

**Integrating Climate Hazards &  
Economic Development:  
Recommendations for Fayetteville, NC**

By

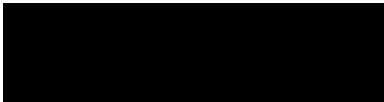
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A paper submitted to the faculty of  
The University of North Carolina at Chapel Hill in partial  
fulfillment of the requirements for the degree  
Master of City and Regional Planning

**April 26, 2017**

This paper represents work done by a UNC-Chapel Hill Master of City and Regional Planning student. It is not a formal report of the Department of City and Regional Planning, nor is it the work of the department's faculty.

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## EXECUTIVE SUMMARY

This report examines the state of hazard mitigation and economic development within the City of Fayetteville by focusing on the planning process and risk assessment elements of the regional hazard mitigation plan and economic development strategy through plan quality and plan interconnectivity analysis. To accomplish this task, this report begins with a literature review of current definitions and elements of hazard mitigation planning, economic development, economic resiliency, and plan quality analysis and plan interconnectivity; additionally, several economic resiliency documents are discussed to place this report with that body of work. A regional profile provides context for the City's locational, demographic, climate, and economic status. The plan analysis section features a modified combination of the Berke & Godschalk plan evaluation criteria and the *Kerr-Tarr* report's plan linking framework. The Hazard Profiles section represents a condensed version of the hazards profiles and climate risks identified in the Cumberland-Hoke Hazard Mitigation Plan and the Cumberland County Climate Resiliency Plan, while the spatial analysis evaluations the geographic location of these climate risks and economic indicators. The SWOT analysis incorporates the strengths, weaknesses, threats, and opportunities from the Southern Economic Development Commission's Comprehensive Economic Development Strategy, the Competitive Realities report, and the Cumberland County Climate Resiliency Plan and informs the implications and recommendations section, which synthesizes the results of the report's analysis with other local plans which govern the policy outlook with the City and provides recommendations moving forward for better plan evaluation and implementation.

## LITERATURE REVIEW

To provide a contextual framework for the necessity of this report, the current literature concerning hazard mitigation planning, economic development, and economic resiliency have been reviewed. The interactions of these types of planning and examples of interconnectivity are given, which will provide a reference for the structure of this report. Additionally, in order to provide an adequate framework for analysis, literature for plan quality and plan integration were reviewed and applied into the plan analysis and implication and recommendations portions of this report.

Hazard mitigation planning consists of identifying local policies and action that can be implemented over the long term to reduce the risk and future losses from hazards. Based on the assessment of hazards, vulnerabilities, and risks a specific community or location faces, the objectives for hazard mitigation planning include: identifying actions for risk reduction; focusing resources on the greatest risks and vulnerabilities; building partnerships with citizens, organizations, and businesses; increasing education and outreach for community threats and hazards; and aligning risk reduction with other community goals and objectives.<sup>1</sup> There are several documents which serve as tools for local and regional governments to develop and update their hazard mitigation plans. These include the Federal Emergency Management Agency (FEMA) Local Mitigation Planning Handbook, 2013, which provides a walkthrough of nine tasks required in developing and maintaining a success mitigation plan; the Hazard Mitigation Planning toolkit, which provides a plethora of resources for regarding the planning process, risk assessment, and hazard profiles; and the Hazard Mitigation: Integrating Best Practices into Planning report, which provides a handbook on the planner's role in mitigation planning, the role of the Disaster Mitigation Act, and how to integrate hazard mitigation planning into other local plans and development codes, along with cases studies for large, middle-sized, and small jurisdictions and rural communities.

Although there is no single standardized definition of economic development, there are commonly described objectives such as the creation of jobs and wealth; the improvement of quality of life; and/or as a process that influences growth and restructuring of an economy to enhance the economic well-being of a community. One of the major areas of economic

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<sup>1</sup> Local Mitigation Planning Handbook, Federal Emergency Management Agency, pg. 1-1-3.  
[https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema\\_local\\_mitigation\\_handbook.pdf](https://www.fema.gov/media-library-data/20130726-1910-25045-9160/fema_local_mitigation_handbook.pdf)

development involves policies which are explicitly directed to improve the business climate through specific efforts, whether those be through financing marketing, business retention and expansion, or real estate and infrastructure development.<sup>2</sup> Historically, these policies have developed and changed over time in a series of “waves” in which the focus, primary actors, and strategies have adapted to meet the current need. These waves have included the first wave, which focused on exogenous development by attracting outside firms through place marketing, prospecting, and incentives such as job tax credits, low interest loans, and infrastructure support; the second wave focused more on endogenous development with an emphasis on regional and local competitiveness and support for small, home-growth firms; the third, more recent wave has focused on ‘market governance’, with an emphasis on building industry clusters and networks which complement each other, with a rise of public-private partnerships to help steward the process.<sup>34</sup> The definition and policies of economic development are reflected within the mission statement of Fayetteville’s Economic and Business Development Department, stated below:

“...The mission of Economic and Business Development is attracting and supporting private investments; increasing employment opportunities; wages and personal income and supporting existing as well as attracting new high quality retail, commercial and industrial enterprises throughout the City, with a particular emphasis on redeveloping underperforming corridors and catalyst sites.”<sup>5</sup>

As a supplement to the City’s economic development mission, *A Competitive Realities Report for Fayetteville and Cumberland County, North Carolina*, prepared by Garner Economics, LLC was created to conduct an economic development strategy for Fayetteville and Cumberland County by analyzing the assets and challenges facing the local and regional economy through an industrial clustering paradigm. This report will contain aspects of this economic development strategy in terms of its regional profile and its implications and recommendations.

Economic resiliency is defined as the ability of a region or community to anticipate, withstand, and bounce back from any shocks to its businesses and overall economy,

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<sup>2</sup> The International Economic Development Council's Economic Development Reference Guide, “What is Economic Development”.

[http://www.iedconline.org/clientuploads/Downloads/IEDC\\_ED\\_Reference\\_Guide.pdf](http://www.iedconline.org/clientuploads/Downloads/IEDC_ED_Reference_Guide.pdf)

<sup>3</sup> Glasmeier, A. K. 2000. “Economic geography in practice: Local economic development policy.” In *The Oxford Handbook of Economic Geography*, edited by G. L. Clark, M. P. Feldman, and M. S. Gertler

<sup>4</sup> Ross, Doug and Robert E. Friedman. 1990. “The Emerging Third Wave: New Economic Development Strategies in the ‘90s.” *The Entrepreneurial Economy Review*. Vol. 9. No. 1

<sup>5</sup> Economic and Business Development, City of Fayetteville. <http://fayettevillenc.gov/government/city-departments/economic-and-business-development>

including: natural disasters or hazards; the closure of a large employer; the decline of an important industry; changes in the workforce; and climate change.<sup>6</sup> In the context of natural hazards, disaster events cause perturbation to the functions of a region's economic system by its negative impacts on assets, production and output, employment, or consumption. The effects of these events extend beyond the immediate property damage and expenses drawn from post-disaster recovery and property replacement; disaster consequences include the loss of output, productivity and tax revenue, loss of income and livelihood, potential displacement of workers and businesses.<sup>7</sup> To engage and measure these factors when considering economic resiliency, the Office of the Chief Economist of the Climate Change Group within the World Bank created a 2014 report, titled *Economic Resilience: Definition and Measurement*, which in the context of this report, will consider the factors of macroeconomic resilience: instantaneous resilience (the ability to limit the magnitude of the immediate loss of income for a given amount of capital losses; and dynamic resilience (the ability to reconstruct and recover quickly). Within the confines of this report, we will limit the scope economic resiliency within the context of these concepts, by looking at intersections of hazard risks and economic indicators, and evaluating how the regional plans provide for the City's ability to limit damage and bounce back afterwards.

In terms of integrating the elements of hazard mitigation planning, economic development, and economic resiliency, several reports and plans have provided a foundation for review. Nationally, there are several locations which have worked to integrate pre-disaster recovery planning into their Comprehensive Economic Development Strategies (CEDS) such as the Eastern Plains Economic Development Corporation, which features a section dedicated towards disaster strategy in pre- and post-disaster planning and implementation, including links to the region's Hazard Mitigation Plan and identifies community partners which can lead the mobilization effort.<sup>8</sup>; the Northwest Oregon CEDS which measures the number of businesses and jobs located in flood zones, total and by industry, and the number of critical facilities in flood zones<sup>9</sup>; and the State of Colorado's Economic Resilience Planning Evaluation Tool which contains

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<sup>6</sup> Building Economic Resilience in the Kerr-Tar Region: Recommendations for Linking Comprehensive Economic Development Strategies and Hazard Mitigation Plans, pg. 3

<sup>7</sup> Hallegatte, Stephane. Economic Resilience: Definition and Measurement. May 2014. Accessed April 2017. <http://elibrary.worldbank.org/doi/abs/10.1596/1813-9450-6852>.

<sup>8</sup> Comprehensive Economic Development Strategy 2012-2017, prepared by the Iowa Northland Regional Council of Governments for the Iowa Northland Regional Economic Development Commission (INREDC).

<sup>9</sup> Northwest Oregon Comprehensive Economic Development Strategy. Report. 2-51. March 2014. Accessed September 2016. [http://www.nworegon.org/Assets/dept\\_2/PM/pdf/2014-2018ceds-final.pdf](http://www.nworegon.org/Assets/dept_2/PM/pdf/2014-2018ceds-final.pdf).

economic mitigation, preparedness and/or recovery components which can be added to a community's CEDS<sup>10</sup>. While these are valuable examples, they are limited by the specific climate and weather impacts of their locations, in addition to their economic specialization mixes which might make exporting their recommendations directly to other regions inadequate<sup>11</sup>.

Within the state of North Carolina, however, the literature on integrated climate-based economic resiliency is scarce. The Kerr-Tar Regional Council of Governments, in partnership with the National Association of Development Organizations (NADO) and the Center for Hazards Research and Policy Development, created their *Building Economic Resilience in the Kerr-Tarr Region* report in order to assist the Council of Governments in identifying ways to align its hazard mitigation and economic development planning documents. To do this, the document identifies the four essential elements of within a Hazard Mitigation Plan (HMP) and a CEDS; discusses how they can inform each other and the benefits aligning these plans bring to a community; and provides recommendations on how each plan can improve, separately. In addition, there are a few minor references to other counties in the state within other reports, such as Rutherford County in the National Association of Counties' Strategies to Bolster Economic Resilience (in the context of attracting private investment). This lack of North Carolina literature and examples helped to prompt the development of this report, to serve as a foundation for future analysis and recommendations for the State.

AS THE FOCUS OF THIS REPORT IS TO EVALUATE THE PLANNING PROCESS AND RISK ASSESSMENT ELEMENTS OF THE REGIONAL ECONOMIC DEVELOPMENT AND HAZARD MITIGATION PLANS, LITERATURE CONSIDERING PLAN QUALITY EVALUATION AND PLAN INTEGRATION WERE REVIEWED. BERKE & GODSCHALK'S *SEARCHING FOR THE GOOD PLAN: A META-ANALYSIS OF PLAN QUALITY STUDIES* SERVES AS THE PLAN QUALITY EVALUATION TEMPLATE, USING A SERIES OF INTERNAL AND EXTERNAL CHARACTERISTICS TO EVALUATE ASPECTS SUCH AS ISSUE IDENTIFICATION AND VISION, GOALS, FACT BASE, IMPLEMENTATION, MONITORING AND EVALUATION, AND INTERNAL CONSISTENCY. FOR THIS REPORT, A MODIFIED VERSION OF THIS CRITERIA WILL BE USED, WITH EACH

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<sup>10</sup> Resilience in Economic Development Planning: Colorado Flooding DR 4145. Report. October 2014. Accessed April 2017. [https://www.eda.gov/files/about/disaster-recovery/EDA\\_CO-Economic-Resilience-Planning\\_Oct2014.pdf](https://www.eda.gov/files/about/disaster-recovery/EDA_CO-Economic-Resilience-Planning_Oct2014.pdf).

<sup>11</sup> US Economic Development Administration CEDS Content Guidelines, <https://www.eda.gov/ceds/content/economic-resilience.htm>



PLAN RATED WITHIN EIGHT FIELDS ON A NUMERIC SCALE. FOR THE PLAN INTERCONNECTIVITY ANALYSIS, THE KERR-TARR PLAN LINKING FRAMEWORK, DESCRIBED ABOVE, WILL BE USED TO LINK THE RESPECTIVE PLANS. RESEARCH METHODS

### *Site Selection Rationale*

The City of Fayetteville was chosen to serve as the location for this report for several reasons: Fayetteville is the sixth-largest municipality within the State<sup>12</sup>; its location within the Sandhills region makes it susceptible to significant weather events, such as Hurricane Matthew; and Fort Bragg's presence as a major economic actor, and the resulting interconnectivity the City and the base have in providing and maintaining the region's infrastructure. In addition, its proximity to the Triangle, provides the educational and personal capacity to further pursue the results of this report through the amount of planning-related research within the area of hazard mitigation and economic development which occurs within the region. Furthermore, my experience as a climate science intern for the non-profit Sustainable Sandhills facilitated the study of this topic by familiarizing myself with the Cumberland County Climate Resilience Plan and participating in a series of educational forums in which professionals and concerned residents discussed the impacts of these weather events and the lack of a comprehensive action plan in terms of protecting vital economic assets.

