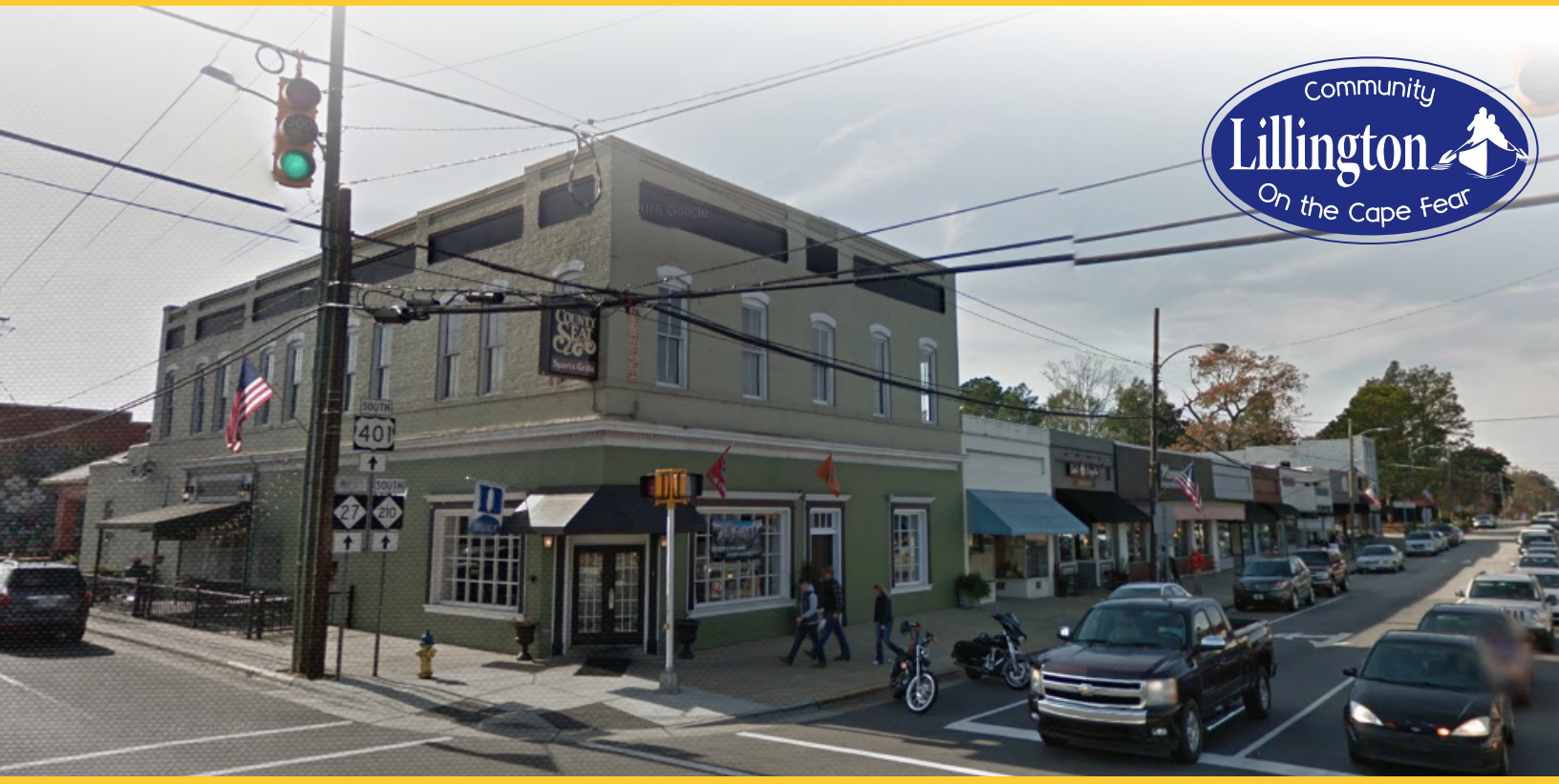
LILLINGTON
North Carolina

Comprehensive Transportation Plan

09.11.2017



J.S. Lane Company, LLC

Lillington

Comprehensive Transportation Plan

Chapter 1: Existing Conditions + Directions

LILLINGTON North Carolina

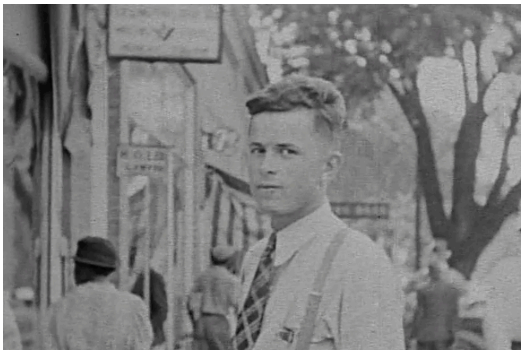
inside

The Lillington Transportation Comprehensive Transportation Plan – About a Town's People, Travel, and Places

The first part addresses the existing conditions described by input from the people of Lillington and information gathered about the Town. It will also address past plans and policies with respect to how they may influence transportation planning and development. The second part will address specific corridors and recommendations for both physical and policy improvements to better transportation mobility. These two sections comprise a complete Comprehensive Transportation Plan (CTP) for Lillington.

The CTP is important because it (1) helps direct the Town in future years towards a comprehensive long-range vision of how mobility works in the Town; (2) identifies specific projects that the Town has to consider with partnering agencies like NCDOT to realize; and (3) specifies how private development actions can support future roadways.

Lillington began as a transportation town.



Lillington's streets have been the place to be for a long time…

H. Lee Waters/Duke University Film Library. Images based on film archive, dated circa 1939.

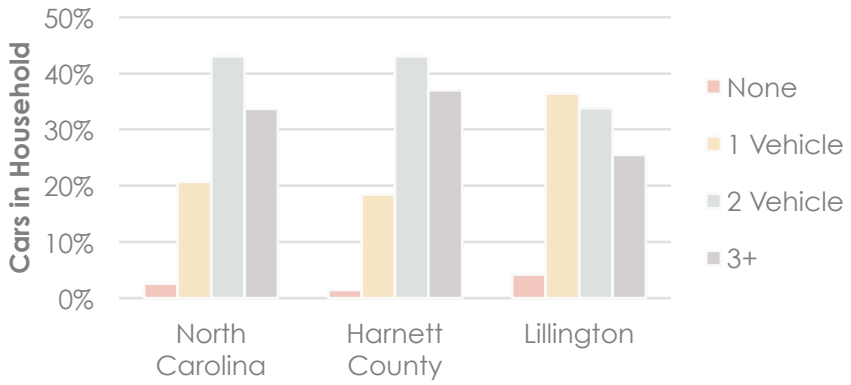
Lillington's earliest beginnings were about transportation. The Town of Lillington, named after a Brigadier General in the Continental Army (and a stint as Commissioner of Roads in New Hanover County), began as a rail stop. A line extended to Sanford until 1961, when it was abandoned. The Norfolk Southern line to Raleigh still operates, albeit only as a freight carrier.

The ascent of the private automobile coincided with the downturn of passenger rail service. By 1960, highway travel had consumed almost all the passenger mode share formerly held by bicycling, walking, and public transportation. Today, 96% of households in Lillington have at least one car; a quarter have three or more cars.

People and places adapted to the private automobile: pedestrians were moved to the edge of the travelway out of harm's way, and parking consumed greater portions of the land, including in front of buildings to comfort potential customers that might be concerned about available parking. These trends manifested themselves over time, and are still reflected in current conditions.

Cars Available per Household

(2014)



1.1 data & current trends

Lillington

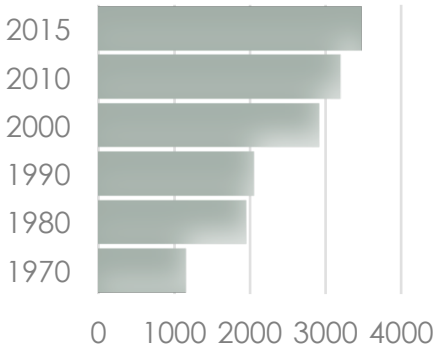
THE LILLINGTON THAT WE KNOW TODAY HAS FIRMLY ESTABLISHED ITSELF AS AN EMPLOYMENT CENTER IN HARNETT COUNTY. In 2014, nearly 82% of workers that started or finished their day in Lillington came from outside the town to work here (up from less than 70% in 2004). Only 15% live in Lillington and work elsewhere, and less than 3% live and work in Lillington.

Lillington's population has tripled in 45 years, to a 2015 number of residents estimated to be nearly 3,500. The "daytime population" is likely two or three times as many, with the number of people commuting into town each day.

Lillington is an increasingly diverse place. Although African-American residents have held fairly steady at 40%, the number of persons of Hispanic ethnicity has risen to over 9% in recent years, closely matching the State average.

The recent trends and current perspective offered by US Census and other data sources.

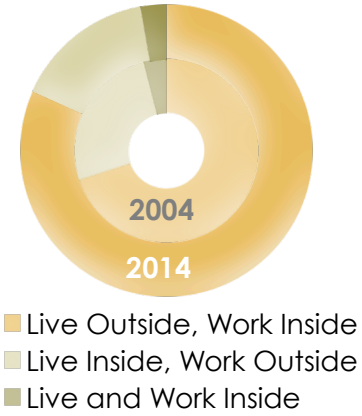
Population, 1960-2015

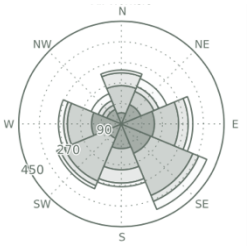


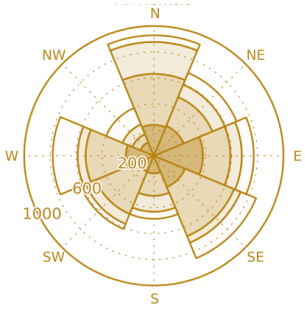
2.2x

the percent of Hispanic persons live in Lillington in 2014 (9.1%) compared to 2010 (4.4%).

