square miles is water.

Vinton is located on U.S. Route 218 and the Cedar River, which has flooded parts of the city, most recently in 2008. The town’s extensive tree cover was damaged by a Derecho windstorm on July 11, 2011 and again on August 10, 2020. The city traces its origins to 1846, the same year that Iowa was granted statehood. In that year a portion of the current city site, an area known as Northport, was designated as the County Seat of Justice by the General Assembly of the State of Iowa. Not a single house was erected on the site for three years; then in 1849 several families settled in an area nearby known as Fremont. As time progressed over the next decade, three communities occupied the area: Northport, Fremont, and Vinton, with Vinton eventually becoming the name of the entire community. The community of Vinton was named after Honorary Plynn Vinton, a state legislator. The city was incorporated in 1869, the same year the railroad was extended to the city. Over the next century the city grew to a population of 5,000 people with all of the necessary infrastructure to support its population along with various business and industrial operations.

As of the US Census of 2020, there were 4,938 people, 2,117 households, and 1,278 families in the city. There are 2,262 housing units. The community is predominantly white and 30% of households have children under the age of 18 years living in them. The average family size is 2.81 and the median age in the city is 44.3 years. The median household income is $44,053 and the employment rate is 60.6%. 49.5% of households have one or more people 60 years of age or over. 88.2% of housing units are one unit structures and 73.2% of housing units are owner occupied.

Figure 37: Vinton Population Change 1960-2020

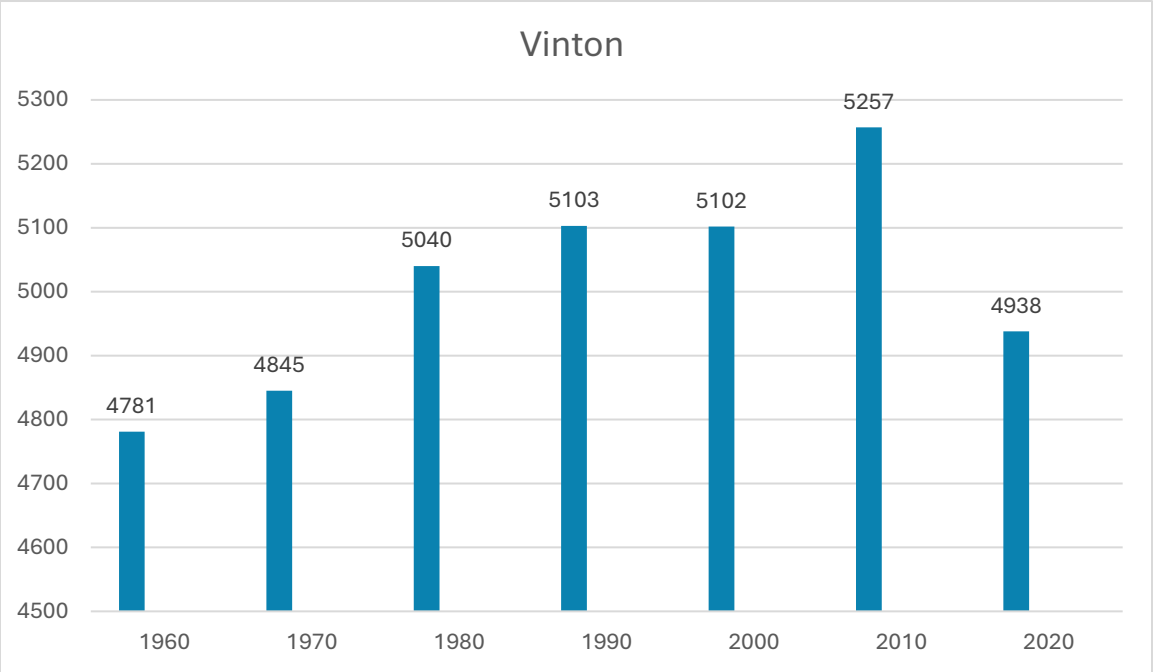


Table 55: Vinton Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	4781	n/a	n/a
1970	4845	64	1.3%
1980	5040	195	4.0%
1990	5103	63	1.3%
2000	5102	-1	0%
2010	5257	155	3%
2020	4938	319	6%

Table 56: Vinton Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**5340**	**5347**
2030	**5433**	**5449**
2040	**5526**	**5552**
2050	**5619**	**5657**

Table 57: Vulnerable Populations in the City of Vinton 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Vinton	1299	25	1027	20	1161	23.5	1156	23
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Vinton is governed by a Mayor/Council form of government with six council members and a mayor, all of whom are elected. General operation of the city is directed by a full-time city administrator. Council members serve on various standing committees concerned with aspects of the city's government, including Public Safety, Public Works, Culture, Recreation, Health & Social Services; General Government, Community & Economic Development, Business Type Activities, and the Communications and Electric Utility Boards. Both the City Attorney and City Clerk/Treasurer are appointed by the council. The city has a total of 54 full-time employees and 128 part-time employees including volunteer firefighters who are paid on-call.

Codes, Ordinances, and Plans

The City of Vinton has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 23 – Planning and Zoning Commission
Chapter 94 – Well Field Protection
Chapter 27 – Airport Zoning Regulations
Chapter 145 – Manufactured, Mobile and Modular Homes
Chapter 155 – Building Code and Building and Housing Board of Appeals
Chapter 156 – Sign Code
Chapter 157 – Abatement of Unsafe Buildings and Equipment
Chapter 160 – Flood Plain Regulations
Chapter 165 – Zoning Regulations
Chapter 170 – Subdivision Control – General Provisions
Chapter 171 – Subdivision Control – Procedures

Chapter 172 – Subdivision Control – Improvements and Design Standards

Codes adopted by reference as per Chapter 155 are:

The International Building Code, 2021 Edition
The International Mechanical Code, 2021 Edition
The International Code Council Electrical Code, 2020 edition
The International Residential Code for One and Two Family Dwellings, 2021 Edition published by the International Code Council
The State Plumbing Code for Iowa promulgated by the Iowa Department of Public Health

Certain provisions of the Iowa State Building Code promulgated by the State Building Code Commission or the State Fire Marshall as provided by Iowa Code, Chapters 100 and 103A are mandatory and supersede the above standards when they conflict.

The City of Vinton developed a Comprehensive SMART Plan in 2012.

Highway/Interstate

The City of Vinton is served by two major highways, Highway 150 and 218. County Road E24 provides another paved route to and from the city.

Air

Vinton has its own airport; the Vinton Veterans Memorial Airport located three miles north of the city on Highway 150. The airport has two runways: Runway 9/27 measuring 4,000 feet long by 60 feet wide and Runway 16/34 measuring 2,500 feet long by 50 feet wide. Management of the airport is overseen by the Vinton Veterans Memorial Airport Commission.

Rail

Rail service is provided to the City of Vinton by the CN-Iowa Northern Railroad. The railroad averages two trains daily through the city.

Streets

The City of Vinton has approximately 672 blocks and 48 miles of streets. Surfaces of the city's streets include 33 percent concrete; 21 percent asphalt; 2 percent brick; 40 percent seal coat and 4 percent gravel. The City of Vinton's Street Department has 8 employees and is headquartered at 901 West 3rd Street.

Water and Water Treatment

Water supply for the City of Vinton is supplied by three wells, a fourth well has been capped and is inactive. Water usage averages 550,000 gallons of water per day. The city has two above ground water storage towers holding a maximum of 1,250,000 gallons of water. Well field protection has been established to a distance of 1,000 feet in circumference of all three of the city's wells. Each well is surrounded by an eight feet tall

chain link fence with barbed wire across the top and are illuminated by security lights at night. The city's water treatment plant is located at the West Well at 903 West 1st Street. Security systems in place at the water treatment plant include alarm systems for any window breakage or unauthorized door opening and security cameras. The City of Vinton's Water Department has 4 employees and is headquartered at 903 West 1st Street.

Wastewater Treatment

The City of Vinton's wastewater treatment facility is located at 6026 25th Avenue Drive on the city's southeast side. The activated sludge system constructed in 1982 has a maximum capacity of 1.8 million gallons of wastewater per day and uses a system of seven lift stations. A major plant update began in the Spring of 2024 and is expected to be complete by the Fall of 2026. The update is adding a 10.5 million gallon overflow basin, a new fine screening building, a sludge press and storage building, and an upgrade to the main lift pumps to handle high rain events. The average use, as of May 2025, was 600,000 gallons per day. The City of Vinton's Wastewater Department has 2 employees.

Emergency Services

Law Enforcement

Law enforcement for the City of Vinton is provided by the Vinton Police Department. The department maintains a staff of 6 full-time patrol officers, a full-time Chief of Police, Police Captain, Investigator, and School Resource Officer (who serves the Vinton Shellsburg Community School District) plus a contingent of 3 reserve officers. The department also has a canine unit with one police dog. With this staff the department is capable of providing 24-hour coverage for the city. The Benton County Sheriff's Office and Benton County Jail are also headquartered in Vinton. The office maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers. A 28E Agreement between Vinton Police Department and Benton County Sheriff's Office allows for cross coverage between the two entities as situations dictate.

Fire Department

The City of Vinton receives fire protection from the Vinton Fire Department. The department is staffed with 25 dedicated volunteers and maintains a fleet of six vehicles for firefighting and rescue operations. The department averages 80 alarms per year in the city and the surrounding rural district. The fire departments in Benton County have formed a county-wide mutual aid agreement, making the services of an additional 12 fire departments available to the city in the event of a major fire or emergency.

Emergency Medical Services

Emergency medical services for the City of Vinton is provided by the North Benton Ambulance (NBA), headquartered in Vinton, Iowa. The private-nonprofit service is the primary emergency medical service provider for 200 square mile area encompassing the communities of Vinton, Garrison, Mt. Auburn, Brandon, and Newhall with supplemental coverage to the communities of Shellsburg, Urbana, and Van Horne. The service is staffed with one full time director and 24 volunteers with varying levels of certification ranging from emergency medical technician to paramedic specialist. In 2014 the service responded to 686 calls for service ranging from medical transfers to multiple casualty incidents.

Utilities

Natural Gas: Alliant Energy

Electricity: Purchased by the Vinton Municipal Electric Utility from the Resale Power Group. The Vinton Municipal Electric Utility is its own entity with its own governing body. The Utility has seven generators capable of generating 17.675 megawatts of power and can power the entire community. A separate hazard mitigation plan has been developed for the utility.

Telecommunications, Cable TV, and Internet: Local telephone is provided by the Vinton Municipal Communications Utility that currently provides high speed internet, cable TV, and telephone services. Cable TV services are expected to end in September 2026.

Business and Industry

The City of Vinton is home to numerous businesses and industries. A downtown area along Fourth Street encompassing approximately ten square blocks in the main area of commerce with approximately 100 retail and service businesses. Virginia Gay Hospital and/or the Vinton Shellsburg Community School District are the largest employers in the city.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Vinton City Hall & Police Station – 110 W 3rd Street and 310 A Avenue
Benton County Court House – 111 E 4th Street
Vinton Fire Station – 109 E 2nd Street
North Benton Ambulance Headquarters – 704 W 4th Street

Emergency Shelters

Vinton Skate and Activity Center – 1703 C Avenue

Transportation Systems

Highway 218
Highway 150
Cedar River Bridge

Lifeline Utility Systems

Vinton Municipal Communication Utility (iVinton) – 414 A Avenue
Water Treatment Plant – 903 W 1st Street
City Wells – 903 W 1st Street
Wastewater Treatment Plant – 6026 25th Avenue Drive
Vinton Municipal Electric Utility Plant – 214 E 2nd Street & 201 E 2nd Street
Vinton Street Department – 901 W 3rd Street

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)

Virginia Gay Nursing & Rehab – 502 N 9th Avenue
Vinton Lutheran Home – 1301 2nd Avenue
Bright Futures Child Care Center – 1310 W 1st Street
Head Start Day Care and Preschool – 202 E 4th Street
Vinton-Shellsburg Schools:
Tilford Elementary – 308 E 13th Street
Creative Kids Child Care (inside Tilford Elementary)
Washington Middle School – 212 W 15th Street
Vinton-Shellsburg High School – 210 W 21st Street
Windsor Assisted Living Manor – 1807 W 5th Street

Financial Institutions

US Bank – 110 W 4th Street
Farmer's Savings Bank & Trust – 401 B Avenue
Cedar Valley Bank and Trust – 405 W 3rd Street

Food Suppliers

Fareway Stores – 501 A Avenue
Casey's General Store – 112 W 4th Street
Hy-Vee Dollar Fresh – 911 South K Avenue
Dollar General Store – 211 North K Avenue
Family Dollar Store – 906 South K Avenue
Casey's General Store – 814 C Avenue
The Ron-Da-Voo – 414 1st Avenue
Vinton Family Restaurant – 310 W 21st Street
Tootsie's – 210 North K Avenue
Pizza Ranch – 219 W 4th Street
Mexican Restaurant – 303 North K Avenue (currently closed but new one expected to open in same location).
Lotus Chinese Restaurant – 102 W 4th Street
McDonald's – 308 South K Avenue

Subway – 309 South K Avenue
H Squared – 213 W 4th Street
Beast & Bird – 314 North K Avenue
Kwik Star – 1208 W 13th Street
Fifth Street Koffee Haus – 102 E 5th Street
Brickside Brew-n-Chew – 115 W 4th Street

Hardware Store

Thiesen's – 1405 Hwy 218 South
McDowell's – 420 2nd Avenue
Rabe Hardware – 112 W 4th Street

Gas & Fuel

Casey's General Store – 1112 West 4th Street
Casey's General Store – 814 C Avenue
Henkle's Service and Repair – 319 W 4th Street
Guru Nanak Enterprises – 310 South K Avenue
Hy-Vee Dollar Fresh – 911 South K Avenue
Kwik Star – 1208 W 13th Street

Prescription Drug Suppliers

LaGrange Pharmacy – 111 W 4th Street
Hy-Vee Dollar Fresh – 911 South K Avenue

Healthcare Facilities

Virginia Gay Hospital – 502 N 9th Avenue
Vinton Family Medical Clinic – 504 N 9th Avenue
Vinton Family Practice/St. Luke's Clinic – 1803 C Avenue

Funeral Service

Phillips Funeral Homes – 605 2nd Avenue
Van Steenhuyse-Teahan Funeral Home – 1212 1st Avenue

Veterinary Service

Vinton Urbana Veterinary Hospital – 5574 24th Ave Dr.

Development Trends

Single Family New House Building Permits (city-data.com):
2023: 7 buildings, average cost: $343,500
2022: 7 buildings, average cost: $714,900
2021: 10 buildings, average cost: $532,400
2020: 1 building, cost: $190,000
2019: 1 building, cost: $190,000
2018: 1 building, cost: $190,000
2017: 1 building, cost: $190,000
2016: 1 building, cost: $190,000
2015: 2 buildings, average cost: $190,000
2014: 3 buildings, average cost: $366,700

2013: 1 building, cost: $400,000
2012: 4 buildings, average cost: $300,000
2011: 5 buildings, average cost: $240,900
2010: 2 buildings, average cost: $234,800
2009: 3 buildings, average cost: $199,300
2008: 1 building, cost: $139,400
2007: 3 buildings, average cost: $139,400
2006: 4 buildings, average cost: $139,400
2005: 6 buildings, average cost: $140,400
2004: 5 buildings, average cost: $138,400
2003: 5 buildings, average cost: $149,000
2002: 9 buildings, average cost: $150,000
2001: 6 buildings, average cost: $162,200
2000: 7 buildings, average cost: $185,000
1999: 8 buildings, average cost: $206,000
1998: 11 buildings, average cost: $166,000
1997: 9 buildings, average cost: $116,000

According to the US Census Bureau, there have been an estimated 1,030 structures built since 1960 in the City of Vinton.

Even with a slight decline in population, the City's vulnerability to hazards has not changed significantly as a result of changes in development. The City does have a few more properties in the 100-year flood hazard area and the 500-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Vinton include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail/air, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Vinton has a number of existing capabilities to support mitigation strategy. The city ordinances include a Building Code ordinance, Zoning Regulations, Subdivision Control, and Flood Plain Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources in the city as well as access to the county emergency management agency. However, the City of Vinton is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Vinton participates in the National Flood Insurance Program. The city does have adopted Flood Plain Regulations that meet the NFIP requirements and govern the city's activities in identified flood plain areas. This adopted regulation identifies the city Zoning Administrator as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Vinton Police Department
  Fire: Vinton Fire Department
  EMS: North Benton Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Battery backup outdoor warning sirens (3) with message capability
- EMA Indoor Warning System receiver in all school buildings
- Adopted Uniform Building Code, National Electric Code, Uniform Plumbing Code and has a building inspector
- Safe room constructed in low-to-moderate income subdivision.
- Refurbished all four outdoor warning sirens to have voice messaging and battery backup.
- Currently buying out flood damaged properties.
- Put in retention basin on south side of City to help with flash flooding.
- Acquired additional emergency siren on the south edge of town provided by Benton County Emergency Management Commission.
- Yearly Fire Department and Law Enforcement education on pipeline awareness.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Continue to cooperate with local medical facilities and Public Health Department officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents. *No longer a priority*
- Encourage construction of tornado safe rooms. *Ongoing*

- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Develop community emergency shelters. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority*
- Public Awareness *Ongoing (combine with other public awareness measure)*
- Flood proofing private property and public infrastructure. *Ongoing*
- Flash Flood and River Flood preparation. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Continue HAZMAT agreements and support regional HAZMAT Teams.
- Encourage citizen disaster preparedness.
- Encourage construction of tornado safe rooms.
- Develop and enhance local emergency operations plans.
- Flash Flood and River Flood preparation.
- Complete reconstruction of West 4th Street from C Avenue to K Avenue. Reconstruction to include new storm sewers. Construction expected in Summer of 2028.
- Creation of a 9 million gallon storm water holding cell at the wastewater treatment plant. Project completion is expected by Fall 2026. Holding cell will help alleviate sewer system inundation and neighborhood flood events/backup during high rain events.
- Relocation of fire station and police department out of the flood plain,
- Increased accessibility to the Storm Shelter (by providing remote unlock access to County Dispatch in the event of severe weather).
- Increase public awareness and safety at rail crossings. Consider upgrading rail crossings so all crossings have stop arms.
- Compliance with the National Flood Insurance Program regulations.

WALFORD

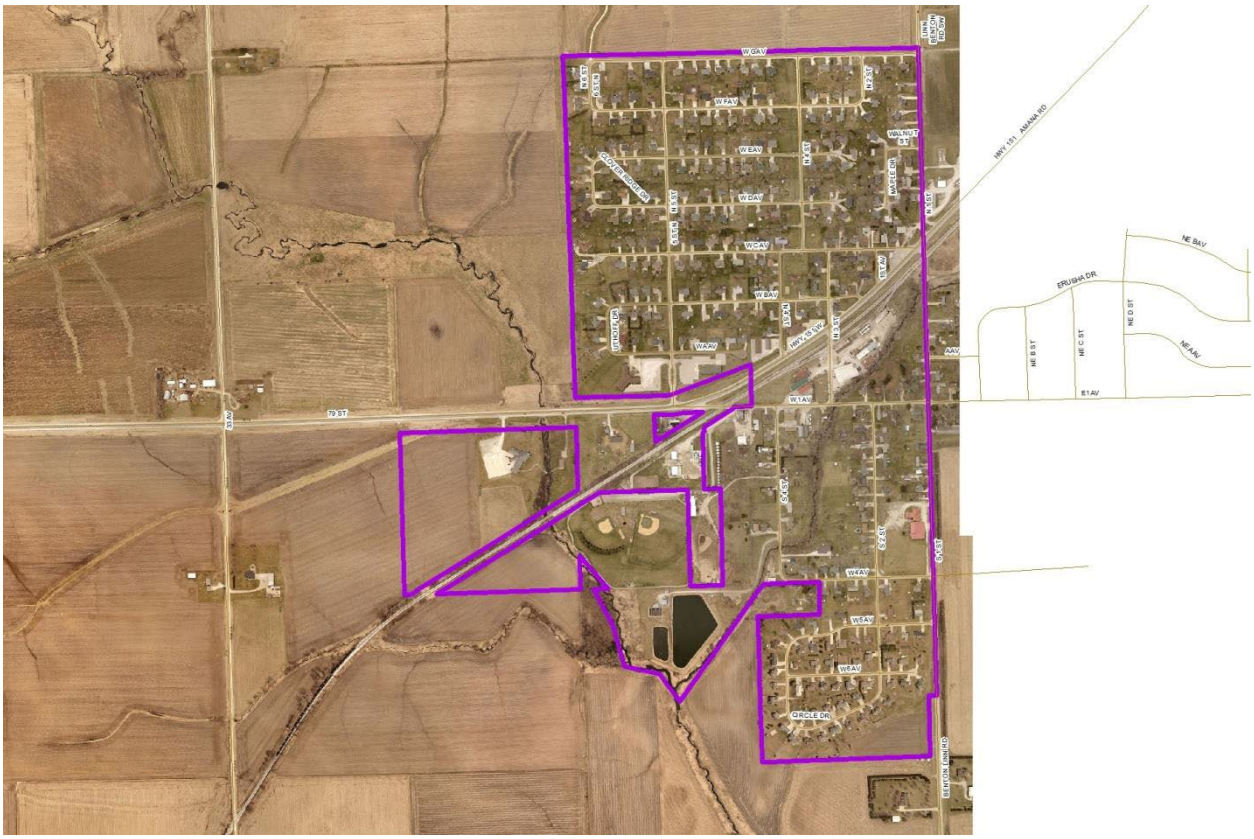


Figure 38: Walford in 2018

Walford is located at 41º52”41”N 91º50’6”W, on the county line in southeast Benton County. Seventy-five percent of the city is located in Benton County and twenty-five percent is in Linn County. Walford promotes diversity in economic growth, planning, and sound strategies for future community changes, a broad local business base, and an excellent quality of life. According to the United States Census Bureau, the city has a total area of 1.11 square miles, all of which is land. In 2018 the city annexed an additional 21 acres in Benton County.

As of the US Census of 2020, there were 1,366 people, 485 households, and 403 families in the city. There are 497 housing units. The community is predominantly white and 40.4% of households have children under the age of 18 years living in them. The average family size is 3.42 and the median age in the city is 37 years. The median household income is $128,750 and the employment rate is 81.1%. 20.5% of households have one or more people 60 years of age or over. 96.4% of housing units are one unit structures and 92.3% of housing units are owner occupied.

Figure 39: Walford Population Change 1960-2020

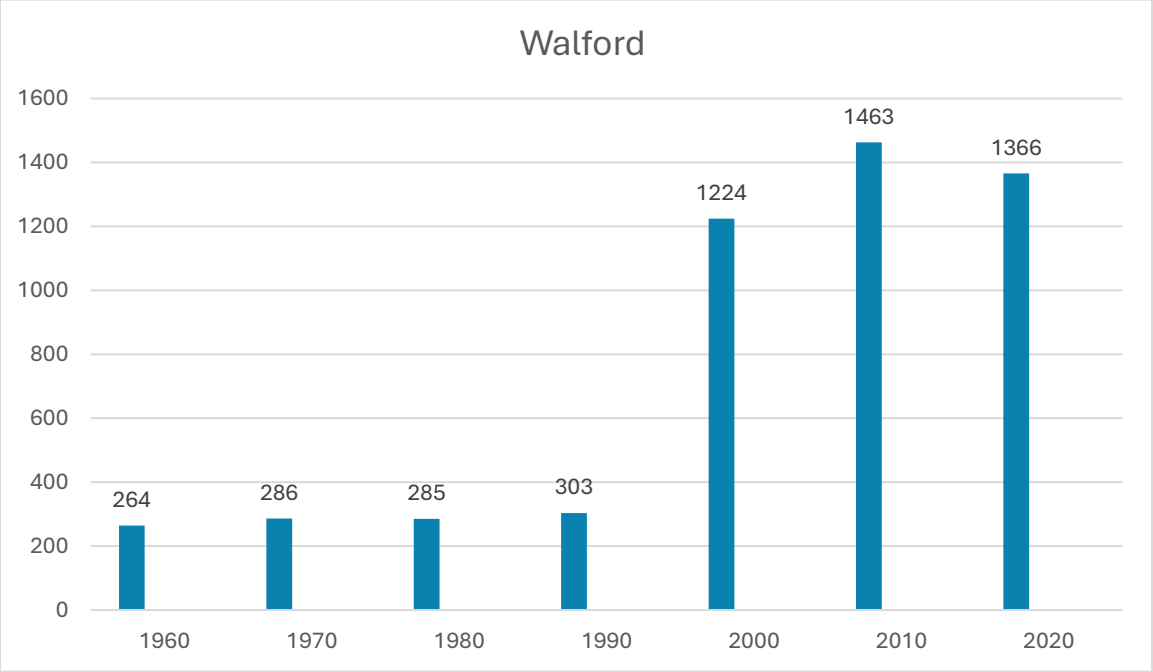


Table 58: Walford Population Change Statistics 1960-2020

Year	Population	Number Change (Linear Method)	Growth/Decline Rate (Geometric Method)
1960	264	n/a	n/a
1970	286	12	4.5%
1980	285	-1	0.3%
1990	303	18	6.3%
2000	1224	921	304%
2010	1463	239	19.5%
2020	1366	-97	6.6%

Table 59: Walford Projected Population Change 2020-2050

Year	Linear Projections	Geometric Projections
2020	**1703**	**2452**
2030	**1943**	**4110**
2040	**2183**	**6888**
2050	**2423**	**11544**

Table 60: Vulnerable Populations in the City of Walford 2010 and 2020

Area	2010				2020			
	<18	**%**	**>64**	**%**	**<18**	**%**	**>64**	**%**
Walford	488	33	77	5	378	28	128	10
Benton County	5,781	22	4,015	15	6,510	25	4,962	19
Iowa	716,011	24	466,169	15	830,048	26	569,081	18

Government

The City of Walford is governed by a Mayor/Council form of government with five council members and a mayor, all of whom are elected. The city also has a full-time city clerk, two full-time public works employees, and a part-time Recreation Coordinator.

Codes, Ordinances, and Plans

The City of Walford has various ordinances regulating development and building construction in the city. Chapters of the city's code relative to development and building construction include:

Chapter 36 – Disaster Recovery and Reconstruction
Chapter 37 – Floodplain Regulations
Chapter 145 – Dangerous Buildings
Chapter 146 – Sign Code
Chapter 147 – Wind Energy Conversion Systems
Chapter 148 – Geothermal Well Standards
Chapter 149 – Solar Energy Systems
Chapter 165 – Zoning Regulations, including the Sign Code
Chapter 166 – Subdivision Regulations

Streets

The City of Walford has approximately 10 miles of streets. Surfaces of the city's streets are asphalt, concrete and seal coat. The city's two public works employees take care of street maintenance for the city.

Water and Water Treatment

The City of Walford does not have a public municipal system. Water is supplied through either private wells or community water systems.

Wastewater Treatment

Wastewater treatment for the City of Walford is accomplished with an extended air activated sludge treatment plant located on 4th Street South. The plant has a capacity of 430,000 gallons per day.

Emergency Services

Law Enforcement

Law enforcement for the City of Walford is provided by contract with the Linn County Sheriff's Department headquartered in Cedar Rapids, Iowa.

Fire Department

The City of Walford receives fire protection from the Fairfax Fire Department (FFD). The department has two stations, one in Fairfax and one in Walford. The FFD is staffed with 37 dedicated volunteers, 11 of whom reside in Walford. The department maintains a fleet of eight vehicles: 2 pumpers, 1 tanker, 1 pumper/tanker, 2 medical response units, 1 rescue unit, and 1 wildland/grass firefighting rig, plus a personnel rescue/mobile command vehicle. The department responds to an average of 175 fire and medical alarms annually.

Emergency Medical Services

Emergency medical services for the City of Walford is provided by the Fairfax Fire Department which maintains a medical first response unit in Walford. EMS transport service is provided by Area Ambulance Service, a paramedic level service headquartered in Linn County. The Fairfax Fire Department responds to an average of 150 medical calls annually.

Utilities

Natural Gas: Alliant Energy

Electricity: Alliant Energy

Telecommunications, Cable TV, and Internet: South Slope Cooperative Communications Company located in North Liberty, Iowa.

Business and Industry

Walford is home to 27 commercial and industrial enterprises. GSTC Trucking and Midwest Computer Broker are the city's largest employers.

Critical Facilities

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk.

Facilities essential to the health and welfare of the entire population, especially following a disaster event:

Walford City Hall – 120 5th Street North
Fairfax Fire Station-Walford Station – 120 5th Street North

Emergency Shelters
Clover Ridge United Methodist Church – 125 5th Street North
Walford Community Center – 120 5th Street North
Walford Public Works Building – 800 G Street

Transportation Systems
Highway 151

Lifeline Utility Systems
Walford Wastewater Treatment Plant – 195 4th Street South

Vulnerable Population Centers (Schools, nursing homes, childcare facilities)
None

Financial Institutions
Central State Bank – 345 Highway 151

Food Suppliers
Wild Hogs Saloon & Eatery – 350 Commercial Drive
Bully's Angle Inn – 505 Highway 151

Hardware Store
None

Gas & Fuel
Walford BP – 200 Highway 151
Fauser Oil – 100 Highway 151

Prescription Drug Suppliers
None

Healthcare Facilities
None

Funeral Service
None

Veterinary Service
None

Development Trends

2023: 2 buildings, average cost: $80,000
2018: 1 building, cost: $230,000
2016: 1 building, cost: $200,000
2013: 4 buildings, average cost: $221,300
2012: 1 building, cost: $200,000
2010: 2 buildings, average cost: $250,000
2009: 1 building, cost: $130,000
2008: 5 buildings, average cost: $261,200
2007: 6 buildings, average cost: $259,500
2006: 9 buildings, average cost: $218,200
2005: 12 buildings, average cost: $212,400
2004: 17 buildings, average cost: $199,900
2003: 13 buildings, average cost: $196,800
2002: 9 buildings, average cost: $168,300
2001: 6 buildings, average cost: $150,800
2000: 17 buildings, average cost: $141,500
1999: 30 buildings, average cost: $137,600
1998: 48 buildings, average cost: $136,000
1997: 43 buildings, average cost: $124,100

According to the US Census Bureau, there have been an estimated 396 structures built since 1960 in the City of Walford.

The City's vulnerability to hazards has not changed significantly as a result of changes in development. The City has more properties in the 100-year flood hazard area than reported in the 2021 hazard mitigation plan.

Key Issues

Natural hazards potentially impacting the City of Walford include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road/rail, and radiological event.

Capabilities to Support Mitigation Strategy

The City of Walford has a number of existing capabilities to support mitigation strategy. The city ordinances include a Zoning Regulations, Subdivision Regulations, and Floodplain Regulations that support mitigation. The City has some ability to expand on these capabilities. As a city government, the city has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through

private activities, grants, and knowledge/expertise. There are emergency services resources both in the city and contract as well as access to the county emergency management agency. However, the City of Walford is a small rural community and these resources are more limited than those of a larger urban community.

NFIP Participation

The City of Walford participates in the National Flood Insurance Program. The city does have an adopted Floodplain Regulation that meets the NFIP requirements and governs the city's activities in identified floodplain areas. This adopted regulation identifies the City Mayor as the manager/administrator of floodplain management.

Current Mitigation Activities and Measures

- Emergency Services:
  Law: Benton County Sheriff's Department
  Fire: Fairfax/Walford Fire Department
  EMS: Norway First Responders and Area Ambulance
  Haz-Mat: Linn County Hazardous Materials Team – Technician Level
- StormReady Community
- Electricity required outdoor warning siren
- Various ordinances for community safety and cleanliness

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Maintain and support community and county public safety and emergency service departments. *Ongoing*
- Develop and enhance local emergency operations plan. *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Maintain electronic resource directory of local resources. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
  - *Battery backup for outdoor warning siren.*
- Develop community emergency shelters. *Ongoing*
- Planning and medical equipment to support human disease and pandemic response. *No longer a priority. Will refer to county public health.*
- Flood proofing private property and public infrastructure. *Ongoing*
- Compliance with the National Flood Insurance Program regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Maintain and support community and county public safety and emergency service departments.
- Develop and enhance local emergency operations plan.
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Maintain electronic resource directory of local resources.
- Encourage citizen disaster preparedness.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Develop community emergency shelters.
- Flood proofing private property and public infrastructure.
- Compliance with the National Flood Insurance Program regulations.

BENTON COUNTY UNINCORPORATED

The area that became Benton County was acquired by the United States as part of the Louisiana Purchase of 1803. The county was named after US Senator Thomas Hart Benton and was organized as Benton County in 1846. The area was first settled in 1839 by two adventurous young men, George Wright and John Smith who built a cabin in Canton Township and cleared some land. Hoosier's Point was the first settlement in Benton County. It eventually became known as Marysville and is today the City of Urbana. The county's first post office was established in Vinton in 1846 and Vinton was selected as the county seat. The county's current courthouse is the third that the county has had and was constructed in 1905. The first courthouse was razed by fire in 1853. The second courthouse, which was built in the southeastern corner of the current courthouse square, was dedicated in 1856. It was torn down to make room for the current courthouse. In 1865 the population of Benton County had risen to 11,245. By 1900 it was 25,177. In 1970, the population of the county was 22,885.

Benton County has 75 facilities worth a combined total of $13,194,200. None of the facilities are located within a flood zone.

The US Census Bureau estimated the population of Benton County's unincorporated area at 8,324 living in 3,232 housing units in 2020.

Regulations

The following ordinances related to hazard mitigation are in force in Benton County. In addition to these regulations there are various regulations that are covered under the Code of Iowa.

Ordinance Number	Title
9	Hazardous Substances & Waste
15	Vinton Airport Tall Structure Zoning Ordinance
16	Issuing Siting Permits
17	Nuisance
20	Belle Plaine Airport Tall Structure Zoning Ordinance
24	Land Use
33	Rural Address System
34	Water Wells
35	Eastern Iowa Airport Zoning Regulations
47	Class "C" Roads
48	Quarantine and Isolation
61	Subdivision
62	Amend Land Use Ordinance
70	Snow Removal

71	All-Terrain Vehicles
73	Private Sewage Disposal System
79	Flood Plain Management

Benton County also maintains a Comprehensive Plan.

Water and Water Treatment

Benton County unincorporated does not have a water treatment system. The only organized means of water supply in the county is rural water that is supplied by Poweshiek Rural Water Association headquartered at 125 Industrial Drive, Brooklyn, Iowa. The association has 1,050 clients in the townships of Bruce, Cedar, Eldorado, Fremont, Florence, Iowa, Jackson, Leroy, Monroe, St. Claire, and Union. This includes the Cities of Luzerne and Van Horne, as well as the unincorporated community of Watkins. All of the remaining residents of rural Benton County maintain their own private wells.

Wastewater Treatment

Wastewater treatment for the majority of the Benton County unincorporated area is accomplished through private septic systems. Poweshiek Water Association does maintain the sewer system in the small, unincorporated community of Watkins.

Emergency Services

Emergency Management

Emergency Management for all of Benton County including the unincorporated area is provided by the Benton County Emergency Management Agency, headquartered in the Benton County Law Enforcement Center in Vinton, is governed by a board of commissioners comprised of the Mayors from each of the incorporated jurisdictions in the County or their designees, a representative of the Benton County Sheriff's Office, and a representative of the Benton County Board of Supervisors. The agency currently has one full time employee, the Emergency Management Coordinator, and one volunteer who assists in the office. The Emergency Management Agency works in coordination with local fire, law enforcement, EMS, and government officials to draft and implement workable emergency action plans in the community. Furthermore, the Agency is responsible for the monthly testing of all outdoor warning sirens in the County.

Law Enforcement

Law enforcement for the unincorporated area of Benton County is provided by the Benton County Sheriff's Office. The office is headquartered in Vinton and maintains a staff of 55 people, 21 of whom are actively engaged in law enforcement activities as peace officers.

HAZMAT Services

A regional hazardous materials team is contracted to assist Benton County with hazardous materials release or spill. The team is located within fifteen minutes of Atkins and is operated by the Linn County Hazardous Materials Response Team headquartered in Cedar Rapids. The team assists Benton County fire departments with hazardous materials emergency procedures and training, thus reducing the possibility of additional contamination in a hazardous materials emergency. An evacuation plan is also in place in the Benton County Multi-Hazard Emergency Operations Plan. The plan is intended to be used in coordination with activities of the Linn County Hazardous Materials Response Team and community emergency responders.

Fire Departments

Benton County unincorporated areas receive their fire protection from 14 domiciled fire departments in Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, and Vinton, Staffing of these departments is entirely volunteer. The fire departments of Benton County are all signatory to a county-wide mutual aid agreement making the services of all departments in the county available to each other in the event of a major fire or emergency. Fire departments in neighboring counties with territory in Benton County include Brandon, Dysart, Fairfax, La Porte City, and Walker.

Emergency Medical Services

Emergency medical services in unincorporated Benton County include first responder services in Atkins, Blairstown, Garrison, Keystone, Newhall, Norway, and Van Horne. Ambulance services include Blairstown, Belle Plaine, and North Benton. Emergency medical service providers in neighboring counties that also provide service to Benton County include the Brandon First Responders, Dysart Ambulance Service, Elberon Ambulance Service, Hiawatha Ambulance Service, La Porte City Ambulance Service, and Area Ambulance Service from Cedar Rapids.

<u>Utilities Providers</u>

Natural Gas – Alliant Energy, Northern Natural Gas

Electricity – Alliant Energy, East Central Iowa REC

Telephone – South Slope Communications Company located in North Liberty, Iowa; Van Horne Cooperative Telephone located in Van Horne, Iowa; USA Communications located in Shellsburg, Iowa; Coon Creek Telephone Company located in Blairstown, Iowa; and Atkins Telephone Company located in Atkins, Iowa.

Cable TV - South Slope Communications Company located in North Liberty, Iowa; Van Horne Cooperative Telephone located in Van Horne, Iowa; USA Communications located in Shellsburg, Iowa; Coon Creek Telephone Company

located in Blairstown, Iowa; and Atkins Telephone Company located in Atkins, Iowa.

Business and Industry

Agriculture is the predominant business in the unincorporated area of Benton County. Census data indicated that in 2022 the county had 1,090 farms totaling 377,259 acres or 82% of the land area of the county. The average size of a farm in Benton County is 346 acres and 92% of the farms in the county are family farms.

According to the information provided by the Benton County Assessor's Office there are 132 non-farming businesses and industries located in the unincorporated areas of Benton County.

CRITICAL FACILITIES

Critical facilities are those structures and infrastructure that the community places a priority on protecting. Damage to these facilities can impact the delivery of vital services, cause greater damages to other sections of the community, or can put special, vulnerable populations at risk. The Planning Committee identified the following critical facilities:

Facilities essential to the health and welfare of the entire population, especially following a hazard event:

Road maintainer sheds of Benton County Secondary Roads located in or near Belle Plaine, Blairstown, Bruce Township, Garrison, Keystone, Mt. Auburn, Newhall, Norway, Shellsburg, Urbana, and Vinton.

Transportation Systems

Interstate 380/Iowa Highway 27
US Highway 30
US Highway 218
Iowa Highway 8
Iowa Highway 21
Iowa Highway 150
1,330 miles of rural roads maintained by Benton County Secondary Roads including 97 miles of rural primary, 216 miles of paved/hard surface secondary roads, 924 miles of rock surface secondary roads, and 93 miles of earth (dirt) surface secondary roads.

24 miles of Union Pacific Railroad line

Lifeline Utility Systems

None

Vulnerable Population Centers

None

Financial Institutions
Watkins Savings Bank

Food Supplier
Tara Hills Country Club

Hardware Stores
Professional Ag Supplies

Gas & Fuel Supplier
New Century FS

Communication Systems
Channel 28 FOX Tower
Benton County Communications Tower
US Cellular Communications Towers
Mediacom Communications Tower
TV-6 LLC Communications Tower
RACOM Communications Tower

Key Issues

Natural hazards potentially impacting the Benton County unincorporated include drought, extreme heat, flooding – riverine and flash, grass or wildfire, severe winter storm, thunderstorm/lightning/hail, and tornado/windstorm. Other hazards include animal/plant/crop disease, hazardous materials release, human disease, infrastructure failure, structure fire, terrorism, transportation – highway/road, and radiological event.

Capabilities to Support Mitigation Strategy

Benton County unincorporated has a number of existing capabilities to support mitigation strategy. The county ordinances include Zoning Regulations, Subdivision Regulations, and Floodplain Regulations that support mitigation. The County has some ability to expand on these capabilities. As a county government, the county has potential resources such as staff time, funding or taxing authority, debt through general obligation bonds, debt through private activities, grants, and knowledge/expertise. There are emergency services resources as well as access to the county emergency management agency. However, Benton County is a small rural county and these resources are more limited than those of a larger urban county.

Benton County (unincorporated) Current Mitigation Activity and Measures

- All of rural Benton County is covered with Law Enforcement provided by the Benton County Sheriff's Department, Fire Service provided by the various municipal fire departments, and Emergency Medical Services provided by Fire Department First Responders and various Ambulance Services. Air Ambulances are available from St. Luke's Hospital in Cedar Rapids, Covenant Medical Center in Waterloo, and University of Iowa Hospitals in Iowa City.

- Benton County EMA offers annual weather spotter training to all emergency responders, amateur radio club members, and citizens.
- A 100 square mile portion of eastern Benton County is covered by 37 outdoor warning sirens with message capability as part of the Duane Arnold Energy Center nuclear power plant. These sirens are utilized for severe weather warnings and any other life threatening situation which may occur in this portion of the county.
- Benton County is covered by contract with Linn County Hazardous Materials Team. This Team is Technician Level trained. Benton County has a cost recovery ordinance in place and offers Haz-Mat Operations Level classes annually to emergency responders.
- In 2004 Benton County was recognized by the National Weather Service as the second county in Iowa to achieve StormReady status. One part of achieving the recognition was the purchase of 92 NOAA Tone Alert Weather Radios by Benton County Emergency Management Commission. The radios were installed in key government buildings and care facilities in all Benton County communities.
- The Benton County Emergency Management Agency has plans in place outlining Emergency Operations, Hazard Mitigation, Recovery and FEMA approved plans for a radiological incident at the Duane Arnold Energy Center. The Agency also has a current Hazard Analysis, Emergency Management Accreditation Program Assessment, Homeland Security Needs Assessment, 5-Year Strategic Plan and participated annually in the Emergency Management Performance Grant Program.
- The Benton County Emergency Management Agency participated in four training drills and two full scale exercises per year in support of the Duane Arnold Energy Center nuclear power plant until its closure in 2020. Planning and preparedness activities will start again when the plant re-opens. The Agency also conducts other drills and exercises throughout the year, with various county officials and volunteers participating at the EOC and on scene.
- Various training opportunities covering a variety of topics are offered to Benton County emergency responders throughout the year.
- FEMA approved county-wide Multi-Jurisdictional Hazard Mitigation Plan originally adopted in 2011. The plan was updated in 2016, 2021, and now in 2026.

<u>County-Wide Mitigation Activity and Measures</u>

- Stockpiles of sandbags located at strategic locations throughout the county
- Iowa One Call – 800-292-8989- Contractors and citizens can call before they dig.
- An epidemiology plan was developed and adopted by Benton County Public Health Department in 2004.

- The Benton County Office of Emergency Management developed a Mass Casualty/Mass Fatality Plan for the county in 2004.
- In 2004 the Benton County Emergency Management Agency purchased 92 NOAA Weather Radios and distributed them free of charge to every county and city office, library, school, and care facility in Benton County.
- The Benton County EMA and Benton County Health Department have established procedures for radiological monitoring in Benton County.
- A Quarantine and Isolation Ordinance for all of Benton County was adopted by the Benton County in 2005.
- A Multi-Hazard Operations Plan for Benton County is maintained and updated as required by the Benton County Emergency Management Agency. This includes Part B which is Mitigation.
- The Benton County EMS Association undertook the project of developing a mass casualty response trailer in 2004.
- A new Emergency Operations Center (EOC) was constructed along with the new Benton County Law Enforcement Center. It became operational in 2011 and is one foot above the 500 year flood level.
- Existence of a comprehensive land use plan for Benton County.
- The establishment of Public Information Officer (PIO) policies and procedures is documented in the Benton County Multi- Hazard Operations Plan for use during emergency situations.
- The existence of a Public Health Department and County Sanitarian for Benton County.
- The Benton County Sheriff's Office has developed a Rapid Response system intended to be used in incidents involving threats at schools and other public as well as private locations.
- Benton County Emergency Management has an Emergency Shetler Trailer with equipment and supplies for up to 50 people and a 13KW emergency electrical power generator.
- In 2009 Benton County implemented an emergency shelter program that identified shelter locations and procedures for opening and operating shelters in every city in the county.
- Benton County Emergency Management has an 8KW and a 6.5KW generator available for operating community shelters.
- Benton County Emergency Management and the Sheriff's Office have a 60KW 3-phase generator that can operate most well/water tower pumps and sewage treatment systems.
- In 2020 all school districts in Benton County completed state approved Emergency Response Plans.

Previous Plan Update Mitigation Measures and Status

(Status will be identified as Completed, Ongoing, or No longer a priority).

- Public Awareness. *Ongoing*
- Develop and enhance local emergency operations plans. *Ongoing*
- Establish Community Emergency Response Teams (CERT). *Ongoing*
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property. *Ongoing*
- Emergency disaster response training and exercises for emergency responders and key county and community leaders. *Ongoing*
- Maintain and support community and county public safety and emergency services departments. *Ongoing*
- Obtain equipment to help mitigate effects of a disaster. *Ongoing*
- Encourage citizen disaster preparedness. *Ongoing*
- Maintain electronic resource directory of local resources. *Ongoing*
- Improve Benton County Radio Communications System Capabilities *Complete*
    - *New radio communications system for county went live in 2024*
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages. *Ongoing*
- Develop Community Emergency Shelters. *Ongoing*
- Improve outdoor warning siren system. *Ongoing*
- Construct public tornado safe rooms at vulnerable points. *Ongoing*
- Encourage construction of tornado safe rooms. *Ongoing*
- Flash flood and river flood preparation. *Ongoing*
- Floodproofing private property and public infrastructure. *Ongoing*
- Continue HAZMAT agreements and support regional HAZMAT teams. *Ongoing*
- Improve safety at rail crossings.
- Planning and medical equipment to support human disease and pandemic response. *Ongoing*
- Continue to cooperate with local medical facilities and public health officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents. *Ongoing*
- Compliance with National Flood Insurance Program (NFIP) regulations. *Ongoing*

New Mitigation Measures for this Plan Update

- Public Awareness.
- Develop and enhance local emergency operations plans.
- Establish Community Emergency Response Teams (CERT).
- Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property.
- Emergency disaster response training and exercises for emergency responders and key county and community leaders.
- Maintain and support community and county public safety and emergency services departments.
- Obtain equipment to help mitigate effects of a disaster.
- Encourage citizen disaster preparedness.
- Maintain electronic resource directory of local resources.
- Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.
- Develop Community Emergency Shelters.
- Improve outdoor warning siren system.
- Improve safety at rail crossings.
- Construct public tornado safe rooms at vulnerable points.
- Encourage construction of tornado safe rooms.
- Flash flood and river flood preparation.
- Floodproofing private property and public infrastructure.
- Continue HAZMAT agreements and support regional HAZMAT teams.
- Planning and medical equipment to support human disease and pandemic response.
- Continue to cooperate with local medical facilities and public health officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents.
- Compliance with National Flood Insurance Program (NFIP) regulations.

SECTION 2

PLANNING PROCESS

Participants

Each city and the county participated in this update of the Benton County Multi-Jurisdictional Hazard Mitigation Plan. These planning team members included those who brought expertise in emergency management and response, representatives who operate critical facilities, and members who represent vulnerable populations or communities from across the county.

The following people were on the list of contacts for the plan and participated in the planning process.

NAME	POSITION	REPRESENTING	PARTICIPATED BY:
Scott Flory	City Administrator	City of Atkins	Emails,
Steve Beck	City Administrator	City of Belle Plaine	Emails,
Sandy Walton	City Clerk	City of Belle Plaine	Emails, Phone,
Rodney Kubichek	City Clerk	City of Blairstown	Emails, phone
Angela Dague	City Clerk	City of Garrison	Emails,
Angie Hagen	City Clerk	City of Keystone	Emails,
Janice Kendall	City Clerk	City of Luzerne	Meeting, emails,
	City Council & Mayor	City of Luzerne	Meeting,
Craig Mahood	City Clerk	City of Mt Auburn	Emails, phone
Keri Touro	City Clerk	City of Newhall	Emails,
Kennedy Judkins	City Clerk	City of Norway	Emails,
Barb Tracey	City Clerk	City of Shellsburg	Emails, Meeting
	City Council	City of Shellsburg	Emails, Meeting
Jennifer Burkhart	City Administrator	City of Urbana	Emails,
Linda Klopping	City Clerk	City of Van Horne	Emails, Phone,
Melissa Schwan	City Clerk	City of Vinton	Meeting, emails
Kevin Kirchner	General Manager	Vinton Municipal Electric Utility	Emails,
Matt Storm	General Manager	Vinton Municipal Communications Utility	Emails,
Randy Bauer	Mayor	City of Walford	Emails,
Dean Vrba	Coordinator	Benton County Emergency	Meeting attendance, emails,

		Management Agency	
Hayley Rippel	Auditor	Benton County Auditor	Meeting/discussion, emails
Larry Andreesen	Assessor	Benton County Assessor	Phone
Kelly Johnson	Assessor	Benton County Assessor	Meeting
Ben Turnis	Director	Benton County GIS/IT	Emails,
Chris Wagner	Systems Administrator	Benton County GIS/IT	Meeting
Aaron Askelson	Naturalist/Environmental Educator	Benton County Conservation	Emails,
Matt Even	Technician	Benton County Land Use, Environmental Health, Flood Plain Manager	Meeting
Josh Karsten	Chief Deputy	Benton County Sheriff's Office	Emails,
Dan Wood	State Fire Marshal	State Fire Marshal Division	Emails,
Chad Straight	Superintendent	Belle Plaine School District	Emails,
James Bieschke	Superintendent	Benton Community School District	Emails,
Dr. Kyle Koeppen	Superintendent	Vinton-Shellsburg Community School District	Emails,
Micah	Cutler	Beacon/Schnieder Geospatial	Emails,
Kate Robertson	Director	Benton Development Group	Emails,
Bruce Visser	Mayor of Atkins	EMA Commission	Meetings
Dan Rammelsberg	Representative and Chair, City of Atkins	EMA Commission	Meetings
Pat Gorkow	Mayor of Van Horne	EMA Commission	Meetings
Gerald Gessner	Representative, City of Newhall	EMA Commission	Meetings
Robert Spangler	Assistant	Benton County Emergency Management Agency	Meetings

Background

On October 30, 2000, the President signed into law the Disaster Mitigation Act of 2000, also known as DMA 2000, which amended the Stafford Act. DMA 2000 streamlines the delivery and utilization of disaster recovery assistance and places increased emphasis on local mitigation planning. It requires local governments to develop and submit mitigation plans as a condition of receiving Pre-Disaster Mitigation (PDM) and Hazard Mitigation Grant Program (HMGP) project grants.

Title 44 of the Code of Federal Regulations (44CFR) Section 201.6 describes requirements of DMA 2000 for single jurisdiction plans but includes options for multi-jurisdictional plans. This is called the Interim Final Rule and was first published in the Federal Register on February 26th, 2002. Because deadlines were subsequently modified, relevant sections of the Rule were again published in the Federal Register on October 1, 2002, and again on October 28, 2003, when one section was reworded.

Purpose

The Purpose of the Benton County Multi-Jurisdictional Hazard Mitigation Plan is to decrease risk of property damage, injury and/or loss of life due to natural and manmade hazards by undertaking comprehensive mitigation strategies prior to a hazard event. The Benton County Multi-Jurisdictional Hazard Mitigation Plan also allows participating jurisdictions to access sources of funding for mitigation projects made available under the DMA 2000.

This local hazard mitigation plan covers all municipal and governmental jurisdictions in Benton County; specifically, the Cities of Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mt. Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, and Walford and the unincorporated areas of Benton County. The 2011 Benton County Plan was revised in 2016. The 2016 Plan was updated in 2021. The 2021 Plan is updated with this update in 2026. Additional jurisdictions participating in this update include the Benton County School Districts of Belle Plaine Community School District; Benton Community School District; and Vinton/Shellsburg School District. This Plan update also includes the Vinton Municipal Electric Utility, as included in previous updates.

Hazard mitigation is any sustained action taken to reduce or eliminate the long term risk to human life and property from hazards. Mitigation activities may be implemented prior to, during, or after an incident. However, it has been demonstrated that hazard mitigation is most effective when based on an inclusive, comprehensive, long-term plan that is developed before a disaster occurs.

Several key concepts are reflected throughout the mitigation planning regulations at 44 CFR Part 201 and are reflected in each of the State, Tribal, and Local Mitigation Plan requirements and corresponding guidance. The most successful mitigation plans -- where practical, meaningful mitigation actions resulted – have two common elements:

- Comprehensive risk and capability assessments that form a solid foundation for decision making
- Participation by a wide range of stakeholders who play a role in identifying and implementing mitigation actions

A Local Mitigation Plan as defined in 44 CFR §201.6 is required for local jurisdictions that elect to participate in FEMA hazard mitigation assistance programs as a sub-applicant or sub-grantee. The Stafford Act authorizes up to 7 percent of available HMGP funds for State, Tribal, or Local mitigation planning purposes. Also, funds from the PDM program may be used to develop mitigation plans, and the FMA program provides annual grant funds for flood mitigation planning. The original 2010 Benton County HMP was funded by a HMPG grant awarded to the East Central Iowa Council of Governments as the sub-grantee. The 2021 update as well as this 2026 update was not funded by any FEMA awarded grant. It was entirely funded by Benton County.