### *Analysis Structure*

This report consists of a regional profile, three types of analysis, and a section of implications and recommendations:

- ❖ The regional profile serves to familiarize the reader with the City of Fayetteville and provide context into the locational, sociodemographic, climate, and economic aspects of the area.
- ❖ The plan analysis is composed of a plan quality evaluation based on the modified version of the Berke & Godschalk plan quality criteria, which is restricted to 8 major characteristics, and of the Kerr-Tarr plan integration framework. The plan quality analysis and the plan integration will both focus on the Cumberland-Hoke Hazard

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<sup>12</sup> <http://factfinder.census.gov/faces/tableservices/jsf/pages/productview.xhtml?src=bkmk>

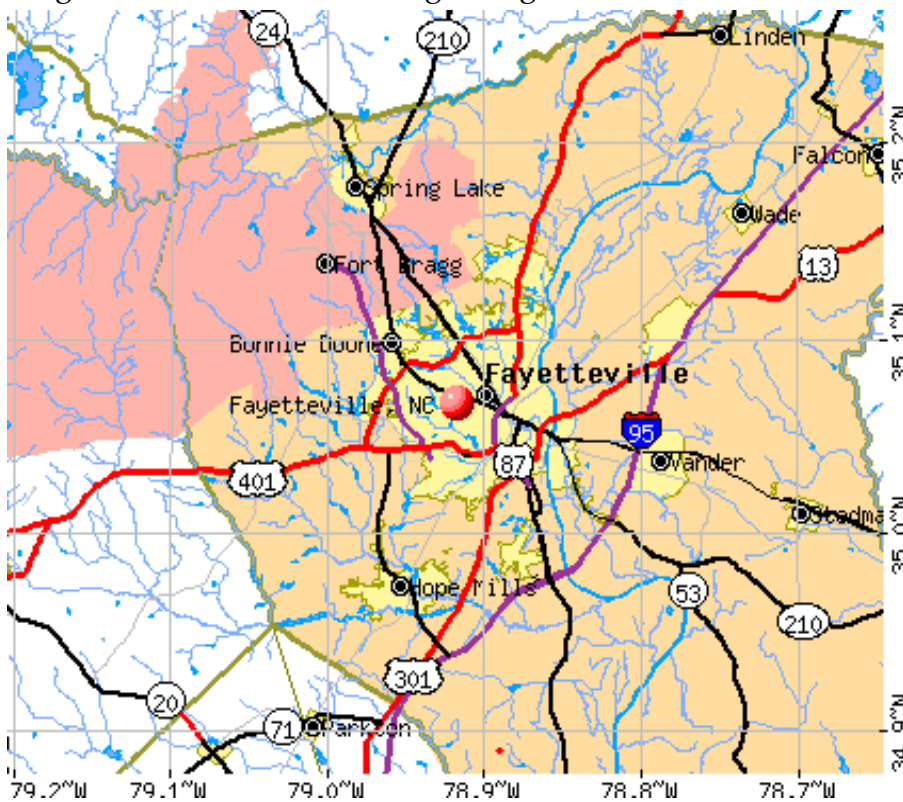
Mitigation Plan and the Southeast Economic Development Commission's Comprehensive Economic Development Strategy, 2012-2017.

- ❖ The Spatial Analysis is based on the hazard profile and climate risks from the Cumberland-Hoke HMP and the Cumberland County Climate Resiliency Plan (CCCRP). Additionally the spatial analysis will include urban wildfire risk assessments from the US Forest Service and Fire Modeling Institute and the Southern Group of State Foresters Wildfire Risk Assessment Portal; floodplain and commercial/industrial site location from the Cumberland County GIS portal and City of Fayetteville Economic and Business Development Commercial Sites and Buildings portal; and job concentrations as a proxy for industrial clustering, from the Work Area Profile Analysis feature of LED OnTheMap.
- ❖ SWOT Analysis: This SWOT analysis will feature elements of the analysis from the CEDS, the CCCRP, and the *A Competitive Realities Report for Fayetteville and Cumberland County, North Carolina*, which is an economic and industrial cluster analytic report designed to supplement the Fayetteville Economic and Business Development Department's efforts.
- ❖ Implications & Recommendations: This section will synthesize all the analysis and discuss their impacts, while provide recommendations to the City in terms of improving its plan quality, plan interconnectivity, and risk assessment process.

## REGIONAL PROFILE

### *Location*

Located in southeastern North Carolina, the City of Fayetteville is the sixth-largest municipality within the State, with a 2014 population of over 200,000 residents and total land area of 145.9 square miles. The City is centrally located between the western mountain range and the coast, running along the US Interstate 95 corridor. Within the greater



Fayetteville metropolitan area (the fifth largest in the State), the City is situated around the suburban areas of Hope Mills, Spring Lake, Raeford, Pope Field, Rockfish, Stedman, and Eastover. Straddling the northwestern border, Fort Bragg, the largest military base in the world with more than 50,000 active duty personnel, is a United States Army installation which spans parts of Cumberland, Hoke, Harnett, and

Source: <http://www.city-data.com/city/Fayetteville-North-Carolina.html>

Moore Counties.<sup>13</sup>

The City resides within the Sandhills physiographic region, which is characterized by broad, sandy ridges, and long, less sandy side slopes. Within Cumberland County, there is

<sup>13</sup> Fayetteville Community Profile, <http://fayettevillenc.gov/government/city-departments/economic-and-business-development/community-profile>

an abundance of soils classified as high capacity for crop producing, with much of this suitable farmland is located to the northeast and southeast of Fayetteville. Fayetteville, along with much of Cumberland County, is located within the Cape Fear River Basin, which covers 9,100 square miles of east-central North Carolina. The watershed acts as the primary water resource of the region, with Jordan Lake (approximately 51 miles upstream) serving as the primary flood control mechanism for the Cape Fear River<sup>14</sup>.

*Sociodemographic*

<b>City of Fayetteville-North Carolina Comparison<sup>15</sup></b>		
	Fayetteville, NC	North Carolina
<b>Population, 2014</b>	203,948	9,944,000
<b>Median Resident Age</b>	30.7 years	38.4 years
<b>Median Household Income, 2015</b>	\$40,408	\$47,830
<b>Estimated per capita income, 2015</b>	\$22,526	\$25,920 <sup>16</sup>
<b>Median Household/Condo Value, 2015</b>	\$121,700	\$160,100
<b>Median Gross Rent, 2014<sup>17</sup></b>	\$857	\$803
<b>Cost of Living Index, 2016</b>	89.9	94.7

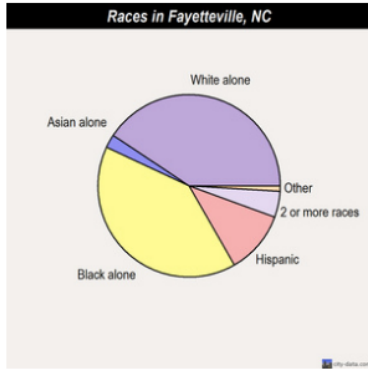
<sup>14</sup> Environmental Profile, Cumberland County Climate Resilience Report

<sup>15</sup> City-Data.com for Fayetteville, NC, <http://www.city-data.com/city/Fayetteville-North-Carolina.html>

<sup>16</sup> North Carolina Income Statistics, <https://www.incomebyzipcode.com/northcarolina>

<sup>17</sup> Fayetteville NC Residential Rent and Rental Statistics, Department of Numbers, <http://www.deptofnumbers.com/rent/north-carolina/fayetteville/>

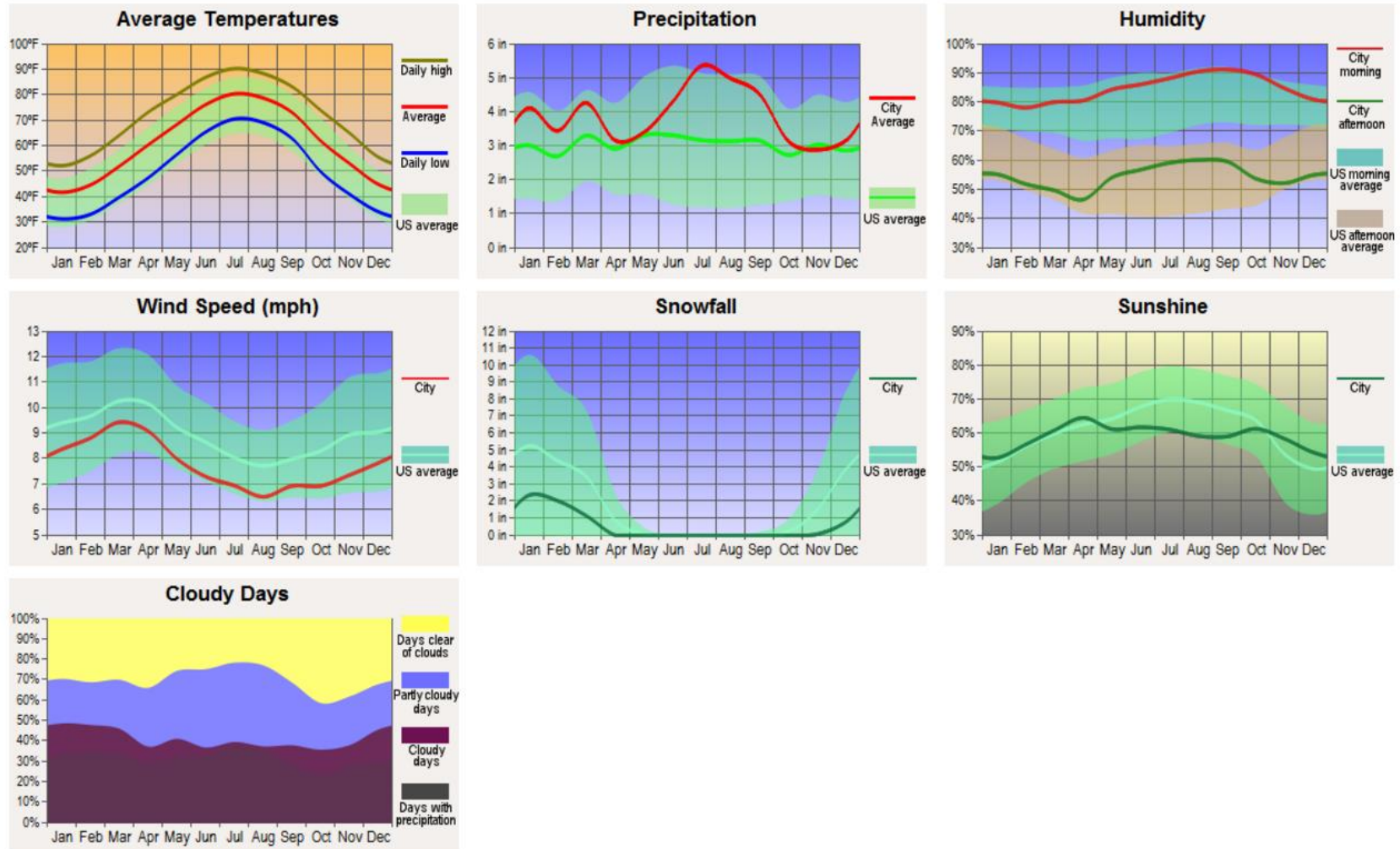
Races in Fayetteville, NC (2015)



Black alone	39.8%	80,355
White alone	38.5%	77,760
Hispanic	12.4%	25,080
Two or more races	5.5%	11,106
Asian alone	2.5%	5,025
American Indian alone	0.8%	1,705
Native Hawaiian and Other Pacific Islander alone	0.2%	441
Other race alone	0.2%	493

## Average Climate Estimates<sup>18</sup>

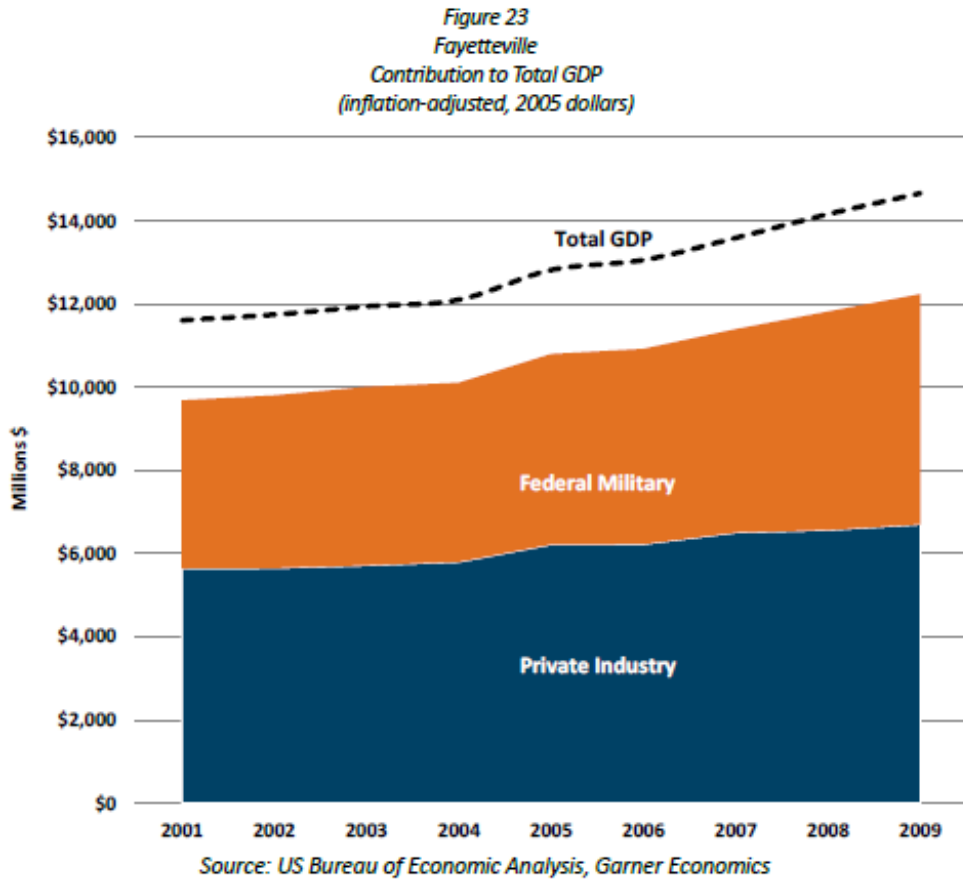
Based on data reported by over 4,000 weather stations



