TOWN OF ELON



Bicycle, Pedestrian and Lighting Plan 2017 UPDATE



FINAL REPORT

May 2017





Bicycle, Pedestrian, and Lighting Plan 2017 UPDATE

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CHAPTER I: INTRODUCTION

1.1 SCOPE AND PURPOSE

The primary purpose of this plan is to identify and prioritize key opportunities for improving Elon's bicycle, pedestrian, and lighting systems over the next 20 years. Implementation of proposed improvements will help encourage greater resident participation in active transportation and physical activity on a coordinated network of alternative transportation facilities. Key objectives of this plan include: improving the health and fitness of town residents and university students, reducing traffic congestion, improving air quality, improving pedestrian safety, and helping to provide a pedestrian-friendly environment for existing and future residents and visitors. Reaching these objectives will improve the quality of life for all residents.

1.2 BACKGROUND

The way people move around in their local communities has dramatically changed over the last 50 years. American lives have become increasingly dominated by the automobile and marked by a distinct pattern of physical inactivity, particularly in the Southeastern United States. Providing safe and accessible places to walk and bicycle will help Elon reduce automobile trips and traffic congestion, and in turn, reduce air pollutants and increase the overall health of the community. In addition, providing a wider mix of land uses in close proximity to each other can reduce travel distances, encourage more foot traffic, and reduce car trips. Well-designed neighborhoods with ample opportunities for walking and biking can increase the quality of life and foster a greater sense of community.

The three key elements of a well-designed bicycle and pedestrian-friendly community include:

- Safety (e.g., issues of traffic, crime, buffering, lighting)
- Access (e.g., sidewalks, bicycle lanes, parking, curb ramps, crossing treatments, connected streets)
- Comfort (e.g., lighting, sidewalk width, compatible land uses, shade)

Design characteristics that serve as some of the basic building blocks of bicycle and pedestrianfriendly communities include:

- Connectivity (establish bicycle routes/lanes, close sidewalk gaps, build cul-de-sac paths and connect different land uses e.g., residential and commercial)
- Separation from traffic (bike-lanes, planting strips, landscaping, bulb-outs)
- Supportive land-use patterns designed for the pedestrian (mixed use, higher density,)
- Designated space (5 foot or wider sidewalks in residential areas and 8 to 12 foot sidewalks in downtown and around schools where feasible)
- Accessibility (ADA ramps, crosswalks, pedestrian signals)
- Street furniture (seating, drinking fountains, trash receptacles)
- Security and visibility (lighting, landscaping, and site distance)

1.3 HISTORY

Some Elon residents use walking and bicycling as a form of transportation. However, walking is not as prevalent as it once was in the United States. According to the National Center for Safe Routes to Schools, in 1969, 49% of school children (5 to 14 years of age) walked or bicycled to school nationwide. By 2009 only 13% of school children (5 to 14 years of age) walked or bicycled to school (). This is partly due to a change in where families choose to live and is also influenced by the built environment that tends to under serve multi-modal transportation needs. A change in the town's Land Development Ordinance (LDO) requiring the construction of a sidewalks with new development and special projects in cooperation with the University and the North Carolina Department of Transportation (NCDOT) have helped to start a network of sidewalks and trails in Elon. However, there are important connections needed to enhance the town's existing pedestrian and bicycling network. Elon cannot achieve a walkable community by itself. Neighboring jurisdictions must participate in improving transportation options as well, encouraging mixed land-use and providing inviting public spaces to walk, transport, and recreate.

Safe and inviting places to walk and bike are important anywhere people want to go, but particularly near neighborhoods, schools, universities, senior centers, downtown, shopping areas, and hospitals. At some point in the journey to work, school, or shops, everyone is a pedestrian. Whether walking is the mode of travel for the entire journey or only from the portion of the trip from the car to the front door, a walking environment that provides a safe, accessible and comfortable journey is important.

The Town of Elon Bicycle, Pedestrian and Lighting Plan Update is a renewed effort to develop a strategy for the development of a safe, secure, and comprehensive network of sidewalks, trails, and on-road bicycle lanes that serve recreation and transportation needs. This planning effort is a major step forward for walking and bicycling in Elon. The Town completed a land development plan in 2002 which included references and action items addressing policies and projects related to bicycle and pedestrian friendliness, trail development, and quality of life. Following the completion of the plan, the Town wrote a new land development ordinance that enhanced walking and bicycle friendliness. Additional changes to the town ordinances and improvements suggested in this updated plan could enhance these provisions.

1.4 VISION AND GOALS

Important to developing and implementing any plan is a set of vision and goals for the future. The following vision statement and goals were drafted by the plan Steering Committee and have been refined using public input. The following vision statement looks ahead in Elon to the year 2035.

Vision Statement

In the year 2035, the Town of Elon will have a coordinated pedestrian, bicycle, and lighting system that will tie residential areas together, providing the community with safe and well-lit access from residential areas to campus academic and recreational facilities and the downtown. Elon will maintain a quality of life that is safe, healthy, and accommodating the needs of residents and students. Throughout Elon, bicycle and pedestrian paths will also connect with Burlington and Gibsonville encouraging walking, running, and biking. Facilities will be safe, functional, innovative, and

maintained. Elon will provide connectivity between residences, shopping, restaurants, and other destinations.

Goals

The following goals are organized into pedestrian, bicycling, and lighting system goals. These goals serve to guide the process by which specific policies, programs, and projects will be developed.

Pedestrian System

- Build sidewalks from residential areas to key destinations;
- Build sidewalks with adequate width, allowing pedestrians to travel safely to locations, especially along major thoroughfares with key destination points and anchors
- Connect existing and future neighborhoods with key destinations, making it easier for pedestrians to walk to locations within the Town;
- Connect sidewalks with destinations on Elon University's campus including the Phoenix Trails;
- Prioritize street sidewalk improvements and areas that attract residents and students to walk and jog for recreation or transportation;
- Improve transit connections;
- Provide transit shelters and seating areas with trash and recycling bins;
- Improve intersection safety; and
- Ensure safe traversable railroad and roadway crossings.

Bicycle System

Bicycle Parking

• Provide safe, well-lit places to secure bicycles.

On-road Accommodation

- Provide protected bicycle lanes on major roads and arteries, where possible;
- Where protected bicycle lanes or off-road paths are not feasible, add marked bicycle lanes or sharrows in existing roadways per MUTCD standards;
- Provide bicycle connections to community parks, shopping, and other destinations while providing opportunities to exercise; and
- Encourage connections between the University housing areas with key University academic, athletic, and entertainment anchors.

Off-Road Accommodation

- Create bicycle paths connecting Elon to Burlington and other outlying areas;
- Provide safe off-road bicycle paths with adequate lighting;
- Provide bikeway connections to community parks, shopping, and other destinations, while providing opportunities to exercise; and
- Connect the University housing areas with key University academic, athletic, and entertainment anchors.

Lighting System

Lighted Pathways

- Provide well-lit pathways to encourage bicycling and pedestrian traffic to key evening destinations;
- Establish lighting in heavily traveled bicycling and pedestrian areas; and
- Complete lighting on outdoor lighting walkways, including high use and high density areas.

Security and Safety

- Provide well-lit emergency stations to improve safety; and
- Install lights along all major thoroughfares.

General Lighting

- Provide better lighting away from the University;
- Be more efficient and innovative in replacing light bulbs; and
- Provide adequate lighting for 24-hour use facilities;
- Ensure new or upgraded lighting with sidewalk construction;
- Lighting installation based on American Association of State Highway and Transportation Officials (AASHTO) standards.

CHAPTER 2: EXISTING CONDITIONS

2.1 OVERVIEW

Important to the Elon planning process is the assessment of existing conditions, (e.g., population demographics, vehicle ownership, and existing facilities) which lays the foundation for future projects, policies, and programs. The existing conditions chapter includes an assessment of many different facts, issues, and input through community outreach and surveys. This information is balanced against demographics, evaluation of crash data, the location and function of the pedestrian and bicycle network and how people use facilities, an inventory of existing sidewalks, pathways and lighting, and an overview of existing ordinances, statutes, plans, and programs.

2.2 DEMOGRAPHICS

Several comparison communities were used in this demographic section to highlight ways in which Elon is similar to these other jurisdictions or ways in which Elon stands above or below these areas. The Towns of Davidson and Boone and the City of Brevard were chosen because they are similar in total population size and make up, and have a large population of college students. The Village of Pinehurst was also chosen because it is a destination town where the majority of the population fluctuates around golf, much like Elon's population fluctuates around the University.

The Population & Growth section utilizes data from the N.C. Office of State Budget and Management (NCOSBM) which produces municipal estimates for each municipality in North Carolina. The remaining demographic sections utilize data from the American Community Survey's 2014 5-year estimates which provides socioeconomic data about the people of each community. Please note that the total populations from these two data sources differ. The total population number from the NCOSBM is more accurate.

Elon statistics, when compared to the State of North Carolina appear quite different in some categories. This statistical variation has to do in most cases with the large student population compared to the overall population in Elon.

Population & Growth

The Town of Elon's population in 2014 totaled 10,186 people and the area of the municipality totaled nearly 3.9 square miles (N.C. Office of State Budget & Management, 2015). With a population density of 2,612 people per square mile (or 4.1 per acre), Elon is now the 9th densest municipality in the state. Only one comparison jurisdiction, Boone, is denser (4th in the state).

Between 1990 and 2014, Elon grew over 130% in population, adding on average about 241 people per year. Growth rates were higher during the 1990's with a 53% growth rate. The growth rate dropped to 40% in the 2000's, which was a normal trend for all other municipalities except Boone (see Table 1).

Also between 1990 and 2014, the Town area expanded by 56% from 2.5 square miles in 1990 to 3.9 square miles in 2014. Population density increased from 2.7 people per acre in 1990 to 4.1 people per acre in 2014 (see Table 2). Elon's population is most dense in its Downtown and areas of student housing on the University Campus (see Map 1).

	Total Population			Growth Rate			Annualized Growth Rate					
	1990			2014	1990- 2000	2000- 2010	2010- 2014	1990- 2014	1990- 2000	2000- 2010	2010- 2014	1990- 2014
Elon	4,394	6,738	9,409	10,186	53.3%	39.6%	8.3%	131.8%	4.4%	3.4%	2.0%	3.6%
Boone	12,915	13,472	17,122	18,227	4.3%	27.1%	6.5%	41.1%	0.4%	2.4%	1.6%	1.4%
Brevard	5,388	6,789	7,609	7,821	26.0%	12.1%	2.8%	45.2%	2.3%	1.1%	0.7%	1.6%
Davidson	4,046	7,139	10,944	12,332	76.4%	53.3%	12.7%	204.8%	5.8%	4.4%	3.0%	4.8%
Pinehurst	5,103	9,706	13,124	15,763	90.2%	35.2%	20.1%	208.9%	6.6%	3.1%	4.7%	4.8%
North Carolina	6,628,637	8,049,313	9,535,483	9,953,687	21.4%	18.5%	4.4%	50.2%	2.0%	١.7%	1.1%	1.7%

Table 1: Population & Growth Comparison (1990-2014)

Source: U.S. Census Bureau, 1990-2010 Decennial Census; (N.C. Office of State Budget & Management, 2015)

Table 2: Land Area & Population Density Comparison (1990-2014)

	Land Area (Square Miles)			Population Density (per square mile)			Population Density (per acre)					
	1990	2000			1990	2000		2014	1990	2000	2010	
Elon	2.5	3.38	3.89	3.9	1,751	1,993	2,419	2,612	2.7	3.1	3.8	4.1
Boone	5.5	5.84	6.13	6.21	2,348	2,307	2,793	2,935	3.7	3.6	4.4	4.6
Brevard	3.4	4.81	5.12	5.15	I,585	1,411	I,486	1,519	2.5	2.2	2.3	2.4
Davidson	3.0	4.86	5.75	5.75	1,349	1,469	١,903	2,145	2.1	2.3	3.0	3.4
Pinehurst	11.1	14.34	13.97	16.6	460	677	939	950	0.7	1.1	١.5	١.5

Source: U.S. Census Bureau, 1990-2010 Decennial Census; (N.C. Office of State Budget & Management, 2015)

Map 1: Population Density by Block Group (2014)



Race & Ethnicity

In 2014, the majority (81%) of Elon's population was White, non-Hispanic (7,748 people). Even though this race continues to make up the majority of the population, the percentage has decreased since the year 2000, when White, non-Hispanics made up 87% of the population. The White, non-Hispanic population increased 33% between 2000 and 2014, while the African American population increased 70%; the Hispanic population increased 73%; and other minority populations saw much higher growth rates. The total minority population continues to represent a higher percentage of Elon's population.

Table 3: Elon Race & Ethnicity Trends (2000-2014)

	2000		2	2014	2000-2014		
	Population	Percentage	Population	Percentage	Change	Growth Rate	
Hispanic or Latino	107	1.6%	185	1.9%	78	72.9%	
Non-Hispanic	6,63 I	98.4%	9,331	98.1%	2,700	40.7%	
White	5,836	86.6%	7,748	81.4%	1,912	32.8%	
African American	684	10.2%	1,162	12.2%	478	69.9%	
Asian	66	1.0%	242	2.5%	176	266.7%	
Other	45	0.7%	179	I. 9 %	134	297.8%	
Total Population	6,738	-	9,516	-	2,778	41.2%	
Minority Population	902	13.4%	١,768	18.6%	866	96.0%	

Source: U.S. Census Bureau, 2000 Decennial Census, Table P004; U.S. Census Bureau, American Community Survey 2010-2014 Estimates, Table B03002

Map 2: Percent Minority Population by Block Group (2014)



Age

The median age in Elon is 21.8 and is much lower than all of the comparison municipalities and the state, except for Boone which also has a lower median age at 21.3. The median age of both Elon and Boone has remained constant since 1990. The other college towns (Brevard and Davidson) have actually seen an increase in median age, while Pinehurst, a retirement community, has seen a slight decrease between 1990 and 2010. College age adults between the ages of 18 and 24 make up 45% of Elon's population.

Table 4: Median Age Comparison (1990-2014)

	1990	2000	2010	2014
Elon	21.4	21.7	21.8	21.8
Boone	21.5	21.4	21.5	21.3
Brevard	38.1	44.6	46.9	40.5
Davidson	25.5	31.3	35.7	35.7
Pinehurst	63.8	60.4	57.6	61.1
North Carolina	33.1	35.3	37.4	37.8

Table 5: Age Range Comparison (2014)

	Ages 0-17	Ages 18-24	Ages 25-44	Ages 45-64	Ages 65+
Elon (#)	I,097	4,297	I,052	1,357	
Elon (%)	11.5%	45.2%	11.1%	14.3%	18.0%
Boone	4.6%	70.4%	13.7%	7.2%	4.1%
Brevard	22.8%	12.0%	19.9%	19.7%	25.7%
Davidson	22. 9 %	18.9%	21.6%	26.4%	10.2%
Pinehurst	13.8%	2.3%	17.4%	25.4%	41.2%
North Carolina	23.4%	10.0%	26.5%	26.3%	13.8%

Figure I: Elon Age Range Pyramid (2014)



Education

Elon continues to outpace the state averages for education attainment. However, higher educational attainment is lower compared to other comparison municipalities. Only 39.2% of Elon's population age 25 years and over has a Bachelor's Degree or higher, compared to 65.5% in Davidson. This phenomenon is most likely due to the smaller adult population in Elon compared to the other municipalities. The well-educated young adults graduating from Elon University may tend to move elsewhere for employment.

	Less than a High School Diploma	High School Diploma or higher	At least some college courses or higher	Bachelor's Degree or higher	Master's Degree or higher
Elon (#)	272	3,850	3,215	1,617	612
Elon (%)	6.6%	93.4%	78.0%	39.2%	14.8%
Boone	9.1%	90.9%	81.1%	48.1%	22.1%
Brevard	12.0%	88.0%	65.5%	35.7%	14.8%
Davidson	2.4%	97.6%	86.1%	65.5%	30.9%
Pinehurst	2.6%	97.4%	80.5%	53.8%	21.4%
North Carolina	14.6%	85.4%	58.6%	27.8%	9.5%

Income

In 2014, the median household income in Elon was \$42,545, slightly behind the state (\$46,693). The median household income of the college age population is much lower (\$10,845), while that of the older adult population is much higher. The most dense census block group in Elon where many college students live has the lowest median household income (\$11,360). The census block groups to the south are some of the wealthiest in the area with median household incomes above \$100,000.

	Total Population	Under Age 25	Ages 25-44	Ages 45-64	Ages 65+
Elon	\$42,545	\$10,845	\$58,929	\$118,944	\$40,525
Boone	\$13,608	\$7,654	\$30,461	\$40,33 I	\$33,531
Brevard	\$38,686	\$26,000	\$39,569	\$48,462	\$37,222
Davidson	\$94,55 I	\$11,250	\$92,700	\$129,020	\$52,746
Pinehurst	\$75,284	n/a	\$100,038	\$91,538	\$60,590
North Carolina	\$46,693	\$24,189	\$50,435	\$55,313	\$35,024

Table 7: Median Household Incom	e Comparison by Age of Householder (2014)
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Map 3: Median Household Income by Block Group (2014)



Poverty

The overall poverty rate in Elon (18.0%) is comparable to that of the state average (17.6%). However, the poverty rate of the different age groups in Elon looks much different. The poverty rate of children and older adults is much lower in Elon. The college age population (ages 18 to 24) has a poverty rate of 67.3%, much higher that the state average (29.2%). However, the American Community Survey does not include individuals who live in college dormitories when calculating poverty status. Therefore, when analyzing the poverty rate of the college age population (ages 18 to 24) that make up the majority of Elon's population, the data only encompasses individuals who do not live in Elon University housing. The total population of college age adults living in Elon is 4,297. The universe population for college age adults in calculating poverty is only 1,530 (1,029 of which live in poverty).

Individuals are determined to be in poverty if their family's total income falls below a set dollar threshold (which is determined by family size and age of householder). Income includes wages, interest, dividends, Social Security, public assistance, disability, and all other incomes. Poverty status for a person living alone or in a household of unrelated individuals (non-family) is determined based off his or her individual income.

	Total Population	Ages 0-17	Ages 18-24	Ages 25-44	Ages 45-64	Ages 65+
Elon (#)	1,200	8	1,029	75	14	74
Elon (%)	18.0%	0.7%	67.3%	7.1%	1.1%	4.5%
Boone	62.5%	8.0%	91.1%	26.9%	26.4%	7.7%
Brevard	16.0%	29.3%	16.3%	11.7%	15.4%	6.6%
Davidson	5.4%	3.2%	34.2%	5.4%	2.1%	3.8%
Pinehurst	2.6%	4.6%	10.5%	2.3%	3.2%	1.1%
North Carolina	17.6%	25.0%	29.2%	16.5%	12.2%	9.9%

Table 8: Poverty Rate Comparison by Age Group (2014)

Map 4: Population in Poverty by Block Group (2014)



Disability

In 2014, Elon had an estimated 1,098 people living with a disability (11.7% of the total population). The majority of these people are older adults; 734 adults age 65 years or older have a disability (or 44.7% of the older adult population).

	Total Population	Ages 0-17	Ages 18-34	Ages 35-64	Ages 65+
Elon (#)	1,098	7	129	228	734
Elon (%)	11.7%	0.6%	2.7%	II .6 %	44.7%
Boone	5.9%	3.6%	2.3%	22.7%	34.8%
Brevard	13.7%	7.7%	2.4%	8.8%	37.3%
Davidson	7.3%	4.3%	5.8%	5.7%	25.6%
Pinehurst	15.7%	9.8%	2.4%	9.8%	25.8%
North Carolina	13.4%	4.4%	6.1%	14.5%	37.8%

Table 9: Disabled Population Comparison by Age Group (2014)



Map 5: Percent of Population with a Disability by Census Tract (2014)

Vehicle Ownership

In 2014, an estimated 225 households (7.8%) in Elon did not have access to a vehicle. This statistic has increased from the year 2000 when only 4.5% of households did not have access to a vehicle. The majority of these households without access to a vehicle are of a household with a householder age 65 years or older (162 households). An additional 1,072 households (37.1%) only had access to one vehicle. Of the households in the densest block group in Elon, 13.8% do not have access to a vehicle.





Labor Force

Of the 8,499 individuals ages 16 years or over in Elon, only 3,067 (36.1%) were in the labor force in 2014. This percentage is lower than all other comparison communities. Only 248 individuals were unemployed, with an overall unemployment rate of 8.1% in Elon, compared to 10.4% across the state. When looking at the college age population, ages 18 to 24, only 880 young adults are in the labor force (20.1%), with 79 unemployed (9.0%). Elon has a much lower percentage of college age adults in the workforce, but a much lower unemployment rate than all other comparison college towns and the state average.

	Population Age 16+	Labor Force	Percent of Adults (16+) in Labor Force	Employed	Unemployed	Percent Unemployed
Elon	8,499	3,067	36. 1%	2,819	248	8.1%
Boone	17,105	9,198	53.8%	7,494	1,704	18.5%
Brevard	6,075	3,121	51.4%	2,836	285	9 .1%
Davidson	9,101	5,872	64.5%	5,466	406	6.9%
Pinehurst	13,269	5,561	41.9%	5,362	199	3.6%
North Carolina	7,717,630	4,879,118	63.2%	4,373,450	505,668	10.4%

Source: U.S. Census Bureau, American Community Survey 2010-2014 Estimates, Table B23001

	Population Age 18-24	Labor Force	Percent of Adults (18-24) in Labor Force	Employed	Unemployed	Percent Unemployed
Elon	4,377	880	20.1%	801	79	9.0%
Boone	12,655	6,095	48.2%	4,590	1,505	24.7%
Brevard	1,080	454	42.0%	374	80	17.6%
Davidson	2,411	1,116	46.3%	905	211	18.9%
Pinehurst	632	364	57.6%	364	0	0.0%
North Carolina	1,222,583	710,643	58.1%	560,718	149,925	21.1%

Travel Time

The mean travel time to work (for all workers ages 16 years and over) was 22.7 minutes in 2014. This statistic has increased from 16.1 minutes in 2000. Almost 22% of workers can get to work in less than 10 minutes. Almost 31% spend more than 30 minutes commuting to work; the majority of these workers are driving automobiles but about 80% of those biking to work commute for more than 30 minutes.