The Local Mitigation Plan requirements encourage agencies at all levels, local residents, businesses, and the nonprofit sector to participate in the mitigation planning and implementation process. This broad public participation enables the development of mitigation actions that are supported by these various stakeholders and reflect the needs of the community. Private sector participation, in particular, may lead to identifying local funding that would not otherwise have been considered for mitigation activities.

The purpose of this revision is to make any changes to demographic and community profile information that is necessary; update the hazard analysis to note any disaster or emergency events from 2021 -2025 that have occurred and any influence these events would have on hazards ranking; document any changes in mitigation actions. This is done in order to comply with FEMA required periodic revisions every five years.

Scope

This plan applies to all municipal jurisdictions of Benton County: Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mt. Auburn, Newhall, Shellsburg, Urbana, Van Horne, Vinton, and Walford and the unincorporated areas of Benton County. Also included are the public school districts of Benton County: Belle Plaine Community School District; Benton Community School District, Vinton/Shellsburg School District, and Vinton Electrical Municipal Utility. This plan shall be effective until 5 years after the approval date or when replaced by an updated DMA 2000 compliant plan for the participating jurisdictions, whichever is sooner.

Stakeholders

Stakeholders who participated in the planning process include:

Municipal Jurisdictions:\

Benton County	Ongoing Participant
City of Atkins	Ongoing Participant
City of Belle Plaine	Ongoing Participant
City of Blairstown	Ongoing Participant
City of Garrison	Ongoing Participant’
City of Keystone	Ongoing Participant
City of Luzerne	Ongoing Participant
City of Mt. Auburn	Ongoing Participant
City of Newhall	Ongoing Participant
City of Norway	Ongoing Participant
City of Shellsburg	Ongoing Participant
City of Urbana	Ongoing Participant
City of Van Horne	Ongoing Participant
City of Vinton	Ongoing Participant
City of Walford	Ongoing Participant

School Districts:\

Belle Plaine Community School District	Ongoing Participant
Benton Community School District	Ongoing Participant
Vinton/Shellsburg School District	Ongoing Participant

Vinton Municipal Electrical Utility	Ongoing Participant
Vinton Municipal Communications Utility	New Participant

Additional Stakeholders who were invited to participate in the planning process include:

Neighboring Counties:

Black Hawk County

Buchanan County

Iowa County

Linn County

Poweshiek County

Benton County Public Health

Benton County Flood Plain Manager

Benton County Disaster Recovery Coalition

The DRAFT Plan was also sent via link to the stakeholders listed above for review and their feedback was requested by provided email or phone call. No comments or feedback was received from the stakeholders listed above.

Public Review and Feedback

The DRAFT Benton County Multi-Jurisdictional Hazard Mitigation Plan was posted for more than thirty days on the Benton County website (https://www.bentoncountyia.gov/) and the City of Vinton website (https://www.cityofvinton.org/) for public review and comment. No comments or feedback was received from the public.

Authority

Section 322 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) 42 U.S.C. 5165, as amended by the DMA 2000, provides for States, Tribes, and Local Governments to undertake a risk based approach to reducing risks to natural hazards through mitigation planning. The National Flood Insurance Act of 1968, as amended, 42 U.S.C. 4001 *et seq,* reinforced the need and requirement for mitigation plans, linking flood mitigation to assistance programs to State, Tribal, and Local Mitigation Plans. Under this authority, the City of Atkins, City of Belle Plaine, City of Blairstown, the City of Garrison, the City of Keystone, the City of Luzerne, the City of Mount Auburn, the City of Newhall, the City of Norway, the City of Shellsburg, the City of Urbana, the City of Van Horne, the City of Vinton, the City of Walford, unincorporated Benton County, the Belle Plaine Community Schools, the Benton Community Schools,

the Vinton/Shellsburg Community Schools, the Vinton Municipal Electric Utility, and the Vinton Municipal Communications Utility are participating in this plan as a multi-jurisdictional hazard mitigation plan.

The Benton County Multi-Jurisdictional Hazard Mitigation Plan will be adopted by each participating jurisdiction (see Resolutions in Appendix D) and will be approved by FEMA.

Funding

The original Benton County Multi-Jurisdictional Hazard Mitigation Plan and 2016 revision were funded under a HMGP planning grant made available after Presidential Disaster Declaration DRA-1998-IA.

Funding for the 2026 update and the 2021 update to the Benton County Multi-Jurisdictional Hazard Mitigation Plan was provided entirely by Benton County – there was no federal grant assistance.

Planning Process

The five year update of this Plan in 2025-2026 again involved Benton County city and county officials in every aspect of the process from updating community profile information and mitigation strategies to developing new mitigation strategies.

Table 61: Participation in the Planning Process

Mitigation Planning Activity Performed	Benton County Unincorporated	Atkins	Belle Plaine	Blairstown	Garrison	Keystone	Luzerne	Mt. Auburn	Newhall	Norway	Shellsburg	Urbana	Van Horne	Vinton	Watkins
Provide updated profile, hazard analysis, and risk assessment information for the plan.		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Review draft of profile, hazard analysis and risk assessment		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Provide information for updated mitigation measures		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Develop mitigation strategy		X	X	X	X	X	X	X	X	X	X	X	X	X	X
Approve plan by resolution															

During the planning process, the existing programs, policies, and technical documents for the participating jurisdictions were reviewed. In addition to the documents listed below, the jurisdictions also reviewed the FEMA's 2013 Mitigation Ideas Booklet to provide an overview of the types of mitigation actions appropriate to include in this plan. The Mitigation Strategies booklet provides a wealth of mitigation ideas and was provided to the Planning Committee to provide them with a background on the various types of mitigation projects, strategies and actions that are possible.

The following table displays the results of this review as applied in the 2021 and 2026 updates:

Table 62: Record of Review/Summary

Existing Program/Policy/Technical Documents	Applicable Jurisdictions	Method of incorporation into the plan
Comprehensive Plan	Benton County, but out of date; Atkins, Belle Plaine, Vinton	Used for assessing development trends and future vulnerabilities
Growth Management Plan	None	
Capital Improvements Plan/Program	Atkins, Belle Plaine	Implementing Mitigation Strategies
Flood Damage Prevention Ordinance	None	
Floodplain Management Plan	Belle Plaine, Blairstown, Shellsburg, Vinton, Walford	Incorporated Actions
Flood Insurance Studies or Engineering Studies for Streams	None	Incorporated Actions
Hazard Vulnerability Analysis	None	Incorporated flood and hazardous materials map into plan to assess risk areas
Emergency Management Plan	Benton County	No up to date, standalone emergency operations plan could be located
Zoning Ordinance	Atkins, Belle Plaine, Blairstown, Keystone, Luzerne, Mt. Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, Walford	Used for assessing development trends and future vulnerabilities

Existing Program/Policy/Technical Documents	Applicable Jurisdictions	Method of incorporation into the plan
Building Code	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Mt. Auburn, Norway, Shellsburg, Urbana, Van Horne, Vinton	Used for assessing development trends and future vulnerabilities
Drainage Ordinance		Storm water management ordinances exist per state regulations regarding onsite treatment of storm water runoff
Critical Facilities maps	All Jurisdictions	Incorporated into Plan
Existing Land Use Maps	Atkins	Used for assessing development trends and future vulnerabilities
Elevation Certificates		Elevation Certificates are only required for compliance with floodplain ordinances but not required for property transfer or outright development of a property.
State Plan		Incorporated risk assessment data

Previous Hazard Mitigation Planning

Hazard Mitigation Planning in Benton County has been completed at the multi-jurisdictional level since 2011 and prior to that was completed at the individual community level. Previous planning is listed below:

Benton County Multi-Jurisdictional Hazard Mitigation Plan 2021 Revision

Benton County Multi-Jurisdictional Hazard Mitigation Plan 2016 Revision

Benton County Multi-Jurisdictional Hazard Mitigation Plan 2011

Community Hazard Mitigation Plans for Atkins, Blairstown, Keystone, and Mount Auburn in 2009.
Community Hazard Mitigation Plans for Belle Plaine and Urbana in 2007.

Community Hazard Mitigation Plans for Luzerne, Norway, and Shellsburg in 2006.

Community Hazard Mitigation Plan for Vinton in 2005.

SECTION 3
HAZARD ANALYSIS

IDENTIFYING HAZARDS

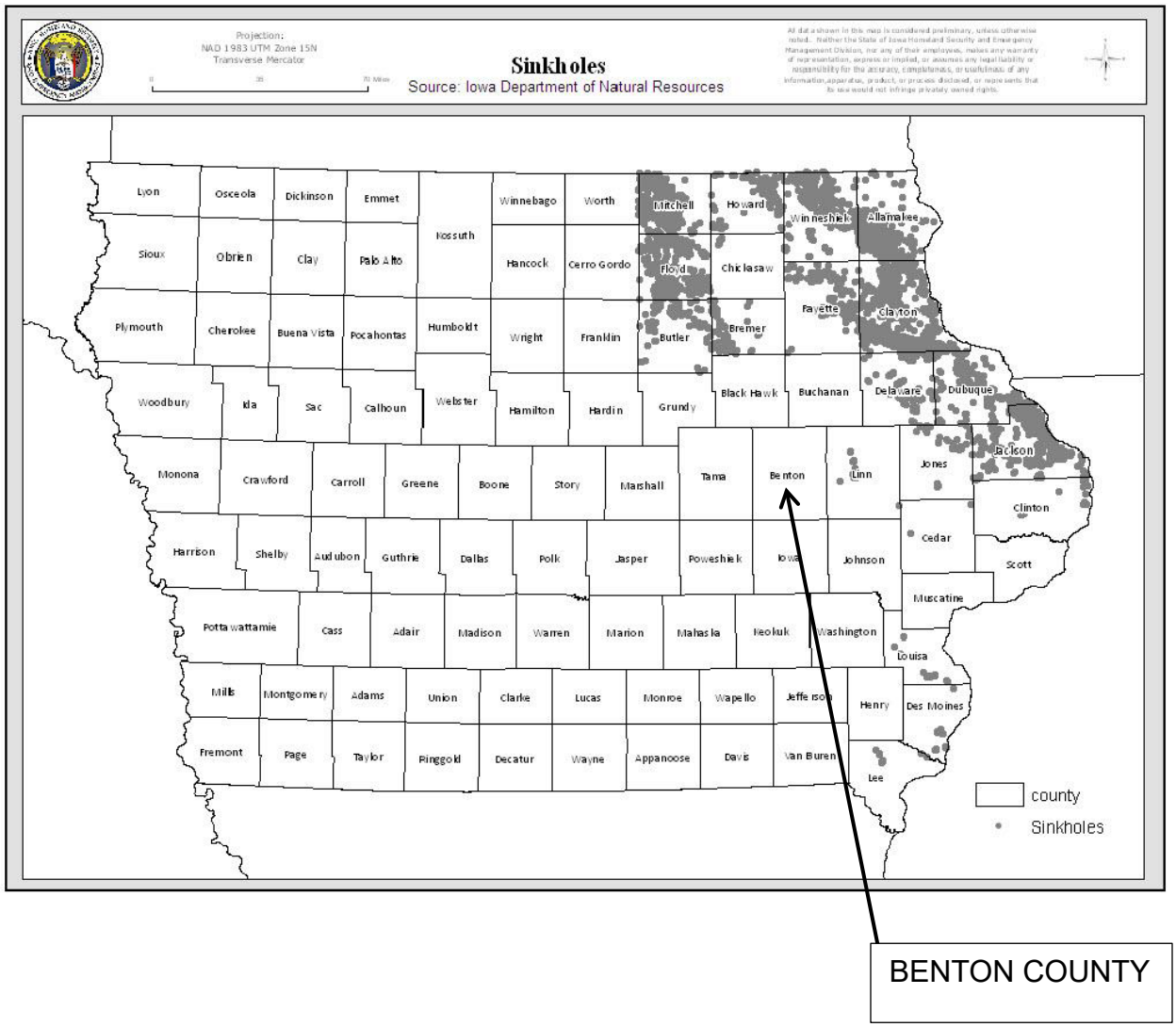
The 2026 Benton County MJHMP Hazard Analysis follows the analysis in the 2021 Plan and is condensed for simplicity and consistency with the State of Iowa 2023 Hazard Mitigation Plan to the following hazards:

- Drought
- Extreme Heat
- Flooding (Flash and Riverine)
- Grass Fire and Wildland Fire
- Severe Winter Storms
- Thunderstorms: Lightning and Hail
- Tornado/Windstorm
- Other Hazards: Animal/Plant/Crop Disease, Hazardous Materials, Pandemic Human Disease, Infrastructure Failure, Structural Fire, Terrorism, Transportation Incident

Previous Benton County MJHMP updates reviewed and narrowed the list of hazards to those best suited for Benton County. This included the removal of some hazards explained as follows:

Sinkholes: the only data on sinkholes that could be found is there are reputedly some in remote areas of southern Benton County. Records maintained by the Iowa DNR do not show any in Benton County. There have never been any documented incidents or accidents or property loss due to sinkholes in Benton County.

Table 63: Sinkhole Hazard Areas of Iowa



Landslide: There has never been a documented incident of landslide in Benton County and no damage ever attributed to a landslide. The Benton County USDA-NRCS office does document some soil types in the county on slopes that have a small probability of creating a landslide, but they are in sparsely populated rural areas that are not near any critical infrastructure.

Expansive Soils: The Benton County USDA-NRCS office does document some soil types in the county that have shrink-swell potential but there has never been a single documented incidence of property damage due to the presence of these soil types. A US Geological Survey map shows the majority of Benton County being in an area that has little or no swelling clay and the remainder being an area that has clay with moderate swelling potential

Earthquake: There has been no history of an earthquake that caused any damage to any location in Benton County. It is improbable that one may occur as shown in the following earthquake probability chart.

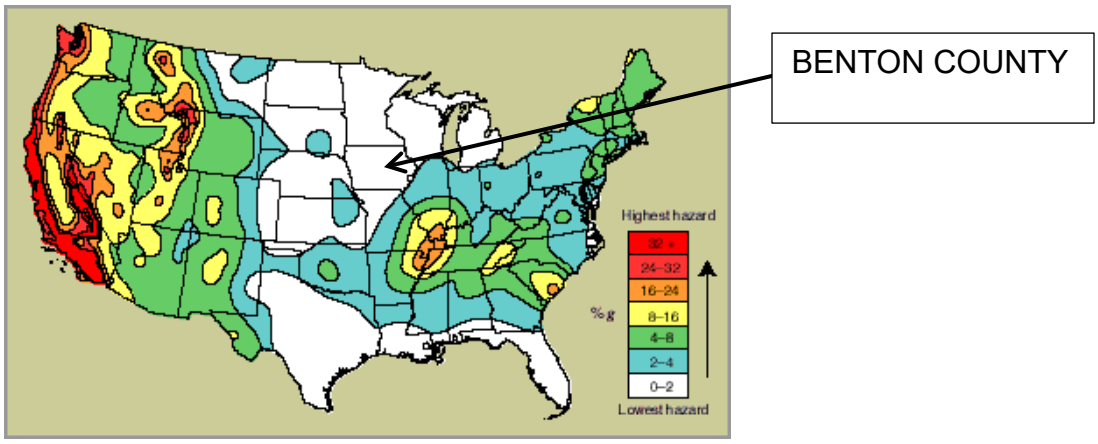


Figure 40: United States Earthquake Zones

Dam/Levee Failure: There is one dam in Benton County that is considered a moderate hazard by the Iowa DNR, the Rodgers Park Lake Dam in northern Benton County. The dam is for a recreational lake that is on a tributary of the Cedar River, located five miles north and east of Vinton. The tributary runs from south to north before it joins with the Cedar River which flows south toward Vinton. The major hazard is that a dam failure would be capable of causing property damage to the two roads before it joins the Cedar River. The Benton County Hazard Mitigation Planning Committee determined that neither of these dams posed a hazard to the county that was significant enough to warrant any mitigation efforts. The only levee system known in Benton County is remnants of an antiquated levee built by the railroad in 1917 near Atkins. The railroad discontinued service to the community in 1978. Local officials indicate the levee has no effect on local water movement or flash flooding.

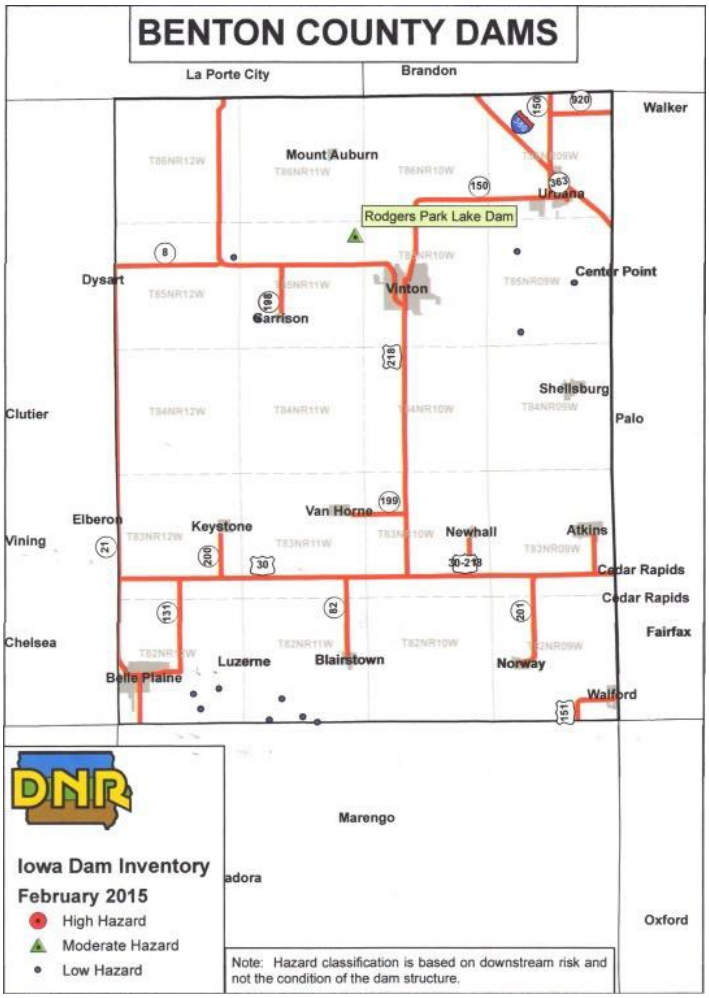


Figure 41: Benton County Dams

Radiological Incident: The Duane Arnold Energy Center (DAEC) nuclear power plant neighbors Benton County. In August 2020 DAEC ceased operations as a result of damages to its cooling system caused by the August 10, 2020 Derecho windstorm disaster. Permanent shutdown of the plant had been planned for October 2020. It was considered decommissioned and all planning and exercise related activities for this facility ceased after June 2021.

In March 2025, meetings began with Next Era Energy DAEC and the NRC to discuss the potential resumption of power operations. This is an ongoing project at the time of this Plan update with an anticipated restart date of late 2028.

CRITERIA AND INFORMATION USED TO IDENTIFY HAZARDS

The following table summarizes how the 15 hazards profiled in the previous plan updates of 2011 and 2016 were identified and why the Planning Committee selected them for further analysis.

Hazard	How Identified	Why Identified
Extreme Heat	• Planning Committee • HSEMD • NCDC records • FEMA publications • 2011 and 2016 BCHMP	• History of extreme heat events • Potential impact on citizens and agricultural base • Benton County location and climate • 2011 and 2016 BCHMP
Flooding (Flash and Riverine	• Flood Insurance Rate Map (FIRM) • Planning Committee • HSEMD • NCDC records • Flood and watershed studies by Army Corps of Engineers (riverine) • 2011 and 2016 BCHMP	• Identified Special Flood Hazard Area (SFHA) • Properties located in the SFHA • Flash Flood history in Benton County, in particular recent flash flood events in 2008 and 2009 (flash) • Flood history in Benton County, particularly along the Cedar River (riverine) • Disaster Declarations (riverine) • 2011 and 2016 BCHMP
Severe Winter Storm	• HSEMD • NCDC records • FEMA publications • National Weather Service • Planning Committee • 2011 and 2016 BCHMP	• Benton County location and climate • History of annual winter events • Potential impact on citizens • 2011 and 2016 BCHMP
Thunderstorm/ Lightning/Hail	• Planning Committee • NCDC records • FEMA publications • NOAA probability maps • HSEMD • National Weather Service • 2011 and 2016 BCHMP	• Benton County experiences several thunderstorms annually, some of which produce lightning that damages structures. • Benton County experiences several hailstorms annually, some

		of which cause damage to structures, autos, and agricultural crops • 2011 and 2016 BCHMP

Hazard	How Identified	Why Identified
Tornado/Windstorm	• Planning Committee • NCDC records • FEMA publications • NOAA probability maps • HSEMD • 2011 and 2016 BCHMP	• Benton County has a history of tornados • Straight line winds with a velocity of 60 miles per hour or more frequently strike Benton County • 2011 and 2016 BCHMP
Grass/Timber/Wildland Fire	• Planning Committee • HSEMD • Fire Departments of Benton County • State Fire Marshall's Office records • 2011 and 2016 BCHMP	• Importance of protecting city properties • Annual fire incidents • History of grass and wildland fire incidents in Benton County • Benton County Fire Department wildland firefighting equipment deficits and concerns • 2011 and 2016 BCHMP
Drought	• HSEMD • NCDC records • FEMA publications • National Weather Service • Planning Committee • 2011 and 2016 BCHMP	• History of drought and dry conditions • Potential impact on citizens and agricultural base • 2011 and 2016 BCHMP

Other Hazards	How Identified	Why Identified
Transportation Incident	• Planning Committee • HSEMD • Benton County EMA • NTSB records • Benton County Sheriff's Office accident records • Federal Railroad Office of Safety Analysis Reports • History of rail transportation incidents in Benton County • 2011 and 2016 BCHMP	• History of air, rail, and vehicular transportation incidents in Benton County • Airports in Benton County managed by the Cities of Belle Plaine and Vinton • Benton County location relative to the Eastern Iowa Airport • NTSB records • Highway systems going through Benton County • Benton County Secondary Roads system • Benton County has three railroads: the Union Pacific Railroad, the Iowa Northern Railroad, and the Cedar Rapids- Iowa City Railroad • 2011 and 2016 BCHMP
Infrastructure Failure	• Planning Committee • Benton County EMA • Local utility providers, Alliant Energy and REC • History of electrical power outages in Benton County • History of bridge failures in Benton County • History of communications difficulties in Benton County • 2011 and 2016 BCHMP	• Health and welfare of Benton County residents • Critical infrastructure, business and residential properties are dependent upon energy for sustenance • Importance of maintaining communications – particularly during hazard events • 2011 and 2016 BCHMP

Other Hazards	How Identified	Why Identified
Hazardous Materials Incident	• Benton County EMA • Planning Committee • HSEMD • EPA website • History of hazardous materials incidents in Benton County • Iowa DNR hazmat spill records • Energy providers and pipeline companies with lines in Benton County • 2011 and 2016 BCHMP	• Presence of facilities having hazardous materials on site in Benton County • Potential for incidents in Benton County • Benton County Highways • Agricultural and motor freight transportation of hazardous materials in Benton County • Benton County has three energy providers with transmission pipelines passing through the county: Alliant Energy Interstate Power and Light; Mid American Energy Corp.; and Northern Natural Gas Co. • 2011 and 2016 BCHMP
Terrorism	• Planning Committee • HSEMD • FEMA publications • Benton County EMA • Benton County agricultural organizations • Benton County government entities concern • Benton County commercial enterprise concern • Benton County law enforcement agencies • 2011 and 2016 BCHMP	• Awareness following 9/11/01 • Potential for terrorism event involving water supply systems in Benton County • Agri-producer concern • Benton County emergency responders and local agri-producer efforts related to terrorism • Benton County law enforcement agencies, school districts, and emergency responders' efforts related to terrorism • Conventional terrorism events in Benton County School Districts • 2011 and 2016 BCHMP

Other Hazards	How Identified	Why Identified
Pandemic Human Disease	• Planning Committee • HSEMD • CDC • Benton County Department of Public Health • 2011 and 2016 BCHMP	• Potential for human disease epidemic outbreak • Health and welfare of Benton County residents • 2020 COVID-19 Pandemic • 2011 and 2016 BCHMP
Animal/Plant/Crop Disease	• Planning Committee • HSEMD • CDC • Benton County Department of Public Health • 2011 and 2016 BCHMP	• Potential for animal disease epidemic outbreak, particularly the prevalent threat of Avian Influenza and a potential pandemic • Potential for animal or crop disease that would affect livestock and agricultural crops and the food supply • Health and welfare of Benton County residents • 2011 and 2016 BCHMP
Structural Fire	• Planning Committee • HSEMD • Fire Departments of Benton County • State Fire Marshall's Office records • 2011 and 2016 BCHMP	• Importance of protecting city properties • Annual fire incidents • Age and condition of structures in Benton County • Benton County Fire Departments apparatus and firefighting equipment condition concerns • Lack of building/fire inspections • 2011 and 2016 BCHMP

PAST DISASTERS AND DISASTER DECLARATIONS

Declaration	Date Declared	Incident Period	Type
DR-4557	August 17, 2020	August 10, 2020	Severe Storm
DR-4483	March 23, 2020	January 20, 2020 – May 11, 2023	COVID19 Pandemic
DR-4289	October 31, 2016	September 21, 2016 – October 3, 016	Severe Storms and Flooding
DR-4135	July 31, 2013	June 21, 2013 – June 28, 2013	Severe Storms, Tornadoes, and Flooding
DR-4126	July 2, 2013	May 19, 2013 – Jun3e 14, 2013	Severe Storms, Tornadoes, and Flooding
DR-4016	August 24, 2011	July 9, 2011 – July 14,2011	Severe Storms, Straight-Line Winds, and Flooding
DR-1763	May 7, 2008	May 5, 2008 – August 13, 2008	Severe Storms, Flooding, and Tornadoes
DR-1688	March 14, 2007	February 23, 2007-March 2, 2007	Severe Winter Storms
DR-1518	May 25, 2004	May 19, 2004 – June 24, 2004	Severe Storms, Tornadoes, and Flooding
DR-1420	June 19, 2002	June 3, 2002 – June 25, 2002	Severe Storms and Flooding
DR-1230	July 2, 1998	April 13, 1998 – October 1, 1998	Severe Storms, Tornadoes, and Flooding
DR-996	July 9, 1993	April 13, 1993 – October 1, 1993	Severe Storms and Flooding
DR- 986	April 26, 1993	March 26, 1993 – April 12, 1993	Severe Storms and Flooding
DR-879	September 6, 1990	July 25, 1990 – August 31, 1990	Severe Storms and Flooding
DR-868	May 26, 1990	May 18, 1990 – July 6, 1990	Severe Storms and Flooding
DR-443	June 24, 1974	June 24, 1974	Severe Storms and Flooding
DR-269	August 14, 1969	August 14, 1969	Heavy Rains, Flooding

HAZARD ANALYSIS AND RISK ASSESSMENT APPROACH

Following the 2023 State of Iowa Hazard Mitigation Plan, this Plan revision will include a hazard analysis and risk assessment (HARA) that is multi-hazard and comprehensive. It will follow the planning approach that focuses on the identified hazards that exist, the risks they present, and how they can impact communities and citizens.

The fourteen hazards identified in previous plan revisions will be profiled in this Plan. Those include 7 natural hazards and 7 non-natural hazards. Each hazard profile will include a description of the hazard, the locations or areas in the county that may be affected by the hazard, the extent of the hazard, previous occurrences, probability of future occurrences, the vulnerability to the hazard, and the impacts of the hazard.

HAZARD PROFILES

DROUGHT

Definition

Drought refers to an extended period of time (usually months, sometimes even years) when a region experiences a deficiency in its water supply. The most typical cause for drought is below average precipitation, although changes in human development patterns can also have a strong impact on water supply. Recent droughts in the United States have caused environmental damage resulting in agricultural and associated economic losses. Droughts historically can and have caused mass migrations and humanitarian crises.

Description

There are several types of drought according to the National Integrated Drought Information System (NIDIS) website. Meteorological drought is the most well-known form of drought and is triggered by a prolonged period with less than average precipitation. Meteorological drought usually leads to other forms of drought. Agricultural droughts are droughts that affect crop production. This condition can also arise independently from meteorological drought with the presence of extreme erosion triggered by poorly planned agricultural development or deforestation, which washes away topsoils capable of retaining moisture. Hydrological drought is caused when water reserves, (such as aquifers, lakes, and reservoirs) fall below the statistical average. In most cases, hydrological drought occurs very slowly over a period of many years as more water is taken from the reserve than replenished. Although hydrological drought can also be triggered or supported by meteorological drought, human development also frequently has a hand in causing hydrological drought. Socioeconomic drought is when the supply and demand of various commodities is affected by drought and Ecological drought is when natural ecosystems are affected.

The National Drought Mitigation Center, in partnership with several federal agencies, tracks drought conditions throughout the country with the US Drought Monitor (USDM). The USDM uses several criteria to determine how severe drought is in any particular area. It updates the classification of areas every week. Thus, the USDM has become a useful tool of tracking how severe drought is in any given area, and for how long.

The chart below illustrates the classification or categories of severity of drought that the USDM provides on a weekly basis.

Figure 42: U.S. Drought Monitor

	Description	Example Percentile Range for Most Indicators	Values for Standard Precipitation Index and Standard Precipitation-Evapotranspiration Index
None	Normal or wet conditions	30.01 or Above	-0.49 or above
D0	Abnormally Dry	20.01 to 30.00	-0.5 to -0.79
D1	Moderate Drought	10.01 to 20.00	-0.8 to -1.29
D2	Severe Drought	5.01 to 10.0	-1.3 to -1.59
D3	Extreme Drought	2.01 to 5.00	-1.6 to -1.99
D4	Exceptional Drought	0.00 to 2.00	-2.0 or less

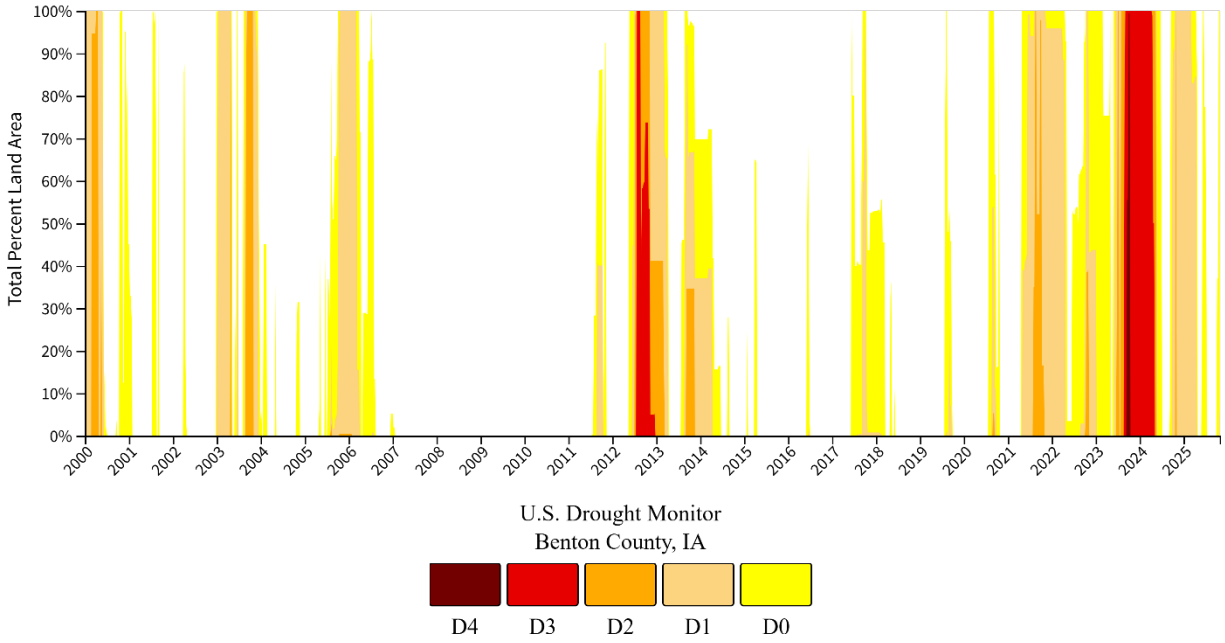
US Drought Monitor (droughtmonitor.unl.edu)

The USDM differentiates between short- and long-term drought. Short-term drought is identified by the letter “S” and is typically less than 6 months. It can have impacts on agriculture and grasslands. Long-term drought is identified by the letter “L” and is typically longer than 6 months. It has deeper impacts on ecology and hydrology. A label of “SL” indicates an area with both short- and long-term drought impacts.

Probability, Location, and Intensity

During the 20th Century, two severe droughts impacted the Midwest (the Dust Bowl of the 1930s and the 1976-1977 drought). Winter droughts have also occurred, the most recent of which was the winter of 2005/2006. NCDC records indicate 4 droughts were reported in Iowa that involved Benton County between 8/1/2003 to 10/1/2013. These droughts are shown occurring in 2003, 2005, 2012, and 2013. The USDM was created in 1999 and has drought records since 2000. Drought in Benton County is shown below.

Figure 43: USDM Historical Conditions for Benton County 2000-Present



Iowa experienced a multiple year drought from 2021 to 2024. During this time Iowa had the longest dry spell in approximately 70 years with the dryness of 2023 being worse than 2013. According to the Iowa Department of Agriculture and Land Stewardship, 2023 was the 22nd driest year on record. The drought lasted 1,428 days with 64 of 99 counties receiving disaster declarations. Benton County received Secretarial Disaster Designations for the crop years of 2021, 2023, and 2024. Benton County was also an eligible county for the USDA Emergency Relief Program (ERP) in 2021. Benton County was in the D1 drought category in November 2021 and again from October 2022 to June 2023. In July and August 2023, Benton County was categorized in D2, moving to D4 in September and October 2023, then down to D3 until April 2024. These statistics, D1 status or above in 14 of the past 25 years, indicate a strong probability of drought status every two to three years.

The entire county of Benton County is at risk for drought. Severe droughts generally impact large geographical areas; a drought would likely affect most of Iowa and certainly Benton County as a whole. Because of the dependence on precipitation and water, the agricultural community would be impacted the most. The agricultural areas would be most adversely impacted , but the entire state would likely feel at least some impact.

Drought most directly affects agricultural crops, livestock, natural vegetation, wildlife, and wetlands (fish and aquatic vegetation). Impacts are costly economically, environmentally, and socially, especially in agriculturally based communities such as

those in Benton County. Drought in the U.S. seldom results directly in the loss of life. Deaths associated with drought are usually related to a heat wave.

Drought in Iowa has the most impact on activities that are water-intensive such as agriculture, wildfire protection, recreation, commerce, and municipal usage. As an agricultural county, Benton County has been impacted by drought with millions of dollars in crop damage since 2000. Per the Iowa Hazard Mitigation Plan 2023, Benton County is one of the “fifteen counties with the greatest losses by dollar value (after adjusting for inflation) in the past 32 years.” (Iowa Hazard Mitigation Plan. 3-30). According to FEMA’s National Risk Index (NRI), Benton County has a relatively moderate drought risk score. This is based on analysis of the expected annual loss (EAL), a social vulnerability index (SoVI), and community resilience. The data in the NRI drought risk index are based on agricultural loss data alone. Agriculture in Iowa is often the first to be affected by drought, making rural agricultural areas such as Benton County more vulnerable to drought. Agriculture is often insured against drought; thus, damages here may not be considered for a declared disaster under FEMA or the USDA. This may seem to lessen the economic impact since it is covered by insurance however there are other Iowa industries that are dependent on successful crops that could be impacted by crop damage due to drought.

EXTREME HEAT

Definition

Temperatures (including heat index) in excess of 100 degrees Fahrenheit or 3 successive days of 90+ degrees Fahrenheit constitute an extreme heat event. A heat advisory is issued when temperatures reach 105 degrees and a warning is issued at 115 degrees.

Description

Extreme heat can be described as a prolonged period of excessive heat and humidity. The heat index is a number in degrees Fahrenheit that tells how hot it really feels when relative humidity is added to the actual air temperature. Exposure to full sunshine can increase the heat index by at least 15 degrees. Extreme heat can impose stress on humans and animals. Heatstroke, sunstroke, cramps, exhaustion, and fatigue are possible with prolonged exposure or physical activity due to the body's inability to dissipate heat. Urban areas are particularly at risk because of air stagnation and large quantities of heat absorbing materials such as streets and buildings. Extreme heat can also result in distortion and failure of structures and surfaces such as roadways and railroad tracks.

Probability, Location, and Intensity

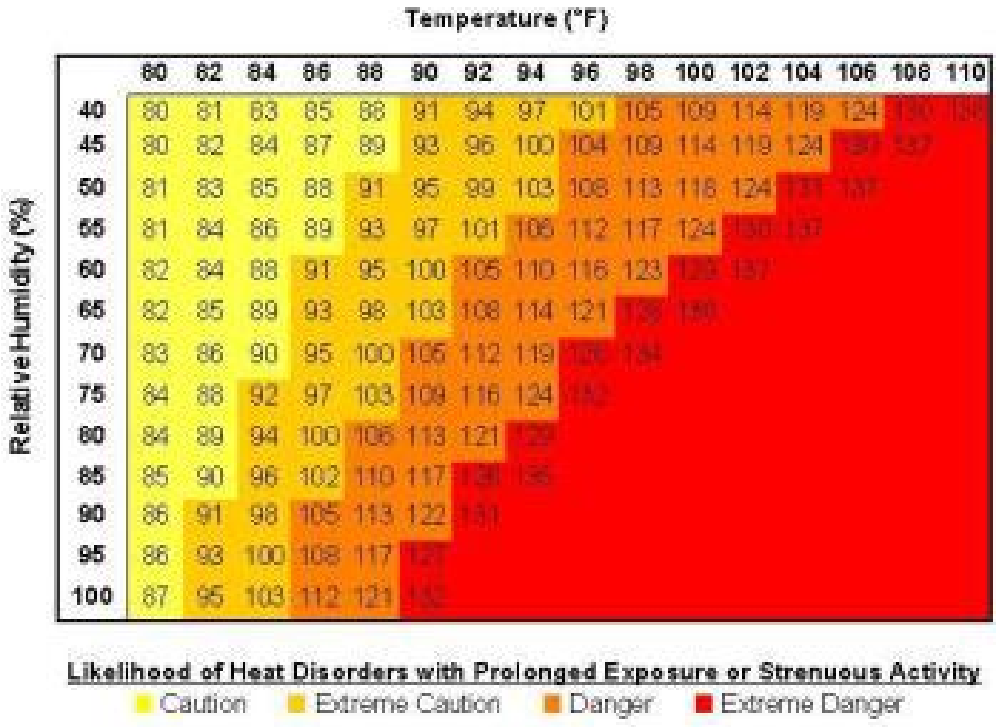
Temperatures of 90 degrees or more occur in Benton County every summer, sometimes for several days in a row. In Iowa, the record high temperature of 110 degrees for Des Moines was recorded in 1936. During July 1936, 12 record setting days topped 100 degrees in Des Moines. The record high temperatures for Des Moines are above 90 degrees, beginning in March and lasting through October. During the summers of 1997 and 1998, there were a combined total of 31 days when the high temperature was 90 degrees Fahrenheit or higher. Extreme heat conditions, when they occur, are broad based. Therefore, events which occurred in Des Moines would have impacted Benton County. National Climatic Data Center records indicate 4 incidents of heat waves or excessive heat conditions that affected Benton County since January 1, 1994.

Based on historical information, Iowa will likely experience about 26 days a year with temperatures above 90 degrees. There is a good chance there will also be a period of 3 consecutive days or more with temperatures in the 90s. It is also common for the temperature to hit 100 degrees or more once every three years during the summer months. Given these facts, Benton County will almost certainly experience extreme heat conditions of various duration every other year.

Most of Iowa would likely be impacted by extreme heat. The stagnant atmospheric conditions of the heat wave trap fertilizers and other agricultural chemicals in the air and add to the stresses of hot weather. The entire Benton County jurisdiction would experience an extreme heat event. People, livestock, crops, and even infrastructure can be affected by extreme heat. The extent of illness or damage depends on a variant of

factors but is highly dependent on the heat index. Exposure to full sunshine can increase the heat index by at least 15 degrees.

Figure 44: Heat Index



The following table (source Wikipedia) notes the effects of the heat index when observed in the shade:

Table 64: Extreme Heat Effects

Fahrenheit	Celsius	Notes
80-90º F	27-32º C	Caution-fatigue is possible with prolonged exposure and activity
90-105º F	32-41º C	Extreme Caution-sunstroke, heat cramps, and heat exhaustion are possible
105-130º F	41-54º C	Danger – sunstroke, heat cramps, and heat exhaustion are likely; heat stroke is possible
Over 130º F	Over 54º C	Extreme Danger – heat stroke or sunstroke are likely with continued exposure

While temperatures over 118 degrees Fahrenheit (air temperature only, not heat index) have never been recorded in Iowa, the average temperature throughout the summer months does put people at risk of anything from fatigue to heat exhaustion on a regular basis during the months of June, July, and August.

Hyperthermia is one of the most common ailments associated with extreme heat. Those at greatest risk of experiencing heat exhaustion are the very young, the very old, people without access to air conditioning, people who work outside throughout the summer months, and athletes who practice outside during the summer months.

Heat exhaustion, heatstroke, and sunstroke are common names for what is usually an advanced form of hyperthermia, which is an acute condition that occurs when the body produces or absorbs more heat than it can dissipate. It is typically caused by prolonged exposure to high temperatures and exacerbated by high humidity, physical exertion, or certain medical conditions. Hyperthermia is unique from a fever because a fever is activated by the body's own temperature control mechanisms while hyperthermia is related to an external cause. Hyperthermia symptoms generally start with confusion or psychological changes, dizziness, low blood pressure, red skin and in children, convulsions may occur. As the body temperature continues to rise, the prolonged low blood pressure may result in a pale or oxygen deprived appearance to the skin and vomiting and blindness may also occur. Body temperatures above 104 degrees Fahrenheit are considered life threatening, and brain death begins to occur at 106 degrees Fahrenheit. Generally, humans cannot survive sustained body temperatures over 113 degrees Fahrenheit and death is almost immediate at body temperatures in excess of 122 degrees Fahrenheit.

As many health-related concerns, the very young and the very old are at greatest risk, as are people with disabilities and certain conditions that limit the ability of the body to regulate its temperature, and people under the influence of drugs or alcohol or who otherwise may be more likely to experience dehydration or impaired judgement. Additionally, people at lower incomes are less likely to have access to or the ability to pay for temperature regulation such as air conditioning.

According to the 2020 US Census, 15% of all housing units are occupied by residents with income levels less than $24,999 per year. People living in these units may be less likely to afford air conditioning. The population of children under the age of 18 in Benton County is 5,881 or 23% of the total population and 7% of children in the county are living below the poverty level. 19.8% of adults are over the age of 65 years and 12% of those are living below the poverty level. Additionally, 2,921 people in Benton County have disabilities who may be at a higher risk of impact from extreme heat.

FLOODING – FLASH and RIVERINE

Definition

Flooding in Iowa takes on two forms: flash flooding and river flooding, both of which occur in Benton County. Flash flooding is a flood event occurring with little or no warning where water levels rise at an extremely fast rate. River flooding is a rise or overflowing of a tributary or body of water that covers adjacent land not usually covered by water when the volume of water in a stream exceeds the channel's capacity.

Description

Floods are the most common and widespread of all natural disasters, except fire. Most communities in the United States can experience some kind of flooding after spring rains, heavy thunderstorms, winter snow thaws, waterway obstructions, or levee/dam failures. Often it is a combination of these elements that causes damaging floods. Floodwaters can be extremely dangerous. The force of six inches of swiftly moving water can knock people off their feet and two feet of water can float a car. Floods can be slow or fast rising but generally develop over a period of days. Flooding is a natural and expected phenomenon that occurs annually, usually restricted to specific streams, rivers, or watershed areas.

Flash flooding results from intense rainfall over a brief period, sometimes combined with rapid snowmelt, ice jam release, frozen ground, saturated soil, or impermeable surfaces. Most flash flooding is caused by slow-moving thunderstorms or thunderstorms repeatedly moving over the same area. Even with information on soil saturation and predicted rainfalls, flash floods can still catch people by surprise. Flash flooding is an extremely dangerous form of flooding which can reach full peak in only a few minutes and allows little or no time for protective measures to be taken by those in its path. Flash flood waters move at very fast speeds and can move boulders, tear out trees, scour channels, destroy buildings, and obliterate bridges. Flash flooding often results in higher loss of lift, both human and animal, than slower-developing river and stream flooding.

River flooding results when the flow of water is greater than the normal carrying capacity of the stream channel. River flooding can also be caused by ice jams. Ice jam flooding generally occurs when warm weather and rain break up frozen rivers or any time there is a rapid cycle of freezing and thawing. The broken ice floats downriver until it is blocked by an obstruction such as a bridge or shallow area, where an ice jam forms, blocking the channel and causing flooding upstream.

Probability, Location, and Intensity

Floods are the most common and widespread of all-natural disasters except fire. In Iowa, as much as 24inches of rain has fallen in a 24 hour period. The Army Corps of Engineers report "Storm Rainfall 1887-1955" published in 1962 included a 24" rainfall event September 17-17, 1926 near Boyden and Maurice. Other 24 hour rainfall totals

include 13.18” on 6/14/1998 near Atlantic and 16.70” on 6/1/1967 in Red Oak. The latest significant event to affect Iowa occurred in July of 2011 when Dubuque got more than 12 inches of rain within a 24 hour period. This event resulted in a Presidential Disaster Declaration due to widespread property losses. Many other flash flood events have occurred across Iowa through mostly localized events. The National Climatic Data Center lists over 500 flash flood events in Iowa from 2015-2025. In that span of time there have been two deaths reported as related to flash flooding in Iowa along with $49.038M in property damage and $48.751M in crop damage.

The Floods of 2008 are still fresh in the minds of many Iowans. Flooding has been a regular and frequent hazard in Iowa. The Iowa Flood of 2008 was a hydrological event involving most of the rivers in eastern Iowa beginning around June 8, 2008 and ending about July 1, 2008. Estimates are that it caused in excess of $10M damage in Benton County. Historically this flood was one of the most if not the most devastating natural disaster to impact Benton County.

The National Climatic Data Center (NCDC) records show a total of 19 flood events impacting Benton County since 1993. There are another 22 events in this time period in Benton County under Flash Flood.

For Benton County floods represent both the most widespread and most devasting natural disaster. Riverine flooding occurs along the Cedar River, which runs through the northeast corner of Benton County including the City of Vinton. The Iowa River touches the southern border of the county. The county is also networked with a number of major streams and their tributaries, some of which are known to have riverine flooding conditions.

The City of Vinton, on the banks of the Cedar River, has the only flood gauge in Benton County. Flood stage is 15 feet. The top ten flood events that have been recorded since 1960 at the Vinton Staff Gauge are:

1.) 24.7 feet, June 12, 2008
2.) 21.8 feet, September 26, 2016
3.) 19.3 feet, March 30, 1961
4.) 19.2 feet, April 4, 1993
5.) 18.59 feet, June 1, 2013
6.) 18.4 feet. May 26, 2004
7.) 18.05 feet, April 9, 1965
8.) 18.0 feet, July 24, 1999
9.) 17.81 feet, June 23, 2014
10.) 17.72 feet, March 17, 2019

Since 2004 there have been nine flood events in Benton County, all of them involving the City of Vinton and along the Cedar River. Approximately once every three years a river flood will occur in Benton County.

In Benton County, NCDC records indicate 20 flash flood events since 1998 that are documented as flash floods. Most notable are flash flooding events that occurred in the county during the months of August 2009 and June 2010. Each event caused an estimated $250K in property damage. In August of 2009 the cities of Keystone, Van Horne, Garrison, and Shellsburg were impacted after 3-8 inches of rain fell in the county. There was unprecedented flooding on Prairie Creek. Mud Creek also flooded. In June of 2010 over 2 inches of rain fell in places resulting in flash flooding in Garrison and Vinton.

Based on historical occurrences, Benton County can expect to incur a flash flood event nearly every year.

In the past 80 years, floods are the second weather related killer in the United States after extreme heat. Flash floods are the number one storm related killer in the nation.

NCDC records document 20 flash flood events in Benton County from 1998 to July 2025. These flash floods caused estimated property damage of $560,000. The table below summarizes these flash flood events.

JURISDICTION	NUMBER	TOTAL LOSS
Benton County Unincorporated	2	0
Atkins	0	0
Belle Plaine	4	0
Blairstown	1	0
Garrison	3	$500K
Keystone	2	0
Luzerne	1	0
Mt. Auburn	0	0
Newhall	0	0
Norway	0	0
Shellsburg	0	0
Urbana	1	0
Van Horne	0	0
Vinton	5	$60K
Walford	1	0

Table 65: Benton County Flash Flood Events and Losses

NCDC records document 18 flood events in Benton County from 1998 to July 2025. These floods caused estimated property damage of $10.100M. The table below summarizes these flash flood events.

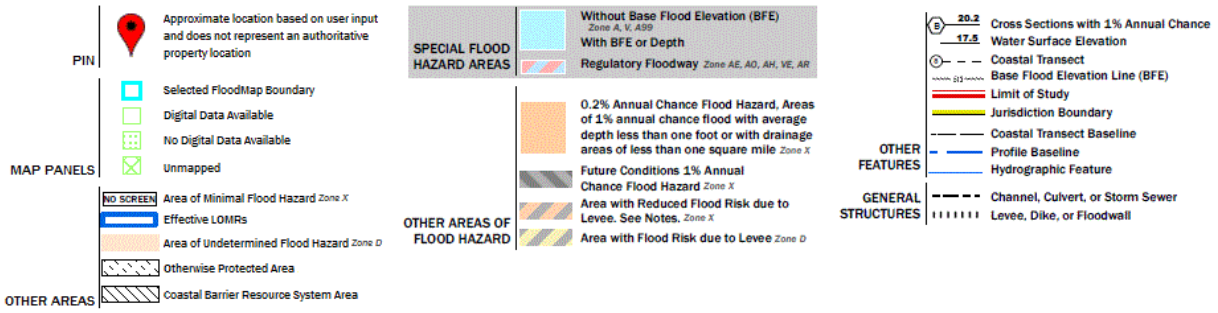
JURISDICTION	NUMBER	TOTAL LOSS
Benton County Unincorporated	5	0
Atkins	0	0
Belle Plaine	0	0
Blairstown	0	0
Garrison	0	0
Keystone	1	0
Luzerne	0	0
Mt. Auburn	2	$10.100M
Newhall	0	0
Norway	1	0
Shellsburg	1	0
Urbana	0	0
Van Horne	0	0
Vinton	6	0
Walford	2	0

Table 66: Benton County Flood Events and Losses

The amount of loss listed for Mt Auburn includes the June 2008 event that started in the Mount Auburn area and continued through the City of Vinton to south of the City of Urbana.

The Federal Emergency Management Agency has delineated the probable extent of the 100-year flood hazard areas in most areas. These Flood Insurance Rate Maps (D-FIRM) show properties affected by the floods that have at least a 1% change of occurring in any particular year. Generally, these areas are in the floodplain or adjacent areas. Many of these areas are parkland, agricultural areas, or conservation land, but residential and commercial areas are impacted by river flooding as well. The Benton County Assessor’s Office has determined that 14 percent of the properties county-wide have the potential for being impacted by riverine or flash flooding. Following are flood maps showing the potential 100-year and 500-year flood zones in Benton County as well as a synopsis of the properties within the zones.