<sup>18</sup> City-Data.com for Fayetteville, NC, <http://www.city-data.com/city/Fayetteville-North-Carolina.html>

*Economic*

As the fifth-largest metro region within the State of North Carolina, the City of Fayetteville has growing an economy, powered in part by Fort Bragg and its related industries. As of 2015, the metro’s GDP is estimated as \$14.56 billion, compared to the State’s estimated \$436.24 billion<sup>19</sup>. Of this figure, the military contributes a massive amount to the region’s economic development, reflected in the graph to the below<sup>20</sup>:



Source:

Competitive Realities Report for Fayetteville and Cumberland County

Although Fayetteville MSA boasts a slightly higher than average unemployment rate of 6.8% as of January 2017, compared to the North Carolina rate of 5.5% and US rate of 5.1%, there has been a 35.2% unemployment rate drop compared to the January 2012 rate of 10.5%.<sup>21</sup>

Employment by major industry has also seen major shifts within the last decade, with positive gains in terms of Professional, Scientific, & Technical Services; Educational Services; Health Care & Social Assistance; Administrative and Support Services; Finance & Insurance; Real Estate; Arts,

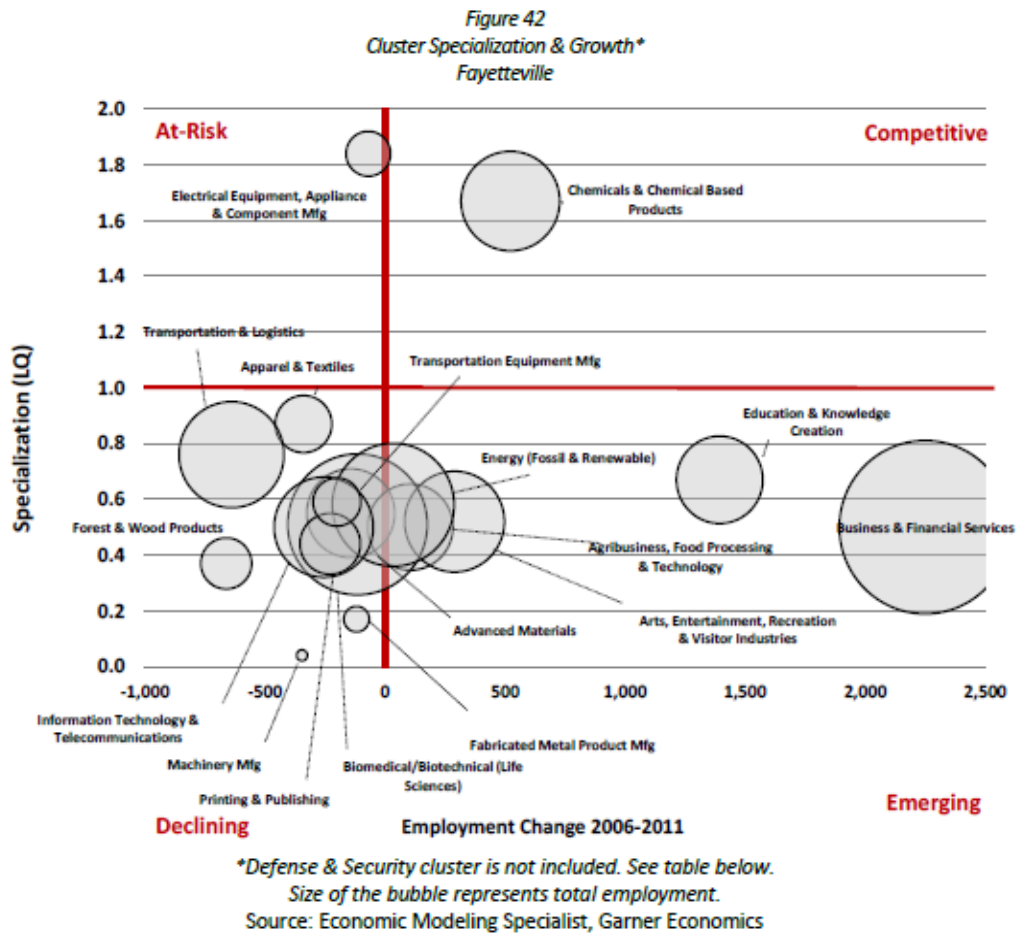
<sup>19</sup> Fayetteville, NC, Department of Numbers report, <http://www.deptofnumbers.com/income/north-carolina/fayetteville/>

<sup>20</sup> Competitive Realities Report for Fayetteville and Cumberland County

<sup>21</sup> Department of Numbers, Fayetteville, NC Unemployment, <http://www.deptofnumbers.com/unemployment/north-carolina/fayetteville/>



Entertainment, & Recreation; Management of Companies & Enterprises; Agriculture; and Utilities. There has been a decline in Retail Trade; Manufacturing; Wholesale Trade; Information; Transportation & Warehousing; and Construction<sup>22</sup>. In terms of cluster specialization and growth, the following graph shows these industries relative to each other:



Source: Competitive Realities Report for Fayetteville and Cumberland County

These industry clusters are also reflected within the top employers within the region, displayed in the table below:

<sup>22</sup> Competitive Realities Report for Fayetteville and Cumberland County



Company Name	Industry	# of Employees
Department of Defense	Public Administration	1,000+
Cumberland County Board of Education	Education & Health Services	1,000+
Cape Fear Valley Health Systems	Education & Health Services	1,000+
Wal-Mart Associates, Inc.	Trade, Transportation & Utilities	1,000+
Goodyear Tire & Rubber, Inc.	Manufacturing	1,000+
County of Cumberland	Public Administration	1,000+
City of Fayetteville	Public Administration	1,000+
Fayetteville Technical Community College	Education & Health Services	1,000+
Veterans Administration	Public Administration	1,000+
Non-Appropriated Fund Activity-Army	Leisure & Hospitality	1,000+
Fayetteville State University (18321)	Education & Health Services	1,000+
Army & Air Force Exchange Service	Public Administration	500-999
Food Lion, Inc.	Trade, Transportation & Utilities	500-999
U.S. Postal Service	Trade, Transportation & Utilities	500-999
Purolator Filters, Na, LLC	Manufacturing	500-999
Eaton Corporation	Manufacturing	500-999
Public Works Commission	Public Administration	500-999
ITT Systems Corporation	Other Services	500-999
Lowes Home Centers, Inc.	Trade, Transportation & Utilities	500-999
Worldwide Language Resources, Inc.	Professional & Business Services	500-999
E.I. DuPont De Nemours & Co., Inc.	Professional & Business Services	250-499
Methodist University (Branch)	Education & Health Services	250-499
Linc Government Services, LLC	Construction	250-499
AT&T Services, Inc.	Information	250-499
L3 National Security Solutions, Inc.	Professional & Business Services	250-499

Source: The Alliance, Economic Development Alliance of Fayetteville & Cumberland County, NC

## PLAN ANALYSIS

In this section, the Berke & Godschalk plan quality structure and the Kerr-Tarr plan interconnectivity structure will be outlined. The tables containing the analysis are found within the Appendix, and the results of both analysis will be discussed within the results.

### *Plan Quality Structure*

Based on framework of plan quality characteristics, eight fields were chosen based on their comprehensiveness and applicability to primarily non-land use centric plans. For each characteristic, the plan was rated on a scale of 1-5, with 5 being the highest and 1 being the lowest, the characteristics included:

- ❖ Issue identification and vision: Description of community needs, assets, trends, and future vision
  - Assessment of major issues, trends, and impacts of forecasted change
  - Description of major opportunities for and threats to desirable land use and development
  - A vision that identifies what the community wants to be
- ❖ Fact base: Analysis of current and future conditions and explanation of reasoning
  - Present and future population and economy
  - Existing land use and land supply, and future land demands for various uses (e.g., housing, commercial, industrial, public facilities)
  - Existing capacity and future demand for public infrastructure State of natural environment resources and constraints
  - Clear maps and tables that support reasoning, and enhance relevance and comprehensibility
- ❖ Policies: Specification of principles to guide public and private land use decisions to achieve goals
  - Sufficiently specific (not vague) to be tied to definite actions
  - Spatial designs that specify future land use, infrastructure, transportation, and open space networks that are sized to accommodate future growth
- ❖ Implementation: Commitments to carry out policy-driven actions
  - Timelines for actions
  - Organizations identified that are responsible for actions
  - Sources of funding are identified to supporting actions
- ❖ Monitoring and evaluation: Provisions for tracking change in community conditions

- Goals are based on measurable objectives
- Indicators of objectives to assess progress
- Organizations identified responsible for monitoring
- Timetable for updating plan based on monitoring of changing conditions
- ❖ Internal consistency: Issues, vision, goals, policies, and implementation are mutually reinforcing
  - Goals must be comprehensive to accommodate issues and vision
  - Policies must be clearly linked back to goals and forward to implementation actions
  - Monitoring should include indicators to gauge goal achievement and effectiveness of policies
- ❖ Inter-organizational coordination: Integration with other plans or policies of public and private parties
  - Vertical coordination with plans or policies of federal, state, and regional parties
  - Horizontal coordination with plans or policies of other local parties within or outside local jurisdiction
- ❖ Compliance: Consistent with the purpose of plan mandates
  - Required elements are included in plan
  - Required elements fit together

### *Plan Interconnectivity Structure*

Using the *Kerr-Tarr* report as a guideline to evaluate the interconnectivity of the HMP and CEDS, the regional economic and environmental visions and goals are stated. This plan analysis is divided into four sections:

- ❖ The Planning Process/Summary Background reviews the document-creation process and the fact base used in describing the economic and environmental conditions of the region; the document's vision and goals; and the key stakeholders involved in the process.
- ❖ The Risk Assessment/SWOT Analysis provides an evaluation of the region's potential impacts of hazards on residents, economy, and the built and natural environment; and the strengths, weaknesses, opportunities, and threats the region faces.
- ❖ The Mitigation Strategy/Economic Development Strategy, which outlines the goals, objectives, and action steps to be taken by the plan's authority board and engaged stakeholders, along with projected thoughts of how these actions will take shape and the potential impacts these actions will have on the vision and goals.
- ❖ The Plan Maintenance/Evaluation Framework, which discusses how the above strategies will be monitored, evaluated, and updated. This includes who is involved in the process, the timeframe for each process, and what type(s) of performance measures will correspond with each goal.

Within each section, the regional nature is observed and tailored down to be the most applicable to the City of Fayetteville as possible without cutting out the overall objectives of these plans. Additionally, several plans more focused on the City and Cumberland County were reviewed and their strengths and weaknesses are incorporated into the SWOT Analysis section.

### *Plan Analysis Results*

From conducting both analyses, we can see the strengths and weaknesses of these plans in terms of plan quality and interconnectivity. In terms of each plan's individual quality, both documents serve their purpose well: the Hazard Mitigation Plan has a clearly defined purpose and scope, with the planning process meticulously outlined; the fact base contextualizes the geographic and climate, historic, cultural, natural resources, land use, and future growth prospects while also defining the hazard profiles; the policies, implementation, and monitoring and evaluation in the Mitigation Action Plan include the responsible agency, anticipated costs, funding sources, and hazard(s) to be addressed, although the timeframe and monitoring measures are a bit understated. In terms of internal consistency, inter-organizational coordination (within the scope of the counties and municipalities affected), and compliance, this plan does well in defining the regulatory capacity of each municipality and the interaction of the various ordinances, codes, and plans at each level, which is taken into consideration for plan implementation.

The CEDS has a wider scope than the Hazard Mitigation Plan, considering the economic clusters of Southeast North Carolina; however, the quality of the plan still is adequate in providing an economic strategy for regional development. The vision of the plan is to show that the region is "Open for Business", and provides a comprehensive outline of the socioeconomic, housing, infrastructure, educational, agricultural, and environmental systems which define the region and the SWOT analysis provides a sufficient overview of the competitive advantages, threats, and opportunities. The Plan of Action is clearly broken down into goals, objectives, and strategies, with each strategy having a corresponding lead agency, strategic partner(s), estimated cost, alignment of resources, barriers/issues to implementation, and performance measures identified. The plan is internally consistent, with the goals and objectives intertwined with each other to produce synergistic effects, and the list of vital projects for infrastructure improvements corroborating with the opportunities stated within the SWOT analysis. The inter-organizational coordination aligns with local, county, and state government agencies and their respective economic development councils, and lists the participants in the planning process, along with how they represent private and public/non-profit interests.

