

Northwoods Safe Routes to School Action Plan

JULY 2016



Prepared for Northwoods Elementary
Prepared by Alta Planning + Design
with the Highway Safety Research Center





Acknowledgements

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Table of Contents

CHAPTER 1: INTRODUCTION

Project Background 1-1

Planning Process1-2

What is Safe Routes to School 1-3

Benefits of Walking and Bicycling to School1-4

CHAPTER 2: EXISTING CONDITIONS

Existing Plans, Programs, & Policies 2-1

School Layout & Circulation.....2-5

Existing Conditions Map2-7

Parent Survey/Student Tally Overall Results2-9

CHAPTER 3: INFRASTRUCTURE RECOMMENDATIONS

Infrastructure Glossary..... 3-1

Priority Improvements3-8

Recommendations Map3-9

CHAPTER 4: NON-INFRASTRUCTURE RECOMMENDATIONS

Programs Toolkit 4-1

 Education 4-2

 Encouragement..... 4-5

 Enforcement..... 4-10

 Evaluation 4-12

Suggested Route Maps 4-15

Park & Walk Recommendations 4-15

CHAPTER 5: NEXT STEPS

Grant Funded Implementation 5-1

How to Use this Plan.....5-2

Priority Project Cutsheet5-3

Priority Program Worksheet 5-6



The Northwoods Greenway neighborhood connection near Northwoods Elementary



CHAPTER 1:

INTRODUCTION

Chapter Contents:

Project Background

The Planning Process

What is Safe Routes to School?

Benefits of Walking and Bicycling to School

Project Background

There's growing interest in encouraging walking and bicycling to school in Wake County and across North Carolina for the health, social, and academic benefits. Currently, only 4 percent of NC students walk or bike to school at least once per week, and 58 percent of K-5 students are not getting the physical activity they need. At the same time, in Wake County, pedestrian injuries are the third leading cause of death for children under 18 years.

Safe Routes to School (SRTS) programs are an evidence-based approach to address safety concerns and provide more opportunities for children to walk and bike to school or at school. The Wake County Public School System (WCPSS) joined with the University of North Carolina Highway Safety Research Center (UNC-HSRC) and other community partners to work with five schools to create SRTS programs that will serve as models for other WCPSS schools. UNC-HSRC is also working with municipalities in Wake County to examine policies that can improve safety for child pedestrians and disseminate lessons learned from the five partner schools. The project is funded by a grant provided to UNC-HSRC by the John Rex Endowment.

Overview

As one of five partner schools in the Safe Routes Wake County project, Northwoods Elementary received staff support, guidance and funding to develop a comprehensive Safe Routes to School Plan and implement the priority recommendations identified in the plan. The effort also involves working with WCPSS and the Town of Cary to examine policies and practices that can improve safety for child pedestrians.

This report outlines infrastructure and programmatic recommendations that will support the Northwoods Elementary School and Town of Cary Safe Routes to School Program.



Planning Process

This plan was developed between November 2015 and April 2016. The planning process began with a project kickoff meeting with the Steering Committee which included parents, interested residents, and staff from Northwoods, Town of Cary, and WCPSS. During that meeting, participants developed a project vision and discussed issues around walking and bicycling to school. The consultant team conducted an existing conditions analysis that included a walk audit through the school and surrounding area. Public engagement was multi-pronged with a project website, the infusion of SRTS parent surveys and student tallies, and a public input event.

A Draft Plan was developed incorporating input from the Steering Committee, public, and existing conditions analysis. The Final Plan will be used as a guiding document for Northwoods Elementary, the school system, the surrounding neighborhood, and the Town of Cary.



The kick-off meeting gave the steering committee an opportunity to share their experiences of walking in and around Northwoods Elementary.



Staff, parents, students and neighbors shared input on the draft action plan recommendations during Northwoods International Night.





What is Safe Routes to School?

SRTS refers to a variety of multi-disciplinary programs aimed at both **increasing the number of students walking and bicycling to school and reducing the number of vehicle trips** associated with school travel. Programs, activities and projects improve traffic safety and air quality around school areas and address childhood obesity and public health issues through education, encouragement, increased law enforcement, and engineering. SRTS efforts are led by partnerships among municipalities, school districts, community members, parent volunteers and law enforcement agencies.

The "Six E's" Approach

Comprehensive SRTS programs use five complementary strategies, referred to as the "Five E's." For this Plan, a sixth 'E', Equity, is considered an integral component of each of the five E's.

- » **Engineering** - Design, implementation and maintenance of infrastructure that improves safety along school commute routes.
- » **Enforcement** - Strategies to deter the unsafe behavior of drivers, bicyclists and pedestrians, and encourage all road users to obey traffic laws and share the road.
- » **Education** - Outreach and lessons that teach students and parents traffic safety skills and the benefits of active modes.
- » **Encouragement** - Events, clubs, and activities that encourage more walking, bicycling, or carpooling through fun activities and incentives.
- » **Evaluation** - Surveys and hand tallies track progress toward program goals, assess successes and identify ways to improve programs.
- » **Equity** - An assessment of the distribution of impacts (benefits and costs) of bicycling and walking programs, policies, and infrastructure improvements, and whether that distribution is appropriate.





Benefits of Walking and Bicycling to School

SRTS programs directly benefit students, parents and teachers by creating a safer travel environment near schools and by reducing motor vehicle congestion at school drop-off and pick-up zones. Students that choose to bike or walk to school are rewarded with the responsibility and independence that comes from being in charge of the way they travel, and learn at an early age that biking and walking can be safe, enjoyable and good for the environment.