	Mean Travel Time (Minutes)	Less than 10 minutes	10-19 minutes	20-29 minutes	30 minutes or more
Elon	22.7	21.8%	36.3%	11.0%	30.9%
Boone	14.1	36.0%	39.2%	16.0%	8.9%
Brevard	20.1	39.1%	23.0%	8.2%	29.7%
Davidson	23.1	28.8%	21.7%	15.5%	34.0%
Pinehurst	23.1	18.9%	45.6%	7.8%	27.6%
North Carolina	23.7	13.0%	32.9%	22.9%	31.2%

Table 12: Travel Time to Work Comparison (2014)

Source: U.S. Census Bureau, American Community Survey 2010-2014 Estimates, Tables DP03 & B08303

Means of Transportation to Work

Of the 2,735 workers in Elon (age 16 years and over), the majority 74.2% (or 2,029 workers) drove alone in a car to get to work in 2014. An additional 9.6% (263 workers) carpooled in a car. An estimated 8.4% of the worker population walked or biked to work; much higher than the state statistic. The majority of those walking and biking to work are between the ages 20 and 24.

	Drove Alone	Carpooled	Public Transportation	Walked	Bicycle & Other Means	Worked at Home
Elon (#)	2,029	263	21	158	71	193
Elon (%)	74.2%	9.6 %	0.8%	5.8%	2.6%	7.1%
Boone	60.5%	8.2%	5.0%	18.9%	1.5%	5.8%
Brevard	80.4%	6.9%	0.0%	6.7%	0.3%	5.8%
Davidson	71.4%	4.5%	I.4%	7.1%	2.1%	13.6%
Pinehurst	84.4%	5.9%	0.0%	2.1%	1.3%	6.4%
North Carolina	81.2%	10.2%	1.1%	1.8%	1.3%	4.5%

Source: U.S. Census Bureau, American Community Survey 2010-2014 Estimates, Table B08101

Commuting Patterns

According to the Longitudinal Employer-Household Dynamics (LEHD) Origin-Destination Employment Statistics (LODES), Elon had a total of 3,185 employees working inside the Town in 2013. The majority of these employees commuted from outside the Town (2,970 employees or 93.2%). Only 215 individuals (or 6.8%) both lived and worked in the Town of Elon. Also according to the LODES data, Elon had a resident workforce population of 3,583. The majority of these residents commuted to another place for employment (3,368 people or 94%). Only 6% of the resident workforce both lived and worked in the Town of Elon. These statistics are similar to the

commuting patterns of the Town of Davidson. Boone, Brevard and Pinehurst have a higher percentage of non-commuters.

The LODES dataset does not take into account: self-employed and sole proprietors, federal/military/railroad workers or employment exempt from UI laws. Therefore, the percentage of residents remaining in the Town for employment is probably underestimated. The LODES dataset is the most comprehensive data source for inflow/outflow of jobs because it uses a variety of data sources including the Employment Characteristics Quarterly Census of Employment and Wages (QCEW) and the Worker Characteristics Personal Characteristics File (PCF).

		Employees		Residents			
	Total	Commute from another area	Live inside area	Total		Work inside area	
Elon (#)	3,185	2,970	215	3,583	3,368	215	
Elon (%)		93.2%	6.8%		94.0%	6.0%	
Boone		87.5%	12.5%		71.1%	28. 9 %	
Brevard		86.3%	13.7%		63.5%	36.5%	
Davidson		92.6%	7.4%		92.6%	7.4%	
Pinehurst		86.3%	13.7%		77.0%	23.0%	

Table 13: Employment Inflow/Outflow (2013)

Source: U.S. Census Bureau, LODES, 2013

The majority of out-commuters are commuting to other areas in Alamance County, mostly to Burlington (1,008 people). The majority of in-commuters are also coming from other areas in Alamance County, mostly Burlington (610 people).

County/Place	Out- Commuters	Percent	County/Place	In- Commuters	Percent
Alamance (outside of Elon)	1,423	39.7%	Alamance (outside of Elon)	1255	39.4%
Burlington	1,008	28.1%	Burlington	610	19.2%
Graham	145	4.0%	Gibsonville	120	3.8%
Guilford	613	17.1%	Graham	90	2.8%
Greensboro	374	10.4%	Guilford	696	21.9%
High Point	67	1.9%	Greensboro	325	10.2%
Durham	260	7.3%	High Point	52	1.6%
Durham	277	6.3%	Orange	169	5.3%
Wake	247	6.9%	Chapel Hill	55	1.7%
Raleigh	147	4.1%	Wake	114	3.6%
Mecklenburg	154	4.3%	Raleigh	53	1.7%
Charlotte	127	3.5%	Durham	82	2.6%
Orange	118	3.3%	Durham	71	2.2%
Chapel Hill	63	1.8%	Forsyth	64	2.0%
Forsyth	80	2.2%			

Table 14: Commuting Origin/Destination by County & Place (2013)

Winston-Salem	64	1.8%
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Source: U.S. Census Bureau, LODES, 2013

University Enrollment & Trends

For the 2015-16 school year, the undergraduate enrollment was 5,903 students; the Graduate enrollment was 728 students; total enrollment was 6,631 students. Over half (62%) of Elon University students live on-campus and 38% live in off-campus housing. Much of the off-campus housing is within walking distance of the University and is also served by the Elon University Bio Bus transit system.

Demographic Summary

- Elon is the 9th densest municipality in North Carolina with 4.1 people per acre.
- Elon has added over 3,000 people since the original plan was completed in 2008. Elon had a population of 7,097 in 2006 and now has a population of 10,186 in 2014.
- Elon's population continues to consist of mostly white, non-Hispanic residents, but this racial group has had the lowest growth rate since 2000.
- The median age in Elon is 21.8 with college age adults (ages 18 to 24) making up 45% of the population.
- Elon's educational attainment continues to outpace state. 39% of Elon's adults have a Bachelor's degree or higher (compared to 28% of the state adult population) while 15% have a Master's degree or higher (compared to 10% of the state adult population).
- Median household income in Elon is slightly lower than the state median, due to many college age adults with a median household income just under \$11,000.
- 67% of college age adults live in poverty.
- Elon has a lower percentage of adults (especially college age) in the workforce, but has lower unemployment rates.
- Elon's workforce has seen increasing travel times to work. The average is now 22.7 minutes compared to 16.1 in 2000. The majority of workers are commuters going to/from Burlington and Greensboro.
- 8.4% of the workforce in Elon walk or bike to work.

Conclusion

Overall, the demographics and data collected for this plan update indicates that Town of Elon continues to be a growing community especially among the young and highly educated. Building a high quality transportation system will be important step to better accommodate the dynamic needs of both the Town and University while providing for an improved quality-of-life for all residents.

2.3 CRASH DATA

Bicycle and pedestrian crash data was provided by the town of Elon's Police Department for the time period 2008 to 2015. During this time, there were two bicycle crashes – one minor and one with evident head injury. There were also 14 pedestrian crashes – five with minor injuries, seven with major injuries and two with unknown injuries. Map 7 shows the location of these crashes,

labeled by the number of crashes occurring at each location. The majority of the crashes occurred along East Haggard Avenue on Elon University property.



Map 7: Bicycle & Pedestrian Crash Locations (2008-2015)

Source: Town of Elon Police Department

2.4 COMMUNITY OUTREACH

Public Open House

A community open house for this plan was held from 5:00 p.m. to 7:00 p.m. on April 26, 2016 at the Heritage Place Community Center at Beth Schmidt Park. A summary of the bicycle, pedestrian and lighting plan process was shared with 25 members of the public. Participants engaged in a mapping exercise indicating areas of concerns with regards to bicycle, pedestrian, and lighting. Additional feedback was given on specific policies and programs to promote bicycling and walking by the Steering Committee.

Community Survey

There were 179 respondents to the Community Survey. The survey opened on April 1, 2016 and closed June 30, 2016. Respondents were asked 18 questions about bicycle, pedestrian, lighting, and funding issues. The survey was made available on the internet and in paper format. The survey was advertised through several outlets including the town's social media. The following is a brief summary of the survey results. A detailed report of the survey can be found in the Appendix C of this report.

- 90.5% of respondents think that the goal of creating a walking and bicycle friendly community is very important.
- Only 9% of respondents bicycle five or more times a week while 43.3% of respondents currently do not bicycle. Most bicycle trips are greater than one mile.
- 44.7% of respondents walk five or more times a week and at a distance greater than one mile.
- The respondents who either bicycle or walk five or more times a week do so for either fitness/recreation or for transportation.
- The top three reasons that respondents do not bicycle or walk is the lack of sidewalks or trails, unfriendly streets/land-uses, and unsafe crossings.
- Respondents noted that the top three sources of revenue that should be pursued if grants and existing revenues are not sufficient should are local bonds, local sales taxes, and property taxes.

2.5 INVENTORY OF EXISTING FACILITIES

A detailed inventory of existing sidewalks, trails, roadway widths, and streetlights was completed in Elon during this planning process to estimate resources needed for future facility development. This section summarizes the number of streetlights, linear feet of sidewalk, length of trails, and existing parking in the Town.

There is a significant level of sidewalk and decorative street lighting in the downtown area and on the university campus, but gaps resulting in access and safety concerns were identified.

Pedestrian Facilities

There is a total of 232,279 feet or approximately 44 miles of sidewalk within the Town of which 6,767 feet (1.25 miles) is the shared-use path along University Drive. Other pedestrian facilities in Elon includes a path which extends 224 feet from Forestview Drive to the Beth Schmidt Park. The location of pedestrian facilities throughout the town can be found in Map 8.

Bicycle Facilities

The Town has 10 foot wide paved shared-use pathway along University Drive that is approximately ³/₄ of a mile long. In addition, there is a signed bicycle route through town, North Carolina Bicycle Route 70 which follows Manning Avenue, Lebanon Street, and Oak Street. There are several roadways within the Town that may be suitable for installing on-road facilities such as bicycle lanes, wide curb lanes and shoulders; however, none of these routes are currently striped for bicycle

facilities. The University has a series of bicycle racks on campus to promote bicycling to campus. The location of bicycle facilities throughout the town can be found in Map 9.

Lighting Facilities

A detailed inventory of streetlights in Elon is maintained by Duke Power. With the assistance of the City of Burlington GIS department, this information was incorporated into a GIS mapping database. In addition to location, the inventory includes information about lumens, fixture style, pole style, height and color. An inventory of the university campus lighting was completed and combined with the existing streetlight data for the Town. The different styles of lighting on the University and in the Town are illustrated here. Eleven unique styles have been found in the Town of Elon.



Athletic Fields Array (off Phoenix Drive)



Golf / Driving Range Array (off South Antioch Avenue)



Small box 2-head (parking lot off Lebanon Avenue)



Small box 3 head (parking lot off Phoenix Drive near athletic fields)



Deluxe Traditional (near Whitney Building on Lebanon Avenue)



Cylindrical - Decorative (off Phoenix Drive)



Acorn

(Millpoint Neighborhood)



Deluxe Acorn - Decorative (Haggard and Williamson Avenue)



Traditional (Haggard Avenue)



NEMA Standard of Cobra (Lebanon Avenue)

There are a total of 799 streetlights within the Town and on the Elon University campus, there are 189 lighting fixtures or arrays. Decorative lighting is centered in the area of Elon University and some newer neighborhoods. There are 339 decorative light fixtures throughout the Town. Over half (460) of streetlights in Elon are Cobra or NEMA Standard issue fixtures by Duke Energy. The other streetlights are the parking lot box lights or athletic field lights, which total 87 units. Over time and as fixtures are replaced or repaired, Duke Energy will be installing only Cobra LED lights throughout town. The location of streetlights can be found in Map 10.

Transit Facilities

The Elon University Bio Bus system provides free transportation to all Elon students, faculty, staff, and Elon residents. There were 121,864 total riders in 2015. The buses use biodiesel fuel, which is blended with vegetable/animal oils and ultra-low sulfur diesel fuel. The system is comprised of six (6) routes with a total of 38 stops of which 24 of them are in town. Each route is equipped with live NextBus tracking, which allows riders to know when a bus will be at their planned stop. The location of transit routes can be found in Map 10.

- The Outer Loop A and B service the east side of campus with stops every ten minutes at various apartment complexes and the Francis Center.
- The West Line services apartments on the west side of campus along with the Ingold Lot, Hunt Softball Lot, and Arts West with stops every twenty minutes.
- The Danieley Center Tram services different stops within the Danieley Neighborhood as well as Colonnades Dinning with stops every ten minutes.
- The University Drive Line provides access to shopping centers and restaurants at University Commons and Alamance Crossing.
- The Downtown/East Burlington Loop provides access to volunteer locations, shopping, and downtown Burlington.

Map 8: Existing Pedestrian Facilities







Map 9: Existing Bicycle Facilities







Map 10: Existing Lighting & Transit Facilities





2.6 RELEVANT STATUTES AND LOCAL ORDINANCES

Town of Elon statutes and ordinances can have the greatest direct impact on how the built environment supports bicycling and walking at the site, neighborhood, and community level. The Town adopted a unified Land Development Ordinance (LDO) in 2004 to regulate development and construction which also includes guidelines for improving the safety and mobility of bicyclist and pedestrians. The specific policies relating directly to bicycling, walking, and lighting are found below and in Sections 5.6 and 5.7 (Street and Greenway Design Regulations) of the LDO. Recommendations to improve the LDO are discussed in Section 4.1 of this plan.

Sidewalk Design Guidelines

Residential sidewalks will be a minimum of 5 feet in width. Sidewalks serving mixed use and commercial areas will be a minimum of 8 feet in width. In front of retail storefronts within designated activity centers sidewalks will be a minimum of 12 feet in width (LDO Section 5.7.4.1).

Pedestrian Crosswalks

Where deemed necessary by the Technical Review Committee (TRC), a pedestrian crosswalk at least 10 feet in width may be required to provide convenient public access to a public areas such as a park, greenway, or school. Crosswalks must be ADA compliant (LDO Section 5.7.4.9).

Sidewalk Connectivity

Infill or new development requires the dedication of right of way and sidewalk construction to connect with existing sidewalk (LDO Section 5.7.4).

Bicycle Lanes and Paths

All new developments within the existing town limits will include bike lanes, a minimum of four feet in width, on new streets. New developments outside the town limits (in ETJ) will include bike paths a minimum of eight feet in width and separated from vehicular traffic. Bike lanes and bike paths will be designed according to the North Carolina Bicycle Facilities Planning and Design Guidelines (LDO Section 5.7.4.2).

Bicycle Parking

The Town of Elon has works with new businesses in Elon to require bicycle racks in or adjacent to parking lots for non-residential and multi-family development (LDO Section 5.6.2.3).

Greenway Trail Design Guidelines

Shared-use trails should accommodate a variety of users including walkers, joggers, cyclists, and in-line skaters. The trails are required to be paved at a minimum width of 10 feet.

Town of Elon - Bicycle, Pedestrian and Lighting Plan (2017)

When the trail is in a flood zone, a minimum 20 foot vegetative buffer between nearby streams and trail should be left intact. (LDO Section 5.7.8)

Street Lights

Streetlights will be installed by the developer on all streets at an average separation of 160 to 200 feet. The Town will accept responsibility of the lights at the time streets are accepted for maintenance. (LDO Section 5.7.4.8)

Street Trees

Planting strips are required for sidewalk development. Specifications include a maximum of 40 feet between large maturing trees. Large canopy trees are required to have an 8 foot planting strip. (LDO Section 5.7.6)

Design and construction specifications will be based on NCDOT standards for streets, sidewalks, bike lanes, greenways and signage. The *Traditional Neighborhood Development Guidelines Manual* and *Subdivision Roads Minimum Construction Standards Manual* published by NCDOT are used as a regulatory reference. A list of design guidelines for different pedestrian and bicycle facilities can be found in the Appendix.

2.7 RELEVANT LOCAL, REGIONAL AND STATE PLANS AND GUIDELINES

The Town of Elon embarked on an innovative planning effort by combining bicycle, pedestrian, and lighting into a comprehensive master plan. Some bicycle and pedestrian policy, infrastructure and facilities have been incorporated into a number of recent planning efforts within Elon, in addition to various regional and statewide planning initiatives.

Elon Land Development Plan (2002)

In 2002, the Town of Elon completed a Land Development Plan (LDP) assessing existing conditions and trends for land development until 2010. The plan was followed by a new land development ordinance based upon the recommendations of the LDP. In regards to increasing bicycle and pedestrian-friendliness, the LDP proposed the following policies:

Growth Management Policies

- 1.2 Preserve, invest in, and expand our downtown to create a vibrant community-wide activity center that is pedestrian-friendly and includes a variety of services, shops, restaurants, offices, and public spaces.
- 1.3 Identify appropriate locations for the development of new activity centers, to create attractive, pedestrian-friendly centers for community life, containing a variety of shops, civic, office, and residential uses within convenient walking distance of existing and future neighborhoods.

- 1.6 Encourage the development of office land uses in convenient locations above shops and in pedestrian-friendly activity centers, to reduce traffic and build a greater sense of community.
- 1.8 Encourage new residential development to be pedestrian friendly and well connected to the rest of the community, providing a range of opportunities for adequate, affordable, quality housing for all residents and a wider variety of housing types.
- 1.10 Encourage the development of new neighborhoods that add to the livability and small town character of Elon by providing a walkable, mixed-use, pedestrian-friendly environment.
- 1.11 Make sure that open space, parks & squares are part of every new neighborhood, and that these amenities are well connected by greenways, sidewalks, and bike lanes, and added to existing neighborhoods where appropriate and feasible.

Planning Coordination Policies

2.2 Encourage University development that keeps Town entrances aesthetically pleasing, includes pedestrian connections throughout Town (walking paths, sidewalks, bike paths, and greenways), and that creates a strong sense of community and adds to the town's quality of life.

Quality of Life / Environmental Stewardship Policies

- 3.1 Maintain and improve our air quality by encouraging clean industry, discouraging noxious uses such as hog farms, and by following smart growth principles that encourage pedestrian-friendly, mixed-use land use patterns, more sidewalks, bike lanes & greenways, interconnected street patterns, and open space (cluster) development (like Twin Lakes) in rural conservation areas.
- 3.4 Continue to add community amenities (public buildings and squares, parks and green spaces, sidewalks, greenways, nature trails, bike lanes, etc.) as we continue to grow.
- 3.5 Provide abundant open space & recreational opportunities throughout the community.
- 3.7 Maintain the "village" concept as new land development occurs.

Public Services & Infrastructure Policies

- 4.2 Encourage the appropriate location of schools and other civic uses, to complement other growth management and community-building goals.
- 4.3 Make sure our parks, recreation & open space system keeps pace with growth, adding a variety of active and passive new parks & programs as needed.
- 4.4 Make sure our parks, recreation & open space system becomes in integral part of our community as each new neighborhood is developed, and that each component is
well connected through a network of sidewalks, bike lanes, walking trails, and greenways.

4.8 Make sure our transportation system includes a variety of alternative transportation options including sidewalks, bike lanes, walking trails, greenways, transit (local & regional), para-transit, as well as roads & the by-pass, and that it supports alternative land use patterns such as Traditional Neighborhood Developments (TNDs) and Transit Oriented Developments (TODs).

Downtown Elon Master Vision Plan (2014)

A Master Plan for Elon's Downtown was released in 2014 and discusses several elements which, if implemented, would enhance the bicycling and walking experience for residents, students, and visitors alike. Included in the plan are guidelines for future downtown architectural design, landscaping, site amenities, traffic and parking, and wayfinding signage.

Burlington-Graham MPO Transportation Plan (2004)

The Town of Elon is a member of the Burlington-Graham Urban Area, designated as a Metropolitan Planning Organization (MPO) for transportation planning purposes. The Burlington-Graham MPO completed and adopted a Metropolitan Transportation Plan in 2015, with a twenty-five year planning horizon (2015-2040). The plan analyzes household and employment figures to identify existing and projected future deficiencies in the region's thoroughfare system, and to establish proposed road building and alternative transportation improvement projects to address these deficiencies over the next twenty-five years.

2016-2025 Transportation Improvement Program

TIP project U-5853 will widen St. Marks Church Road/ South Williamson Avenue from Boone Station Road to Lebanon Avenue between Elon and Burlington. South Williamson Avenue will be widened to three (3) lanes from Trollinger Avenue to Church Street and widening St. Marks Church Road to four (4) lanes from Church Street to Boone Station. The recommendation that the widening include a multi-use path or bicycle and pedestrian accommodations to increase non-motorized mobility between the two municipalities was discussed at a project scoping meeting held in November 2015.

WalkBike NC

WalkBikeNC, North Carolina's Bicycle and Pedestrian Plan, was adopted by the NCDOT Board of Transportation in December 2013. The adoption concluded an 18-month planning process that included comprehensive stakeholder and public engagement across the entire State. The Plan lays out a framework for improving bicycle and pedestrian transportation as a means to enhance mobility, safety, personal health, the economy, and the environment.

3.1 PEDESTRIAN, BICYCLE, AND LIGHTING SYSTEM OVERVIEW

The Town has a nearly complete sidewalk network in the University and downtown areas providing a walkable area around Williamson Avenue between Haggard and Lebanon Avenue. Twin Lakes Retirement Community and the Millpoint Subdivision also have sidewalk networks. There are quite a few small gaps in the pedestrian system that need to be filled. Section 3.2 summarizes pedestrian system recommendations.