While each plan is compliant in stating their goals and objectives and providing actions steps to achieve results, these plans are rather self-contained within their own sphere, which the plan interconnectivity analysis will show. According to the Kerr-Tarr report's framework, both plans adequately detail the

four core components of planning process and summary background, risk assessment and/or SWOT analysis, mitigation/economic strategies, and evaluation and maintenance frameworks; however, the amount of threads connecting these plans are minimum:

In the planning process, the major participants represented in these plans are limited to the agencies and organizations with direct ties to the services rendered, such as the Cumberland County Department of Emergency Services and the Planning and Inspections Department in the Hazard Mitigation Plan, yet no economic development and business council representation is presented. And vice versa for representation outside of economic development councils within the CEDS. Within the SWOT analysis for the CEDS, there is absolutely no mention of hazard mitigation or climate-related impacts in relation to economic development, while the HMP has some economic indicator primarily tied to property tax assessment and damage. The Mitigation Action Plan and Plan of Action within the two plans make brief references to environmental and economic considerations, but many of the goals and objectives do not include aspects of resiliency and responding to outside shocks within the systems from these perspectives. In the plan maintenance and evaluation frameworks of each plan, the responsibility for facilitating, coordinating, and scheduling reviews fall under the Cumberland County Emergency Management Agency and the Economic Development Administration for the HMP and CEDS, respectively, with no recommendations for consultation from outside perspectives and agencies. Thus, in terms of plan interconnectivity, if these plans need to have more threads interwoven to bridge the gaps and address interrelated vulnerabilities for these plans to truly be comprehensive.

In order to provide a better idea of connecting economic development and hazard mitigation, the Hazard Profiles will identify the risks assessed within the Hazard Mitigation Plan and the Cumberland County Climate Resiliency Plan, which will be visually contextualized and related to spatial hazard in the Spatial Analysis section.

# HAZARD PROFILES

## *City of Fayetteville Vulnerability Assessment*

The Cumberland-Hoke HMP lists regional, county, and municipality level Priority Risk Index (PRI) results and classifications for each of the hazards established in the Hazard Profile. Narrowing this assessment for our purposes, a Summary table of the PRI results for Fayetteville is provided below, which details the 10 hazards identified in the Hazard Profile section of the HMP.

**Table B19 - Summary of PRI Results for the City of Fayetteville**

Hazard	Probability	Impact	Spatial Extent	Warning Time	Duration	PRI Score
Dam/Levee Failure	Possible	Limited	Small	Less than 6 hrs	Less than 6 hrs	2.1
Drought	Highly Likely	Minor	Large	More than 24 hrs	More than 1 week	2.8
Earthquake	Possible	Limited	Moderate	Less than 6 hrs	Less than 6 hrs	2.3
Extreme Heat	Possible	Minor	Large	More than 24 hrs	Less than 1 week	2.1
Hurricane/Tropical Storm	Likely	Critical	Large	More than 24 hrs	Less than 24 hrs	2.9
Inland Flooding: 100-/500-year	Possible	Critical	Moderate	6 to 12 hours	Less than 1 week	2.7
Severe Weather (thunderstorm wind, lightning, & hail)	Likely	Limited	Moderate	6 to 12 hours	Less than 6 hrs	2.5
Tornado	Likely	Critical	Small	Less than 6 hrs	Less than 6 hrs	2.7
Wildfire	Highly Likely	Limited	Small	Less than 6 hrs	Less than 1 week	2.9
Winter Storm	Highly Likely	Minor	Moderate	More than 24 hrs	Less than 1 week	2.5

Although these hazards are tangible, this report will focus more on the climate risks outlined in the Cumberland County Climate Resilience Plan (CCCRP), which, along with their potential impacts on the City, include:

- ❖ *Increasing Temperatures*: impacts include increased energy and water demands, stressing production and supply lines; potential for rolling black-outs and brown-outs; infrastructure damage from road and railway warping; heat-related illnesses and injuries in relationship to outdoor industries and activities (including Fort Bragg operations and training)
- ❖ *Severe Weather Events*: direct damage to people, infrastructure, and natural resources; agricultural and forest industries losses through damaged trees, crops, and livestock.
- ❖ *Heavy Rains & Flooding*: Increased flooding disruption of business operations; structural damage to buildings and other critical infrastructure, even outside of

the floodplain; issues with agricultural waster holding ponds, industrial process ponds, and wastewater treatment facilities.

- ❖ *Drought & Wildfires:* Drought increased water demands for businesses; leads to the conditions for wildfires, which threaten buildings and developments, especially closer towards Fort Bragg; Fort Bragg personnel face diverting resources to unintended wildfire management.

As increasing temperatures and drought & wildfires are tied together, our Spatial Analysis will include wildfire maps for Fayetteville; similarly, given that heavy rains, flooding, and severe weather correlate in terms of their damages and influence, the Spatial Analysis will look at the floodplain maps and gauge how much of the City is within different zones. These hazards will then be compared to the geographic locations of economic indicators, which in this report will be the siting of commercial, office, and industrial space, and the location of job concentrations by various industries.

## SPATIAL ANALYSIS

For this analysis, publicly-available Cumberland County GIS, OnTheMap work profile analysis, US Forest Service and Fire Modeling, Southern Group of State Foresters Wildfire Risk Assessment Portal, and Fayetteville, NC Economic and Business Development mapping software were viewed for the potential geographic relationships between industry and employment concentrations and hazard zones. Due to the separate natures of these software, in addition to the lack of file outputting for some sites, each layer is looked at individually.

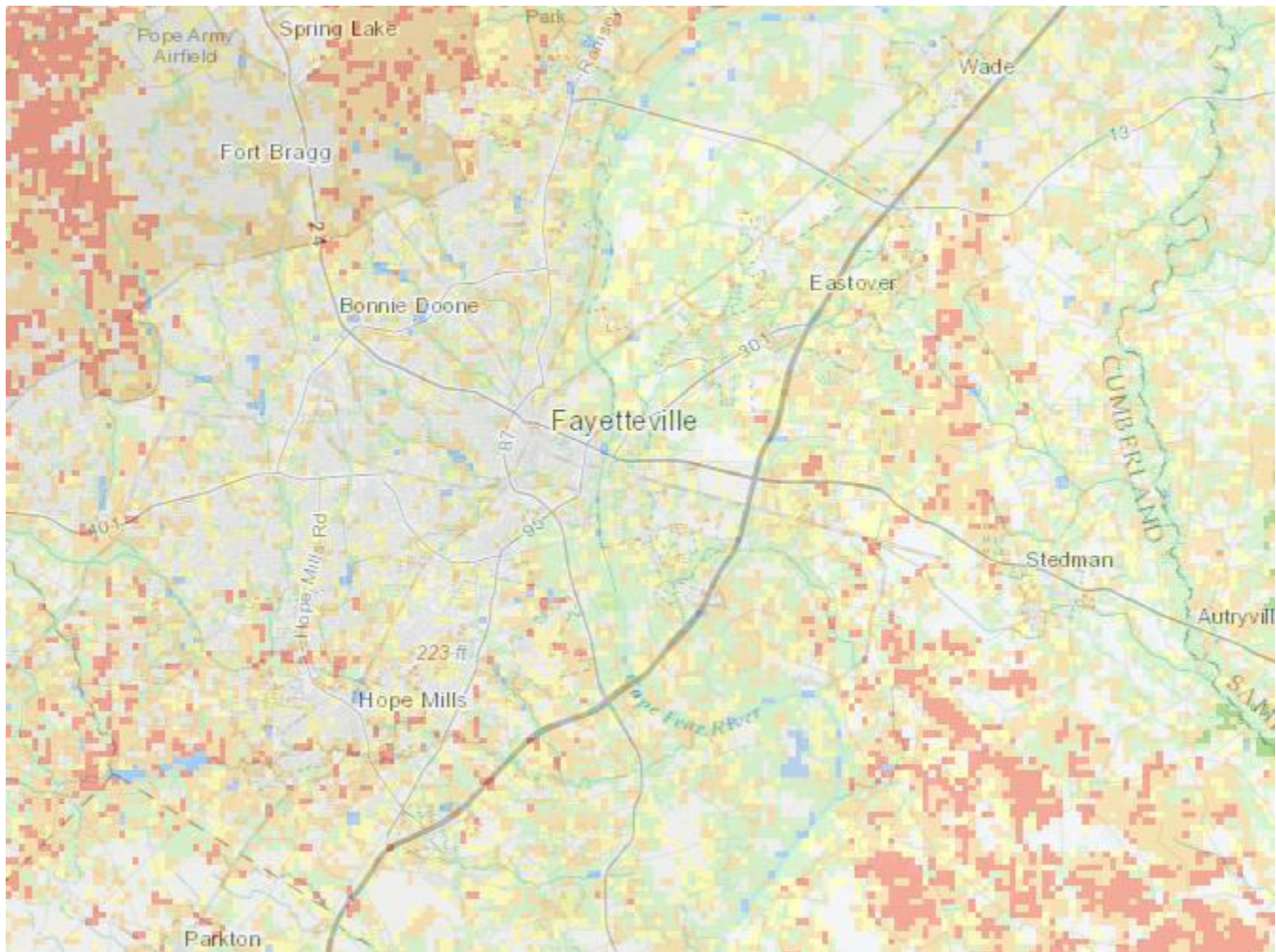
In order, we will look at wildfire risk maps, floodplains maps, office/industrial sites and building locations, and industries concentrations maps to obtain a reasonable picture of the relationship between these hazards and their potential impacts on economic development. Note, because of the limitations of this report, industrial sites and industries concentrations are acting as a proxy for our economic development analysis.

### **Wildfire**

#### *Wildfire Hazard Potential (USFS)*

This map service portrays the Wildfire Hazard Potential (WHP), developed by the U.S. Forest Service and Fire Modeling Institute to help inform assessments of wildfire risk or prioritization of fuels management needs across large landscapes. Per this map, much of the urban area of Fayetteville is within the non-burnable category. However, there is significant high and very high wildfire hazard

potential within the areas controlled by Fort Bragg. The CCCRP addresses this risk in detail, as it is part of Fort Bragg operations to have wildfire monitoring and controlled burns<sup>23</sup>, but it is still worth noting this risk.



### Wildfire Hazard Potential (USFS)

Wildfire Hazard Potential

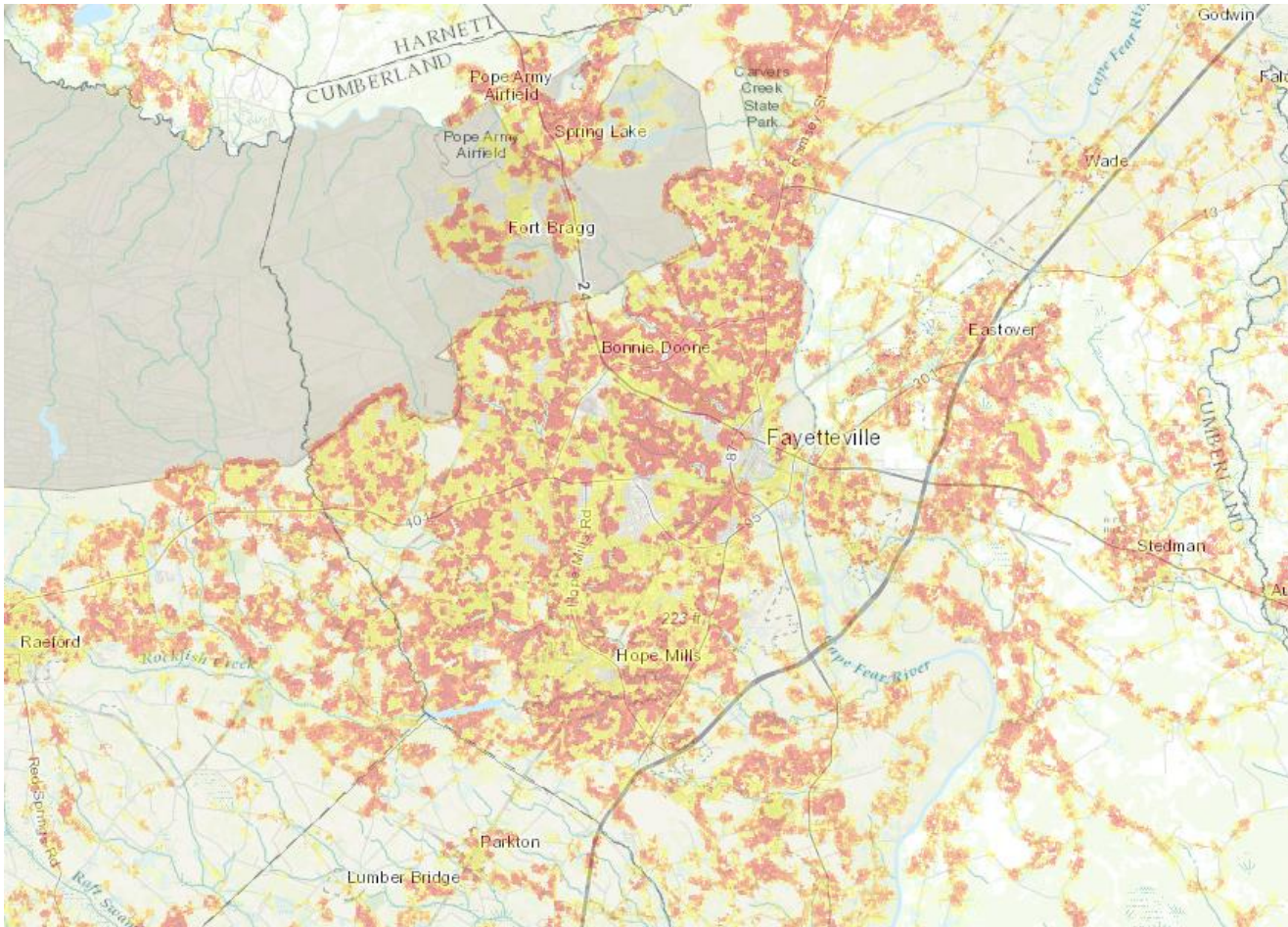
- Very Low
- Low
- Moderate
- High
- Very High
- Non-burnable
- Water

<sup>23</sup> Burning Towards Success, Sustainable Fort Bragg, <https://sustainablefortbragg.com/2017/01/06/burning-towards-success/>



### WUI Risk Index

The Wildland-Urban Interface is defined as the area where structures and other human development meet or intermingle with undeveloped wildland, which is where wildfires have their greatest impacts on people<sup>24</sup>. This index reflects the housing density (houses per acre), as consistent with Federal Register National standards. The gradient scale represents the severity of impact at wildfires would have on that location, with the darker colors displaying higher impacts.