Figure 45: Legend for All Flood Maps



Benton County Unincorporated

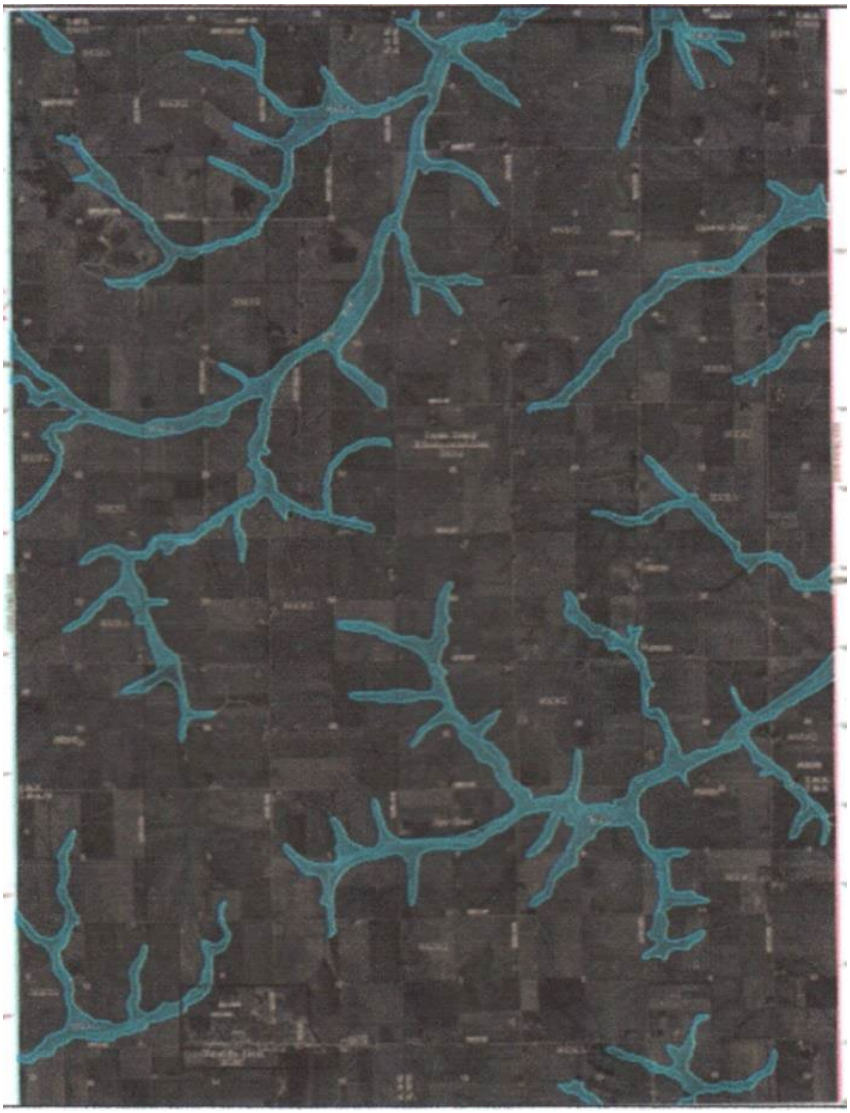


Figure 46: Benton County Unincorporated 100-Year Flood Hazard Areas

Benton County was completely mapped on 12/20/2019. The CID number is 180845. The rural unincorporated areas of the county has 1,968 agricultural properties, 128 exempt properties, 32 commercial properties, 2 industrial properties and 441 residential properties in the 100-year flood hazard areas. (per Schneider Geospatial).

ATKINS



Figure 47: Atkins 100-Year Flood Hazard Areas

The CID for Atkins is 190548. FIRMS are 19011Co500D dated 12/20/2019 and 19113C0380D dated 12/20/2019. An area running through the city from north to south and a small area on the northwest side of the city are within the 100-year flood hazard area. There are 4 agricultural properties, 6 exempt properties, 1 commercial property, and 42 residential properties in the 100-year flood hazard area.

BELLE PLAINE

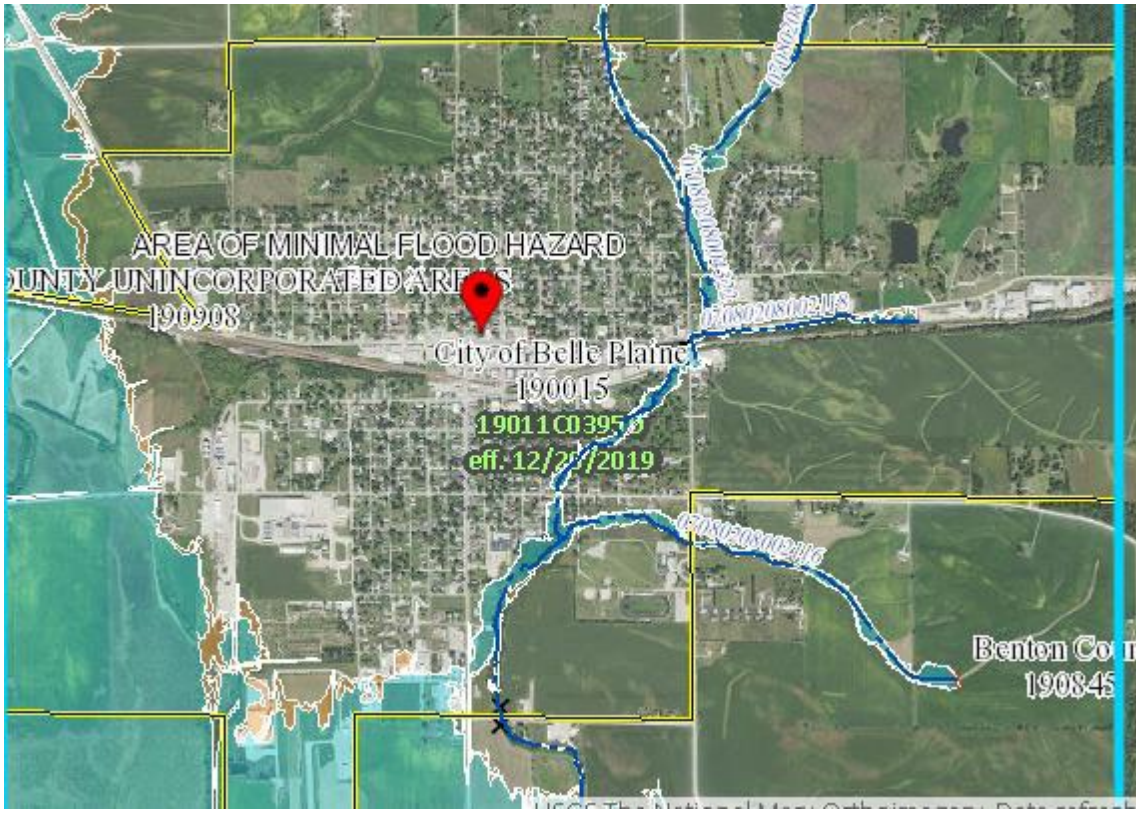


Figure 48: Belle Plaine 100-Year Flood Hazard Areas

The CID for Belle Plaine is 190015. FIRMs 19022C0395D and 19171C0500CD are dated 12/20/2019. The city is flanked on its east and west sides by areas in the 100-year flood hazard area. There are 13 agricultural properties, 22 commercial properties, 14 exempt properties, 6 industrial properties, and 50 residential properties within the hazard areas.

BLAIRSTOWN

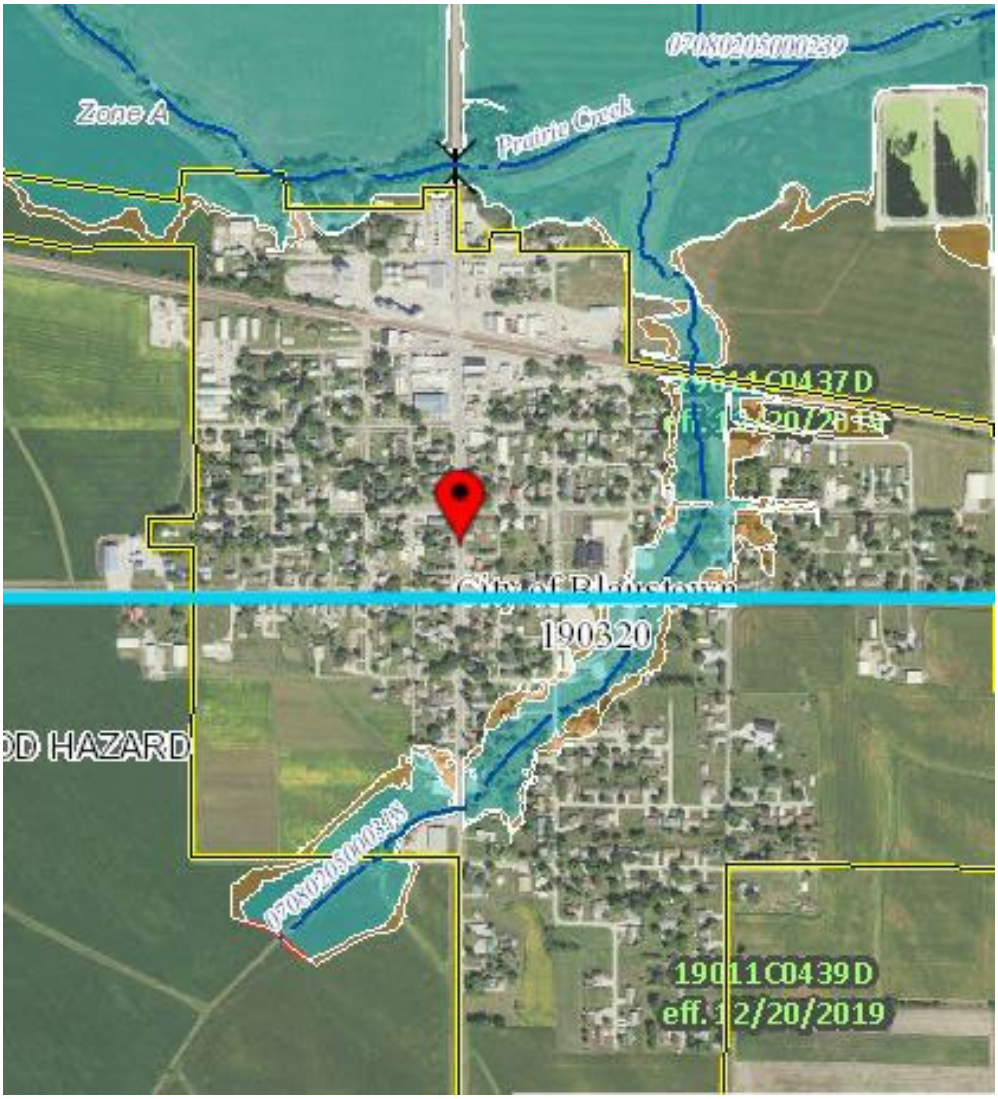


Figure 49: Blairstown 100-Year Flood Hazard Areas

The CID for Blairstown is 190320. FIRM 19011C0437D and 19011C0439D dates are both 12/20/2019. A small area on the north side of the corporate city limits and an area running through the city from north to south are withing the 100-year flood hazard area. There are 4 agricultural properties, 6 commercial properties, 4 exempt properties, and 56 residential properties within the hazard areas.

GARRISON



Figure 50: Garrison 100-Year Flood Hazard Areas

The CID for Garrison is 190321. FIRM 19011C0169D dated 12/20/2019. The city is flanked by 100-year flood hazard areas along the city's south and west side. There are 3 agricultural properties, 1 commercial property, and 2 exempt properties within the hazard areas.

KEYSTONE



Figure 51: Keystone 100-Year Flood Hazard Areas

The CID for Keystone is 190602. The FIRM 19011C0300 is dated 12/20/2019. A small area in the southeast corner of the corporate city limits is within the 100-year flood hazard area. There are 12 agricultural properties, 7 commercial properties, 3 exempt properties, and 14 residential properties within the hazard areas.

LUZERNE



Figure 52: Luzerne 100-Year Flood Hazard Areas

The CID for Luzerne is 190281. The FIRM 19011C0425D is dated 12/20/2019. There appears to be no delineated special flood hazard areas within the corporate limits of Luzerne.

MOUNT AUBURN



Figure 53: Mount Auburn 100-Year Flood Hazard Areas

The CID for Mount Auburn is 190785. FIRM 19011C0075D dated 12/20/2019. There appears to be no delineated special flood hazard area within the corporate limits of Mount Auburn.

NEWHALL

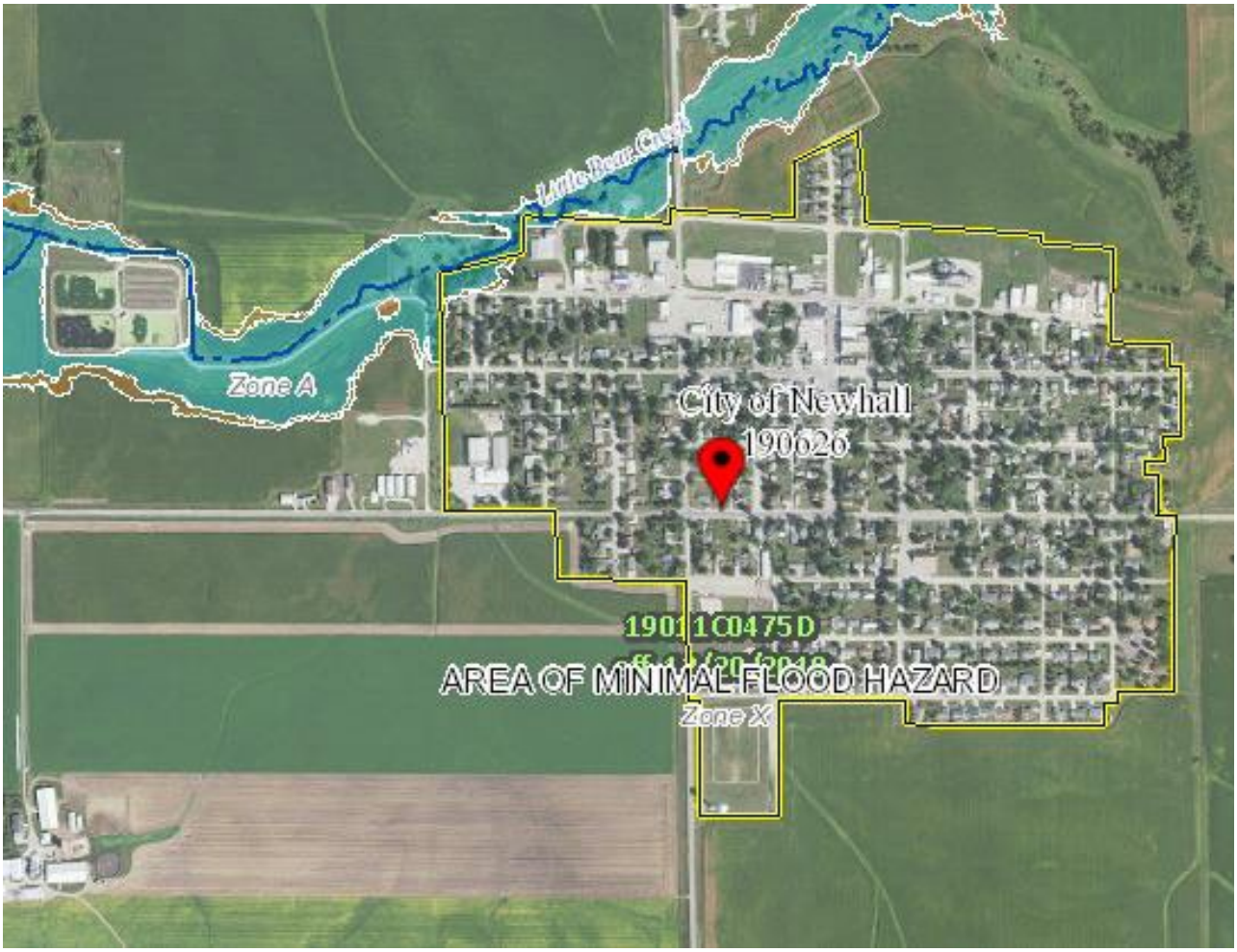


Figure 54: Newhall 100-Year Flood Hazard Areas

The CID for Newhall is 190626. Their FIRM 19011C0475D is dated 12/20/2019. A small area in the north side of the corporate city limits is within the 100-year flood hazard area. There is 1 commercial property, 1 exempt property, and 4 residential properties within the hazard areas.

NORWAY

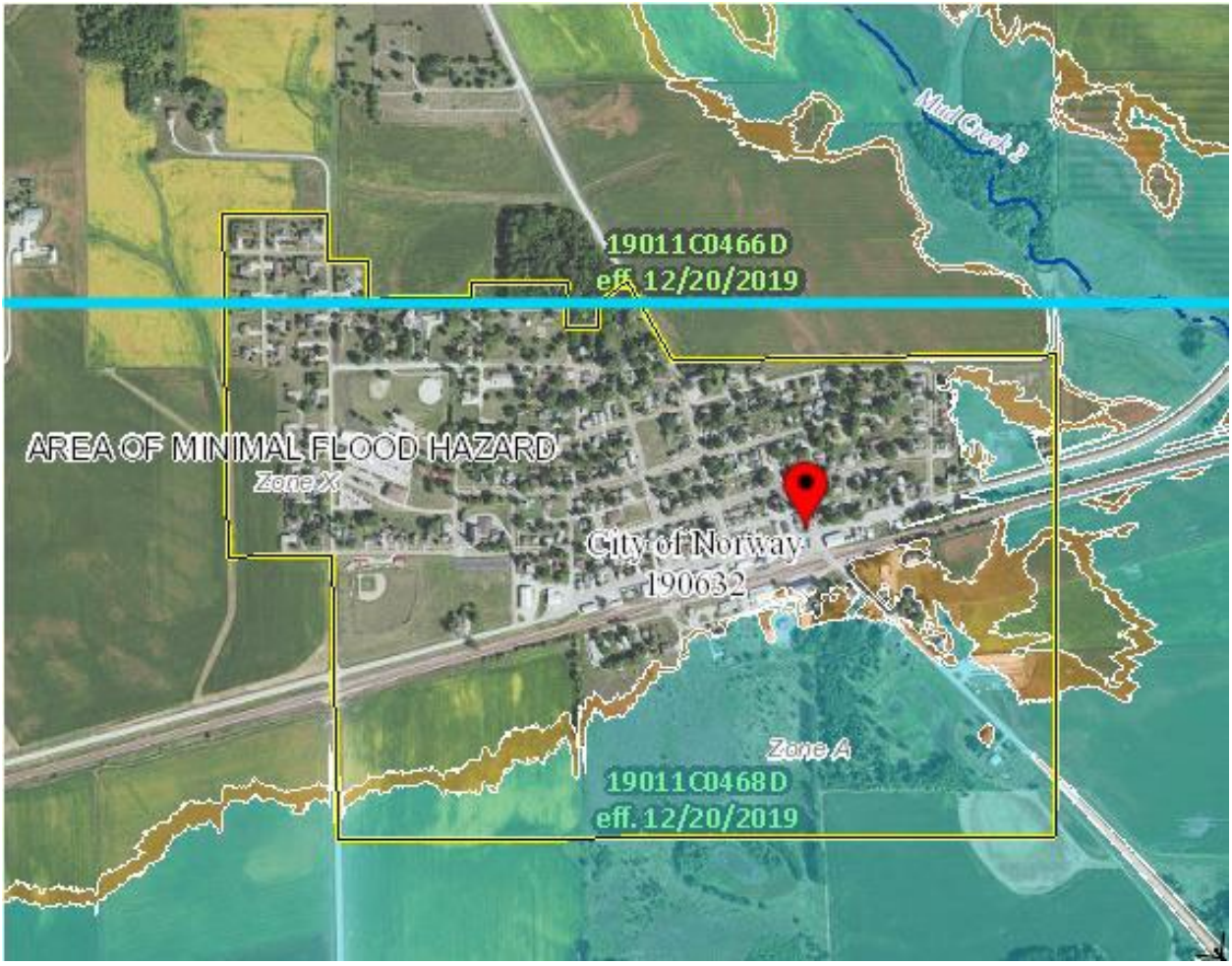


Figure 55: Norway 100-Year Flood Hazard Areas

The CID for Norway is 190632. Their FIRMS 19011C0466D and 19011C0468D are dated 12/20/2019. There is only a small corner of special flood hazard area in the northeast corner of the corporate limits of Norway. There are 14 agricultural properties, 4 commercial properties, 2 exempt properties, and 34 residential properties within the hazard areas.

SHELLSBURG

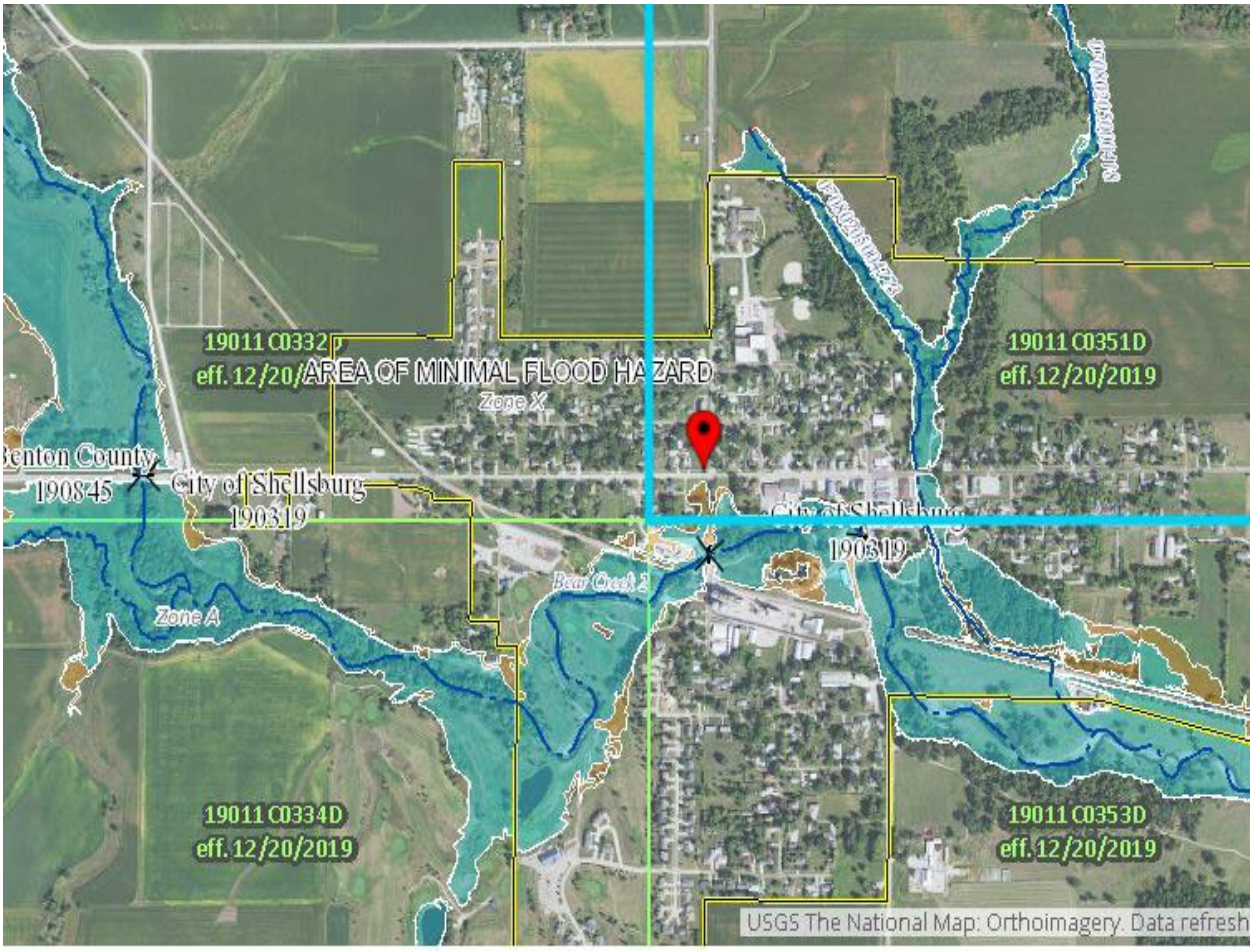


Figure 56: Shellsburg 100-Year Flood Hazard Areas

The CID for Shellsburg is 190319. Their FIRMS are 19011C0332D, 19011C0351D, 19011C0353D, and 19011C0334D with all dated 12/20/2019. An expansive 100-year flood hazard area runs through the city from east to west along Wildcat Creek with tributaries running to the north and south. There are 9 agricultural properties, 7 commercial properties, 11 exempt properties, and 45 residential properties within the hazard areas.

URBANA

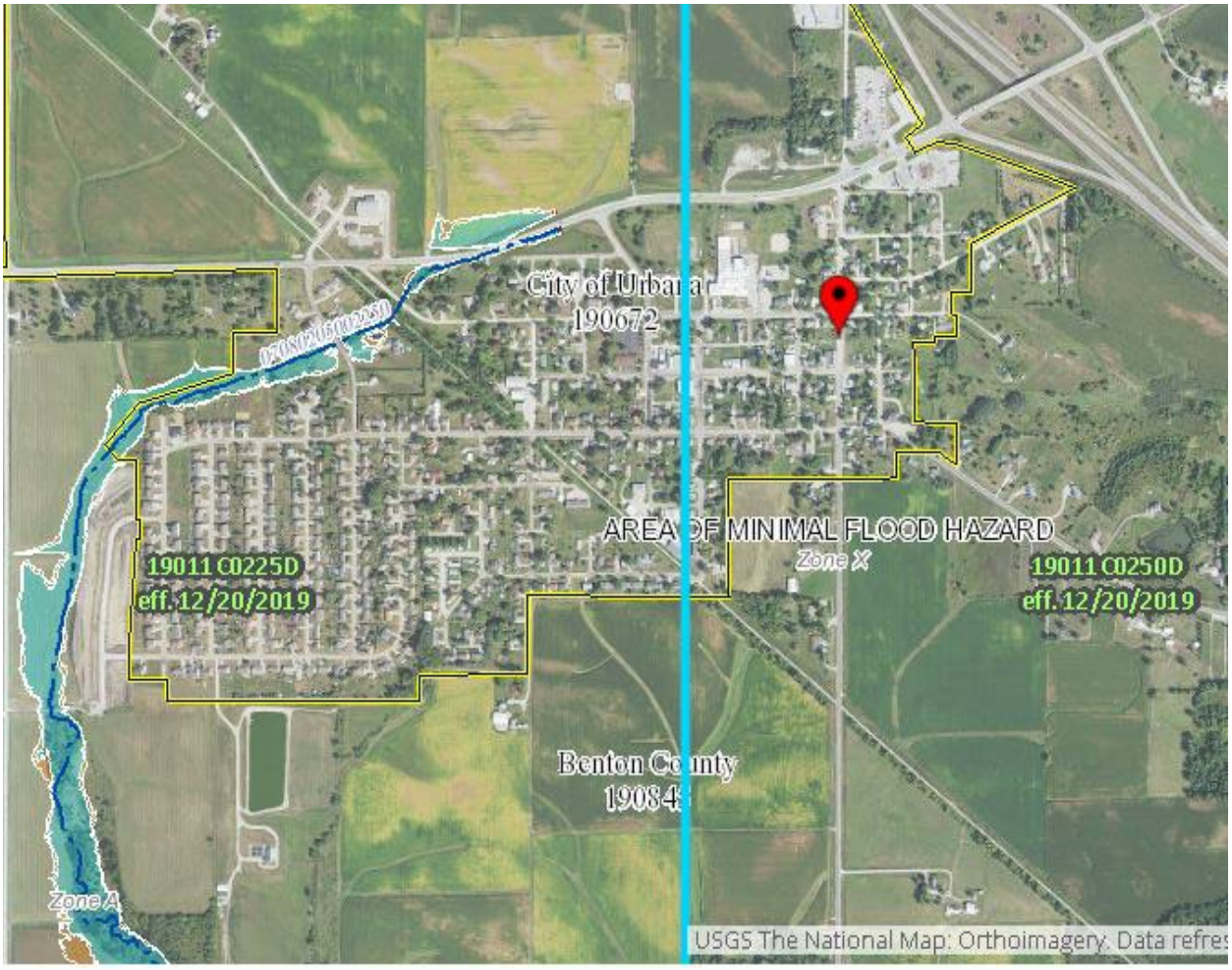


Figure 57: Urbana 100-Year Flood Hazard Areas

The CID for Urbana is 190672. Their FIRMS 19011C0225D and 19011C0250D are dated 12/20/2019. A 100-year flood hazard area runs along the west and north side of the city. There are 7 agricultural properties, 4 commercial properties, 3 exempt properties, and 50 residential property within the hazard areas.

VAN HORNE



Figure 58: Van Horne 100-Year Flood Hazard Areas

The CID for Van Horne is 190673. Their FIRM 19011C0325D is dated 12/20/2019. A small area in the northwest corner of the corporate city limits is within the 100-year flood hazard area. There are 2 agricultural properties and 1 exempt property within the hazard area.

VINTON

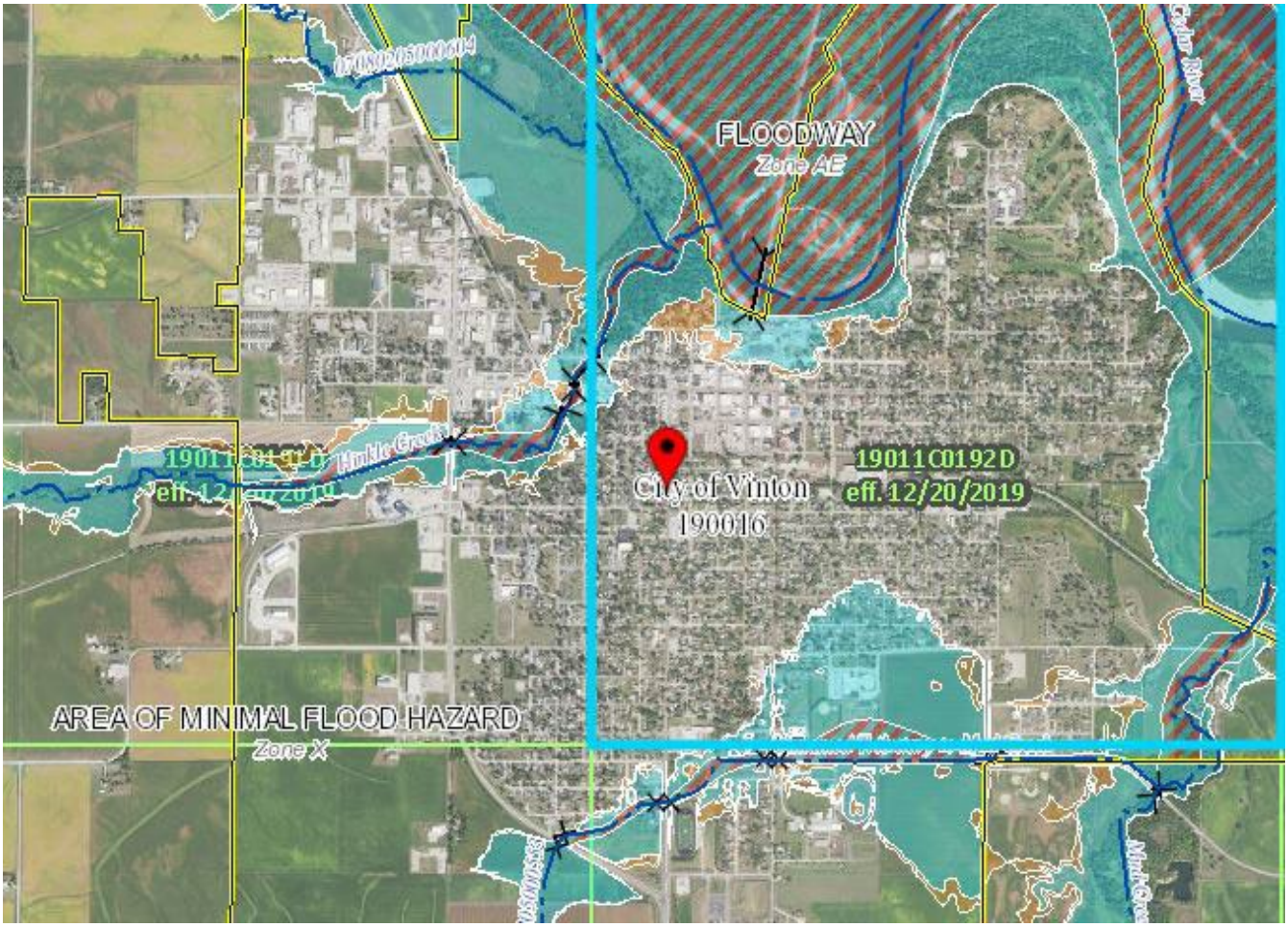


Figure 59: Vinton 100-Year Flood Hazard Areas

The CID for Vinton is 190673. Their FIRMS 19011C0191D and 19011C0193D are dated 12/20/2019. Their FIRMS 19011C0192D and 19011C0194D are dated 9/23/2023 due to a revaluation. Vinton is the only area of Benton County that has an identified 100-year and 500-year flood hazard areas. The 2019 FIRM mapping did identify additional properties that would be affected by flooding in the Frog Flats area in the southeast corner of the city. There are 21 agricultural properties, 49 commercial properties, 62 exempt properties, 2 industrial properties, and 328 residential properties within the 100-year flood hazard area. Also within this area are the Vinton Fire Station, Vinton Electrical Generation Plant, and Benton County Transportation offices. There are an additional 1 agricultural property, 19 commercial properties, 5 exempt properties, and 39 residential properties within the 500-year flood hazard area. Also within this area are the Benton County Law Enforcement and Communications Center, the Benton County Emergency Operations Center, and the Vinton Electrical Utility Building.

WALFORD

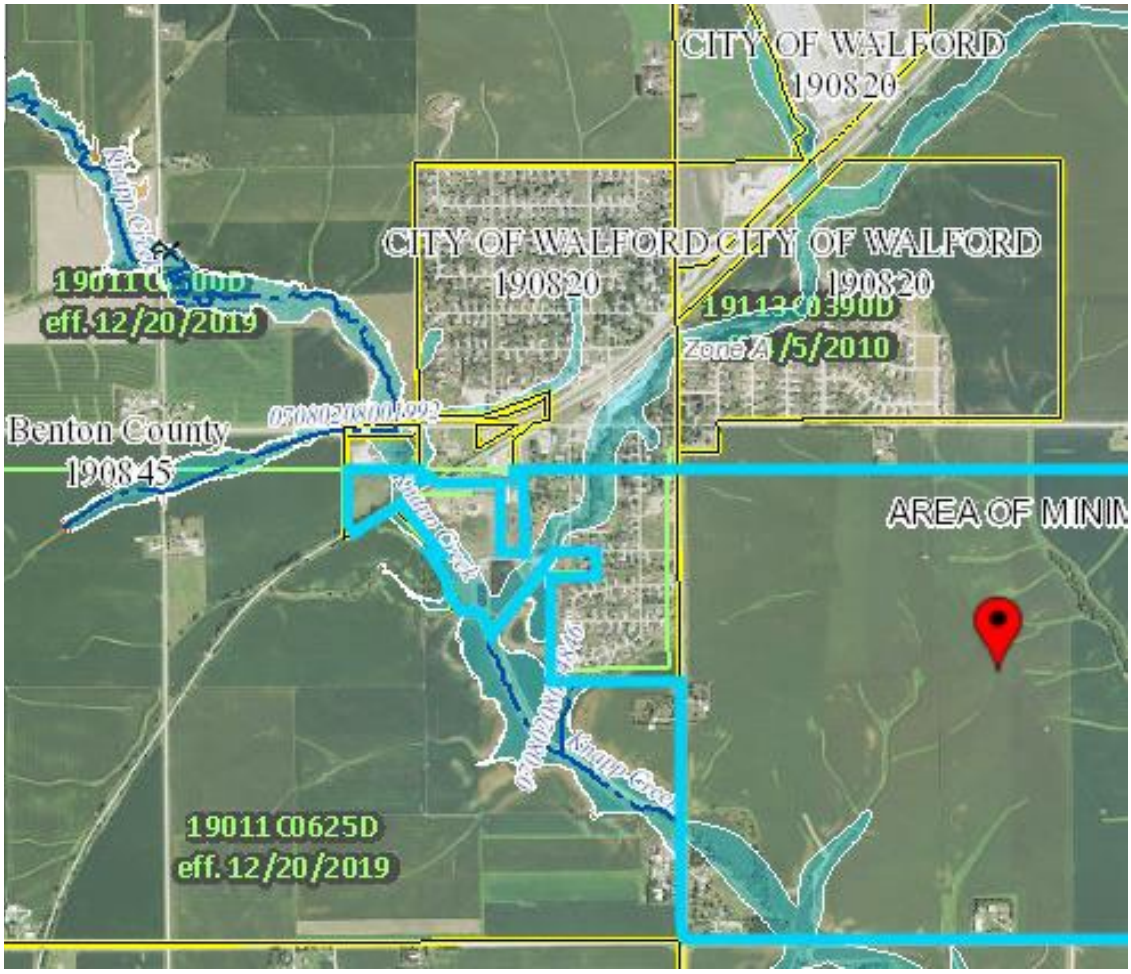


Figure 60: Walford 100-Year Flood Hazard Areas

The CID of Walford is 190820. Their FIRMs are 19011C0390D and 19011C0625D dated 12/20/2019. Several 100-year flood hazard areas run through the city. There are 2 agricultural properties, 4 commercial properties, 8 exempt properties, and 67 residential properties within the 100-year flood hazard areas.

After researching all available sources, the only information that could be found regarding flood losses in Benton County was that in the record setting floods of 2008, an estimated 110 properties were damaged county-wide from actual flooding that caused an estimated $10 million in damages. In the City of Vinton, 29 residential properties qualified for FEMA flood buyouts following the floods of 2008. Also flooded during the floods of 2008 were the Vinton Fire Station, City of Vinton Electrical Utility Plant and the Benton County Law Enforcement Center. Benton County also qualified for FEMA funding to replace the flood damaged Benton County Jail at a cost of $5.9 million.

Using data generated by Schneider Geospatial maps, it was determined that 3,587 properties are located within the 100-year flood plain areas of Benton County. These properties include 1,131 (10% of the total residential properties in the county) classified as residential with an assessed value of $199,692,200, 138 classified as commercial (24% of the total commercial properties in the county) with an assessed value of $55,441,400, 14 classified as industrial (30% of the total industrial properties in the county) with an assessed value of $12,678,070, and 245 properties that are tax exempt, municipal, or county owned properties within Flood Zone A. Using the average of 2.51 people per household as found in the 2020 census, the potential number of people who could be affected is 2,839, or 11 percent of the Benton County population.

Of the 20 Presidential Disaster Declarations that have been declared for Benton County since 1969, 18 have involved flooding.

The 2008 Iowa floods resulted in 86 of the State's 99 counties included in the Governor's Disaster Declarations, and 84 being declared as Presidential Disaster Declarations. The event resulted in 18 fatalities and 106 injuries, the evacuation of approximately 38,000 Iowans and impacting 21,000 housing units. Iowa had 2 presidentially declared disasters in 2010, both of which included flooding and severe storms. Over half of Iowa's 99 counties were included in one (or both) of these declarations. In 2011 Iowa had 3 separate presidentially declared disasters due to flooding (as well as severe storms and straight-line winds). Counties covered in the 2011 disasters ranged from the western borders due to flooding on the Missouri River to eastern counties along the Mississippi River. Crop losses in Iowa alone from the Missouri River flooding were an estimated $162 million. Iowa has been involved in 38 presidential declarations for major disasters related to flooding since 1953. Given the history of river flooding in Iowa, it is likely there will be many minor events in any given year and a high likelihood that a major flooding event requiring federal assistance will occur in the next five years. While hundreds of homes and businesses have been removed from the floodplain over the last decade, many opportunities for mitigation remain.

GRASS OR WILDLAND FIRE

Definition

A grass or wildland fire is an uncontrolled fire that threatens life and property in a rural or wooded area. Grass and wildland fires are more likely to occur when conditions are favorable, such as during periods of drought when natural vegetation is drier and more combustible.

Description

Wildfire risk is frequently associated with specific types of terrain and groundcover. Areas with the least amount of development are generally where wildfires will occur, and groundcover in these areas typically includes forests, ditches, prairie remnants, poorly maintained lots or fields. The situation can be made worse by the addition of steep slopes, which make any fire that does occur more likely to spread and more difficult to maintain. The likelihood of a wildland fire occurring is exacerbated by dry conditions and high winds.

Probability, Location, and Intensity

According to the National Interagency Fire Center, not counting prescribed fires, there were 4,359 wildland fires spanning 99,211 acres from 2010 to 2024 in Iowa. There were 1,817 wildland fires spanning 33, 122 acres from 2002 to 2012 in Iowa. No event reported in the state has been a historically significant wildfire. While this may seem like a large number of fires, when compared to other states, it is very small. As an example of how the state ranks versus other states, Iowa ranked 44th in number of wildland fires for the decade of 2002 to 2012, and 40th in number of acres burned. For the period 2013 to 2017 (inclusive) Iowa was 34th in number of fires. Most of the states that had fewer fires were much smaller states like Hawaii, Delaware, Rhode Island, and Vermont.

Rural settings are more vulnerable to wildland fires, and the value of the exposed property is increasing at a faster rate than population. Development trends indicate that it is indeed in the rural, unincorporated areas of Benton County where new homes are being constructed on small acreages that are either contingent to or located on tracts of land that are vulnerable to grassland, wildland, or timber fires. Grass fires are often more easily contained and extinguished before there is damage to people or developed property. Fires often burn large portions of field crops in the fall when the crops are dry and harvesting equipment can overheat or throw sparks. This can be quite costly to the famer in terms of lost production.

Most grass fires are contained to highway right-of-way and rail right-of-way ditches and are less than a few acres in size. However, in Benton County the potential threat is more acute due to the expanses of grassland, cropland, wild lands, and timber. High winds can turn a small flame into a multi-acre grass fire within a matter of minutes. The extent is dependent upon conditions such as land use/land cover, moisture, and wind.

Most grass fires only burn the grasses, crops, or other low land cover. Injuries and deaths from fighting the fire most often occur by natural causes such as heart attack or stroke. Property damage is usually limited to grass, small trees, etc. Occasionally a house or outbuilding can be damaged or destroyed as could be the case in the rural, unincorporated areas of Benton County where development is occurring.

While wildland fires in the form of grass, brush and field fires do occur throughout Benton County, they are more likely to occur in the rural unincorporated areas of the county or on the outskirts of cities/towns where people are more likely to have a greater number of combustible materials in their yards.

Wildland fires in Benton County are not typically beyond the response capabilities of the local fire departments, and thus people or property are more likely to be directly affected by a wildland fire than indirectly affected. This would typically include property losses to whatever was burned, which might include crop losses, loss or damage to homes and/or accessory structures, and possible infrastructure damage if the fire reaches a roadway, propane tank, electricity lines or similar. The most common indirect effect of grass, timber, or wildland fire is excessive smoke, which could potentially cause visibility issues for drivers depending on the location of the wildland fire and weather conditions such as wind direction and humidity.

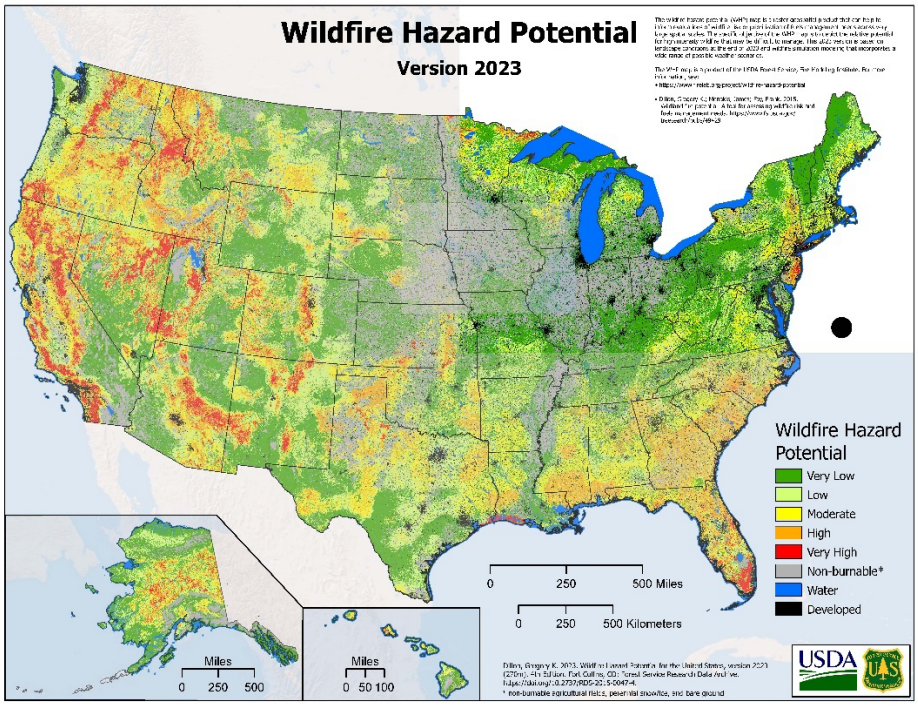
According to the Iowa State Fire Marshall's Office, from 2020-2025 Benton County had 467 natural vegetation fire incidents impacting 1,524.50 acres with property losses of $609,179.00. These incidents include the categories of: grass fire; brush or brush-and-grass mixture fire; forest, woods, or wildland fire; cultivated vegetation, crop fire, other; natural vegetation fire, other; and cultivated grain or crop fire.

Urbana – Polk Township Fire Department responded to the most incidents of natural vegetation fires in the report from the State Fire Marshall's Office with 66 incidents in the years 2020 through 2025. Vinton Fire Department was second with 61 incidents followed by Belle Plaine Fire Department with 60 incidents and Shellsburg First Responders with 57 incidents. Cedar Mount Auburn Fire and EMS had the least number of incidents with only 1 incident over the five year period. Walford was not included in this report as it uses the Fairfax Fire Department based out of Linn County.

Figure 61: Wildfire Hazard Potential 2023

Source USDA Forest Service

https://research.fs.usda.gov/firelab/understory/whp2023-classified-map



SEVERE WINTER STORM

Definition

Severe winter weather conditions are those that affect day-to-day activities. These can include blizzard conditions, heavy snow, blowing snow, freezing rain, heavy sleet, and extreme cold.

Description

Winter storms are most likely to occur between late October and late March. Blizzards, the most dangerous of winter storms, combine low temperatures, heavy snowfall, and high winds that blow the snow into drifts and reduce visibility. The National Weather Service describes a blizzard as large amounts of falling or blowing snow and winds of at least 35 miles per hour that are expected to last for several hours. A severe blizzard is characterized by considerable falling or blowing snow, winds of at least 45 miles per hour, and temperatures of 10 degrees Fahrenheit or lower lasting for several hours.

A heavy snowstorm is one that drops four or more inches of snow in a 12-hour period or six or more inches in a 24-hr period. Often high winds accompany the storm, blowing the snow into drifts and causing poor visibility.

Probability, Location, and Intensity

Iowa has had a plethora of winter storm related events catalogued in the NCDC. The database includes these type winter events for Iowa from 1/1/2015 to 6/30/2025.

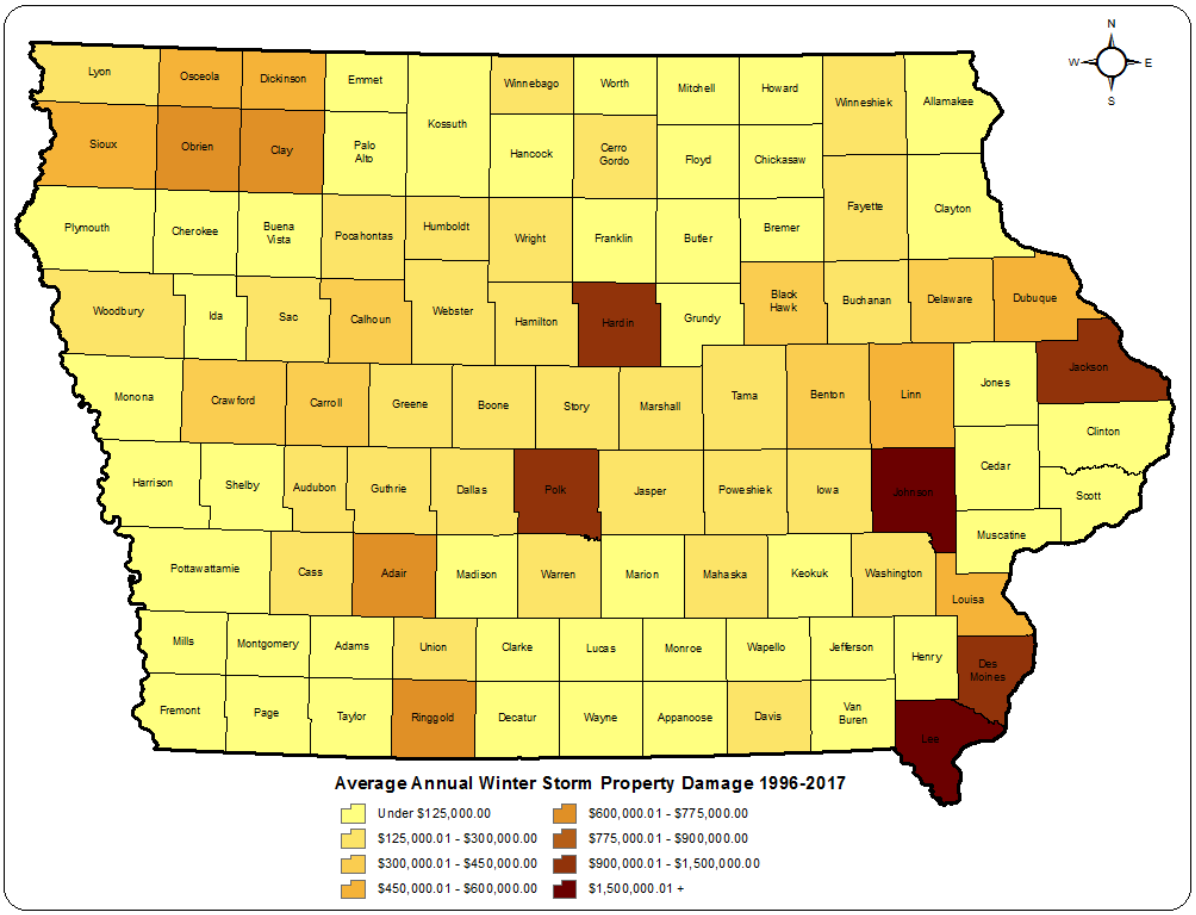
* 9 winter weather events
* 18 winter storm events
* 2 blizzard events
* 2 ice storm events
* 2 heavy snow events
* 1 extreme cold/windchill event

The most recent winter event recorded in this time frame was 2/11/2025 when 6-10 inches of snow fell across the county impacting roads and travel.

Some of these events may overlap, but it is clear that in Iowa a variety of winter weather-related hazards are commonplace. In Iowa, there are cases where deaths have been attributed to cold temperatures or blizzards.

NCDC documents 58 winter weather events and 62 winter storm events that have been reported to impact Benton County from 1950 to mid-2025. This is an average of slightly more than one event per year. There were no deaths and one injury attributed to these events.

Figure 62: Average Annual Winter Storm Property Damage 1996-2017



A snowfall of six inches or more from one storm only occurs in 49% of Iowa winters, while a large winter storm event of 10 inches or more will occur about once every 3 years. The winter of 2007-2008 saw very high snowfall totals for much of eastern Iowa and many areas had multiple storm events in excess of 10 inches.

Winter storms regularly move easterly and use both the southward plunge of cold arctic air from Canada and the northward flow of moisture from the Gulf of Mexico to produce heavy snow and sometimes blizzard conditions in Iowa and other parts of the Midwest. From 1983 to 1998, Des Moines averaged nearly 50 days a year with falling snow. The cold temperatures, strong winds, and heavy precipitation are the ingredients of winter storms. Most counties, including Benton County, can usually expect 2 or 3 winter storms a season with an extreme storm every 3 to five years on average (more in the northwest, fewer in the southeast).

Based on the state's geographic location, personal knowledge, and historical data, the SHMT has evaluated the probability on winter storms and determined that a winter storm event is highly likely to occur in any given year. Due to the historical frequency of severe winter storms and Benton County's geographical location, there is almost 100 percent certainty that the county will be impacted by winter storms in the future.

Nine winter storm related Presidential Disaster Declarations for major disasters have been declared in Iowa since 1991. The first declaration related to winter storms which occurred in 1991 resulting from an ice storm that affected 16 counties. Extensive damage occurred to power lines, including the collapse of numerous high tension towers in north central Iowa. The second declaration occurred in 1997 resulting from a severe winter storm that affected 13 counties. In 2007 the third declaration on March 14 affected 48 counties and the fourth declaration on March 30 affected 23 counties with five counties included in both declarations. These declarations resulted from a major winter storm with ice and heavy snow combined with strong winds gusting to 50-55 mph causing blizzard conditions. Some areas in Iowa received 16 inches of snow, and coupled with strong winds, it caused already weakened ice-covered power lines to crumble and interstate highways to be closed due to drifting snow. This situation left approximately 250,000-plus Iowa citizens without electricity for more than 10 days. In central Iowa, one county had 20 miles of downed power poles that snapped due to the power lines being coated with inches of ice coupled with the strong winds, with high-tension towers also collapsing. Due to the severity of the winter blizzard, the governor signed a governor's proclamation of disaster emergency for all 99 counties in Iowa. Another disaster was declared in January of 2008, affecting 30 counties in southern Iowa. Two more Presidential Disaster Declarations occurred in late February 2010, impacting 27 counties, and in early March of 2010, impacting 27 counties in western Iowa. The eighth declaration was for an event on April 9-11, 2013 that impacted NW Iowa with freezing rain, sleet, and snow. The ice accumulation, greater than a half of inch in some areas, caused major tree and power line damage. Travel was difficult resulting in closures of schools and businesses. The winter storm events on these dates in NW Iowa had reported property damage of approximately $55 million. The most recent Presidential Disaster Declaration for a winter storm event in Iowa occurred in March of 2025 with both significant snowfall and very high winds that caused limited visibility and many road closures across the state. Four counties in west central Iowa were included in this declaration.

Severe winter storms always affect the entire jurisdiction, although specific areas may experience heavier damage. The main complications from severe winter storms are hazardous driving conditions and extremely cold temperatures. Sometimes severe winter storms are also accompanied by significant ice, which can accumulate on power lines and cause widespread outages. People who are at greatest risk are those who must travel a significant distance on a regular basis and portions of the population who are less able to accommodate extreme cold or power outages.