The on-street bicycle network in Elon consists of shared travel lanes and no dedicated onstreet facilities. North Carolina Bike Route 70 crosses the Town of Elon on Manning, Lebanon and Oak Street. Bicycling activity has been observed in Elon, especially while Elon University is in session, and several roadways have been proposed for installation of bicycle lanes or wide shoulders. The lane widths of commonly traveled roads in Elon are color coded on the existing Bicycling Facilities map in Chapter 2.

In 2002, the University Drive bypass was completed which also included an adjacent shareduse path which serves as a promising result of then recent policies adopted by the Town that call for bicycle and pedestrian accommodation for all new roads. Other gateways into Elon include Haggard Avenue from Gibsonville and Williamson Avenue, Front Street and West Webb Avenue from Burlington.

The lighting system in Elon consists of decorative lighting in the University area, downtown, Twin Lakes and some newer neighborhoods. Standard telephone pole mounted lights exist in older neighborhoods and along heavily traveled corridors such as Williamson and Haggard Avenues (outside the downtown and University area). There are several corridors where lighting coverage needs to be improved. Specific areas recommended for improvement are provided in Section 3.4 below.

This plan outlines a series of projects, programs, and policy recommendations. Section 3.2, 3.3, and 3.4 pertain to project recommendations, which will require the largest amount of funding to complete. Projects are grouped by a) corridors b) intersections and c) shared-use paths. Shared-use path recommendations focus on the creation of new corridor connections to parks, schools, and shopping. Both corridor projects and intersection projects are prioritized based on factors explained in the Appendix.

Sidewalk and intersection improvements are considered on-road improvements, which offer safe pedestrian transportation options on existing street corridors. Shared-use path and trail improvements are considered off-road improvements and provide important long-term non-motorized connections near streams, sewer lines, or other corridors. Bicycle lane facilities are considered on-road improvements. Lighting improvements include areas where gaps need to be filled or lighting quality and aesthetics need to be improved.

Project improvements have been identified using the following sources and criteria:

a) Public comments (surveys, public meeting maps, and meeting questionnaires);

- b) Higher traffic volume streets and intersections with observed high levels of walking behavior;
- c) Safety concerns resulting from crash data and demographic analysis;
- d) Proximity to trip generators (parks, schools, shopping, Downtown);
- e) Steering Committee recommendations
- f) Previous plan recommendations (e.g. 2008 Bicycle, Pedestrian, and Lighting Plan and the Land Development Ordinance, etc.); and
- g) Staff project recommendations.

The following sections (3.2-3.4) highlight both previously identified proposed projects along with those collected during the plan update. These lists are not intended to be comprehensive and will be re-evaluated as projects are built, funding becomes available, and/or conditions change. Residents are encouraged to contact the Town to offer project recommendations not included here.

3.2 PEDESTRIAN SYSTEM RECOMMENDATIONS

The pedestrian facilities recommended for improvement include sidewalks, intersections, and shared-use path facilities. The sidewalk corridor improvements have been prioritized as shown in Table 15 and explained in Appendix A, Section A.6. The prioritization process used for corridor and intersection improvements combine factors used in the Graham, N.C. Pedestrian Transportation Plan (2006), the Durham, N.C. Pedestrian Transportation Plan (2006), the Portland, OR Pedestrian Plan (1998), and input from Town of Elon staff. A wide range of factors were used for project prioritization - the higher the score, the higher the priority. The scoring system used to rate each project will serve as a guide to programming resources for projects. However, opportunities for improvement to certain corridors may arise (i.e., unplanned road projects, repaving projects, utility installation, or specific funding opportunities) initiating the construction of projects that may not be a top priority. More detail on each of the factors and their value are found in the Appendix.

Project ID	Street	From	То	Side	Feet	Miles
S-01	W Haggard Ave.	St. John's St.	Manning Ave.	S	1,006	0.19
S-02	W Haggard Ave.	University Dr.	Manning Ave.	Ν	2,360	0.45
S-03	E Haggard Ave.	Gilliam Rd.	Partners Place	Ν	939	0.18
S-04	University Dr.	Ramp	E. Haggard Ave.	S	13,594	2.57
S-05	S Oak Ave. / W. Front St.	Truitt Dr.	Burlington City Limits	S	158	0.03
S-06	W. Trollinger Ave.	Ballpark Ave.	Holt Ave.	S	1,570	0.30
S-07	E. Haggard Ave.	Partners Place	University Dr.	Ν	927	0.18
S-08	Westbrook Ave.	University Dr.	Church St.	Е	4,679	0.89
S-09	Manning Ave.	W Haggard Ave.	W Lebanon Ave.	Е	664	0.13
S-10	S. Williamson Ave.	Existing Sidewalk	Church St.	W	5,159	0.98
S-11	W. Lebanon Ave.	Church St.	Manning Ave.	Ν	523	0.10
S-12	N. Manning Ave.	University Dr.	Existing Sidewalk	W	2,654	0.50

S-13	Church St.	W Haggard Ave.	W. Lebanon Ave.	W	515	0.10
S-14	Lee St.	W Haggard Ave.	W. Lebanon Ave.	Е	705	0.13
S-15	St. John Street	W Haggard Ave.	Existing Sidewalk	W	208	0.04
S-16	N. Williamson Ave.	University Dr.	Existing Sidewalk	W	1,363	0.26
S-17	S. O' Kelly Ave.	Woodale Dr.	Existing Sidewalk	E	247	0.05
S-18	Ballpark Ave.	W Trollinger Ave.	Johnson St.	Е	2,951	0.56
S-19	Truitt Dr.	Oak St.	Windsor Way	W	1,892	0.36
S-20	Shallowford Church Rd.	University Dr.	Elon Ossipee Rd.	W	342	0.06
S-21	Elon Ossipee Rd.	Shallowford Church Rd.	Existing Sidewalk	W	557	0.11
S-22	Orange Dr.	Williamson Ave.	Earl Dr.	Ν	1,506	0.29
S-23	N O' Kelly Ave.	University Dr.	Circle	W	1,111	0.21
S-24	Earl Dr.	Orange Dr.	Windsor Way	W	1,019	0.19
S-25	Georgetown Dr.	Earl Dr.	Meadowood Dr.	W	4,273	0.81
S-26	Westgate Dr.	Westbrook Ave.	Williamson Ave.	Ν	1,703	0.32

The proposed project phasing shown below takes into account adjacent projects that could be constructed together to provide users a system with maximum connectivity. Table 16 summarizes these proposed groups of projects which take into account their score and geographic location.

Table	16:	Proposed	Sidewalk	Project	Grouping
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Geographic Group	Proposed Projects
Northern	S-06, S-15, S-18, S-21, S-22, S-25
Northeastern	S-03, S-05
Northwestern	S-01, S-02, S-09, S-10, S-12, S-13, S-14
Southeastern	S-08, S-11, S-16, S-19, S-20, S-23, S-24
Southwestern	S-04, S-07, S-17, S-26

Intersection improvement projects are shown below in Table 17. These proposed improvements may need to include pedestrian refuge islands, curb ramps, crosswalks, traffic calming, or other measures to increase pedestrian and bicycle safety. Further planning and engineering will need to take place at each intersection before recommendations can be finalized.

Table	17:	Proposed	Intersection	Projects
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Project ID	Location
I-01	S. Williamson Ave./Westgate Dr/Eastgate Dr.
I-02	Cook Rd. at Elon Park entrance and Driftwood Dr.
I-03	Cook Rd. at Elon Park entrance and Travis Ln.
I-04	W. Haggard Ave./Manning Ave.
I-05	University Dr. and US-70
I-06	S. Williamson Ave. and US-70
I-07	Williamson Ave. & Rail Road

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I-08	N. Williamson Ave. and W. College Ave.
I-09	S. Williamson Ave. and Orange Dr.
I-10	Truitt Dr. & Oak St.
I-11	E. Haggard & University Dr.
I-12	Williamson Ave. & Haggard Ave.
I-13	University Dr. & Westbrook Ave.
I-14	E. Haggard Ave. Crosswalk
I-15	N. O'Kelly Ave. & University Drive
I-16	Shallowford Church Rd. & University Dr.

The following shared-use paths are proposed to connect neighborhoods and improve pedestrian and bicycle connections for transportation and recreation. These connections provide key access points to destinations including work, school, shopping, and recreation. Final location, design, and trail surface should be decided only after further planning and engineering has taken place.

There were nearly 28 miles of potential greenway trails identified in the 2002 Elon Land Development Plan, much of which extend into areas outside Elon's town limits. As new development occurs, the Town should preserve previous and newly identified potential and proposed shared-use paths through the subdivision and easement acquisition process.

Table 18: Proposed Trail Project

Project ID	Location	Feet	Miles
P-01	Connect Lawrence Slade and Beth Schmidt Parks	1,206	0.23
P-02	Connect St. Johns to Church St. (near RR tracks)	416	0.08
P-03	Connect Westover Drive to University Property	712	0.13

Map 11: Proposed Pedestrian Facilities





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3.3 BICYCLE SYSTEM RECOMMENDATIONS

The majority of the heavier traveled roads are proposed for bicycle improvements to facilitate bicycle transportation and recreation. The level of effort required to complete the facilities will vary based on existing pavement width, adjoining land uses, adjacent facilities, repaving schedules, and other factors. The bicycle system recommendations are prioritized using a different set of factors from the pedestrian facilities. The ranked bicycle transportation improvements shown in Table 19 indicate proposed improvements and existing travel lane widths to install bicycle lanes, striping, or some other improvements to facilitate bicycle travel while also accommodating motor vehicle travel. The higher the score total, the higher the rank. See Section 3.6 for further detail on specific facility recommendations. Map 12 displays on-road and off-road proposed bicycling system improvements. More detail on each of the factors and their values are found in the Appendix.

Project ID	Street	From	То	Feet	Miles
B-01	W. Haggard Ave.	University Dr.	University Dr./Webb Ave.	13,594	2.57
B-02	Westbrook Ave.	University Dr.	US-70	4,666	0.88
B-03	S. Williamson Ave.	E. Lebanon Ave.	Sunset Dr.	2,589	0.49
B-04	University Dr.	Ramp	Webb Ave.	13,955	2.64
B-05	University Dr. & Ramp	W. Haggard Ave.	W. Haggard Ave.	2,301	0.44
B-06	S. Oak St.	E. Lebanon Ave.	Truitt Dr.	1,132	0.21
B-07	N. Manning Ave.	University Dr.	W. Haggard Ave.	3,101	0.59
B-08	University Dr.	Multi-use path	W. Haggard Ave.	1,640	0.31
B-09	N. Oak St.	E. Haggard Ave.	E. Lebanon Ave.	992	0.19
B-10	S. Williamson Ave.	Sunset Dr.	US-70	5,359	1.01
B-11	Shallowford Church Rd.	University Dr.	Pitts Rd.	5,716	1.08
B-12	Manning Ave.	W. Haggard Ave.	W. Lebanon Ave.	729	0.14
B-13	N Manning Ave.	Gibsonville Ossipee Rd.	University Dr.	4,351	0.82
B-14	Sunset Dr. & Courtland Dr.	S. Williamson Ave.	Park Path	3,702	0.70

Table 19: Proposed Bicycle Projects

Map 12: Proposed Bicycle Facilities





Bicycle, Pedestiran and Lighting Plan



Mapping provided by the Piedmont Triad Regional Council Planning Department Date: October 06, 2016

Proposed Bicycle Facilities



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3.4 LIGHTING SYSTEM RECOMMENDATIONS

The lighting system in Elon needs to be improved in certain areas. The problem areas result from either gaps in lighting, aesthetically unpleasing lighting or insufficient light fixtures (e.g. wasted light away from the ground, low wattage, etc.). Table 20 and Map 13 indicate existing corridors that need lighting improvements.

The distance between light fixtures should match the LDO requirement for new development, which calls for light fixtures to be spaced 160 to 200 feet apart. In the instance that new lighting installations will reduce the distance below the suggested spacing distance, consideration of adjusting pole height, wattage, and foot candle should be managed through consultation with a lighting specialist or Duke Energy. Where there are transit stops, additional lighting should be installed at the stop for safety purposes.

Further details on lighting recommendations are found in Appendix A.

Project ID	Corridor
L-01	Brighton Dr.
L-02	Ball Park Ave.
L-03	E. College Ave.
L-04	N. Williamson Ave.
L-05	Manning Ave. (RR to Arts West)
L-06	N. Williamson Ave (between Koury Athletic Center and The Oaks)
L-07	E. Lebanon Ave (past Antioch Ave.)
L-08	Lebanon Ave. (in area of McEwen Construction)
L-09	S. Williamson Ave.
L-10	W. Haggard Ave. (Williamson to University)
L-11	E. College Ave. (East Gym to Oak St.)
L-12	University Dr.
L-13	University Dr. Ramp
L-14	Oak St.
L-15	E. Haggard Ave. (Williamson to Danieley Center Dr.)
L-16	Woodale Dr.
L-17	Earl Dr.
L-18	Georgetowne Dr.
L-19	W. Trollinger Ave.
L-20	Lawrence St.
L-21	Orange Dr.

Table 20: Proposed Lighting Corridors

Map 13: Proposed Lighting Corridors





Proposed Lighting Corridors

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CHAPTER 4: RECOMMENDED PROGRAMS AND POLICIES

4.1 POLICY AND PROGRAM RECOMMENDATIONS

The Town currently has a number of policies pertaining to bicycle and pedestrian transportation. The Land Development Ordinance calls for the preservation of open space and encourages pedestrian and bicycle travel through a number of existing regulations outlined in Chapter 2.

Policy Recommendations and Ordinance Changes

The following recommended changes build upon policies developed in the town's current Land Development Ordinance and were suggested by the Steering Committee, project staff, and public comments.

Issue I: Funding sidewalk construction in existing development

Current Policy: Reliance upon the town General Fund, State transportation funding, and donations to build new sidewalk.

Recommended Policy: To supplement other sources of funding for sidewalk construction, the Town should set up a fair, but comprehensive assessment policy to facilitate and fund the development of a connected sidewalk system.

Issue 2: Public access easements

Current Policy: The Town does not currently acquire shared-use path, trail or other public access easements with sewer and water easements as lines are extended.

Recommended Policy: As new sewer lines are extended along proposed greenway corridors recommended in this plan or along stream corridors, acquire public access easements for non-motorized users for both sewer line use and future trail use. Include a requirement in the subdivision ordinance that requires public access easements along proposed greenways when land is subdivided within the Town Limits and extra territorial zoning jurisdiction.

Issue 3: Promoting mixed use zoning (e.g. Town Center, Town Center-I, Village Center and Neighborhood Center) designation

Current Policy: Few areas have been zoned to accommodate the mixed uses allowed in the above zoning districts.

Recommended Policy: Proactively explore the possibility of designating more mixed-use districts in Elon. Creating mixed use districts will allow new development to have a range of uses thereby allowing shorter trips that can be made by foot or bicycle.

Issue 4: Sidewalk requirements for change of use – all zoning districts

Current Policy: No requirements for sidewalk construction with change of use (e.g. change from residential to commercial).

Recommended Policy: Require sidewalk installation with a change of use.

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Issue 5: Cul-de-sac connections

Current Policy: No requirements for pathway connections in cul-de-sac subdivision developments.

Recommended Policy: Provide requirements for cul-de-sac development to accommodate pedestrians by connecting cul-de-sacs with the nearest neighboring street or parks. In Figure 3.6 the cul-de-sacs are connected by pathway to an adjacent trail. In cases where there are no pathways or streets to connect to behind the cul-de-sac, appropriate right-of-way should be set aside to connect with future cul-de-sacs, streets or pathways during the subdivision process.

Issue 6: Pedestrian access on bridges

Current Policy: No requirements for pedestrian access on bridges.

Recommended Policy: Require all bridges within Town limits and ETJ to be equipped with sidewalks or an offset that provides space for future sidewalks due to the Town's desire to have an interconnected pedestrian friendly community. This will ensure pedestrian access as bridges are replaced by the State.

Issue 7: Sustainable and energy efficient lighting

Current Policy: Requirement to place streetlights in new subdivisions and on new streets 160 to 200 feet apart. No requirement on the type of lighting or energy use.

Recommended Policy: Require closer light spacing in high pedestrian activity centers and on major corridors. Explore lower wattage lights that also provide enough lumens for needed safety in Elon. Produce list of sustainable lighting vendors to share with developers and seek input yearly to update list and keep current.

Issue 8: Complete Streets

Current Policy: The Town requires the provision of a "complete street" when **new** roads are developed, which include provisions for sidewalks, bicycle paths and/or bicycle lanes.

Recommended Policy: Adopt the "Complete Streets" policy for all **existing** road reconstruction, in addition to new construction. The policy would require that roads being resurfaced also be evaluated to include bicycle lanes and sidewalks.

Issue 9: Scenic Corridor Overlay District

Current Policy: No current overlay district

Recommended Policy: Work with the Appearance Commission to create this new overlay district to help beautify and preserve major and minor thoroughfares. The features would include lighting specifications, landscape requirements, signage requirements and other features to improve and preserve scenic beauty.

Issue 10: Decorative Lighting Overlay District

Current Policy: No current overlay district

Recommended Policy: Create this new overlay district to include detail on aesthetic and energy efficient design, spacing requirements, foot candle and lumens. Create the first district in the downtown area.

Issue 11: Require shared-use pathways along existing major arterials

Current Policy: Shared-use pathways and/or sidewalks are required for *new* roads.

Recommended Policy: Conduct a study to determine the feasibility of shared-use pathways along *existing* arterial corridors with few driveway cuts (i.e. existing University Drive) and sidewalks along arterial and collector corridors with significant driveway cuts. Require construction of pathways or sidewalk when new land development occurs.

Issue 12: Trail access under new road bridges

Current Policy: None

Recommended Policy: Require that road bridge design accommodate future trail development where greenways or conservation areas are proposed – or within ½ mile of parks or schools. Conduct a study that identifies the feasibility of trail development under existing bridges in the town limits and ETJ.

Program Recommendations

Coordination with other municipalities on bicycle and pedestrian transportation

Elon participates in the Burlington-Graham MPO Transportation Advisory Committee, responsible for transportation funding and issues in all of Alamance County and its municipalities. Encourage the development of a bicycle and pedestrian transportation advisory committee to the MPO that will work to refine and develop regional bicycle and pedestrian transportation initiatives that connect across municipal lines, encourage active transportation, cleaner air and personal health.

Establish Downtown Design Committee

The establishment of a Downtown Design Committee tasked with coordinating and approving changes in the town's downtown is an important step in creating safe mobility for bicyclist and pedestrians in Elon's core commercial area. Aside from members of the community, the Downtown Design Committee should also include a representative from the Appearance Committee and Planning Board.

Tasked with improving Elon's Downtown, a goal of the Committee should be to target specific routes identified in this plan for lighting, trees and landscaping along existing streets and roads. The Downtown Design Committee could also explore a traffic calming program in coordination with Appearance Committee for roadways that enhance lighting to accommodate and encourage pedestrian or bicycle travel.

Sidewalk Art Program

Encourage creative use of public sidewalks within the downtown area (i.e., ability to set up chairs, apply for art enhancements on the sidewalk, etc.). Help businesses develop a theme or design for

the sidewalk in front of their stores and shops in cooperation with Elon University classes. Work with the newly established Downtown Design Committee and Downtown Promotion Committee to implement the program and supply seed funding for the first year of this program.

Bicycle Route Maintenance

The state bicycle route through Elon as well as any bicycle facilities that are installed should be cleaned regularly to avoid collecting debris that will discourage bicycling on these facilities as well as reduce safety.

Bicycle Parking Program

Elon University provides bicycle parking on campus and bicycle racks are required in new multifamily or commercial development. However, existing developments lack ample bicycle parking. The Town, neighboring jurisdictions and the Burlington-Graham Metropolitan Planning Organization should assess needs and provide funds for a bicycle parking program across the region. Bicycle racks and lockers should be placed at key locations (e.g. shopping centers, downtown areas, community centers, etc.) to encourage bicycle travel.

Crosswalk Spot Improvement Program

Regularly check existing crosswalks for wear and tear and work to repaint or tape existing crosswalks to improve visibility. Work to identify crossing locations that may need additional treatments such as in-pavement crosswalk signs, stamped pavement or other features to slow traffic and increase pedestrian safety.

Benches and Plantings

Provide more sidewalk space and plantings around benches in the downtown and Haggard Avenue where space allows. Consider sidewalk width expansion in key locations. Consider adding more benches as well.

Establish a Downtown Walking Promotion Program

Working with the County Department of Health, Twin Lakes, the University, downtown businesses and neighborhoods, establish walking programs in the downtown and Beth Schmidt Park. Encourage participants to walk or bicycle to the event. The programs can be organized by individual employers/employees or among different employers and employees. The program will benefit the health of Elon residents by increasing daytime and evening physical activity, while reducing health care costs, making workers more productive and reducing stress. In the first year, a pilot program for either downtown or Beth Schmidt Park is appropriate. The program should then be evaluated for effectiveness, improved, adjusted and then expanded to other locations if there is interest.

Watch for Me NC

Watch For Me NC is a comprehensive statewide safety and awareness campaign geared toward bicycle and pedestrian safety, education, and enforcement. Combining multimedia with public engagement, Watch For Me NC promotes safety messages at local events, followed by targeted

enforcement in areas with heightened risk of crashes involving bicyclists and pedestrians. A key component of the program includes the training of law enforcement officers on existing laws and how to enforce them.

For more information, visit: http://watchformenc.org/

Adopt a Road / Adopt a Sidewalk Programs

Adopt a Road programs are seen in many communities across North Carolina. The program provides resources to the community to sponsor and help to clean up road litter. The Town of Elon can begin a similar program for its sidewalks and (future) shared-use paths. This program could also be used as a means for the community to alert the Town when there is a maintenance issue with a sidewalk, or as a means for a sidewalk to get special attention, funding, and improvements because of the dedication of its community sponsor. If effective, the quality of the sidewalk system will increase significantly.