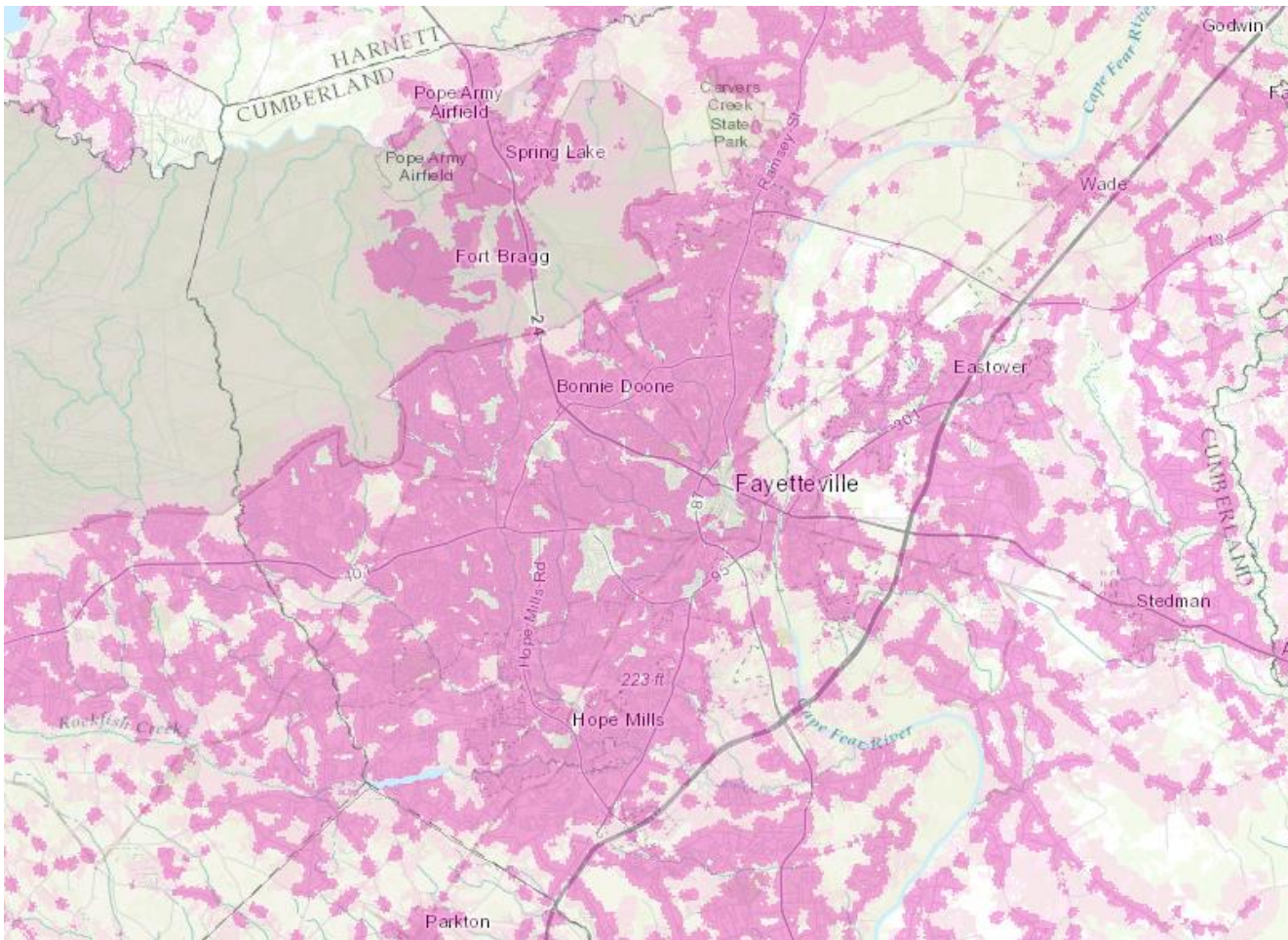
<sup>24</sup> Southern Group of State Foresters Wildfire Risk Assessment Portal, WUI Risk Index description

Class	
	-9 Major Impact
	-8
	-7
	-6
	-5 Moderate
	-4
	-3
	-2
	-1 Minor Impacts

Source: Southern Group of S

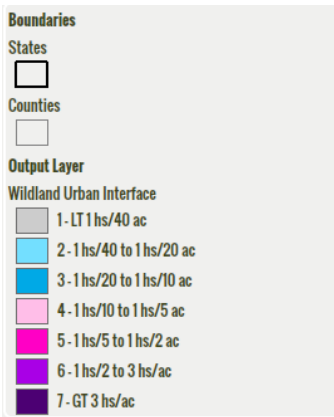
### Community Protection Zones (CPZ)

Relating to the WUI Risk map, the CPZ map represents those areas considered highest priority for mitigation planning activities. Based on analysis of the Where People Live housing density data and surrounding fire behavior potential<sup>25</sup>. The gradient scale represents the level of concern for populated areas within a 2-hour fire spread distance, with the darker coloration showing a higher level of concern.



<sup>25</sup> Southern Group of State Foresters Wildfire Risk Assessment Portal, Community Protection Zones description.





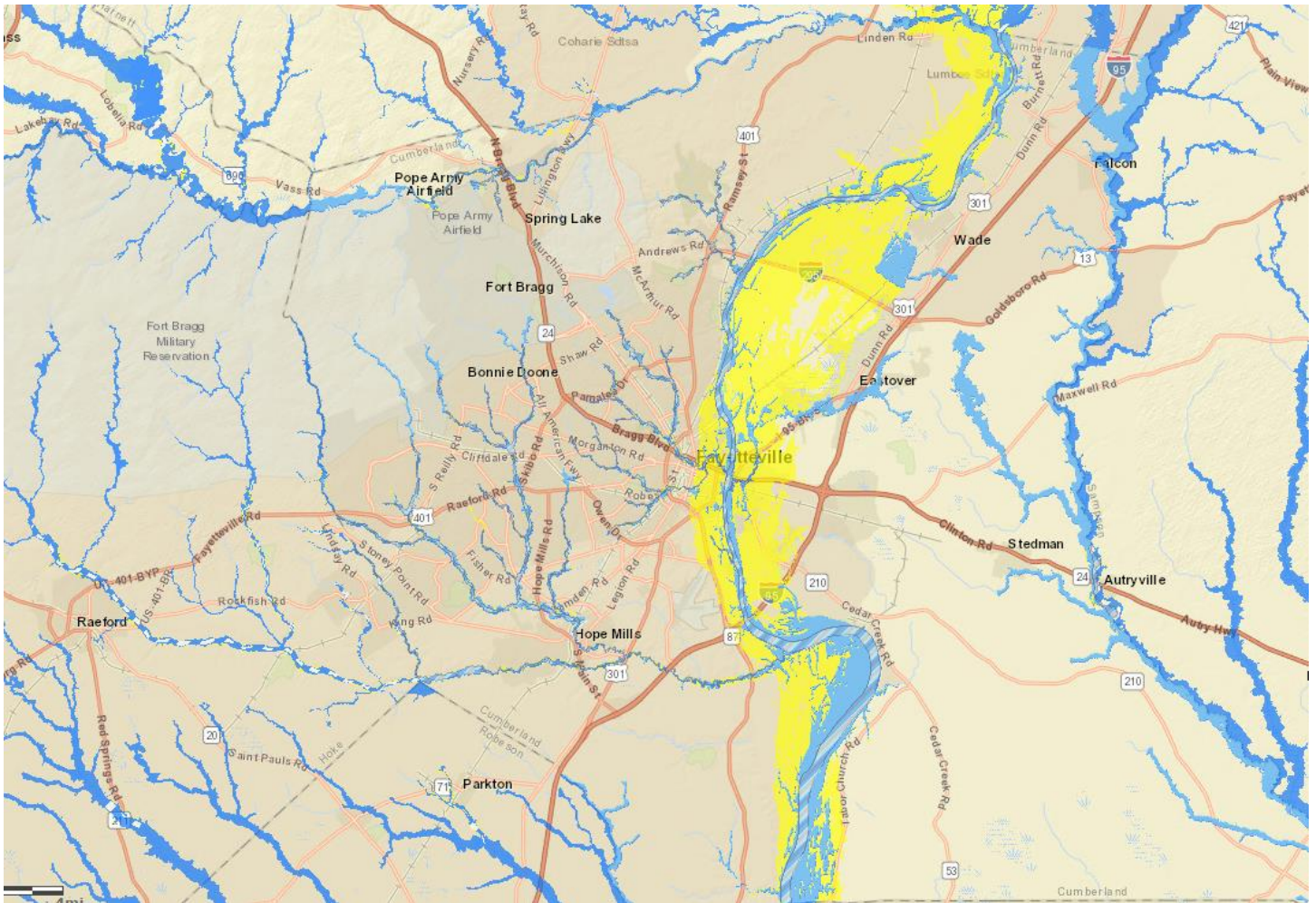
## **Flooding**

### *City of Fayetteville Flood Map, Centered towards Downtown*

Within this zoomed-in section of the Cumberland County Flood map, the river and stream patterns are visible, along with the various Flood Hazard Areas, most prominently:

- Zone AE (medium blue), where there is a 1% annual chance flood hazard contained in Structure;
- Zone AE Floodway (white and blue stripped), where there is a 1% annual flood hazard contained in channel and floodway; and
- Zone X (yellow), where there is a 0.2% annual chance flood hazard and a 0.2% annual chance flood hazard is contained in channel.

From this visual, half of downtown and much of the northwestern, western, and southwestern portions of the City are located within one of these zones.

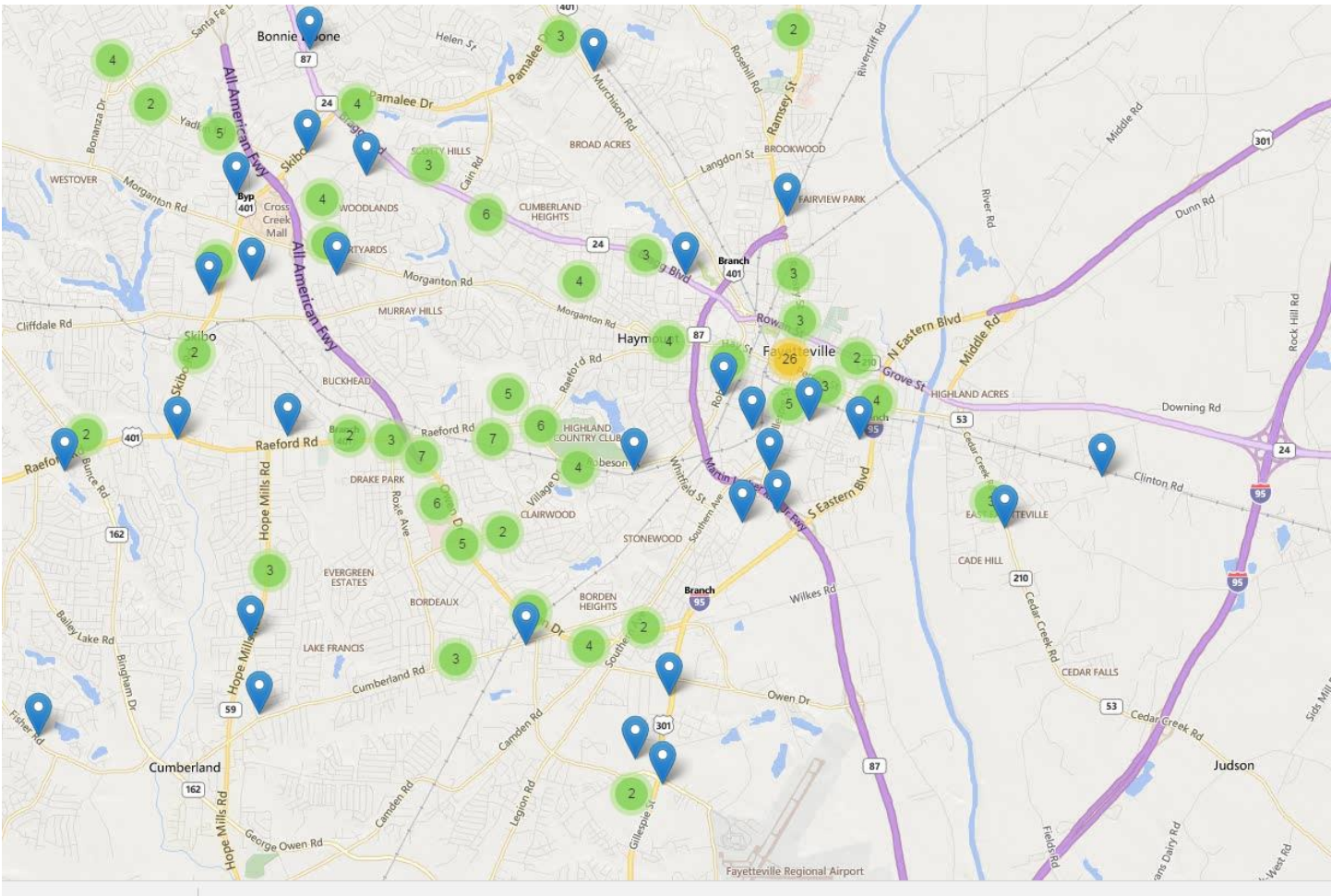


Note: A full-sized map including the entire Fayetteville and Fort Bragg region is included in the Appendix.