Live & Work, 2004 - 14



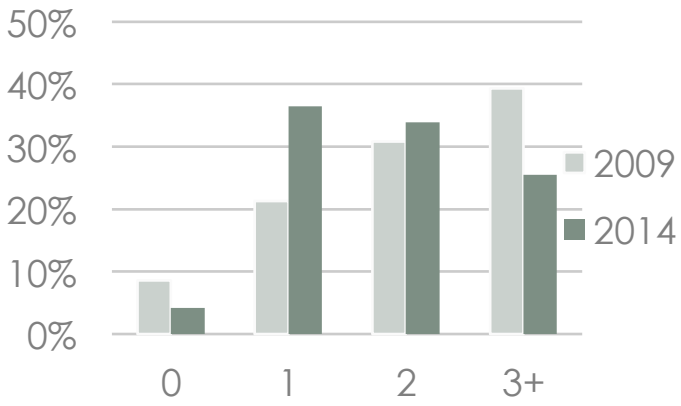




Driving Farther, and Northward-Bound. Between 2004 and 2014, the number of people commuting north increased dramatically, and so did the number of work trips lasting more than 25 minutes (from 21% to nearly 30%).

Renters are the Majority Now. Homeownership fell from 55% to 42% between 2000 and 2014.

Car Ownership, 2009 - 2014



Income matters. People living under 1.5x the poverty threshold are much more likely *not* to have their own car to get to work (22%) compared to those above that threshold (7%)

36%

Over 36% of Lillington workers are employed in education; 15% in public administration

WHAT'S IT MEAN?

Lillington has grown its non-retail sector employment rapidly, unlike most places in North Carolina and the U.S. More of these workers are headed north for their daily commute, increasing commuting pressure on these routes. Larger numbers of Hispanic populations may change how we consider outreach, while the overall workforce is aging (89% of workers were over the age of 30 in 2014, compared to only 72% in 2004); older drivers bring new transportation challenges to aging in place.

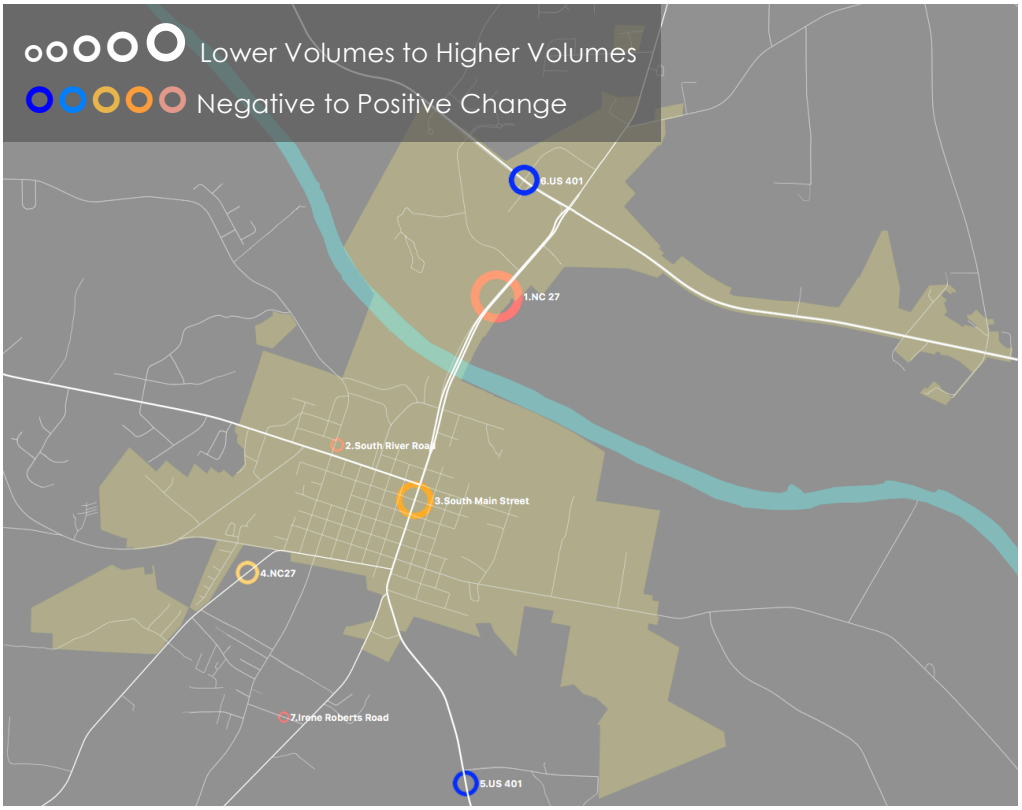
While car ownership has increased, those with access to just one car are vulnerable to breakdowns with no options available to them. Lillington's workforce has gotten more dispersed, and perhaps more transient with increasing renters entering the housing market. Lillington is much more of a job attractor now, with its daytime population accessing the town from further away. This translates into longer trips, more cars, and more traffic.

TRAFFIC VOLUMES in the Lillington area have generally remained stable or even slightly declined from 2010 to 2016 (the most recent count data available).

The figure on this page illustrates how these volumes have changed as well as the total AADT (Average Annual Daily Traffic, a traffic count that has been adjusted for seasonal and daily variations) counted by NCDOT.

All of the count locations have increased over the six-year period. The NC 210 corridor north of town has grown in traffic volumes by approximately 10%, as has traffic west of town (US 421/Front Street). On the south end of town traffic volumes have remained fairly constant with little or no growth from 2010.

Individual counts often vary 10% or more due to normal variation in in daily volumes.

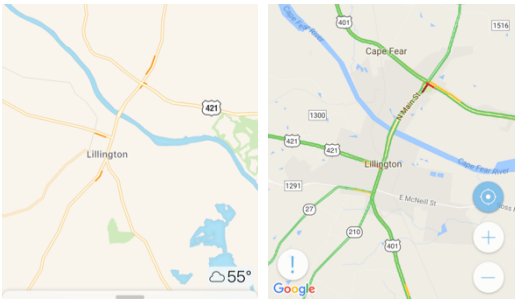


Changes in Average Annual Daily Traffic Volumes 2010 to 2016

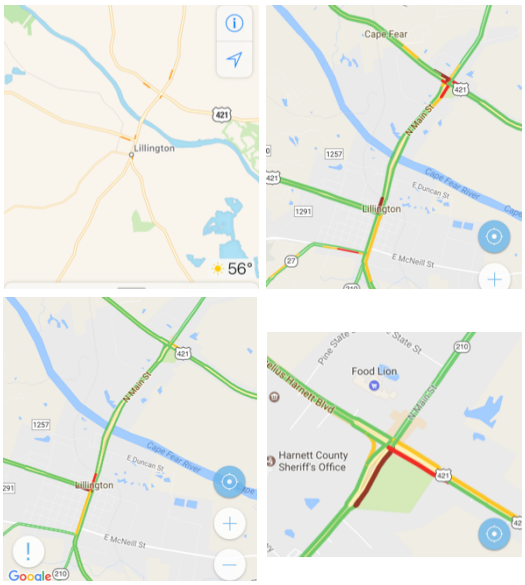
source: NCDOT Traffic Counts

Map ID	Count Location	2010	2014	2014-2010 Change
1	NC 27 / US 401 / US 421 (north of Cape Fear)	27,000	30,000	11%
2	South River Road (west of Main)	1,000	1,100	10%
3	South Main Street (near Ivey)	18,000	19,000	6%
4	NC 27 (south of West Old Road)	5,600	5,900	5%
5	US 401 (south of Lincoln McKay Drive)	6,800	6,700	1%
6	US 401 (west of N. Main Street)	9,900	10,000	1%
7	Irene Roberts Road	600	660	10%

TABLE 1. Average Annual Daily Traffic Counts, 2010 – 2016 (Irene Roberts Road is 2010-2015)



"...traffic data can be accessed on almost any major street at any time of the year..."



Screen captures of both Google Maps™ and the INRIX™ application indicate similar results for congestion in Lillington. The congestion patterns are consistent regardless of which day or time period is considered. The image at bottom-right is an enlarged view of the US 421 / NC 210 intersection, indicating the level of detail available through the INRIX application.

TO UNDERSTAND CURRENT TRAFFIC CONGESTION IN LILLINGTON, a systematic attempt was made to view peak period congestion as reported by INRIX, a company that collects traffic data from cellular devices in vehicles.

This data can be most easily accessed by simply turning on the "traffic" toggle in many of today's mapping applications, like those found on a typical smartphone. In previous years, the only way to access such data was to conduct manual counts, but those counts could only be conducted on a few roadway locations, and even then usually for less than a week at a time. With the INRIX application, traffic data can be accessed on almost any major street at any time of the year, around the clock.

The following congestion locations were identified through this approach, and verified with the Town staff.

Map ID	Congestion Location	AM	PM
1	US 401 / NC 210 (north of Cape Fear) *All four approaches have turn movement delays*	●	●
2	Front Street / US 401 (S. Main Street) *EB approach left-turn delay in AM; SB through and right-turn delays in PM*	●	●
3	W. Old Road / US 401 (S. Main St) *EB left-turn (AM) delays*	●	
4	NC 210 / US 401 (S. Main St) *EB left-turn (AM) and NB through (AM) delays*	●	

TABLE 2. Identified High Congestion Issues, 2017.

Crash data shown on this page is from all reported crashes (not all crashes are reported) from September 2011 to September 2016. The heat map at right illustrates both the severity and density/location of crashes during this period. US 401 has more volume and therefore generates more crashes, particularly at the US 401 / US 421 intersection, and along Main Street.

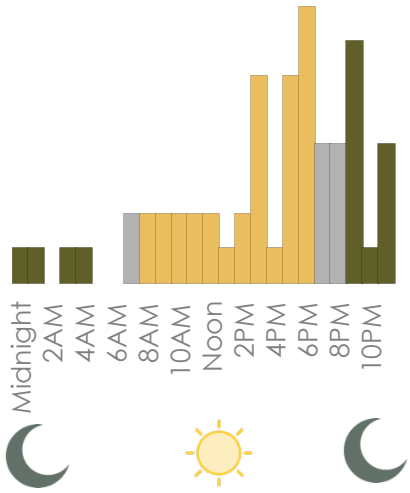
A deeper dive into the data indicates that crashes are most likely to occur in the afternoon to early evening (Table 2). The time between 3pm and 7pm is particularly hazardous for pedestrians: 36% of all pedestrians in a crash occurred during just four hours of the day (3pm to 7pm). This period is frequently associated with school age children being out of school, unfortunately.

Reported Crashes 9.2011 to 9.2016 (Five Years)

Time of Day	Fatality	Incapacitating Injury	Injury	Injury, Not Visible	No Injury
Midnight					
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
Noon					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					

TABLE 3. Crashes Reported to Lillington, 2011 to 2016 (five years; includes surrounding hinterlands). "Hotter" colors indicate more crashes.