Also at risk are people who live in homes that are not well maintained (leaky windows and doors, lack of insulation, older heating systems, etc.), people who may have existing medical conditions that make them less able to tolerate temperature extreme, the very old and the very young.

Hazardous driving conditions due to snow and ice on highways and bridges lead to many traffic accidents. The leading cause of death during winter storms is transportation accidents. About 70% of winter-related deaths occur in automobiles and about 25% are

people caught out in the storm. The majority of these are males over 40 years of age. Emergency services such as police, fire, and ambulance may be unable to respond due to road conditions. Emergency needs of remote or isolated residents for food or fuel, as well as for feed, water and shelter for livestock are unable to be met. People, pets, and livestock are also susceptible to frostbite and hypothermia during winter storms. Those at risk in Benton County are primarily either engaged in outdoor activity (shoveling snow, digging out vehicles, or assisting stranded motorists), or are the elderly or very young (11,236 or 44 percent of the total Benton County population). The school systems of Benton County often close during extreme cold or heavy snow conditions to protect the safety of children and bus drivers. Citizens' use of kerosene heaters and other alternate forms of heating may create other hazards such as structural fires and carbon monoxide poisoning.

According to the Iowa Department of Transportation's Iowa Crash Analysis Tool, from 2020 to 2025 there were 216 motor vehicle accidents in Benton County directly related to weather conditions. These weather conditions included ice/frost, snow, and slush. Of the 216 accidents, one was a fatality crash, 3 were suspected serious injury crashes, 23 were suspected minor injury crashes, 34 were possible/unknown injury crashes, and 155 were property damage only crashes. These accidents had an average property damage of $9,112.66 per crash and a total property damage of $1,968,335.00. In the 2020-2025 period, 2021 had the most motor vehicle accidents at 50 total followed by 2025 with 39 total, and 2022 with 38 total. The remaining years of 2024, 2026, and 2020 had 33, 32, and 24 accidents, respectfully.

Winter storm are quite vast and would likely impact multiple counties. Certain areas may experience local variations in storm intensity and quantity of snow or ice. The Iowa Department of Transportation, Benton County Secondary Roads, and city public works departments are responsible for the removal of snow and treatment of snow and ice with sand and salt on Benton County's 1,330 miles of hard surfaced, secondary, rock and dirt roads in the county and on any street in the county's 14 incorporated cities. Travelers using any of the county's roads may become stranded in a severe winter storm and may be forced to seek refuge in a shelter.

Immobilized transportation (including emergency vehicles), downed trees and electrical wires, building and communication tower collapse, bodily injury/death are just a few of the impacts of a severe winter storm. Vehicle batteries and diesel engines are stressed and the fuel often gels in extreme cold weather. This impacts transportation, trucking, and rail traffic. Rivers and lacks freeze and subsequent ice jams threaten bridges and can close major highways. Ice jams can also create flooding problems when temperatures begin to rise. An ice coating at least one-fourth inch in thickness is heavy enough to damage trees, overhead wires, and similar objects and to produce widespread power outages. Buried water pipes can burst causing massive ice problems, loss of water and subsequent evacuations during sub-zero temperatures. Fire during winter storms presents a great danger because water supplies may freeze, and firefighting equipment may not function effectively or personnel and equipment may be unable to get to the fire. If power is out, interiors of homes become very cold, causing

pipes to freeze and possibly burst. Cold temperature impacts on agriculture are frequently discussed in terms of frost and freeze impacts early or late in growing seasons and on unprotected livestock. The cost of snow removal, repairing damage, and loss of business can have large economic impacts on the community. Since 1950, Iowa has had 16 injuries related to winter storms and 6 deaths.

THUNDERSTORM/LIGHTNING/HAIL

Definition

Thunderstorms are weather systems resulting in heavy rains. Severe thunderstorms have winds reaching or exceeding 58 mph, tornadoes, or surface hail at least 0.75 inches in diameter.

Hail is an outgrowth of a severe thunderstorm in which balls or irregularly shaped lumps of ice greater than 1 inch in diameter fall with rain.

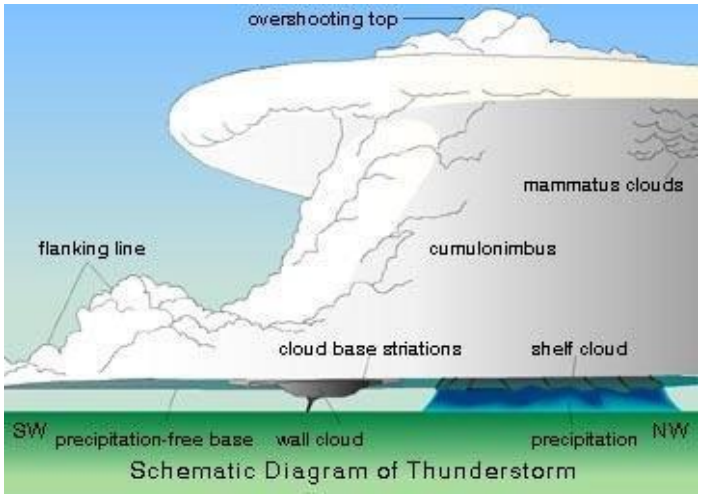
Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt.” This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees Fahrenheit in a split second. This rapid heating, expansion, and cooling of air near the lightning bolt creates thunder.

Description

Thunderstorms are formed from a combination of moisture, rapidly rising warm air, and a lifting mechanism such as clashing warm and cold air masses. Most thunderstorms produce only thunder, lightning, and rain. Severe storms, however, can produce tornadoes, high straight-line winds above 58 mph, microbursts, lightning, hailstorms, and flooding. High straight-line winds, which can often exceed 60 mph, are common occurrences and are often mistaken for tornadoes.

Thunderstorms area common in Iowa and can occur singly, in clusters, or in lines. Compared to other atmospheric hazards such as hurricanes and winter storms, they tend to affect relatively small areas. A typical thunderstorm is 15 miles in diameter and lasts an average of 30 minutes but may travel distances in excess of 600 miles.

Figure 63: Thunderstorm Diagram



The National Weather Service (NWS) considers a thunderstorm severe if it produces hail at least 1 inch in diameter, wind 58 mph or higher, or tornadoes. High straight-line winds, which can often exceed 60 mph, are common occurrences and are often mistaken for tornadoes. Lightning is an electrical discharge that results from the buildup of positive and negative charges within a thunderstorm. When the buildup becomes strong enough, lightning appears as a “bolt.” This flash of light usually occurs within the clouds or between the clouds and the ground. A bolt of lightning reaches temperatures approaching 50,000 degrees F in a split second. This rapid heating, expansion, and cooling of air near the lightning bolt creates thunder. Thunderstorms are hazards unto themselves, but can cause other hazards such as flash flooding, river flooding, and tornadoes/windstorms.

Hail is produced by many strong thunderstorms. Strong rising currents of air within a storm carry water droplets to a height where freezing occurs. Ince particles grow in size until they are too heavy to be supported by the updraft. Hail can be smaller than a pea or as large as a softball and can be very destructive to plants and crops. Pets and livestock are particularly vulnerable to hail.

Probability, Location, and Intensity

There have been fifteen Presidential Disaster Declarations for Major Disaster since 2014 related to severe storms in Iowa. In 2024 alone, the NCDC lists 417 hail events, 5 lightning events, and 104 heavy rain events that have impacted Iowa. The NCDC lists events by county, and one storm can be listed as multiple events. Thunderstorms also may occur singly, in clusters, or in lines, so it is possible that several thunderstorms may affect the same area in the course of a few hours.

Iowa experiences between 30 and 50 thunderstorms per year on average. Benton County is impacted by these events also. With Iowa’s location in the interior of the U.S., there is a very high likelihood that a few summer storms will become severe and cause damage. Because of the humid continental climate that Iowa experiences, ingredients of a severe thunderstorm are usually available (moister to form clouds and rain, relatively warm and stable air that can rise rapidly, and weather fronts and convective systems that lift air masses).

The NCDC statistics document 356 thunderstorm wind events in Benton County between 1/1/1950 and 7/31/2025. These events caused one death and three injuries. The cumulative total of all damages caused by these storms is $4.987M in property damage and $15.257M in crop damage. The largest property loss was $2.677M on 7/11/2011. The largest reported crop damage was $15.1M in the Garrison area on 8/10/2006.

Table 67: Historical Thunderstorms by Jurisdiction as reported by the NCDC

JURISDICTION	NUMBER	TOTAL PROPERTY LOSS
Unincorporated Areas	60	$213,000
Atkins	26	$132,000
Belle Plaine	33	$185,000
Blairstown	3	$0
Garrison	29	$1,041,000
Keystone	20	$103,000
Luzerne	3	$500
Mount Auburn	21	$324,500
Newhall	15	$30,000
Norway	24	$12,000
Shellsburg	17	$101,000
Urbana	19	$930,000
Van Horne	20	$262,000
Vinton	50	$1,338,000
Walford	2	$7,000

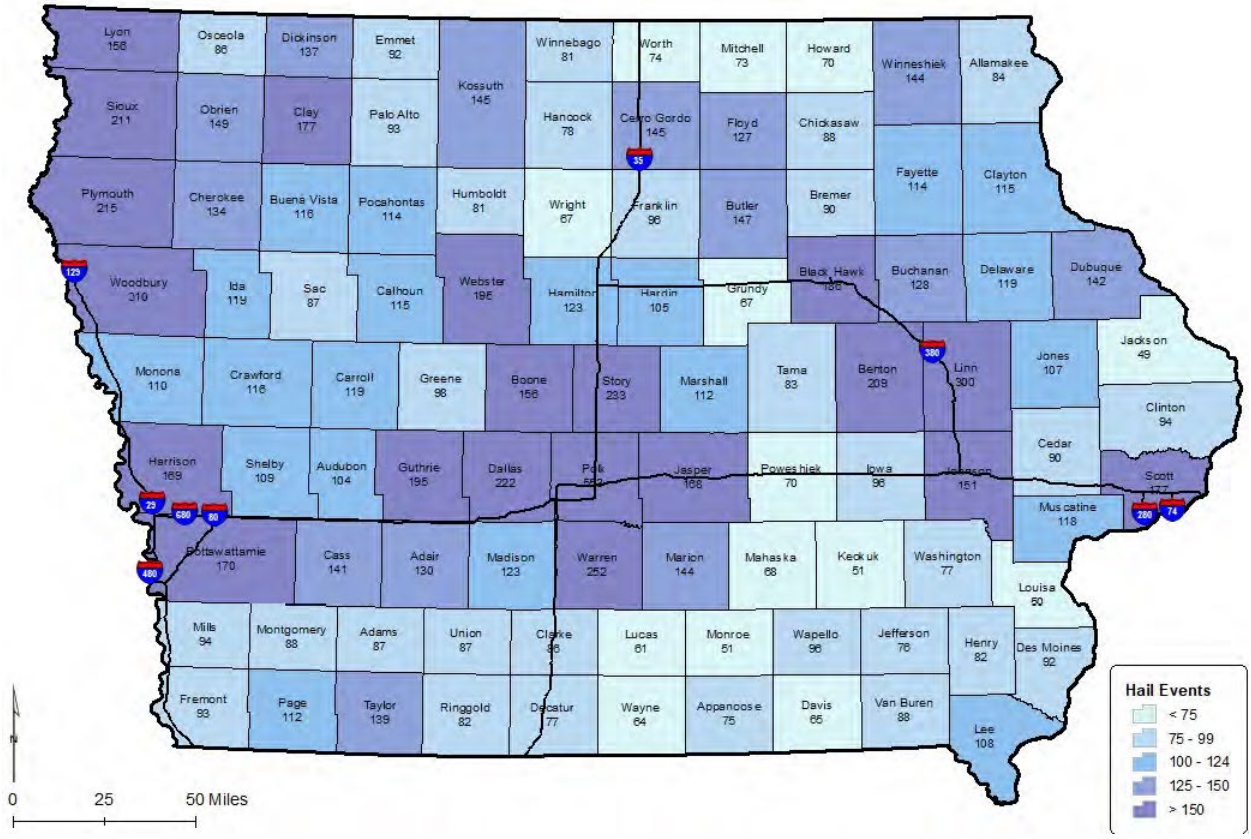
NCDC records indicate 266 hailstorm events in Benton County from 1/1/1950 to 7/31/2025 causing a reported $2,888,000 in property damage and $799,000 in crop damage. One hailstorm had hail 4 inches in diameter; two had hail 3 inches in diameter; three had hail 2 ¾ inches in diameter; two had hail 2 inches in diameter and thirty-seven had hail 1 ¾ inches in diameter.

Table 68: Historical Thunderstorms by Jurisdiction as reported by the NCDC

JURISDICTION	NUMBER	TOTAL PROPERTY LOSS
Unincorporated Areas	24	$0
Atkins	14	$16,000
Belle Plaine	25	$0
Blairstown	7	$3,000
Garrison	118	$515,000
Keystone	21	$559,000
Luzerne	4	$0
Mount Auburn	10	$55,000
Newhall	11	$32,000
Norway	20	$7,000
Shellsburg	18	$13,000
Urbana	20	$1,504,000
Van Horne	30	$22,000
Vinton	33	$74,000
Walford	11	$78,000

Figure 64: Hail Events: 1996-2022, Iowa Hazard Mitigation Plan

Source: NCEI Storm Events Database



The map above from the State of Iowa Hazard Mitigation Plan depicts the geographic breakdown of the number of hail events in Iowa from 1996 to 2022. According to the NCDC, Iowa experienced 209 hail events in this time period. There were zero deaths and zero injuries in these storms. NCDC website data shows $2,688,000 in property damage and $99,000 in crop damage during this time. NCDC lists events by county and one event may be counted several times if the event affects a large region of the state.

Data on probability and frequency of occurrence of hailstorms is limited, but research indicates that any given location point in Iowa can expect on average two to three hailstorms in a year. The historical occurrence of hailstorms in Benton County supports this conclusion. Due to the historical frequency of thunderstorm/hail/lightning in Benton County it is near 100 percent certainty the county will be impacted by thunderstorms, hail, and lighting in the future.

Lightning can cause fires and ignite explosive materials. Especially during dry conditions, lightning is a common cause of grass, forest, and wildfires. Lightning can also cause house fires and other types of structural or urban fire. Perhaps the most common forms of property damage relating to lightning are downed trees and damage to electronic devices. Several different types of devices have been designed to prevent or reduce lightning damage by redirecting current away from a structure. These types of

protection generally fall into the category of either lightning rods (also referred to as lightning finials or air terminals) or lightning protection systems (also referred to as lightning conductors, arrestors, or dischargers). Lightning rods are relatively common devices that use a strip or rod of conductive metal material placed on or above the highest point of a structure to direct the current of a lightning strike to a grounding network. Lightning rods are typically used a spart of a lightning protection system that may also include metal conductors and ground electrodes designed to provide a low resistance path to the ground for potential strikes.

The cost of lightning damage is difficult to determine as the event appears to be significantly under-recorded on NOAA. One lightning event on 8/10/2006 in Vinton caused $500,000 in damages.

Severe thunderstorms can be quite expensive with areas of localized severe conditions. Most severe thunderstorm cells are 5 to 25 miles wide with a larger area of heavy rain and strong winds around the main cell. Most non-severe thunderstorms have a lifespan of 20 to 30 minutes, while severe thunderstorms last longer than 30 minutes. A lightning strike would most likely affect only a single structure or person whereas a thunderstorm would affect broader areas in Benton County.

Like tornadoes, thunderstorms and lightning can cause death, serious injury, and substantial property damage. Severe thunderstorms can bring a variety of associated hazards with them including straight-line winds in excess of 100 mph. Straight-line winds are responsible for most thunderstorm damage. High winds can damage trees, homes (especially mobile homes), and businesses and can knock vehicles off the road. The power of lightning’s electrical charge and intense heat can electrocute people and livestock on contact, split trees, ignite fires, and cause electrical failures. Thunderstorms can also bring large hail that can damage homes and businesses, break glass, destroy vehicles, and cause bodily injury to people, pets, and livestock. One or more severe thunderstorms occurring over a short period of time (especially on saturated ground) can lead to flooding and cause extensive power and communications outages as well as agricultural damage. Damages caused by thunderstorms would likely impact an entire city or several cities as occurred on July 11, 2011 when as NCDC reports detail, a severe thunderstorm/windstorm caused $2,627,000 in property damages to the Cities of Garrison, Shellsburg, Urbana, and Vinton.

The land area affected by individual hail events is not much smaller than that of a parent thunderstorm, an average of 15 miles in diameter around the center of the storm. A majority of the hailstorms recorded as affecting Benton County are shown to have only affected 1, 2, or 3 communities at a time. A hailstorm that struck the county on 4/13/2006 affected 8 of the county’s 14 communities and the surrounding rural areas. This is equivalent to over one half of the county’s land area. This storm is shown to have caused $55,000 in property damages.

In the United States, hail is commonly measured by comparison to round objects of various sizes. The chart below lists the approximate size comparison between the objects hail is compared to and their actual size.

Table 69: Hail Size Chart

Object	Diameter
Pea	6.4 millimeters (0.25 inches)
Dime	17.9 millimeters (0.70 inches)
Penny	19 millimeters (0.75 inches)
Nickel	21.2 millimeters (0.83 inches)
Quarter	24.26 millimeters (0.955 inches)
Half Dollar	30.6 millimeters (1.20 inches)
Walnut	38 millimeters (1.5 inches)
Golf Ball	44 millimeters (1.7 inches)
Tennis Ball	64 millimeters (2.5 inches)
Cricket Ball	71 millimeters (2.8 inches)
Baseball	73 millimeters (2.9 inches)
Softball	114 millimeters (4.5 inches)

In the United Kingdom, the TORRO Institute has a scale for measuring hail that associates hail size with damage. Although not widely used in this country, the comparison is still useful in determining the risk associated with various sizes of hailstones.

Table 70: TORRO Hail Scale

Intensity Category	Typical Hail Diameter mm	Typical Damage Impacts
Hard Hail	5	No damage
Potentially Damaging	10-15	Slight general damage to plants, crops
Significant	10-20	Significant damage to fruit, crops, vegetation
Severe	20-30	Severe damage to fruit and crops, damage to glass and plastic structures, paint and wood scored
Severe	25-40	Widespread glass damage, vehicle bodywork damage
Destructive	30-50	Wholesale destruction of glass, damage to tiled roofs, significant risk of injuries
Destructive	40-60	Bodywork of grounded aircraft dented, brick walls pitted
Destructive	50-75	Severe roof damage, risk of serious Injuries
Destructive	60-90	(Severest recorded in the British Isles) Severe damage to aircraft bodywork
Super Hailstorms	75-100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open
Super Hailstorms	>100	Extensive structural damage. Risk of severe or even fatal injuries to persons caught in the open

Agricultural crops such as corn and soybeans are particularly vulnerable to hailstorms stripping the plant of its leaves. Hail can also do considerable damage to vehicles and buildings. Hail only rarely results in loss of life directly although injuries can occur.

Hailstorms cause nearly $1 billion annually in property and crop damage in the United States. The peak hail activity coincides with the Midwest's peak agricultural season. Financial impacts resulting from damage to property is in the millions of dollars every year, most of which is covered by crop and hazard insurance. The 266 hailstorm events that occurred in Benton County from 01/01/1950 to 07/31/2025 caused a reported $2,888,000 in property damage and $799,000 in crop damage. The largest incident of property damage due to hail was $1 million on 05/10/2003 in Urbana and the largest reported incident of c5rop damage was $500,000 in a swath from Keystone to Norway on 06/07/1994.

Those in unprotected areas, mobile homes, or automobiles during a storm are most at risk. US Census Bureau statistics for Benton County from 2020 state that there were an estimated 242 mobile homes in Benton County. These are distributed as follows: Atkins, 0; Belle Plaine, 8; Blairstown, 3; Garrison, 2; Keystone, 0; Luzerne, 0; Mount Auburn, 10; Newhall, 0; Norway, 0; Shellsburg, 0; Urbana, 10, Van Horne, 4; Vinton, 52; Walford, 3; and Benton County unincorporated, 150.

Also at risk are vulnerable populations such as the young, the old, and the disabled. Every resident and structure in Benton County is vulnerable to the effect of thunderstorms and lightning.

TORNADO/WINDSTORM

Definition

A tornado is a violent, destructive, rotating column of air taking the shape of a funnel-shaped cloud in contact with the ground that progresses in a narrow, erratic path. Rotating wind speeds can exceed 200 mph and travel across the ground at average speeds of 25 to 30 mph.

High speed winds (windstorm) of 50 mph or higher are often associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients usually accompanying frontal systems.

Description

A tornado is characteristically accompanied by a funnel shaped cloud extending down from a cumuliform cloud. A tornado can be a few yards to a mile wide where it touches the ground. The funnel is made visible by the dust sucked up and by condensation of water droplets in the center of the funnel.

Figure 65: Tornado Diagram

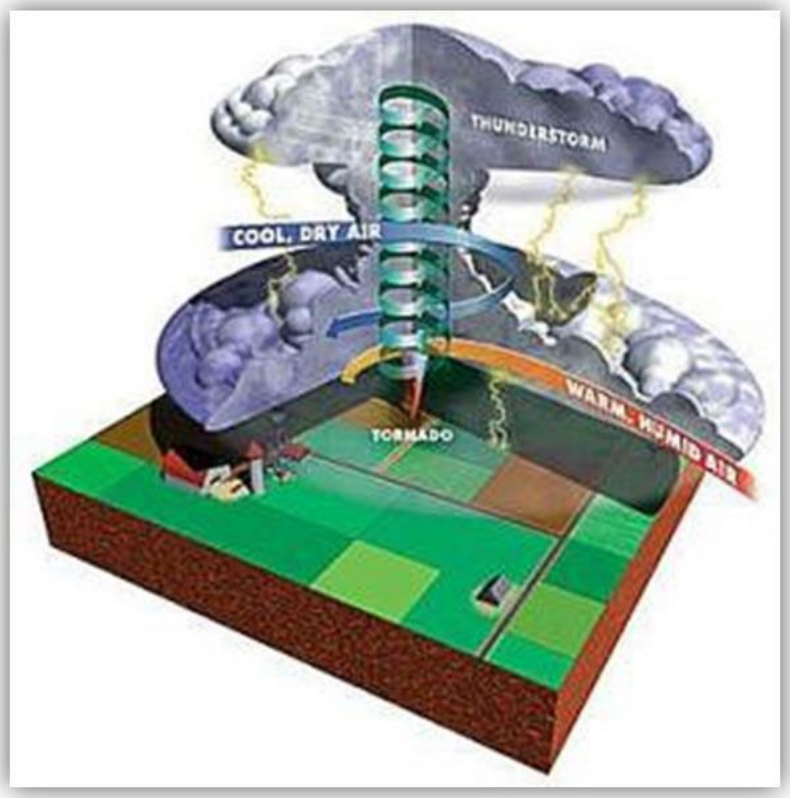


Image Source: NASA

An average tornado, however, is a few hundred yards or approximately 500 feet wide. It can move over land for distances ranging from short hops to many miles (the Tri-State Tornado of 1924 was on the ground for 219 miles and 3.5 hours), causing great damage wherever it descends.

Probability, Location, and Intensity

Benton County is located within the Wind Zone 4, the highest wind zone in the country. According to NOAA records, Benton County is in an area experiencing 25-30 significant (EF2 or greater) tornadoes per 100-year period, providing an average of 1 event every 4 years.

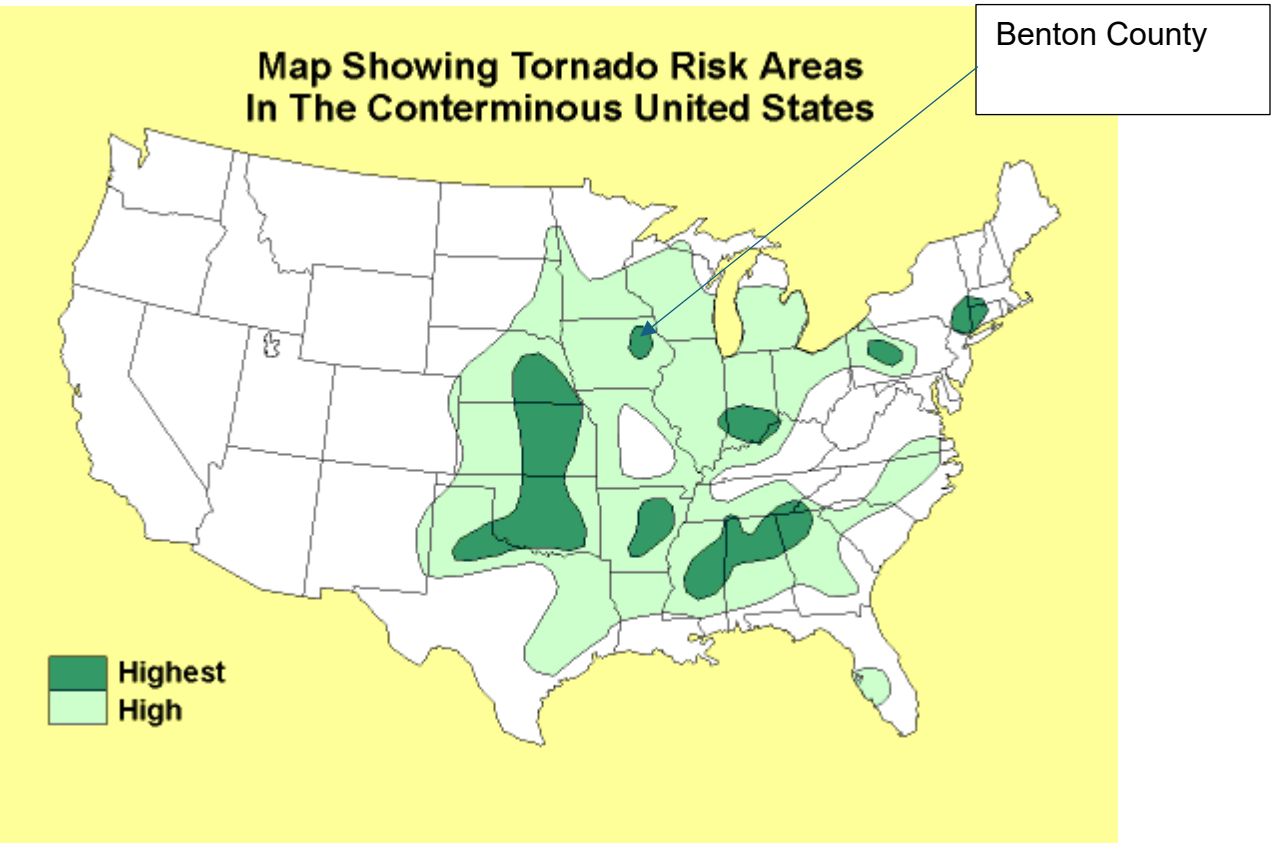
The NCDC recorded 46 tornado events in Benton County between 1965 through July 2025. These tornadoes caused one death, twenty-two injuries and property losses of $3,956,000. The most devastating tornado was an F4 that occurred on August 8, 1965 in rural Benton County. The tornado caused $2,500,000 in property damages and one death. Tornadoes by type included F0-12, F1-6, F3-3, F4-1, EF0-7, EF1-7, EF2-3, and EFU-7.

Table 71: Historical Tornadoes by Jurisdiction

JURISDICTION	NUMBER	TOTAL LOSS
Unincorporated Areas	14	$3,577,750
Atkins	3	$ 50,000
Belle Plaine	0	$0
Blairstown	2	$0
Garrison	6	$0
Keystone	2	$0
Luzerne	0	$0
Mount Auburn	2	$ 18,000
Newhall	1	$0
Norway	1	$ 25,000
Shellsburg	2	$0
Urbana	1	$0
Van Horne	3	$ 110,000
Vinton	9	$ 200,000
Walford	0	$0

Historically, 30-40 tornadoes are confirmed in Iowa per year. Included in these statistics is Benton County, which history has shown will have a tornado touch down somewhere in the county every other year. Figure 63 shows tornado risk areas for the United States. As shown in the diagram, geographically Benton County is located in one of the highest risk areas. Based on historical occurrences Benton County will probably experience one tornado every two years.

Figure 66: Tornado Risk Areas of the United States



NCDC records document 378 High Wind, Strong Wind, and Thunderstorm Wind events in Benton County. These events caused an estimated $10,200,000 in property damage and no deaths or injuries. The most devastating event was the July 11, 2011 Derecho Windstorm which had winds of more than 130 miles per hour for 30 minutes. The path of the storm was ten miles wide across the 24 mile width of the county. The most affected communities were Garrison, Vinton, and Urbana.

Based on historical averages, Iowa would expect to have about 7-10 wind events each year in which wind speeds exceed 70 knots (80.5 mph). Due to the historical frequency of windstorms in Benton County, there is almost 100 percent certainty that the county will be impacted by a windstorm on the average of once annually.

Those most at risk from tornadoes and windstorms include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to tornadoes and windstorms. The US Census Bureau estimates there are 242 occupied mobile home units in the county, with the majority in the unincorporated areas.

Though the descriptions of “tornado alley” varies slightly, Iowa is generally considered to be included in, or on the edge of the geographic area. Iowa averages 35 tornadoes per

year. In Iowa, most tornadoes occur in the spring and summer months but can also occur in the fall and winter seasons. Tornadoes tend to be the most common in the late afternoon or evening, but they can occur any time of day. The NCDC identified 470 tornado events from 01/01/2021 to 07/31/2025. Iowa has received 25 Presidential Disaster Declarations that include tornadoes in the description since 1968, which is when Iowa had its first Presidential Disaster Declaration that included tornadoes.

Since 2021, Iowa has experienced thirteen fatalities, sixty-three injuries, $292,229,000 in property damage and $180,900 in crop damage due to tornadoes. On May 21, 2024 numerous tornadoes occurred in southwest Iowa causing a total of five deaths and 39 injuries in multiple locations. Four deaths occurred in Greenfield, Iowa, when the town was struck by an EF4 tornado that also caused thirty-five injuries and $30,000,000 in property loss. The total property loss in southwest Iowa that day was estimated at $42,121,000. On March 5, 2022 a total of fifteen tornadoes occurred across the State of Iowa. One of these, an EF4 in Madison County caused six deaths, five injuries, and $75,000,000 in property loss. Total losses that day were seven lives, six injuries, and $152,175,000 in property loss.

Over five hundred wind events have impacted Iowa since 2021, including High Wind, Strong Wind, and Funnel Clouds listed in the NCDC database. These events did not cause more than a few hundred thousand dollars damage. Previous events have resulted in extensive damage such as 2013 when wind events exceeded $109,000,000 in property damage and crop damage climbed over $1,000,000,000. Events in 2013 caused two fatalities and seven injuries. In 2014 Iowa experienced the highest fatality rate (six) and highest number of injuries (20) that were directly attributed to thunderstorms and straight-line winds. That year, Iowa had three presidentially declared disasters that included straight-line winds in the disaster description. Since 2014, there have been six more presidentially declared disasters that included straight-line winds in the years 2015, 2016, 2017, 2018, 2021, and 2024.

On August 10, 2020, Benton County was at the epicenter of a multi-state Derecho windstorm disaster that resulted in a minimum of $7,500,000,000 in damages according to data from NOAA. The storm, which hit Iowa the hardest and also impacted Illinois, Ohio, Minnesota, and Indiana, was the costliest windstorm in the U.S. history according to the Washington Post. The storm caused severe to total damage to 75% of the land mass of Benton County. Thousands of structures were damaged or destroyed. Hundreds of thousands of acres of crops were severely damaged or destroyed. Parts of the county were without power for up to two weeks. The storm was Federally Declared Disaster DR-4557. Both public and individual assistance was provided. Recovery operations have been ongoing since the event.

Then severity and damage from tornadoes and windstorms can be very high. Impacts can range from broken tree branches, shingle damage to roofs, and some broken windows; all the way to compete destruction and disintegration of well-constructed structures, infrastructure and trees. Injury or death related to tornadoes most often

occurs when buildings collapse, people are hit by flying objects or are trying to escape the tornado in a vehicle.
The original scale used to rate tornado intensity was called the Fujita Scale. Introduced in 1971, the scale was retroactively applied to tornado reports from 1950 onward. The Fujita Scale originally ranged from F0 (the weakest) to F12 (the most devastating). However, later research proved that the original Fujita Scale overestimated wind speeds, and this was addressed somewhat in the 1992 Modified Fujita Scale. On February 1, 2007, the Fujita Scale was officially replaced with the Enhanced Fujita Scale, which provides rankings of EF0 through EF5.

Table 72: Fujita Scale and Enhanced Fujita Scale

	FUJITA SCALE		DERIVED EF SCALE		OPERATIONAL EF SCALE	
F Number	Fastest 1/4-mile (mph)	3 Second Gust (mph)	EF Number	3 Second Gust (mph)	**EF Number**	**3 Second Gust (mph)**
0	40-72	45-78	0	65-85	**0**	**65-85**
1	73-112	79-117	1	86-109	**1**	**86-110**
2	113-157	118-161	2	110-137	**2**	**111-135**
3	158-207	162-209	3	138-167	**3**	**136-165**
4	208-260	210-261	4	168-199	**4**	**166-200**
5	261-318	262-317	5	200-234	**5**	**Over 200**

Extreme winds are often associated with severe winter storms, severe thunderstorms, downbursts, and very steep pressure gradients. Extreme winds other than tornadoes are experienced in all regions of the United States, It is difficult to separate the various wind components that cause damage from other wind-related natural events that often occur with or generate windstorms.

The standard measurement for windstorm classification is the Beaufort Scale. The Beaufort Scale can be used on water or on land, but as there are no coastal areas near Benton County, the coastal equivalents have been omitted from the following table sourced from NOAA.

Table 73: Beaufort Scale

	(Knots)	Classification	On Land
0	Less than 1	Calm	Calm, smoke rises vertically
1	1-3	Light Air	Smoke drift indicates wind direction, still wind vanes
2	4-6	Light Breeze	Wind felt on face, leaves rustle, vanes begin to move
3	7-10	Gentle Breeze	Leaves and small twigs constantly moving, light flags extended
4	11-16	Moderate Breeze	Dust, leaves, and loose paper lifted, small tree branches move
5	17-21	Fresh Breeze	Small trees in leaf begin to sway
6	22-27	Strong Breeze	Larger tree branches moving, whistling in wires
7	28-33	Near Gale	Whole trees moving, resistance felt walking against wind
8	34-40	Gale	Whole trees in motion, resistance felt walking against wind
9	41-47	Strong Gale	Slight structural damage occurs, slate blows off roofs
10	48-55	Storm	Seldom experienced on land, trees broken or uprooted, "considerable structural damage"
11	56-63	Violent Storm	Severe structural damage
12	64+	Hurricane	Extensive destruction

Wind speeds during the August 10, 2020, Derecho were reported up to 80 mph for much of Benton County with areas in central Benton County that had wind speed estimates from 120 mph or greater. Reports at the Belle Plaine Airport were of wind speeds of 144 mph and 126 mph in the City of Atkins.

OTHER HAZARDS

ANIMAL/PLANT/CROP DISEASE

Definition

A medical, health, or sanitation threat to wildlife or domestic animals such as contamination, epidemics, plagues, and insect infestation. An outbreak of disease transmitted from animal to animal or plant to plant represents an animal/crop/plant disease.

Description

Infectious diseases introduced onto an operation can have a devastating effect on cash flow and equity. Major animal diseases include foot and mouth disease, rinderpest, African swine fever, classical swine fever, brucellosis, lumpy skin disease, avian influenza, and others. Adverse effects of infectious diseases can occur at the farm or industry level. Some diseases may severely limit or eliminate animal marketing options, (for example: to slaughter only). Negative effects may be short- or long-term, depending on the nature of the pathogen and level of concern among producers and consumers. Presence of some pathogens can also affect market access for larger portions of the industry. With the stakes so high, biosecurity should be a very high priority in day-to-day management decisions.

Probability, Location, and Intensity

As the nation’s number one producer of corn, soybeans, eggs, and hogs, Iowa farmers and producers know the importance of securing America’s food supply. With hundreds of thousands of head of livestock produced and transported in Iowa each year, Iowa could be a rich environment for a disease epidemic to take hold if precautions such as vaccinations and handling procedures are not rigorously followed.

USDA Nation Agricultural Statistics Service Data for 2022 (the most recent statistics available) indicate that in 2022 Benton County had 1,090 farms totaling 377,259 acres or 82% of the land area of the county. The average size of a Benton County farm is 346 acres. The following statistics are also pertinent to the prevalence of crop acres and livestock in Benton County.

No. of all cattle and calves in Benton County	25,000 (2024)
No. of beef cows in Benton County	5,700 (2024)
No. of milk cows in Benton County	4,500 (2024)
All hogs and pigs in Benton County	117,999 (2022)
Corn acres for grain in Benton County	172,486
Soybean acres for beans in Benton County	136,071
Hay acres in Benton County	9,548
Oats acres in Benton County	173

(Source: https://www.nass.usda.gov/Publications/AgCensus/2022/Online_Resources/County_Profiles/Iowa/cp19011.pdf)

Current animal disease epidemics that threaten the United States include the West Nile Virus (WNV) and Bird Flu (H5N1). First identified in New York City and carried by birds and mosquitoes, the WNV disease spread to four states in 1999 and to 12 states and the District of Columbia in 2000. A H5N2 bird flu outbreak in Iowa in 2015 resulted in destruction of over 20 million chickens (25% of Iowa's poultry stock). WNC causes severe neuralgic infections in humans, horses, and other mammal species. As of early 2004, the disease has been found in nearly all states east of the Rocky Mountains, including Iowa where 15 confirmed human cases, 113 birds, and 1,039 horses have tested positive for WNV. According to CDC, Benton County had 3 human cases of WNV from 1999-2024. The State of Iowa had 675 human cases for the same time period. Iowa is one of the hardest states impacted by bird flu. The CDC indicates Iowa has lost 29,957,524 birds through January 15, 2025. These are only two recent examples of animal diseases of major concern in Iowa in the recent past.

The Iowa Department of Agriculture and Land Stewardship lists one incidence of bird flu in Benton County in November 2023. It was a backyard mixed species flock of approximately 86 birds. Across the State of Iowa, there are 30 detections listed for 2022, 21 detections listed for 2023, 11 detections listed for 2024, and 10 detections listed for 2025. It is likely there will be more detections in future years due to the transmissibility of bird flu and the interactions between wild and domestic flocks in the state.

With 82% of the land area of Benton County being farms, an animal/plant/crop disease event could occur anywhere in the county.

There aren't scales or ranges for intensity of animal/plant/crop disease. The numbers provide one way to quantify the intensity of an event and the impact it has. With 34% of residents in Benton County being employed by Ag or Ag-Related Industries and $251,000,000 in wages from agriculture, any significant reduction in crops and/or livestock due to disease will impact the county. Additionally, diseases that are transmissible to humans will increase the intensity of an event.

HAZARDOUS MATERIALS

Definition

Accidental release of chemical substances or mixtures that presents danger to the public health or safety during production or handling at a fixed facility or transportation of a chemical or other hazardous substance. This also includes a break in a pipeline creating potential for an explosion or leak of a dangerous substance (oil, gas, etc.) possibly requiring evacuation.

Description

A hazardous substance is one that may cause damage to persons, property, or the environment when released to soil, water, or air. Chemicals are manufactured and used in ever increasing types and quantities. As many as 500,000 products pose physical or health hazards and can be defined as “hazardous chemicals.” Each year, over 1,000 new synthetic chemicals are introduced. These substances are both stored in and transported through Benton County via trucks and train. Hazardous substances are categorized as toxic, corrosive, flammable, irritant, or explosive. Hazardous materials incidents generally affect a localized area and the use of planning and zoning can minimize the area of impact.

Pipelines present another exposure for hazardous materials incidents. Iowa is served by many high pressure pipelines to residents and industries. An underground pipeline incident can be caused by environmental disruption, accidental damage, or sabotage. Incidents can range from a small slow leak that is not ignited to a large rupture in which the gas is ignited. Inspection and maintenance of the pipeline system along with marked gas line locations and an early warning and response procedure can lessen the risk to those in proximity to the pipelines.

Probability, Location, and Intensity

During the period of January 1, 2020 to December 31, 2024 there were 11 hazardous materials incidents reported in Benton County. During the same period there were 2,947 incidents reported in the Iowa. Historically, approximately 50% of incidents are at fixed facilities. In 2025, there were 48 facilities that submitted Tier II reports in Benton County. There were 4,691 facilities that submitted Tier II reports in Iowa. Tier II facilities are designated under the federal Superfund Amendments and Reauthorization Act based on the volume or toxicity of the materials on site.

Beyond the Tier II records, no records are maintained in the county or any of its communities pertaining to the types and quantities of other hazardous materials maintained at any other sites in the county. It is known that agricultural chemical companies, automotive service centers, light manufacturing facilities, and industrial facilities are among those who periodically have hazardous materials on their premises. Historical occurrences and the presence of hazardous materials in multiple locations

throughout the county lend credibility to an estimated probability of a fixed facility hazardous materials incident at least once every five years. Additionally, with the IDNR Spill Reports indicating 11 spill reports total in Benton County in the years 2020, 2021, 2022, 2023, and 2024 there is an average of two spill reports per year indicating a probability that there will be at least one spill reported annually.

Benton County has three energy providers with transmission pipelines passing through the county: Alliant Energy Interstate Power and Light; MidAmerican Energy Corp; and Northern Natural Gas Co. For security reasons none of these providers would release information regarding any incidents that have occurred with their lines in Benton County. The Iowa Utilities Commission reports that there were no pipeline incidents during this time period.

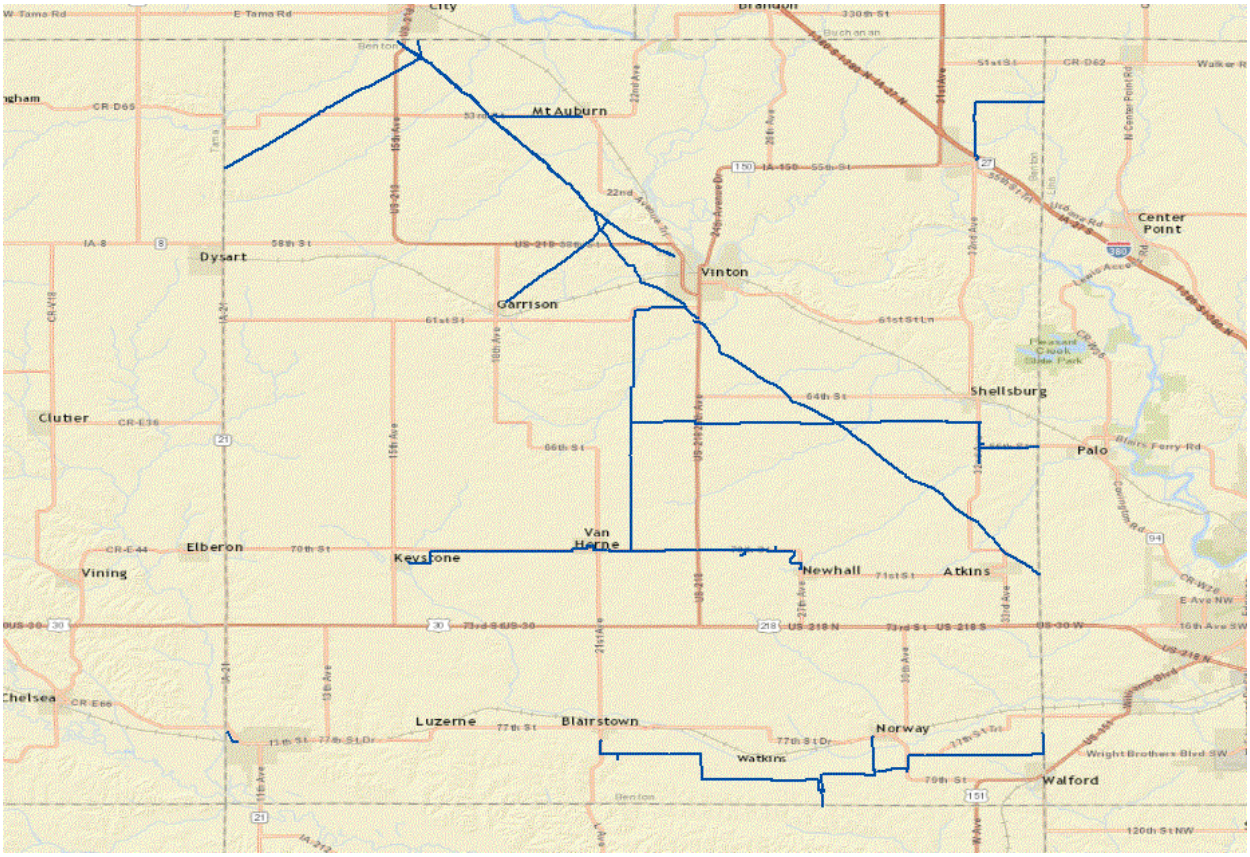


Figure 67: Pipelines in Benton County

Benton County also has the risk of exposure from transportation of Bakken Crude on the Union Pacific Railroad across southern Benton County. A derailment of 6 cars on the Burlington Northern Santa Fe Railroad near Galena, Illinois in 2015 burned for over a week and caused an evacuation of nearly two miles.

Given the history of hazardous materials incidents in Benton County, the county can reasonably expect to experience an average of three hazardous materials incidents of varied types annually.

As an agricultural county there is risk throughout the county of a hazardous materials incident. In addition to agriculture, the road system and railroad system also add to potential risk of an incident.

A hazardous materials accident can occur almost anywhere due to a fixed facility, transportation, or pipeline incident, so any area is considered vulnerable to an accident. People, pets, livestock, and vegetation in close proximity to facilities producing, storing, or transporting hazardous substances are at higher risk. Populations downstream, downwind, and downhill of a released substance area particularly vulnerable. Depending on the characteristics of the substance released, a larger area may be in danger from explosion, absorption, injection, ingestion, or inhalation. Occupants of areas previously contaminated by a persistent material may also be harmed either directly or through consumption of contaminated food or water. Facilities are required to have an off-site consequence plan that addresses the population of the surrounding area. Responding personnel are required to be trained to HAZMAT Operations Level to respond to the scene, and those personnel who come in direct contact with the substances released are required to have HAZMAT Technician Level training.

Most of the hazardous materials incidents are localized and are quickly contained or stabilized by trained fire departments and hazardous materials teams. Depending on the characteristic of the hazardous material or the volume of product involved, the affected area can be as small as a room in a building or as large as 5 square miles or more. Many times, additional regions outside the immediately affected area are evacuated for precautionary reasons. More widespread effects occur when the produce contaminates the municipal water supply or water system such as a river, lake, or aquifer.

A gas release such as anhydrous ammonia or LP could affect portions of Benton County as large as two or three square miles. The unpredictable nature of hazardous materials coupled with climatic and geographic variables and the unknown effects of different hazardous materials reacting together creates a situation where the maximum extent of damage from a hazardous materials release is unpredictable.

Immediate dangers from hazardous materials include fires and explosion. The release of some toxic gases may cause immediate death, disablement, or sickness if absorbed through the skin, injected, ingested, or inhaled. Contaminated water resources may be unsafe and unusable, depending on the amount of contaminant. Some chemicals cause painful and damaging burns to skin if they come in direct contact with your body. Contamination of air, ground, or water may result in harm to fish, wildlife, livestock, and crops. The release of hazardous materials into the environment may cause debilitation, disease, or birth defects over a long period of time. Loss of livestock and crops may lead to economic hardship within the community.

Transportation routes that would be most prone to transportation hazardous materials incidents would naturally be those that are the most frequently traveled and those that carry the heaviest load of motor freight transports carrying hazardous materials. In

Benton County this would be Interstate 380 and US Highways 30, 150, and 218. A transportation hazardous materials incident could, however, occur on any of Benton County's 1,330 miles of hard surfaced, secondary, rock, and dirt roads and on any street in the county's 14 incorporated cities. Property adjacent to these transportation routes is vulnerable to damage from a hazardous materials release and people living or traveling near an incident are vulnerable to physical harm from any release that may occur.

Petroleum and natural gas pipelines can leak or erupt and cause property damage, environmental contamination, injuries, and even loss of life. Accidents may be caused by internal or external corrosion, defective welds, incorrect operation, outside damage, or other defective pipeline or equipment. Most incidents involve crude oil, gasoline, or natural gas pipelines. All petroleum liquids pose dangers from fire or explosion, and the fire may produce poisonous or irritating gasses. Toxic fumes and direct contact can cause health hazards. Vapor clouds can travel a distance and settle in low-lying areas where the fumes may overcome people and animals. Released products should be treated as any other hazardous material. Large areas may need to be evacuated to remove people from the threat of fire, explosion, or exposure. These evacuations potentially save lives and limit injury, but they also disrupt businesses and inconvenience residents. A break in water pipelines may impact fire protection and continuity of operations at businesses and industry and may affect the area by saturating the soil causing rapid erosion.

Alliant Energy IPL has approximately 68 miles of transmission pipelines in Benton County. The transmission pipeline size ranges from ½" to 6" plastic pipe and 2" to 4" steel pipe. Northern Natural Gas has 39 miles of natural gas transmission pipelines in Benton County. The lines are 2", 3", 4", 6", 12", and 16" pipe.

Records maintained and provided to the Iowa Department of Natural Resources regarding reported release of hazardous materials in Benton County do not mention any injuries or fatalities. The records do not mention any costs associated with cleanup or control of the chemicals or any costs associated with damages caused by the chemicals.

HUMAN DISEASE

Definition

An incident related to human disease is defined as a medical, health, or sanitation threat to the general public including contamination, epidemics, plagues, or infestations.

Description

Public health action to control infectious diseases in the 21st century is based on the 19th century discovery of microorganisms as the cause of many serious diseases (e.g., cholera and TB). Disease control has resulted from improvements to sanitation and hygiene, the discovery of antibiotics, and the implementation of universal childhood vaccination programs. Scientific and technological advances have played a major role in each of these areas and are the foundation for today's disease surveillance and control systems. Scientific findings also have contributed to a new understanding of the evolving relation between humans and microbes.

As of 2025 a total of 69 infectious diseases were designated as notifiable at the national level. A notifiable disease is one for which regular, frequent, and timely information regarding individual cases is considered necessary for the prevention and control of the disease. Notifiable disease vary by country (as the determinations are made by the Center of Disease Control or equivalent body in each nation). In the United States, notifiable diseases are generally classified as bacterial, viral, or other (a classification which primarily includes small organisms and fungal infections). The following are the notifiable disease for the US by type:

Bacterial

Anthrax, Anaplasmosis, Babesiosis, Botulism, Brucellosis, Campylobacteriosis, Carbapenemase-Producing Organisms (CPO), Chancroid, Chlamydia trachomatis, Cholera, Congenital Syphilis, Diphtheria, Ehrlichiosis, Escherichia coli 0157:H7, Gonorrhea, Hemolytic uremia syndrome, Legionellosis, Hansen's disease (leprosy), Leptospirosis, Listeriosis, Lyme Disease, Melioidosis, Meningococcal disease, Mpox virus infection, Pertussis, Plague, Psittacosis, Q Fever, Salmonellosis, Shigellosis, Group A Streptococcal disease, Streptococcus pneumoniae, Syphilis, Tetanus, Toxic Shock Syndrome, Tuberculosis, Tularemia, Typhoid Fever, Vancomycin-intermediate Staph Aureus, Vancomycin Resistant Staph Aureus, Vibriosis

Viral

Acquired Immunodeficiency Syndrome, Arboviral diseases – neuroinvasive and non-neuroinvasive, Dengue Fever, Haemophilus influenzae, Hantavirus, Hepatitis A, Hepatitis B, Hepatitis C, HIV infection, Invasive Pneumococcal disease, Measles, Mumps, Novel Influenza A virus, Oropouche Virus Disease, Poliovirus, Rabies, Rubella, Severe Acute Respiratory Syndrome, Smallpox, Varicella, Viral Hemorrhagic Fever, Yellow Fever, Zika virus disease

Others

Candida auris, Coccidioidomycosis, Cryptosporidiosis, Cyclospora, Malaria, Giardiasis, Trichinosis

Probability, Location, and Intensity

A human disease that is prevalent across an entire country, region, continent or world is considered a pandemic human disease. There have been many pandemic human diseases in the world throughout history. It is estimated the 1918 influenza pandemic killed 50 million people and more than 25 percent of the population in the U.S. became ill, dropping our average life expectancy by 12 years. In 1957 an influenza pandemic killed 70,000 people worldwide and in 1968 another took 34,000 lives. As many as 18,000 may have died as a result of the H1N1 pandemic in 2009-2010.

The COVID-19 pandemic began in 2019 in China and was declared an emergency in the U.S. in early 2020. According to the CDC, this pandemic killed over 10,700 people in the U.S. by March 2003. A little over 7,000 cases of COVID-19 were reported in Benton County between 2020 and mid 2023 with 82 deaths. The CDC reported an age-adjusted death rate in Iowa of 76 deaths per 100,000 people for the year 2021. This is higher than neighboring states, except Missouri, but relatively low compared to all states. Vaccines were developed within a year of the onset of the COVID-19 pandemic and studies estimate they saved millions of lives worldwide.

The Division of Public Health within Iowa's Department of Health and Human Services (HHS) tracks epidemiological statistics in Iowa. Each year there are many cases of diseases on the national notification list. Each year Iowa has outbreaks of common flu and cold that also affect Benton County. Additionally, Iowa has seen viruses carried by insects as well as pathogens in our lakes and waterways.