## **Office and Industrial Properties**

### *Commercial Sites and Buildings*

From the City of Fayetteville’s Commercial Sites and Buildings portal of their Economic and Business Development site, this map represents the current sites for sale/lease for Office, Retail, and Industrial properties as of March 2017. The color coding represents the number of sites clustered within a specific location, as given by the number on the bubbles. Each site is linked to a property profile which includes property acreage, property type, specific use, building square footage, and current asking price. Reviewing the flooding map, many of the downtown sites are within Zone X, or near the other Zones. (Unfortunately, the site portal does not allow for data export, so it is not possible to overlay this layer with the floodplain; however, the sites are markable by reviewing the floodplain maps in the report and Appendix)

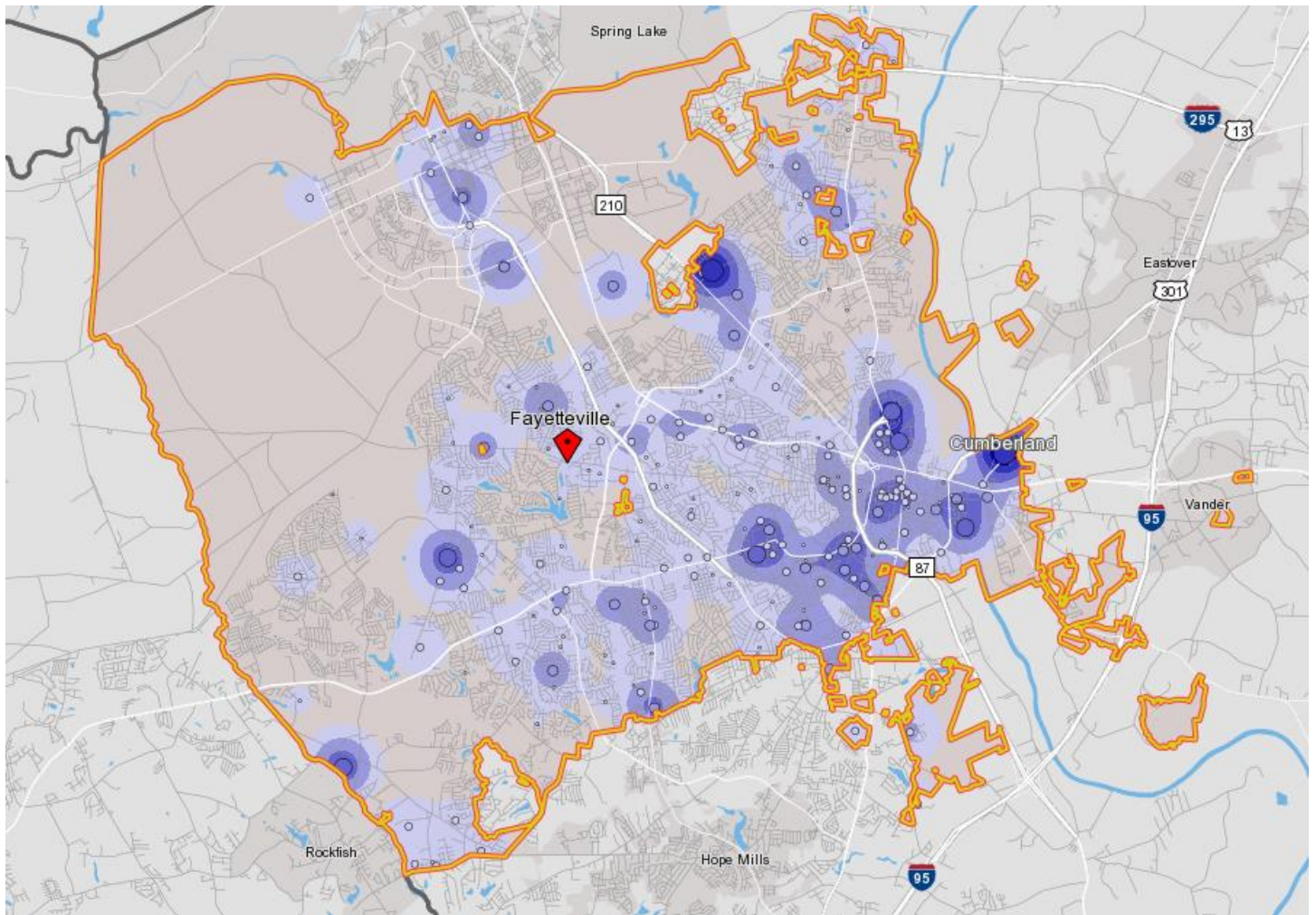


**Industry Concentrations and Locations<sup>26</sup>**

*Job Concentrations in the “Goods Producing” Industry Class*

<sup>26</sup> All maps sourced from OnTheMap, Fayetteville, NC Work Area Profile Analysis, <https://onthemap.ces.census.gov/>

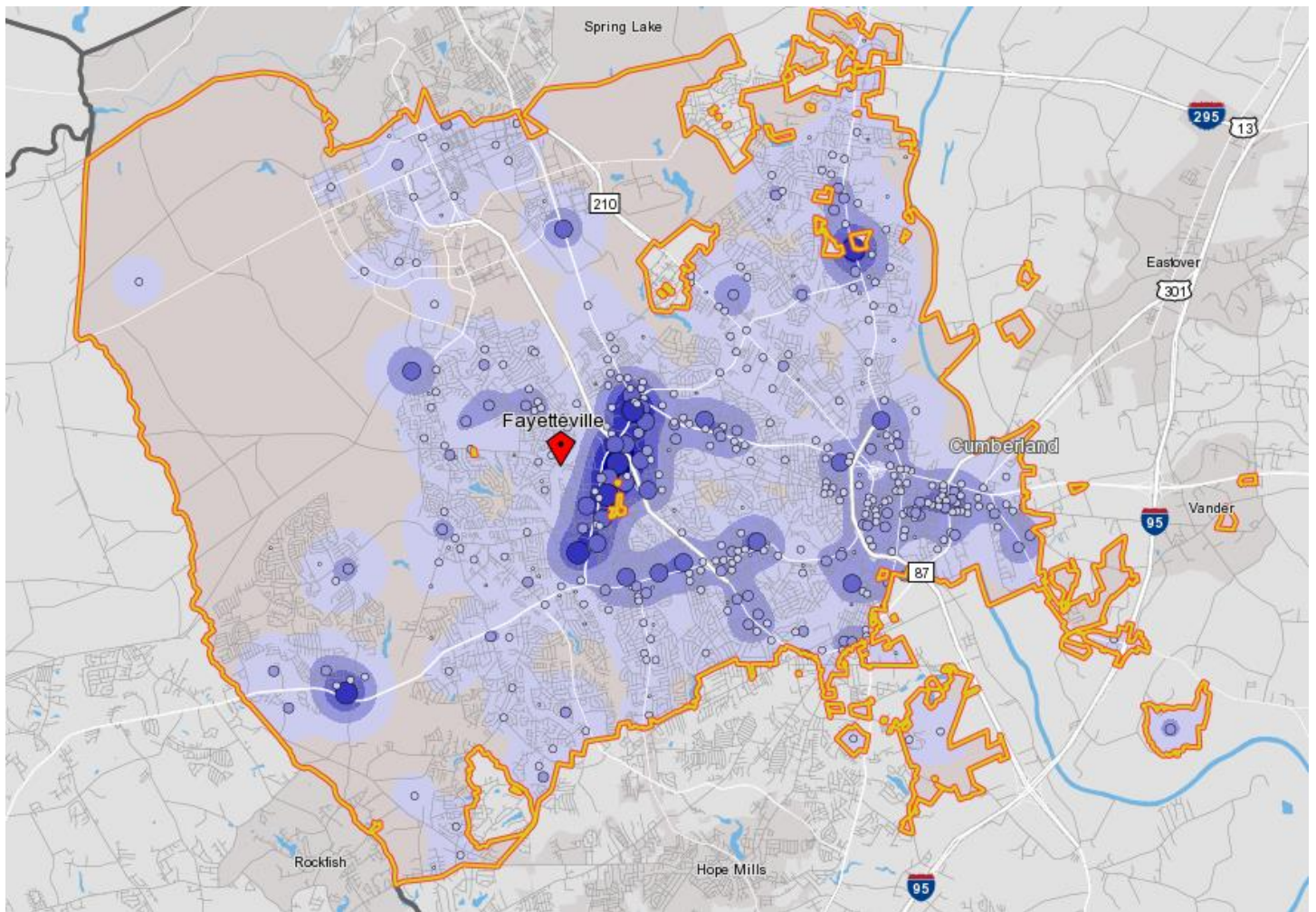




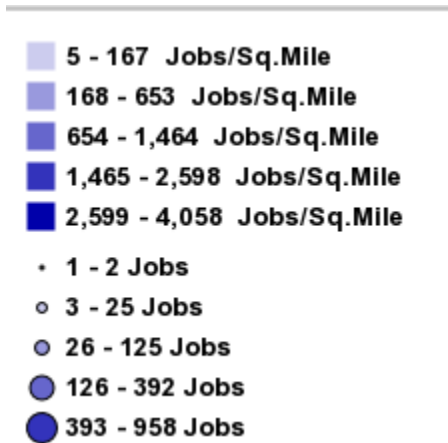
- 5 - 47 Jobs/Sq.Mile
- 48 - 173 Jobs/Sq.Mile
- 174 - 384 Jobs/Sq.Mile
- 385 - 680 Jobs/Sq.Mile
- 681 - 1,060 Jobs/Sq.Mile
- 1 - 4 Jobs
- 5 - 26 Jobs
- 27 - 87 Jobs
- 88 - 206 Jobs
- 207 - 403 Jobs
- N** Analysis Selection

NAICS Industry Sector		2014	
		Count	Share
■	<a href="#">Agriculture, Forestry, Fishing and Hunting</a>	13	0.3%
■	<a href="#">Mining, Quarrying, and Oil and Gas Extraction</a>	0	0.0%
■	<a href="#">Utilities</a>	0	0.0%
■	<a href="#">Construction</a>	2,252	58.4%
■	<a href="#">Manufacturing</a>	1,594	41.3%

*Job Concentrations in the "Trade, Transportation, and Utilities" Industry Class*



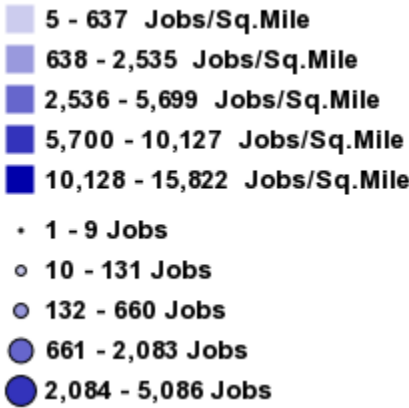
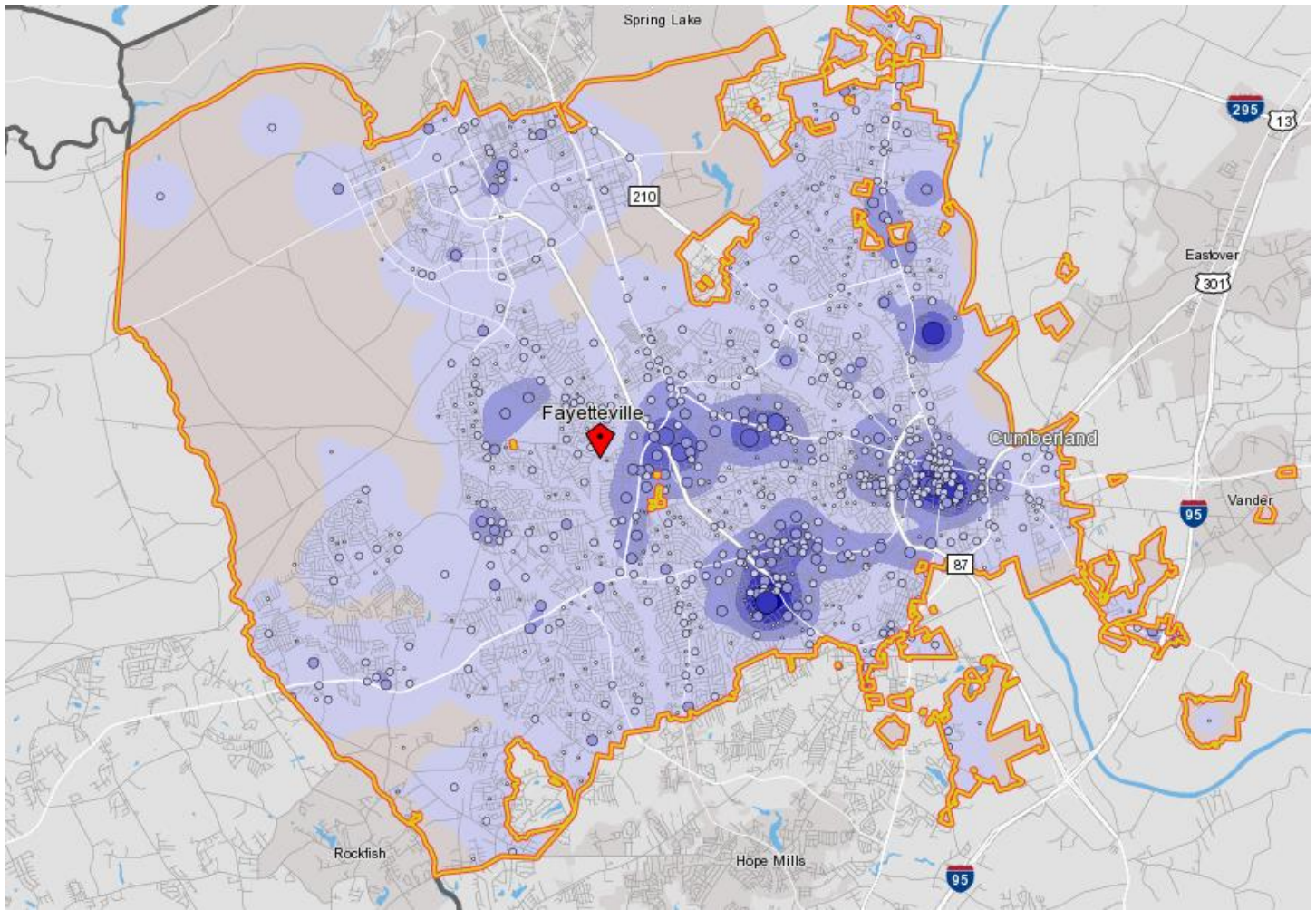
### NAICS Industry Sector