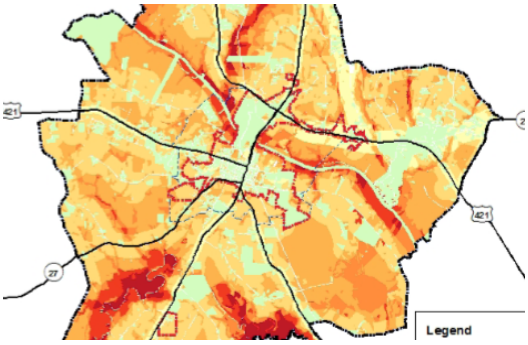
Pedestrian Injuries
(by time of day)



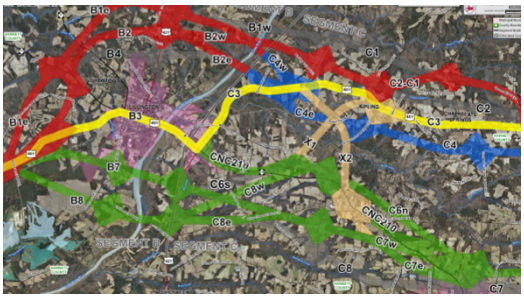
LILLINGTON HAS BEEN PROACTIVE IN GUIDING ITS FUTURE, AND THAT ACTIVITY IS ENCAPSULATED BOTH IN WHAT WE SEE IN THE TOWN TODAY AND THE PLANS, POLICIES, AND ORDINANCES THAT CONTINUE TO GUIDE ITS GROWTH. In this section, the CTP will contemplate these past actions and identify specifically how they may influence the Comprehensive Transportation Plan and its recommendations.

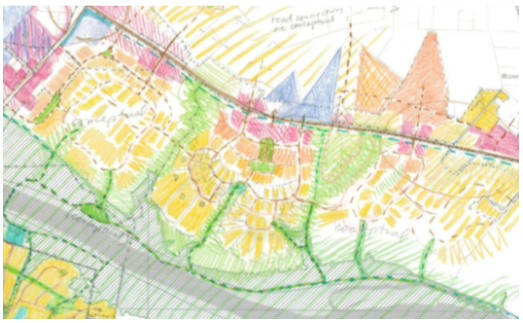
Each plan or policy will contain a short title, date of adoption / update, brief description of the overall contents, and then list the ways that it might interface with the CTP.

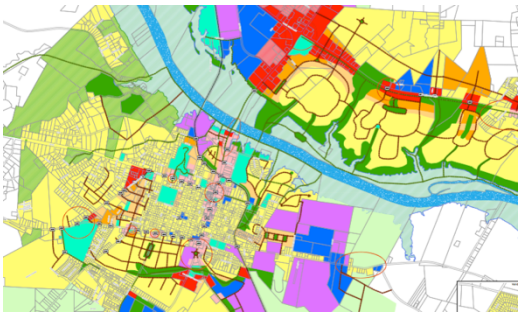
Over time, the biggest changes in our community are wrought in conjunction with private development and our public sector partners.



Top to Bottom:
Suitability Analysis
R-2609 (US 401 Bypass)
Winston Tract Concept
Future Land Use Map







Images from the Land Use Plan 2015

Town of Lillington
Land Use Plan 2015

CenterPlace, LLC / NC Dept. of Commerce Div. of Community Assistance
Bill Summers, Town Manager / Marshall Parish, Town Planner and PIO
April.2014

General

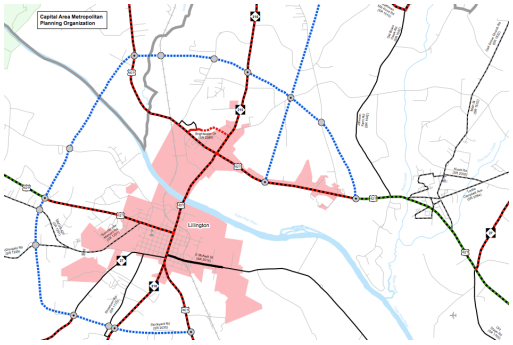
The context section discusses granularity of the older parts and newer sections of Town, and their compatibility to walking or driving. A suitability analysis emphasized areas south of downtown and along commercial corridors, particularly along Front Street. The alternatives study for a bypass (potentially) of US 401 was still being conducted at the time.

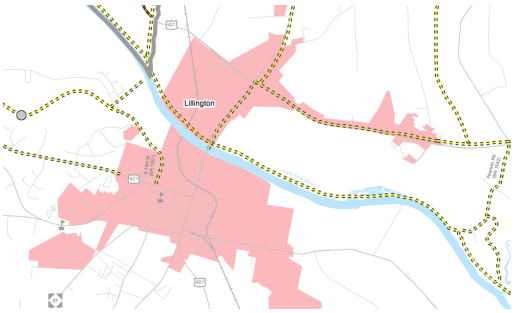
The emergence of US 421as a commercial and mixed-use boulevard is noted here, as well as the risks to long-term mobility that this dual role (accessibility and mobility) poses.

Relevant Points

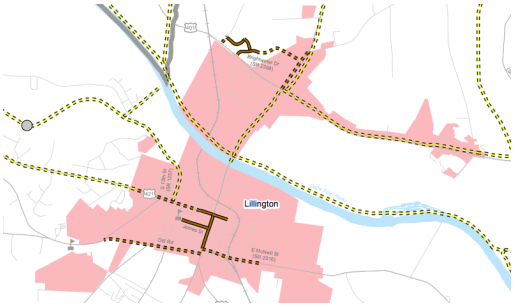
- Support extensions to the grid network
- Use complete street and context-sensitive design, and adopt supportive policies
- Emphasize connectivity and walkable patterns
- Pursue membership to CAMPO (Capital Area Metropolitan Planning Organization)
- Update the Thoroughfare Plan *(see next page)*
- Develop greenway network plan
- Retrofit Front/Main Streets; emphasize tailored cross-sections

"Lillington has become a walkable community with curb appeal. Neighborhoods, the downtown, public buildings, and recreational spots like the riverfront park are linked together by a highly functional urban form. Streets are easy to cross; sidewalks and shade trees tie it all together."





Top to Bottom:
2016 Highway Map
2016 Bicycle Map
2016 Pedestrian Map
US 401 Bypass Options



Harnett County
2016 Comprehensive Transportation Plan

Hemal Shah, Transportation Planning Branch / NCDOT
January 2017

General

The 2016 CTP was an update to the 2011 plan, and includes major updates or changes to every mode of travel: new sidewalks on E. Mitchell, Old Road, and W. Front Street are complimented by proposed trails along the riverfront and US 421, and South River Road. Express bus service and, in the longer-term, rail service is recommended to provide north-south connectivity, anticipated to be a continuing concern in the future due to growth pressures.

The following page provides information on projects sent for prioritization in 2016 for state and/or federal funding.

Relevant Points

- US 421 in Lillington is recommended to go from four lanes to two with on-street parking; other sections of US 421 are recommended to move to a four-lane facility throughout Harnett County
- Proposed sidewalks, multi-purpose trails (esp. along the riverfront), and north-south transit services and park-and-ride station south of downtown
- The Plan retains the proposed US 401 Bypass of Lillington
- New connectivity at Brightwater Drive and a new, north-south arterial terminating at US 421

"From the Wake County line to the proposed US 401 Bypass traffic is projected to increase from 10,000 vehicles per day in 2007 to 20,000vpd in 2035 compared to a capacity of 10,600vpd. Within Lillington, traffic is projected to increase from 26,000vpd in 2007 to 78,000vpd in 2035, compared to a capacity of 36,600 vpd."

US 401 Widening (R-2609)

Widen US 401 to multi-lanes from north of Fayetteville in Cumberland County to Proposed Lillington Bypass.

Status: Project did not score high enough to receive funding.

US 401 Extension (R-2609)

Construct freeway on new location from US 401 south of Lillington to US 401 north of Lillington (bypass).

Status: Project did not score high enough to receive funding.

US 421 Widening

Widen to multi-lanes and enhance corridor from US 401 in Lillington to NC 87 in Sanford.

Status: Project did not score high enough to receive funding.

NC 210 Widening

Widen NC 210 to multi-lanes with wide shoulders from NC 87 in Spring Lake (Cumberland County) to US 401 in Lillington.

Status: Project did not score high enough to receive funding.

Airport (AV-5827)

Construct hanger taxiways at HRJ-Harnett Regional Jetport. (Note: in Erwin)

Status: Project funded; construction in 2025

West Front Street Sidewalks

Construct 3,500 feet of sidewalk on each side of US 421/W. Front Street in Lillington from Lakeside Drive to 9th Street.

Status: Project funded; ROW in 2024; construction in 2026

North Main Street Sidewalks

Construct 2,500 feet of sidewalk on each side of N. Main Street from W. Cornelius Harnett Blvd (US 401) to Old Coats Rd.

Status: Project funded; ROW in 2024; construction in 2026

West Old Road Sidewalk

Construct sidewalk on the north side of West Old Rd from Old US 421 to NC 210/US 401.

Status: Project did not score high enough to receive funding.

Harnett Transit Expansion

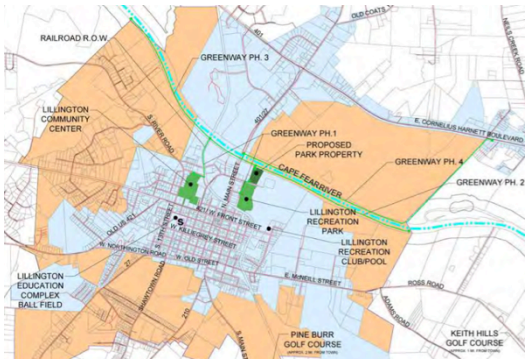
Purchase (2) 20 ft. conversion vans and (2) 20 ft. lift vans for Medicaid transportation in Harnett County for both in-county and out-county transportation.

Status: Project funded; purchase scheduled for 2026

Lillington Transportation Scoring (2016)

In adherence to state law, the NC Department of Transportation employs a scoring system to determine state and federal funding for projects. Scoring elements including congestion, safety, freight/military movement benefits, economic impact, and favorable priorities from metropolitan planning organizations and NCDOT Division offices. The position of a project can be improved with local financial contributions.