Safe Routes to School Programs (SRTS)

The Safe Routes to School program is a national and international movement to enable and encourage children, including those with disabilities, to walk and bicycle to school. Safe Routes to School programs are comprehensive efforts that look at ways to make walking and bicycling to school a safer and more appealing transportation alternative, thus encouraging a healthy and active lifestyle from an early age. The North Carolina SRTS program is administered by the North Carolina Department of Transportation Bicycle and Pedestrian Transportation Program. There is funding available for a broad spectrum of initiatives including, but not limited to:

- Walking school bus programs (i.e. groups of students and parents/teachers walking to school) <u>www.walkingschoolbus.org;</u>
- Crossing guard training;
- One-time walking and bicycling safety events (i.e. bicycle rodeos, safety and health awareness fairs, walk to school day <u>www.walktoschool.org</u>);
- Safety curriculum (i.e. printing safety curriculum and training for teachers);
- Bicycling and walking improvements (i.e. sidewalks, paths, bike parking, bike lanes, crossing treatments); and
- Weekly walking or bicycling programs (i.e. walking Wednesdays, Walk across America).

Many of the SRTS programs take few resources to get started (aside from bicycling and walking facility improvements), however a "local champion" will be needed to start and implement Safe Routes to School programs. The "local champion" will likely be a parent or teacher who can lead the effort on Safe Routes to School. This is a significant opportunity to fund programs educating and encouraging both students and parents about the benefits of walking or bicycling to school.

For more information, visit: <u>http://www.ncdot.org/transit/bicycle/saferoutes/SafeRoutes.html</u>

Tree Programs

Explore enhanced tree planting and preservation programs for the Town. Build on existing programs and encourage quality tree cover. Basic requirements of the enhanced ordinance should include:

- If trees are cut down, replacement trees should be of equal or greater than the diameter of the trees cut, multiple trees can be planted where the sum of the diameters are equal to the diameter of the trees cut down;
- Provide more detailed guidance on the types of trees and landscaping for commercial and retail areas; and
- Provide a certified part-time ISA arborist to educate and enforce the ordinance.

Some cities have worked with the utility company to provide free saplings and trees to customers. In addition education for residents, businesses and developers about affordable and quality trees can be beneficial to improve the tree canopy, property aesthetics and the pedestrian experience.

CHAPTER 5: IMPLEMENTATION PLAN

5.1 INTRODUCTION

This chapter defines a structure for managing the implementation of the Elon Bicycle, Pedestrian, and Lighting Plan Update. Both leadership and dedication will be critical to the implementation process as will coordination with numerous agencies and stakeholder groups. Equally critical is the identification of and use of reoccurring funding sources of revenue. Even small amounts can be useful to the implementation process when matched with outside sources.

The climate of uncertainty faced by local governments and other agencies make it difficult to determine the level of resources that may be available in the future to implement the ideas outlined in this plan. However, several important actions can still take place to prepare for major investments including organizational steps and pursuing low-cost solutions. It is also recommended to plan over time to take advantage of strategic opportunities as they might arise and to adjust this plan as needed to achieve the greatest impact.

5.2 ACTION PLAN FOR IMPLEMENTATION

The following is a suggested step-by-step implementation process for the next two (2) years. The action items are grouped by year and in most cases are not in sequential order. The suggested party or parties who need to complete each action step is also included. Opportunities to implement certain action items may arise before others and these opportunities should be pursued. The action items below are a menu of options for the Town to pursue as time, resources and political will allow.

If there are budgetary implications for action items, the budget amount is indicated. Each new project or program and policy change should be evaluated for effectiveness as needed. In 2021, a broader assessment and evaluation of efforts should be performed to both look at proposed changes and their progress, but also to look at new ideas and new challenges.

Effective implementation of recommended projects, programs, and policies outlined in this plan will require the sustained, focused, and coordinated efforts by town leaders, the University and the public. The schedule of action items on the following page outlines how plan recommendations can be implemented and the entities with primary responsibility for carrying out each action item.

FY 2017-2018 Action Items				
Item Number	Year	Action	Responsible Organizations	
2017-01	2017	Complete two (2) priority sidewalk projects, two (2) shared use path projects, two (2) bicycle lane projects and three (3) intersection improvement projects.	Town of Elon, Sub-contractor and University	
2017-02	2017	Work to update subdivision and zoning ordinance to aid in pedestrian and bicycle transportation.	Town of Elon Planning, Zoning Board	
2017-03	2017	Establish Bicycle and Pedestrian Advisory Committee to develop a bicycle parking program and other programs of interest.	Members of the community, focus group and meeting attendees invited to participate	
2017-04	2017	Seek funding sources needed to build projects.	Town of Elon Planning Department, Bicycle and Pedestrian Advisory Committee, and University	
2017-04.01	2017	Establish grant writing schedule and seek grants for specific projects to achieve 2017-01 goals.	Town of Elon, Intern, NCDOT, Bicycle and Pedestrian Advisory	
2017-04.02	2017	Provide matching money for grant applications.	Committee, University, and Non-Profit Partners	
2017-04.03	2017	Establish Elon Greenway Trust Fund.		
2017-04.04	2017	Seek Safe Routes to School Funding.		
2017-04.05	2017	Increase Capital Program funding for sidewalks.		
2017-04.06	2017	Seek other funding sources.		

FY 2017-2018 Action Items						
Item Number	Year	Action	Responsible Organizations			
2018-01	2018	Complete two (2) additional sidewalk projects, two (2) shared use path projects, two (2) bicycle lane projects, and two (2) intersection improvement projects.	Town of Elon, Sub-contractor and University			
2018-02	2018	Adopt an update to subdivision and zoning ordinance to aid in pedestrian and bicycle transportation.	Town of Elon Planning, Zoning Board			
2018-03	2018	Have Bicycle and Pedestrian Advisory Committee coordinate with Elon University, Elon Elementary, businesses and churches to encourage more walking and bicycling, conduct SRTS Workshop.	Bicycle and Pedestrian Advisory Committee, University, Elon Elementary			
2018-04	2018	Continue to seek funding sources needed to build pedestrian projects.	Town of Elon Planning Department, Bicycle and Pedestrian Advisory Committee, and University			
2018-04.01	2018	Establish 2018 grant writing schedule and seek grants for specific projects to achieve 2018-01 goals.	Town of Elon, Intern, NCDOT, Bicycle and Pedestrian Advisory Committee, University,			
2018-04.02	2018	Provide matching money for grant applications.	Alternative Transportation Working Group and Non-Profit			
2018-04.03	2018	Safe Routes to School Implementation.	Partners			
2018-04.04	2018	Renew Capital Program funding for sidewalks.				
2018-04.05	2018	Seek other funding sources.				

One of the *most important* action items is the formation of a bicycle and pedestrian transportation working group. This working group will advocate for implementation of the plan and assist in public outreach and grant writing, Town staff communication and other duties. The working group will likely be involved in each of the action items, and will need to recruit new members to share the work load and maintain active participation.

5.3 ORGANIZATION FRAMEWORK AND STAKEHOLDER ROLES

The following chart illustrates the suggested organizational framework and stakeholder roles in implementing a bicycling, pedestrian, and lighting network within the Town.



APPENDIX A: PROJECT DEVELOPMENT

A.1 PEDESTRIAN AND BICYCLE FACILITY GUIDELINES

<u>WalkBikeNC</u>, the North Carolina Statewide Bicycle and Pedestrian Plan, contains much useful information. In particular, chapter 6 of the plan contains a matrix with cross-references to design guidance for particular facility types. It is designed to help planners and project designers find guidance that is adaptable to context, especially in the planning and design of projects to carry out the Complete Streets policy.

The <u>WalkBikeNC</u> plan appendices are also rich with information useful to planners, including highly researched sections on the benefits of bicycling and walking; state bike routes; health; economic impacts; environment; lane width research; and crash and mode-share data by city and county.

For more information, visit: <u>http://www.walkbikenc.com/</u>

<u>The Pedestrian-Bicycle Infrastructure Network (PBIN) Glossary</u> gives the correct terminology for bicycle and pedestrian facilities and features, with a description for each. This glossary of terms is useful for planners and others who need to refer to facilities by clear, defined terms so as to be understood and accepted in the context of transportation planning.

For more information, visit:

https://connect.ncdot.gov/projects/BikePed/Documents/NC%20Terminology%20for%20Active%20T ravel.pdf

<u>The Manual on Uniform Traffic Control Devices</u>, published by the Federal Highway Administration (FHWA), defines the standards used by state departments of transportation nationwide to install and maintain traffic control devices such as pedestrian signals and crosswalk markings.

For more information, visit: <u>http://mutcd.fhwa.dot.gov/</u>

The Guide for the Planning, Design and Operation of Pedestrian Facilities, published by the American Association of State Highway and Transportation Officials (AASHTO), provides guidelines for pedestrian facilities. The guide recommends methods for accommodating pedestrians, which vary among roadway and facility types, and addresses the effects of land use planning and site design on pedestrian mobility.

To purchase this guide, visit: <u>https://bookstore.transportation.org/collection_detail.aspx?ID=131</u>

AASHTO's Guide for the Development of Bicycle Facilities, 4th Edition provides detailed planning and design guidelines on how to accommodate bicycle travel and operation in most cycling environments. It covers the planning, design, operation, maintenance, and safety of on-road facilities, shared use paths, and parking facilities.

To purchase this guide, visit: <u>https://bookstore.transportation.org/item_details.aspx?ID=1943</u>

The National Association of City Transportation Officials (NACTO) <u>Urban Bikeway Design</u> <u>Guide</u> provides options not included in the AASHTO Guide for the Development of Bicycle Facilities. To purchase this guide, visit: <u>http://nacto.org/publication/urban-bikeway-design-guide/</u>

NACTO's <u>Urban Street Design Guide</u> focuses on the design of city streets and public spaces, offering strategies for making streets safer, more livable, and more economically vibrant.

NCDOT adopted a <u>Complete Streets Policy</u> in 2009. It also created a set of design guidance called the Complete Streets Planning and Design Guidelines in 2012. These documents help guide the Department's consideration for bicyclists and pedestrians as part of the roadway or bridge design process. Visit <u>http://www.completestreetsnc.org/</u> to learn more about the policy, sample projects and recent training activities.

For more information about the above design policies and NCDOT specific guidance for the design of greenways (shared-use paths), visit the NC <u>Guidelines section</u> of Connect NCDOT.

NCDOT's <u>Traffic Engineering Policies</u>, <u>Practices and Legal Authority</u> (TEPPL) includes information about pedestrian signal placement and school bus transportation laws.

For more information, visit: <u>https://connect.ncdot.gov/resources/safety/Teppl/Pages/traffic-engineering-policies.aspx</u>

A.2 SPECIFIC PEDESTRIAN RECOMMENDATIONS

The following examples provide detailed information about the recommended signs and markings including descriptions, designs, guidance information (if available), and estimated costs.

Crossing Signs

Pedestrian crossing signs (W11-2 and W16-7P) may be used to alert road users in advance of locations where unexpected entries into the roadway or shared use of the roadway by pedestrians may occur.



Advance Yield Line and Sign

At midblock crossings and signalized or stop-controlled approaches to intersections, the vehicle yield line can be moved farther back from the pedestrian crosswalk for an improved factor of safety and for improved visibility of pedestrians.



Hi-Visibility Crosswalk (Ladder Crossing)

Markings provide guidance for pedestrians who are crossing roadways by defining and delineating paths on approaches to and within signalized intersections, and on approaches to other intersections where traffic stops. They also alert road users of a pedestrian crossing point across roadways not controlled by signals or stop signs. At non-intersection locations, markings legally establish the crosswalk. Specific guidance on the use of marked crosswalks is provided in FHWA-RD-01-075. These FHWA guidelines may be used as a supplement to the guidelines for marked crosswalks presented here. (Source: TCRP Report 112/NCHRP Report 562) Ladder MUTCD Markings Guidance: Crosswalks MUTCD Markings Standard: When crosswalk lines are should be no less than 6 feet (1.8 m) wide. used, they shall consist of solid white lines that shall not Crosswalk lines should extend across the be less than 6 in nor greater than 24 in wide. full width of pavement. Crosswalks should be marked at all intersections with "substantial conflict" between vehicles and pedestrians. FHWA Markings Guidelines: Marked crosswalks alone should not be installed at un-signalized pedestrian crossings when speeds are greater than 40 mph.

In-Street Pedestrian Crossing Signs

In-Street Pedestrian Crossing signs are regulatory signs placed in the street (on lane edge lines and road centerlines, or in medians). In-Street Pedestrian Crossing signs are described in the 2003 Manual of Uniform Traffic Control Devices, in Section 2B.12.

The In-Street Pedestrian Crossing sign (RI-6 or RI-6a) may be used to remind road users of laws regarding right of way at an un-signalized pedestrian crossing. The legend STATE LAW may be shown at the top of the sign if applicable. The legends STOP FOR or YIELD TO may be used in conjunction with the appropriate symbol. (Source: TCRP Report 112/NCHRP Report 562)

STATE	STATE		
LAW	LAW		
TO	TO		
MUTCD Standard: The In-Street Pedestrian Crossing sign shall not be used at signalized locations. The STOP FOR legend shall only be used in states where the state law specifically requires that a driver must stop for a pedestrian in a crosswalk. If used, the In-Street Pedestrian Crossing sign shall have a black legend (except for the red STOP or YIELD sign symbols) and border on either a white and/or fluorescent yellow-green background. If the In- Street Pedestrian Crossing sign is placed in the roadway, the sign support shall comply with the breakaway requirements of the latest edition of AASHTO's specifications.	MUTCD Guidance: If an island is available, the In- Street Pedestrian Crossing sign, if used, should be placed on the island. MUTCD Option: The In-Street Pedestrian Crossing sign may be used seasonally to prevent damage in winter because of plowing operations and may be removed at night if the pedestrian activity at night is minimal.		

Advance Signing

Advance signing is used to provide additional notification to drivers that a crosswalk is near and pedestrians may be crossing the roadway. Advance signing is particularly useful at locations where a crosswalk might be unexpected by approaching drivers. (Source: TCRP Report 112/NCHRP Report 562)



Driveway Improvements

Several driveway design characteristics may cause safety and access problems for pedestrians, including excessively wide and/or sloped driveways, driveways with large turning radii, multiple adjacent driveways, driveways that are not well defined, and driveways where motorist attention is focused on finding a gap in congested traffic. (Source: http://www.pedbikesafe.org/PEDSAFE)



Sidewalk designed to allow for maintaining level surface across a driveway. Source: pedbikeimages.org - Dan Burden (2006)

When driveways cross sidewalks, the sidewalk should be clearly delineated across the driveway (e.g. if the sidewalk is composed of concrete, the concrete surface treatment should be continuous across the driveway) to make it clear to motorists that they must watch for pedestrians. Additionally, it is necessary to maintain a sidewalk level across the driveway with no more than 2 percent cross slope in order to safely accommodate pedestrians in wheelchairs and other mobility devices and to comply with ADA standards.

As a general rule, driveways should be designed to look like driveways, not roadway intersections. However, in locations where a driveway must function as part of an intersection, it should be designed with pedestrian safety features such as crosswalks, small corner radii, and pedestrian signal heads if signalized.

(Source: http://www.pedbikesafe.org/PEDSAFE)

Detectable Warnings

Detectable warnings are a distinctive surface pattern of domes detectable by cane or underfoot that alert people with vision impairments of their approach to street crossings and hazardous drop-offs. They are used to indicate the boundary between pedestrian and vehicular routes where there is a flush instead of a curbed connection. (Source: United States Access Board)



A.3 LIGHTING GUIDELINES

There are a diverse number of lighting designs and technology options available today. However, some hurdles to new technologies such as solid state lighting (e.g. LEDs) and solar powered light fixtures and arrays continue to prevent widespread use. These hurdles include high upfront costs, unreliable performance, narrow foot candle, lumen losses in fixtures and heat dissipation issues.

Lighting design should follow the latest best practices for both placement and design to ensure a safe and reliable bicycling and pedestrian experience for residents and visitors alike. The Town can use resources like The American Association of State Highway and Transportation Officials (AASHTO) publication titled "Roadway Lighting Design Guide" last amended in 2010 in addition to consulting with NCDOT on any relevant statewide standards.

Over the past few years, additional research has become available assisting municipalities understand the purposes to good lighting and apply them in their community. Generally speaking, good lighting should:

- Provide pedestrians safety from tripping, slipping, or falling,
- Offer personal security from harm and/or intimidation,
- Prevent unwanted light in residential windows,
- Improve the appearance of a neighborhood, campus, or area.

Suggested Lighting Fixtures

Duke Energy provides much of the lighting fixtures in the town and in neighboring jurisdictions. In the downtown area, the Town has selected the Deluxe Acord LED light and Pole Style B with banner rods or Pole Style C. The cost of each fixture and pole range \$49.27 to \$52.81 per month.

In areas outside of downtown, Duke Energy is installing Cobra LED lights for new fixture installations or replacements typically on wood poles. The University area has a number of decorative light fixtures that have been provided by different vendors.

Sample Lighting Fixture Designs and Poles

Deluxe Acorn LED



Pole Style B



Cobra LED



Pole Style C

The illustration on page 61 shows the decorative fixtures available from Duke Energy. In addition, the list on page 62 shows Duke Energy's Outdoor Lighting Schedule, which the Town currently employs for its streetlights.

Lighting Fixtures Available from Duke Energy



Outdoor Lighting Service Costs

SCHEDULE OL (NC) OUTDOOR LIGHTING SERVICE

AVAILABILITY (North Carolina Only)

Available to the individual customer for lighting of outdoor areas at locations on the Company's distribution system. Service under this Schedule may be withheld or discontinued at the option of the Company.

RATE:

(A) Bracket-Mounted Luminaires

All-night outdoor lighting service using Company standard equipment mounted on standard poles:

Lamp Rating

Lamp Rating		Per Month Per Luminaire			
Lumens	<u>kWh Per</u> Month	Style	Existing Pole (1)	New Pole	<u>New Pole Served</u> <u>Underground</u>
	Monui	High Pressure Sodium Vanor			
4 000	21	Post Top (2)	NA	NA	\$15.19
9,500	47	Suburban (3)	\$9.34	\$15.85	\$20.46
9,500	47	Urban	\$10.54	\$17.05	\$21.66
13.000	56	Suburban (4) (in suitable mercury fixture)	\$10.23	NA	NA
16.000	70	Urban	\$11.39	\$17.89	\$22.51
27,500	104	Urban	\$13.47	\$19.97	\$24.59
50,000	156	Urban	\$16.41	\$22.90	\$27.54
		Metal Halide			
9,000	43	Urban	\$12.09	\$18.62	\$23.25
40,000	155	Urban	\$19.53	\$26.03	\$30.66
78,000	295	Area	\$45.12	\$52.86	\$57.49
110,000	395	Area	\$61.70	\$69.44	\$74.07
		Mercury Vapor *			
4,000	41	Suburban (7)	\$8.41	NA	NA
4,000	41	Post Top (2)	\$7.73(5)	NA	\$15.51(6)
4,000	41	Post Top (7)	\$10.20	NA	NA
7,500	75	Suburban (3)	\$8.43	\$14.92	\$19.56
7,500	75	Urban (6)	\$9.50	\$16.01	\$20.62
7,500	75	Post Top (7)	\$14.53	NA	NA
20,000	152	Urban (6)	\$13.06	\$19.58	\$24.19
		Light Emitting Diode (8) (9)			
4,500	18	Area 50 watts	\$8.73	\$15.23	\$19.84
6,500	25	Area 70 watts	\$8.93	\$15.42	\$20.04
9,500	40	Area 110 watts	\$10.85	\$17.35	\$21.96
12,500	54	Area 150 watts	\$12.11	\$18.61	\$23.22
18,500	79	Area 220 watts	\$14.22	\$20.71	\$25.33
24,000	101	Area 280 watts	\$16.23	\$22.73	\$27.34
43,000	151	Area 420 watts	\$34.29	\$40.78	\$45.40

* Mercury vapor luminaires are no longer available and will be replaced with LED luminaires. (See Notes 8 and 9). If the existing mercury vapor fixture is nonstandard and a comparable LED luminaire is not available, the Company will replace it with another available luminaire.

- (1) The "Existing Pole" rate is applicable to installations, including pole, installed prior to November 12, 1991. After this date, the "Existing Pole" rate is available only for luminaires attached to poles which are not installed solely to support the luminaire.
- (2) Luminaire is not available for the lighting of streets, roadways, and other vehicle thoroughfares.
- (3) Closed to new installations on or after July 1, 2005
- (4) Closed to new installations on or after September 15, 1985
- (5) Closed to new installations on or after November 12, 1991

North Carolina Forty-Eighth Revised Leaf No. 32 Effective June 21, 2016 NCUC Docket No. E-7 Sub 1114 Order dated June 21, 2016

Additional Lighting Resources

Federal Highway Administration (FHWA) Lighting Handbook (August 2012)

http://safety.fhwa.dot.gov/roadway_dept/night_visib/lighting_handbook/

This handbook is an update to the 1978 FHWA Lighting Handbook 78-15 as well as the 1983 addendum. It is meant to provide guidance to designers and State, city, and town officials concerning the application of roadway lighting. Supplementing and referring to other resources developed by AASHTO, IES, and CIE this document contains information on:

- Policy and Guidance discussing references, policy, and recommendations used by FHWA in evaluating and administering funds for roadway and street lighting projects.
- Basic Terms and Concepts discussing descriptions of significant terms and concepts used in roadway and street lighting projects.
- Warranting Criteria including various warranting methods available when considering lighting.
- Lighting Impacts discussing various impacts (both positive and negative) of lighting systems and ways to control and mitigate.
- Application Considerations supplementing information provided in the reference documents.
- Other Systems and Issues discussing additional lighting and non-lighting elements impacting the roadway user.