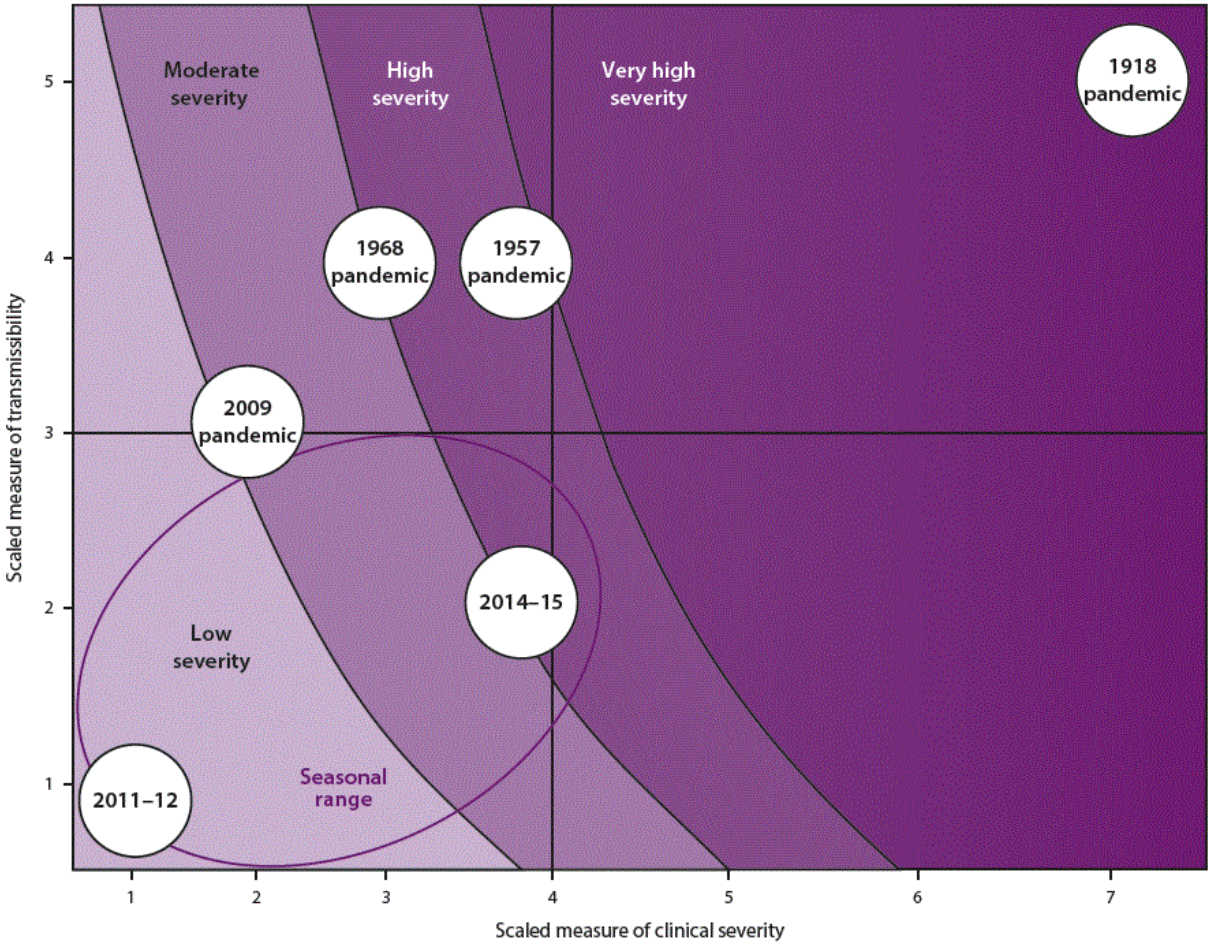
Public health agencies work to protect Iowans from infectious diseases and preserve the health and safety of Iowans through disease surveillance; investigation of acute outbreaks; education and consultation to county, local, and private health agencies on infectious diseases; immunization and vaccine guidelines; treatment after animal bites; and vaccines for international travel. While this can reduce the number of cases, it does not eliminate them. The Benton County Public Health Department is the local public health agency with jurisdiction over Benton County.

It is highly likely that Benton County will continue to see human diseases included in the notifiable list in the future. With two pandemics within the last twenty years and three in the last sixty years, there is a minimal change of another pandemic within the next five years.

A pandemic event would certainly impact all of Benton County as well as the state and country. It would have widespread societal implications for Iowa. Response and recovery to a pandemic will likely be lengthy if Iowa is severely infected. The death rate of a pandemic depends on the number of people infected, the virulence of the virus,

characteristics and vulnerability of the population, and the availability and effectiveness of preventative measures. Future pandemics will be assessed to determine the impact of the pandemic using the CDC's Pandemic Severity Assessment Framework (PSAF). The pandemic impact is determined using two main factors: clinical severity and transmissibility. The framework uses an initial assessment early in the pandemic followed by a refined assessment later when more information is available. The results of the assessments can be compared to seasonal flu and previous pandemics to create a snapshot of the potential impact.

Figure 68: PSAF Example with Previous Pandemic Events



INFRASTRUCTURE FAILURE

Definition

This hazard encompasses a variety of occurrences including communication failure, energy failure, and structural failure.

Description

Energy failure includes extended interruption, widespread breakdown, or collapse (part or all) of any public or private infrastructure that threatens life and property. One potential cause of infrastructure failure is space weather/solar flare.

Communication failure is the widespread breakdown or disruption of normal communication capabilities. Major telephone/cell phone outages, loss of local government radio facilities, long-term interruption of electronic broadcast services, emergency 911, law enforcement, fire, emergency medical services, public works, and emergency warning systems are just a few of the vital services which rely on communication systems to effectively protect citizens. Business and industry rely heavily on various communication media as well. Mechanical failure, traffic accidents, power failure, line severance, solar flares, and severe weather can affect communication systems and disrupt service. Disruptions and failures can range from localized and temporary to widespread and long term.

The collapse (partial or total) of any structure including roads, bridges, towers, and buildings is considered a structural failure. A road, bridge, or building may collapse due to the failure of the structural components or because the structure was overloaded. Natural events such as heavy snow may also cause the roof of a building to collapse (under weight of snow). Heavy rains and flooding can undercut and washout a road or bridge. The age of the structure is sometimes independent of the cause of failure.

Probability, Location, and Intensity

Energy disruptions have occurred regularly in Benton County since the advent of electrical power and natural gas energy. Local records and electrical energy provider records document at least one electrical power outage annually somewhere in the county. There are no records of any natural gas outages. In recent times the most devastating outages have been those associated with the ice storms of February 24, 2007, the floods of June 12, 2008, and Derecho Windstorms of July 11,2011 and August 10, 2020. Shortages, especially electrical shortages, can be unpredictable with immediate effects. Natural events, human destruction, price escalation, and national security energy emergencies can cause unavoidable energy shortages. Recent severe winter storms that caused extensive long term power outages in states like Kansas and Missouri in 2006 and 2007 add more credibility to the probability that similar events could impact Benton County. Given the history of energy failure events in Benton

County, it is nearly 100 percent probability that the county will experience an energy failure somewhere in the county at least once annually.

No major widespread communication failures have occurred in Iowa. Local incidents: due to weather conditions, equipment failure, excavation incidents or traffic incidents have been reported, but the outages were usually resolved in a timely manner. Widespread communication losses are unlikely due to backup systems and redundant system designs. Local communication failures are likely to affect only small areas of the county. According to Benton County officials, there have been communication failures including failures of the county's E911 system, but due to the backup systems and procedures in place, they have always been resolved in no more than a few hours.

The only incidents of structural failures in Benton County that were of any significance could only be determined from local records. One incident in June of 1993 near Garrison involved the washout of a box culvert on Benton County Highway E22 due to heavy rains. A car drove off into the washout resulting in a triple fatality accident. Another incident that occurred the same summer on Benton County Highway D65 north of Mount Auburn again involved heavy rains that washed out a bridge which a car drove off into resulting in another fatality. During the floods of June 2008, a portion of Highway 150 north of Vinton was washed out. No records of any structural failure to a building of any significant circumstance could be determined, though it is acknowledged by local county and municipal officials across the county that the potential for such incidence does exist.

Infrastructure failure could occur anywhere within Benton County.

The intensity of infrastructure failure is often determined by the number impacted by the event and the duration of that impact. Communications outages could impact the entire county, especially if the outage is a cellular service network outage that is nationwide. Electrical outages could also impact a large portion of the county due to a widespread storm event such as a derecho.

STRUCTURAL FIRE\

Definition

An uncontrolled fire in a populated area that threatens life and property and is beyond normal day-to-day response capabilities.

Description

Structural fires present a far greater threat to life and property and the potential for much larger economic losses. Modern fire codes and fire suppression requirements in new construction and building renovations, coupled with improved firefighting equipment, training, and techniques, lessen the change and impact of a major urban fire. Most structural fires occur in residential structures, but the occurrence of a fire in a commercial or industrial facility could affect more people and pose a greater threat to those near the fire or fighting the fire because of the volume or type of material involved.

Probability, Location, and Intensity

Structural fires are almost a daily occurrence in some communities. Nearly all are quickly extinguished by on-site personnel or local fire departments. According to records provided by the State of Iowa Fire Marshall's Office, the 13 fire departments of Benton County reported 216 structural fires from 2010 through 2014, or an average of 43 structural fire alarms per year. Approximately 30 percent of these alarms require mutual aid and the combined efforts of two or more fire departments to extinguish, particularly in rural areas where there is no water supply. From 2015 to 2020, structural fires have accounted for $1,428,703 in fire losses, 1 civilian death, 7 civilian fire injuries, and 10 firefighter injuries in Benton County.

In the United States in 2022, local fire departments responded to an estimated 1.5 million fires resulting in 3,970 civilian deaths, 13,250 reported civilian injuries, and property damage estimated at $18 billion.

Table 74: Fire Deaths in Iowa in the Past Five Years

YEAR	TOTAL FIRES
2025	42
2024	38
2023	37
2022	48
2021	30

Given history of structural fire incidents in Benton County, it is a near certainty that the county will experience numerous structural fires annually. Even with Benton County fire departments focusing on fire prevention effort for both residential and nonresidential structural fires, fires will continue to occur. During the colder months, clogged chimneys, faulty furnaces, and fireplaces can increase the probability of structural fires.

All cities and rural areas in Benton County that have structures are at risk of structural fire. The central areas of cities are most densely built and these areas are at greatest risk.

The intensity of a structural fire is often determined by the loss of life, injury, and/or amount of damage. Structural fires can range from minor property damage with no loss of life or injury to complete destruction of the property and multiple deaths and injuries.

TERRORISM

Definition

This hazard encompasses a wide variety of human caused threats including enemy attach, biological terrorism, agro-terrorism, chemical terrorism, conventional terrorism, cyber terrorism, radiological terrorism, and public disorder.

Description

Terrorism includes the use of multiple outlets to demonstrate unlawful force, violence, and/or threat against persons or property causing intentional harm for purposes of intimidation, coercion or ransom in violation of the criminal law of the United States. These actions may cause massive destruction and/or extensive casualties.

Probability, Location, and Intensity

Iowa has not been immune to acts of terrorism or sabotage. Most incidents have been limited to reported suspected powders, actual threats, and hoaxes. In the spring of 2002, 18 pipe bombs were found in mailboxes in five states stretching from Illinois to Texas, including Iowa. Six people were injured in bombings in Iowa and Illinois.

Incidents of agro-terrorism have occurred in Iowa in the past 10 years when animal rights activists have vandalized or released animals from agricultural facilities. Recent clashes between activists and factory farms have also been in the news.

The Dakota Access Pipeline carries Bakken crude oil through Iowa and there have been issues that could be associated with terrorism. The pipeline was repeatedly damaged by two activists before it was put into operation.

According to the Benton County Sheriff's Office, there have been bomb threats in Benton County, all of them at Benton Community High School in Van Horne on 4/20/1998, 2/24/1999, 9/29/1999, and 12/16/2005. On all occasions a search of the school found no bomb. Schools were closed at Benton Community Middle School and High School on November 15, 2019 due to a threat. In May 2025, the Benton Community Middle and High School received a firearm threat. This was followed by subsequent threats that night and the following day. A juvenile was later arrested.

Also, in 2025 a number of Iowa schools were affected by swatting calls in February and October. Swatting calls are prank calls made to emergency services in order to dispatch a large number of emergency responders to a location.

The most likely targets of a conventional terrorism attack in Benton County include school system facilities of the Belle Plaine Community School District; Benton Community School District; Center-Point Urbana School District; Central Lutheran

School; Vinton-Shellsburg School District; The Benton County Courthouse and Benton County Law Enforcement Center.

No incidents of agro-terrorism in Benton County could be documented. Because of security and privacy issues, the Iowa Department of Agriculture and Land Stewardship does not release details of specific incidents or their location, including any that have occurred in Benton County. In Iowa, intentional incidents have involved feed poisoning causing livestock deaths, contamination of raw mile, vandalism and arson to production facilities, and destruction of research and laboratory facilities. Because Iowa serves as the breadbasket to the world, there is an increased risk of agro-terrorism activity. Benton County is at the heart of Iowa's agriculture industry and is surrounded by farmland and livestock operations. Vacant buildings and remote areas in Benton County offer opportunities for renegade terrorists to carry out clandestine activities.

Fortunately, biological terrorism history has been limited to threats and hoaxes only. While these acts have caused terror, they have not resulted in injuries or deaths. There have been no incidents of bioterrorism in Benton County. The most probable target for a bioterrorism attack in Benton County is a city's water supply system. The probability that Benton County may be affected by an act of bioterrorism is also somewhat enhanced due to the presence of Highway 30 to the south and I-380 to the north and the county's proximity to the major metropolitan cities such as Cedar Rapids and Waterloo.

Cyber-security and critical infrastructure protection are among the most important national security issues facing our country today. Iowa schools, hospitals, and utility companies have experienced cybersecurity attacks including data breaches and ransomware. In 2019, the Benton County Sheriff's Office incurred a cybersecurity attack. Security experts describe this threat as eminent. Intrusion detection systems log thousands of attempts in a single month.

Even with all of these events and risks of events, the probability of a terrorism event in Benton County still remains low.

The intensity of a terrorism event will be dependent on the type of event and the loss of human life and property damage. An event such as a conventional bomb or chemical event could affect an entire community. Other targeted attacks could be much more limited. Cyber security attacks could be limited to one facility or could impact a number of municipalities and their critical infrastructure.

TRANSPORTATION INCIDENT

Definition

This hazard encompasses air transportation, highway transportation, railway transportation, and waterway incidents. A transportation incident is described as an accident involving any mode of transportation that directly threatens life, property damage, injury, or adversely impacts a community's capabilities to provide emergency services.

Description

A highway transportation incident can be a single or multi-vehicle requiring responses exceeding normal day-to-day capabilities. An extensive surface transportation network exists in Iowa; local residents, travelers, business, and industry rely on this network on a daily basis. Hundreds of thousands of trips a day on made on the streets, roads, highways, and interstates in the state. If the designed capacity of the roadway is exceeded, the potential for a major highway incident increases. Weather conditions play a major factor in the ability of traffic to flow safely in and through the state as does the time of day and week. Incidents involving buses and other high occupancy vehicles could trigger a response that exceeds normal day-to-day capabilities of response agencies.

Air transportation is playing a more prominent role in transportation as a whole. Airplanes, helicopters, and other modes of air transportation are used to transport passengers for business and recreation as well as thousands of tons of cargo. A variety of circumstances can result in an air transportation incident. Mechanical failure, pilot error, enemy attack, terrorism, weather conditions, and on-board fire can all lead to an incident at or near an airport. Air transportation incidents can occur in remote unpopulated areas, residential areas, or downtown business districts, Incidents involving military, commercial, or private aircraft can also occur while the aircraft is on the ground.

A railway transportation incident is a train accident that directly threatens life, property, or adversely impacts a community's capabilities to provide emergency services. Railway incidents may include derailments, collisions, and highway/rail crossing accidents. Train incidents can result from a variety of causses including human error, mechanical failure, faulty signals, or problems with the track. Results of an incident can range from minor "track hops" to catastrophic hazardous materials incidents with human and animal casualties.

A waterway incident is an accident involving any water vessel that threatens life, property, or adversely affects a community's capability to provide emergency services. Waterway incidents primarily involve pleasure craft on rivers and lakes. In the event of an incident involving a water vessel, the greatest threat would be drowning, fuel spillage, and/or property damage.

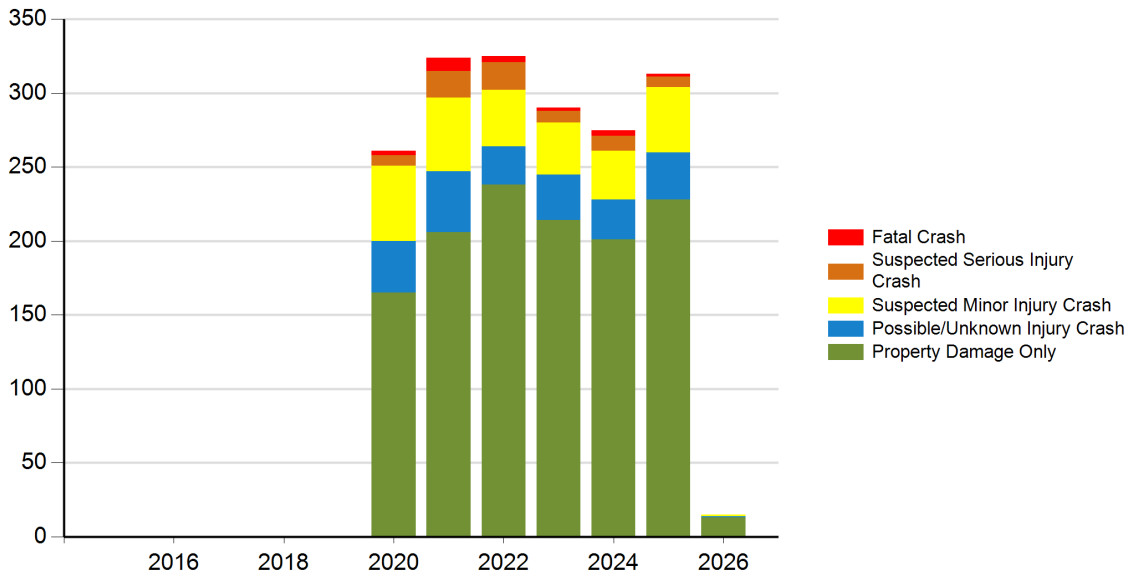
Probability, Location, Intensity

Although traffic engineering, inspection of traffic facilities, land use management of areas adjacent to roads and highways, and the readiness of local response agencies have increased, highway incidents continue to occur. As the volume of traffic on the state's streets, highways, and interstates increases, the number of traffic accidents will likely also increase. The combination of large numbers of people on the road, unpredictable weather conditions, potential mechanical problems, and human error always leaves open the potential for a transportation accident.

DOT reports indicate that over 50,000 vehicles travel on the primary, secondary, rock and dirt roads, highways and interstate of Benton County daily. Given the amount of traffic and the historical occurrence of highway transportation incidents in the county; future traffic accidents with death and major injuries annually are a near 100 percent probability.

Figure 69: Iowa DOT Crash Severity by Year

(Iowa Crash Analysis Tool Quick Report)



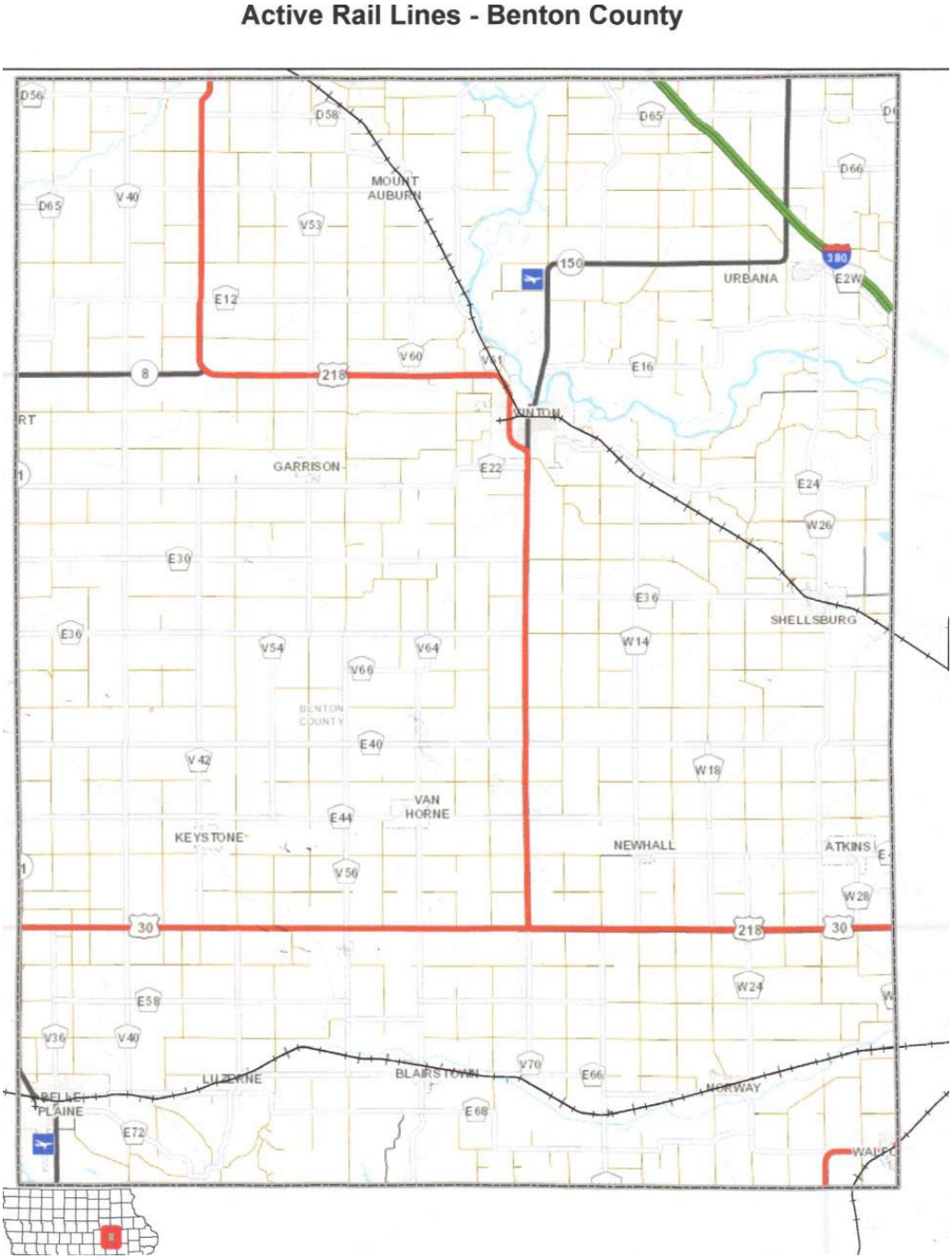
Most fatalities occur on major county roads or highways. Historically in Benton County Highway 30 has had the majority of these incidents. This is not unexpected as injuries are typically more severe at higher rates of speed. Accidents in general appear to occur more often along major thoroughfares and in the central portions of the larger communities where there is generally more traffic.

Benton County has three railroads. Nearly 100 trains per day travel 24 miles of track through the cities of Belle Plaine, Blairstown, Luzerne, and Norway on a busy double rail line operated by the Union Pacific Railroad. The Iowa Northern Railroad passes two

trains daily over 25 miles of track through Mt. Auburn, Vinton, and Shellsburg. Two miles of track is operated by the Cedar Rapids-Iowa City Railroad and passes through Walford in the southeast corner of the county.

Figure 70: Benton County Rail Lines

Image provided by the Iowa DNR.



The Federal Railroad Administration Office of Safety Analysis reports seven railway incidents in Benton County from 2016 through 2025. Three were highway-rail incidents at public crossings. All were nonfatal and one indicated injuries. One was a train accident with derailment on a main line track caused by mechanical failure. It resulted in $13,655 in damage. One was a train accident with miscellaneous cause with derailment on an industry track. This one resulted in $35,221 in damage.

Benton County has two airports domiciled within the county's boundaries, the Belle Plaine Airport near Belle Plaine and the Vinton Veterans Memorial Airport near Vinton. Both have 4,000 feet long runways. Both airports are used by smaller aircraft primarily locally owned, though a 4,000 foot long runway is long enough to land a commercial aircraft as large as a 727.

National Transportation Safety Board Aviation accident reports show 9 air transportation accidents as having occurred in Benton County between January 1, 2007 and December 31, 2025. Five of those involved small aircraft landing at the Vinton Veterans Memorial Airport. Two involved crop dusting aircraft in the Vinton area. One occurred in Garrison and one occurred in Belle Plaine. There were no fatalities or major injuries reported with these events.

Benton County has had 5 fatal aircraft accidents over the past 50 years:

- A Beech C90 crashed near Blairstown on January 3, 1973 and killed all five people on board.
- A Bellanca 17-31A crashed near Garrison on December 20, 1075 and killed all three people on board.
- A Cessna T210L crashed and killed all three people on board near Atkins on March 17, 1977.
- A Beech C23 crashed near Belle Plaine on September 22, 1988 and killed one person.
- A Bell 206B crashed near Walford on June 30, 2006 and killed one person.

With five fatal aircraft accidents occurring in Benton County over the past 50 years and the county's proximity to the Eastern Iowa Airport in Cedar Rapids, Iowa, it is predictable that a fatal aircraft accident will occur on the average of once every 10 years. It is important to note that it has been almost 20 years since a fatal air accident occurred in Benton County at the time of this plan update.

Benton County does not have any waterways that are navigated by anything other than recreational watercraft. There is no history or record of any type of water body incident in the county.

Transportation incidents can occur at any location throughout Benton County and can range from no injury and very little damage to severe injury or death and total destruction of the mode of transportation.

SECTION 4

RISK ASSESSMENT

ASSESSING VULNERABILITY

Overview

An overview of the planning area's vulnerability is a summary of the hazard's impact on the community and its vulnerable structures. To determine what populations or properties could be lost to a particular hazard event, the hazard locations discussed in the hazard profiles are classified below. Some hazards do not have defined risk areas, i.e. they will only occur in certain places, while other hazards could affect an entire town, or any smaller portion of the town.

Hazards with well-defined risk areas with risk of structural damage:

Flood – Flash and Riverine

The majority of these areas have been identified as best as currently possible within the hazard profiles. People living, working, or otherwise being present inside these risk areas, as well as structures inside these risk areas, are most vulnerable to the effects of these hazards. While these hazards may have an extremely detrimental impact on lives and property in their path, the typical occurrences of these hazards will not impact other people or property within the jurisdiction, except when a critical facility is impacted. An example of this would be flooding of the wastewater plants, which could be caused by flash flooding, riverine flooding, or a dam failure, which would in-turn impact larger areas of town outside of the defined hazard area.

Hazard with well-defined risk areas and little to no risk of structural damage:

None

Hazards with specific areas of elevated risk with risk of structural damage:

Wildfire

Hazards with specific areas of elevated risk are those that are more likely to occur in a certain identified location. However, they are not guaranteed to be limited to that location. Wildfires normally only impact areas with enough vegetation, fuel, and slopes necessary to sustain a fire. Other factors may impact the spread of wildfire, such as materials stored in specific areas that may ignite and spread a fire over a greater area than might have been predicted by vegetation and terrain alone. Transportation events as well as hazardous materials events can almost always be expected to occur in specific areas:

transportation events will likely originate on or near roadways, railroads, or other transportation infrastructure; many hazardous materials sites are well known to first responders and have federal and state reporting requirements. However, it is difficult to predict the magnitude of any specific event because these types of events are accidental, and thus the circumstances surrounding these events will impact the extent of damage or injuries that occur.

Hazards without defined areas of elevated risk with risk of structural damage:

Thunderstorms/Lightning/Hail, Severe Winter Storm, Tornado, Windstorm

These hazards have no defined area in which they are known to occur, and they could occur in either limited sections of the jurisdiction or over the entire jurisdiction at once. These hazards are also able to directly cause substantial structural losses, and potentially loss of life.

Hazards without defined areas of elevated risk, without high risk of structural damage:

Extreme Heat, Drought

These types of hazards are those that could occur anywhere within the jurisdiction or could occur throughout the entire jurisdiction and for which it is not possible to determine beforehand where the hazard is most likely to occur. Additionally, any of these hazards could occur without causing damage to the structures in the jurisdiction. While this does not indicate that any of these events could not be combined with other hazards or circumstances to create property damage, rather they were determined to be least likely to directly cause structural damage. However, these hazards will still create losses, which are likely to be economic, either due to a disruption in the provision of an essential service or to a loss of some type of product such as crop failure.

Table 75: Overall Summary of Vulnerability by Jurisdiction

Key:

L = Low to no risk; little damage potential

M = Medium risk; moderate damage potential or infrequent occurrence

H =High risk; significant risk or major damage potential or frequent hazard occurrence

Hazard Identified	Benton County Unincorporated	Atkins	Belle Plaine	Blairstown	Garrison	Keystone	Luzerne	Mount Auburn	Newhall	Norway	Shellsburg	Urbana	Van Horne	Vinton	Walford
DROUGHT	M	M	L	L	M	L	H	M	L	L	L	L	L	L	L
EXTREME HEAT	M	L	M	M	M	L	H	M	L	M	M	M	M	M	M
FLOOD – FLASH OR RIVERINE	L	L	H	L	L	L	L	L	L	H	H	L	L	H	M
GRASS OR WILDLAND FIRE	M	L	L	M	L	M	L	M	L	M	M	M	L	L	L
SEVERE WINTER STORM	H	H	M	H	H	M	H	H	H	M	M	M	M	H	M
STRUCTURAL FIRE	L	M	M	M	L	M	H	H	M	M	M	M	M	H	M
THUNDERSTORM/LIGHTNING/HAIL	M	M	M	M	H	H	M	M	M	M	M	M	M	M	M
TORNADO/WINDSTORM	H	H	M	H	H	M	H	H	M	H	H	H	H	H	M

Those hazards in the Other Hazards Category include:

Hazards with specific areas of elevated risk with risk of structural damage:
Transportation Incident, Hazardous Materials Incident

Hazards without defined areas of elevated risk with risk of structural damage:
Structural Fire, Terrorism, Transportation Incident

Hazards without defined areas of elevated risk, without high risk of structural damage:
Infrastructure Failure, Animal-Plant-Crop Disease, Human Disease

REPETITIVE LOSS PROPERTIES

Repetitive loss properties are those for which two or more losses of at least $1,000 each have been paid under the National Flood Insurance Program (NFIP) within any 10 year period since 1978. Local governments may obtain information on repetitive loss properties within their jurisdiction by contacting their State NFIP Coordinator. Use of the flood insurance claim and disaster assistance information is subject to The Privacy Act of 1974, as amended, which prohibits public release of the names of policy holders or recipients of financial assistance and the amount of the claim payment or assistance.

For the purpose of preparing this plan update, the consultant requested information from the Iowa Department of Homeland Security and Emergency Management (DHSEM) about repetitive loss structures in Benton County. DHSEM referred the inquiry to the Iowa Department of Natural Resources (IDNR). Officials of the IDNR report that as of February 17, 2026 there are a total of five repetitive loss structures in Benton County. One is a non-residential structure located in the City of Vinton and four are residential structures located in unincorporated Benton County. There are no severe repetitive loss properties in the county.

IDENTIFYING STRUCTURES

Hazard mitigation plans should describe vulnerability in terms of the types and numbers of existing and future buildings, infrastructure, and critical facilities located in the identified hazard areas. Thus, the next step in the planning process was to determine who and what is at risk in the event that any of the selected hazards do occur. To determine this, the consultant provided an overview of the potential property losses by assessment classification to provide a sense of what property could be lost in addition to the populations detailed in the community profiles.

Building Stock

This data represents 2020 assessed value and 2020 population estimates based on where people live rather than where they work (or attend school). The source for this data is the Benton County Assessor’s Office and the US Census Bureau. This was the most recent and up-to-date information available at the time this section was developed. Values for tax exempt structures are not available. Additionally, more specific building type classifications are also not available. When interpreting the data above to provide loss estimates for the jurisdiction in a worst-case scenario event, it is also useful to keep in mind that the assessed value of the property is presented, which may not directly correlate to the fair market or replacement value of that property. A common method that is used in Iowa to adjust from assessed value to fair market value is to increase the assessed value by 110% however every property is unique and this may not be accurate in all cases. As previously discussed in the vulnerability overview section, only certain hazards have well defined risk areas, and only some of those hazards pose a risk of structural losses. Thus, the hazard of riverine flooding and flash flooding are the only hazards examined in this document where it is possible to identify the structures

that are at risk should one of these hazards occur. The hazards of expansive soils and landslide are not examined because the mitigation planning committee decided not to include them in the plan based on information provided by the USDA NRCS which showed low or no risk for the county for these two hazards. For the purpose of reviewing riverine and flash flooding, the two hazards were combined and properties were reviewed for overlap with the boundaries of the identified special flood hazard area.

ALL PROPERTIES

Table 76: Potential Structural Losses, Unincorporated Benton County

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	6,050	$1,042,553,000	$55,682,100	N/A	$1,098,235,100	0
Commercial	271			N/A	$41,711,163	0
Exempt	218	N/A	N/A	N/A	N/A	N/A
Industrial	9			$0	$19,801,000	
Residential	4,135	$185,292,850	$0	$923,049,587	$1,108,343,437	8,324
Total	10,683	$1,227,845,850	$55,682,100	$923,049,587	$2,268,090,700	8,324

Table 77: Potential Structural Losses, Atkins

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	9	$318,361	$178		$318,539	
Commercial	60	$728,721	$5,878,816	N/A	$6,607,537	
Exempt	28	$3,250,700	$5,778,400	$377,600	$9,406,700	
Industrial	0	$0	$0	$0	$0	
Residential	798	$34,605,379	N/A	$198,979,884	$233,585,263	2,056
Total	895	$38,903,161	$11,657,394	$199,357,484	$249,918,039	2,056

Table 78: Potential Structural Losses, Belle Plaine

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	46	$970,004	$87,614	$0	$1,057,618	
Commercial	215	$4,105,298	$26,513,710	$0	$29,794,408	
Exempt	58	$6,389,500	$8,233,700	$0	$17,234,100	
Industrial	11	$1,181,000	$171,400	$0	$9,555,700	
Residential	1,210	$16.662.202	$0	$113,233,310	$129,895,512	2,330
Total	1,540	$29,308,004	$35,006,424	$113,233,310	$187,537,338	2,330

Table 79: Potential Structural Losses, Blairstown

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	14	$138,733	$26,450	$0	$165,183	
Commercial	69	$713,400	$5,981,300	$0	$6,694,700	
Exempt	18	$464,100	$1,340,700	$0	$1,804,800	
Industrial	2	$49,700	$171,400		$221,100	
Residential	362	$7,060,900	$0	$45,797,100	$52,858,000	713
Total	465	$8,426,833	$7,519,850	$45,797,100	$61,743,783	713

Table 80: Potential Structural Losses, Garrison

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	8	$114,482	$182,303	$0	$296,785	
Commercial	34	$193,700	$797,300	$0	$991,000	
Exempt	19	$420,600	$873,700	$544,400	$1,838,700	
Industrial	0	$0	$0	$0	$0	
Residential	207	$1,226,100	$0	$8,936,600	$10,162,700	344
Total	268	$1,954,882	$1,853,303	$9,481,000	$13,289,185	344

Table 81: Potential Structural Losses, Keystone

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	14	$163,994	$23,182	$0	$187,176	
Commercial	47	$914,466	$7,423,365	$0	$8,337,831	
Exempt	17	$920,200	$3,422,700	$0	$4,342,900	
Industrial	0	$0	$0	$0	$0	
Residential	286	$5,779,434	$0	$42,190,635	$47,970,069	599
Total	364	$7,778,094	$10,869,247	$42,190,635	$60,837,976	599

Table 82: Potential Structural Losses, Luzerne

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	3	$40,063	$0	$0	$40,063	
Commercial	12	$78,700	$525,400	$0	$604,100	
Exempt	5	$105,300	$1,035,700	$0	$1,141,000	
Industrial	0	$0	$0	$0	$0	
Residential	82	$642,800	$0	$3,702,700	$4,345,500	112
Total	102	$866,863	$1,561,100	3,702,700	$6,130,663	112

Table 83: Potential Structural Losses, Mount Auburn

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	9	$111,984	$120,485	$0	$232,469	
Commercial	16	$63,600	$243,500	$0	$307,100	
Exempt	9	$87,400	$288,100	$0	$375,500	
Industrial	0	$0	$0	$0	$0	
Residential	92	$859,100	$0	$6,709,300	$7,568,400	162
Total	126	$1,122,084	$652,085	$6,709,300	$8,483,469	162

Table 84: Potential Structural Losses, Newhall

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	0	$0	$0	$0	$0	
Commercial	57	$747,448	$4,937,444	$0	$5,684,892	
Exempt	18	$944,800	$3,734,100	$0	$4,678,900	
Industrial	0	$0	$0	$0	$0	
Residential	398	$10,137,452	$0	$61,858,456	$71,995,908	876
Total	473	$11,829,700	$8,671,544	$61,858,456	$82,359,700	876

Table 85: Potential Structural Losses, Norway

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	17	$134,812	$10,343	$0	$145,155	
Commercial	46	$397,916	$3,567,916	$0	$3,965,832	
Exempt	20	$1,132,100	$3,718,900	$0	$4,851,000	
Industrial	0	$0	$0	$0	$0	
Residential	264	$5,849,184	$0	$37,545,184	$43,394,368	466
Total	347	$7,514,012	$7,297,159	$37,545,184	$52,356,355	466

Table 86: Potential Structural Losses, Shellsburg

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	18	$108,360	$4,161	$0	$112,521	
Commercial	68	$841,883	$6,146,289	$0	$6,988,172	
Exempt	32	$1,501,600	$2,575,800	$14,000	$4,091,400	
Industrial	2	$54,700	$40,200	$0	$94,900	
Residential	492	$11,853,717	$0	$68,783,111	$80,636,828	961
Total	612	$14,360,260	$8,766,450	$68,797,111	$91,923,821	961

Table 87: Potential Structural Losses, Urbana

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	21	$580,255	$5,587	$0	$585,842	
Commercial	85	$5,774,871	$28,557,896	$0	$34,332,767	
Exempt	28	$1,302,500	$4,291,000	$292,700	$5,886,200	
Industrial	7	$811,200	$1,822,900	$0	$2,634,100	
Residential	656	$20,819,729	$0	$119,411,904	$140,231,633	1,554
Total	797	$29,288,555	$34,677,383	$119,704,604	$183,670,542	1,554

Table 88: Potential Structural Losses, Van Horne

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	13	$478,909	$10,818	$0	$489,727	
Commercial	70	$1,291,300	$10,310,300	$0	$11,601,600	
Exempt	31	$2,804,300	$9,864,400	$888,600	$13,557,300	
Industrial	1	$85,000	$84,500	$0	$169,500	
Residential	305	$7,530,100	$0	$43,806,000	$51,336,100	774
Total	420	$12,189,609	$20,270,018	$44,694,600	$77,154,227	774

Table 89: Potential Structural Losses, Vinton

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	101	$1,572,071	$9,392	$0	$1,581,463	
Commercial	393	$10,754,238	$63,153,362	$0	$73,400,800	
Exempt	144	$10,597,500	$43,645,200	$949,100	$55,191,800	
Industrial	14	$1,920,400	$9,523,500	$0	$11,443,900	
Residential	2,078	$44,062,362	$0	$291,442,338	$335,504,700	4,938
Total	2,730	$68,906,571	$116,331,454	$292,391,438	$477,122,663	4,938

Table 90: Potential Structural Losses, Walford

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value	Population
Agricultural	4	$27,699	$6,479	$0	$34,178	
Commercial	27	$1,036,300	$2,752,400	$0	$73,400,800	
Exempt	11	$1,368,700	$2,349,100	$0	$3,717,800	
Industrial	0	$0	$0	$0	$0	
Residential	365	$14,152,800	$0	$83,095,500	$97,248,300	1,366
Total	407	$16,585,499	$5,107,979	$83,095,500	$174,401,078	1,366

POTENTIAL FLOOD LOSSES

Table 91: Atkins Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	4	$ 369,300	$ 300	$ 0	$ 369,300
Commercial	1	$ 294,900	$ 0	$ 0	$ 294,900
Exempt	6	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	42	$ 2,403,900	$ 0	$ 12,268,600	$ 14,672,500
Total	53	$ 3,068,100	$ 300	$ 12,268,600	$ 15,337,000

Table 92: Belle Plaine Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	13	$ 649,500	$ 84,900	$ 6,300	$ 740,700
Commercial	22	$ 1,240,100	$10,118,000	$ 0	$ 11,358,100
Exempt	14	$ 23,300	$ 0	$ 0	$ 23,300
Industrial	6	$ 918,600	$ 6,471,500	$ 0	$ 7,390,100
Residential	50	$ 1,265,500	$ 0	$ 6,762,500	$ 8,028,000
Total	105	$ 4,097,000	$16,674,400	$ 6,768,800	$ 27,540,200

Table 93: Blairstown Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	4	$ 88,000	$ 18,500	$ 0	$ 106,500
Commercial	6	$ 116,900	$ 977,700	$ 0	$ 1,094,600
Exempt	4	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	56	$ 1,014,600	$ 0	$ 5,069,700	$ 6,084,300
Total	70	$ 1,219,500	$ 996,200	$ 5,069,700	$ 7,285,400

Table 94: Garrison Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	3	$ 66,500	$ 0	$ 0	$ 66,500
Commercial	1	$ 81,600	$ 38,300	$ 0	$ 119,900
Exempt	2	$ 14,300	$ 0	$ 0	$ 14,300
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	0	$ 0	$ 0	$ 0	$ 0
Total	6	$ 162,400	$ 38,300	$ 0	$ 200,700

Table 95: Keystone Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	12	$ 231,000	$ 39,000	$ 261,700	$ 531,700
Commercial	7	$ 449,400	$ 2,700,100	$ 0	$ 3,149,500
Exempt	3	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	14	$ 335,500	$ 0	$ 1,353,700	$ 1,689,200
Total	36	$ 1,015,900	$ 2,739,100	$ 1,615,400	$ 5,370,400

Table 96: Luzerne Potential 100 Year Flood Losses - No flood hazard area

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	0	$0	$0	$	$0
Commercial	0	$0	$0	$0	$0
Exempt	0	$0	$0	$0	$0
Industrial	0	$0	$0	$0	$0
Residential	0	$0	$0	$0	$0
Total	0	$0	$0	$0	$0

Table 97: Mount Auburn Potential 100 Year Flood Losses - No flood hazard area

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	0	$0	$0	$0	$0
Commercial	0	$0	$0	$0	$0
Exempt	0	$0	$0	$0	$0
Industrial	0	$0	$0	$0	$0
Residential	0	$0	$0	$0	$0
Total	0	$0	$0	$0	$0

Table 98: Newhall Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	0	$ 0	$ 0	$ 0	$ 0
Commercial	1	$ 44,200	$ 352,900	$ 0	$ 397,100
Exempt	1	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	4	$ 102,500	$ 0	$ 632,600	$ 735,100
Total	6	$ 146,700	$ 352,900	$ 632,600	$ 1,132,200

Table 99: Norway Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	14	$ 210,200	$ 800	$ 0	$ 211,000
Commercial	4	$ 174,600	$ 1,391,800	$ 0	$ 1,566,400
Exempt	2	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	34	$ 791,100	$ 0	$ 3,950,300	$ 4,741,400
Total	54	$ 1,175,900	$ 1,392,600	$ 3,950,300	$ 6,518,800

Table 100: Shellsburg Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	9	$ 60,800	$ 6,400	$ 232,900	$ 300,100
Commercial	7	$ 340,400	$ 2,445,045	$ 44,155	$ 2,829,600
Exempt	11	$ 0	$ 0	$ 0	$ 0
Industrial	1	$ 49,700	$ 40,200	$ 0	$ 89,900
Residential	45	$ 1,132,500	$ 0	$ 4,922,200	$ 6,054,700
Total	73	$ 1,583,400	$ 2,491,645	$ 5,199,255	$ 9,274,300

Table 101: Urbana Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	7	$ 0	$ 0	$ 0	$ 0
Commercial	4	$ 571,300	$ 8,546,300	$ 0	$ 9,117,600
Exempt	3	$ 0	$ 0	$ 0	$ 0
Industrial	3	$ 363,200	$ 1,311,800	$ 0	$ 1,675,000
Residential	50	$ 2,470,400	$ 0	$ 14,288,300	$ 16,758700
Total	67	$ 3,404,900	$ 9,858,100	$ 14,288,300	$ 27,551,300

Table 102: Van Horne Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	2	$ 109,600	$ 0	$ 0	$ 109,600
Commercial	0	$ 0	$ 0	$ 0	$ 0
Exempt	1	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	0	$ 0	$ 0	$ 0	$ 0
Total	3	$ 109,600	$ 0	$ 0	$ 109,600

Table 103: Vinton Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	21	$ 1,214,000	$ 15,800	$ 219,800	$ 1,449,600
Commercial	49	$ 2,171,200	$10,677,060	$ 121,740	$ 12,970,000
Exempt	62	$ 273,800	$ 0	$ 141,900	$ 415,700
Industrial	2	$ 689,000	$ 1,358,200	$ 0	$ 2,047,200
Residential	328	$ 8,122,400	$ 0	$ 44,975,300	$ 53,097,700
Total	462	$ 12,470,400	$12,051,060	$ 45,458,740	$ 69,980,200

Table 104: Vinton Potential 500 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	1	$ 16,600	$ 0	$ 0	$ 16,600
Commercial	19	$ 886,600	$ 3,127,600	$ 0	$ 3,492,100
Exempt	5	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	39	$ 826.300	$ 0	$ 3,867,000	$ 4,693,300
Total	64	$ 1,729,500	$ 3,127,600	$ 3,867,000	$ 8,724,100

Table 105: Walford Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	2	$ 27,700	$ 0	$ 0	$ 27,700
Commercial	4	$ 385,200	$ 1,603,500	$ 0	$ 1,988,700
Exempt	8	$ 0	$ 0	$ 0	$ 0
Industrial	0	$ 0	$ 0	$ 0	$ 0
Residential	67	$ 2,604,100	$ 0	$ 13,960,600	$ 16,564,700
Total	81	$ 3,017,000	$ 1,603,500	$ 13,960,600	$ 18,581,100

Table 106: Benton County Unincorporated Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	1968	$413,759,800	$13,801,200	$89,869,700	$517,430,700
Commercial	32	$ 3,306,600	$ 7,248,400	$ 0	$ 10,555,000
Exempt	128	$ 6,939,000	$ 523,400	$ 7,574,300	$ 15,036,700
Industrial	2	$ 208,200	$ 1,267,670	$ 0	$ 1,475,870
Residential	441	$ 20,948,200	$ 0	$50,317,700	$ 71,265,900
Total	2,571	$445,161,800	$22,840,670	$147,761,700	$615,764,170

Table 107: Benton County Total Potential 100 Year Flood Losses

Use Type	Properties	Land Value	Building Value	Dwelling Value	Total Value
Agricultural	2,059	$416,786,400	$13,966,900	$ 90,590,400	$521,343,700
Commercial	138	$ 9,176,400	$46,099,105	$ 165,895	$ 55,441,400
Exempt	245	$ 7,250,400	$ 523,400	$ 7,716,200	$ 15,490,000
Industrial	14	$ 2,228,700	$10,449,370	$ 0	$ 12,678,070
Residential	1,131	$ 41,190,700	$ 0	$158,501,500	$199,692,200
Total	3,587	$476,632,600	$71,038,775	$256,973,995	$804,645,370

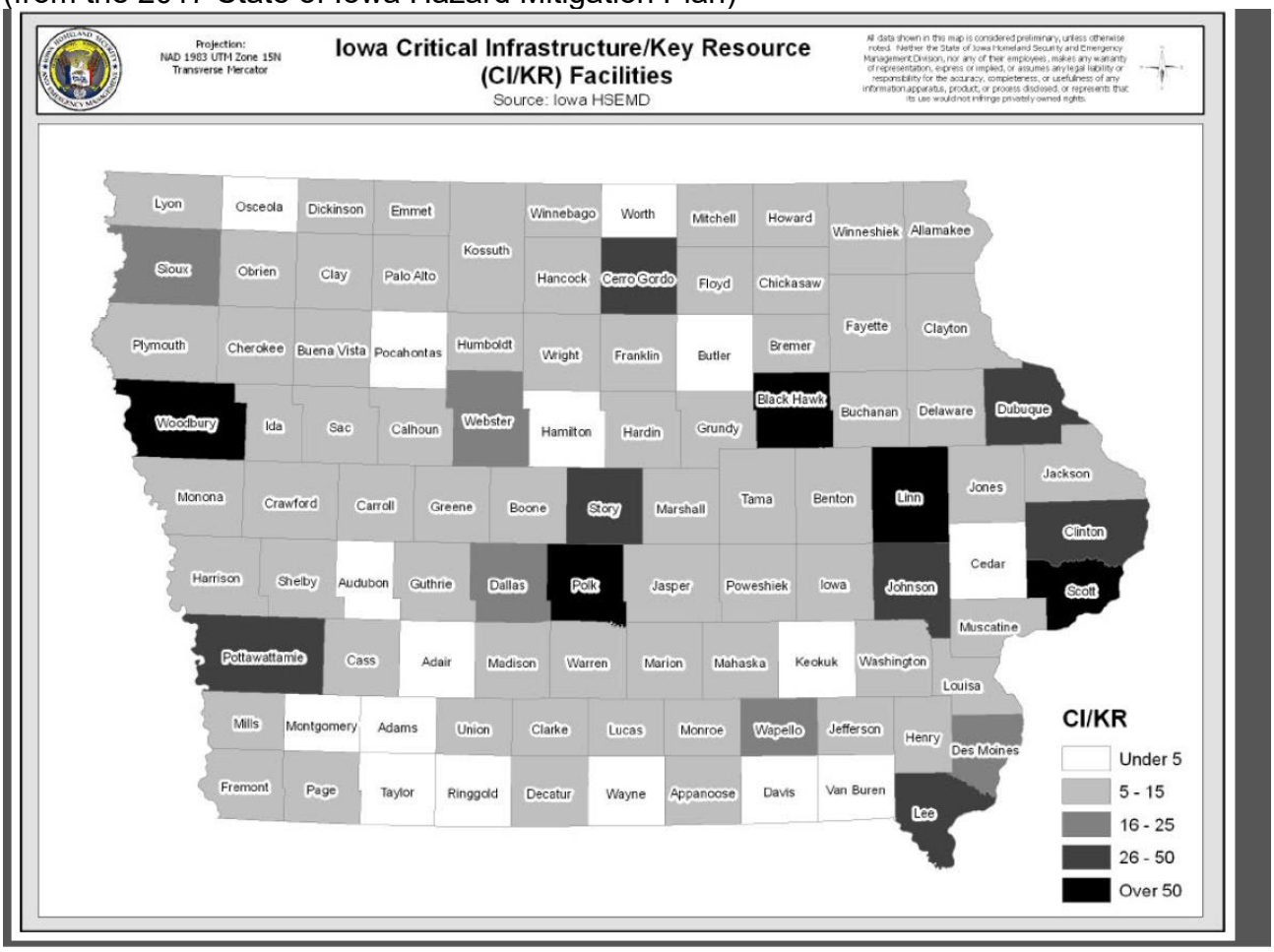
CRITICAL FACILITIES

Critical facilities are essential to the health and welfare of the whole population and are especially important following hazard events. Since vulnerability is based on service losses as well as building structure integrity and contents value, loss of the following structures would have an unusually large effect on the community. For purposes of this mitigation planning guidance, critical facilities may include emergency service facilities such as hospitals and other medical facilities, jails, police and fire stations, emergency operations centers, public works facilities, evacuation shelters, schools, other center that house special needs populations, and facilities the provide necessary services, such as provision of food or pharmaceutical supplies. Facilities critical to the incorporated and unincorporated areas of Benton County are identified in the Community Profiles section of this plan under each area.

The State of Iowa Department of Homeland Security and Emergency Management (HSEM) lists 34 facilities in Benton County as critical assets. For security reasons, HSEM does not release information on the location or nature of those facilities.

Figure 71: Iowa Critical Infrastructure/Key Resources

(from the 2017 State of Iowa Hazard Mitigation Plan)



ESTIMATING POTENTIAL LOSSES

Describing vulnerability in terms of dollar losses provides the communities and the State with a common framework in which to measure the effects of hazards on vulnerable structures. Plans are encouraged to include an estimate of losses for the identified vulnerable structures. This is intended to be a monetary estimate for each hazard including the value of the structure, contents, and loss of function to present a full picture of the total loss for each asset.

As a guide, FEMA's Plan Review Guide and Planning Handbook recommends that structure loss is defined as a percentage of the Replacement Value x Percentage of Damage. Content Loss is defined as a percentage of the Replacement Value x Percentage of Damage. Functional Losses are indirect effects that usually involve interruptions in asset operations. Because the majority of mitigation projects fundable under the Stafford Act require a detailed Benefit Cost Analysis (BCA), FEMA does have standard values available for calculating replacement value of contents and functional losses based on the type and use of the structure in question.

Where data is limited, the guidance allows planning teams to select the most likely event for each hazard and estimate the potential losses for that event. Because detailed historical records of loss values associated with many hazards were unavailable, loss estimations have only been performed for the natural hazards identified in this plan.