Top to Bottom:
Lanier Falls Image
Proposed East Duncan Park
Proposed Greenways



Images from the Comprehensive Parks Master Plan 2013 – 2033

Town of Lillington
Comprehensive Parks Master Plan 2013 – 2033

McGill Associates / Bill Summers, Town Manager / Theresa Thompson, Planning & Zoning Director / William Baker, Parks and Recreation Director
2013

General

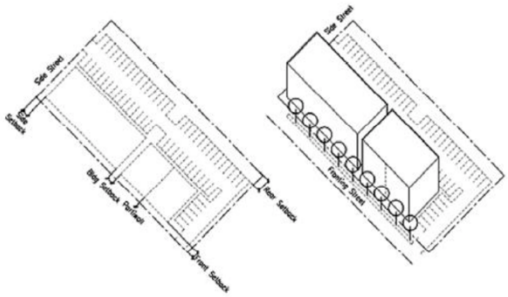
The Plan identifies locations of both parks and greenways, in part based on two workshops and community meetings. The need for more walking trails was noted at the third community meeting and by 100% of survey respondents. Typical park and greenway facilities were included in descriptions.

A menu of funding and land acquisition techniques was also included in this Plan.

Relevant Points

- Recommendations for bike lanes, greenways and more walkable communities included in this Plan
- Need for a Town Greenway System identified
- Expansion of trails associated with Lillington Park was identified as a top-tier priority; other, longer-term priorities include a downtown greenway trail and other, connectivity trails (locations were not specified)

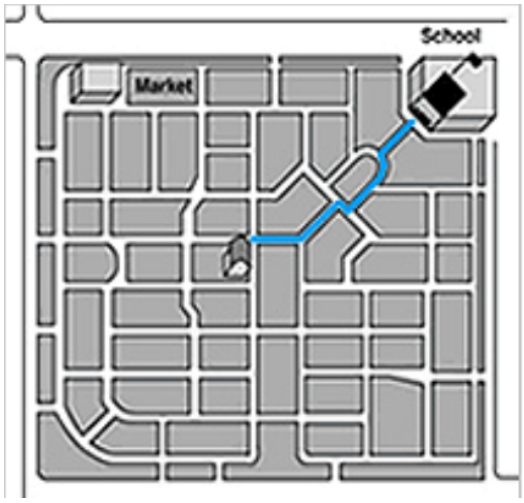
"A future Greenway system could connect several destinations within the Town including the existing Town Park, future park locations, Downtown, and residential areas. It is recommended to pave approximately 6.5 miles of new Greenway trail by 2033."



Town of Lillington
Unified Development Ordinance (UDO) Update 2016

Stewart Consulting, Chad Sary, 2015

Top to Bottom:
Proper Parking Location and Building/Street Orientation; Example of Good Street Connectivity



A Town's control over its future is determined by the laws, ordinances, and regulations adopted by both Town and State (although federal policies can wield important influence). The Lillington Comprehensive Transportation Plan, Land Use / Comprehensive Plan, and other plans create opportunities for the Town to consider what works and what can change to achieve goals. The UDO represents the regulations that private (and public) participants in the development process have to respect.

General

Although not strictly speaking a plan, the UDO represents much of the implementation force of overarching planning documents adopted by the Town (see figure below).

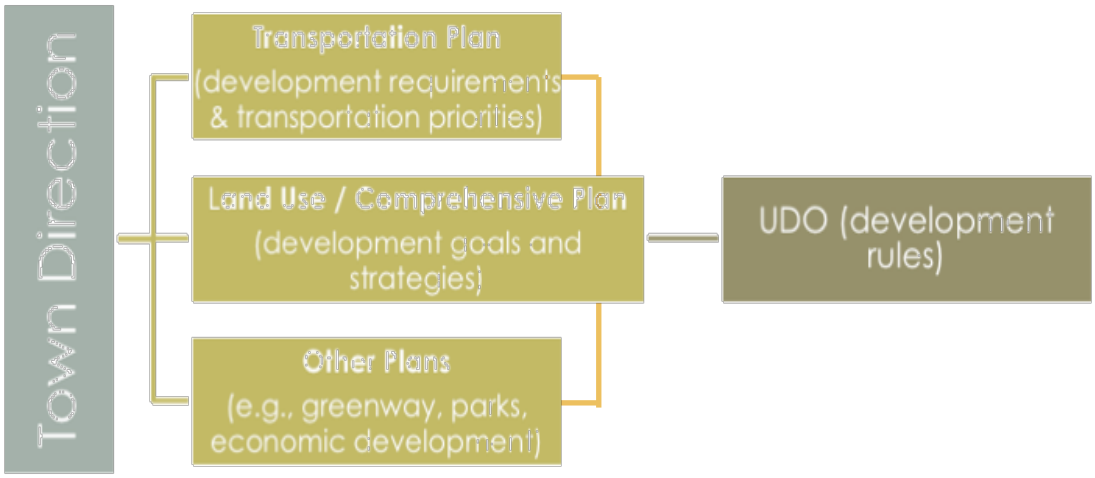
Much of the 2016 update was devoted to refining and formalizing development review processes; updating treatment of flood-prone areas; treatment of non-conforming uses; and creating more rigor in definitions and terms. The UDO is now comprehensive, dealing with topics like solar farms, parking / building orientation, street connectivity, and other contemporary topics.

Relevant Points

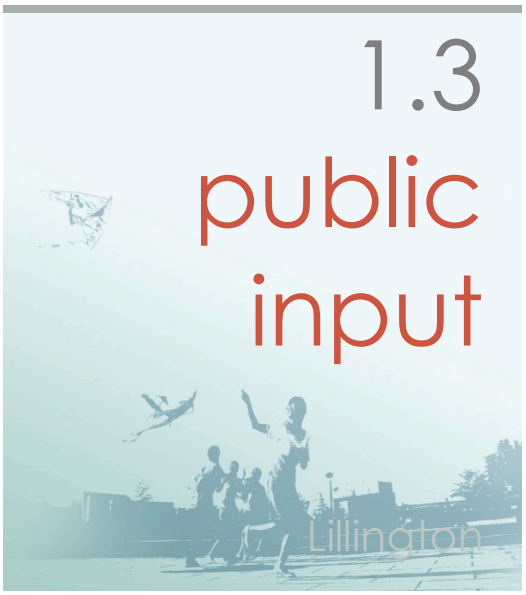
- Change of use or major expansion triggers sidewalk requirements (Art. 8.02.1)

Other UDO Notes:

- Good restrictions on parking location and building orientation to the street (promotes walking)
- Notes on connectivity requirements (pedestrian ways, adjacent parking areas, and streets)
- TIA (Transportation Impact Assessment) requirements
- Some key missing elements: access management / driveway design, requirements for greenways

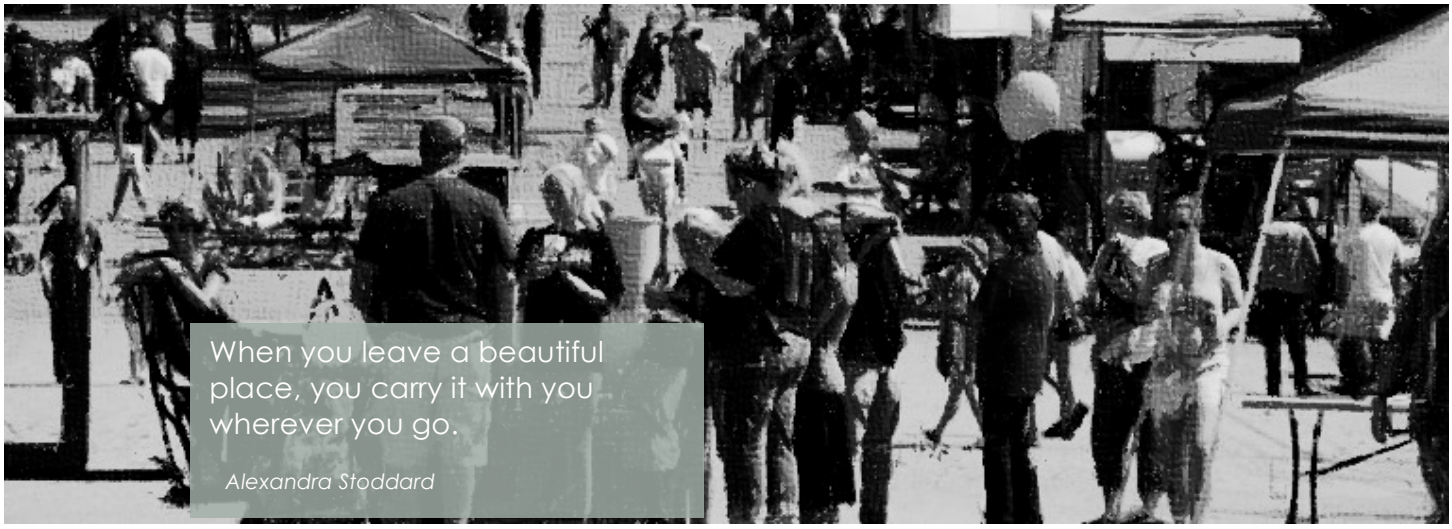


1.3 public input



THE PEOPLE OF LILLINGTON HAVE COME HERE BECAUSE IT IS A PLACE THAT THEY CAN LIVE IN A LIFESTYLE THAT IS COMFORTABLE AND FAMILIAR TO THEM. Lillington's residents have to go to school, shop, and journey to work or their friends, so having convenient, safe ways of traveling is important to keeping the town working. In this section, the CTP provides an overview of public comments received from workshops (one at the Christmas parade and another at a local ice cream shop where free cones were given away in return for responses to questions).

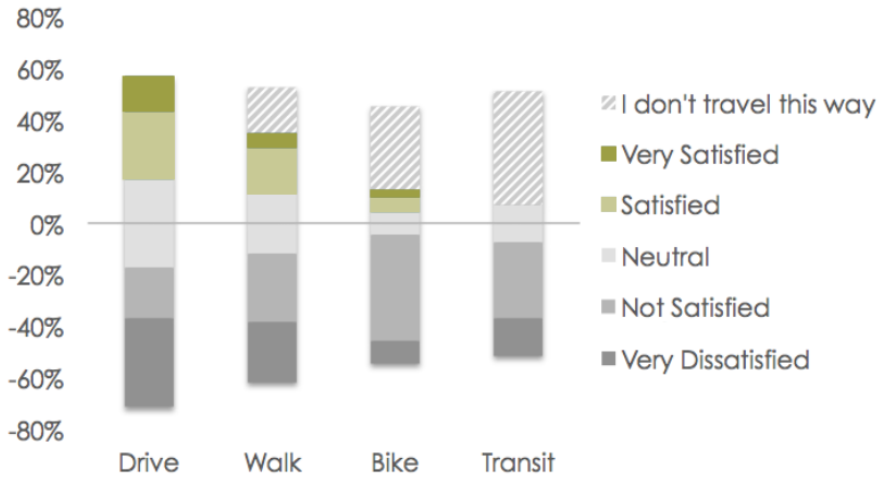
If you want to know a place, you have to ask the people that live and work in it to tell you what it is like to live, work, and go home.