Pedestrian Friendly Outdoor Lighting: Final Report prepared in support of the DOE Solid-State Lighting Technology Demonstration GATEWAY Program (December 2013)

http://www.nlb.org/index.cfm?cdid=11020&pid=10225

Sponsored by the U.S. Department of Energy, this project was undertaken to establish success criteria for pedestrian lighting and learn how designers can satisfy those criteria by applying solid-state lighting solutions. The report presents findings and recommendations developed by closely monitoring the evolution of two major pedestrian-lighting projects.

A.4 BENCHES AND SEATING GUIDELINES

The City of San Francisco has made available the following best practices when deciding on the location and design of benches and outdoor seating.

For more information, visit: <u>http://www.sfbetterstreets.org/</u>

Location of Benches and Seating

- Seating should be located under trees where possible to provide shade and comfort and to integrate multiple elements.
- Informal seating (low walls, etc.) may also be incorporated into other elements in the site furnishings zone, such as planter edges. Where space allows, benches can be built into planters.

- Where seating is oriented parallel to the curb, it should face toward buildings when located in the furnishings zone, or away from buildings when located in the frontage zone.
- Where sidewalk width permits, seating in the furnishing zone should be perpendicular to the curb.
- On curb extensions, seating should be organized to create social spaces.
- Seating incorporated into building forms, such as seatwalls, may be used as an alternative to free-standing benches.
- Seating should be designed to encourage sitting and to discourage lying down.

Design of Benches and Seating

Seating and other amenities should be made of durable, high-quality materials. Seating should complement and visually reinforce the design of other streetscape elements.

Seating should be designed as an integrated part of other streetscape elements where possible, including:

- Integrated seat walls in pedestrian refuges;
- Seat walls and benches around trees and landscaping;
- Part of public art and gateway monuments; and
- Other elements where integration improves utility of the element to pedestrians without compromising its primary function.

Fifty percent of public benches in a group, or at least one (1) bench, must comply with the Americans with Disabilities Act Accessibility Guidelines (ADAAG). See Section 4.32 of ADAAG.

Suggested Bench Design

It is recommended that in downtown and adjacent areas, the Town should continue using the following bench design (CR-10) manufactured by Victor Stanley, Inc. Other bench designs can also be considered depending on their location, exposure to the elements, and expected use.



Victor Stanley Model CR-10

A.5 BICYCLE RACK GUIDELINES

The City of San Francisco has made available the following best practices when deciding on the location and design of bicycle racks.

For more information, visit: <u>http://www.sfbetterstreets.org/find-project-types/streetscape-elements/street-furniture-overview/bicycle-racks/</u>

Location of Bicycle Racks

Bicycle racks should be located according to the following guidelines:

- There must be at least a six-foot clear walkway, to comply with the Americans with Disabilities Act. This does not include frontage occupied by street furniture.
- Bicycle racks should be frequent in active commercial districts. Racks should be provided near major destinations such as schools, libraries, transit stops, major shopping and service destinations, and other locations with high pedestrian traffic.
- Where parking meter consolidation programs are implemented, bike racks should be provided to replace meter poles, or meter poles should be retrofitted with rings to allow bike parking.
- Racks should be located in either the furnishings zone or on curb extensions where possible. Racks should not be placed at accessible parking (blue curb zones) or passenger loading zones.
- At transit stops, bike racks should be placed near the back of the transit stop, further from the shelter (where present), or be placed outside of but adjacent to the transit stop. Bike-sharing pods, where provided, should be placed outside of but adjacent to the transit stop.
- Placement and spacing of bicycle racks should consider dimensions when occupied.
- Bike racks placed in the furnishings zone should be perpendicular to the curb where sidewalks are wide enough so that bikes parked at them do not project into the throughway or edge zone. Where this space is not available, bike racks should be placed parallel to the curb. Perpendicular bike racks should be placed at either edge of a tree basin, a minimum of 2 feet from the edge to allow a person to easily pull their bike in and out.
- A rack should be at least 2 feet from the curb, with 3 feet preferred.
- Bicycle racks should not be located directly in front of a store/building entrance or exit or in a driveway.
- There should be at least 3 feet of clearance between bicycles parked at racks and any other street furniture, with the exception of other bike racks, which should be placed a minimum of every 3 feet on center.
- Bicycles parked at a rack should have a minimum I foot clearance from utility vaults.
- On-street bike parking: Where sufficient demand exists or where sidewalk space is constrained, replacing an on-street vehicle parking space with bicycle parking should be considered.

Design of Bicycle Racks

- The inverted "U" rail rack (or similar design) is the preferred rack for normal sidewalk installation. A bike rack should be sturdily attached to the ground to prevent theft. In areas where sidewalk width is limited, smaller bicycle rack design can be considered.
- Galvanized or stainless steel materials that are not powder-coated are more secure and are easier to maintain; where there is a specialized streetscape palette with particular design scheme, bicycle racks should be considered that match other site furnishings.
- All elements of a bike rack should have a minimum 2 inch diameter (or 2 inch square tube). Racks should offer a minimum of 2 points of support for bikes unless the rack can support a bike in two places, such as a post and ring configuration
- New designs that integrate decorative tree guards with bicycle parking should be considered for their efficiency in providing more benefit to the streetscape and maintaining more open space on the sidewalk. Artistic bike racks or racks integrated with other elements should also follow the above recommendations.
- New development should be encouraged or required to install on-street bike racks as part of development approvals where appropriate.

Suggested Bicycle Rack Designs

It is recommended that the following designs be used when installing new bicycle racks. Two models manufactured by Victor Stanley, Inc. are shown as examples. Model BRQS-101 can be used in a variety of settings while model BRNS-301 is useful in areas where sidewalk width may be limited. Model BRNS-301 or a similar rack design can also be customized to reflect the Town of Elon's brand.



Victor Stanley, Inc. Model BRQS-101



Victor Stanley, Inc. Model BRNS-301

A.6 PROJECT PRIORITIZATION

Prioritizing projects is an important part of this plan and the ranking of projects will help the Town Planner and Administration decide which projects to pursue first. In many cases opportunities will arise that allow lower ranked projects to be built first (e.g. an NCDOT road project, road resurfacing plans, private funding, etc.). This section explains in more detail what factors were used to develop a prioritization list for sidewalks, bicycle facilities, intersection improvements and shared-use path projects.

Sidewalk Project Prioritization Factors

The following prioritization factors have been weighted and are used to determine the prioritization of sidewalk corridor projects. The total maximum score possible from the following factors is 34.

- Public Comments The improvements that received a total of 5 to 10 comments in the surveys or public meetings get 3 points, improvements that received 11 to 20 comments get 4 points and improvements that received over 20 comments get 5 points.
- Proximity to Schools Zones The improvement receives a score of 3 points if a portion of the project lies within 1/4 mile of a school or 2 points if within 1/2 mile of school.
- Proximity to Parks and Recreation The improvement receives a score of 3 points if a portion of the project lies within 1/4 mile of a park or 2 points if within 1/2 mile of park.
- Crashes The improvement receives a score of 2 points if a pedestrian/vehicle or bicycle/vehicle crash occurred along the corridor. The crashes are based on the Elon Police Department records for 2001-2006.
- Small Gaps Those projects that are less than 1,000 ft. in length of sidewalk and are joined by existing sidewalk on both ends of the project will receive a score of 2 points.
- Roadway Speed Those projects that are located on roadways with a designated speed of 35 or greater received 3 points while roadways with lower speeds received 0 points.
- Collison Exposure Those projects that are along roadways that carry 5,001 or more in annual daily traffic (AADT) will receive a score of 3 points; roadways that carry between 5,000 and 4,001 will receive 2 points; roadway that carry between 4,000 and 5,00 AADT will receive 1 point; all other projects will receive 0 points.
- Land Use Those projects that are located within an area zoned for downtown uses are given 4 points; commercially zoned areas are given 3 points; areas zoned for institutional uses are given 2 points; and projects on land zoned for residential are given I point.
- Existing Project Projects or gaps that were identified in the 2008 plan receive 3 points.
- Curb and Gutter Existing Projects along roadways that already have curb and gutter existing receive a score of 2 points. Streets with curb and gutter are less expensive to retrofit with sidewalk. If there are road projects that include curb and gutter, the option of installing a sidewalk during road construction should be explored for cost efficiency.
- Connectivity to Existing Sidewalk If the project connects to an existing sidewalk, that project will receive 2 points. The project does not need to connect to a sidewalk on both ends, just one.

• Proximity to Transit - The improvement receives a score of 2 points if it connects to or lies along an existing transit route.

Project ID	Street	From	То	Total Score
S-01	W. Haggard Ave.	St. John's Street	Manning Ave.	26
S-02	W. Haggard Ave.	University Dr.	Manning Ave.	24
S-03	E. Haggard Ave.	Gilliam Rd.	Partners Place	23
S-04	University Dr.	Ramp	E. Haggard Ave.	22
S-05	S. Oak Ave. / W. Front St.	Truitt Dr.	Burlington City Limits	21
S-06	W. Trollinger Ave.	Ballpark Ave.	Holt Ave.	21
S-07	E. Haggard Ave.	Partners Place	University Dr.	20
S-08	Westbrook Ave.	University Dr.	Church St.	20
S-09	Manning Ave.	W. Haggard Ave.	W. Lebanon Ave	20
S-10	S. Williamson Ave.	Existing Sidewalk	Church St.	19
S-11	W. Lebanon Ave.	Church St.	Manning Ave.	18
S-12	N. Manning Ave.	University Dr.	Existing Sidewalk	16
S-13	Church St.	W. Haggard Ave.	W. Lebanon Ave.	16
S-14	Lee St.	W. Haggard Ave.	W. Lebanon Ave.	14
S-15	St. John Street	W. Haggard Ave.	Existing Sidewalk	14
S-16	N Williamson Ave.	University Dr.	Existing Sidewalk	13
S-17	S. O' Kelly Ave.	Woodale Dr.	Existing Sidewalk	12
S-18	Ballpark Ave.	W. Trollinger Ave.	Johnson St.	12
S-19	Truitt Dr.	Oak St.	Windsor Way	10
S-20	Shallowford Church Rd.	University Dr.	Elon Ossipee Rd.	10
S-21	Elon Ossipee Rd.	Shallowford Church Rd.	Existing Sidewalk	8
S-22	Orange Dr.	Williamson Ave.	Earl Dr.	7
S-23	N. O' Kelly Ave.	University Dr.	Circle	7
S-24	Earl Dr.	Orange Dr.	Windsor Way	5
S-25	Georgetown Dr.	Earl Dr.	Meadowood Dr.	5
S-26	Westgate Dr.	Westbrook Ave.	Williamson Ave.	4

Table 21: Prioritization Scores for Proposed Sidewalk Projects

Bicycle Project Prioritization Factors

The following prioritization factors have been weighted and are used to determine the prioritization of **bicycle corridor** projects. The total maximum score possible from the following factors is 20.
- Direct Access to a Park The improvement receives a score of 2 points if a portion of the project lies within ½ mile of a park or recreation facility. These facilities include all Town and University parks and fields.
- Direct Access to a School or University The improvement receives a score of 3 points if a portion of the project lies within 1/2 mile of a school. The projects that provide a direct connection to school also receive this 4 point score.
- Average Daily Traffic (ADT) The improvement receives a score of 3 points if the ADT is > 10,000 vehicles, 2 points if the ADT is between 5,000 and 10,000 vehicles and one point if the ADT is between 1,500 and 5,000 vehicles.
- Speed Limit The improvement receives a score of 3 points if the speed limit is 55mph or over, 2 points if the limit is between 45-54 mph and 1 point if the limit is between 35-44 mph.
- Transit Route Connectivity The improvement receives a score of 2 points if it connects with an existing transit route.
- Crashes The improvement receives a score of 2 points if 1 or more pedestrian/vehicle or bicycle/vehicle crashes occurred along the corridor. The crashes are based on the Elon Police Department records for 2001-2006.
- Connect to a Proposed or Existing Greenway If the project intersects with a proposed shared-use path as described in the Town's Land Development plan or this plan or to an existing shared-use path, the project receives a score of 2 points.
- Direct Access to a Commercial District Projects that are along roadways abutting land use that is either downtown, commercial, institutional or multi-family residential receives a score of 3 points.

Project ID	Street	From	То	Total Score
B-01	W Haggard Ave	University Dr	University Dr/Webb Ave	15
B-02	Westbrook Ave	University Dr	US-70	12
B-03	S Williamson Ave	E Lebanon Ave	Sunset Dr	11
B-04	University Dr	Ramp	Webb Ave	11
B-05	Univeristy Dr & Ramp	W Haggard Ave	W Haggard Ave	10
B-06	S Oak St	E Lebanon Ave	Truitt Dr	10
B-07	N Manning Ave	University Dr	W Haggard Ave	9
B-08	University Dr	Multi-use path	W Haggard Ave	8
B-09	N Oak St	E Haggard Ave	E Lebanon Ave	8
B-10	S Williamson Ave	Sunset Dr	US-70	8
B-11	Shallowford Church Rd	University Dr	Pitts Rd	8
B-12	Manning Ave	W Haggard Ave	W Lebanon Ave	6
B-13	N Manning Ave	Gibsonville Ossipee Rd	University Dr	5
B-14	Sunset Dr & Courtland Dr	S Williamson Ave	Park Path	2

Table 22: Prioritization Scores for Proposed Bicycle Projects

Trail, Intersection, Light Corridor Prioritization

The proposed trails, intersections, and lighting corridors have been prioritized by the Steering Committee.

APPENDIX B: FUNDING OPPORTUNITIES

B.1 OVERVIEW

Local, state, federal, and private/non-profit funding is available to support the planning, construction, right of way acquisition and maintenance of bicycle and pedestrian facilities. Available funding sources are related to a variety of purposes including transportation, water quality, hazard mitigation, recreation, air quality, wildlife protection, community health, and economic development. This appendix identifies a list of some of the bicycle and pedestrian facility funding opportunities available through federal, state, nonprofit and corporate sources. An important key to obtaining funding is for local governments to have adopted plans for greenway, bicycle, and pedestrian or trail systems in place prior to making an application for funding.

B.2 FEDERAL FUNDING SOURCES

Transportation Alternatives

The Fixing America's Surface Transportation (FAST) Act replaced the former Transportation Alternatives Program (TAP) with a set-aside of funds under the Surface Transportation Block Grant Program (STBG). For administrative purposes, the Federal Highway Administration (FHWA) will refer to these funds as the TA Set-Aside. The TA Set-Aside authorizes funding for programs and projects defined as transportation alternatives, including on- and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities such as historic preservation and vegetation management, and environmental mitigation related to stormwater and habitat connectivity; recreational trail projects; safe routes to school projects; and projects for planning, designing, or constructing boulevards and other roadways largely in the right-of-way of former divided highways.

Unless the Governor opts out in advance, for each fiscal year FHWA is to set aside for the State's Recreational Trails Program (RTP) an amount of TA funds equal to the State's FY 2009 RTP apportionment. FHWA administers this set-aside identically to the RTP set-aside under the prior TAP.

For more information, visit: http://www.fhwa.dot.gov/environment/transportation_alternatives/

Surface Transportation Block Grant Program

The FAST Act converts the long-standing Surface Transportation Program into the Surface Transportation Block Grant Program acknowledging that this program has the most flexible eligibilities among all Federal-aid highway programs and aligning the program's name with how FHWA has historically administered it. [FAST Act § 1109(a)]. The STBG promotes flexibility in State and local transportation decisions and provides flexible funding to best address State and local transportation needs.

The Surface Transportation Block Grant program (STBG) provides flexible funding that may be used by States and localities for projects to preserve and improve the conditions and performance on any Federal-aid highway, bridge and tunnel projects on any public road, pedestrian and bicycle infrastructure, and transit capital projects, including intercity bus terminals.

For more information, visit: http://www.fhwa.dot.gov/fastact/factsheets/stbgfs.cfm

Highway Safety Improvement Program

The purpose of the North Carolina Highway Safety Improvement Program (HSIP) is to provide a continuous and systematic procedure that identifies, investigates and addresses specific safety concerns throughout the state. The ultimate goal of the HSIP is to reduce the number of traffic crashes, injuries, and fatalities by reducing the potential for and the severity of these incidents of public roadways.

FTA Enhanced Mobility of Seniors and Individuals with Disabilities

This program (49 U.S.C. 5310) provides formula funding to states for the purpose of assisting private nonprofit groups in meeting the transportation needs of older adults and people with disabilities when the transportation service provided is unavailable, insufficient, or inappropriate to meeting these needs.

This program supports transportation services planned, designed, and carried out to meet the special transportation needs of seniors and individuals with disabilities in all areas – large urbanized (over 200,000), small urbanized (50,000-200,000), and rural (under 50,000). Eligible projects include both "traditional" capital investment and "nontraditional" investment beyond the Americans with Disabilities Act (ADA) complementary paratransit services.

For more information, visit: <u>https://www.transit.dot.gov/funding/grants/enhanced-mobility-seniors-individuals-disabilities-section-5310</u>

Partnership for Sustainable Communities

On June 16, 2009, the U.S. Department of Housing and Urban Development (HUD), U.S. Department of Transportation (DOT), and the U.S. Environmental Protection Agency (EPA) joined together to help communities nationwide improve access to affordable housing, increase transportation options, and lower transportation costs while protecting the environment.

The Partnership for Sustainable Communities (PSC) works to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution. The partnership agencies incorporate six principles of livability into federal funding programs, policies, and future legislative proposals. The partnerships is based on five livability principles one of which is to "provide more transportation choices: develop safe, reliable, and economical transportation choices to decrease household transportation costs, reduce our nation's dependence on foreign oil, improve air quality, reduce greenhouse gas emissions, and promote public health."

For more information, visit: <u>https://www.sustainablecommunities.gov/</u>

The Community Development Block Grant (HUD-CDBG)

The U.S. Department of Housing and Urban Development (HUD) offers financial grants to communities for neighborhood revitalization, economic development, and improvements to community facilities and services, especially in low and moderate income areas. Several communities have used HUD funds to develop greenways, including the Boulding Branch Greenway in High Point, North Carolina. Grants from this program range from \$50,000 to \$200,000 and are either made to municipalities or non-profits. There is no formal application process.

For more information, visit:

http://portal.hud.gov/hudportal/HUD?src=/program_offices/comm_planning/communitydevelopment /programs

Rural Economic Development Loan & Grant Program

Public and private nonprofit groups in communities with populations under 50,000 are eligible to apply for grant assistance to help their local small business environment and may be used for sidewalk and other community facilities.

For more information, visit: <u>http://www.rd.usda.gov/programs-services/rural-economic-development-loan-grant-program</u>

Rivers, Trails, and Conservation Assistance Program

The Rivers, Trails, and Conservation Assistance Program, also known as the Rivers & Trails Program or RTCA, is the community assistance arm of the National Park Service. RTCA staff provide technical assistance to community groups and local, State, and federal government agencies so they can conserve rivers, preserve open space, and develop trails and greenways. The RTCA program implements the natural resource conservation and outdoor recreation mission of the National Park Service in communities across America.

Although the program does not provide funding for projects, National Park Service staff does provide free, on-location facilitation and planning expertise. Specific tasks staff help with include:

- Define project vision and goals
- Inventory and map community resources
- Identify and analyze key issues and opportunities
- Engage collaborative partners and stakeholders
- Design community outreach and participation strategies
- Develop concept plans for trails, parks, and natural areas
- Set priorities and build consensus
- Identify funding sources
- Develop a sustainable organizational framework to support the project

For more information, visit: <u>https://www.nps.gov/orgs/rtca/index.htm</u>

B.3 STATE FUNDING SOURCES

NCDOT State Transportation Improvement Program

Passed in 2013, the Strategic Transportation Investments law (STI) allows NCDOT to use its funding more efficiently and effectively to enhance the state's infrastructure, while supporting economic growth, job creation and a higher quality of life. This process encourages thinking from a statewide and regional perspective while also providing flexibility to address local needs.

STI also establishes the Strategic Mobility Formula, a new way of allocating available revenues based on data-driven scoring and local input. The formula includes three funding categories – Statewide Mobility, Regional Impact and Division Needs – with bicycle and pedestrian projects only eligible within the Division Needs category. Metropolitan Planning Organizations (MPOs), Rural Planning Organizations (RPOs), and NCDOT Divisions may submit projects through the prioritization process.

Independent bicycle and pedestrian projects (shared-use paths, bike lanes, sidewalks, intersection improvements, etc.) are comparatively evaluated and ranked based on a range of criteria and compete with projects from all other transportation modes.

For more information, visit: https://www.ncdot.gov/strategictransportationinvestments/

Incidental Projects

Bicycle and pedestrian accommodations such as bike lanes, sidewalks, intersection improvements, widened paved shoulders and bicycle and pedestrian-safe bridge design are frequently included as incidental features of highway projects. In addition, bicycle-safe drainage grates are a standard feature of all highway construction. Most pedestrian safety accommodations built by NCDOT are included as part of scheduled highway improvement projects funded with a combination of federal and state roadway construction funds or with a local fund match.

Spot Safety Program

The Spot Safety Program is used to develop smaller improvement projects to address safety, potential safety, and operational issues. The program is funded with state funds and currently receives approximately \$9 million per state fiscal year. Other monetary sources (such as Small Construction or Contingency funds) can assist in funding Spot Safety projects, however, the maximum allowable contribution of Spot Safety funds per project is \$250,000. A Safety Oversight Committee (SOC) reviews and recommends Spot Safety projects to the Board of Transportation (BOT) for approval and funding. Criteria used by the SOC to select projects for recommendation to the BOT include, but are not limited to, the frequency of correctable crashes, severity of crashes, delay, congestion, number of signal warrants met, effect on pedestrians and schools, division and region priorities, and public interest

Hazard Elimination Program

The Hazard Elimination Program is used to develop larger improvement projects to address safety and potential safety issues. The program is funded with 90% federal funds and 10% state funds. The cost of Hazard Elimination Program projects typically ranges between \$400,000 and \$1 million. A

Safety Oversight Committee (SOC) reviews and recommends Hazard Elimination projects to the Board of Transportation (BOT) for approval and funding. These projects are prioritized for funding according to a safety benefit to cost (B/C) ratio, with the safety benefit being based on crash reduction. Once approved and funded by the BOT, these projects become part of the department's State Transportation Improvement Program (STIP).