In addition to data collected during the planning process, this plan also references the loss estimations completed for the 2023 Iowa Hazard Mitigation Plan.

Flooding – River and Flash Flooding

In the 2013 Iowa Hazard Mitigation Plan, annual losses from flooding in Benton County (both riverine and flash flooding) were estimated at $7,830,000 or $306 per person (2020 US Census). Due to changes in data collection methodology, no comparative data could be found for the 2021 plan update or this plan update. The 2018 State of Iowa Hazard Mitigation Plan did state that between 1991 and 2017 there were two riverine flood events in Benton County that caused between $500,000 to $600,000 in damages. Flash flooding for the county was less than $250,000 annually. The 2023 State of Iowa Hazard Mitigation Plan did put Benton County in the $300,000 -$999,999 range for estimated annual loss due to river flooding.

For values of property located in the identified flood hazard areas broken down by jurisdiction, please see the tables in the earlier section Potential Flood Losses. Additionally, multiple jurisdictions reported loss of all or part of their wastewater service during flood events due to floodwaters inundating components of their wastewater treatment systems. Based on the current FEMA BCA loss of service values of $71/person/day for the population of each community, the following economic losses could apply on a per-day basis for disruption of wastewater services:

Table 108: Economic Impact of Loss of Wastewater Services

Atkins	$145,976
Belle Plain	$165.430
Blairstown	$ 50,623
Garrison	$ 24,424
Keystone	$ 42,529
Luzerne	No Flood Hazard Area & No Wastewater Treatment System
Mount Auburn	No Flood Hazard Area
Newhall	$ 62,196
Norway	$ 33,086
Shellsburg	$ 68,231
Urbana	$110,334
Van Horne	$ 54,954
Vinton	$350,598
Walford	$96,986 – No Wastewater Treatment System
Benton County Unincorporated	No Wastewater Treatment System

Regarding Benton County Unincorporated area residents, the majority of them rely on private septic systems for their wastewater management. Of these residents, only 11% are within a flood hazard area, meaning that the most realistic economic impact of flooding would be a maximum of $201,569.

An additional statistic that can be looked at to estimate potential flood losses is flood insurance that is in force. According to the NFIP statistics there were a total of 85 flood insurance policies in force in all of Benton County on December 31, 2025.

It is also significant to note that of the seventeen Presidentially Declared Disasters that have occurred in Benton County, fourteen have involved flooding.

FEMA provides a means of measuring vulnerability to inland flooding events through its Expected Annual Loss (EAL) factor in its National Risk Index (NRI). The analysis from FEMA's NRI on inland flooding in Benton County is divided among seven census tracts (2020 US Census). However, for the purpose of EAL ratings, these census tracts are within one of four EAL ratings. The highest EAL rating for inland flooding in Benton County is Very High and it encompasses an area of 12 square miles around and including the City of Vinton. The majority of the population within this area resides within the City of Vinton. The EAL total for this area is $2,335,044.69. The next EAL rating for inland flooding in Benton County is Relatively High and this area encompasses 52% of the county area (373.44 square miles). This area includes the communities of Atkins, Garrison, Mount Auburn, Newhall, Norway, Van Horne, and Walford. This area also includes 2,908 people living in the unincorporated area of Benton County. The EAL total for this area is $3,073,416.77. The next EAL rating for inland flooding in Benton County

is Relatively Moderate and encompasses 45% of the county area (323.62 square miles), including the communities of Blairstown, Keystone, Luzerne, Shellsburg, and Urbana. A majority of people residing in this area of Benton County (56%) live in the unincorporated area that this census tract includes. The EAL total for this area is $2,330,664.05. The remaining area has an EAL rating of Relatively Low and includes only 10% of the county population and 2% of the county square miles. It encompasses the community of Belle Plaine. The EAL total for this area is $425,431.23. The annualized frequency of an inland flooding event for Benton County is 1.18.

Extreme Heat

National Climatic Data Center records indicate 4 incidents of heat waves or excessive heat conditions that affected Benton County since January 1, 1994. The most damaging extreme heat event on record for the area occurred on July of 1995, causing $3.9 million in property damage statewide. Three deaths were also attributed to the heat, though none occurred in Benton County. Livestock damages were estimated at $31 million statewide for 1995, comprising of deaths of an estimated 4,000 cattle, 370 hogs, 1,250,000 chickens, and 250,000 turkeys. Little crop damage was reported. Although statewide damages are difficult to scale appropriately to the planning area, dividing the totals reported equally by county would yield property damages of approximately $40,000 and agricultural losses of $50,000 to $60,000 for an extreme heat event. Extreme heat can also damage pavement, causing it to buckle and rupture. According to the 2023 Iowa Hazard Mitigation Plan, the Iowa DOT maintenance operators spend 2,000 to 4,000 hours per year (typically) making temporary repairs to pavement ruptures and an additional 6,000 hours replacing sections of pavement which costs the state an average of $400,000 each year.

An excessive heat incident which impacted Benton County on July 19, 1999 is shown as having caused 12 heat related injuries or illnesses in the county.

Planning committees have also noted that extreme heat often results in high use of electricity, which can occasionally cause outages or brownouts. Based on the current FEMA BCA loss of service values of $213/person/day for the population of each community, the following economic losses could apply on a per-day basis for disruption of electrical services:

Table 109: Economic Impact of Loss of Electrical Services Per Day

Atkins	$ 437,928
Belle Plaine	$ 496,290
Blairstown	$ 151,869
Garrison	$ 73,272
Keystone	$ 127,587
Luzerne	$ 23,856
Mount Auburn	$ 34,506
Newhall	$ 186,588
Norway	$ 99,258
Shellsburg	$ 204,693
Urbana	$ 331,002
Van Horne	$ 164,862
Vinton	$1,051,794
Walford	$ 290,958
Benton County Unincorporated	$1,773,012

A disruption of electrical services may not affect an entire community or all of the rural area and may be isolated to areas with aged or inadequate electrical infrastructure that is more vulnerable to the influence of extreme heat.

As with many health related concerns, the very young and the very old are at greatest risk, as are people with disabilities and certain conditions that limit the ability of the body to regulate its temperature, and people under the influence of drugs or alcohol or who otherwise may be more likely to experience dehydration or impaired judgement. Additionally, people at lower incomes are less likely to have access to or the ability to pay for temperature regulation such as air conditioning.

In Benton County 23% of the population are under the age of 18 years old and almost 20% are over the age of 65 years old. These groups are at an increased risk with extreme heat. Potentially increasing that risk is the estimate that 7% of children and 12% of adults over the age of 65 years in the county are also below the poverty level. Benton County also has an estimated 11% of the population as people with disabilities.

No record of value of structural losses could be located. Losses to structures such as buildings are highly unlikely in an extreme heat event. However, transportation infrastructure can be damaged as mentioned earlier in this section. Roadways that are damaged not only incur repair costs but can also cause potential travel delays and damage to vehicles if motorists drive over damaged roadways or if vehicles are damaged by debris in the road.

FEMA provides a means of measuring vulnerability to excessive heat events through its Expected Annual Loss (EAL) factor in its National Risk Index (NRI). The analysis from FEMA's NRI reveals that expected annual loss (EAL) from heat wave for Benton County is $79,477.75 as of December 2025. The EAL rating for Benton County for Heat Wave is Relatively Low. The annualized frequency of a heat wave event for Benton County is 6.0.

Thunderstorm/Lightning/Hail

Thunderstorm and lightning events are quite common throughout the summer months in the planning area; yet do not normally cause reportable damage. When damage does occur, it may be caused by high winds, heavy rainfall, or lightning striking an object. The damaging effects of heavy rainfall typically results in flash flooding, a hazard that is addressed separately.

Thunderstorms can vary substantially in scale, which means that losses associated with thunderstorms are also variable. National Climatic Data Center (NCDC) statistics document 286 thunderstorm wind events in Benton County between 1/1/2000 and 12/31/2025. The cumulative total of all damages caused by these storms is $4,603,000 in property damages and $15,239,000 in agricultural crop damages. This is an average of $16,094 in property damage and $53,283 in crop damages per storm. The largest

property damage loss was $2,677,000 county-wide on 7/11/2011. The largest reported crop damage was $15,100,000 in the Garrison area on 8/10/2006. Seven injuries are also recorded as having occurred due to these storms.

NCDC records indicate 217 hailstorm events in Benton County from 1/1/2000 to 12/31/2025 causing a reported $2,688,000 in property damages and $99,000 in crop damages. This is an average of $12,387.00 in property damage and $456.22 in crop damages per storm.

The most damaging hailstorm events in Benton County occurred on 5/10/2003 in Urbana when a total of $1 million in damages were reported from 1.75” hail. This same day $500,000 damage occurred in Garrison due to 1.75” hail and $500,000 in damage occurred in Keystone due to 1.75” hail.

FEMA provides a means of measuring vulnerability to hail through its Expected Annual Loss (EAL) factor in its National Riks Index (NRI). The analysis from FEMA’s NRI reveals that EAL from hail for Benton County is $1,173,716.16 as of December 2025. The EAL rating for Benton County for Hail is Relatively Moderate. The annualized frequency of a hail event for Benton County is 4.73.

Damage associated with lightning occurs much less frequently than damage from high winds. Only one damaging lighting event is recorded by the NCDC as having occurred in Benton County. This event took place in Vinton on 8/10/2006 and caused $500 in property damage. A review of neighboring counties revealed that damages in the $10,000 to $20,000 range are common when lightning does not cause a fire and only damages the electrical system of the affected building. However, when a fire does occur, damages are much higher, and records show that the complete loss of one building has occurred multiple times, and in some cases neighboring structures were also damaged.

FEMA provides a means of measuring vulnerability to lightning through its EAL factor in its NRI. The analysis from FEMA’s NRI reveals that EAL from lightning for Benton County is $85,437.06 as of December 2025. The EAL rating for Benton County for Lightning is Very Low. The annualized frequency of a lightning event for Benton County is 44.07.

Grass or Wildland Fire

Wildfires in Iowa are tracked though the NFIRS reporting system maintained by the State of Iowa Fire Marshall’s Office. Due to terrain and vegetation features, wildfires in Iowa generally are not as severe as those experienced in western states, though when dry or windy conditions prevail, wildfires that burn several hundred acres can occur. The major threat of a wildfire is spread to structures as evidenced by a 4/10/2014 wildfire involving crops and wildlands near Vinton that caused structural damages of $200,000.

In Benton County grass and wildfires reported to the State of Iowa Fire Marshall's Office by Benton County fire departments include 60 in 2014 that caused $220,000 in property damage, 24 in 2013 that caused $21,000 in property damage, 93 in 2012 that caused $32,500 in property damage, 66 in 2010 that caused $5,600 in property damage, and 27 in 2009 that caused $1,000 in property damage.
FEMA provides a means of measuring vulnerability to wildfires through its EAL factor in its NRI. The analysis from FEMA's NRI reveals that EAL from wildfires for the majority of Benton County is $33,778.63 and that area has an EAL rating of Relatively Low. This area includes the communities of Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Shellsburg, Urbana, Van Horne, and Vinton, The remaining is an area within the US Census tract in Benton County in the southeast corner of the county that has an EAL of $811.57 and an EAL rating of Very Low. This area includes the communities of Atkins, Newhall, Norway, and Walford.

Severe Winter Storm

The NCDC documents 137 total events listed under winter storm events, blizzard events, cold/windchill events, extreme cold/windchill events, ice storm events, and winter weather events. All of these events total $2,111,000 in property damage. There were no deaths, injuries, or crop damages attributed to these storms. The most damage occurred in an ice storm on February 24, 2007 and the total property damage was $2,100,000. All of these events were recorded as county-wide.

Often power outages and traffic accidents are the two most common problematic events resulting from a severe winter storm event. A disruption of electrical services may not affect an entire community or all of the rural area and may be isolated to areas with aged and inadequate electrical infrastructure that is more vulnerable to the influence of severe winter weather.

Certain populations, the young and old and those with disabilities in particular, are more vulnerable to the effects of cold weather that accompanies severe winter storms.

FEMA provides a means of measuring vulnerability to severe winter storms through its EAL factor in its NRI. The analysis from FEMA's NRI reveals that EAL from severe winter storms for Benton County is $127,993.17. The EAL rating is Relatively Moderate and the annualized frequency is 16.16.

Drought

The monetary values of losses that could be associated with a severe drought are difficult to estimate. Most documented losses are to agricultural corps. The NCDC documents 10 events from 1/1/2000 to 12/31/2025. During that period there were $17,730,000 in agricultural crop damages from these events. The two most damaging

events occurred on 8/1/2003 when there was $14,880,000 in crop damages and on 7/1/2005 when there was $2,850,000 in crop damages.

Drought conditions also bring the possibility of loss of drinking water supply. According to the Iowa DNR, all public water sources in Benton County are groundwater (rather than surface water from a river, or similar). Generally, groundwater sources experience less fluctuation in levels associated with climate than would a surface water source. If a drought were to occur that affected a drinking water source, it would likely be on a well-by-well basis, then escalating into exhaustion of sections of aquifers. The economic impact of a loss of drinking water on a per-day basis is a rate of $150 per person per day as per FEMA guidelines. The following table documents the potential financial impact of loss of water supply per Benton County community.

Table 110: Economic Impact of Loss of Water Services Per Day

Atkins	$ 308,400
Belle Plaine	$ 349,500
Blairstown	$ 106,950
Garrison	$ 51,600
Keystone	$ 89,850
Luzerne	$ 16,800
Mount Auburn	$ 24,300
Newhall	$ 131,400
Norway	$ 69,900
Shellsburg	$ 144,150
Urbana	$ 233,100
Van Horne	$ 116,100
Vinton	$ 740,700
Walford	$ 204,900
Benton County Unincorporated	$1,248,600

In addition to the above populations, numerous homes and properties and commercial businesses in the rural and unincorporated areas have private wells. This is also true of the City of Luzerne and the City of Walford. However, the exact number of private wells could not be determined. An estimate of the number of private wells could be the number of rural residential properties, commercial enterprises, and industrial enterprises in unincorporated Benton County which is 13,245. A loss of drinking water to the unincorporated residents would result in an economic impact of $1,986,750 per day according to FEMA's standard values. It is unlikely however that all of the private wells in Benton County would be affected.

FEMA provides a means for measuring vulnerability to drought through its EAL factor in its NRI. The analysis from FEMA's NRI reveals that EAL from drought for Benton County is $1,840,181.38. This is directly reflective of the EAL Agriculture Value. The EAL rating is Relatively High and the annualized frequency is 15.49.

Tornado/Windstorm

Benton County is located within Wind Zone 4, the highest wind zone in the country. According to NOAA records, Benton County is in an area experiencing 25-30 significant (EF2 or greater) tornadoes per 100-year period, providing an average of 1 event every 4 years.

The NCDC recorded 46 tornado events in Benton County between 1965 through July 2025. These tornadoes caused one death, twenty-two injuries and property losses of $3,956,000. The most devastating tornado was an F4 that occurred on August 8, 1965 in rural Benton County. The tornado caused $2,500,000 in property damages and one death. Tornadoes by type included F0-12, F1-6, F3-3, F4-1, EF0-7, EF1-7, EF2-3, and EFU-7.

Historically, 30-40 tornadoes are confirmed in Iowa per year. Included in these statistics is Benton County, which history has shown will have a tornado touch down somewhere in the county every other year. Based on historical occurrences Benton County will probably experience one tornado every two years.

NCDC records document 378 High Wind, Strong Wind, and Thunderstorm Wind events in Benton County. These events caused an estimated $10,200,000 in property damage and no deaths or injuries. The most devastating event was the July 11, 2011 Derecho Windstorm which had winds of more than 130 miles per hour for 30 minutes. The path of the storm was ten miles wide across the 24 mile width of the county. The most affected communities were Garrison, Vinton, and Urbana. The August 10, 2020 Derecho windstorm that devastated 2/3 of Benton County does not have specific damage amounts listed in the NCDC. It is believed to be the most devastating windstorm event in the history of Benton County and the State of Iowa. According to NCDC, the cost of this storm was extreme, reaching an estimated $7.5 billion along the path of these storms from Iowa through Illinois. An average of two derechos a year occur across the area, one of this intensity is a roughly once-in-a-decade occurrence. Extensive damage was reported throughout Benton County due to these widespread straight-line winds that lasted an hour in total even after the fast moving storm had moved through the area. Reported windspeeds for much of the county were 80 mph with reports of 120 mph or greater in central Benton County. Atkins, Iowa reported the maximum measured unofficial wind gust of 126 mph. NCDC states these reports are estimates based off of damage surveys and photos submitted to social media. The extensive damage included most trees, powerlines, crops, and many structures in the path of these winds. The damage also caused long power outages.

Based on historical averages, Iowa would expect to have about 7-10 wind events each year in which wind speeds exceed 70 knots (80.5 mph). Due to the historical frequency of windstorms in Benton County, there is almost 100 percent certainty that the county will be impacted by a windstorm on the average of once annually.

Those most at risk from tornadoes and windstorms include people living in mobile homes, campgrounds, and other dwellings without secure foundations or basements. People in automobiles are also very vulnerable to tornadoes and windstorms. The US Census Bureau estimates there are 242 occupied mobile home units in the county, with the majority in the unincorporated areas.

The elderly, very young, and those with access and functional needs are the most vulnerable because of their lack of mobility to escape the path of destruction. People who may not understand watches and warnings due to language barriers are also at risk.

People most at risk are also those who do not have access to early warning capabilities such as are available through siren systems, cellular communications, or NOAA weather radios.

FEMA provides a means for measuring vulnerability to tornado through its EAL factor in its NRI. The analysis from FEMA's NRI reveals that EAL from tornado for Benton County is $1,660,386.91. The EAL rating is Relatively Low and the annualized frequency is 0.67. FEMA also has an EAL from strong wind for Benton County that is $1,973,997.41. The EAL rating is relatively high and the annualized frequency is 5.55.

ANALYZING DEVELOPMENT TRENDS

As detailed in FEMA's guidance, hazard mitigation plans should provide a general overview of land uses and types of development occurring within each community participating in the plan. This can include existing land uses and development densities in the identified hazard areas, as well as any anticipated future/proposed land uses, including anticipated new development, and redevelopment, and anticipated annexation areas. This information is recommended for mitigation plans because an analysis of development trends provides a basis for making decisions on the type of mitigation approaches to consider, and the locations where these approaches can be implemented. This information can also be used to influence decisions regarding future development in hazard areas. FEMA suggests consideration of the following areas when analyzing development trends, and where possible, relevant data was presented in the same order for each of the participating jurisdictions in their corresponding section of the Community Profiles section of this plan.

- ✓ Development trends, described both by amount and location of development
- ✓ Differentiation of distinct land uses with unique densities
- ✓ Location of future development
- ✓ Expected growth

Benton County is limited in available resources for analyzing development trends. The county's comprehensive plan, which includes the county's land use plan was adopted in 1986. Minor revisions were made to the land use plan in 1994, but nothing else has

been done to revise or update the plan. Also, Benton County does not have a strategic plan and there has not been any kind of formal analysis conducted concerning growth trends. Hence, resources used in developing this analysis were limited to information from City-data.com, interviews with city and county officials and information provided by the Benton Development Group, which is the county's office for economic development.

Benton County has seen modest population growth since the 1950's, with an average growth per decade of 1.9%. Most recently, according to the US Census, Benton County did have a population decline of 1.4% from 2000-2010, bringing the county's population to 26,076. Another slight population decline of 2% has occurred from 2010-2020. Growth that has occurred in Benton County has been predominantly in the communities and rural areas of the county that are along the eastern side. This is due to the proximity of that part of the county to the metropolitan Cedar Rapids areas, the I-380 corridor, and the expansion of Hwy 30.

SECTION 5

MITIGATION STRATEGY

Hazard Mitigation Plan Goals

In 2011 the Benton County Mitigation Planning Committee set as a priority the development of broad-based goals that would address a multitude of hazards and encompass a variety of mitigation activities. By identifying these goals, the Committee was able to develop mitigation action steps that would work toward the broader goal. The hazard mitigation plan goals identified were as follows:

1. Improve the quality of life for Benton County residents by mitigating potential hazards.
2. Take steps to mitigate the probable negative consequences that may occur in Benton County as a result of natural or human caused/combined disasters.
3. Identify potential funding sources needed to accomplish identified mitigation projects.
4. Protect the health and welfare of Benton County residents and properties in Benton County by enhancing the training and capabilities of all first responder organizations.
5. Developing capacities to return to pre-disaster or improved conditions as soon as possible after disaster occurs.
6. Assist businesses and industries to reduce the impact of hazards in order to ensure economic viability of Benton County.
7. Compliance with NFIP requirements.

Subsequent updates in 2016, 2021, and 2026 have maintained those seven original goals.

Each of the mitigation activities identified in this plan update can be related to at least one of the hazard mitigation plan goals.

MITIGATION STRATEGY OVERVIEW

Benton County hazard mitigation goals are directly connected to the seven hazards determined by the Benton County Hazard Mitigation Planning Committee to be of planning importance to the county. The mitigation measures (activities) listed are arranged into six broad categories.

1. Preventative Measures. Government administrative or regulatory actions or processes are developed and implemented that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Preventive measures are used to keep problems from getting started or getting worse. Mitigation measures that fall into this group include planning and zoning, building codes, conducting technical studies, inspection, enforcement, implementation, hazard analysis risk assessment, security, capital improvement programs, open space preservation, and storm water management regulations. Community participation in the National Flood Insurance Program (NFIP) also protects both individuals and the community as a whole form devastating losses.

2. Property Protection. These are measures that involve the modification of existing buildings or structures to protect them from hazard(s), or removal from the hazard area. They are implemented in order to remove people, property, and businesses permanently out of unsafe areas where, in terms of wise disaster planning, they shouldn't have been in the first place. Property protection measures include acquisition, elevation, relocation, structural retrofits, and security.

3. Public Education and Awareness. These measures help to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. These measures include outreach projects, real estate disclosure, hazard information centers, and school age and adult education programs.

4. Natural Resource Protection. These are actions that, in addition to minimizing hazard losses, also preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor protection and restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

5. Emergency Services. These actions protect people and property during and after a disaster or hazard event in order to minimize its impact and preserve the community's health and safety. Emergency services include warning systems, monitoring systems, response and recovery planning, emergency response services, evacuations, protection of critical facilities, acquisition of equipment to facilitate the delivery of these services, and training for responders in emergency situations.

6. Structural Projects. These projects involve the construction and maintenance of structures to reduce or redirect the impact of a hazard away from at-risk populations and facilities. Such structures include, but are not limited to, dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

MITIGATION MEASURES (Action Steps)

In 2011 Potential mitigation measure for Benton County were developed using a combination of sources as follows:

- Existing community hazard mitigation plans
- The Benton County Strategic Plan maintained by the Benton County Emergency Management Agency
- Consultation and meetings with city and county officials and representatives

The 69 measures that were developed in 2011 were reviewed at planning committee meetings and individual community planning meetings. The consensus of all attendees was to retain all mitigation measures from 2011 in the 2016 Benton County MJHMP revision. For the 2021 update, the 69 measures were refined to the following 22 measures. All jurisdictions were asked to review the measures and determine if there were any measures that they wanted to be included that previously had not been, or if there were measures that were previously included in but they did not want to be a part of in the 2021 update.

The 2025 update followed the same process however in 2024, a new county communications system went live so the previous measure #10 referencing “Improving the Benton County Communications Capabilities” was removed from this update leaving 21 measures.

Action Step 1	Public awareness
Applicable Hazards	All Hazards
Applicable Communities	Belle Plaine, Keystone, Newhall, Van Horne, Vinton and Benton County unincorporated
Analysis	Public awareness of the dangers inherent in a disaster and what they can do to prevent or minimize threats to their personal safety and the integrity of their property from a disaster is one of the keystones of disaster mitigation. Awareness covers a broad spectrum of possibilities. Following are some specific examples cited by Benton County jurisdictions. 1) Maintain and publicize a list of sites that could be used as cooling shelters for public retreats during extreme heat events. The American Red Cross would if requested open cooling shelters to be used by the general public in the event of a severe heat wave or extreme heat event. These locations would act as retreats for individuals throughout the community who do not have personal access to any other cool location. Identification of all facilities that could function as shelters during heat wave or extreme heat events is necessary in order to fulfill this action step. 2) Maintain awareness of pipeline locations and proper locations procedures to use before digging: Many of the pipeline incidents that occur are the result of digging activities that strike an underground pipeline. Preventing such incidents requires an awareness of where pipelines are located and having locations where digging is to occur scanned for any underground pipelines or other hazards that may be present. 3) Improve awareness of animal disease hazard risks. Animal disease poses a substantial risk to any population, the severity of which can vary tremendously. Recent fears about pandemic flu outbreaks such as the Avian Flu have heightened awareness and concern about animal disease outbreaks. The Benton County Department of Public Health will monitor and respond to the outbreak of any disease. Education about any potential animal disease outbreak will be contingent upon circumstances. Once an animal or plant disease is detected and determined to be a threat to the community a proper response must occur in order to reduce risk of sickness and/or death. In order for this response to be effective it is important for several first responder organizations to work cooperatively. This type of response requires coordination not only during a response but also planning for the response in advance of an event. Reporting and monitoring standard operating procedures

	are in place throughout the community, state, and nation. These efforts are deemed crucial towards mitigating the risk of disease.
Timeline	Completion by December 31, 2031
Estimated Cost	Costs will be variable depending upon the particular project and the form of media used. Maximum of $25,000.
Mitigation Measure Category	Prevention
Responsible Party	American Red Cross, Benton County municipal jurisdictions, Benton County EMA
Funding Sources	Benton County Cities, Companies owning and operating underground pipelines in Benton County, Iowa Pipeline Association (IPA), Benton County Public Health, Benton County EMA, USDA
Related Goal	1, 2
Priority	1
Accomplished since 2011	• The City of Urbana has established its Community Center as a cooling center and has publicized its use for that function. • The City of Belle Plaine has established its Community Center as a cooling center and has publicized its use for that function. • There has been a pipeline education class sponsored by the IPA for Benton County Emergency Responders every year since 2011. • The Norway Fire/Rescue Dept. was presented a class on Avian Influenza in 2015. • In 2019 the City of Keystone set up an email list that residents can sign up to be on and receive monthly newsletter and any “emergency” notices via email as soon as possible

Action Step 2	Develop and enhance local emergency operations plans
Applicable Hazards	All Hazards
Applicable Communities	Atkins, Belle Plaine, Garrison, Luzerne, Mount Auburn, Newhall, Norway, Van Horne, Vinton, Walford, and Benton County unincorporated
Analysis	The Benton County Emergency Management Agency has a full scope of Emergency Operations Plans. Some cities in Benton County have rudimentary Emergency Operations Plans while most have nothing at all. Development or enhancement of existing plans is essential in order to provide an organized local response to all disasters and to provide the guidelines necessary for incident and resource management in disaster and emergency situations that may influence any city in Benton County. Priority items for planning include but are not limited to: • Develop and enhance local emergency operations plans • Develop plans to address utility outages and emergencies • Continuity of Government/Continuity of Operations Planning • Develop city evacuation plans • Develop plans for public health emergencies and pandemics • Develop written flood plans
Timeline	Completion by December 2031
Estimated Cost	Up to $15,000 per plan for contract planner
Mitigation Measure Category	Emergency Services
Responsible Party	The City councils and emergency response entities of individual Benton County communities; Benton County EMA
Funding Sources	City councils of Benton County Municipalities
Related Goal	1, 2, 4
Priority	1
Accomplished since 2011	• In 2015 the City of Atkins began the process of developing an emergency operations plan • In 2015 the City of Norway began working with Benton County Emergency Management to enhance current plans.

Action Step 3	Establish community emergency response teams (CERT)
Applicable Hazards	All Hazards
Applicable Communities	Luzerne and Benton County unincorporated
Analysis	The Community Emergency Response Team (CERT) Program educates people about disaster preparedness for hazards that may impact their area and trains them in basic disaster response skills, such as fire safety, light search and rescue, team organization, and disaster medical operations. Using the training learned in the classroom and during exercises, CERT members can assist others in their neighborhood or workplace following an event when professional responders are not immediately available to help. CERT members also are encouraged to support emergency response agencies by taking a more active role in emergency preparedness projects in their community. Currently none of the Benton County Communities have established CERT teams. Establishing CERT teams in every community in Benton County is integral to successful disaster and emergency management.
Timeline	Implementation by May 2031
Estimated Cost	$5,000 per community
Mitigation Measure Category	Emergency Services
Responsible Party	Benton County EMA, City Councils, Emergency Services and citizens of Benton County Communities
Funding Sources	The Dept. of Homeland Security has grant funds available to establish CERT Teams.
Related Goal	2, 3, 4, 5, 6
Priority	2
Accomplished since 2011	No community in Benton County has established a CERT Team, though several have expressed an interest in establishing and training the teams.

Action Step 4	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property from these hazards.
Applicable Hazards	All Hazards
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Norway, Shellsburg, Urbana, Van Horne, Walford, and Benton County unincorporated
Analysis	There are many measures that can be taken to prepare citizens for disaster and sustaining themselves for a prolonged period of time. Crucial to preparing citizens for disasters is education and awareness. Several publications to distribute to citizens and public announcements for news media have been produced by such entities as FEMA and the American Red Cross that describe the hazards and what people can do to prepare themselves for disaster. Placing copies of this information in the hands of Benton County residents and news media and encouraging them to take the necessary steps to prepare themselves is a critical step in disaster preparedness for Benton County. Social media is also a growing platform to use for informing the public about hazards and their risks.
Timeline	Education on this topic is an ongoing process that will continue past May 2031.
Estimated Cost	The cost of this project can vary substantially based on what type of educational effort is made. For purposes of this plan, the cost estimate will assume that the county and individual communities of the county will contact every household by mail. According to 2020 Census estimates there are 26,076 residents living in 10,377 households in Benton County. Assuming $1.00 cost per household (copies, postage and handling) it would cost the county and/or its individual communities $25,000 annually for the educational effort. Use of social media could cost nothing other than the time it takes someone to post the information.
Mitigation Measure Category	Public Awareness and Education
Responsible Party	The City councils and emergency response entities of individual Benton County communities; Benton County EMA, Benton County, American Red Cross, FEMA
Funding Sources	Individual Benton County communities; Benton County EMA, Benton County, American Red Cross, FEMA
Related Goal	1, 2, 5
Priority	1
Accomplished since 2011	• This is an ongoing mitigation activity. Since 2011 the Benton County EMA and local media have posted information concerning hazard risks and what Benton County residents can do to safeguard themselves from disasters and their

	impacts. The City of Atkins is also undertaking some efforts on its own to improve public awareness of hazard risks. • The Norway Fire Department conducts an October Safety day at schools and daycare, plus promotes information on ALICE training, Elderly cooking hazards, CO Poisoning, Flooding and disaster preparation annually • The Keystone Nursing Care Center is educated yearly by Benton EMA Coordinator on Weather, Fire and Emergency procedures

Action Step 5	Emergency/disaster response training and exercises for emergency responders and key county and community leaders
Applicable Hazards	All Hazards
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Mount Auburn, Newhall, Shellsburg, Urbana, Van Horne, Vinton and Benton County unincorporated
Analysis	Critical to effective response operations at a disaster or emergency incident is the training and knowledge of emergency responders, governing body officials, and others with expertise who have the potential of becoming involved. This training covers many aspects, including NIMS and strategic and tactical considerations. In Benton County a great deal of effort has already been expended in this area, but there is more to be done, particularly with training new people who come into the system, continuing NIMS compliance requirements and the evolution of new equipment and guidance for response to disaster and emergency incidents of any magnitude and any potential hazard.
Timeline	Education on this topic is an ongoing process that will continue past May 2031.
Estimated Cost	Much of the training can be obtained for free. Depending upon the complexity and time commitment of the educational opportunity, some can cost up to $5,000 or more per session.
Mitigation Measure Category	Emergency Services
Responsible Party	The City councils and emergency response entities of individual Benton County communities; Benton County EMA, Benton County,
Funding Sources	Individual Benton County communities; Benton County EMA, Benton County, FEMA
Related Goal	1, 2, 4
Priority	1
Accomplished since 2011	• **T**his is an ongoing mitigation activity. The Benton County EMA annually provides training to governing body officials, emergency responders and the general public about disaster management, Benton County EMA and disaster preparedness. The EMA and NWS service also provides severe weather spotter training annually that is attended by representatives of the county's emergency services as well as members of the general public. • In 2014 representatives from the Norway Fire and Rescue Department and Blairstown Fire Department attended Bakken Crude Oil railcar disaster training in Pueblo, Colorado

Action Step 6	Maintain and support Community and County Public Safety and Emergency Service Departments
Applicable Hazards	All Hazards
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, Walford, and Benton County unincorporated
Analysis	It is incumbent that the emergency response services of Benton County maintain adequate rosters of properly trained and equipped personnel in order to respond to disaster and emergencies anywhere in Benton County. Every disaster or emergency situation that can occur in Benton County has the potential for property loss, personal injury, multiple casualties and increased injuries and losses if consequences of the disaster are unabated. Benton County law enforcement, fire and EMS departments are the county's first line of defense and first responders to any disaster situation. These services require adequate personnel, training, PPE, equipment, communications capabilities, vehicles and apparatus and facilities and stations in order to fulfill their missions. In many instances local resources cannot provide adequate funding for these needs and outside assistance is needed.
Timeline	This is an ongoing need that will continue past 2031
Estimated Cost	This is project dependent and can range from $0 for some training opportunities up through several million dollars for a new fire or emergency services station.
Mitigation Measure Category	Emergency Services
Responsible Party	Emergency service providers of Benton County.
Funding Sources	Community and County emergency service providers; County, State, Federal and private grant sources
Related Goal	1, 2, 4
Priority	1
Accomplished since 2011	• In 2011 the Garrison Fire Dept purchased all new PPE for every member of the department • Since 2011 the Urbana Fire Dept. has provided new PPE for all of its firefighters • Since 2011 the Urbana Police Dept. has provided new PPE for all of its officers • The Atkins FD has purchased new PPE for some of its members every year since 2011 • The Vinton Fire Dept. replaced PPE for half of the department's firefighters in 2013 • In 2013 the Atkins Fire Department placed a new first responder unit in service • In 2015 The Belle Plaine Ambulance Service initiated an effort to purchase a new ambulance

	• The Norway Fire/Rescue Department purchase a new Ambulance/First Responder unit in 2014 • In 2011 the Garrison Fire Protection Agency constructed a new Emergency Services Building • The Vinton Fire Department purchased a new Engine in 2014 • The Belle Plaine Fire Department purchased a new Engine in 2015 • The Norway Fire Department purchased a new Engine in 2011 • City of Keystone purchased a new first responder vehicle in 2019 • In 2019 the City of Belle Plaine purchased a new brush truck and a used 1995 Freightliner pumper for the fire department. • Since 2016 the City of Belle Plaine has purchased 3 police vehicles. • Since 2021 the City of Belle Plain has acquired new SCBAs for the Fire Department and ordered an updated fire truck.

Action Step 7	Obtain equipment to help mitigate effects of a disaster
Applicable Hazards	All Hazards
Applicable Communities	Luzerne, Shellsburg, and Benton County unincorporated
Analysis	The effects of some disasters can be mitigated with proper equipment. One such item is Standby (trash) pumps that are needed by municipalities in order to deal with flooded basements, sanitary and storm sewer systems and flood prone areas of the respective jurisdictions. Some communities of the county have trash pump capabilities that are inadequate. In some cities this mitigation capability is non-existent. Another item is snow removal equipment. Maintaining clear streets during winter driving conditions is vital to maintaining clear routes of travel for emergency equipment and safe travel for city residents. Cities of Benton County and the Benton County Secondary Roads Department have snow removal equipment, but there are inadequacies in some cities and at the county level that jeopardize removal of snow, a wintertime safety measure. Other potential equipment needs are sandbagging machines, portable flood walls such as Hesco barriers
Timeline	Ongoing
Estimated Cost	$5,000 to $100,000 depending upon the item sought.
Mitigation Measure Category	Prevention
Responsible Party	Benton County communities and their respective public works departments, Benton County Board of Supervisors.
Funding Sources	Local communities, FEMA Hazard Mitigation Project Grant
Related Goal	1, 2, 5
Priority	2
Accomplished since 2011	In 2014 the City of Garrison purchased a trash pump capable of handling the city’s sanitary sewage system

Action Step 8	Encourage citizen disaster preparedness
Applicable Hazards	All Hazards
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Luzerne, Mount Auburn, Norway, Shellsburg, Urbana, Vinton, Walford, and Benton County unincorporated
Analysis	Having citizens that are well prepared for a disaster could help to speed recovery after a disaster event occurs and may provide some peace of mind prior to and during an event. Some things that can be done to help citizens prepare themselves for a disaster include but are not limited to: Encourage residents to have Disaster Supply Kits on hand to be used in the event of a disaster event Promote NOAA weather radio use and encourage purchase of NOAA weather radios by vulnerable populations Promote use of disaster alerts and notifications via electronic media and devices Establish Good Neighbor programs for winter storms.
Timeline	This is an ongoing mitigation effort that will continue until past 2031.
Estimated Cost	$100-$5,000 per household depending on the quality and quantity of items purchased or stored.
Mitigation Measure Category	Prevention
Responsible Party	The City councils and emergency response entities of individual Benton County communities; Benton County EMA, Private citizens
Funding Sources	Individual citizens and households of Benton County
Related Goal	1, 2, 5
Priority	2
Accomplished since 2011	• Informational classes on citizen disaster preparedness were provided to the Benton County Disaster Recovery Coalition by the Benton County EMA in 2014. There has not been an organized effort to promote assembling Disaster Supply Kits, though individuals in the county have undertaken such efforts on their own. • The Norway Fire and Rescue Department provides information to • residents about the kits each October and spring annually • Since 2016 the Benton County EMA and Benton County Disaster

	• Recovery coalition present information about disaster supply kits at the Benton County-county-wide health fair sponsored by Virginia Gay Hospital. • Since 2015 over 1,000 backpacks with initial supplies for a disaster kit have been given away to Benton County citizens.

Action Step 9	Maintain electronic resource directory of local resources
Applicable Hazards	All Hazards
Applicable Communities	Walford and Benton County unincorporated
Analysis	In order to effectively manage any disaster or emergency situation, municipal and emergency management officials need to know what resources are available and where they can obtain the necessary resources for management of the situation. An electronic resource directory with lists of contact information for implementing the response of necessary resources is necessary in order to accomplish this objective. In 2009 the Benton County EMA was able to have such a resource directory developed with the use of DHS funds. It is now necessary to revise the directory annually in order to maintain accuracy.
Timeline	This is an ongoing mitigation activity that will continue past May 2031.
Estimated Cost	This is a job function of Benton County EMA Coordinator or designee
Mitigation Measure Category	Emergency Services
Responsible Party	Benton County EMA
Funding Sources	Benton County EMA
Related Goal	1, 2, 4
Priority	1
Accomplished since 2011	• The Benton County EMA Coordinator updates the directory as resources change • The Norway Fire and Rescue Department maintains a list of available resources that is updated annually

Action Step 10	Install back-up power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages
Applicable Hazards	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Keystone, Mount Auburn, Newhall, Shellsburg, Van Horne, Walford, and Benton County unincorporated
Analysis	Emergency back-up electrical power generators are essential for keeping critical facilities and infrastructure operational during prolonged power outage situations. Facilities where generators are necessary include but are not limited to: public works facilities, city halls, municipal wells, water and wastewater treatment facilities, lift stations, emergency services buildings, emergency shelters; park, camp and recreational facilities. In Benton County only a small percentage of these facilities have generators.
Timeline	Installation by May 2031
Estimated Cost	Up to $75,000 per generator
Mitigation Measure Category	Prevention
Responsible Party	The city councils and emergency response entities of individual Benton County communities; Benton County
Funding Sources	Local communities, FEMA Hazard Mitigation Project Grants
Related Goal	1, 2, 4
Priority	2
Accomplished since 2011	• In 2011 the City of Garrison and Garrison Fire Department installed a generator that will operate its Emergency Services Building, City Well and Water Treatment Plant • In 2014 the City of Mt. Auburn installed a generator that will operate its City Well and Water Treatment Plant • In 2012 the City of Urbana installed a generator that will operate its City Hall, Community Center and Emergency Services Building • In 2013 and 2104 the City of Blairstown installed a 4 generators, one each at the Water Treatment Plant, Wastewater Treatment Plant, Fire Station and Ambulance Garage • In 2013 the City of Belle Plaine installed a generator at the Belle Plaine Community Center which functions as an emergency shelter • A generator was retrofitted to run critical station functions at the Norway Fire/Rescue station in 2011 • Keystone Communications in 2012 installed a backup power generator to operate its phone and internet services during power outages

	• Since 2011 the Keystone Nursing and Care Center has added a second backup power generator • In 2011 the Van Horne Fire Department installed a backup power generator at the Van Horne Emergency Services Building • In 2018 the City of Norway installed a back-up power generator at its wastewater treatment facility • Since 2021 the City of Belle Plaine has acquired a backup generator for their Community Center and Fire Department.

Action Step 11	Develop Community Emergency Shelters
Applicable Hazards	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards
Applicable Communities	Atkins, Blairstown, Mount Auburn, Newhall, Norway, Shellsburg, Urbana, Van Horne, Walford, and Benton County unincorporated
Analysis	In 2009 the Benton County EMA, working with a consultant, undertook the project of identifying Community Emergency Shelters for every city of Benton County and developing policies and procedures for activating, operating and demobilizing these shelters. Every community participated in the process and has its own plan for shelter operations. The designation of such facilities is necessary in order to provide for the health, safety and sustenance needs of people displaced by disasters or suffering from such incidents as extreme heat, severe winter weather or energy disruption situations. Most of the shelters are not equipped with emergency power generators. The shelters are also without supplies and provisions. Equipping the shelters with emergency electrical power generators and stocking the shelters with provisions for feeding and other human needs is the next step in completing preparation of the shelters.
Timeline	As funding becomes available from each entity designated as a primary shelter, or as funding becomes available through grants or other sources up through May 2031.
Estimated Cost	This will be determined by the specific shelter. Costs could be as high as $100,000 per shelter, particularly for those in need of a generator.
Mitigation Measure Category	Prevention
Responsible Party	The city councils of individual Benton County communities; Benton County, Benton County EMA, American Red Cross
Funding Sources	Local communities, FEMA Hazard Mitigation Project Grants
Related Goal	1, 2, 5, 6
Priority	2
Accomplished since 2011	• In 2011 the City of Garrison designated the Garrison Emergency Services Building as the city's emergency shelter. The shelter has an emergency electrical power generator • In 2014 the Benton County Health Department provided six emergency cots plus bedding to very community in the county. • The City of Walford has designated its Community Center as an emergency shelter • In 2013 the Benton County Emergency Management Agency and Benton County Health Department provided a cart with provisions to shelter 25 people to the Belle Plaine Community Center • The Norway Fire Station was designated as a community shelter in 2012

	• The Van Horne Emergency Services Building was designated as a community shelter in 2011

Action Step 12	Improve outdoor warning siren system
Applicable Hazards	Tornado/Windstorm, Infrastructure Failure, Thunderstorm/Lightning/Hail, Structural Fire, Grass and Wildland Fire
Applicable Communities	Luzerne, Mt. Auburn, and Benton County unincorporated
Analysis	Vulnerability to natural and manmade hazards can affect a variety of resident and transient populations in Benton County. Having the capability to avert personal harm and damage to property in the event of a natural or man-made disaster relies upon early warning capabilities. Establishing alert systems to address this need requires an audio capable siren warning system with a battery backup so the siren system remains functional during electrical power outages. Some cities of Benton County are in need of updating their siren warning system to have this capability. Additionally, this capability is needed in Benton County parks and rural areas.
Timeline	Installation or improvements by May 2031.
Estimated Cost	Costs per siren warning system is estimated at $25,000 maximum.
Mitigation Measure Category	Emergency Services
Responsible Party	The city councils and emergency response entities of individual Benton County communities; Benton County
Funding Sources	Local communities, FEMA Hazard Mitigation Project Grants
Related Goal	1, 2, 3, 4
Priority	2
Accomplished since 2011	• In 2011 the City of Garrison installed a new siren warning system • In 2014 the Cedar/M. Auburn Fire Department installed a new siren warning system for the City of Mt. Auburn • Since 2005 the City of Walford has updated its entire system of outdoor warning sirens • In 2015 the City of Belle Plaine upgraded the city's entire siren warning system • The City of Norway repaired its siren warning system in 2013 and 2014 • The City of Newhall installed a new siren warning system in 2019

Action Step 13	Construct public tornado safe rooms at vulnerable points
Applicable Hazards	Tornado/Windstorm, Thunderstorm/Lightning/Hail
Applicable Communities	Newhall, Norway, and Benton County unincorporated
Analysis	Users of parks and recreational areas are out in the open and could find themselves exposed to severe weather conditions, most notably the effects of a tornado or windstorm. Places of mass assembly or congregate living such as schools, daycare centers and senior citizen centers also present an area of vulnerability. Another area of vulnerability is mobile home parks and areas with homes that do not have basements. In Benton County there are a number of areas that have such exposures. The only resolution that protects the health and welfare of park and recreational area users from extreme weather is construction of a storm shelter. The shelter can be used as multi-purpose structures that can be used for more than just a severe weather retreat. There are occasionally funding opportunities for such a project through the Federal Emergency Management Agency. In order to be eligible for these funds, the proposed structure must meet certain design standards established by FEMA, must be readily accessible to the general public, and must be maintained. Benton County Schools Mitigation Measures are detailed in Appendix B.
Timeline	The likelihood of accomplishing this goal hinges on the ability to secure outside funding assistance. No date for completion has been established for completion of such a project in any community.
Estimated Cost	$300 per square foot
Mitigation Measure Category	Property protection
Responsible Party	City councils of Atkins, Keystone, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, Walford, Benton County EMA, Benton County, FEMA
Funding Sources	Benton County Cities, FEMA Hazard Mitigation Project Grant
Related Goal	1, 2, 3
Priority	2
Accomplished since 2011	In 2012 the City of Urbana installed a generator that allowed its City Hall to be designated as a safe room

Action Step 14	Encourage construction of tornado safe rooms
Applicable Hazards	Tornado/Windstorm, Thunderstorm/Lightning/Hail
Applicable Communities	Atkins, Van Horne, Vinton, and Benton County unincorporated
Analysis	The construction of tornado safe rooms in private residences, businesses, schools, municipal and government facilities and recreational areas in Benton County would likely be an educational process. The County EMA would work with private property and business owners, day care and senior citizen centers, municipal and school district officials to help them identify resources to help them successfully design and complete the construction of a safe room. Tornado safe rooms are, like tornado shelters are intended to provide a place of retreat for those individuals in a structure. The rooms are constructed to withstand very severe tornadic winds. Private property owners, business owners, municipal and school district officials of Benton County are encouraged to consider incorporating safe room into any new construction and considering retrofits into existing construction. Benton County Schools Mitigation Measures are detailed in Appendix D, Page 685.
Timeline	There is no timeline established for this particular action step. Accomplishment of this step will be contingent upon securing the necessary funding through personal or corporate finance or grant sources up through May 2031
Estimated Cost	The cost of this project can vary substantially based on what type of educational effort is made. For purposes of this plan, the cost estimate will assume that the County will contact every household by mail or local access television. Estimates for this component are $15,000 for the entire county. Construction costs for a tornado safe room are estimated at $250 per square foot.
Mitigation Measure Category	Public Awareness and Education
Responsible Party	Private property owners of Benton County, business owners of Benton County, municipal and school district officials of Benton County, Benton County Conservation, Benton County EMA, FEMA, Communities of Atkins, Keystone, Newhall, Norway, Shellsburg, Urbana, Van Horne, Walford, Benton County unincorporated
Funding Sources	Private property and business owners, School Districts, Municipal governments of Atkins, Keystone, Newhall, Norway, Shellsburg, Urbana, Van Horne, Walford, Benton County unincorporated; FEMA Hazard Mitigation Project Grant
Related Goal	1, 2
Priority	1

Accomplished since 2011	• There has not been any Tornado Safe Rooms constructed in Benton County since 2011. • The new Benton County EOC which opened in 2011 is a FEMA P=361 rated Tornado Safe Room

Action Step 15	Flash Flood and River Flood preparation
Applicable Hazards	Flash Flood, River Flood
Applicable Communities	Vinton, Walford, and Benton County Unincorporated
Analysis	Adequate preparation for flash flooding or river flooding requires a broad range of activities including but not limited to everything from training and education through having staged resources such as sandbags and Hesco barriers. Within this scope of activities, the following are some specific actions: 1) Sandbags and sandbagging equipment: A supply of at least 20,000 sandbags strategically positioned around the county along with the necessary sandbag filling equipment readily available is necessary in order to prevent flood damage in those cities and areas of Benton County that experience river and flash flooding problems. Cities of the county that are most prone to flooding in the county include Blairstown, Newhall, Norway, Shellsburg, Vinton, Benton County Unincorporated. Also necessary is a stockpile of 500 tons of sand for filling at least 20,000 sandbags. 2) Floodplain Manager Training: Cities of Benton County and Benton County have designated floodplain managers. None of them have had formal training in this capacity. Formal training is necessary in order for the Floodplain manager to fully understand all of the regulations and intricacies of floodplain management. 3) Compliance with National Flood Insurance Program (NFIP) regulations: All municipal jurisdictions are required to address NFIP requirements. Membership in the National Flood Insurance Program is necessary to enable property owners to purchase flood insurance. Membership carries the responsibility for cities and the county to have and enforce a local floodplain ordinance. 4) Acquisition of portable flood barriers such as Hesco Barriers. In many situations, use of portable flood barriers is financially more feasible than permanent solutions such as dikes and property buyouts. In those situations, rapid deployment of portable flood barriers is a necessity in preventing flood damage. 5) Movement of critical infrastructure out of flood plain areas. This is particularly applicable in the City of Vinton where the Fire Station, Electrical Generation Plant, North Benton Ambulance, Police Department headquarters and Vinton City Hall are located within the flood plain.
Timeline	Ongoing mitigation effort that will continue beyond May 2031.

Estimated Cost	Variable, from $0 for NFIP compliance up to over $100,000 for Hesco barriers
Mitigation Measure Category	Prevention
Responsible Party	Public works departments of Atkins, Blairstown, Newhall, Norway, Shellsburg, Urbana, Vinton, Benton County, Benton County Secondary Roads, Benton County EMA.
Funding Sources	Cities of Atkins, Blairstown, Keystone, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton; Walford, and Benton County Unincorporated
Related Goal	1, 2, 6, 7
Priority	2
Accomplished since 2011	• In 2014 the City of Blairstown established a supply of sandbags and sand • Since 2012 the City of Norway has maintained a readily available supply of sandbags and sand • Since 2011 the City of Shellsburg has maintained a readily available supply of sandbags and sand • Since 2011 the City of Vinton has purchased Hesco barriers to protect a critical area of the city within the floodplain. The barriers have been deployed three times • All Benton County communities are in compliance with flood manager training

Action Step 16	Flood proofing private property and public infrastructure
Applicable Hazards	Flash Flood, River Flood
Applicable Communities	Urbana, Walford, and Benton County unincorporated
Analysis	1) Continue to identify, purchase, and remove structures, critical assets and populations in danger of being flooded. The only sure method of totally eliminating a structure from the threat of damage by flooding is to totally remove the structure from the floodplain. The FEMA Flood Buy Out program is one method of accomplishing this mission. Under the auspices of the program, the U.S. government purchases the property and residents relocate to a safe location out of the flood plain. The City of Vinton and Benton County have been progressive in identifying structures that are in the floodplain that are good candidates for removal because of repetitive loss problems due to flooding. Following the floods of June, 2008, 31 residential structures in the City of Vinton qualified for FEMA flood buyout funding. 2) Elevate structures above flood plain level. According to information provided by the Benton County Assessor and GIS department in 2016 there were an estimated 1,477 structures in Benton County that lie within floodplains or flood prone areas of the county. One strategy for alleviating or minimizing the impact of flooding on any of these structures is to raise the structure above the flood plain level. 3) Continue to evaluate critical public utilities (i.e. lift stations, wells, etc.) for ways they can be further flood proofed. Protecting infrastructure and critical public utilities from floodwaters can require several remedies including but not limited to erection of berms, construction of floodwalls, installation of generators and trash pumps, even relocation of a facility. Some engineering studies have been undertaken in Benton County to determine what can be done to protect some facilities and infrastructure such as the City of Vinton Electrical Utility plant which would require construction of a floodwall estimated at costing $12 million. 4) Raise road grades to eliminate backup flooding damage. Some roads in Benton County become impassable due to river and flash flooding situations when they occur. Such a situation is an impediment to traffic flow in the county. In some instances, the resolution to this problem lies in raising the road above the level of the 100 or 500 year flood plain.