Town of Lillington
Issues Survey

Overview of Survey

As part of the outreach for the Lillington Comprehensive Transportation Plan, a digital and paper-format survey was conducted. Consulting staff attended the Christmas festival to help raise awareness of the project and completed several surveys on-site, but the total number of survey respondents was 35, less than 5% of the number of households in Lillington. About 7 out of 10 respondents were aged 26 to 50 years. Some of the results of that survey are shown on this page, but the relatively small sample size needs to be kept in mind when contemplating the representativeness of the findings.



"How Satisfied are You with Driving, Walking, Biking, and Public Transportation in Lillington?"

Key Points from Survey

- Since nearly everyone has to leave the Town of Lillington to arrive to work, it isn't surprising that only one of the 35 survey respondents did not use a car to commute (that person works from home).
- Nearly 40% of respondents said that they were satisfied with driving conditions in Lillington.
- About one-quarter of all respondents said that they bike or walk regularly, mostly for their health. Those who don't stated that distance and concerns about safety were whey they did not walk or ride more often.

"...Remove the drop below 35 in town, or enforce it. You pick."
- survey respondent

MORE ENGAGEMENT RESULTS

What project are you most likely to support?

Intersection or Signal Timing Improvements	20.22%
Widen Existing Roads	19.10%
Construct Greenways/Multi-Use Paths Away from Roads	15.73%
Build More Sidewalks	14.61%
Construct New Roadways	12.36%
Create Better Public Transportation Options	7.87%
Create On-Road Bicycle Lanes	6.74%
More Street Connections	3.37%

97%

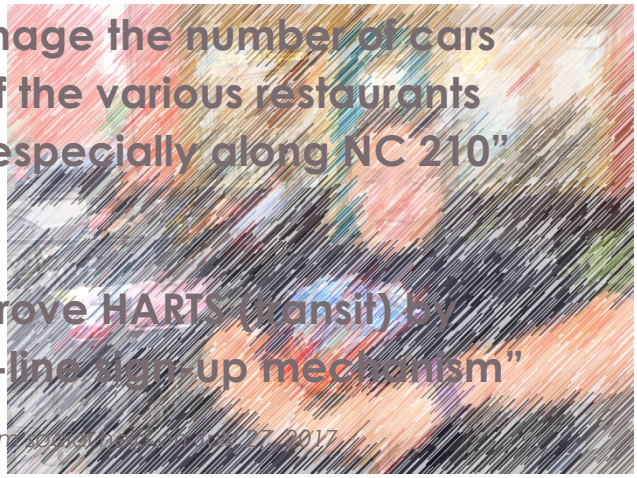
of the people that responded to the survey who work said that they use a car to do so.

"Need to manage the number of cars coming out of the various restaurants and stores... especially along NC 210"

- survey respondent

"Need to improve HARTS (transit) by having an on-line sign-up mechanism"

- participant at ice cream social on [illegible] 27 2017



24% WALK REGULARLY

WHY?

health	42%
save money	21%
environment	21%
school	10%

WHY NOT?

2%	something else
16%	no / bad sidewalks
16%	not safe
57%	too far

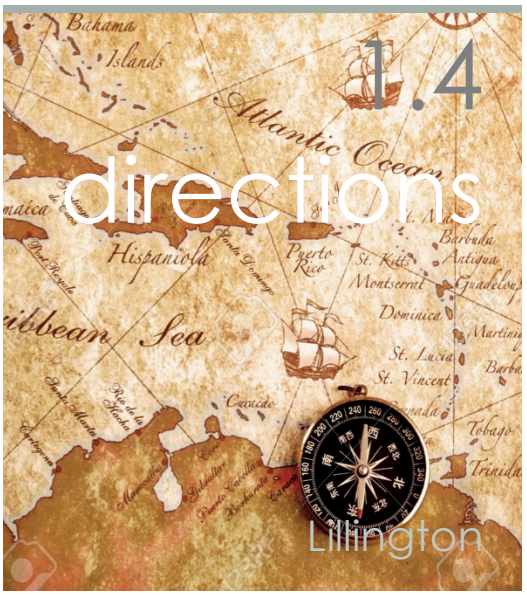
27% BIKE REGULARLY

WHY?

health	40%
save money	20%
environment	25%
school	15%

WHY NOT?

15%	something else
26%	no trails / bike lanes
31%	not safe
26%	too far



THE RESULT OF CONSIDERING THE FIELD OBSERVATIONS AND PUBLIC ENGAGEMENT WERE USED TO PRODUCE DIRECTIONS FOR THE TRANSPORTATION FUTURE OF LILLINGTON. Each of the "direction" statements, below, helps to shape the ultimate recommendations in the subsequent chapter.

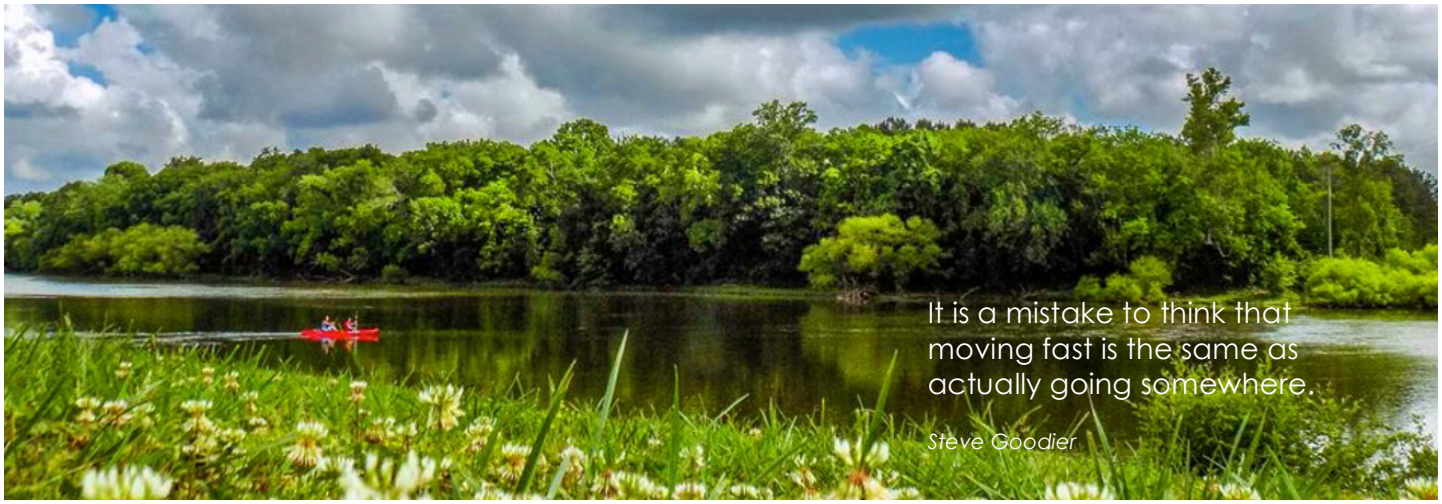
Each directional statement embraces one or more key themes to guide the final recommendations.

- Mobility: Moving people more efficiently and reliably
- Access: Creating more ways to distribute people and deliver goods and services
- Safety: Making travel less hazardous and more reliable to serve day-to-day needs
- Support: Transportation should support community goals for development and character

Top-Left: New sidewalk being constructed along South Main Street in 2015

Bottom: Cape Fear River

(source: Cape Fear River Adventures, 2015)



Access to the North is the Future

More people are driving to the job market that spreads rom Raleigh and Wake County. Workers rely heavily on NC 210 and US 401, creating future congestion concerns as people move to the Lillington area to seek cheap housing.

Keeping in Character

The Main Street of Lillington is the confluence of two US and two NC Highways. The conflict of these two roles – Main Street and Regional Arterial – are felt most keenly at Front Street and nearby blocks.

A Singular Crossing

With only one crossing of the Cape Fear River close by, continued traffic pressures will mount to a level that exceeds the roadway capacity by 2035. Delays and congestion are already evident in the heart of the Town now.

Connectivity is King

Leveraging private resources to extend roadways and the grid system is the best chance for Lillington to resolve traffic problems in the near term. A railroad, a river, existing / developed properties, and even topography challenge some connections.

Land Use Drives Congestion

Although much traffic emanates from outside town, the way that the town develops will determine how "walkable" it becomes and how the transportation system distributes auto traffic as well.

Walking & Biking are Important Here

People young and old want to be in a place where they feel like they can walk to places – and that includes workers. Economics, health, and transportation come together in the form of greenways, improved sidewalks, and bike-friendly roadways.

The grid pattern of the original town is evident, and breaks created by the rail line (East Ivey Street, for example), creeks, and the Cape Fear River.

Lillington Comprehensive Transportation Plan

Chapter 2: Recommendations & Concepts

LILLINGTON North Carolina

inside

Ways of improving transportation in Lillington should come from its people and its conditions.

While the first part outlined important background conditions and policies, this chapter takes that information and builds on it to create a better future through recommendations for infrastructure, policies, and programs.

The introduction that follows addresses those issues head-on, and the subsequent sections discuss roadway concerns and recommendations followed by multimodal (biking, walking, and public transportation options) proposals. Finally, this report is completed by a discussion of possible changes to adopted plans and policies to create continuous improvement for transportation options as well as suggested programs for the Town to consider to help improve its transportation future.

Everything changes, some more slowly than others.

"Would you tell me, please, which way I ought to go from here?"

"That depends a good deal on where you want to get to."

"I don't much care where –"

"Then it doesn't matter which way you go."

Lewis Carroll, Alice in Wonderland

State Funding for secondary roadways has substantially declined, with funding for this "tier" of roadways small relative to mileage in the overall system.