Governor's Highway Safety Program

The mission of the Governor's Highway Safety Program (GHSP) is to promote highway safety awareness and reduce the number of traffic crashes in the state of North Carolina through the planning and execution of safety programs. GHSP funding is provided through an annual program, upon approval of specific project requests. Amounts of GHSP funds vary from year to year, according to the specific amounts requested. Communities may apply for a GHSP grant to be used as seed money to start a program to enhance highway safety. Once a grant is awarded, funding is provided on a reimbursement basis. Evidence of reductions in crashes, injuries, and fatalities is required.

For more information, visit: <u>https://www.ncdot.gov/programs/ghsp/</u>

Bicycle and Pedestrian Planning Grant Initiative

To encourage the development of comprehensive local bicycle plans and pedestrian plans, the NCDOT Division of Bicycle and Pedestrian Transportation (DBPT) and the Transportation Planning Branch (TPB) have created a matching grant program to fund plan development. This program was initiated through a special allocation of funding approved by the North Carolina General Assembly in 2003 along with federal funds earmarked specifically for bicycle and pedestrian planning by the TPB. The planning grant program was launched in January 2004, and it is currently administered through NCDOT-DBPT. Over the past thirteen grant cycles, 173 municipal plans have been selected and funded from 411 applicants. A total of almost \$4.6 million has been allocated. Funding for 2017 is approximately \$400,000. Additional annual allocations will be sought for subsequent years.

For more information, visit: <u>https://connect.ncdot.gov/municipalities/PlanningGrants/Pages/Planning-Grant-Initiative.aspx</u>

Eat Smart, Move More North Carolina Community Grants

The Eat Smart, Move More Community Grants Program supported local health departments in North Carolina in their efforts to develop community-based interventions that encourage, promote and facilitate physical activity and healthy eating. The purpose of the program was to provide funding to local communities to implement strategies that advance the goals and objectives of North Carolina's Obesity Prevention Plan. Through Nutrition, Physical Activity and Obesity funding from the Centers for Disease Control and Prevention, the North Carolina Division of Public Health successfully administered over 199 community grants. In the past, funds have been used to conduct educational programs and construct trails.

For more information, visit: http://www.eatsmartmovemorenc.com/Funding/CommunityGrants.html

The North Carolina Division of Parks and Recreation

The NC Trails Program works to support and promote trails of all types across North Carolina, including equestrian, paddle, hiking, cycling, and off-highway vehicles. Focus is given to developing sustainable trails, efficient trail maintenance, safety on trails, promotion of trails and working towards accessible trail options.

The program includes three regional trails specialists and a state trails planner. These positions are responsible for providing trail assessment, planning, design and trail layout services to units of the state park system and to other governmental agencies, non-profit organizations and volunteers who request assistance. The Regional Trails Specialists directly support the state parks system through trail planning, design, and corridor flagging for new trail and trail renovation projects within State Parks. Program staff also provide training/education to park staff on sustainable trail construction and maintenance techniques. The regional trails specialists are also involved in the planning and promotion of community trail and greenway projects across North Carolina. The staff offers technical expertise to state and federal agencies, local governments, private stakeholders, landowners, and trail user groups to plan and coordinate the acquisition, construction, and management of trails and greenways for multiple purposes. Each Trail Specialist is responsible for a 33 county area divided geographically. Staff are located at Lake James State Park, Raleigh headquarters office and Cliffs of the Neuse State Park.

For more information, visit: <u>http://www.ncparks.gov/more-about-us/about-parks-recreation/north-</u> <u>carolina-trails-program</u>

The North Carolina Parks and Recreation Trust Fund (PARTF)

The Parks and Recreation Trust Fund (PARTF) provides dollar-for-dollar matching grants to local governments for the acquisition and/or development of park and recreational projects to serve the general public. A local government can request a maximum of \$500,000 with each application. North Carolina counties and incorporated municipalities are eligible for PARTF grants. Public authorities, as defined by N.C. General Statute 159-7, are also eligible if they are authorized to acquire land or develop recreational facilities for the general public.

Local governments can apply to acquire land for parks and build recreational facilities for use by the public. A PARTF grant can also be used to protect the natural and scenic resources or renovate older park facilities. A project must be located on a single site. An applicant must match the grant dollar-for-dollar, 50% of the total cost of the project, and may contribute more than 50%. The appraised value of land to be donated to the applicant can be used as part of the match. The value of in-kind services, such as volunteer work, cannot be used as part of the match.

PARTF is the primary source of funding to build and renovate facilities in the state parks as well as to buy land for new and existing parks.

For more information, visit: <u>http://www.ncparks.gov/more-about-us/parks-recreation-trust-fund</u>

North Carolina Department of Environment and Natural Resources – Recreational Trails Program

The RTP is a federal grant program authorized by Congress in 2012 as Moving Ahead for Progress in the 21st Century (MAP-21). The intent of the RTP is to help fund trails and trail-related recreational needs at the State level. Funding for the RTP comes from federal gas taxes paid on non-highway fuel used in off-highway vehicles, and the program is administered at the Federal level by the Federal Highway Administration.

At the State level, the Secretary of the Department of Environment and Natural Resources has assigned that responsibility to the Division of Parks and Recreation and its NC Trails Program. The North Carolina Trails Committee is a seven-member advisory committee who will review all applications and make recommendations for funding. The Secretary of DNCR has the final approval authority for North Carolina.

Since 1993, RTP funding in the state has been used to provide recreational opportunities for hikers, equestrians, bicyclists, paddlers, and off-highway vehicle users. RTP grants are awarded up to \$75,000 per project.

For more information, visit: <u>http://www.ncparks.gov/more-about-us/grants/trail-grants</u>

State Street-Aid (Powell Bill) Program

Annually, State street-aid (Powell Bill) allocations are made to incorporated municipalities which establish their eligibility and qualify as provided by statute. This program is a state grant to municipalities for the purposes of maintaining, repairing, constructing, reconstructing or widening of local streets that are the responsibility of the municipalities or for planning, construction, and maintenance of bikeways or sidewalks along public streets and highways. Funding for this program is collected from fuel taxes. Amount of funds are based on population and mileage of townmaintained streets.

For more information, visit: <u>https://connect.ncdot.gov/municipalities/State-Street-Aid/Pages/default.aspx</u>

Community Development Block Grant

Community Development Block Grant (CDBG) funds are available to local municipal or county governments for projects to enhance the vitality of communities by providing decent housing and suitable living environments and expanding economic opportunities. These grants primarily serve persons of low- and moderate- incomes. State CDBG funds are provided by the U.S. Department of Housing and Urban Development (HUD) to the state of North Carolina. Some urban counties and cities in North Carolina receive CDBG funding directly from HUD.

The primary statutory objective of the CDBG program is to develop viable communities by providing decent housing and a suitable living environment and by expanding economic opportunities. These grants primarily serve persons of low- and moderate-income, as the State must ensure that at least 70 percent of its CDBG grant funds are used for activities that benefit these persons.

The State typically receives about \$45 million in federal CDBG funds annually to go towards various CDBG program categories that have been designed to meet the needs of North Carolina's communities. Local governments may apply for these funds.

For more information, visit: https://www.nccommerce.com/rd/state-cdbg

Clean Water Management Trust Fund

Established in 1996, the Clean Water Management Trust Fund provides grant assistance to conservation non-profits, local governments and state agencies for the protection of surface waters in North Carolina. CWMTF funds projects that (1) enhance or restore degraded waters, (2) protect unpolluted waters, and/or (3) contribute toward a network of riparian buffers and greenways for environmental, educational, and recreational benefits, (4) provide buffers around military bases to protect the military mission, (5) acquire land that represents the ecological diversity of North Carolina, and (6) acquire land that contributes to the development of a balanced State program of historic properties.

On July 14, 2016 the Governor ratified the FY 2016-17 Budget. CWMTF maintained recurring appropriations of \$11,657,530 for general grant funds, as well as \$1,000,000 set aside specifically for military buffers. In addition, the budget included a non-recurring program expansion of \$8,600,000 - a \$3,600,000 increase over the previous year. When added to the dedicated revenue stream from specialty and personalized license plates, CWMTF expects to award over \$25 million this year to projects that protect our natural and cultural resources.

For more information, visit: <u>http://www.cwmtf.net/</u>.

Safe Routes to School Program

Safe Routes to School (SRTS) is a program that enables and encourages children to walk and bicycle to school; makes walking and bicycling to school a safe and more appealing transportation option, and facilitates the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption, and air pollution in the vicinity of school.

For more information, visit: <u>https://www.ncdot.gov/bikeped/safetyeducation/safeRoutesToSchools/</u>.

Urban and Community Forestry Grant

The North Carolina Division of Forest Resources Urban and Community Forestry grant makes available funding for a variety of projects that will provide for both the establishment of trees both along streets and urban open spaces. Funding will not be provided for entertainment, food and beverages, computers, tree maintenance, or construction and landscape supplies/equipment.

Any unit of local or state government, public educational institution, or IRS approved non-profit 501(c)(3) and other tax-exempt organizations may apply for grants yearly, although when funding is limited and project merits are solid, a first-time applicant may be selected before a repeat applicant. Repeat applicants should submit projects that are wholly new or that build upon previous grants projects and demonstrate a progression towards a self-sustaining urban forestry program. Grant funding is not meant to replace funding for current programs, such as planting, maintenance or staffing. Grant requests can range from \$2,500 to \$15,000.

Grants are awarded on an annual basis through the USDA Forest Service and are administered by the NC Forest Service U&CF Program. The grant provides 50% of the project costs, and requires matching funds or in-kind efforts, to encourage resident involvement in creating and sustaining urban and community forestry programs. First-time municipal applicants and municipalities seeking Tree City USA status are given priority for funding.

For more information, visit: <u>http://www.ncforestservice.gov/Urban/urban_grant_overview.htm</u>

B.4 LOCAL FUNDING SOURCES

Municipalities often plan for the funding of pedestrian facilities or improvements through development of Capital Improvement Programs (CIP). In Raleigh, for example, the greenways system has been developed over many years through a dedicated source of annual funding that has ranged from \$100,000 to \$500,000, administered through the Recreation and Parks Department. CIPs should include all types of capital improvements (water, sewer, buildings, streets, etc.) versus programs for single purposes. This allows municipal decision-makers to balance all capital needs. Typical capital funding mechanisms include the following: capital reserve fund, capital protection ordinances, municipal service district, tax increment financing, taxes, fees, and bonds. Each of these categories are described below.

Capital Reserve Fund

Municipalities have statutory authority to create capital reserve funds for any capital purpose, including pedestrian facilities. The reserve fund must be created through ordinance or resolution that states the purpose of the fund, the duration of the fund, the approximate amount of the fund, and the source of revenue for the fund. Sources of revenue can include general fund allocations, fund balance allocations, grants and donations for the specified use.

Capital Project Ordinances

Municipalities can pass Capital Project Ordinances that are project specific. The ordinance identifies and makes appropriations for the project.

Municipal Service District

Municipalities have statutory authority to establish municipal service districts, to levy a property tax in the district additional to the citywide property tax, and to use the proceeds to provide services in the district. Downtown revitalization projects are one of the eligible uses of service districts.

Tax Increment Financing

Tax increment financing is a tool to use future gains in taxes to finance the current improvements that will create those gains. When a public project, such as the construction of a greenway, is carried out, there is an increase in the value of surrounding real estate. Oftentimes, new investment in the area follows such a project. This increase sit value and investment creates more taxable property, which increases tax revenues. These increased revenues can be referred to as the "tax increment." Tax Increment Financing dedicates that increased revenue to finance debt issued to pay for the project. TIF is designed to channel funding toward improvements in distressed or underdeveloped areas where development would not otherwise occur. TIF creates funding for

public projects that may otherwise be unaffordable to localities. The large majority of states have enabling legislation for tax increment financing.

Installment Purchase Financing

As an alternative to debt financing of capital improvements, communities can execute installment/ lease purchase contracts for improvements. This type of financing is typically used for relatively small projects that the seller or a financial institution is willing to finance or when up-front funds are unavailable. In a lease purchase contract the community leases the property or improvement from the seller or financial institution. The lease is paid in installments that include principal, interest, and associated costs. Upon completion of the lease period, the community owns the property or improvement. While lease purchase contracts are similar to a bond, this arrangement allows the community to acquire the property or improvement without issuing debt. These instruments, however, are more costly than issuing debt.

Taxes

Many communities have raised money through self-imposed increases in taxes and bonds. For example, Pinellas County residents in Florida voted to adopt a one-cent sales tax increase, which provided an additional \$5 million for the development of the overwhelmingly popular Pinellas Trail. Sales taxes have also been used in Allegheny County, Pennsylvania, and in Boulder, Colorado to fund open space projects. A gas tax is another method used by some municipalities to fund public improvements. A number of taxes provide direct or indirect funding for the operations of local governments. Some of them are:

Sales Tax

In North Carolina, the state has authorized a sales tax at the state and county levels. Local governments that choose to exercise the local option sales tax (all counties currently do), use the tax revenues to provide funding for a wide variety of projects and activities. Any increase in the sales tax, even if applying to a single county, must gain approval of the state legislature. In 1998, Mecklenburg County was granted authority to institute a one-half cent sales tax increase for mass transit.

Property Tax

Property taxes generally support a significant portion of a municipality's activities. However, the revenues from property taxes can also be used to pay debt service on general obligation bonds issued to finance greenway system acquisitions. Because of limits imposed on tax rates, use of property taxes to fund greenways could limit the municipality's ability to raise funds for other activities. Property taxes can provide a steady stream of financing while broadly distributing the tax burden. In other parts of the country, this mechanism has been popular with voters as long as the increase is restricted to parks and open space. Note, other public agencies compete vigorously for these funds, and taxpayers are generally concerned about high property tax rates.

Excise Taxes

Excise taxes are taxes on specific goods and services. These taxes require special legislation and the use of the funds generated through the tax are limited to specific uses. Examples include lodging,

food, and beverage taxes that generate funds for promotion of tourism, and the gas tax that generates revenues for transportation related activities.

Occupancy Tax

The NC General Assembly may grant towns the authority to levy occupancy tax on hotel and motel rooms. The act granting the taxing authority limits the use of the proceeds, usually for tourism-promotion purposes.

Fees

Three fee options that have been used by local governments to assist in funding pedestrian and bicycle facilities are listed here:

Stormwater Utility Fees

Greenway sections may be purchased with stormwater fees, if the property in question is used to mitigate floodwater or filter pollutants.

Stormwater charges are typically based on an estimate of the amount of impervious surface on a user's property. Impervious surfaces (such as rooftops and paved areas) increase both the amount and rate of stormwater runoff compared to natural conditions. Such surfaces cause runoff that directly or indirectly discharge into public storm drainage facilities and creates a need for stormwater management services. Thus, users with more impervious surface are charged more for stormwater service than users with less impervious surface. The rates, fees, and charges collected for stormwater management services may not exceed the costs incurred to provide these services. The costs that may be recovered through the stormwater rates, fees, and charges includes any costs necessary to assure that all aspects of stormwater quality and quantity are managed in accordance with federal and state laws, regulations, and rules.

Streetscape Utility Fees

Streetscape Utility Fees could help support streetscape maintenance of the area between the curb and the property line through a flat monthly fee per residential dwelling unit. Discounts would be available for senior and disabled residents. Non-residential customers would be charged a per foot fee based on the length of frontage on streetscape improvements. This amount could be capped for non-residential customers with extremely large amounts of street frontage. The revenues raised from Streetscape Utility fees would be limited by ordinance to maintenance (or construction and maintenance) activities in support of the streetscape.

Exactions

Exactions are similar to impact fees in that they both provide facilities to growing communities. The difference is that through exactions it can be established that it is the responsibility of the developer to build the greenway or pedestrian facility that crosses through the property, or adjacent to the property being developed.

In-Lieu-Of Fees

As an alternative to requiring developers to dedicate on-site greenway sections that would serve their development, some communities provide a choice of paying a front-end charge for off-site protection of pieces of the larger system. Payment is generally a condition of development approval and recovers the cost of the off-site land acquisition or the development's proportionate share of the cost of a regional facility serving a larger area. Some communities prefer in-lieu-of fees. This alternative allows community staff to purchase land worthy of protection rather than accept marginal land that meets the quantitative requirements of a developer dedication but falls a bit short of qualitative interests.

Bonds and Loans

Bonds have been a very popular way for communities across the country to finance their pedestrian and greenway projects. A number of bond options are listed below. Contracting with a private consultant to assist with this program may be advisable. Since bonds rely on the support of the voting population, an education and awareness program should be implemented prior to any vote. Billings, Montana used the issuance of a bond in the amount of \$599,000 to provide the matching funds for several of their TEA-21 enhancement dollars. Austin, Texas has also used bond issues to fund a portion of their bicycle and trail system.

Revenue Bonds

Revenue bonds are bonds that are secured by a pledge of the revenues from a certain local government activity. The entity issuing bonds, pledges to generate sufficient revenue annually to cover the program's operating costs, plus meet the annual debt service requirements (principal and interest payment). Revenue bonds are not constrained by the debt ceilings of general obligation bonds, but they are generally more expensive than general obligation bonds.

General Obligation Bonds

Cities, counties, and service districts generally are able to issue general obligation (G.O.) bonds that are secured by the full faith and credit of the entity. In this case, the local government issuing the bonds pledges to raise its property taxes, or use any other sources of revenue, to generate sufficient revenues to make the debt service payments on the bonds. A general obligation pledge is stronger than a revenue pledge, and thus may carry a lower interest rate than a revenue bond. Frequently, when local governments issue G.O. bonds for public enterprise improvements, the public enterprise will make the debt service payments on the G.O. bonds with revenues generated through the public entity's rates and charges. However, if those rate revenues are insufficient to make the debt payment, the local government is obligated to raise taxes or use other sources of revenue to make the payments. G.O. bonds distribute the costs of land acquisition and greenway development and make funds available for immediate purchases and projects. Voter approval is required.

Special Assessment Bonds

Special assessment bonds are secured by a lien on the property that benefits by the improvements funded with the special assessment bond proceeds. Debt service payments on these bonds are funded through annual assessments to the property owners in the assessment area.

State Revolving Fund (SRF) Loans

Initially funded with federal and state money, and continued by funds generated by repayment of earlier loans, State Revolving Funds (SRFs) provide low interest loans for local governments to fund water pollution control and water supply related projects including many watershed management activities. These loans typically require a revenue pledge, like a revenue bond, but carry a below market interest rate and limited term for debt repayment (20 years).

B.5 OTHER LOCAL OPTIONS

Facility Maintenance Districts

Facility Maintenance Districts (FMDs) can be created to pay for the costs of on-going maintenance of public facilities and landscaping within the areas of the Town where improvements have been concentrated and where their benefits most directly benefit business and institutional property owners. An FMD is needed in order to assure a sustainable maintenance program. Fees may be based upon the length of lot frontage along streets where improvements have been installed, or upon other factors such as the size of the parcel. The program supported by the FMD should include regular maintenance of streetscape of off road trail improvements. The municipality can initiate public outreach efforts to merchants, the Chamber of Commerce, and property owners. In these meetings, Town staff will discuss the proposed apportionment and allocation methodology and will explore implementation strategies. The municipality can manage maintenance responsibilities either through its own staff or through private contractors.

Partnerships

Another method of funding pedestrian systems and greenways is to partner with public agencies and private companies and organizations. Partnerships engender a spirit of cooperation, civic pride and community participation. The key to the involvement of private partners is to make a compelling argument for their participation. Major employers and developers should be identified and provided with a "Benefits of Walking"-type handout for themselves and their employees. Very specific routes that make critical connections to place of business would be targeted for private partners' monetary support following a successful master planning effort. Potential partners include major employers which are located along or accessible to pedestrian facilities such as shared-use paths or greenways. Name recognition for corporate partnerships would be accomplished through signage trail heads or interpretive signage along greenway systems. Utilities often make good partners and many trails now share corridors with them. Money raised from providing an easement to utilities can help defray the costs of maintenance. It is important to have a lawyer review the legal agreement and verify ownership of the subsurface, surface or air rights in order to enter into an agreement.

Local Trail Sponsors

A sponsorship program for trail amenities allows smaller donations to be received from both individuals and businesses. Cash donations could be placed into a trust fund to be accessed for certain construction or acquisition projects associated with the greenways and open space system. Some recognition of the donors is appropriate and can be accomplished through the placement of a plaque, the naming of a trail segment, and/or special recognition at an opening ceremony. Types of gifts other than cash could include donations of services, equipment, labor, or reduced costs for supplies.

Volunteer Work

It is expected that many residents will be excited about the development of a greenway corridor. Individual volunteers from the community can be brought together with groups of volunteers form church groups, civic groups, scout troops and environmental groups to work on greenway development on special community work days. Volunteers can also be used for fund-raising, maintenance, and programming needs.

B.6 PRIVATE & NON-PROFIT FUNDING

The Robert Wood Johnson Foundation

The Robert Wood Johnson Foundation was established in 1972 and is the largest United States foundation devoted to improving the health care of all Americans. The foundation works to help achieve health equity and expand opportunity to pursue the best health possible through investments in four broad areas: Healthy Communities; Healthy Kids, Health Weight; Health Leadership; and Health Systems.