NAICS Industry Sector	2014	
	Count	Share
Agriculture, Forestry, Fishing and Hunting	0	0.0%
Mining, Quarrying, and Oil and Gas Extraction	0	0.0%
Utilities	170	1.1%
Construction	0	0.0%
Manufacturing	0	0.0%
Wholesale Trade	1,399	9.2%
Retail Trade	12,363	81.0%
Transportation and Warehousing	1,333	8.7%

*Job Concentrations in the "All Other Services" Industry Class*





<b>Transportation and Warehousing</b>	0	0.0%
<b>Information</b>	1,145	2.1%
<b>Finance and Insurance</b>	1,428	2.6%
<b>Real Estate and Rental and Leasing</b>	1,310	2.4%
<b>Professional, Scientific, and Technical Services</b>	4,586	8.4%
<b>Management of Companies and Enterprises</b>	394	0.7%
<b>Administration &amp; Support, Waste Management and Remediation</b>	5,677	10.4%
<b>Educational Services</b>	6,359	11.7%
<b>Health Care and Social Assistance</b>	16,811	30.9%
<b>Arts, Entertainment, and Recreation</b>	641	1.2%
<b>Accommodation and Food Services</b>	9,569	17.6%
<b>Other Services (excluding Public Administration)</b>	2,067	3.8%
<b>Public Administration</b>	4,349	8.0%

SWOT ANALYSIS



Given the results of our plan analysis, hazard profile, and spatial analysis, we can updated the SWOT analysis provided within the CEDS, the *Competitive Realities*, and the *CCCRP reports* to better match the City’s circumstances:

<u>Strengths</u>	<u>Weakness</u>
<ul style="list-style-type: none"> <li>❖ Abundant natural and cultural resources</li> <li>❖ Military &amp; Security cluster as a massive base industry supporting the region</li> <li>❖ Positive industry growth and competitive advantages in non-military industries such as Business &amp; Financial; Education &amp; Knowledge Creation; and Professional Services.</li> <li>❖ Diverse locations of job concentrations among differing industries</li> </ul>	<ul style="list-style-type: none"> <li>❖ Difficulties in drawing and retaining high-skill, high-wage knowledge-based jobs</li> <li>❖ Inadequate transportation infrastructure, including public and multi-modal transit</li> <li>❖ Economic inequality affecting housing and services provision</li> <li>❖ Current development practices lead to greater impacts from storm and severe weather events.</li> </ul>
<u>Opportunities</u>	<u>Threats</u>
<ul style="list-style-type: none"> <li>❖ Accessibility to human capital through geographical proximity to the Triangle and surrounding cities.</li> <li>❖ Economic and climate resiliency provide a niche for clean tech and other solution-based industrial growth</li> <li>❖ Presence of non-profit organizations and conscious individuals who are leading the charge in linking climate resilience to other planning processes.</li> <li>❖ Quality of Hazard Mitigation and CEDS plans allow for potential step forward in plan integration</li> </ul>	<ul style="list-style-type: none"> <li>❖ Climate risks pose further risks to already crumbling infrastructure, vulnerable populations, and weather-sensitive industries</li> <li>❖ Many currently available commercial and industrial sites are located within flood or wildfire risk zones</li> <li>❖ Projected population growth increases strain on existing resources and infrastructure</li> <li>❖ Growing gap in low-skill and high-skill jobs and corresponding wages increase the economic difficulties for some households.</li> <li>❖ Volatile state political environment presents barriers to potential local decision making</li> </ul>

## IMPLICATIONS AND RECOMMENDATIONS

## *Implications*

Given the results of our plan, spatial, and SWOT analysis, we can make assumptions about the state of economic development, hazard mitigation, and economic resiliency for Fayetteville.

From the plan analysis, we have determined that the individual plans are adequate in their visions; clearly define their goals, visions, and objectives; provide metrics for implementation, monitoring, and evaluation; are internally consistent; and are compliant. In their inter-organizational coordination, their scores are more ambivalent: as self-contained documents, the organizations which participate and are responsible for enacting these plans are sufficient; however, in the wider scope of plan interconnectivity, both fail to interweave threads of hazard mitigation and economic development into each other to provide for a sense of economic resiliency in terms of climate and weather-based events.

This lack of cohesiveness between plans is carried into the issues faced spatially: many of the commercial and industrial sites are in or near the floodplains which cover half of downtown Fayetteville, which is also where the majority of job concentrations tend to cluster, due to the built infrastructure which allows for their function. Although the infrastructure and urban center existed before the creation of these documents, this documents should guide current and future standards to mitigate any future shocks created by weather impacts. Thus, this report will provide recommendations which seeks to allow for better integration of these plans which can capitalize on the strengths and opportunities presented to the City through these events while also mitigating the weaknesses and threats.

## *Recommendations*

### Recommendation 1: Allow for Paradigm Shift in Terms of Economic Resiliency

The first step in moving forward would be pivoting the current narrative, in which many economic development decisions are made separately from land use and environmental planning. By reviewing the documents outlined within the literature review of this report, utilizing the sustainability framework of the triple-bottom line (integrating the natural environment, economic vitality, and healthy communities) contained within the CCCR, and reviewing the updated SWOT analysis of this report, the gaps within the currently body of documents governing development within Fayetteville can be addressed and filled.

### Recommendation 2: Integrate Economic Development Councils and Agencies into the Planning and Resiliency-building Process.

Building upon the first recommendation and referring to Strategy 1 of the CCCRP, which provides an integrated planning method layering land use/building infrastructure, transportation systems, water resources systems, and natural and cultural resource systems, economic and business development systems need to be a thread cross-cutting through these layers. This can start by having officers of the Economic and Business Development and the City of Fayetteville Emergency Management and Planning Department more engaged with each agency's efforts to build horizontal integration. In addition, follow up reports which detail economic resiliency and hazard mitigation should be produced from works like this report, using several of the same technical staff and agencies which produced the documents analyzed here.

### Recommendation 3: Review Existing City Ordinances, Codes, and Plans and Vet for Economic Resiliency Compliance

Under the City's *Growth Vision Plan*, several of the action steps for Vision 1: A More Diversified Local Economy, recommend conducting a complete a review of zoning and infrastructure to identify and/or confirm appropriate sites for manufacturing and new technology enterprise, and creating and maintaining an inventory of opportunity sites for business development, to include existing buildings suitable for rehabilitation and adaptive reuse. Policies like these and other identified in other plans such as the Hazard Mitigation Plan's section for the City, should bolster actions favoring adoption and inclusion of design measures and policies which considers these business sites' locations within a climate hazard. Additionally, other codes and ordinances within the City which have a role in building design, siting and the selling/leasing/renting of business for economic development, or attracting and incubating businesses should be reviewed through an lens of economic resiliency in terms of weather/climate hazard mitigation. To enact this recommendation, better interagency connectivity and plan integration is necessary; thus, drawing plan processing and risk assessment from the *Kerr-Tarr* report and Hazard Mitigation Plan in terms of the CEDS and other economic documents for the City.

### Recommendation 4: Capitalize on Solution-Based Industries Working within Economic Resiliency and Hazard Mitigation

As identified within the opportunities section of this report's SWOT analysis, there are individuals and organizations which are operating within this space of hazard mitigation, climate and economic resiliency, and green building and low impact developments. Thus, it would serve an economic purpose to work with organizations and businesses which are providing solutions to these challenges the City faces. This outreach can start with existing relationships to non-profit organizations and agencies such as Sustainable Sandhills, whose goal is to raise awareness and influence policies

concerning this field. From here, building relationships between the Department of Economic and Business Development, the Emergency Management and Planning Department, and non-profit organizations and businesses as engaged stakeholders would provide its own opportunity for 'clustering' to make the needs of reviewing the existing ordinances, codes, and plans, and providing for a new paradigm in City development and management.

## CONCLUSIONS

The objective of this report was to evaluate the planning process and risk assessment elements of the City of Fayetteville in regards to their hazard mitigation and economic development. Through our Plan Analysis, Spatial Analysis, and SWOT analysis, this report has identified the current circumstances which the City is facing, the various strengths and weaknesses regarding these circumstances, and has provided a series of recommendations for consideration. These recommendations are framed around the existing body of literature surrounding hazard mitigation planning, economic development, economic resiliency, plan quality, and plan interconnectivity, and seeks to encourage for further document creation. , with this report providing a foundation to be built off. Thus, the hope of this report is to provide a foundation for future planning considerations by the City, and to be incorporated into the body of literature surrounding economic resiliency and plan interconnectivity.

**PLAN INTERCONNECTIVITY ANALYSIS TABLE**

**Cumberland-Hoke Regional Hazard Mitigation Plan (2016)**

**Comprehensive Economic Development Strategy (2012-2017)**

- ❖ Local government participation with a 10-step planning process of document creation: Organize to Prepare Plan, Involve the Public, Coordinate, Assess the Hazard, Assess the Problem, Set Goals, Review Possible Activities, Draft an Action Plan, Adopt the Plan, and Implement, Evaluate, and Revise the Plan
- ❖ Participants included, but not limited to: City of Fayetteville Emergency Management and Planning Depart.; Cumberland County Depart. of Emergency Services, Depart. of Engineering, and Planning and Inspections Depart.; the Towns’ representatives; non-profit organizations and public service managers; and Code Enforcement Officers
- ❖ No economic development/ business council representation
- ❖ Types of activity conducted: Community Profile, Hazard Identification, Hazards Profiles, Vulnerability Assessment, Capability Assessment, Mitigation Strategy, and Mitigation Action Plan

**<=Planning Process**

**Summary Background=>**

- ❖ Regional Profile discusses population and labor force characteristics; housing; infrastructure; community colleges and universities; the agricultural economy; the environment; medical facilities and healthcare; film; tourism; and the military presence
- ❖ Related planning docs: Workforce Needs Analysis and Strategic Plan for the NC Southeast Region
- ❖ Similarities in data analyzed from HMP (demographic, socioeconomic, environmental, geographic, climatic data)
  - ❖ List of economic clusters: Advanced Manufacturing, Agribusiness, Biotechnology, Healthcare, Film, Tourism, Transportation and Logistics, and Military Defense

- ❖ The jurisdictions participating in the Plan include: The Unincorporated Areas of Cumberland County; the City of Fayetteville; the Towns of Eastover, Falcon, Godwin, Hope Mills, Linden, Spring Lake, Stedman, and Wade; the Unincorporated Areas of Hoke County; and the City of Raeford.

- ❖ Regional Risk Assessment:
  - The Outline provides a hazard profile by hazard description, location and spatial extent, past occurrences, probabilities of future occurrences, and a consequence analysis.
  - Hazards include dam/levee failure; drought; earthquake; erosion; extreme heat; hurricane & tropical storms; inland flooding; severe weather; sinkholes; tornados; wildfire; and winter storms.

- ❖ Fayetteville-specific Risk Assessment:
  - Dam/Levee Failure: Details for 53 dams included in the NC Dam Inventory, which lists the name, height, NID Storage, Dam Status, River, and Hazard Classification

- ❖ Establishment of emergency preparedness and response priorities

- ❖ Economic indicators mapped and considered

- ❖ Economic Development Challenges and Opportunities are broken into 8 Strengths, Weaknesses, Opportunities, and Threats

- ❖ Each of the Regional Councils of Government, working in collaboration with the SEDC, conducted a series of SWOT analysis meetings called Visioning meetings.