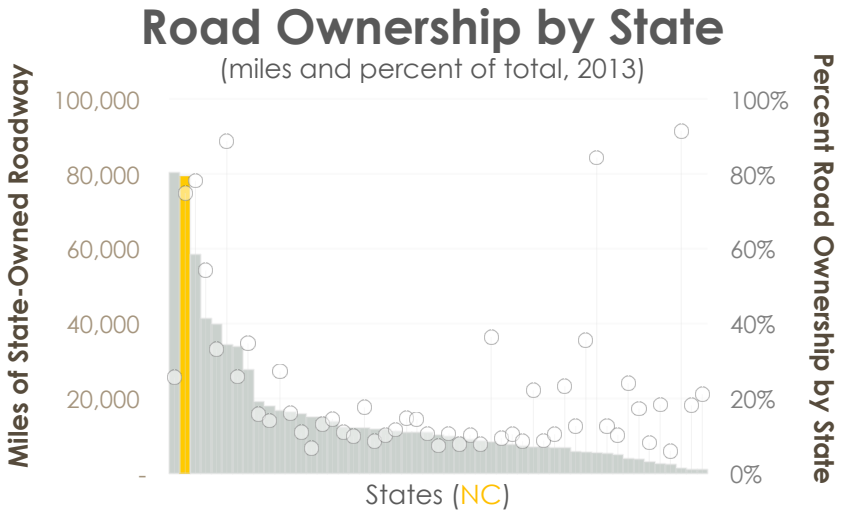
The prioritization of transportation projects has become more quantitative and performance-driven since the advent of the Surface Transportation Initiative (STI). This makes it possible to understand which projects could fare well under the new system.

The economics of transportation benefits has moved from adding capacity to creating a more complete street – attracting younger workers, creating memorable places, and supporting land use are now front-and-center.

Technology has continued to force change. Parking and peer-to-peer transportation services like Uber are transforming how we think about travel.

Some things don't change: private sector participation, good land development/design practices, and safety continue to be important issues today.

PERHAPS MORE THAN IN ANY OTHER STATE, NORTH CAROLINA MANAGES TRANSPORTATION OUTCOMES. While local governments, including counties in the last few years, are permitted and encouraged to finance transportation improvements, a long history of state funding and control over the roadway network have left a lasting imprint on how transportation projects are planned, designed, and financed to construction. Below is a chart that illustrates how North Carolina carries the twin burden of having (almost) the largest number of road miles, and (almost) the highest number under state management.

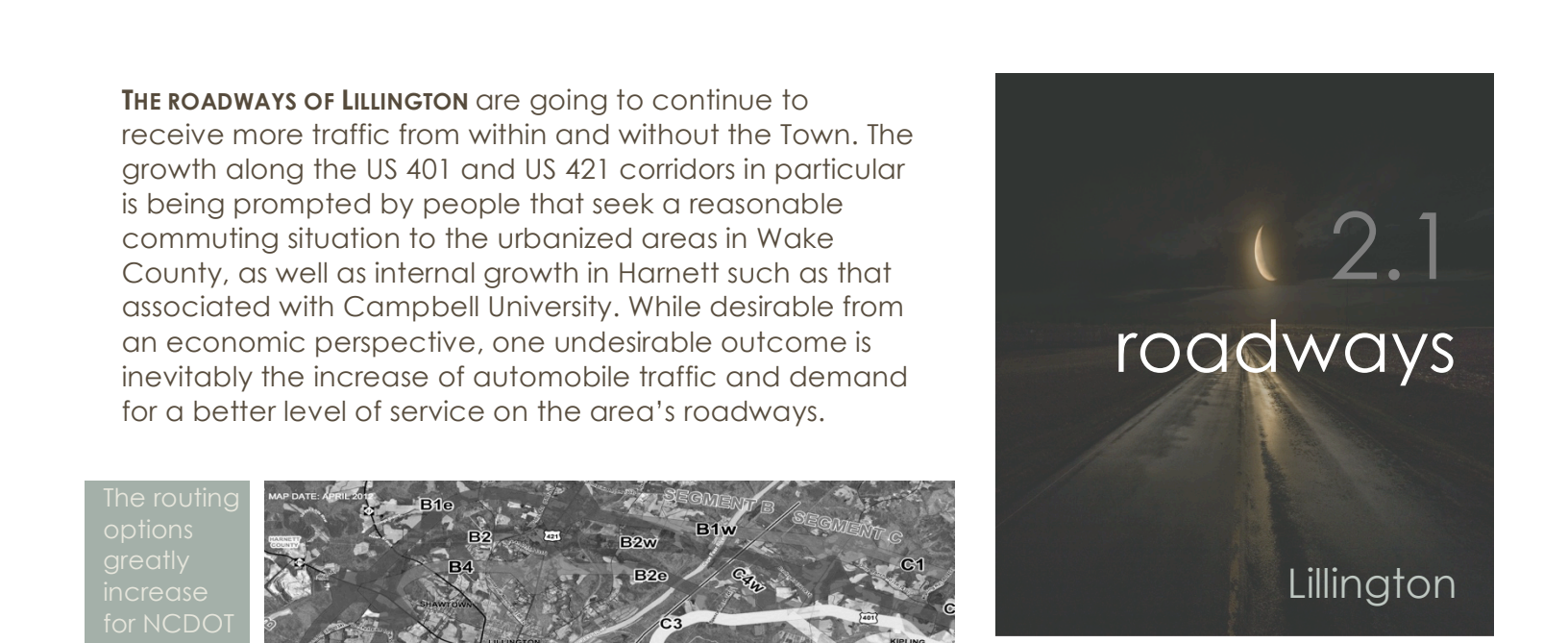


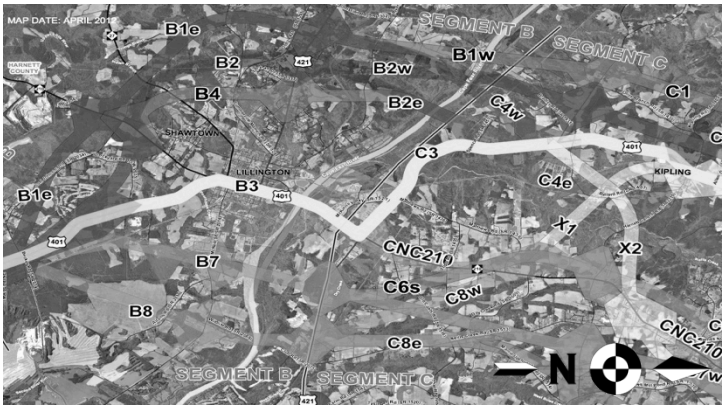
While other states assume that county and municipal governments will share substantial portions, often the majority, of the road building and maintenance financing, North Carolina's local governments and taxing systems are usually poorly positioned to take on a major portion of this responsibility.

At left are some of the other key elements that influence decision-making and the development of the recommendations that follow.

CONTEXT OF RECOMMENDATIONS

THE ROADWAYS OF LILLINGTON are going to continue to receive more traffic from within and without the Town. The growth along the US 401 and US 421 corridors in particular is being prompted by people that seek a reasonable commuting situation to the urbanized areas in Wake County, as well as internal growth in Harnett such as that associated with Campbell University. While desirable from an economic perspective, one undesirable outcome is inevitably the increase of automobile traffic and demand for a better level of service on the area's roadways.





The routing options greatly increase for NCDOT Project R-2609 (US 401) near Lillington.

Source: NCDOT, 2012

The approach that this report takes to the challenge of financing transportation objectives is to develop a listing of projects that emphasize a range of capitalization, from a major new bypass to small-scale intersection improvements that the Town or private sector developers can undertake without State aid.

The map on the following page indicates the scope of these improvements and their locations. Preeminent among these recommendations is the development of segmented sections of the Lillington / US 401 Bypass project with the final alignment and design pending a more detailed, corridor-specific study that is currently on hold by NCDOT. The doubling of forecasted traffic (2010 Harnett County Transportation Plan, NCDOT) cannot be accommodated through downtown Lillington.

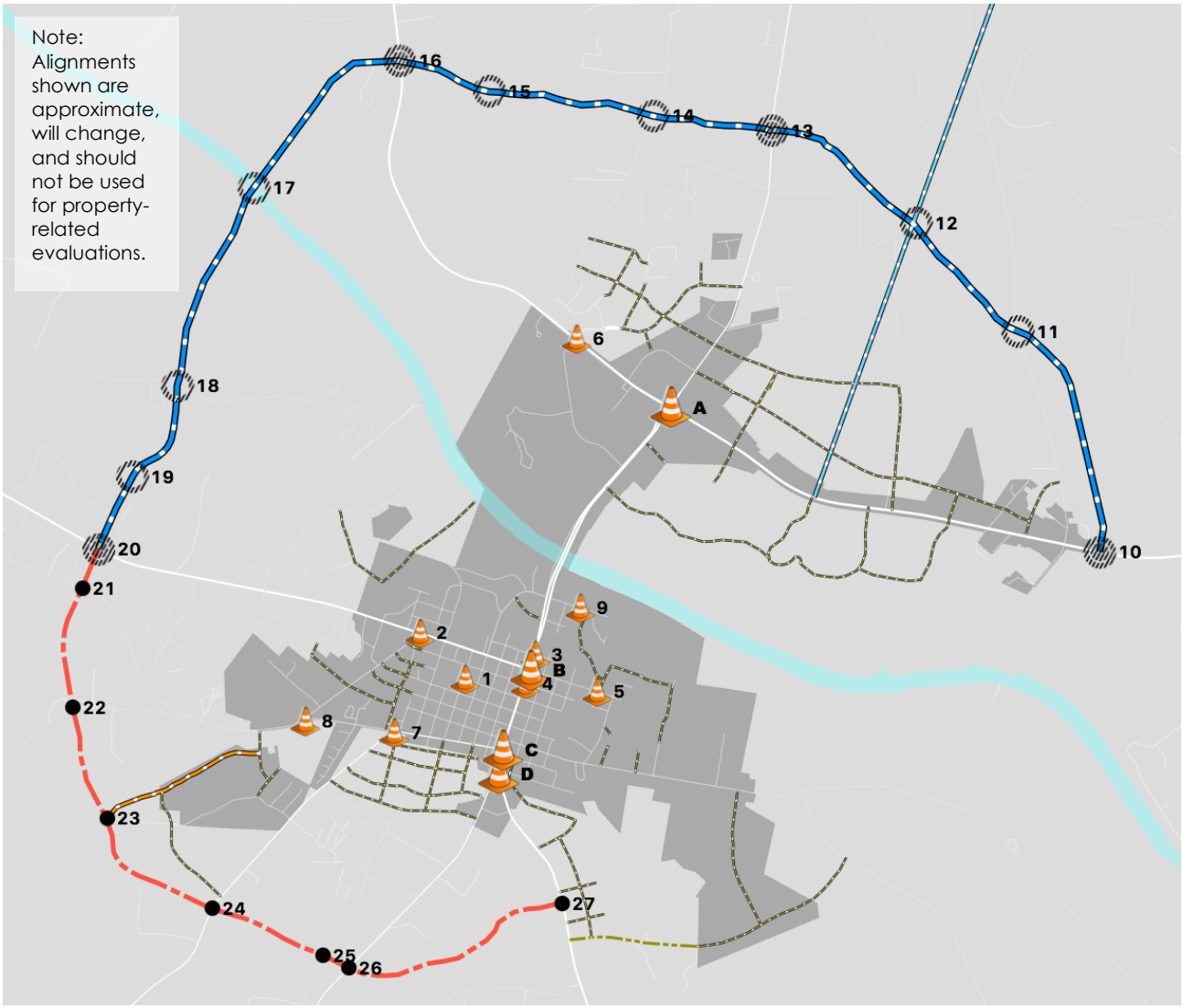
The Southern Lillington Bypass is proposed to be a Boulevard, with limited and controlled accessibility to ensure that the capacity of the road stays high while still allowing development to occur at major cross-streets. In rare circumstances, NCDOT may allow a developer that is willing to purchase access rights and make improvements to create a new street accessing a boulevard, allowing some recoupment of the initial capital outlays.