For more information, visit: http://www.rwjf.org/

North Carolina Community Foundation

According to their website, "The NCCF is the single statewide community foundation serving North Carolina and has made \$101 million in grants since its inception in 1988. With more than \$237 million in assets, the NCCF sustains 1,200 endowments established to provide long-term support of a broad range of community needs, nonprofit organizations, institutions and scholarships. The NCCF partners with 60 affiliate foundations to provide local resource allocation and community assistance in 67 counties across the state. An important component of the NCCF's mission is to ensure that rural philanthropy has a voice at local, regional and national levels."

For more information, visit: <u>http://www.nccommunityfoundation.org/</u>

Walmart State Giving Program

According to their website, "The Walmart Foundation's State Giving Program plays an essential role in the Foundation's mission to create opportunities so people can live better. The Program provides grants to 501(c)(3) organizations ranging from \$25,000 to \$200,000, depending on the type of program.

The State Giving Program invests in all 50 states, Washington, D.C. and Puerto Rico. The Walmart Foundation has a State Advisory Council in each state, made up of Walmart associates representing local communities. Each Council helps identify local needs within its state, reviews all eligible grant applications and makes funding recommendations to the Walmart Foundation. Councils base recommendations on alignment with Foundation focus areas, state or community needs and program eligibility criteria. Applications are accepted during designated periods, or cycles, only. All states have two application cycles annually.

For more information, visit: <u>http://giving.walmart.com/foundation</u>

Z. Smith Reynolds Foundation

According to the organization's website, "the Z. Smith Reynolds Foundation seeks to improve the quality of life for all North Carolinians by preventing harm to, ensuring access to and enhancing the resilience of the natural systems that sustain life. The Foundation is committed to strong and sensible environmental protection. ZSR has a particular interest in broadening the base of residents acting on behalf of the environment and supporting organizations that empower people at the grassroots to effect state and regional policy decisions. ZSR funds a wide variety of strategies to meet its environmental goals, including but not limited to: policy development, advocacy, civic engagement, communications, and litigation."

For more information, visit: <u>http://www.zsr.org/</u>

American Hiking Society's National Trails Fund

According to the organization's website, the "American Hiking Society's National Trails Fund (NTF) offers 'hiking trail improvement' grants to active member organizations of our Hiking Alliance. Once a year, Alliance Members have the opportunity to apply for a grant (value between \$500 and \$5,000) in order to improve hiking access or hiker safety on a particular trail. American Hiking Society's National Trails Fund is the only privately funded, national grants program dedicated solely to building and protecting hiking trails. Created in response to the growing backlog of trail maintenance projects, the National Trails Fund has helped hundreds of grassroots organizations acquire the resources needed to protect America's cherished hiking trails. To date, American Hiking Society has funded 209 trail projects by awarding over \$679,000 in National Trails Fund grants."

For more information, visit: https://americanhiking.org/national-trails-fund/

The Conservation Alliance

The Conservation Alliance is a non-profit organization of outdoor businesses whoes collective annual membership dues support grassroots resident-action groups and their efforts to protect wild and natural areas. Grants are typically around \$35,000 each.

According to The Conservation Alliance, they make grants to registered 501(c)(3) organizations whose work meets the following criteria:

Town of Elon - Bicycle, Pedestrian and Lighting Plan (2017)

- 1) The project should seek to secure permanent and quantifiable protection of a specific wild land or waterway. We prioritize landscape-scale projects that have a clear benefit for habitat.
- 2) The campaign should engage grassroots resident action in support of the conservation effort. We do not fund general education, stewardship, or scientific research projects.
- 3) All projects must have a clear recreational benefit.
- 4) The project should have a good chance of final success within four years.

For more information, visit: <u>http://www.conservationalliance.com/</u>

National Fish and Wildlife Foundation

The National Fish and Wildlife Foundation (NFWF) is a private, non-profit, tax-exempt organization chartered by Congress in 1984. The National Fish and Wildlife Foundation sustains, restores, and enhances the Nation's fish, wildlife, plants, and habitats.

NFWF supports more than 70 grant programs to protect and restore our nation's wildlife and habitats. Federal, state, and local governments, educational institutions, and nonprofit organizations are welcome to apply twice annually for matching grants from our conservation priority programs. For other funding opportunities, application timelines, scope and guidelines vary.

For more information, visit: http://www.nfwf.org/

The Trust for Public Land

The Trust for Public Land helps conserve land for recreation and to improve the health and quality of life of American communities.

For more information, visit: http://www.tpl.org/

Blue Cross Blue Shield of North Carolina Foundation

The Blue Cross Blue Shield of North Carolina Foundation focuses on programs that use an outcome approach to improve the health and well-being of residents. The Healthy Living grant focuses specifically on planning, promotion, and consumer demand for places and spaces for physical activity. The foundation's investments have ranged from local to statewide efforts on projects such as system-wide comprehensive parks and recreation plans, health impact assessments and bicycle and pedestrian plans.

For more information, visit: http://www.bcbsncfoundation.org/

APPENDIX C: COMMUNITY SURVEY RESULTS REPORT

Question I

How important to you is the goal of creating a walking and bicycle friendly community? (Please select only one.)

Answer Options	Response Percent	Response Count
Very Important	77.7%	139
Important	12.8%	23
Somewhat Important	7.8%	14
Not Important	I.7%	3
	answered question	179
	skipped question	0



How often do you bicycle now? (Please select only one.)

Answer Options	Response Percent	Response Count
5+ times per week	9.0%	16
Few times per week	14.6%	26
Few times per month	17.4%	31
Less than once a month	15.7%	28
l currently do not bike	43.3%	77
	answered question	178
	skipped question	I



How often do you walk now? (Please select only one.)

Answer Options	Response Percent	Response Count
5+ times per week	44.7%	80
Few times per week	30.2%	54
Few times per month	16.8%	30
Less than once a month	5.0%	9
I currently do not walk	3.4%	6
	answered question	179
	skipped question	0



For what purpose do you bicycle now and how far? If you do not ride now, for what purpose would you use a bicycle in the future? (Please select all that apply.)

Answer Options	Less than 1/4 mile	l/4 - l/2 mile	I/2 - I mile	Greater than I mile	Rating Average	Response Count
Fitness or recreation	12	10	19	109	3.50	150
Transportation (i.e. work/retail/school)	21	9	21	55	3.04	106
Social visits	22	12	26	35	2.78	95
Other	9	I	3	П	2.67	24
Other (please specify)						14
				answe	ered question	157
				skip	ped question	22



"Other" Responses

- only way to travel
- I would bike/walk everywhere if there were wider lanes and/or more sidewalks
- shopping
- No car
- fun with children/biking to the playground
- library/downtown
- shopping
- food and restaurants

- Cultural events-Elon University
- Transportation
- shopping, errands
- I would use a bike to ride on Elon's campus and back and forth to my off-campus apartment.
- I feel like it is difficult to ride now because of narrow roads and cars speeding through neighborhoods
- Walking

For what purpose do you walk now and how far? If you do not walk now, for what purpose would you walk in the future? (Please select all that apply.)

Answer Options	Less than 1/4 mile	l/4 - l/2 mile	I/2 - I mile	Greater than I mile	Rating Average	Response Count
Fitness or recreation	14	11	21	121	3.49	167
Transportation (i.e. work/retail/school)	19	11	34	36	2.87	100
Social visits	18	20	41	28	2.74	107
Other	9		9	14	2.65	43
Other (please specify)						29
				answe	ered question	177
				skip	ped question	2



"Other" Responses

- walking the dog; walking/pushing a stroller
- walking the dog
- post office, restaurants
- walk the dog
- walking the dog
- walking dog; pushing stroller
- walking the dog
- walking the dog, pushing baby stroller
- walking dog, pushing stroller
- walking dog
- walking the dog, pushing baby stroller
- walking the dog
- walking the dog
- walking the dog, pushing baby stroller
- Pushing baby stroller

- walking the dog
- walking the dog
- walking the dog, walking/pushing a baby stroller; necessity
- walking the dog
- walking the dog, walking the baby/pushing a stroller
- no car
- Work related
- walking with children/going to playground
- library/downtown
 - food and restaurants
 - I have dogs
 - shopping, errands
 - businesses in Elon, ECC, Elon U.
 - exercise

What is the most important factor that discourages you from walking or bicycling? (Please rank your top factors, with I being most important.)

Answer Options	Т	2	3	4	5	6	7	8	9	N/A	Rating Average	Response Count
Lack of sidewalks and trails	89	25	20	5	3	5	4	0	I	4	1.98	156
Pedestrian unfriendly streets/land uses	32	64	19	12	8	4	0	2	I	7	2.49	149
Unsafe crossings	10	27	48	24	П	8	3	2	0	10	3.34	143
Traffic/aggressive motorist behavior	7	18	27	43	15	8	6	3	2	8	3.90	137
Lack of nearby destinations	9	5	13	14	29	12	8	5	8	23	4.84	126
Lack of time	10	7	7	12	13	27	16	4	4	28	5.00	128
Lack of interest	2	4	4	4	7	10	19	24	6	42	6.40	122
Health issues	5	I	4	I	I	5	8	13	28	52	7.12	118
Low lighting	6	5	9	16	22	14	17	13	8	26	5.42	136
										answe	ered question	174
skipped question										5		



What walking and bicycling destinations would you most like to get to? (Please select your top destinations, with I being most important.)

Answer Options	I	2	3	4	5	6	7	8	9	10	П	12	N/A	Rating Average	Response Count
Town Parks	37	32	17	15	17	7	3	2	Т	I	0	0	9	2.99	4
Other Town Facilities	7	11	8	16	7	17	9	12	6	0	I	I	17	5.16	112
University	44	19	20	14	10	7	8	I	7	I	0	0	15	3.26	146
Medical	2	3	Ι	3	7	6	8	7	9	9	8	4	41	7.66	108
Greenways or Trails	34	31	20	22	17	6	3	4	0	I	2	0	7	3.21	147
Churches	I	2	3	3	6	7	8	10	9	10	5	5	38	7.68	107
Shopping	8	17	23	10	15	16	10	9	2	2	0	2	8	4.61	122
Restaurants	20	21	32	25	10	7	4	4	4	3	4	0	9	3.88	143
Place of work	7	13	П	15	6	8	П	4	8	5	2	0	37	5.08	127
Public or Private Schools	3	5	8	7	9	5	6	9	7	14	4	I	38	6.58	116
Senior Center	0	I	0	I	I	4	0	3	4	5	12	12	62	9.79	105
Other Neighborhoods	8	6	6	10	14	8	11	9	9	9	9	7	17	6.59	123
answered question											174				
skipped question											5				

What walking and bicycling destinations would you most like to get to? (Please select your top destinations, with 1 being most important.)



Town of Elon - Bicycle, Pedestrian and Lighting Plan (2017)

What is the most important action you think is needed to increase walking and bicycling in the community? (Please select your top actions, with I being most important.)

										Rating	Response
Answer Options	I	2	3	4	5	6	7	8	N/A	Average	Count
Crossing improvements	27	34	27	24	19	5	0	2	6	2.99	144
More pedestrian friendly land-uses	29	38	38	17	9	2	4	I	2	2.75	140
Improved greenway trail systems	40	24	24	30	6	5	7	3	5	2.97	144
New sidewalks	51	43	22	18	7	3	2	I	5	2.38	152
Public transportation routes	10	4	11	14	26	16	8	13	17	4.83	119
Planting street trees	I	I	2	9	17	34	18	13	23	5.94	118
Install lighting	12	14	15	13	26	19	25	3	13	4.57	140
Benches	3	2	9	8	7	10	20	40	20	6.27	119
answered question											176
skipped question										3	

What is the most important action you think is needed to increase walking and bicycling in the community? (Please select your top actions, with 1 being most important.)



What is the most important consideration in determining locations for new sidewalks or bicycle facilities? (Please select your top considerations, with I being most important.)

											Rating	Response
Answer Options	I	2	3	4	5	6	7	8	9	N/A	Average	Count
Safety	70	23	19	14	8	6	4	5	I	I	2.55	151
Filling gaps of missing sidewalk	37	36	20	19	9	5	2	5	I	4	2.86	138
Filling gaps in bicycle lanes	10	32	31	21	9	5	9	5	I	6	3.56	129
Connecting to greenway and trails	20	25	29	24	12	10	5	8	2	4	3.63	139
Residential neighborhoods	12	14	12	16	27	17	12	5	8	8	4.66	131
Schools	7	9	9		15	18	23	11	4	13	5.27	120
Parks	5	8	16	11	16	28	17	14	I	5	5.18	121
Access to medical facilities	I	I	I	3	8	3	7	13	39	34	7.63	110
Business or commercial areas	6	4	8	12	12	14	17	23	12	14	5.94	122
answered question											171	

What is the most important consideration in determining locations for new sidewalks or bicycle facilities? (Please select your top considerations, with 1 being most important.)



Town of Elon - Bicycle, Pedestrian and Lighting Plan (2017)

If grants and existing revenues are not sufficient, what do you think should be the primary funding source for sidewalks and trails? (Please select your top revenue sources, with I being the best source.)

Answer Options	I	2	3	4	5	Rating Average	Response Count
Local Bond Referendum	76	26	25	9	3	1.83	139
Local Sales Tax	27	52	27	10	7	2.33	123
Assessments (Fees directly linked to properties served by new sidewalk/trail infrastructure.)	13	22	28	45	6	3.08	114
Property Tax	29	25	25	35	5	2.68	119
No Funding	15	2	9	5	73	4.14	104
				(answ	ered question	163
skipped question							



What do you think are the top roadway corridors most needing bicycle and/or pedestrian improvements? Please be specific in location and improvements, include cross streets or landmarks where possible:

Answer Options	Response Percent	Response Count
Sidewalk or trail improvements?	80.6%	104
Bicycle facility improvements?	65.1%	84
Lighting improvements?	48.1%	62
Crossing or intersection improvements?	47.3%	61
answered question		129
skipped question		50

Sidewalk or trail improvements?

- Front St.
- University Blvd. beyond the bridge
- Burlingto Rd into Elon (Haggard); pave trail connecting Beth Schmidt to Forestville Dr. for road bikes; Williamson Ave to Church St.
- S. Williamson from Sunset to Church
- to the store, to 70
- maybe more trails
- Over bridge toward Elon
- parks
- near parks
- sidewalk near parks
- more
- yes
- yes
- near Sheridan Apartments, currently happening
- in more useful areas
- More eco-friendly greenways
- Add greenways; no more sidewalks
- railroad track area
- More sidewalks and trails
- Most traveled connector streets first. Places with current foot paths.
- Burlington ave Elon to gibsonville
- Burlington Road connecting elon to gibsonville
- Widen Westbrook add sidewalks and bike lanes
- Between the university and University Drive
- Williamson Ave from campus to Church Street; Haggard Ave

- Length of Williamson connecting to Church St sidewalks, short "missing" sidewalk running along Westbrook between Forestview and University (allowing a safe "loop" from the quiet neighborhood streets and over to University and then back again through Beth Schmidt connector), any way to further expand the Beth Schmidt trails and/or connect via greenway to other areas nearby? Along the length of Haggard from where sidewalks end to the sidewalks on University, along Manning from University to Haggard, and along University from the "on-ramp" where the sidewalk ends to Manning (university is particularly frustrating since it's a nice length of sidewalk that GOES NOWHERE, crossing is dangerous down towards Lowe's or Target and up in our area the sidewalk just ends. Would be great to have a loop at least!
- We have trails? Trails that connect campus, neighborhoods, area parks
- Edgewood, Church street
- Church street
- North side of Edgewood from Church to Tarleton; south side of Edgewood there are sidewalks but none on the opposite side for residents and students to walk on. Need sidewalk on Forestdale both sides between Church and Boone Station. I walk to Harris Teeter on Church/Huffman Mill and to bank. Need sidewalks on both sides of Church St (there are some portions of southbound Church St. that have side walks); Williamson Ave needs sidewalk on firestation side from Trollinger all the way to Church.
- Williamson Ave. between S. Church and Trollinger, Oak/Front St. towards downtown from Haggard. Haggard Ave. towards University Ave.
- Elon University -- Front St -- downtown Burlington
- Williamson avenue, Westbrook avenue
- Need to have a trail link to parks (Beth- Joe D- Springwood- downtown Burlington)
- Williamson all the way to Church street
- It would be great to get safely from Elon to downtown Burlington.
- Connecting Gibsonville to Elon and Burlington
- Haggard Ave west of Williamson, Westbrook Ave east of University/Cook Rd., general downtown area
- East Haggard Avenue
- Along Haggard to from university west to the Bypass. Along Trollinger Avenue and along Lebanon ave.
- We need a sidewalk and bike lanes all the way down williamson ave to church street
- Williamson & Haggard
- Oak street into neighborhoods surrounding ACC all the way to Edgewood
- Neighborhoods! It's hard to walk or job for exercise on neighborhood streets with no sidewalks

 particularly when there are curves or hills in the road. Also, having a sidewalk along the length
 of Church St. would be great (although I realize this may be Burlington's issue)
- Williamson Ave from Church Street to Elon Post Office
- surrounding elon university
- downtown
- Front St. from Oak all the way down to Saddle Club (at least) needs a proper sidewalk, period. Student and staff run, jog and bike on Front St. south of the cemetery every single day. I've seen a couple of near-miss accidents in the past year alone, since people are forced off the sidewalk into the street after Truitt Dr.

- Williamson Avenue, leading out of campus towards Church St.
- Cook/University to Haggard to Elon University
- Extend sidewalk all the way to Alamance Crossing, University Commons (not Elon?); University Drive past Haggard, at least up to Williamson; Haggard Ave all the way to the Physical Plant
- Inconsistent through historic district (both presence & quality), downtown, and around Willowbrook park/Edgewood
- Williamson RR crossing
- Oak Street
- Haggard Ave west of Williamson
- S Williamson between Church and University. Haggard from Elon University to residential neighborhoods just north of University Ave
- South O'Kelley to Windsor
- Williamson needs a sidewalk all the way to Church.
- W Trollinger Ave from S Holt St down to Church St. Unsafe for student and cars traveling that road. Student walk on both sides of the street and stay on the street while cars go by.
- Williamson, Front, Saddle Club, Shadowbrook
- around schools, Oak is very dangerous at dusk and dawn
- Haggard and Williamson
- Williamson Ave
- Front Street from downtown Burlington to the university
- Trollinger av needs a side walk from Ballpark to Wilamson
- Williamson/Shallowford Church Rd. from Church St. to past University Dr (past Elon-Ossippee Rd)
- sidewalk in areas leading away from parks to and from neighborhoods any open area that conncet to sidewalked areas for continious walking
- New Greenway Constructed
- Williamson Ave
- Sidewalks between Elon University and Downtown Burlington (Front Street) and between Elon University and Church Street (Williamson)
- Williamson Avenue Crossing
- bike/walking trail that connects the Town of Elon Park and Downtown Elon (which would then connect someone to sidewalks almost all the way to Alamance Crossing); sidewalks on Haggard Avenue from downtown Elon all the way to University Drive (from Arts West to Fatt Frogg and all the way to University Drive)
- Williamson Ave to Church St
- Area between Phoenix Arms and University drive
- Nice, but probably unrealistic to add sidewalks (and curbs) in existing residential neighborhoods like Westbrook Forest
- Williamson from Elon to Church Street
- Sidewalk complete from Elon to Church St on Williamson
- Georgetowne/Mill Point neighborhoods
- Williamson
- Williamson from Church St to Shallowford Church
- Williamson to church st

- Manning Ave
- Front street sidewalk from downtown burlington to elon
- West Trollinger
- Williamson Ave, Haggard Ave, create pedestrian friendly connections to Church St (shopping), Beth Schmidt park, residential areas.
- Expanding outward from Downtown/Elon University/Elon Elementary School. It is the biggest section and should be built upon rather than a patchwork addition throughout the city.
- More sidewalk connecting Elon to church st. Many people walk Williamson students and residents included.
- Sidewalk down to Green St and Williamson Ave
- I don't know if any that are available to bike or run
- Williamson ave
- Access campus from Mill Pointe
- Sidewalk on saddle brook and the entire front street area. Also- smith elementary school does not have sidewalks in front of the school!
- Williams from elon to burlington; an alternative bike route through the field from elon into the mill point Georgetown neighborhoods, better access to olde forest pool from georgetowne, mill point area
- Williamson avenue to Food Lion
- Williamson up to Church Street
- Extend Williamson sidewalk to South Church, Westbrook (S. Church to Cook) and Westgate, between Williamson and Westbrook
- North Manning Avenue needs sidewalks
- Sidewalks that join other sidewalks with no gaps in your destination being able to stay on the sidewalks without having to get off sidewalks.
- Manning Ave. needs sidewalks, from haggard to Blakey Hall.
- willamson ave.
- Westbrook Ave and S. Williamson St
- Shallowford church rd
- sunset to Beth Schmidt Park and Sunset to Curch Street

Bicycle facility improvements?