	5) Infrastructure development and landscaping to alleviate surface water problems and flash flooding. Some areas of Benton County incur flash flooding issues due to lack of appropriate infrastructure and unfavorable terrain.
Timeline	This is an ongoing mitigation effort. As funding becomes available through FEMA, grants or property owner investment through May 2031
Estimated Cost	Unknown. Costs are subject to approval for funding and values of the individual structures and magnitude of the particular project.
Mitigation Measure Category	Prevention, Property Protection
Responsible Party	City of Newhall, Norway, Urbana, Vinton, Benton County, FEMA
Funding Sources	Private funds, Benton County cities, CDBG Grant, FEMA Hazard Mitigation Project Grants
Related Goal	1, 2, 3, 5, 6, 7
Priority	2
Accomplished since 2011	In 2011 the Benton County Sheriff Office and Benton County EMA moved into a new facility that was constructed with a ground floor level one foot above the 500 year flood level There were two property buyouts in the City of Vinton following the floods of 2016

Action Step 17	Continue HAZMAT agreements and support regional HAZMAT teams
Applicable Hazards	Other Hazards
Applicable Communities	Belle Plaine, Garrison, Norway, Urbana, Van Horne, Vinton and Benton County unincorporated
Analysis	Benton County maintains a 28E agreement with the Linn County Hazardous Material Response Team for hazmat response assistance anywhere in Benton County. It is incumbent that the agreement be maintained.
Timeline	Indefinite, the agreement will continue past May 2021 and can be discontinued only upon the agreement of both parties, Benton County and the Linn County HazMat. Team.
Estimated Cost	$4,500 annually from Benton County, $1,500 annually from grants
Mitigation Measure Category	Emergency Services
Responsible Party	Benton County Board of Supervisors
Funding Sources	Benton County, FEMA
Related Goal	1, 2, 5
Priority	1
Accomplished since 2011	Benton County has maintained the agreement with the Linn County Hazardous Materials Response Team as agreed by contract.

Action Step 18	Improve safety at rail crossings
Applicable Hazards	Other Hazards
Applicable Communities	Belle Plaine, Blairstown, Luzerne, Mt Auburn, Norway, Shellsburg, Vinton, and Benton County unincorporated
Analysis	Benton County has three railroads. Nearly 100 trains per day travel 24 miles of track through the cities of Belle Plaine, Blairstown and Norway on a busy double rail line operated by the Union Pacific Railroad. The Iowa Northern Railroad passes two trains daily over 25 miles of track through Mt. Auburn, Vinton and Shellsburg. Two miles of track operated by the Cedar Rapids—Iowa City Railroad pass through Walford in the southeast corner of the county. Every intersection of these rail lines with county and city roads requires annual maintenance. Individual communities and Benton County Secondary Roads have identified crossings that require additional improvements and safety enhancements which can include the installation of signals and cross arms.
Timeline	Ongoing through May 2031
Estimated Cost	$1,000 annually per crossing for maintenance. Up to $150,000 per crossing for upgrading including installation of signals and cross arms.
Mitigation Measure Category	Prevention
Responsible Party	Cities of Belle Plaine, Blairstown, Luzerne, Mt. Auburn, Norway, Shellsburg, Vinton, Benton County unincorporated, Iowa Northern Railroad, Iowa City Railroad, Union Pacific Railroad
Funding Sources	Cities of Belle Plaine, Blairstown, Luzerne, Mt. Auburn, Norway, Shellsburg, Vinton, Benton County unincorporated, Iowa Northern Railroad, Iowa City Railroad, Union Pacific Railroad
Related Goal	1, 2, 3
Priority	1
Accomplished since 2011	There have not been any railroad crossings that have been improved or upgraded since 2011. They have all, however, been adequately maintained

Action Step 19	Planning and medical equipment to support human disease and pandemic response
Applicable Hazards	Other Hazards--Human Disease Pandemic
Applicable Communities	Garrison, Keystone, Newhall, Urbana, Van Horne, and Benton County unincorporated
Analysis	The 2020 COVID-19 Pandemic created financial, medical equipment, PPE and personnel needs challenges for Benton County municipalities, Benton County government, the county's emergency services, the county's school systems and the county's medical facilities. Successfully meeting the challenges of this pandemic disaster and any future pandemics may require resources beyond the county's current capabilities. These resources may include but are not limited to development of pandemic prevention and response plans, PPE needs, medical equipment needs, emergency services responder and health care provider needs.
Timeline	This is an ongoing need that will continue past 2031
Estimated Cost	This is project dependent and can range from $0 for some training opportunities up through several million dollars for new health care facilities.
Mitigation Measure Category	Emergency Services
Responsible Party	Emergency service providers of Benton County.
Funding Sources	Community and County government, county health care providers, emergency service providers; County, State, Federal and private grant sources
Related Goal	1, 2, 4
Priority	1
Accomplished since 2011	In 2020 the City of Belle Plaine purchased PPE for Covid-19 and sanitizer for cleaning city hall and police vehicles. The city also purchased Plexiglass for the window at city hall and the desk at the library, UV lights for the four furnaces in city hall that sanitize the air four times per hour and Chrome Books so that city council meetings could be conducted remotely if needed. Benton County Public Health and EMA developed a reserve supply of PPE in 2020. All medical facilities, schools, nursing homes and extended care facilities in Benton County and Benton County government buildings implemented COVID-19 control policies and procedures in 2020.

Action Step 20	Continue to cooperate with local medical facilities and Health Department officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents
Applicable Hazards	Other Hazards
Applicable Communities	Benton County unincorporated
Analysis	Once an animal or plant disease is detected and determined to be a threat to the community a proper response must occur in order to reduce risk of sickness and/or death. In order for this response to be effective it is important for several first responder organizations to work cooperatively. This type of response requires coordination not only during a response, but also planning for the response in advance of an event. Reporting and monitoring standard operating procedures are in place throughout the community, state, and nation. These efforts and the cooperation it takes to make them effective are deemed crucial toward mitigating the risk of disease.
Timeline	This is an ongoing process, led by the Benton County Public Health Department through May 2031
Estimated Cost	N/A—ongoing process
Mitigation Measure Category	Prevention
Responsible Party	Benton County Public Health Department, Virginia Gay Hospital in Vinton
Funding Sources	Benton County Public Health Department, USDA
Related Goal	1, 2
Priority	1
Accomplished since 2011	No known activity

Action Step 21	Compliance with National Flood Insurance Program (NFIP) regulations
Applicable Hazards	Flash Flood, River Flood
Applicable Communities	Atkins, Belle Plaine, Blairstown, Garrison, Newhall, Norway, Shellsburg, Urbana, Van Horne, Vinton, Walford, and Benton County unincorporated
Analysis	Participating municipal jurisdictions are required to address NFIP requirements. Membership in the National Flood Insurance Program is necessary to enable property owners to purchase flood insurance. Membership carries the responsibility for cities and the county to have and enforce a local floodplain ordinance.
Timeline	Continued compliance through May 2031
Estimated Cost	No cost
Mitigation Measure Category	Prevention
Responsible Party	City councils of Benton County's 12 cities, Benton County Board of Supervisors
Funding Sources	No funding necessary
Related Goal	1, 2, 7
Priority	1
Accomplished since 2011	All participating 5, Benton County communities are in compliance

ANALYSIS OF MITIGATION ACTIVITIES—STAPLEE CRITERIA

The Benton County Hazard Mitigation Planning Committee used the STAPLEE evaluation criteria (Social, Technical, Administrative, Political, Legal, Economic and Environmental) in narrowing the list of potential mitigation measures to the future hazard mitigation activities accepted by the committee. The Committee identified a timeline for each activity, identified the responsible party or parties for each activity and finally related each activity to at least one of the five Hazard Mitigation Plan Goals. Each activity was also categorized with a ranking of 1, 2 or 3 according to the criteria described on page 476.

Below is a summary of the STAPLEE evaluation criteria applied to each mitigation activity: Each of the evaluation criteria was given a ranking of +3, +2, +1, 0, -1, -2, -3 with +3 being the most positive impact, 0 being no impact and -3 being the most negative impact.

Social

Evaluates public support of the overall implementation strategy and specific mitigation actions. Factors the Committee considered were:

- Will the action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods or cause the relocation of lower income people?
- Is the action compatible with present and future community values?

Technical

Evaluates the technical feasibility of the proposed action. Factors the Committee considered were:

- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem?

Administrative

Evaluates the community's staffing, funding, and maintenance capabilities. Factors the Committee considered were:

- Does the community have the staff, technical experts, and/or funding to implement the action?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political.

Evaluates the political acceptability of the action. Factors the Committee considered were:

- Is there political support to implement and maintain the action?
- Have political leaders participated in the planning process?
- Have all stakeholders been provided with an opportunity to participate in the planning process?

Legal

Evaluates the community's legal authority to implement the action. Factors the Committee considered were:

- Does the city have authority to implement the action?
- Are the proper laws, ordinances and resolution in place to implement the action?

NOTE: The City has the legal authority to implement all alternatives selected for consideration.

Economical

Evaluates economic feasibility and cost-effectiveness of the action. Factors the Committee considered were:

- Are there current sources of funds to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement the action?
- Does the action contribute to other community economic goals?
- What proposed actions should be considered but be "tabled" for implementation until outside sources of funding are available?

Environmental

Evaluates the impact on the environment. Factors the Committee considered were:

- How will the action affect the environment (land, water, endangered species)?
- Will the action comply with local, state, and federal environmental laws or regulations?

CATEGORIZING MITIGATION MEAURES

Following is the criteria applied to categorizing the mitigation activities.

1: Those mitigation activities that are ongoing in the community and need to be sustained. Those activities that would have the largest and most immediate mitigation impact on threats to the lives of Benton County residents and property in Benton County. Mitigation activities Benton County can undertake with the resources the city has available. Mitigation activities that are required in order to satisfy regulation or compliancy issues.

2: Those mitigation activities that are beyond the resources of Benton County and are only achievable with an infusion of resources such as a grant.

3: Those mitigation activities that are of the lowest impact. Mitigation activities that address hazards that are the remotest nature in their possibility of occurrence.

BENTON COUNTY MITIGATION MEASURES STAPLEE CRITERIA APPLICATION	Social	Technical	Administrative	Political	Legal	Economical	Environmental	TOTAL VALUE
Public awareness	+3	+1	+1	+3	+2	-1	0	+9
Develop and enhance local emergency operations plan	+2	+1	+1	+1	+1	+1	+1	+8
Establish community emergency response teams (CERT)	+3	0	0	+1	+1	-1	+2	+6
Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property from these hazards	+2	+1	+1	+1	+1	0	0	+6
Emergency/disaster response training for emergency responders and key county and community leaders	+2	+1	+1	+1	+1	0	0	+6
Maintain and support community and county public safety and emergency service departments	+3	+1	-2	+2	+1	0	0	+5
Obtain equipment to help mitigate effects of a disaster	+2	0	+1	0	0	-1	+1	+3
Encourage citizen disaster preparedness	+3	0	-1	+2	0	-2	0	+2
Maintain electronic resource directory of local resources	+3	-1	-2	+1	+2	0	+1	+4
Install back-up power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	+3	+1	0	+2	+2	-2	0	+6
Develop community emergency shelters	+3	0	-1	+1	+1	0	0	+5
Improve outdoor warning siren system	+2	+1	0	+1	+2	-2	0	+4
Construct public tornado safe rooms at vulnerable points	+3	+1	0	+1	+1	-3	0	+3
Flood proofing private property and public infrastructure	+2	0	0	+1	+1	-2	+2	+4
Encourage construction of tornado safe rooms	+2	0	-1	0	0	-1	+1	+1
Flash flood and river flood preparation	+2	0	0	0	+1	+2	+2	+7
Continue Hazmat agreements and support regional Hazmat team	+1	+2	0	+1	+2	-1	+3	+8
Improve safety at rail crossings	+3	-1	-1	+2	+3	-1	0	+5
Planning and medical equipment to support human disease and pandemic response	+3	0	-1	-1	+2	0	0	+3

Continue to cooperate with local medical facilities and health department officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents	+1	0	-1	+1	+1	0	0	+2
Compliance with national flood insurance program (NFIP) regulations	+1	0	-2	+1	0	0	0	0

In an effort to establish a prioritization of mitigation actions the Benton County Hazard Mitigation Planning Committee conducted an analysis to determine which of the mitigation actions listed above are “high pay-off” actions. These ‘high pay-off” actions are generally actions that are technically feasible and cost-effective while also providing for multiple benefits or risk reduction related to multiple hazards. Additionally, actions that are prioritized are associated with mitigation of higher priority hazards from the hazard analysis and risk assessment process.

BENEFIT COST ANALYSIS OF MITIGATION MEASURES

The following table depicts financial considerations of Benton County Mitigation Measures. The measures are presented in their prioritized order. Estimated costs and potential funding sources are shown where known. In those cases where a potential funding source could not be identified, none are indicated. Estimated costs are based on a variety of sources including other documents, previous or other planning documents, known costs of other projects already undertaken by the city, estimates or bids obtained from subject matter experts. Estimates of ongoing actions are based on the Hazard Mitigation Committee’s knowledge of the activity in question.

Feasibilities for each action are listed as good, fair, or poor. Projects that are ongoing or already budgeted for completion are defined as good. Projects that have an identified funding source without funding secured are defined as fair. Projects with no identified funding source are defined as poor. Though committee members did take the STAPLEE criteria and Mitigation Measure Priorities under considerations, it was the observation of the committee that the availability of finding for mitigation measures would be the best determinant of whether a project is completed or not.

MITIGATION MEASURE	Estimated Cost	Federal Funds	State Funds	Local Funds	Feasibility
1. Public awareness	0-up to $25,000				Good
2. Develop and enhance local emergency operations plan	Up to $15,000 per plan for contract planner	75%		25%	Fair
3. Establish community emergency response teams (CERT)	$5,000 per community	100%			Fair
4. Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property from these hazards	$25,000 Annually				Poor
5. Emergency/disaster response training and exercises for emergency responders and key county and community leaders	Up to $5,000 per class	75%		25%	Fair
6. Maintain and support community and county public safety and emergency service departments.	Variable – depends on need and project	Up to 95%			Fair
7. Obtain equipment to help mitigate effects of a disaster	Up to $100,000				Fair
8. Encourage citizen disaster preparedness	Up to $5,000				Fair
9. Maintain electronic resource directory of local resources	0				Good
10. Install back-up power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Up to $75,000 per generator	75%		25%	Fair
11. Develop community emergency shelters	Up to $100,000 per shelter	75%		25%	Fair
12. Improve outdoor warning siren system	Up to $35,000 per system	75%		25%	Fair

13. Construct public tornado safe rooms at vulnerable points	Minimum of $250,000 per facility	75%		25%	Fair
14. Encourage construction of tornado safe rooms	$250 per square foot	75%		25%	Fair
15. Flash Flood and River Flood preparation	Up to over $100,000	75%		25%	Fair
16. Flood proofing private property and public infrastructure	Variable – Unknown				Fair
17. Continue Hazmat agreements and support regional Hazmat team	$6,000 annually			100%	Good
18. Improve safety at rail crossings	Up to $150,000 per crossing				Poor
19. Planning and medical equipment to support human disease and pandemic response	Up to several million dollars				Fair
20. Continue to cooperate with local medical facilities and health department officials to increase the likelihood of detection and proper response to animal/plant/crop disease incidents	No cost				Good
21. Compliance with the National Flood Insurance Program regulations (NFIP)	No cost	75%		25%	Good

IMPLEMENTATION STRATEGY

A requirement of mitigation plans is that they include an action plan (in this case, referred to as the implementation strategy). This section describes how the mitigation strategies identified in the previous section will be prioritized, implemented, and administered by the local jurisdiction. Prioritization should include a special emphasis on the extent to which benefits are maximized according to a cost benefit review of the proposed projects and their associated costs. Jurisdictions were asked to identify their top 10-15 (or so) mitigation actions. While these actions will be priorities for implementation, this does not mean that the other actions identified in the previous section will not be pursued; in the event that unanticipated funding becomes available, a jurisdiction may change their prioritization and pursue one option ahead of their anticipated schedule. These actions were identified by the committees as actions that were believed to be cost effective and were well supported by the community.

CITY OF ATKINS MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Develop and enhance local emergency operations plan	All Hazards	Existing	Atkins City Council	City of Atkins	5	$15,000	See Action Step 2	1,2,4
2	Maintain and support community and county public safety and emergency service department	All Hazards	Existing	Atkins Fire Department Benton County Sheriff's Office Benton County EMA	City of Atkins Atkins Benefitted Fire District Benton County	Ongoing	$0 to multi-million Project dependent	See Action 6	1,2,4
3	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Atkins	5	$100,000	See Action Step 11	1,2,5,6
4	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/ Hail, Tornado/Windstorm	New	Capital Improvement Program	City of Atkins	3	$75,000	See Action Step 10	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Atkins Fire Department Benton County EMA	City of Atkins	5	$2,000	See Action Step 4	1,2,5
6	Emergency/ disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	3	$1,000	See Action Step 5	1,2,4
7	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$3,000	See Action Step 8	1,2,5
8	Encourage construction of tornado safe rooms	Tornado/Windstorm, Thunderstorm/Lightning/Hail,	New	Capital Improvement Program	City of Atkins	5	$5,000 for 4 person unit	See Action Step 14	1,2,

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
9	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Atkins City Council Benton County EMA	Atkins City Council	5	No cost	See Action 21	1,2,7

CITY OF BELLE PLAINE MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Belle Plaine Fire Department Belle Plaine Ambulance Belle Plaine Police Department Benton County EMA	City of Belle Plaine Belle Plaine Ambulance Belle Plaine Police Department	Ongoing	$0 to multi-million Project dependent	See Action Step 5	1,2,4
2	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards – Hazardous Materials Incidents, Terrorism	Existing	Benton County EMA Belle Plaine Fire Department	Benton County Supervisors	5	$6,000 annually	See Action 17	1,2,5
3	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$3,000	See Action Step 8	1,2,5
4	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/ Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Belle Plaine	3	$75,000	See Action Step 10	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Public Awareness	All Hazards	Existing	Belle Plaine City Council Benton County EMA	City of Belle Plaine	1	$3,000	See Action Step 1	1
6	Develop and enhance local emergency operations plan	All Hazards	Existing	Belle Plaine City Council	City of Belle Plaine	3	$15,000	See Action 2	1,2,4
7	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Belle Plaine City Council Benton County EMA	City of Belle Plaine Benton County EMA	5	$2,000	See Action Step 4	1,2,5
8	Emergency/ disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
9	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Belle Plaine City Council Benton County EMA	Belle Plaine City Council	5	No Cost	See Action Step 21	1,2,7
10	Support the state's plan to raise Highway 21 south of Belle Plaine to help prevent water from going over highway	Flash Flood, River Flood	Existing	State of Iowa City of Belle Plaine	State of Iowa	6	No cost	See Action Step 15	1,2,7
11	Continue working on North Wetland Project to prevent so much runoff going straight to Salt Creek and instead holding it near our wellfield to replenish our aquifers.	Flash Flood, River Flood	Existing	City of Belle Plaine	City of Belle Plaine City Council	5	$400,000	See Action Step 15	1,2,7

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
12	Improve safety at rail crossings.	Other Hazards - Transportation	Existing	City of Belle Plaine, Railroads,	Railroads City of Belle Plaine	5	$0 to $150,000	See Action Step 18	1,2,3

CITY OF BLAIRSTOWN MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Blairstown Fire Department Blairstown Ambulance Service Benton County Sheriff's Office Benton County EMA	City of Blairstown Blairstown Fire Department Blairstown Ambulance Service Benton County	Ongoing	$0 to multi-million Project dependent	See Action Step 6	1,2,4
2	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Blairstown City Council Benton County EMA	City of Blairstown Benton County EMA	5	$2,000	See Action 4	1,2,5
3	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	City of Blairstown Benton County EMA	5	$100 to $5,000 per household	See Action Step 8	1,2,5
4	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/ Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Blairstown	5	$50,000	See Action Step 11	1,2,5,6

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Blairstown	3	$75,000	See Action Step 10	1,2,4
6	Improve safety at rail crossings.	Other Hazards – Transportation	Existing	City of Blairstown, Railroads	Railroads, City of Blairstown	5	$0 to $150,000	See Action Step 18	1,2,3
7	Emergency/ Disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
8	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Blairstown City Council Benton County EMA	Blairstown City Council	5	No Cost	See Action Step 21	1,2,7

CITY OF GARRISON MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Develop and enhance local emergency operations plan	All Hazards	Existing	Garrison City Council	City of Garrison	3	$15,000	See Action Step 2	1,2,4
2	Maintain and support community and county public safety and emergency service department	All Hazards	Existing	Garrison Fire Department Garrison First Responders Benton County Sheriff's Office Benton County EMA	City of Garrison Benton County	Ongoing	$0 to multi-million Project dependent	See Action 6	1,2,4
3	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Garrison Fire Department Benton County EMA	City of Garrison	5	$2,000	See Action Step 4	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Emergency/ Disaster response training and exercises for emergency responders and key community and county leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action Step 5	1,2,4
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	Up to $5,000	See Action 8	1,2,5
6	Continue Hazmat agreements and support regional hazmat teams	Other Hazards – Hazardous Materials Incidents, Terrorism	Existing	Benton County EMA	Benton County Supervisors	5	$6,000 annually	See Action Step 17	1,2,5
7	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/ Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Garrison	3	$75,000	See Action Step 10	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
8	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	City of Garrison Benton County Public Health	City of Garrison Benton County Public Health	2	$25,000	See Action Step 19	1,2,4
9	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Garrison City Council Benton County EMA	Garrison City Council	5	No Cost	See Action 21	1,2,7

CITY OF KEYSTONE MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety emergency service departments	All Hazards	Existing	Keystone Fire Department Keystone First Responders Benton County Sheriff's Office Benton County EMA	City of Keystone Benton County	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Develop and enhance local emergency operations plan	All Hazards	Existing	Keystone City Council	City of Keystone	3	$15,000	See Action 2	1,2,4
3	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Keystone Fire Department	City of Keystone	5	$2,000	See Action Step 4	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Emergency/ Disaster response training and exercises for emergency responders and key community and county leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action Step 5	1,2,4
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	Up to $5,000	See Action 8	1,2,5
6	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Keystone	3	$75,000	See Action Step 10	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
7	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	City of Keystone Benton County Public Health	City of Keystone Benton County Public Health	2	$25,000	See Action Step 20	1,2,4

CITY OF LUZERNE MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Develop and enhance local emergency operations plan	All Hazards	Existing	Luzerne City Council	City of Luzerne	3	$15,000	See Action Step 2	1,2,4
2	Maintain and support community and county public safety and emergency service department	All Hazards	Existing	Luzerne Fire Department Benton County Sheriff's Office Benton County EMA	City of Luzerne Atkins Benefitted Fire District Benton County	Ongoing	$0 to multi-million Project dependent	See Action 6	1,2,4
3	Establish community emergency response teams (CERT)	All Hazards	Existing	Luzerne City Council	City of Luzerne	3	$5,000	See Action Step 3	2,3,4,5,6

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Luzerne Fire Department	City of Luzerne	5	$1,000	See Action Step 4	1,2,5
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	Up to $5,000	See Action 8	1,2,5
6	Improve outdoor warning siren system and consider agreement with Benton County to test emergency siren	Tornado/Windstorm, Infrastructure Failure, Thunderstorm/Lightning/Hail, Structural Fire	Existing	Luzerne City Council	City of Luzerne	3	$35,000	See Action Step 12	1,2,3,4
7	Consider lease of 1000 gallon LP tank.	Severe Winter Storm	Existing	City of Luzerne	City of Luzerne	3	$5,000	See Action Step 7	2
8	Update city snow removal equipment	Severe Winter Storm	Existing	City of Luzerne	City of Luzerne	2	$25,000	See Action Step 7	2

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
9	Conduct study on flash flooding that impacts city park and roadway to determine mitigation options.	Flash Flooding	Existing	City of Luzerne	City of Luzerne	5	$50,000	See Action Step 15	1,2,7
10	Provide hazardous materials training to fire departments to include anhydrous ammonia and hazardous materials carried by rail.	Hazardous Materials	Existing	City of Luzerne Luzerne Fire Department Linn County HazMat	City of Luzerne Luzerne Fire Department	3	$5,000	See Action Step 5	1,2,4
11	Upgrade siren and consider an agreement with Benton County to test emergency siren	Thunderstorm/Lightning/Hail Tornado/Windstorm	Existing	City of Luzerne	City of Luzerne	3	$35,000	See Action Step 12	1,2
12	Improve safety at rail crossings	Other Hazards – Transportation	Existing	City of Luzerne Railroads	Railroads, City of Luzerne	5	$0 to $150,000	See Action Step 18	1,2,3

CITY OF MOUNT AUBURN MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Mount Auburn Fire Department Benton County Sheriff's Department Benton County EMA	City of Mount Auburn Benton County	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Develop and enhance local emergency operations plan	All Hazards	Existing	Mount Auburn City Council	City of Mount Auburn	3	$15,000	See Action 2	1,2,4
3	Encourage citizen preparedness	All Hazards	Existing	Benton County Media & Educational Classes	City of Mount Auburn	5	Up to $5,000	See Action Step 8	1,2
4	Emergency/ disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	3	$3,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Mount Auburn	5	$50,000	See Action Step 11	1,2,5,6
6	Improve safety at rail crossings	Other Hazards – Transportation	Existing	City of Mount Auburn Railroads	Railroads City of Mount Auburn	5	$0 to $150,000	See Action 18	1,2,3
7	Improve outdoor warning siren system	Tornado/Windstorm, Infrastructure Failure, Thunderstorm/Lightning/Hail, Structural Fire	Existing	Mount Auburn City Council	City of Mount Auburn	3	$35,000	See Action Step 12	1,2,3,4
8	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Terrorism, Other Hazards	New	Capital Improvement Program	City of Mount Auburn	3	$35,000	See Action Step 10	1,2,4

CITY OF NEWHALL MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service department	All Hazards	Existing	Newhall Fire & Rescue Department Benton County Sheriff's Office Benton County EMA	City of Newhall Benton County	Ongoing	$0 to multi-million Project dependent	See Action 6	1,2,4
2	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Infrastructure Failure, Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/ Hail, Tornado/Windstorm, Terrorism	New	Capital Improvement Program	City of Newhall	3	$75,000	See Action Step 10	1,2,4
3	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Newhall	5	$50,000	See Action Step 11	1,2,5,6

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Construct public tornado safe rooms at vulnerable points	Tornado/Windstorm, Thunderstorm/Lightning/Hail	New	Capital Improvement Program	City of Newhall	5	$250 per square foot	See Action Step 13	1,2,3
5	Develop and enhance local emergency operations plan	All Hazards	Existing	Newhall City Council	City of Newhall	3	$14,000	See Action 2	1,2,4
6	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	Up to $5,000	See Action Step 8	1,2
7	Emergency/ Disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	3	$3,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
8	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	City of Newhall Benton County Public Health	City of Newhall Benton County Public Health	2	$25,000	See Action Step 19	1,2,4
9	Compliance with National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	City of Newhall Benton County EMA	City of Newhall	5	No Cost	See Action 21	1,2,7

CITY OF NORWAY MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Norway Fire & Rescue Department	City of Norway Benton County	Ongoing	$0 to multi Million Project dependent	See Action Step 6	1,2,4
2	Develop and enhance local emergency operations plan	All Hazards	Existing	Norway City Council	City of Norway	3	$14,000	See Action 2	1,2,4
3	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards – Hazardous Materials Incidents, Terrorism	Existing	Benton County EMA	Benton County Supervisors	5	$6,000 annually	See Action Step 17	1,2,5
4	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action Step 8	1,2,5
5	Improve public awareness of hazard risks and educate the public about	All Hazards	Existing	Norway Fire and Rescue Department	City of Norway	5	$1,000	See Action Step 4	1,2,5

	measures they can take to protect themselves and their property								
6	Develop Community Emergency Shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Norway	5	$50,000	See Action Step 12	1,2,5,6
7	Construct public tornado safe rooms at vulnerable points	Tornado/Windstorm, Thunderstorm/Lightning/Hail, Other Hazards	New	Capital Improvement Program	City of Norway	5	$250 per square foot	See Action 13	1,2,3
8	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	City of Norway	City of Norway	5	No Cost	See Action Step 16	1,2,7

CITY OF SHELLSBURG MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Shellsburg Fire Department Shellsburg First Responders Benton County Sheriff's Office Benton County EMA	City of Shellsburg Benton County	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Develop community emergency shelters. Purchase and install transfer switch and/or backup generator for school to be used as emergency shelter.	Infrastructure Failure, Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm	New	Capital Improvement Program	City of Shellsburg	5	$50,000	See Action 11	1,2,5,6
3	Install backup power sources that will keep critical infrastructure and critical facilities operational	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards, Terrorism	New	Capital Improvement Program	City of Shellsburg	3	$50,000	See Action Step 10	1,2,4

	during prolonged power outages. Purchase and install transfer switch at single local gas station. Purchase portable backup generator that could be utilized as needed in a prolonged power outage.								
4	Update city equipment for response to disasters and assistance with recovery	All Hazards	New	City of Shellsburg	City of Shellsburg	5	$25,000 -	See Action Step 7	1,2
5	Emergency/ Disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	3	$1,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
6	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action Step 8	1,2,5
7	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Shellsburg Fire Department City of Shellsburg Benton County EMA	City of Shellsburg Benton County EMA	5	$1,000	See Action 4	1,2,5
8	Improve safety at rail crossings	Other Hazards – Transportation	Existing	City of Shellsburg Railroads	Railroads City of Shellsburg	5	$0 to $150,000	See Action Step 18	1,2,3
9	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	City of Shellsburg	City of Shellsburg	5	No Cost	See Action Step 21	1,2,7

CITY OF URBANA MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Urbana Fire Department North Benton Ambulance Benton County EMA	City of Urbana Benton County Urbana/Polk Township Fire Protection Agency	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Emergency/ disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action 5	1,2,4
3	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards – Hazardous Materials Incidents, Terrorism	Existing	Benton County EMA	Benton County Supervisors	5	$6,000 annually	See Action Step 17	1,2,5
4	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Urbana	5	$50,000	See Action Step 11	1,2,5,6

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Flood proofing private property and public infrastructure	Flash Flood, River Flood	Existing	Urbana Public Works Department	City of Urbana	2	$100,000	See Action Step 16	1,2,5
6	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	City of Urbana Benton County Public Health	City of Urbana Benton County Public Health	2	$25,000	See Action Step 19	1,2,4
7	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action Step 8	1,2,5
8	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Urbana Fire Department City of Urbana Benton County EMA	City of Urbana Benton County EMA	5	$1,000	See Action 4	1,2,5
9	Compliance with the National Flood Insurance	Flash Flood, River Flood	Existing	City of Urbana	City of Urbana	5	No Cost	See Action Step 21	1,2,7

	Program (NFIP) regulations

CITY OF VAN HORNE MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency service departments	All Hazards	Existing	Van Horne Fire Department Van Horne First Responders Benton County Sheriff's Department Benton County EMA	City of Van Horne	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Emergency/ Disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	3	$1,000	See Action 5	1,2,4
3	Develop and enhance local emergency operations plan	All Hazards	Existing	Van Horne City Council	City of Van Horne	3	$15,000	See Action Step 2	1,2,4
4	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards- Hazardous Materials Incidents	Existing	Benton County EMA	Benton County Supervisors	5	$6,000 annually	See Action Step 17	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
5	Encourage construction of tornado safe rooms	Tornado/Windstorm Thunderstorm/Lightning/Hail	New	Capital Improvement Program	City of Van Horne	5	$5,000 for 4 person unit $250 per square foot for larger facilities	See Action Step 14	1,2
6	Develop community emergency shelters	Extreme Heat, Severe Winter Storms, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	New	Capital Improvement Program	City of Van Horne	5	$50,000	See Action 11	1,2,4
7	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	City of Van Horne Benton County Public Health	City of Van Horne Benton County Public Health	2	$25,000	See Action Step 19	1,2,4
8	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages.	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards, Terrorism	New	Capital Improvement Program	City of Van Horne	3	$35,000	See Action Step 10	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
9	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Van Horne Fire Department Benton County EMA	City of Van Horne Benton County EMA	5	$1,000	See Action Step 4	1,2,5
10	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Van Horne City Council, Benton County EMA	Van Horne City Council	5	No cost	See Action Step 16	1,2,7

CITY OF VINTON MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency services departments	All Hazards	Existing	Vinton Fire Department North Benton Ambulance Service Vinton Police Department Benton County EMA	City of Vinton	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Develop and enhance local emergency operations plan	All Hazards	Existing	Vinton City Council	City of Vinton	3	$15,000	See Action 2	1,2,4
3	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Vinton Fire Department City of Vinton Benton County EMA	City of Vinton Benton County EMA	5	$5,000	See Action Step 4	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards – Hazardous Materials Incidents	Existing	Benton County EMA	Benton County EMA	5	$6,000 annually	See Action Step 17	1,2,5
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action 8	1,2,5
6	Encourage construction of tornado safe rooms	Tornado/Windstorm, Thunderstorm/Lightning/Hail	New	Capital Improvement Program	City of Vinton	5	$5,000 for 4 person unit $250 per square foot for larger facilities	See Action Step 14	1,2
7	Flash Flood and River Flood Preparation	Flash Flood, River Flood	Existing	Vinton Public Works Department	City of Vinton	2	$100,000	See Action Step 15	1,2,5
8	Complete reconstruction of West 4th Street from C Avenue to K Avenue. Reconstruction to include new storm sewers. Construction expected 2028	Flash Flood, River Flood	New	Capital Improvement Program	City of Vinton	5		See Action Step 15	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
9	Creation of a 9 million gallon storm water holding cell at the wastewater treatment plant. Project completion is expected by Fall 2026. Holding cell will help alleviate sewer system inundation and neighborhood flood events/backup during high rain events.	Flash Flood	New	Capital Improvement Program	City of Vinton	5		See Action Step 15	1,2,5
10	Relocation of the Fire Station and Police Department out of the floodplain.	Flash Flood, River Flood	Existing	Capital Improvement Program	City of Vinton	5		See Action 16	1,2,5,
11	Increased accessibility to the Storm Shelter (by providing remote unlock access to	Tornado/Windstorm, Thunderstorm/Lightning/Hail	Existing	City of Vinton	City of Vinton	3		See Action Step 14	1,2,4

	County Dispatch in the event of severe weather)								
12	Increase public awareness and safety at rail crossings. Consider upgrading rail crossings so all crossings have stop arms.	Other Hazards – Transportation	Existing	Vinton City Council Railroads	Railroads, City of Vinton	5	$0 to $150,000	See Action Step 18	1,2,3
13	Compliance with the National Flood Insurance Program (NFIP) regulations.	Flash Flood, River Flood	Existing	Vinton City Council, Benton County EMA	Vinton City Council	5	No cost	See Action Step 21	1,2,7

CITY OF WALFORD MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Maintain and support community and county public safety and emergency services departments	All Hazards	Existing	Fairfax/Walford Fire Department Area Ambulance Linn County Sheriff's Department Benton County Sheriff's Department Benton County EMA	City of Walford	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
2	Develop and enhance local emergency operations plan	All Hazards	Existing	Walford City Council	City of Walford	3	$15,000	See Action Step 2	1,2,4
3	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Fairfax/Walford Fire Department City of Walford Benton County EMA	City of Walford Benton County EMA	5	$5,000	See Action Step 4	1,2,5

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Maintain electronic resource directory of local resources	All Hazards	Existing	Fairfax/Walford Fire Department	Fairfax/Walford Fire Department City of Walford	2	$2,500	See Action Step 9	1,2,4
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action 8	1,2,5
6	Install backup power sources that will keep critical infrastructure and critical facilities operational during a prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards, Terrorism	New	Capital Improvement Program	City of Walford	3	$35,000	See Action Step 10	1,2,4
7	Develop community emergency shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm Other Hazards	New	Capital Improvement Program	City of Walford	5	$50,000	See Action Step 11	1,2,5,6

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
8	Flood proofing private property and public infrastructure	Flash Flood, River Flood	Existing	City of Walford	City of Walford	5	$250,000	See Action 16	1,2,5
9	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	City of Walford	City of Walford	5	No Cost	See Action Step 21	1,2,7

BENTON COUNTY HAZARD MITIGATION STRATEGY 2026

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
1	Develop and enhance local emergency operations plan	All Hazards	Existing	Benton Couty EMA	Benton County EMA	5	$14,000	See Action Step 2	1,2,4
2	Improve public awareness of hazard risks and educate the public about measures they can take to protect themselves and their property	All Hazards	Existing	Benton County	Benton County	5	$11,000	See Action 4	1,2,5
3	Emergency/ disaster response training and exercises for emergency responders and key county and community leaders	All Hazards	Existing	Benton County EMA	Benton County EMA	5	$5,000	See Action Step 5	1,2,4

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
4	Maintain and support community and county public safety and emergency services departments	All Hazards	Existing	Benton County Sheriff's Department Benton County EMA	Benton County	Ongoing	$0 to multi million Project dependent	See Action Step 6	1,2,4
5	Encourage citizen disaster preparedness	All Hazards	Existing	Benton County Media & Educational Classes	Benton County EMA	5	$100 to $5,000 per household	See Action 8	1,2,5
6	Continue Hazmat agreements and support regional Hazmat teams	Other Hazards – Hazardous Materials Incidents	Existing	Benton County EMA	Benton County Supervisors	5	$6,000 annually	See Action Step 18	1,2,5
7	Continue to cooperate with local medical facilities and public health officials to increase the likelihood of detection and proper response to animal/plant/ crop disease incidents	Other Hazards – Animal/Plant/Crop Disease	Existing	USDA Benton County Public Health	Benton County Public Health Virginia Gay Hospital	5	$5,000	See Action Step 20	1,2

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
8	Improve outdoor warning siren system	Tornado/Windstorm, Infrastructure Failure, Thunderstorm/Lightning/Hail, Structural Fire	Existing	Benton County EMA	Benton County Board of Supervisors	3	$35,000	See Action Step 12	1,2,3,4
9	Planning and medical equipment to support human disease and pandemic response	Other Hazards – Human Disease Pandemic	Existing	Benton County Public Health	Benton County Public Health	2	$25,000	See Action 19	1,2,4
10	Install backup power sources that will keep critical infrastructure and critical facilities operational during prolonged power outages	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards, Terrorism	New	Benton County Supervisors	Benton County	3	$35,000	See Action Step 10	1,2,4
11	Encourage construction of tornado safe rooms	Thunderstorm/Lightning/ Hail, Tornado/Windstorm	New	Benton County EMA	Benton County Supervisors	5	$5,000 for 4 person unit $250 per sq foot for larger facilities	See Action Step 14	1,2

Rank	Mitigation Action/ Program/ Project	Hazard Addressed	Applies to Existing or New Assets	Existing Local Implementation Mechanism	Primary Responsible Agency	Years	Estimated Cost	Funding Source	Related Goals
12	Flood proofing private property and public infrastructure	Flash Flood, River Flood	Existing	Benton County EMA	Benton County Board of Supervisors	2	Up to $100,000	See Action 16	1,2,5
13	Flash Flood and River Flood preparation	Flash Flood, River Flood	Existing	Benton County EMA	Benton County Board of Supervisors	2	Up to $100,000	See Action Step 15	1,2,5
14	Compliance with National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Benton County EMA	Benton County Board of Supervisors	5	No Cost	See Action Step 21	1,2,7
15	Public Awareness	All Hazards	Existing	Benton County EMA	Benton County Board of Supervisors	5	$5,000	See Action Step 1	1
16	Establish Community Emergency Response Teams (CERT)	All Hazards	Existing	Benton County EMA	Benton County Board of Supervisors	5	$6,000	See Action Step 3	2,3,4,5,6
17	Obtain equipment to help mitigate effects of disaster	All Hazards	New	Benton County	Benton County Board of Supervisors	5	$5,000 to $100,000	See Action Step 7	1,2,5
18	Maintain electronic resource directory of	All Hazards	Existing	Benton County EMA	Benton County EMA	5	No cost	See Action Step 9	1,2,4

	local resources								
19	Develop Community Emergency Shelters	Extreme Heat, Severe Winter Storm, Thunderstorm/Lightning/Hail, Tornado/Windstorm, Other Hazards	Existing	Benton County EMA	Benton County Board of Supervisors	5	Up to $100,000	See Action Step 11	1,2,5,6
20	Improve safety at rail crossings	Other Hazards – Transportation	Existing	Benton County Railroads	Railroads Benton County	5	$0 to $150,000	See Action Step 18	1,2,3
21	Construct tornado safe rooms at vulnerable points	Tornado/Windstorm, Thunderstorm/Lightning/Hail	New	Benton County EMA	Benton County Board of Supervisors	5	$300 per square foot	See Action Step 13	1,2,3
22	Compliance with the National Flood Insurance Program (NFIP) regulations	Flash Flood, River Flood	Existing	Benton County Flood Plain Manager	Benton County Board of Supervisors	5	No Cost	See Action Step 21	1,2,7

SECTION 6
PLAN MAINTENANCE

MONITORING, EVALUATING, AND UPDATING THE PLAN

The agency ultimately responsible for evaluating and updating the plan is the Benton County Board of Supervisors. The plan will be monitored by the Benton County Emergency Management Agency. The plan will be reviewed annually and updated every five years unless the Planning Committee or EMA determines that an update is needed sooner. To ensure that an update is completed on time, the EMA will reconvene the Planning Committee a maximum of four (4) years after plan adoption to begin the review and update process.

Between updates, the lead departments should make note of any completed mitigation actions steps, and the date by which those steps were completed in a publicly available copy of the adopted Multi-Jurisdictional Hazard Mitigation Plan. Any member of the City or County staff or any member of the community may submit suggestions to the EMA for aspects of the plan that may need to be changed. The planning agency may also provide advice or assistance in any grant projects that may result from implementation of the mitigation action steps.

During the review process, available representatives of the current Planning Committee and/or any additional interested residents or new City or County staff will serve as the review committee to retain as much institutional knowledge about the planning process as possible. The review process should include an evaluation of the following:

- The effectiveness of the planning process
- The effectiveness of the City's/County's actions
- Progress made toward implementing the mitigation action steps
- Determination of the relative success of implemented action steps

Additionally, the plan updates should include a discussion of the following items, to be completed by the Planning Committee and/or consultant selected by the EMA:

- The goals and objectives address current and expected conditions
- The nature, magnitude, and/or type of risks have changed
- The current resources are appropriate for implementing the plan

- There are implementation problems, such as technical, political, legal, or coordination issues with other agencies
- The outcomes have occurred as expected (a demonstration of progress)
- The agencies and other partners participated as originally proposed

The updated plan will also include a reviewed and/or revised recommendation on the method and schedule of plan maintenance. After the above considerations are addressed by the Planning Committee and/or the selected consultant, the EMA or the selected consultant resubmit the plan for approval.

INCORPORATION INTO EXISTING PLANNING MECHANISMS

Benton County officials cannot document any incorporation of information from the original 2010 Benton County Multijurisdictional HMP into any existing, revised or new plans of any Benton County jurisdiction. This is attributed to the fact that the plan was not reviewed during the years that intervened between the plan approval and the beginning of the revision process. The 2011 Benton County Multijurisdictional HMP was used as reference material by the Cities of Garrison, Newhall, and Urbana in applying for Hazard Mitigation Project Grants.

Updates of this planning document will include a summary of any mitigation items that were incorporated into other planning mechanisms. The Planning Committee or the selected consultant should particularly examine the following when incorporating this document into existing planning mechanisms:

- Updates to the floodplain maps or floodplain regulations.
- Updates of the zoning code that may include additional regulations on building near identified hazard areas, which may include steep slopes, unstable soils, special flood hazard areas, proximity of residential areas to transportation, Hazmat, flooding, or other hazards.
- Updates to the comprehensive plan that include the goals of the mitigation strategy or mitigation related goals.
- Updates to the subdivision ordinance relating to setbacks on properties that pose a higher than average risk from structural failure, hazardous materials incident, or fire.
- Updates to the building code may include adoption of a full set of building codes or adoption of more stringent building codes.
- Any new additions to the City/County Code or administrative policies that may include but are not limited to: solid waste regulations, landscape codes, evacuation plans, response plans, fire mitigation programs, and construction or retrofit programs.
- An overview of how the information contained in the HARA was used in any other planning documents.

Where possible, the participating jurisdictions will use existing plans and/or programs to implement hazard mitigation actions. Based on the capability assessments of the participating jurisdiction, the communities will continue to plan and implement programs to reduce loss of life and property from hazards. This plan builds upon the momentum developed through previously related planning efforts and mitigation programs, and recommends implementing actions, where possible, through the following means:

- Benton County Multi-Hazard Emergency Operations Plan
- General or master plans of participating jurisdictions'
- Benton County Comprehensive Plan
- Ordinances of participating jurisdictions
- Capital improvement plans and budgets
- Benton County Multi-Jurisdictional Hazard Mitigation Plan developed in the future
- Other community plans either in existence or developed in the future
- Other county/regional plans either in existence or developed in the future

Many plans have not been updated recently so there was not an opportunity to incorporate hazard mitigation planning information.

The governing body with legal authority for the participating jurisdictions adopting this plan will encourage other relevant planning mechanisms under their authority to consult this plan to ensure minimization of risk to natural hazards as well as maximum coordination of activities.

The above considerations and any others deemed appropriate will constitute part of the required explanation of how the Cities and the County incorporated the mitigation plan into other planning mechanisms.

CONTINUED PUBLIC INVOLVEMENT

Upon review and update of the plan, the participating jurisdictions may host a public strategic meeting to analyze public opinion about the past mitigation plan and determine what additions may need to be made to the update. The exact details of public involvement will be determined at the time the involvement is sought based on the number of jurisdictions participating in the planning process at the time, growth trends and new facilities that may be constructed between now and that time. However, appropriate methods of public involvement would include posting notices on public buildings and other community facilities, circulating flyers, and posting proposed changes on the appropriate City/County website. This information will be used by the Planning Committee and/or the selected consultant to guide the update of the plan. Upon completion of a final draft of the plan update, the final draft will be made publicly available online or at the participating jurisdictions city halls or the County office for review and comment by the public, with specifically noted end date for the public comment period. Public comment may be submitted to the EMA in writing before the end of the public comment period or may be delivered in person to the public meeting of the City Councils and County Board of Supervisors for formal adoption of the revised plan.

APPENDIX A – GLOSSARY

Acceleration: The rate of change of velocity with respect to time. Acceleration due to gravity at the earth's surface is 9.8 meters per second squared (9.8 m2). That means that every second that something falls toward the surface of earth its velocity increases by 9.8 meters per second.

Anchoring: Special connections made to ensure that a building will not float off, blow off or be pushed off its foundation during a flood or storm.

Asset: Any manmade or natural feature that has value, including, but not limited to people; buildings; infrastructure like bridges, roads, and sewer and water systems; lifelines like electricity and communication resources; or environmental, cultural, recreational features like parks, dunes, wetlands, or landmarks.

Base Flood: Flood that has a 1 percent probability of being equaled or exceeded in any given year. Also known as the 100-year flood.

Best Flood Elevation (BFE): Elevation of the base flood in relation to a specified datum, such as National Geodetic Vertical Datum of 1929. The Base Flood Elevation is used as the standard for the National Flood Insurance Program.

Basement: Any floor level below grade.

Bedrock: The solid rock that underlies loose material, such as soil, sand, clay, or gravel.

Building: A structure that is walled and roofed, principally above ground and permanently affixed to a site. The term includes a manufactured home on a permanent foundation on which the wheels and axles carry no weight.

Community Rating System (CRS): A National Flood Insurance Program (NFIP) that provides incentives for NFIP communities to complete activities that reduce flood hazard risk. When the community completes specified activities, the insurance premiums of policyholders in these communities are reduced.

Computer-Aided Design and Drafting (CADD): A computerized system enabling quick and accurate electronic 2-D and 2-D drawings, topographic mapping, site plans, and profile/cross-section drawings.

Consequences: The damages, injuries, and loss of life, property, environment, and business that can be quantified by some unit of measure, often in economic or financial terms.

Contour: A line of equal ground elevation on a topographic (contour) map.

Critical Facility: Facilities that are critical to the health and welfare of the population and that are especially important during and following hazard events. Critical facilities include shelters, police and fire stations, schools, childcare centers, senior citizen centers, hospitals, disability centers, vehicle and equipment storage facilities, emergency operations centers, and County hall. The term also includes buildings or locations that, if damaged, would create secondary disasters, such as hazardous materials facilities, vulnerable facilities, day care centers, nursing homes, and housing likely to contain occupants who are not very mobile. Other critical count infrastructure such as telephone exchanges and water treatment plants are referred to as lifelines. See Lifelines.

Dam Breach Inundation Area: The area flooded by a dam failure or programmed release.

Debris: The scattered remains of assets broken or destroyed in a hazard event. Debris caused by a wind or water hazard event can cause additional damage to other assets.

Development: Any man-made change to real estate.

Digitize: To convert electronically points, lines, and area boundaries shown on maps into x, y coordinates (e.g. latitude and longitude, Universal Transverse Mercator (UTM), or table coordinates) for use in computer applications.

Duration: How long a hazard event lasts.

Earthquake: A sudden motion or trembling that is caused by a release of strain accumulated within or along the edge of earth's tectonic plates.

Emergency: Any hurricane, tornado, storm, flood, high water, wind-driven water, tidal wave, tsunami, earthquake, volcanic eruption, landslide, mudslide, snowstorm, drought, fire, explosion, or other catastrophe in any part of the United States which requires federal emergency assistance to supplement state and local efforts to save lives and protect property, public health and safety, or to avert or lessen the threat of a disaster. Defined by Title V of Public Law 93-288, Section 102(1).

Emergency Operations Center (EOC): A facility that houses communications equipment that is used to coordinate the response to a disaster or emergency.

Emergency Operations Plan (EOP): Sets forth actions to be taken by state or local governments for response to emergencies or major disasters.

Emergency Response Plan: A document that contains information on the actions that may be taken by a governmental jurisdiction to protect people and property before, during, and after a disaster.

Extent: The size of an area affected by a hazard or hazard event.

Fault: A fracture in the continuity of a rock formation caused by a shifting or dislodging of the earth's crust, in which adjacent surfaces are differentially displaced parallel to the plan of fracture.

Federal Emergency Management Agency (FEMA): The independent agency created in 1978 to provide a single point of accountability for all Federal activities related to disaster mitigation and emergency preparedness, response and recovery.

FIPS: Stands for Federal Information Processing Standards. Under the Information Technology Management Reform Act (Public Law 104-106), the Secretary of Commerce approves standards and guidelines that are developed by the National Institute of Standards and Technology (NIST) for federal computer systems. These standards and guidelines are issues by NIST as Federal Information Processing Standards (FIPS) for use government-wide. NIS develops FIPS when there are compelling federal government requirements such as for security and interoperability and there are no acceptable industry standards or solutions.

Fire Potential Index (FPI): Developed by United States Geological Survey (USGS) and United States Forest Service (USFS) to assess and map fire hazard potential over broad areas. Based on such geographic information, national policy makers and on-the-ground fire managers established priorities for prevention activities in the defined area to reduce the risk of managed and wildfire ignition spread. Prediction of fire hazard shortens the time between fire ignition and initial attach by enabling fire managers to pre-allocate and stage suppression forces to high fire risk areas.

Flash Flood: A flood event occurring with little or no warning where water levels rise at an extremely fast rate.

Flood: A general and temporary condition of partial or complete inundation of normally dry land areas from (1) the overflow of inland or tidal water, (2) the unusual and rapid accumulation or runoff of surface waters from any source, or (3) mudflows or the sudden collapse of shoreline land.

Flood Depth: Height of the flood water surface above the ground surface.

Flood Elevation: Elevation of the water surface above an established datum, e.g. National Geodetic Vertical Datum of 1929, North American Vertical Datum of 1988, or Mean Sea Level.

Flood Hazard Area: The area shown to be inundated by a flood of a given magnitude on a map.

Flood Insurance Rate Map (FIRM): Map of a community, prepared by the Federal Emergency Management Agency, which shows both the special flood hazard areas and the risk premium zones applicable to the community.

Flood Insurance Study (FIS): A study that provides an examination, evaluation, and determination of flood hazards and, if appropriate, corresponding water surface elevations in a community or communities.

Flood Mitigation Assistance Program (FMA): A planning and project implementation grant program funded by the National Flood Insurance Program. Provides pre-disaster grants to state and local governments for both planning and implementation of mitigation strategies. Grant funds are made available from NFIP insurance premiums and therefore are only available to communities participating in the NFIP.

Flood of Record: The highest known flood level for the area, as recorded in historical documents.

Floodplain: Any land area, including watercourse, susceptible to partial or complete inundation by water from any source.

Floodproofing: Protective measures added to or incorporated in a building to prevent or minimize flood damage. “Dry floodproofing” measures are designed to keep water from entering a building. “Wet floodproofing” measures minimize damage to a structure and its contents from water that is allowed into a building.

Floodway: The stream channel and that portion of the adjacent floodplain which must remain open to permit conveyance of the base flood. Floodwaters are generally the swiftest and deepest in the floodway. The floodway should remain clear of buildings and impediments to the flow of water.

Freeboard: A margin of safety added to a protection measure to account for waves, debris, miscalculations, lack of scientific data, floodplain fill, or upstream development.

Frequency: A measure of how often events of a particular magnitude are expected to occur. Frequency describes how often a hazard of a specific magnitude, duration, and/or extent typically occurs, on average. Statistically, a hazard with a 100-year recurrence interval is expected to occur once every 100 years on average and would have a 1 percent chance-its probability-of happening in any given year. The reliability of this information varies depending on the kind of hazard being considered.

Fujita Scale of Tornado Intensity: Rates tornadoes with numeric values from F0 to F5 based on tornado wind speed and damage sustained. An F0 indicates minimal damage such as broken tree limbs or signs while an F5 indicates severe damage sustained.

Functional Downtime: The average time (in days) during which a function (business or service) is unable to provide its services due to a hazard event.