CHALLENGES

- **Financing major improvements is limited to highly competitive, state-level formulas.**
- **Traffic increases around Lillington are growing faster than roadway capacity.**
- **Adding typical capacity improvements is likely to diminish the small-town charm and vitality that Lillington wants to protect.**

OPPORTUNITIES

- **There is a recognition that a third crossing of the Cape Fear is important.**
- **North Carolina has adopted more flexible design standards to keep people moving and respect local economic objectives.**
- **There are smaller improvements at intersections that can yield disproportionate benefits.**
- **Connectivity improvements can be added as private development occurs.**



Roadway & Intersection Recommendations

Roadway & Intersection Improvements

- Lillington Bypass (Freeway on New Location)
- Lillington Bypass (Boulevard on New Location)
- Proposed Rural Parkway
- Collector Street (New Location)
- Collector Street (Widen Existing)
- Proposed Grade Separation
- Proposed Interchange
- Proposed Intersection
- Walking Improvement to Existing Intersection
- Driving Improvement to Existing Intersection

Collector Streets are generally two-lane streets that provide connectivity, not speed, and are enhanced with sidewalks and, particularly in downtown areas, street trees and wider (8') walking space adjacent to buildings. Typically, these streets are constructed through private development or redevelopment actions.

The roadway recommendations below include a range of project types and estimated costs (all costs are dependent on final design studies). The four intersection improvements specifically address current congestion levels; minor collectors would most be constructed by private development actions. With them solidified in this plan, the Town can accurately direct developers on what to construct over time.

Roadway Segment Description	From	To	Total Cost w/Contingency
North Lillington Connector (A)-Freeway	New Location		**$57,805,169**
North Lillington Connector (B)-Freeway	New Location		**$48,536,870**
North Lillington Connector (C)-Freeway	New Location		**$52,966,632**
South Lillington Connector-Boulevard	New Location		**$26,436,228**
South Lillington Connector-Boulevard	New Location		**$23,739,109**
New Location – Rural Parkway	New Location		**$20,978,381**
Intersection Improvement	US 401	NC 210	**$1,737,955**
Intersection Improvement	US 401	Front Street	**$579,318**
Intersection Improvement & Widening	US 401	W. Old Road	**$2,459,993**
Intersection Improvement	US 401	NC 210	**$1,391,653**
All Minor Collectors*	New Location		**$131,540,986**
New Location-Major Collector	New Location		**$7,964,658**
Lincoln McKay Drive-Collector - Improve	New Location		**$2,544,268**

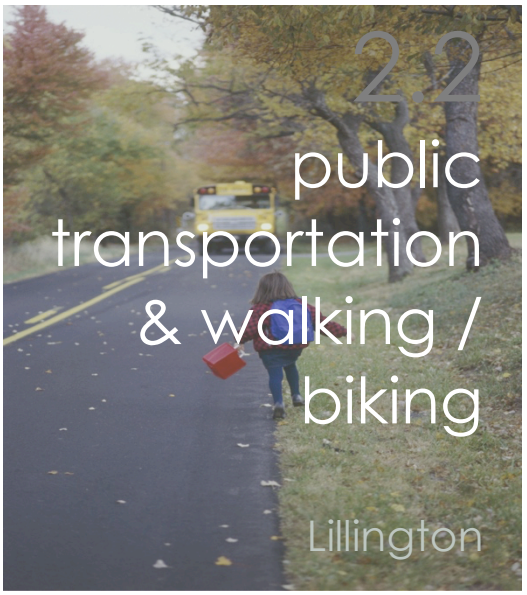
**Note: constructed through private development actions over time.*

Location	Improvement
West James at South 11th Street	High-Visibility Crosswalks (4)
West Front at Old US 421	Redesign Intersection
South Main Street at Harnett St	Add Pedestrian Bulb-Outs (2)
South Main Street at Ivy St	Add Pedestrian Bulb-Outs (2)
East Front Street at Greenway	Add Mid-Block Crossing
US 401 at McKinney Parkway	High-Visibility Crosswalks (4)
W. Northington Street @ NC 27	Redesign Intersection
Old US 421 at W. Northington St	Redesign Intersection
East Duncan at Future Greenway	High-Visibility Crosswalk

TRANSIT SERVICES in Lillington are commensurate with those found in most rural parts of North Carolina. Distant from dense urban centers and possessing low-density housing scattered on (mostly) single-family homesites, traditional public transportation would find a challenging marketplace for the foreseeable future. In these environments, public and human service transportation providers create invaluable resources for mobility restricted populations. The Harnett County Rural Transportation System (HARTS) provides some capacity for people residing in Harnett County to schedule trips with 48 hours' advance notification. This door-to-door service charges unique fares based on the origins and destinations cited during the reservation call. Although focused on health and human service customers, anyone can schedule a trip with HARTS.

Improvements to HARTS, such as creating an on-line (Internet) reservation system and creating capacity for Lillington's residents through additional financial support were voiced by the public.

WALKING OR BICYCLING around Lillington, particularly the core downtown, quiet neighborhoods, and a couple of commercial locations can be very enjoyable. However, facilities for longer-distance travel by bicycle are non-existent, and the limited sidewalks in town cover only the immediate downtown along Front and Main Streets with scattered length of sidewalk along sidestreets and newer areas, particularly those north of the Cape Fear River. Maintenance levels for some sidewalks are becoming important, although wider sidewalk plazas in a few places surpass the standard five-foot concrete paths. Greenways (10' to 12' walkways that don't necessarily follow beside a road) are limited to a couple of one-block sidepaths adjacent to the Lillington Ballfields along South 1st and East Duncan Streets. The map on the next page shows the locations of sidewalks in town.



CHALLENGES

- **Modest population totals and densities cannot support a traditional fixed-route bus service, at least for now.**
- **The current HARTS system requires too much advance notification to be attractive to many "choice" riders that have other options.**
- **A lack of infrastructure makes building out a complete bike and walk network daunting.**

OPPORTUNITIES

- **New peer-to-peer (PTP) private services like Uber and Lyft are helping more people in lower-density areas share trips.**
- **Great destinations, like the river, downtown, and parks, abound and are easily reached on foot or by bike.**
- **As densities along the US 401 corridor increase, an express bus route will make increasingly more sense to reach Raleigh or the RTP campus with a few stops in-between at key destinations.**

Sidewalks and Greenways (Existing)

- Sidewalk on one side
- Sidewalk on two sides
- Sidepath (asphalt)

Bike & Walk Destinations

- Downtown
- School
- Multifamily Residence
- Park

Where to Walk in Lillington

The following pages map out the recommendations for the physical improvements for the Lillington Transportation Plan in the areas of bicycle and pedestrian improvements.

Walking and Biking Recommendations

BICYCLE AND PEDESTRIAN IMPROVEMENTS

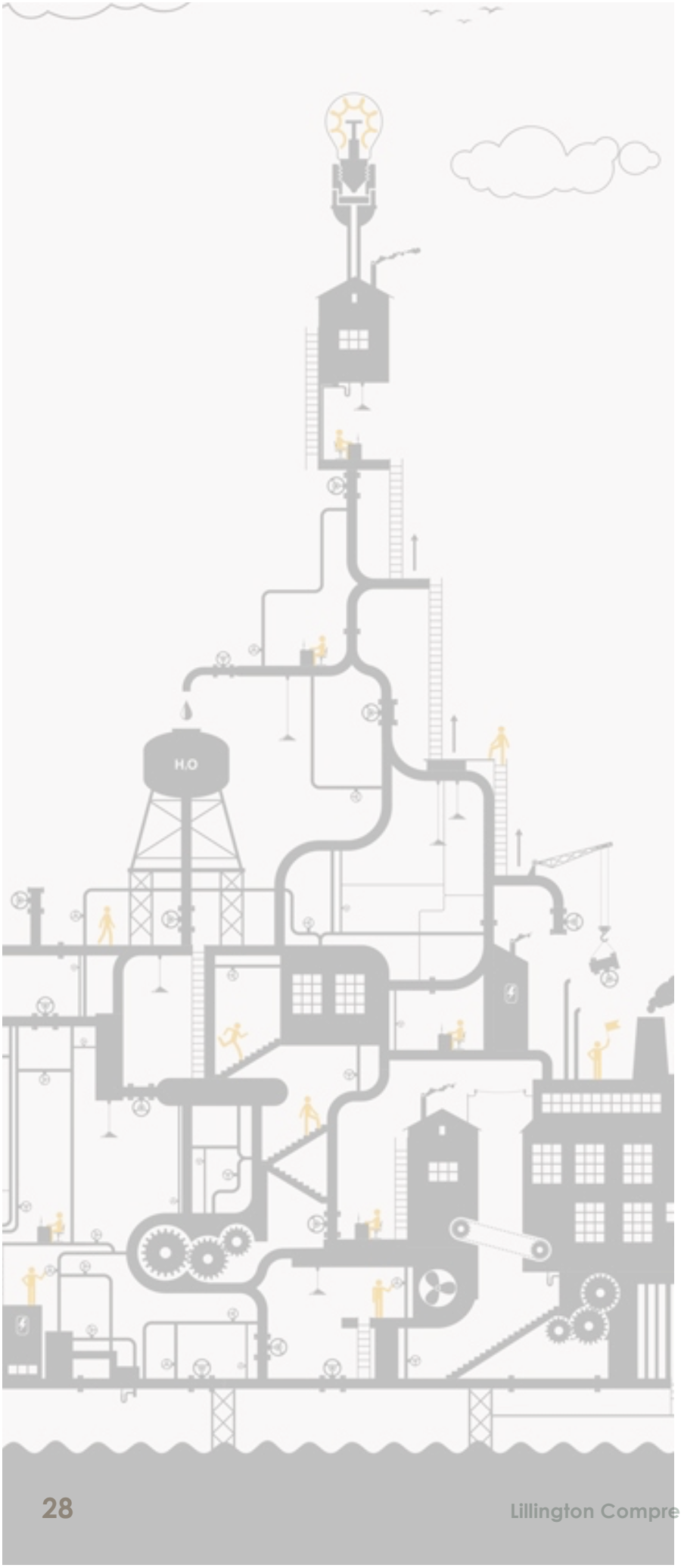
- Proposed Sidewalk
- Proposed Greenway
- Park Loop
- Proposed Bicycle Lane
- Proposed Sidepath
- Shared Lane Markings ("Sharrows")