- Front St.
- Front St.
- University Drive
- Burlington Ave/Haggard Ave. from 100 to Manning; Connector path from Westover Dr. to Sokelly; Connector path from Sudbury Ct. to Slade Pk., Crosswalk across University from Gibsonville to Beth Schmidt
- all paved
- University Drive/Railways
- seem fine
- all roads
- need improvement
- yes

- yes
- need to do more
- I don't bike
- I do not care
- Bike lanes
- Shallow ford church rd to elon
- Burlington ave Elon to gibsonville
- Linking Elon and Gibsonville via Haggard and Burlington Ave and also connecting Burlington Ave to University Drive
- Williamson Ave from campus to Church Street; Haggard Ave
- Would be nice to have bike racks throughout downtown (or if they're there they should be marked or decorated to attract attention because I have no idea where they are)
- Front St/Oak -- needs bike lane -- Haggard & Williamson could also use bike lanes, preferably that also connect with Burlington
- Edgewood
- Bike lane on Edgewood between Church and Tarleton
- WILLIAMS high school needs to have bike racks! Bike lane on Edgewood both directions between Church and Tarleton.
- Williamson avenue, Westbrook avenue
- Williamson Avenue from Elon University to Church Street; University Drive more caution signs warning motorists of cyclists; Easier access to Beth Schmidt Park by bicycle is needed riding on Cook Road is dangerous
- front street from Elon to downtown
- All of Williamson from Haggard all the through St. Marks church through Alamance Crossing
- Connecting Gibsonville to Elon and Burlington
- everywhere, simply not enough room for bikes and peoples driving habits
- Streets around Elon U & Church Street
- Along Williamson Ave. along Haggard west of university to the bypass
- Bike racks at Elon Elementary school, extension of wide sidewalk along University Drive, linking some scattered pieces of sidewalk over the bridge.
- Williamson & Haggard
- Williamson all the way to Alamance crossings and around university drive all the way around EU to haggard by off campus housing
- Trails at Beth Schmidt Park, and to and from the park
- The major arterials directly adjacent to (or directly paralleling) Elon's main campus should have bike lanes. This includes Haggard from S. Williamson to Oak. An extended route that desperately needs a bike lane or multi-use paved trail (and has adequate space) is Front St. to Saddle Club to Shadowbrook and 2) Front St. to Briarcliff. Saddle Club has lots of students jogging/running/biking...it's *extremely* dangerous as there is no shoulder.
- Cook/University to Haggard to Elon University
- Along Front St. connecting campus to downtown, down Edegewood
- Williamson should include bike lanes
- Williams Ave
- Oak Street

- S Williamson between Church and University. Haggard from Elon University to residential neighborhoods just north of University Ave
- Williamson
- Bike Lanes need to be wide enough on main roads. Williamson is a road that could really use help between Elon and University Drive. Haggard is another road that could use work.
- access to Beth Schmidt Park: the sidewalks on University are lovely but you can't cross University safely, or access the park safely from the east. Williamson also needs sidewalk and bike lanes all along it.
- Williamson, Front Saddle Club, Shadowbrook
- Haggard, Williamson
- Haggard and Williamson
- Williamson Ave
- Front Street from downtown Burlington to the university
- Williamson/Shallowford Church Rd. from Church St. to past University Dr (past Elon-Ossippee Rd) particularly where road is too narrow to safely bike (between Church and Station at Mill Pointe, as well as where the sidewalks end on campus north to Elon-Ossippee)
- Bike Lane along Williamson Avenue
- Haggard, Webb, and Oak/Front
- Areas around and adjacent to Elon University/downtown
- Williamson Ave
- Linking parks and downtown
- Bike paths between Elon University and Downtown Burlington (Front Street) and between Elon University and Church Street (Williamson)
- Williamson Avenue crossing
- bike lanes around the elon university area (so cyclists aren't on sidewalks)
- Williamson Ave to Church St
- Same; also on Williamson and West Haggard
- Williamson Ave new sidewalk resulted in wide shoulder on east side, but not west side need 2-way bike path. Need greenways/connectors to allow for safe and convenient recreational biking and access to shopping areas University Commons, Food Lion, etc.
- Front street from Elon to downtown Burlington, Williamson from Elon to Church Street, Haggard Street from Elon to Gibsonville
- front street, manning, Williamson, Westbrook
- Manning Ave and thru-out the town, with Specific Bike Lanes
- Rails to trails/greenway Webb ave?
- Haggard, Williamson
- Same as sidewalks.
- Connecting downtown and neighborhoods to the path along University Drive by Beth Schmidt Park
- More bike lanes in Elon
- Don't know of any current ones
- Williamson ave
- Access campus from Mill Pointe
- We need a 5-10+ mile bike trail!!!

- From MillPointe to Elon campus
- Williamson Ave to Food Lion
- Williamson, University Drive
- North Manning Avenue
- Need bicycle lanes/paths. If we had good ones now, I would use my bike more. Elon is a beautiful area residents need to be able to frequent the area with bikes to enjoy being outside, getting exercise, enjoying nature and our beautiful city.
- University Dr to at least Manning Dr but would be nice to Shallowford
- Westbrook Ave and S. Williamson St
- Bicycle lanes in college area as bicycles are not allowed on sidewalks

Lighting improvements?

- Haggard from S. Williamson to University Dr.
- Ball Park Ave
- N/A
- downtown lighting is horrible
- downtown
- neighborhood streets
- everywhere very dark at night
- Almost every street
- yes for safety
- Everywhere
- yes
- yes
- Around campus
- Sure
- Sure, safety first
- More street lights
- Most traveled connector streets first. Places with current foot paths.
- n/a
- Williamson next to campus
- Huffman Mill
- NA
- Needed to safely connect Gibsonville to Elon and Burlington
- The crosswalks near Pandora's are very poorly lit at night
- Haggard Avenue
- Williamson & Haggard
- Wherever you put sidewalks and bike paths
- downtown
- The first pedestrian crossing across Haggard heading eastbound (after crossing N. Williamson) is not marked, very poorly lit, and extremely dangerous. Besides a different kind of brick, there's basically nothing to indicate cars should stop at night. This is the first of three major student crossings and it's very poorly lit. It's a huge liability for the university.

- Williamson Avenue, between the Oaks and Koury Athletic Center
- Inconsistent in the historic district (Trollinger St.) and neighboring areas, along Front St.
- Throughout the town. All very dim
- Cross between Elon University and Pandora's
- Oak Street
- People should not ride bikes at night
- Oak
- improve lighting on Williamson Avenue!
- Haggard and Williams
- Williamson Ave
- areas where stduents from Elon University walk across street without looking Williamson Ave by Acorn Coffee Shop - surrounding areas that are not Elon property but house students students seem to think it is OK to just walk across the street without looking -- anywhere
- Improved lighting along Williamson Avenue
- Between Elon University and Downtown Burlington (Front Street) and between Elon University and Church Street (Williamson), in neighborhoods around Elon
- Lebanon, Haggard Avenue near Fatt Frogg
- Wiliiamson Ave to Church St
- Area between Danieley (Elon) and University Drive
- Don't care
- Orange Drive, Georgetowne Drive, Brighton Drive and Earl Drive
- williamson
- Lighting is very good already
- West Trollinger
- All neighborhoods
- All
- Street lights on orange drive
- Willamson Ave
- Green street
- Definitely need in many areas. I live off on Shallowford Road. We have no lighting along these roads and no sidewalks probably because it's a rural area. It would be great to have a bike path along this road, even if it was off the road and not paved.
- crosswalks on Williamson near College Ave. need lighting. Students wear dark clothing at night and are impossible to see popping out from the corners into the sidewalk.
- williamson ave.
- Williamson and Haggard Ave
- Older Elon Neighborhoods
- Students just walk and don't look! Then wonder why they get ran over!! Duhhhhh!!!
- University Dr behind university
- Along haggard with new sidewalk

Crossing or intersection improvements?

- University drive
- S. Williamson and E. College

- Sometimes difficult to cross over 70 with so much traffic
- N/A
- seem fine
- fine
- Crossing near tracks
- more
- need more
- yes
- yes
- Kangaroo/railroad intersection
- more pedestrian friendly
- More crosswalks, near the Oaks
- Grid the town
- Crossing guards?
- University and church st
- University near Beth Schmidt could definitely use a pedestrian-triggered stoplight to allow safe crossing -- people still whip through there at 45mph+ and there are frequently families with small children and people with dogs who cross there
- Orange Drive & Williamson
- Edgewood
- Church & Forestdale crosswalk; Truitt & Oak (lots of university students and residents walk/run and the evergreen trees on private property at that SW corner is a hazard/blind corner when turning south onto Truitt)
- Church & Forestdale crosswalk; Truitt & Oak (lots of university students and residents walk/run and the evergreen trees on private property at that SW corner is a hazard/blind corner when turning south onto Truitt)
- Traffic signal sensors on the 2 roads on either side of the tracks at Williamson Ave do not pick up cyclists.
- anything on university drive
- Close Haggard through Elon university to cars and trucks and motorcycles, mopeds etc. Only allowing bicycles and pedestrians
- Cook Road/University Drive/Westbrook Ave./Williamson Ave.
- East Haggard & Webb/University Drive; University Drive at Alamance Crossing
- Williamson & Haggard
- Into and out of all neighborhoods surrounding EU where students feel comfortable walking off campus
- The outlying downtown areas could use improvement. It's not bad in actual downtown, but getting from neighborhoods to downtown can be challenging.
- See previous comment.
- Crossing from CVS/Lowe's parking lot to the sidewalk on the other side on University Drive.
- Crossing church street to get to city park, aquatics center
- Williamson RR crossing is DANGEROUS
- University Ave / Haggard / Webb / Hwy 87
- Orange and South Williamson; Truitt and Windsor; Williamson and Trollinger/Lebanon/tracks
- N/A don't ride enough to know, I don't ride because of Bike Lanes in roads
- The train track crossing at Williamson and Trollinger/Lebanon are dangerous for everyone: cars, bikes, and people. Left turns from Williamson onto Trollinger are particularly difficult on a bike.
- colose haggard during the 8-5 day from O'kelly to Williamson
- Haggard and Williamson
- Shallowford Church Rd and University Dr (additional turn lanes and turn lights would help w/ high school and middle school related traffic)
- Church Street
- get authorities to SHORTEN the greenlight time for Univ Dr at Shallowford CRd
- Williamson Street
- Haggard/University Dr.
- University and Westbrook
- Crossing over the railway on Williamson is dicey.
- Crawling from Orange Drive/Georgetowne neighborhood to Williamson Avenue's new sidewalk
- university
- All
- mid campus. Use the existing traffic lights on Haggard to organize pedestrian and vehicle traffic patterns. Traffic backs up badly during class changes. This is dangerous to pedestrians and scary for drivers.
- every intersection around the university should have pedestrian walk lights that give pedestrians protected crossing time separate from the green lights for cars. What's the point of a walk light when cars have a green light at the same time????????
- University drive crossings
- All
- Williamson Ave and Westgate
- North Manning and Haggard intersection
- A big concern in the University area. Students cross the road (anywhere) they don't look, they are glued to their phones. The lighting is poor on campus roadways and students wear black outer garments and you can't see them. Elon students need to receive a better orientation on this. They should wear reflective clothes at night, or carry small (University provided) flashlights for night walking.
- williamson ave. & Haggard ave
- Students look before crossing the road!
- University Dr/shallowford church/Williamson
- The business enters fed like Elon vet to new sidewalk. Unravel and unsafe for stroller

Please use the following space to provide any additional comments regarding bicycling, walking, or lighting improvements in the Town of Elon.

- I don't live here so I am unsure.
- "Share the Road" signs
- To me the important issues are accessibility/connectivity and safety. The few short paths I listed above would increase safe connections for many more people in Elon and Gibsonville to access downtown Elon without a car.
- I feel Elon has a lot of sidewalks. More biking lanes would be great.
- Hard to see when people want to walk through Elon.
- I think the trails for waling and bikes should be paved. That way people in wheelchairs, etc., could also use them.
- There needs to be more walking trails that are safe and appropriate lighting around the trails for night use.
- It would be nice if bikes were allowed on the sidewalks on Elon's campus because the roads with street parking are too narrow.
- It would be great to connect the community between the 2 existing parks.
- It would be lovely to be able to get from downtown to Beth Schmidt Park
- more sidewalks need to be added
- All sidewalks need better lighting. Very dark at night.
- Lighting need to be improved immensely around the community.
- I think the sidewalk added on South Williamson Avenue was unnecessary as it leads to nowhere but I think the current sidewalk project by Sheridan will make our community safer.
- Better lit; more pedestrian friendly; more greenway systems
- less parking lots to discourage driving
- Less needless spending
- All traffic is funneled across the tracks on S. Williamson. It gets incredibly congested and can be very frustrating. Also no more sidewalks! Way too much traffic for small benefit.
- build sidewalks in areas with high foot traffic
- Town of Elon needs bike lanes
- More bike trails and sidewalks everywhere
- We need more community initiatives to help citizens be aware of pedestrians and cyclists and respect it
- I know the University is a huge partner in this, but I worry that sometimes their priorities don't entirely match the community's, case-in-point the new sidewalk going in on Oak Ave -- while I can't find fault with more sidewalks, it does seem that there are many other areas with much higher traffic that could've used sidewalks first. That said, major kudos on the new section of sidewalk along Williamson, it's awesome!
- Often bike lanes not listed as option above. We need ways to make cyclists more visible on major roads. We need bike lanes and trails available. This will improve overall desirability of area.
- it would be a great idea!
- You should investigate this funding source! http://www.parksbuildcommunity.org/

- Due to lack of sidewalks to businesses, this prevents people from walking to nearby stores from neighborhoods. Why drive the 1/4 mile when you can walk it?!? Also, need sidewalks or bike lanes to parks to encourage residents to go to parks. If parks were WITHIN walking or biking distance from neighborhoods, it would encourage people to utilize parks and exercise. Currently you ALWAYS basically have to drive to get to a park (unless you live right next to a park).
- One of the main detriments to enjoying life here is the fact that there are so few bike trails and greenways accessible making improvements in these areas would be a HUGE asset to our community.
- My family visits Alexandria, VA and Washington, DC most summers. We love riding the bike trails there. We leave our car parked for most of the trip. I would love to be able to have a bikable community.
- this is an important issue and I hope improvements are carefully considered
- Having the sidewalk into Elon is a great improvement for my family thank you....
- The communities of Gibsonville, Elon and Burlington are not easily traveled in foot or bike. As these areas grow, we need better roads, greenway trails to connect them. Drivers are aggressive and it is dangerous especially on University Drive. Safe, lighted crossing is needed to connect Driftwood neighborhood across from Schmidt Park to Elon. It is very dangerous to try and cross right now and vehicles are speeding. Also getting to downtown Gibsonville from Elon is treacherous on foot or bike. People are speeding through neighborhoods and citizens of all ages walking dogs, running and riding bikes are in danger.
- Please be considerate with lighting considerations. There is a fine line between providing good lighting and creating light pollution.
- Areas around Elon University should be bike & walking friendly, as should main shopping areas like University Drive, Huffman Mill, and Church Street.
- University cushman drivers would like for Haggard Ave. be widened west of old Winn Dixie to the bypass
- If you're going to bike with children, it needs to be a fairly long stretch of safe trail. As a family, we like the "bike route" signs posted along roads in Burlington that take you along safe, quiet streets, but even better, safer, and easier to follow would be an extension of the wide, separate sidewalk that currently flanks university drive from church street all the way to Beth Schmidt Park. It would be wonderful to see that wide sidewalk, on which a family can easily and safely walk or bike, stretch all the way across the bridge to the entrance of Elon University. It would safe link work/business/park/communities/ and the university all in one. cross country team students could run down this to the wooded trails at Beth Schmidt park, and faculty members could bike from homes in Gibsonville and Elon to work. More of this good thing please!
- Connecting Beth Schmidt park to the Williamson avenue area would be HUGE!
- When my husband and I moved here from the midwest, we were astonished by the lack of sidewalks, especially considering the largely temperate weather. We'd love to see improved sidewalk presence throughout the area for a multitude of reasons.
- Please do NOT raise our taxes to support bicycling and walking. We are taxed enough in all facits of life. WE DO NOT NEED MORE TAXES.
- I am retiring this year from Elon because parking has become such a problem. I have severe arthritus and have a handicapped tag, but I have difficulty finding a parking spot.

- Elon's city limits, unfortunately, end exactly where there should be multi-use trails and bike lanes. Saddle Club to Briarcliff could really use a multi-use trail.
- Overall, it seems Elon is very walking friendly (which is the part I appreciate the most!) but can use a few key improvements.
- I live in Greensboro and would bike to my job in Elon more regularly if there were a dedicated and safe bike path between the two towns. I recognize that this is a long-term goal but it would be an important investment in the health of our community for the future. The town of Elon could work in partnership with other communities and the state to develop these kinds of biking routes.
- With the resurgence of downtown areas, a comprehensive and coordinated plan to improve bicycling and walking activities would be a WELCOME improvement!!
- You should really be saying "walking/running" in all this; omitting running skews perception away from younger/active/families.
- Make Water Fountains a priority, and make bike lines in streets wider
- I love biking and walking and I am pleased to see that the Town of Elon is looking to improve its facilities in this area!
- I live in the historic district of Burlington and work at Elon University. I would love to commute to work by bicycle at least some days of the week, but I don't feel safe doing so. Some of this feedback may be more appropriate for the city of Burlington, since most of my route is not in Elon, but I assume you will coordinate and share info with Burlington. Thank you.
- i thank Trollinger AV is a Big saftey need side walk
- I enjoy walking but I live on the far side of University Drive there are not sidewalks to allow my to walk from the Powerline area to Elon University or the downtown area
- the reason there are so may wrecks at Shal CRd/Univ is LONG GREEN lights there & O'K/Univ
- The lack of sidewalks and bike paths (or even large enough road shoulders to allow for pedestrians to walk safely on roads) discourages people from engaging in physical activity and from accessing commercial locations (grocery stores, restaurants, etc). Having sidewalks and bike paths would encourage people to be more physically active and to visit various commercial locations. For example, more Elon students would be able to walk, run, or bike to downtown Burlington and other locations in Burlington.
- I'm excited that the Town is looking into making some improvements in this area for the safety of cyclists and walkers/runners.
- A lot of people living in Elon off of Williamson would like access to business on Church St like Food Lion, Rite Aid, Dollar General etc and also in the other direction going toward the University to restuarants & businesses there.
- Elon needs more bicycle lanes!
- This is very exciting and we hope our wonderful Town of Elon is able to make these wonderful ideas happen!
- please more bike trails!
- Need specified Bike Lanes
- Rails to trails would be good
- It would be great to be able to walk and bicycle from the Mill Pointe/Georgetowne area to the businesses, schools and parks near or on Campus.
- i would love to see a path from Mill Pointe to campus, possibly through the practice fields. It will improve non vehicle traffic to campus

- Would love a bike path through the field that joins MillPoint and Elon Univeristy campus to use to safely access Elon Elementary by bikes away from the traffic on Truitt toward Haggard.
- Nice greenway like the tobacco trail in Durham. Make it easier to walk to elon town from adjacent neighborhoods like mill point and georgetowne.
- sidewalk to green street
- Thank you for doing this survey!!!
- Students need to crosswalk at lights only, traffic in village is horrific during day. Random crosswalks dont help. They're in college and should be able to understand crossing at lights only
- It would be nice to have a sidewalk on Manning up to Haggard to walk on. Now it is in the grass and not level.
- Should be paid for by Elon University
- Bike paths would make facilities more accessible without having to use a car (limited parking). With the town development plan, this would be a good time to introduce with bike friendly lanes. Could the University made some greenways on the land they own that is not developed? Lighting is very important for the safety of our residents and the University students, especially if the town expands retail and commercial space for restaurants, etc.
- What is equally as important is getting pedestrians to follow the laws on jaywalking, not crossing against red lights, not riding bikes on sidewalks, and obeying crossing signs
- I would like to see Elon require students to cross the street at stop lights. As it is now, they walk out in front of cars and it makes it extremely hard to drive through Elon because of this. I'm surprised more students have not been hit by cars. I realize pedestrians have the right of way, but in most towns and cities, pedestrians cross the street when the light allows for it. It keeps them safe and drivers safe.
- Lighting in the barnes & noble, smittys & acorn coffee shop area is completely inadequate. Also students walk across without looking first. You cannot see people at night. University needs to light up crossings.
- Better Lighting! Better street crossing classes to these kids!!

What is your current age?

Answer Options	Response Percent	Response Count
Under 18	3.4%	6
18-24	14.3%	25
25-34	12.6%	22
35-44	25.7%	45
45-54	22. 9 %	40
55-64	12.6%	22
65-74	8.6%	15
Over 75	0.0%	0
	answered question	175
	skipped question	4



How would you describe your ethnicity?

Answer Options	Response Percent	Response Count
White	88.4%	152
Black or African-American	5.2%	9
Asian	2.3%	4
Hispanic or Latino	2.3%	4
Other	1.7%	3
answered question		172
	skipped question	7



What is your annual household income?

Answer Options	Response Percent	Response Count
Less than \$25,000	12.3%	20
\$25,000-\$49,999	11.0%	18
\$50,000-74,999	13.5%	22
\$75,000-99,999	27.0%	44
Greater than \$100,000	36.2%	59
	answered question	163
	skipped question	16



What is your highest education level?

Answer Options	Response Percent	Response Count
Currently enrolled in college	11.1%	19
Some high school	2.9%	5
High school diploma or GED	I.8%	3
Some college	7.0%	12
Associate degree	4.7%	8
Bachelor's degree	26. 9 %	46
Graduate degree or PhD	45.6%	78
	answered question	171
	skipped question	8



Are you currently a student at Elon University?

Answer Options	Response Percent	Response Count
Yes	11.6%	20
Νο	88.4%	152
answered question		172
	skipped question	7



Where do you currently live?

Answer Options	Response Percent	Response Count
Current city or town:	98.2%	161
County:	95.1%	156
Zip Code:	98.2%	161
	answered question	164
	skipped question	15

County	Number	
Alamance	136	
Guilford	13	
Orange	6	
Fairfield (CT)	2	
Kings (NY)	1	
Suffolk (MA)	1	
Wake 1		
Chatham	1	
Durham	1	

Municipality	Number	Zip Code	e Number
Elon	81	27244	81
Burlington	41	27215	39
Gibsonville	12	27249	11
Chapel Hill	5	27217	5
Mebane	4	27253	3
Burlington	3	27302	3
Greensboro	3	27516	3
Graham	2	27377	2
Stamford (CT)	2	27510	2
Whitsett	2	06902	2
Boston (MA)	1	11222	1
Brooklyn (NY)	1	11701	1
Carrboro	1	27258	1
Durham	1	27259	1
Haw River	1	27401	1
Raleigh	1	27406	1
Twin Lakes	1	27410	1
		27514	1
		27606	1
		27717	1

1

28302