Geographic Area Impacted: The physical area in which the effects of the hazard are experienced.

Geographic Information System (GIS): A computer software application that relates physical features on the earth to a database to be used for mapping and analysis.

Ground Motion: The vibration or shaking of the ground during an earthquake. When a fault ruptures, seismic waves radiate, causing the ground to vibrate. The severity of the vibration increases with the amount of energy released and decreases with the distance from the causative fault or epicenter, but soft soils can further amplify the ground motions.

Hazard: A source of potential danger or adverse condition. An event or physical condition that has the potential to cause fatalities, injuries, property and infrastructure damage, agriculture loss, damage to the environment, interruption of business, or other types of harm or loss. Hazards, as defined in this study, will include naturally occurring events such as floods, dam failures, levee failures, tornadoes, high winds, hailstorms, lightning, winter storms, extreme heat, drought, expansive soils, urban fires, wildfires, that strike populated areas, and earthquakes. A natural event is a hazard when it has the potential to harm people or property. For purposes of this study, hazardous materials are also included.

Hazard Event: A specific occurrence of a particular type of hazard.

Hazard Identification: The process of defining and describing a hazard, including its physical characteristics, magnitude and severity, probability and frequency, causative factors, and locations or areas affected.

Hazard Mitigation: Sustained actions taken to reduce or eliminate long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery.

Hazard Mitigation Grant Program (HMGP): Authorized under Section 404 of the Stafford Act; a FEMA disaster assistance grant program that funds mitigation projects in conformance with post-disaster mitigation plans required under Section 409 of the Stafford Act. The program is available only after a Presidential Disaster Declaration.

Hazard Mitigation Plan: The plan resulting from a systematic evaluation of the nature and extent of vulnerability to the effects of natural hazards present in society that includes the actions needed to minimize future vulnerability to hazards. Section 409 of the Stafford Act requires the identification and evaluation of mitigation opportunities, and that all repairs be made to applicable codes and standards, as condition for receiving federal disaster assistance. Enacted to encourage identification and mitigation of hazards at all levels of government.

Hazard Profile: A description of the physical characteristics of hazards and a determination of various descriptors including magnitude, duration, frequency, probability, and extent. In most cases, a community can most easily use these descriptors when they are recorded and displayed as maps.

HAZUS (Hazards U.S.): A GIS-based nationally standardized earthquake loss estimation tool developed by FEMA.

Hydrology: The science of dealing with the waters of the earth. A flood discharge is developed by a hydrologic study.

Infrastructure: The public services of a community that have a direct impact on the quality of life. Infrastructure includes communication technology such as phone lines or internet access, vital services such as public water supplies and sewer treatment facilities, and includes an area's transportation system such as airports, heliports, highways, bridges, tunnels, roadbeds, overpasses, railways, railyards, depts, and waterways, canals, locks, and regional dams.

Insurance Service Office (ISO): An insurance organization that administers several programs that rate a community's hazard mitigation activities.

Intensity: A measure of the effects of a hazard event at a particular place.

Landslide: Downward movement of a slope and materials under the force of gravity.

Lifelines: Transportation and utility systems that are essential to the function of a region and to the wellbeing of its inhabitants. Transportation systems include highways, air, rail, waterways, ports, and harbors. Utility systems include electric power, gas and liquid fuels, telecommunications, water, and wastewater.

Liquefaction: The phenomenon that occurs when ground shaking causes loose soils to lose strength and act like viscous fluid. Liquefaction caused two types of ground failure: lateral spread and loss of bearing strength.

Lowest Floor: Under the NFIP, the lowest floor of the lowest enclosed area (including basement) of a structure.

Magnitude: A measure of the strength of a hazard event. The magnitude (also referred to as severity) of a given hazard event is usually determined using technical measures specific to the hazard.

Mitigation: Sustained action taken to reduce or eliminate the long-term risk to human life and property from natural and technological hazards and their effects. Note that this emphasis on long-term risk distinguishes mitigation from actions geared primarily to emergency preparedness and short-term recovery (Burby, 1998)

National Flood Insurance Program (NFIP): A federal program created by Congress in 1968 that provides the availability of flood insurance to communities in exchange for the adoption and enforcement of a minimum floodplain management ordinance specified in 44 CFR §60.3. The ordinance regulates new and substantially damaged or improved development in identified flood hazard areas.

National Geodetic Vertical Datum of 1929 (NGVD): Datum established 1929 and used in the NFIP as a basis for measuring flood, ground, and structural elevations, previously referred to as Sea Level Datum or Mean Sea Level. The Base Flood Elevations shown on most of the Flood Insurance Rate Maps issued by the Federal Emergency Management Agency are referenced to NGVD.

National Weather Service (NWS): Prepares and issues flood, severe weather, and coastal storm warnings and can provide technical assistance to federal and state entities in preparing weather and flood warning plans.

Planimetric: Describes maps that indicate only man-made features like buildings.

Planning: The act or process of making or carrying out plans; the establishment of goals, policies, and procedures for a social or economic unit.

Planning for Post-Disaster Reconstruction: The process of planning (preferably prior to an actual disaster) those steps the community will take to implement long-term reconstruction with one of the primary goals being to reduce or minimize its vulnerability to future disasters. These measures can include a wide variety of land-use planning tools, such as acquisition, design review, zoning, and subdivision review procedures. It can also involve coordination with other types of plans and agencies but is distinct from planning for emergency operations, such as restoration of utility services and basic infrastructure.

Preparedness: Activities to ensure that people are ready for a disaster and respond to it effectively. Preparedness requires figuring out what will be done if essential services break down, developing a plan for contingencies, and practicing the plan.

Probability: A statistical measure of the likelihood that a hazard event will occur.

Project Impact: A program that encourages business, government agencies and the public to work together to build disaster-resistant communities.

Reconstruction: The long-term process of rebuilding the community’s destroyed or damaged buildings, public facilities, or other structures.

Recovery: The process of restoring normal public or utility services following a disaster, perhaps starting during but extending beyond the emergency period to the point when the vast majority of such services, including electricity, water, communications, and public transportation have resumed normal operations. Recovery activities necessary to rebuild after a disaster include rebuilding homes, businesses, and public facilities, clearing debris, repairing roads and bridges, and restoring water, sewer and other essential services. Short-term recovery does not include the reconstruction of the build environment, although reconstruction may commence during this period.

Recurrence Interval: The time between hazard events of similar size in a given location. It is based on the probability that the given event will be equaled or exceeded in any given year.

Repetitive Loss Property: A property that is currently insured for which two or more National Flood Insurance Program losses (occurring more than ten days apart) of at least $1,000 each have been paid within any 10-year period since 1978. While Repetitive Loss Properties constitute only 2% of insured properties, they account for 40% of flood damage claims against NFIP.

Replacement Value: The cost of rebuilding a structure. This is usually expressed in terms of cost per square foot and reflects the present-day cost of labor and materials to construct a building of a particular size, type and quality.

Retrofitting: Modifications to a building or other structure to reduce its susceptibility to damage by a hazard.

Richter Scale: A numerical scale of earthquake magnitude devised by seismologist C.F. Richter in 1935.

Risk: The estimated impact that a hazard would have on people, services, facilities, and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage. Risk is often expressed in relative terms such as a high, moderate or low likelihood of sustaining damage above a particular threshold due to a specific type of hazard event. It also can be expressed in terms of potential monetary losses associated with the intensity of the hazard.

Risk Assessment: A process or method for evaluating risk associated with a specific hazard and defined in terms of probability and frequency of occurrence, magnitude, and severity, exposure and consequences. Also defined as “The process of measuring the potential loss of life, personal property, housing, public facilities, equipment, and infrastructure; lost jobs, business earnings, and lost revenues, as well as indirect losses caused by interruption of business and production; and the public cost of planning, preparedness, mitigation, response, and recovery.” (Burby, 1998)

Riverine: Of or produced by a river.

Scale: A proportion used in determining a dimensional relationship; the ratio of the distance between two points on a map and the actual distance between the two points on the earth’s surface.

Scarp: A steep slope.

Scour: Removal of soil or fill material by the flow of flood waters. The term is frequently used to describe storm-induced, localized conical erosion around pilings and other foundation supports where the obstruction of flow increases turbulence.

Seismicity: Describes the likelihood of an area being subject to earthquakes.

Special Flood Hazard Area (SFHA): An area within a floodplain having a 1 percent or greater chance of flood occurrence in any given year (100-year floodplain); represented on Flood Insurance Rate Maps by darkly shaded areas with zone designations that include the letter A or V.

Stafford Act: The Robert T. Stafford Disaster Relief and Emergency Assistance Act, PL 100-107 was signed into law November 23, 1988 and amended by the Disaster Relief Act of 1974, PL 93-288. The Stafford Act is the statutory authority for most federal disaster response activities, especially as they pertain to FEMA and its programs.

State Hazard Mitigation Team: Composed of key state agency representatives, the team evaluates hazards, identifies strategies, coordinates resources, and implements measures that will reduce the vulnerability of people and property to damage from hazards.

State Hazard Mitigation Officer (SHMO): The representative of state government who is the primary point of contact with FEMA, other state and federal agencies, and local units of government in the planning and implementation of pre- and post- disaster mitigation activities.

Stormwater Management: Efforts to reduce the impact of stormwater or snowmelt runoff on flooding and water quality.

Stormwater Detention: The storing of stormwater runoff for release at a restricted rate after the storm subsides, or the flood crest passes.

Substantial Damage: Damage of any origin sustained by a structure in a Special Flood Hazard Area whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage.

Surface Faulting: The differential movement of two sides of a fracture – in other words, the location where the ground breaks apart. The length, width, and displacement of the ground characterize surface faults.

Tectonic Plate: Torsionally rigid, thin segments of the earth’s lithosphere that may be assumed to move horizontally and adjoin other plates. It is the friction between plate boundaries that cause seismic activity.

Topographic: Characterizes maps that show natural features and indicate the physical shape of the land using contour lines. These maps may also include man-made features.

Tornado: A violently rotating column of air extending from a thunderstorm to the ground.

UST: An underground storage tank. LUST denotes a leaking underground storage tank.

Vulnerability: Describes how exposed or susceptible to damage an asset is. Vulnerability depends on an asset's construction, contents, and the economic value of its functions. Like indirect damages, the vulnerability of one element of the community is often related to the vulnerability of another. For example, many businesses depend on uninterrupted electrical power – if an electric substation is flooding, it will affect not only the substation itself, but a number of businesses as well. Often, indirect effects can be much more widespread and damaging than direct ones.

Vulnerability Assessment: The extent of injury and damage that may result from a hazard event of a given intensity in a given area. The vulnerability assessment should address impacts of hazard events on the existing and future built environment.

Wildfire: An uncontrolled fire spreading through vegetative fuels, exposing and possibly consuming structures.

Zone: A geographical area shown on a Flood Insurance Rate Map (FIRM) that reflects the severity or type of flooding in the area.

APPENDIX B – SCHOOL DISTRICTS

BENTON COUNTY SCHOOL DISTRICT MITIGATION PLANNING

The four public schools of Benton County were invited to participate in the development of the 2026 update. Following is the updated information that was provided with any mitigation strategies developed for the 2021 plan and any updates or changes to the strategies expressed by school officials for the 2026 BCHJHMP update.

BELLE PLAINE COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY

For several identified hazards, district operations are considered sustained mitigation actions that are sufficient for reducing risk in the community. Either current operation addresses the hazard or effective mitigation actions are not feasible due to the minimal historical occurrences. Refer to Table 1 below for the hazards currently addressed by district operations.

Table 1: Hazards Addressed by Belle Plaine Community School District Operations

HAZARD	JUSTIFICATION
Transportation Incident	The district regularly maintains its bus and vehicle fleet, provides safety training, maintains emergency plans, and completes practice drills.
Hazardous Materials Incident	District employees are trained to properly handle hazardous material, and the district maintains safety plans. Local fire departments and Benton County Sheriff's Office (SO) are trained to immediately respond to hazardous material incidents, and these agencies coordinate with Benton County Emergency Management Agency (EMA). In addition, Tier II hazardous material listings are maintained for the area.
Terrorism	The district maintains emergency plans, practices drills, and coordinates with Benton County EMA, Public Health, and SO.
Human Disease	The district has medical staff, provides health education to students, and coordinates with Benton County Public Health.
Radiological Incident	As needed, the district coordinates with Benton County EMA, the Benton County SO, local fire departments, and emergency medical response.

All other identified hazards were addressed by at least one mitigation action in Belle Plaine Community School District's final mitigation strategy. Several mitigation actions address several hazards due to the similar impacts. Mitigation actions for severe weather hazards are often similar. See Table 2 for the district's mitigation strategy.

Table 2: Belle Plaine Community School District Mitigation Strategy

Proposed Mitigation Action	Hazards Addressed	Action Steps	Notes
Construct a tornado safe room as a multipurpose addition to district facilities.	Thunderstorms/Lightning/Hail, Tornado/Windstorm	25	
Retrofit facilities for high wind hazard events	Thunderstorms/Lightning/Hail, Tornado/Windstorm	25	
Purchase and install generators in critical facilities	Thunderstorms/Lightning/Hail, Tornado/Windstorm	16	
Add air conditioning to all district facilities	Extreme Heat	59	Not all district facilities currently have air conditioning
Identify and implement storm water management solutions on district property	Flash Flood, Infrastructure Failure	38	

Incorporation of Mitigation Strategy into Belle Plaine Community Schools Planning Mechanism

The Belle Plaine Community School District does not have any specific long range or capital improvement or disaster management plans. The Belle Plaine Community School District spends $250,000 annually on structural improvements, repairs and modifications. These funds come from a combination of Physical Plant Equipment (PPEL) tax levy and one percent Local Option Sales Tax (LOST) levy. The five action items identified by Belle Plaine Community School officials will be addressed as funding through the normal budgetary process becomes available. A component of the Belle Plaine Community Schools facility planning process is securing grant funding for these

action items. If a grant can be located and secured for any of the six action items, the item will be completed.

Additional Information for the 2026 BCMJHMP

No changes or updates to the Belle Plaine Community School District mitigation strategy were indicated.

School district officials did report that the school district's buildings and properties sustained $537,016 in damages from the August 10, 2020 Derecho Windstorm.

The COVID-19 Pandemic disaster has caused the following challenges for the Belle Plaine Community School District:

- Increased supply costs for PPE, sanitizers, Bio-Mist machines, etc.
- Extra OT paid to custodial and maintenance staff for additional labor due to cleaning of the facilities
- Substitute teachers were in short supply for staff absences due to positive tests/illness/quarantines.
- Additional technology had to be purchased, i.e. hotspots, SWIVL stands, additional Chromebooks, laptops for the virtual learning components.

BENTON COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY

For several identified hazards, district operations are considered sustained mitigation actions that are sufficient for reducing risk in the community. Either current operation addresses the hazard or effective mitigation actions are not feasible due to the minimal historical occurrences. Refer to Table 3 below for the hazards currently addressed by district operations.

Table 3: Hazards Addressed by Benton Community School District Operations

HAZARD	JUSTIFICATION
Transportation Incident	The district provides STOP (School Transportation Operating Procedures) training and provides an annual two hour refresher course for all drivers.
Hazardous Materials Incident	District employees are trained to properly handle hazardous material, and the district maintains safety plans. Local fire departments and Benton County Sheriff's Office (SO) are trained to immediately respond to hazardous material incidents, and these agencies coordinate with Benton County Emergency Management Agency (EMA). In addition, Tier II hazardous material listings are maintained for the area.
Terrorism	All school district employees are training in the "I Love You Guys" safety and security protocol.
Human Disease	The district has medical staff, provides health education to students, and coordinates with Benton County Public Health on all notices and information on disease notifications.
Radiological Incident	The school district has participated with Duane Arnold Energy Center for all related actions to emergency radiological incident awareness as posted and provided by the agency.

All other identified hazards were addressed by at least one mitigation action in Benton Community School District's final mitigation strategy. Several mitigation actions address several hazards due to the similar impacts. Mitigation actions for severe weather hazards are often similar. See Table 4 for the district's mitigation strategy.

Table 4: Benton Community School District Mitigation Strategy

Proposed Mitigation Action	Hazards Addressed	Action Steps	Notes
Construct a tornado safe room as a multipurpose addition to district facilities.	Thunderstorms/Lightning/Hail, Tornado/Windstorm	25	All District Buildings are in need of tornado safe rooms. This includes the MS/HS in Van Horne; Keystone Elementary in Keystone, Iowa; Atkins Elementary in Atkins, Iowa; Norway Elementary in Norway, Iowa; and Central Office Complex in Van Horne.
Purchase and install generators in critical facilities	Thunderstorms/Lightning/Hail, Tornado/Windstorm	16	Generators are needed at Atkins Elementary, Norway Elementary, Keystone Elementary, Transportation Warehouse in Van Horne, Bus Barn in Norway, and Bus Barn in Blairstown.

Incorporation of Mitigation Strategy into Benton Community Schools Planning Mechanism

The Benton Community School District does not have any specific long range or capital improvement or disaster management plans. The Benton Community School District spends $100,00 to $150,000 annually on structural improvements, repairs and modifications. These funds come from a combination of Physical Plant Equipment (PPEL) tax levy and one percent Local Option Sales Tax (LOST) levy. These two action items identified by Benton Community School officials will be addressed as funding through the normal budgetary process becomes available. A component of the Benton Community Schools facility planning process is securing grant funding for these action

items. If a grant can be located and secured for either of the two action items, the item will be completed.

Additional Information for the 2026 BCMJHMP

No significant changes or updates to the Benton Community School District mitigation strategy were indicated.

School district officials did report that the school district's buildings and properties sustained $6 million in damages from the August 10, 2020 Derecho Windstorm. This included:

- Extensive roof damage to the MS/HS in Van Horne and Norway Elementary.
- Minor roof damage to Atkins and Keystone Elementary Schools
- Major damage to various building structures district wide, i.e. Bus Garages, Storage Facilities, Concession and Ticket Booths
- All facilities had tree, fence, and light pole damage
- At the athletic field the press box, scoreboards, flag poles, and greenhouse were all severely damaged

The COVID-19 Pandemic disaster caused the following challenges for the Benton Community School District:

- Major expense categories include technology, PPE, and cleaning equipment and product
- Schedules, routines, extra-curricular and general programming impacted
- Significant loss of revenue for activity programs

VINTON-SHELLSBURG COMMUNITY SCHOOL DISTRICT MITIGATION SUMMARY

For several identified hazards, district operations are considered sustained mitigation actions that are sufficient for reducing risk in the community. Either current operation addresses the hazard or effective mitigation actions are not feasible due to the minimal historical occurrences. Refer to Table 5 below for the hazards currently addressed by district operations.

Table 5: Hazards Addressed by Vinton-Shellsburg Community School District Operations

HAZARD	JUSTIFICATION
Extreme Heat	All school facilities are equipped to varying degrees with air conditioning. The High School is kept cool with geothermal that was installed when it was built. Tilford Elementary has roof top units, and the Middle School and Shellsburg Elementary have window units in most rooms. As long as the units are all working, extreme heat is not an issue while school is in session. If units aren't working and there is extreme heat, the school would go to an early out schedule. School district officials also watch the heat on the busses as they do not have air conditioning.
Flash Flood	The district has two schools that sit on a flood plain: Tilford Elementary and the Middle School. Historically there has not been any flooding that has occurred while school has been in session.
Transportation Incident	The district provides STOP (School Transportation Operating Procedures) training and provides an annual two hour refresher course for all bus drivers.
Hazardous Materials Incident	All district employees are trained to properly handle hazardous materials, and the district maintains safety plans at each building. MSDS sheets are kept on all hazardous chemicals kept in our buildings and building custodians and district maintenance all have additional training. The local fire department is trained to

	immediately respond to hazardous materials incidents.
Infrastructure Failure	All buildings have emergency plans for evacuation procedures.
Terrorism	All buildings have a plan in place for intruders in the building. Staff is trained in the ALICE Program, and some members are certified trainers. The district has worked with local law enforcement and first responders on establishing emergency plans.
Human Disease	The district has trained medical staff and trains all staff on bloodborne pathogens. The district provides health education to *some* of our students at the high school level, but perhaps an action step would be to provide health education to all of our students. The district coordinates with Benton County Public Health and our local hospital and medical providers.
Severe Winter Storm	All buildings have plans in place for when a severe winter storm is an immediate risk.
Thunderstorm/Lightning/Hail	All buildings have emergency plans in place.
Structural Fire	All buildings have a plan in place for a structural fire.
Tornado/Windstorm	All buildings have emergency plans in place and practice tornado drills.
Transportation Incident	The district regularly maintains its bus and vehicle fleet, provides training for its drivers, and has emergency plans in place.
Radiological Incident	As needed, the district has coordinated with the Duane Arnold Energy Center and the Benton County Emergency Management Agency and has emergency plans in place.

All other identified hazards were addressed by at least one mitigation action in Vinton-Shellsburg Community School District's final mitigation strategy. Several mitigation actions address several hazards due to the similar impacts. Mitigation actions for severe weather hazards are often similar. See Table 6 for the district's mitigation strategy.

Table 6: Vinton-Shellsburg Community School District Mitigation Strategy

Proposed Mitigation Action	Hazards Addressed	Action Steps	Notes
Develop a written flood plan	Flood – Flash and Riverine	40	The district does not have a written flood plan. It does have two structures within a flood plain.
Reshape and pace parking lot so water flows away from structures.	Flood – Flash	44	Both Tilford Elementary and the Middle School in Vinton have parking lots surrounding them that slope towards the buildings.
Construct a tornado safe room in existing facilities or as attachments to existing facilities	Infrastructure Failure Tornado/Windstorm	25	None of the district's facilities have tornado safe rooms.
Purchase and install generators in critical facilities	Thunderstorm/Lightning/Hail Tornado/Windstorm Infrastructure Failure	16	Generators are needed at all critical facilities in the district.
Hire a school resource officer in partnership with Vinton Police Department.	Terrorism	6	Need a person to coordinate and manage security efforts. Completed
Provide health education to all students at the high school level.	Human Disease		Only some students receive health education at the high school level.

Incorporation of Mitigation Strategy into Belle Plaine Community Schools Planning Mechanism

The Vinton-Shellsburg Community School District does not have any specific long range or capital improvement or disaster management plans. The Vinton-Shellsburg Community School District spends $4,000,000 annually on structural improvements, repairs and modifications. These funds come from a combination of Physical Plant Equipment (PPEL) tax levy and one percent Local Option Sales Tax (LOST) levy. The six action items identified by Vinton-Shellsburg Community School officials will be addressed as funding through the normal budgetary process becomes available. A component of the Vinton-Shellsburg Community Schools facility planning process is securing grant funding for these action items. If a grant can be located and secured for any of the six action items, the item will be completed.

Additional Information for the 2026 BCMJHMP

No changes or updates to the Vinton-Shellsburg Community School District mitigation strategy were indicated.

Since the 2021 plan update, the district has continued to invest in facility improvements and HVAC upgrades across buildings, which has strengthened the ability to respond to extreme heat and indoor air quality concerns. A School Resource Officer position has been established in partnership with local law enforcement, enhancing safety and security efforts.

School district officials did report that the school district’s buildings and properties sustained $1million in damages from the August 10, 2020 Derecho Windstorm. This included:

- The major structural damages occurred to the roofs of Shellsburg Elementary, Tilford Elementary, and the Middle School. Cost to fix roof damages exceeded $300,000.
- There was structural damage to the bus barn in Shellsburg estimated at $100,000.
- There was structural damage to the high school greenhouse estimated at $25,000.
- The storm mitigation clean up at Shellsburg Elementary was approximately $150,000
- Tree damage removal and replacement exceeded $100,00

The COVID-19 Pandemic disaster caused the following challenges for the Vinton-Shellsburg Community School District:

- It affected school finances with additional purchases of cleaning supplies and protective equipment for students and staff
- It changed operating procedures at each of the district's buildings which incurred additional cost, time, and staffing resources.
- There have been structural changes to the HVAC systems and hygiene devices throughout the school district buildings.

CENTER POINT-URBANA COMMUNITY SCHOOL DISTRICT MITGATION SUMMARY

Mitigation information and mitigation strategy for the Center Point-Urbana Community School District are covered in the Linn County Multi-Jurisdictional Hazard Mitigation Plan.

APPENDIX C – UTILITIES

VINTON MUNICIPAL ELECTRIC UTILITY HAZARD MITIGATION PLAN

Updated information provided by VMEU General Manager Kevin Kirchner, April 2026.

The Vinton Municipal Electric Utility (VMEU) is a jurisdiction of its own and has hazard mitigation needs that are unique and separate from those of the City of Vinton and any other entity in Benton County. Therefore, the hazard mitigation needs of the utility are being addressed separately from those of the other Benton County jurisdictions.

VMEU was started in 1895 when the city council decided to start providing electrical power to Vinton residents. A new generator was ordered and installed in 1896. The plant was located right next to the Cedar River because generators at the time could use river water as a coolant. The generation plant is still at the same location, within the 100 year flood plain area of the city.

VMEU is governed by a 5 person Utility Board separate from the city and the city council. It is a separate entity from the City of Vinton. Properties of the utility are valued at $22 million.

The utility has under its control the Electric Generation Plant located at 203 E. 2nd Street, Storage Building at 301 E. 2nd Street, Office Building with Distribution at 214 E. 2nd Street, and a Storage Building at 206 E. 2nd Street. These facilities are within the 100 year flood plain of the Cedar River. The utility also has substations at 10th Avenue and 8th Street, Hwy 218 and G Avenue, 2009 S. K Avenue, and 504 S. K Avenue. The generation plant has a total generating capacity of 17,675 KW or 17.675 megawatts and consists of seven generating units, 5 of which are dual fuel (natural gas and diesel fuel) and 2 are diesel only. This is capable of providing electrical power to the entire City of Vinton and routinely does during power outages. One notable event was following the 7/11/2011 Derecho Wind Disaster when the plant provided power to the City for a week. The plant is also occasionally called upon to provide power to the transmission grid by its wholesale power supplier.

The utility employs four full-time lineman; four full-time generation plant crew; and one Utility Manager. The utility also transfers funds from the utility to the City to pay for the full-time wages of one office staff member, ½ of the City Clerk's wages, and ½ of the city meter reader's wages. The projected revenue for FY2026/2027 for the utility is $6,700,000.

Below is the list of hazards that could impact the VMEU:

Extreme Heat
Thunderstorm/Lightning/Hail
Structural Fire
Tornado/Windstorm
Severe Winter Storm
Flood-Flash or Riverine

The VMEU was “flooded out” during the historic Midwestern Floods that began on June 8, 2008. The flood caused $5.8 million in damages to the generation plant, office, and distribution building. It was nine months before the generation plat was operable again.

INCORPORATION OF MITIGATION STRATEGY INTO VMEU PLANNING MECHANISMS

The VMEU does not have any specific long range or capital improvement or disaster management plans. The VMEU spends approximately $350,000 on structural improvements, repairs, and modifications. This does not include capital improvements. The three ongoing action items identified by the VMEU will be addressed as funding through its normal budgetary process becomes available. A component of the VMEU facility planning process is securing grant funding for these action items. If a grant can be located and secured for any of the three ongoing action items, the item will be completed.

Action Step 4 from the 2020 Benton County Multi-Jurisdictional Hazard Mitigation Plan update has been completed.

Ongoing Action Steps

Action Step VMEU 1	Relocate Vinton Municipal Electrical Utility (VMEU) generation plant & distribution building to a location outside of the flood plain.
Applicable Hazards	Flood – Flash and Riverine
Applicable Communities	Vinton
Analysis	The VMEU generation plant and distribution building are located on the bank of the Cedar River. This has led to flood water problems in the past, most notably in 2008 when the buildings were flooded and the plant was offline for nine months. The flood caused $5.8 million in damages to the plant. The only permanent solution is relocation of the entire plant to a location entirely outside of the 100 year and 500 year flood zone for the City of Vinton.
Timeline	Completion by 2031
Estimated Cost	$50,000,000 (estimate from 2020)
Mitigation Measure Category	6
Responsible Party	Vinton Municipal Electrical Utility (VMEU)
Funding Source	Vinton Municipal Electrical Utility, National Disaster Resilience Competition, BCA 404 Grant, and Hazard Mitigation Project Grant Program
Related to Goals	2,6
Priority	1

Action Step VMEU 2	Convert all City of Vinton overhead power lines to underground.
Applicable Hazards	Tornado/Windstorm, Severe Winter Storm, Thunderstorm/Lightning/Hail
Applicable Communities	Vinton
Analysis	Ninety percent of the City of Vinton electrical distribution lines are above ground. This leaves them susceptible to damage from tornado/windstorms, ice storms, and lightning which can cause power outages. Burying the power lines underground alleviates this threat.
Timeline	Completion by 2031
Estimated Cost	$10,000,000 (estimate from 2020)
Mitigation Measure Category	2
Responsible Party	Vinton Municipal Electrical Utility (VMEU)
Funding Source	Vinton Municipal Electrical Utility, National Disaster Resilience Competition, BCA 404 Grant, and Hazard Mitigation Project Grant Program
Related to Goals	2,6
Priority	1

Action Step VMEU 3	Permanent flood wall to encompass all of the Vinton Municipal Electrical Utility (VMEU) generation and distribution area.
Applicable Hazards	Flood – Flash and Riverine
Applicable Communities	Vinton
Analysis	The VMEU generation and distribution area is within the 100 year floodplain area of the City of Vinton, leaving the facilities susceptible to flooding and becoming inoperable as happened in 2008. A permanent flood wall protecting the VMEU generation and distribution area would prevent flood water inundation of the area. This would allow the VMEU to continue to operate during river or flash flood events.
Timeline	Completion by 2031
Estimated Cost	$12,000,000 (estimate from 2020)
Mitigation Measure Category	6
Responsible Party	Vinton Municipal Electrical Utility (VMEU)
Funding Source	Vinton Municipal Electrical Utility, National Disaster Resilience Competition, BCA 404 Grant, and Hazard Mitigation Project Grant Program
Related to Goals	2,6
Priority	1

Completed Action Step

Action Step VMEU 4	Purchase more HESCO barriers to increase the current protection capabilities.
Applicable Hazards	Flood – Flash and Riverine
Applicable Communities	Vinton
Analysis	Following the Flood of 2008, the City of Vinton purchased HESCO barriers adequate to protect the VMEU generation and distribution area and other critical infrastructure areas from floodwaters of the 100-year recurrent flood. To fully protect the VMEU generation and distribution area enough HESCO barriers need to be available to provide protection from a 500-year recurrent flood. **We have purchased additional HESCO barriers along with the city to protect VMEU and the fire department from a flood to approximately 27 feet. (The Flood of 2008 was 24.7 feet).**
Timeline	**COMPLETED**
Estimated Cost	$1,000,000
Mitigation Measure Category	2
Responsible Party	Vinton Municipal Electrical Utility (VMEU)
Funding Source	Vinton Municipal Electrical Utility, National Disaster Resilience Competition, BCA 404 Grant, and Hazard Mitigation Project Grant Program
Related to Goals	2,6
Priority	1

VINTON MUNICIPAL COMMUNICATIONS UTILITY HAZARD MITIGATION PLAN

Updated information provided by VMCU General Manager Matt Storm, April 2026.

The Vinton Municipal Communications Utility (VMCU) is a jurisdiction of its own and has hazard mitigation needs that are unique and separate from those of the City of Vinton and any other entity in Benton County. Therefore, the hazard mitigation needs of the utility are being addressed separately from those of the other Benton County jurisdictions.

In November of 2015 the citizens of the City of Vinton voted overwhelmingly to form a telecommunications utility and asked VMEU to lead the initiative. A feasibility study was conducted in 2017 and in late 2018 the City began developing a publicly owned Fiber-to-the-Premise (FTTP) network. Work continued over the next year to build a system from the ground up with underground deployment of approximately 82 miles of fiber. The City estimated a cost of $8.9 million to connect all 2100 premises within the community to the service.

The system, iVinton, went live in March 2020 with customer installations beginning in June 2020. By August 2021 iVinton had 1,000 of 2,450 residential and business premises, or 41% of the available premises in Vinton connected to service.

The Vinton Municipal Communications Utility is governed by the Vinton Municipal Electric Utility. The utility has a 5 person Board of Trustees separate from the city and the city council. It is a separate entity from the City of Vinton.

The utility employs two customer service personnel to work with customers directly and provide a hometown touch to customer care. VCMU partners with ImOn Communications of Cedar Rapids for technical support and field customer service. VMCU also partners with several other municipal broadband providers in Iowa as join owners of an IPTV video platform in Cedar Falls. Cedar Falls Utilities, the managing partner of the joint effort, provides additional engineering support to VMCU.

Below is the list of hazards that could impact the VMCU:

Extreme Heat
Thunderstorm/Lightning/Hail
Structural Fire
Tornado/Windstorm
Severe Winter Storm
Flood-Flash or Riverine

INCORPORATION OF MITIGATION STRATEGY INTON VMCU PLANNING MECHANISMS

The VMCU does not have any specific long range or capital improvement or disaster management plans. The action items identified by the VMCU will be addressed as funding through its normal budgetary process becomes available. A component of the VMCU facility planning process is securing grant funding for these action items. If a grant can be located and secured for any of the action items, the item will be completed.

APPENDIX D – MEETING INFORMATION

EMERGENCY MANAGEMENT
BENTON COUNTY IOWA
StormReady County 2004-2027

BENTON COUNTY
EMERGENCY MANAGEMENT
DEAN VRBA, COUNTY COORDINATOR
213 2nd AVE. VINTON, IOWA 52349
PHONE (319) 472-4519 CELL (319) 640-5080 E-MAIL: ema@bentoncountyema.com

Meeting Notice:

Benton County Emergency Management Commission
MONDAY JULY 28, 2025, County EMA Office/EOC -
213 2nd Ave. - Vinton, Iowa
1830 hours (6:30 p.m.) Use east door off 2nd Ave. for access to building

Proposed Agenda:
(items may be discussed in any order)

OPENING PROTOCOL:
Call to Order
Roll Call by Sign In
Approve Agenda
Approval of Minutes: - *May 19, ,2025 meetings*

1. **ORGANIZATION:**
   1.1 EM Budget Financial Report & EMPG Report
   1.2 Region 6 LEPC & HMEP Grant Report
   1.3 DAEC Update

2. **PLANNING:**
   2.1 Multi-jurisdictional Hazard Mitigation Plan Update due 2026 (County)
   2.2 Emergency Management Plan - Review/Approve ESF-10

3. **TRAINING:**
   3.1 Training Received
   3.2 Training Calendar

4. **EXERCISE:**
   4.1 Measles Exercise

5. **EQUIPMENT:**
   5.1

6. **OTHER**
   6.1 Coordinator's Report – Other
   6.2 Members and Public Open Forum - Comments, Concerns, Questions

7. **ADJOURN**

Posted: July 23, 2025

EMERGENCY MANAGEMENT
BENTON COUNTY IOWA

StormReady County 2004-2027

BENTON COUNTY EMERGENCY MANAGEMENT

DEAN VRBA, COUNTY COORDINATOR

213 2nd AVE. VINTON, IOWA 52349
PHONE (319) 472-4519 CELL (319) 640-5080 E-MAIL: ema@bentoncountyema.com

EMERGENCY MANAGEMENT COMMISSION MEETING

Attendance Record

DATE: 07/28/25 LOCATION: Benton County EOC

Bruce Visser, Mayor City of Atkins	Dan Rammelsberg, Rep. City of Atkins
Lyle Morrow, Mayor City of Belle Plaine	, Rep. City of Belle Plaine
Rodney Kubichek, Mayor City of Blairstown	Bryce Konigsmark, Rep. City of Blairstown
Garrett Flickinger, Mayor City of Garrison	Steve Meyer, Rep. & Chair City of Garrison
Mark Andresen, Mayor City of Keystone	Jamey Clemann, Rep. City of Keystone
John Brandt, Mayor City of Luzerne	Andrew Davis, Rep. City of Luzerne
Austin Brase, Mayor City of Mt. Auburn	, Rep. City of Mt. Auburn

EMERGENCY MANAGEMENT
BENTON COUNTY IOWA

StormReady County 2004-2027

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PHONE (319) 472-4519 CELL (319) 640-5080 E-MAIL: ema@bentoncountyema.com

EMERGENCY MANAGEMENT COMMISSION MEETING

Attendance Record

DATE: 07/28/25 LOCATION: Benton County EOC

Doug Boddiker, Mayor City of Newhall	Gerald Gessner, Rep. City of Newhall
Loras Schulte, Mayor City of Norway	Aric Rust, Rep. City of Norway
Phillip Travis, Mayor City of Shellsburg	Dennis Gardemann, Rep. City of Shellsburg
Gary Benson, Mayor City of Urbana	, Rep. City of Urbana
Pat Gorkow, Mayor City of Van Horne	Jeremy Hlas, Rep. City of Van Horne
Bud Maynard, Mayor City of Vinton	Charlie Garwood, Rep. City of Vinton
Todd Gibbs, Mayor City of Walford	, Rep. City of Walford
Ron Tippett, Sheriff Benton County	Tracey Seeman, Supervisor Benton County

EMERGENCY MANAGEMENT
BENTON COUNTY IOWA

StormReady County 2004-2027

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DEAN VRBA, COUNTY COORDINATOR
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PHONE (319) 472-4519 CELL (319) 640-5080 E-MAIL: ema@bentoncountyema.com

EMERGENCY MANAGEMENT COMMISSION MEETING

GUEST Attendance Record

DATE: 07/28/25 LOCATION: Benton County EOC

NAME (Please Print)	CITY
Robyn Reese	Contractor-Emergency Planning & Consulting
Barbara Palmer	KLD Associates
Mike Davis	DAEC

T

CITY OF LUZERNE
REGULAR MEETING AGENDA– THURSDAY, FEBRUARY 5, 2026
7:00 P.M.

A. Meeting called to order

B. Discuss approval of the previous meeting's minutes

C. Discuss approval of the bills

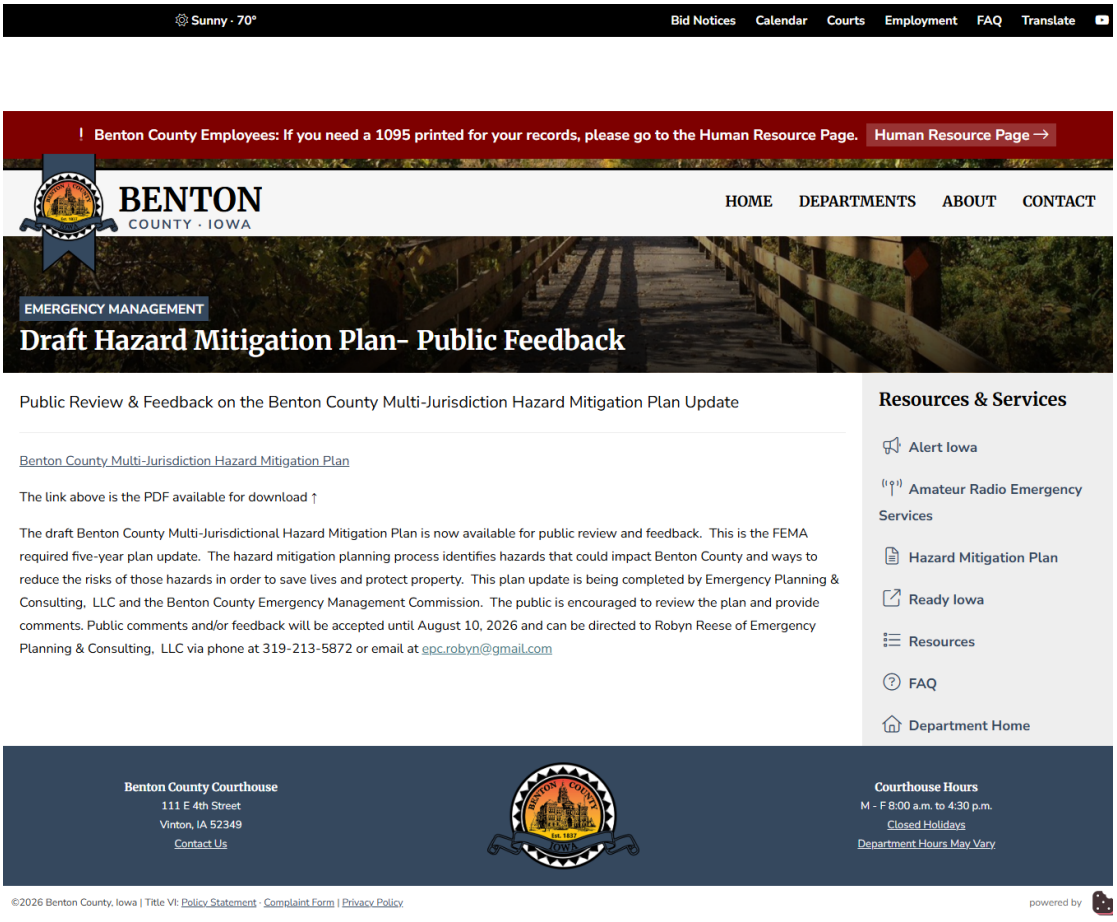
D. Old business
1. Robyn Reese present to discuss changes needed for the 2016 Hazard Mitigation Plan
2. Discuss the FY27 budget
   A. Set a public hearing date for the proposed Property Tax Rate
3. Fire Chief Andrew Davis present to discuss insurance options for the fire department

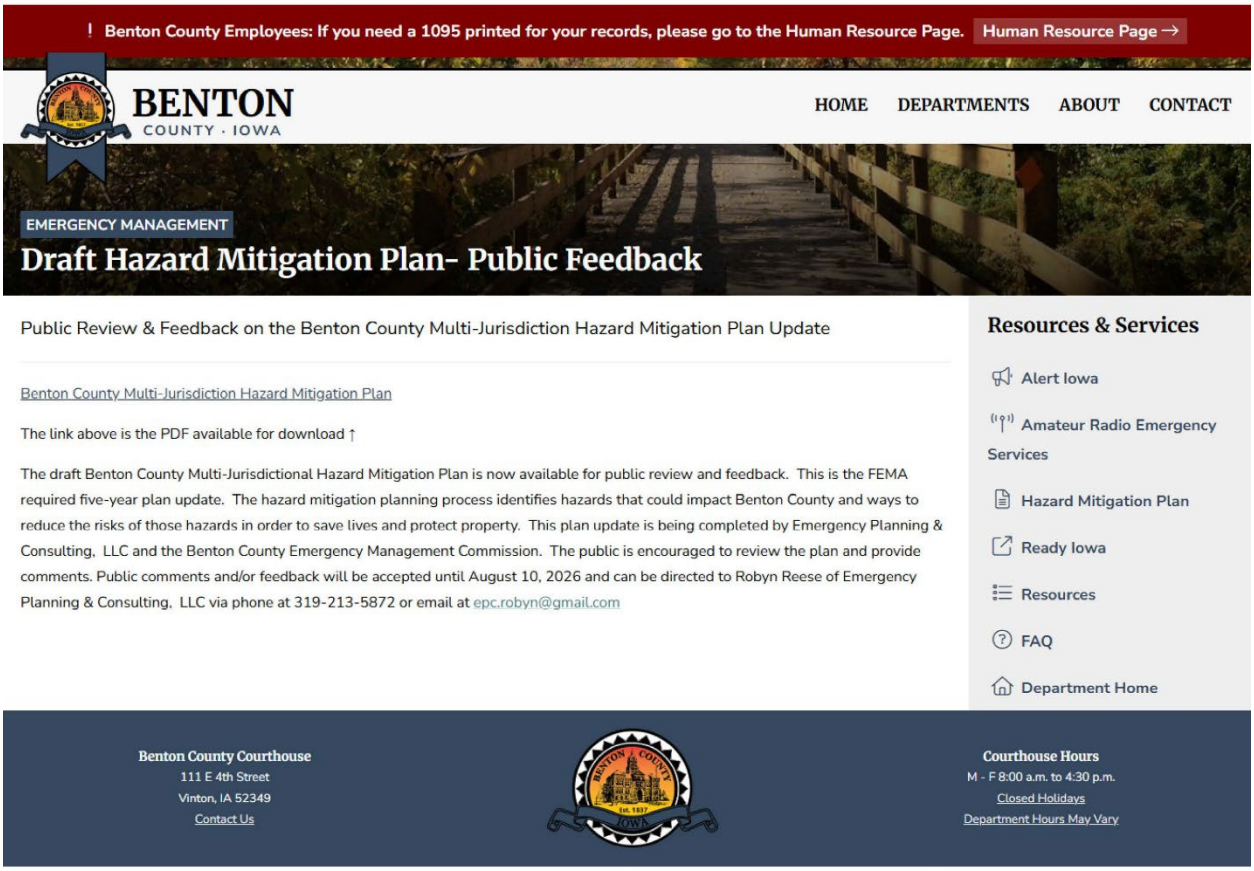
E. New business
1. Discuss putting a roll up door on the west side of the bay area of the fire station
2. Discuss recodifying the city ordinances

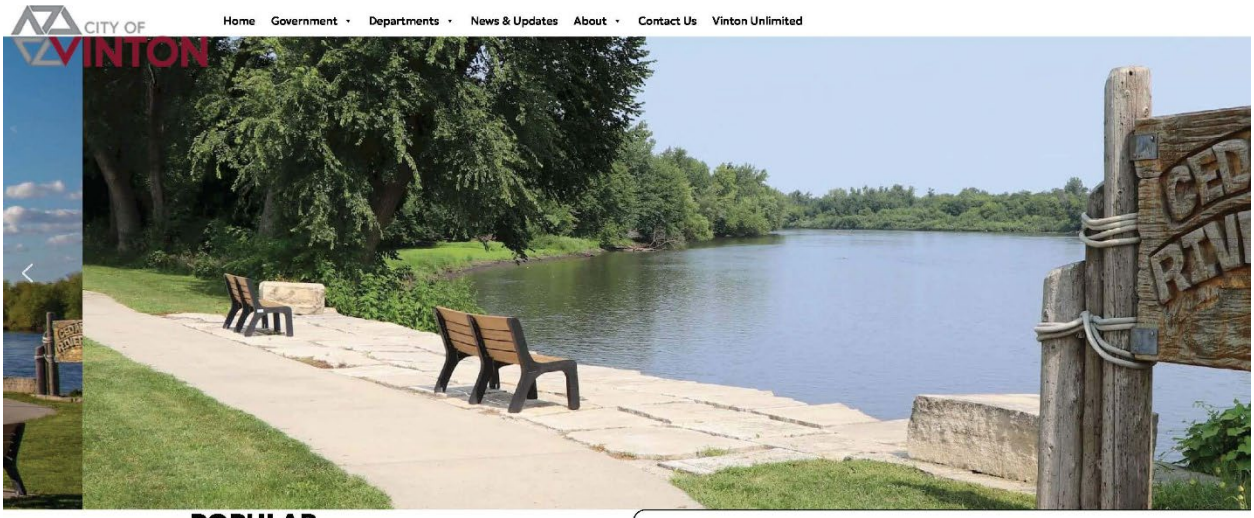
F. Further business

APPENDIX E – PUBLIC FEEDBACK

No comments or feedback was received by email or by phone call during the 30 days the plan draft was available for public review on the Benton County website and the City of Vinton website.




! Benton County Employees: If you need a 1095 printed for your records, please go to the Human Resource Page. Human Resource Page →
BENTON
COUNTY · IOWA
HOME
DEPARTMENTS
ABOUT
CONTACT
EMERGENCY MANAGEMENT
Draft Hazard Mitigation Plan- Public Feedback
Public Review & Feedback on the Benton County Multi-Jurisdiction Hazard Mitigation Plan Update
Benton County Multi-Jurisdiction Hazard Mitigation Plan
The link above is the PDF available for download ↑
The draft Benton County Multi-Jurisdictional Hazard Mitigation Plan is now available for public review and feedback. This is the FEMA required five-year plan update. The hazard mitigation planning process identifies hazards that could impact Benton County and ways to reduce the risks of those hazards in order to save lives and protect property. This plan update is being completed by Emergency Planning & Consulting, LLC and the Benton County Emergency Management Commission. The public is encouraged to review the plan and provide comments. Public comments and/or feedback will be accepted until August 10, 2026 and can be directed to Robyn Reese of Emergency Planning & Consulting, LLC via phone at 319-213-5872 or email at epc.robyn@gmail.com
Resources & Services
Alert Iowa
Amateur Radio Emergency Services
Hazard Mitigation Plan
Ready Iowa
Resources
FAQ
Department Home
Benton County Courthouse
111 E 4th Street
Vinton, IA 52349
Contact Us
Courthouse Hours
M - F 8:00 a.m. to 4:30 p.m.
Closed Holidays
Department Hours May Vary



POPULAR LINKS

PAY BILL ONLINE
(HTTPS://BILLPAY.IVINTON.COM/BILLPAY/LOGIN)

UTILITIES
(HTTPS://WWW.CITYOFVINTON.ORG/VINTON-UTILITIES)

APPLICATIONS & PERMITS
(HTTPS://WWW.CITYOFVINTON.ORG/APPLICATIONS-PERMITS)

AGENDAS & MINUTES
(HTTPS://PORTAL.LASERFICHE.COM/PORTAL/WELCOME.ASPX?REPO=R-75D44567&REF=DESIGNER)

CITY ORDINANCES
(HTTPS://CODELIBRARY.AMLEGAL.COM/CODES/VINTONIA/LATEST/OV

CITY OF VINTON

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PUBLIC REVIEW NEEDED :: BENTON COUNTY HAZARD MITIGATION PLAN

HOME | NEWS & UPDATES | PUBLIC REVIEW NEEDED :: BENTON COUNTY HAZARD MITIGATION PLAN

Posted: July 22, 2026

The draft Benton County Multi-Jurisdictional Hazard Mitigation Plan is now available for public review and feedback. This is the FEMA required five-year plan update. The hazard mitigation planning process identifies hazards that could impact Benton County and ways to reduce the risks of those hazards in order to save lives and protect property. This plan update is being completed by Emergency Planning & Consulting, LLC and the Benton County Emergency Management Commission. The public is encouraged to review the plan and provide comments. Public comments and/or feedback will be accepted until August 10, 2026 and can be directed to Robyn Reese of Emergency Planning & Consulting, LLC via phone at 319-213-5872 or email at epc.robyn@gmail.com.

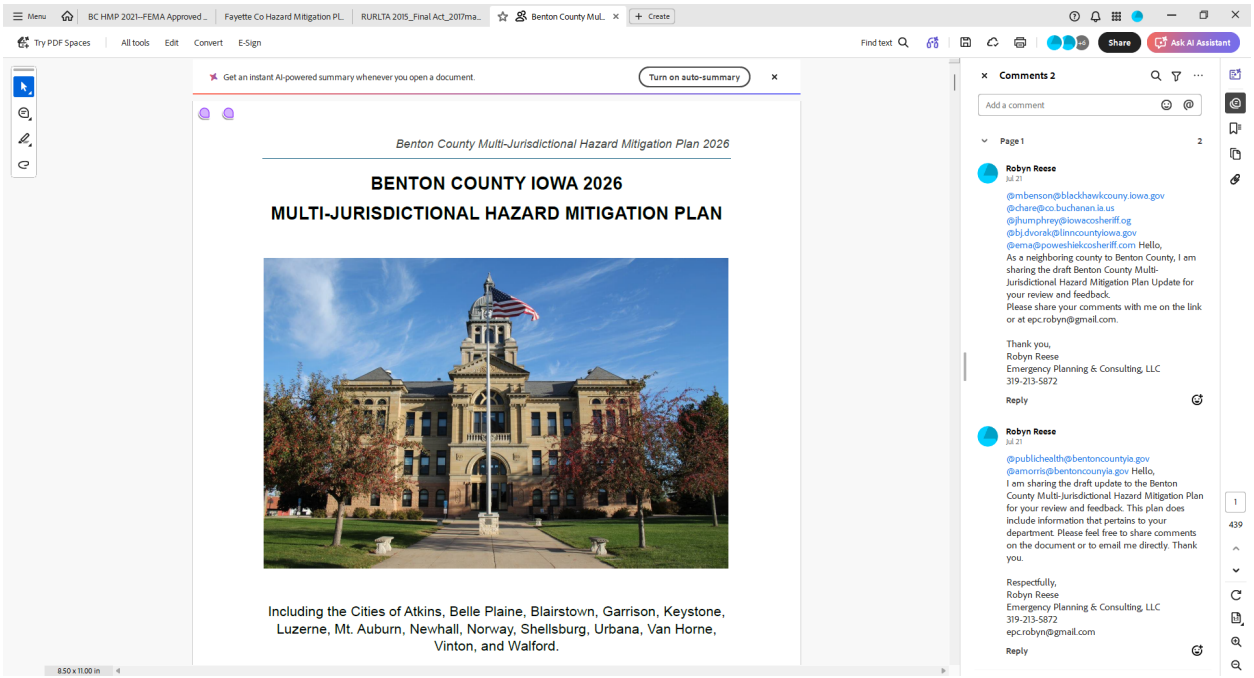
Benton County Multi-Jurisdictional Hazard Mitigation Plan (https://www.cityofvinton.org/wp-content/uploads/2026/07/BentonCo_MJHMP2026_draft.pdf)

General Information (https://www.cityofvinton.org/news-category/general-information)

ALL NEWS (/NEWS)

APPENDIX F – STAKEHOLDER FEEDBACK

No comments or feedback from stakeholders was received after a link to the plan draft was sent.



APPENDIX G – RESOLUTIONS