The **bicycle and pedestrian recommendations** take advantage of Lillington's strategic riverfront position, and builds on what we heard from people about wanting to walk and be more active.

Map ID	Name	Improvement	Length (feet)	Estimated Cost
1	South 8th Street	Sharrow Marking	479	$1,224
2	West James Street	Bike Lane	1634	$105,875
3	West Front Street (US 421)	Sidewalk (1 side)	2372	$388,278
4	Old US 421	Sidewalk (1 side)	4800	$776,556
5	North Main Street	Sidewalk (1 side)	5961	$965,448
6	West James Street	Streetscape	466	$142,135
7	South 13th Street	Sidewalk (1 side)	479	$73,458
8	South 8th Street	Bike Lane	1109	$49,555
9	South 8th Street	Sharrow Marking	472	$1,224
10	West McNeil Street	Sidewalk (1 side)	1916	$314,820
11	East Ivey Street	Sidewalk (1 side)	236	$41,976
12	South 1st Street	Sidewalk (1 side)	1017	$167,904
13	South Main Street (Edgar to Harnett)	Sidewalk (1 side)	1932	$314,820
14	East Edgar Street	Sidewalk (1 side)	499	$83,952
15	West Lofton Street	Sidewalk (1 side)	1142	$188,892
16	Riverwalk South A	New Location (12')	1627	$234,716
17	Lillington Park Greenway	New Location (12')	922	$131,292
18	Greenway 3A	New Location (12')	1916	$280,948
19	Greenway 3B	New Location (12')	1335	$196,996
20	Riverwalk North A	New Location (12')	1155	$169,012
21	Riverwalk North B	New Location (12')	4311	$626,492
22	South 8th Street	Sharrow Marking, Sidewalk (1 side)	889	$81,942
23	Community Greenway Loop	Greenway (10')	3376	$486,164
24	Community Greenway South	Greenway (10')	984	$140,620
25	Community Greenway East	Greenway (10')	377	$56,668
26	Riverwalk South B	Greenway (12')	1680	$243,228
27	Greenway Front to River	Greenway (12')	3225	$467,100
28	McKinney Parkway Trail	Sidepath	4980	$718,956
29	College Greenway	Sidepath	14774	$2,128,999
30	East Duncan Street	Sidepath	1106	$158,576
31	East Front Street	Sidewalk (1 side)	1332	$215,972
32	West Northington Street	Sidewalk (1 side)	2434	$398,772
33	West Old Road (NC 27)	Sidewalk (1 side)	3612	$587,664
34	East McNeil Street	Sidewalk (1 side)	5453	$884,052

There are two explicit **transit recommendations**, although some of the policy recommendations on the next two pages will help create supportive developments for future transit use.

Transit Express Route – As Lillington and the US 401 grows, so will traffic and the marketability of an express route running north-south. The time frame is long-term (8-10 years)	*$1.35million startup cost $46,000 annual operating cost (some costs offset with fed. $$)*
Use Peer-to-Peer Sharing – Instead of planning with past technology, consider subsidizing peer-to-peer ridesharing. This is already being done in small and large communities in the U.S. These services offer door-to-door service, low prices, and rapid service – but they don't serve the poor or mobility challenged yet.	*Costs depend on subsidy – Altamonte Springs, FL (pop: 42,000) subsidizes 20%-25% of each ride; early indications are it's very successful.*



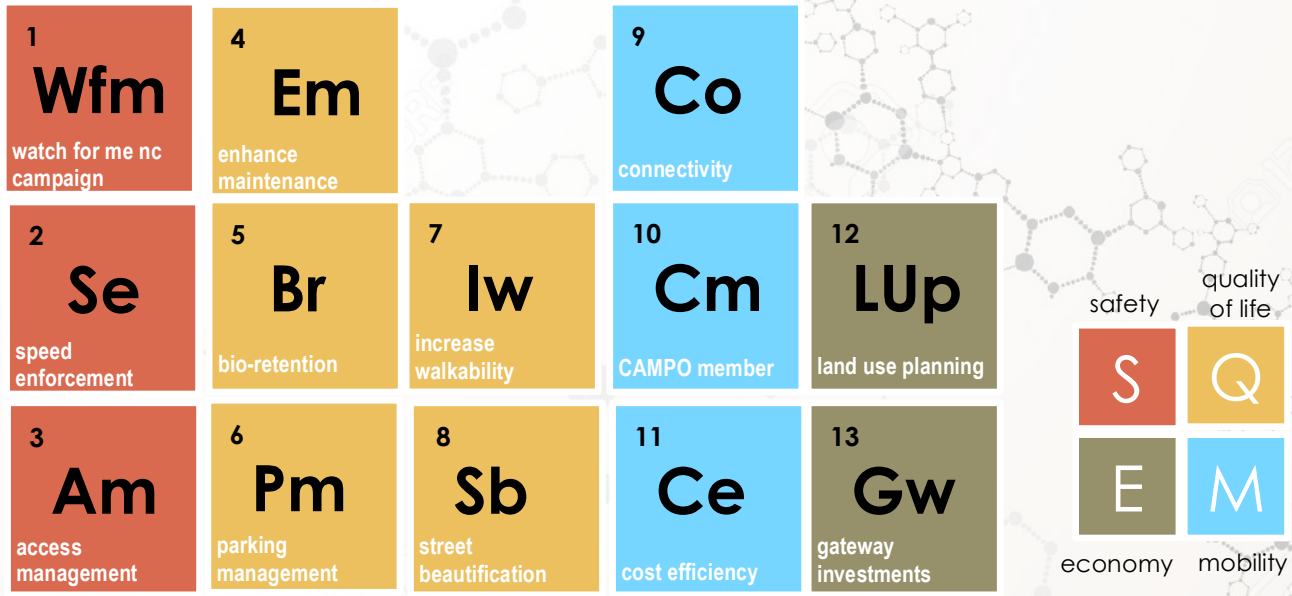
THE POLICIES USED BY LILLINGTON will ultimately have the largest influence over how the Town develops and how well its transportation system supports the needs of travelers, businesses, and residents.

The presentation of the policy and program recommendations on the following page are initially illustrative, organized like the elemental periodic table taught to grade school students. The organization is arranged according to Safety, Mobility, Economic Development, and Quality of Life (aesthetics, property value protection, social cohesion, etc) represented by four colors. Since transportation is not an end unto itself but rather serves activities and allows access to places and goods, the 2015 Lillington Land Use Plan is also used as an organization principle.

Where the goals of the Lillington Land Use Plan touch upon transportation elements they are noted in the discussion that accompanies the table.

Comprehensive Transportation Plan

Policy and Program Strategies



Number	Description	Land Use Plan Goals
1	*Join the Watch for Me NC campaign to promote schoolchildren safety*	1E, 4B, 4D, 5E, 6A
2	*Enforce speeds more often and increase penalties*	8K
3	*Go beyond state requirements for driveway spacing and access points*	4F
4	*Dedicate funds each year to the maintenance of sidewalks and street repairs*	4I, 8F
5	*Seize opportunities to capture stormwater in street rights-of-way*	7C
6	*Use technology, sharing, and parking maximums to use parking more wisely*	6D, 6F, 7F
7	*Sidewalks, greenways, building design, and lighting to encourage more walking*	2D, 4D, 5E, 6A, 7B, 7H
8	*Street trees, wayfinding signs, seating, and public art encourage walking and biking*	2D, 3A, 3C, 5F, 6C
9	*Interconnected streets support small-scale development, walking, and biking*	4D, 4F, 7H, 8B, 8J, 8M
10	*CAMPO membership maximizes transportation funding options*	3E, 4A
11	*Work with developers and municipal partners, including financing the completion of the NEPA study for US 401 Bypass*	4F, 4G, 4H, 5D, 7D, 8G, 8L
12	*Promote diverse, proximate land uses to reduce driving trips and miles traveled*	2B, 4D, 6B, 7A, 7B, 7I, 7K, 8J
13	*Visible and attractive gateways caution drivers as they enter town and downtown*	3A, 3C, 5F, 8A

Many thanks are due to the people of Lillington, without whom this plan wouldn't be necessary.

Resources Used

Page 1: U.S. Bureau of the Census

Page 2: and Left: Duke University, H. Lee Waters Film Collection Movies of Local People, 1936-1942.

Pages 3-4: U.S. Bureau of the Census and U.S. Business Census

Page 5: NCDOT Annual Average Daily Traffic Counts, 2010 and 2014

Page 6: INRIX data application

Page 7: Murphy, Brian, NCDOT reported crash database, 2011 to 2016. Received via email on October 10, 2016.

Page 16: Cape Fear image by Cape Fear River Adventures

Page 17 Map: Google Maps (enhanced)

Page 19: Road Ownership by State, FHWA Highway Statistics 2014, Table HM-10, October 2015.

Page 25: Illustration by Zanetta Illustrations / JJ Zanetta.

Throughout: icons by MadebyOliver and Freepik

LILLINGTON
North Carolina

Comprehensive Transportation Plan