- ❖ Absolutely no mentions of hazard mitigation or climate change in economic development strategy

### **<=Risk Assessment**

### **SWOT Analysis=>**

- ❖ Regional goals, actions, and plans:
  - Goal 1: Protect properties and natural resources that are at risk of damage due to hazards and undertake cost-effective mitigation measures to minimize losses
  - Goals2: Reduce vulnerabilities of Cumberland and Hoke Counties and their municipalities to all hazards for existing development, future development, redevelopment and infrastructure.
  - Goal 3: Improve public awareness of hazards through a variety of education and outreach programs
  - Goal 4: Establish and participate in local, state, and federal mitigation-oriented and disaster-based programs and planning efforts to reduce damage from natural hazards to protect lives and property.
- ❖ Mitigation Action Plan subdivided by jurisdiction:
  - Cumberland County and all internal jurisdictions have 9 total action steps
  - The City of Fayetteville has 3 major action steps within the regional Plan: provide storm water infrastructure improvements to mitigate reported flooding; identify

**<=Mitigation Strategy**

**Strategy=>**

- ❖ Goal #1: Build on the region’s competitive advantages and leverage the marketplace
  - Objective 1: Identify the region’s clusters of economic development that offer competitive advantages
  - Objective 2: Develop a plan to leverage the region’s competitive advantages
  - Objective 3: Conduct an analysis that identifies the existing and potential improved place brand for the region.
  - Objective 4: Develop a regional marketing plan
    - Objective 5: Identify new adaptive capabilities of the regional economy
- ❖ Goal #2: Establish and Maintain a Robust Regional Infrastructure
  - Objective 1: Identify and upgrade the region’s infrastructure assets
  - Objective 2: Develop multi-modal transportation plans that address existing and future year capacity deficiencies.
  - Objective 3: Identify whether water, sewer, and natural gas infrastructure can accommodate future growth
  - Objective 4: Develop and pursue the implementation of intermodal connectivity

areas in the City that might experience wildfires in the future, based on past occurrences; and improve access to reliable and convenient emergency shelters.

- ❖ Fayetteville-specific goals, actions, and plans (12 new/revised mitigation actions and 11 unrevised, ongoing actions)
  - Each action lists the issue/background statement, responsible agency, anticipated cost, funding sources, timeframe, status, whether it addresses current and future development, and hazard(s) addressed
  
- ❖ local plans and regulations which are in place in the City include the Comprehensive plan, the Zoning Ordinance, the Subdivision Ordinance, the Floodplain Ordinance, the Building Code, the BCEGS Rating, the Stormwater Management Program, Site Plan Review requirements, Capital Improvements Plan, Local Emergency Operations Plan, Flood Insurance Studies, and Elevation Certificates.

between roads, rails, and ports to support expanded exports of regional commodities

- Objective 5: Strategically expand the region's telecommunication and broadband infrastructure to support sustainable and competitive growth
  - Objective 6: Develop plans for equitable and affordable housing choices
  - Objective 7: Enhance the capacity of the NC Ports to meet the needs of North Carolina businesses in the changing, global economy
- 
- ❖ Goal #3: Create revitalized and vibrant communities
    - Objective 1: Promote environmentally sustainable patterns of development
    - Objective 2: Ensure that underserved and distressed communities are engaged in the planning process
    - Objective 3: Invest in healthy, safe, and walkable neighborhoods
    - Objective 4: Promote vitality in the region's downtowns and 'Main Street' centers
- 
- ❖ Goal #4: Develop Health and Innovative People
    - Objective 1: Foster development, recruitment and retention of a skilled workforce
    - Objective 2: Identify and analyze all educational resources and conduct a gap analysis if needed



- ❖ The Hazard Mitigation Planning Committee (HMPC) will convene annually and following a hazard event
- ❖ Cumberland County Emergency Management Agency will be responsible for facilitating, coordinating, and scheduling reviews and maintenance of the plan
- ❖ The next plan update is scheduled for 2021.
- ❖ Fayetteville-specific:
  - Timeframe: Defined as short, medium, and long-range goals

**<=Plan Maintenance**

**Evaluation Framework=>**

- Objective 3: Enhance the digital literacy and technical skills of the region's workforce
- ❖ Goal #5: Encourage Entrepreneurs and Small Business Growth
  - Objective 1: Foster entrepreneurs and small businesses in the region as they provide needed employment options for the region's workforce and strengthen the regional economy
  - Objective 2: Help existing companies and small businesses expand
- ❖ List of vital infrastructure projects (highways, rail, airports, ports, water and sewer, & industrial parks and business incubators) including the name, lead agency, estimated cost, resource, and partners
- ❖ Performance measures: Number of new jobs; number and types of investments undertaken in the region by Sept. 2017; number of retained jobs; private sector investment; changes in the economic environment of the region
- ❖ Who is involved in this process? These measures will be reviewed on an annual basis within a CEDS progress report submitted to the Economic Development Administration (EDA) by the SEDC.

- Responsible agencies identified
- No performance metrics announced.

## PLAN QUALITY ANALYSIS TABLES

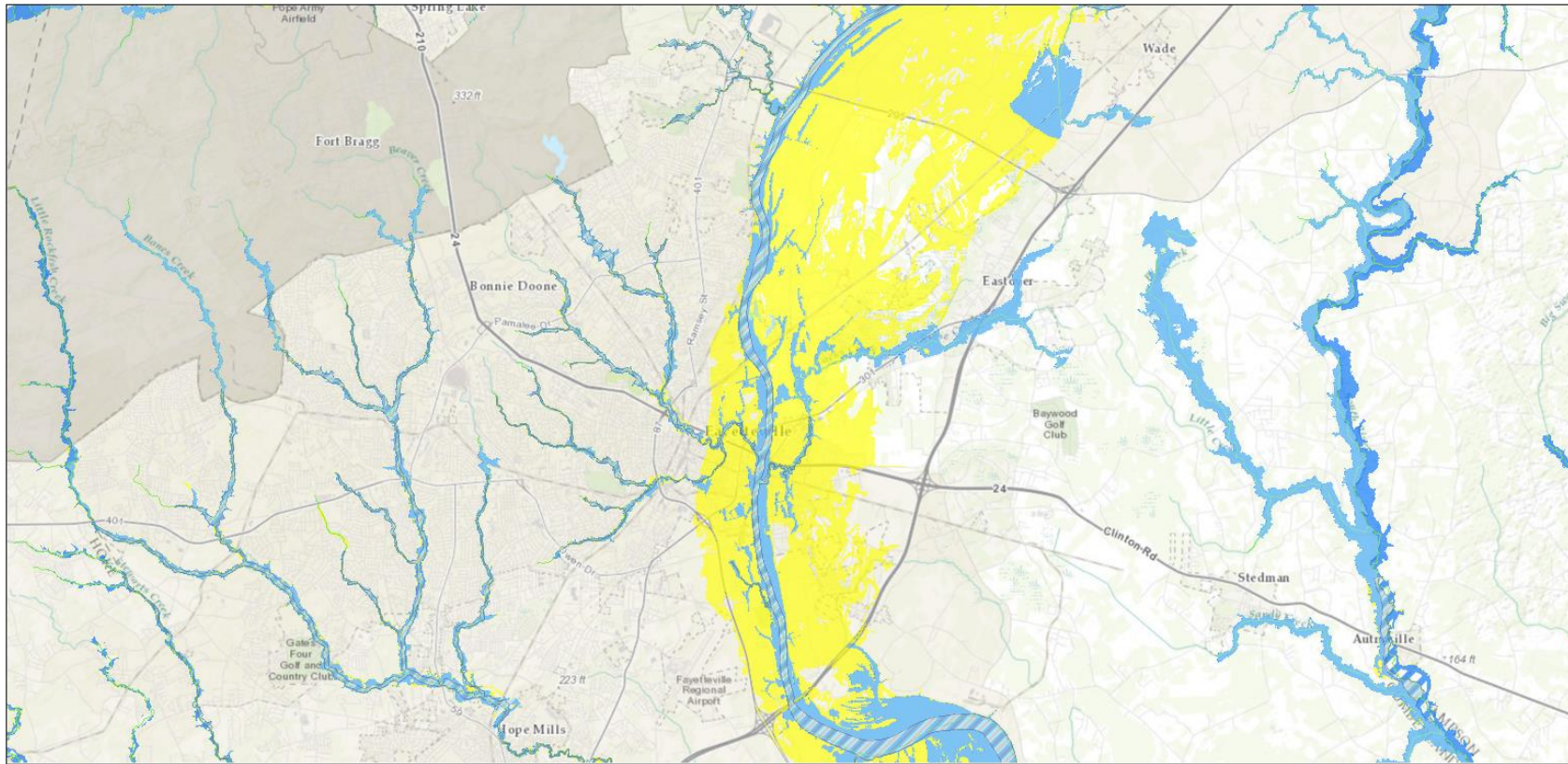
*Plan: Comprehensive Economic Development Strategy 2012-17*

	Rating (1-5)	Comments:
<i>Issue identification and vision</i>	3.5	A SWOT analysis is provided generally, and a competitive advantages, threats, and opportunities analysis based on each economic cluster.
<i>Fact base</i>	4	Detailed outline of the socioeconomic climate, housing, infrastructure, the education system, agricultural economy, environment, and other important industrial sectors.
<i>Policies:</i>	4.5	The Plan of Action is clearly broken down into goals, which lead to objectives and strategies within the economic clusters, bolstered by an outline for lead agency, strategic partners, and actions steps.
<i>Implementation:</i>	4	Each strategy has a corresponding lead agency, strategic partner(s), estimated cost, alignment of resources, barriers/issues, and performance measures.
<i>Monitoring and evaluation</i>	3	Performance measures corresponding to each goal outlined, along with overarching specific measureable targets, such as new job creation; number and types of investments within the region; retained jobs; and private sector investment.
<i>Internal consistency:</i>	4	Goals and objectives intertwine with each other to build synergistic effects; and list of vital projects for infrastructure corroborate opportunities stated within the SWOT analysis.
<i>Inter-organizational coordination</i>	4	Partners for regional infrastructure range from local, county, and state government agencies, economic development councils, and participants in planning process include private and public/non-profit representation from the entire region.
<i>Compliance:</i>	5	All elements of a CEDS is presented within this report in-depth.

*Plan: Cumberland-Hoke HMP*

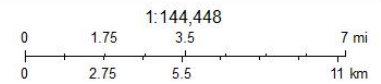
	Rating (1-5)	Comments:
<i>Issue identification and vision</i>	4.5	Plan purpose and scope clearly defined; planning process very clearly outlined;
<i>Fact base</i>	5	Community profile outlines geography and climate, historic, cultural, and natural resources, economy, land use, and future growth prospects. These prospects are well supported with maps and data; hazard profiles are very detailed and contextualized.
<i>Policies:</i>	4	Mitigation Action plan proscribed as action items, rather than policies and objectives, for the regional and local municipalities, which provides a description and background statement providing the purpose and context of each action item.
<i>Implementation:</i>	4.5	Mitigation action plan includes responsible agency, anticipated costs, funding sources, timeframe, and hazard(s) addressed for all action items. Layered to serve intercounty, intra-county, and town-concentrated hazards.
<i>Monitoring and evaluation</i>	3	The plan states the lead agency for leading the future plan review, the criteria for annual reviews, and schedule for five-year updates. Each individual action item has a quantitative timeframe for implementation and review.
<i>Internal consistency:</i>	5	The plan is very interconnected with the various local municipality ordinances, codes, and plans, and takes these documents into consideration when gauging the municipalities capacity for plan implementation.
<i>Inter-organizational coordination</i>	5	At the Fayetteville level, regulatory mitigation capabilities are defined as it relates to each relevant ordinance, code, and plan within the City, the dates adopted, and comments on each document. Additionally, the planning process outlines each agency and organization which had a role in building the document.
<i>Compliance:</i>	5	All elements required for a comprehensive hazard mitigation plan is present and accounted for in this document.

**Flood Map**



March 22, 2017

- AEFW
- AE
- Flood Hazard Areas**
- Zone A, AH, AO, A99, V
- Zone AE, Zone AE 1% Annual Chance Flood Hazard Contained In Structure
- Zone AE Floodway Zone X, 1% Annual Chance Flood Hazard Contained In Channel, Floodway
- Zone AE, Community Encroachment Area
- Zone VE
- Zone X, 0.2% Annual Chance Flood Hazard, 0.2% Annual Chance Flood Hazard Contained In Channel
- Zone X, 1% Annual Chance Future Conditions, 1% Annual Chance Contained In Structure
- Zone X, 1% Future Conditions Contained In Channel, Community Encroachment Area
- Zone D
- Open Water
- Zone X
- Stream Centerlines



Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swiss topo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

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**Reports:**

*2030 Growth Vision Plan, Policies and Actions,*

*A Competitive Realities Report for Fayetteville and Cumberland County, North Carolina*

*Comprehensive Economic Development Strategy, 2012-2017*

*Cumberland County Climate Resiliency Plan*

*Cumberland-Hoke Regional Hazard Mitigation Plan, 2016*

**Data Sources:**

Wildfire Hazard Potential (USFS), ArcGIS,

<https://www.arcgis.com/home/webmap/viewer.html?useExisting=1&layers=fc0ccb504be142b59eb16a7ef44669a3>

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<http://fayettevillenc.gov/government/city-departments/economic-and-business-development/xceligent>

City-Data.com, Fayetteville, NC, <http://www.city-data.com/city/Fayetteville-North-Carolina.html>

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OnTheMap, Fayetteville, NC Work Area Profile Analysis, <https://onthemap.ces.census.gov/>