Safe Routes to Schools programs offer ancillary benefits to neighborhoods by helping to slow traffic and by providing infrastructure improvements that facilitate biking and walking for everyone. Identifying and improving routes for children to safely walk and bicycle to school is also one of the most cost-effective means of reducing weekday morning traffic congestion and can help reduce auto-related pollution.

In addition to safety and traffic improvements, a SRTS program helps integrate physical activity into the everyday routine of school children. Health concerns related to sedentary lifestyles have become the focus of statewide and national efforts to reduce health risks associated with being overweight. Children who bike or walk to school have an overall higher activity level than those who are driven to school, even though the journey to school makes only a small contribution to activity levels. Active kids are healthy kids. Walking or bicycling to school is an easy way to make sure that children get daily physical activity.

SRTS benefits children:

- Increased physical fitness and cardiovascular health
- Increased ability to focus on school
- A sense of independence and confidence about their transportation and their neighborhood

SRTS benefits neighborhoods:

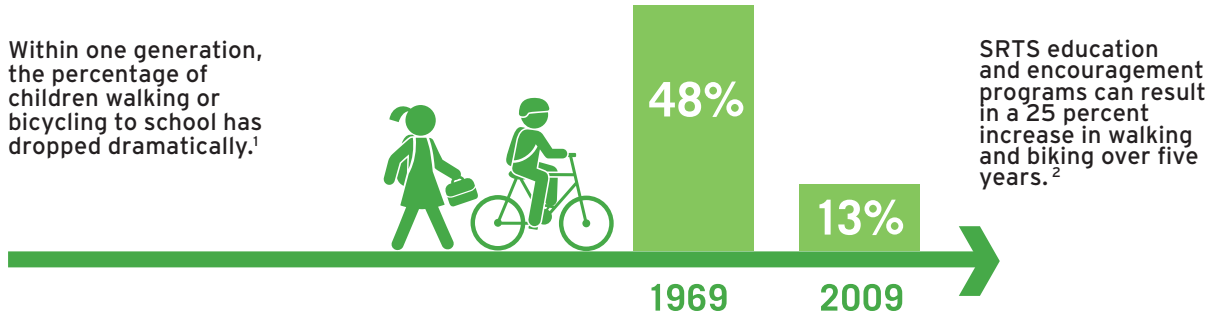
- Improved air quality as fewer children are driven to school
- Decreased crashes and congestion as fewer children are driven to school
- More community involvement as parents, teachers and neighbors get involved and put “eyes on the street”

SRTS benefits schools:

- Fewer discipline problems because children arrive “ready to learn”
- Fewer private cars arriving to drop off and pick up children
- Opportunities to integrate walking, bicycling and transportation topics into curriculum (e.g. “Walk & Bike Across America”)
- Increased efficiency and safety during drop off and pick up times



NATIONAL TRENDS



HEALTH



ENVIRONMENT



Sources:

1- McDonald, Noreen, Austin Brown, Lauren Marchetti, and Margo Pedrosa. "U.S. School Travel 2009: An Assessment of Trends." *American Journal of Preventive Medicine* (August 2011).

2- McDonald, N. Steiner, R., Lee, C., Rhoulac Smith, T., Zhu, X., and Y. Yang. (2014). *Impact of the Safe Routes to School Program on Walking and Bicycling*. *Journal of the American Planning Association*.

3- Centers for Disease Control and Prevention. www.cdc.gov/healthyyouth/physicalactivity/guidelines.htm.

4- Giles Cortie, B., et al. *Encouraging Walking for Transport and Physical Activity in Children*. *Sports Medicine* (2009).

5- U.S. Energy Information Administration. (2014). *State-Level Energy-Related Carbon Dioxide Emissions, 20000-2011*. U.S. Department of Energy, Washington, DC. <http://www.eia.gov/environment/emissions/state/analysis/pdf/stateanalysis.pdf>



*Neighborhood roadway crossing
along the Northwoods Greenway
near Northwoods Elementary*



CHAPTER 2:

EXISTING CONDITIONS

Chapter Contents:

*Existing Plans,
Programs, & Policies*

*School Layout &
Circulation*

*Parent Survey
& Student Tally
Overall Results*

This chapter provides a summary of the existing conditions, in terms of programs, policies and adopted plans already in place that relate to transportation to and from school, existing facilities surrounding the school campus, traffic patterns for arrival and dismissal, and enrollment boundaries. Results from the parent surveys and student travel tallies are included at the end of this chapter.

Existing Plans, Programs, & Policies

Policy Audit

The project team reviewed relevant planning, environmental, land use, and engineering information and materials in order to develop this SRTS Action Plan. Interviews were conducted with the following agencies regarding policies, regulations and ordinances that promote pedestrian- and bicycle-friendly development:

- » Wake County Public School System (WCPSS)
- » Town of Cary (Planning Department, Transportation and Facilities Department, and Police Department)
- » Capital Area Metropolitan Planning Organization (CAMPO)
- » North Carolina Department of Transportation (NCDOT)

The information gathered was used to inform the recommendations in this plan and will continue to be used as UNC-HSRC provides advice and support as these agencies consider how to improve their policies and practices.

Adopted Plans

TOWN OF CARY

Previously authored planning documents, policies, and reports specific to the schools or multi-modal transportation were reviewed to ensure that the SRTS recommendations aligned with those in other planning efforts. The following Town of Cary plans were reviewed:

- » 2007 Cary Comprehensive Pedestrian Plan
- » 2008 Comprehensive Transportation Plan (CTP)
- » 2013 - 2016 Draft Cary Community Plan (Imagine Cary)
- » 2012 Town of Cary Parks, Recreation and Cultural Resources Master Plan



WCPSS STRATEGIC PLAN: VISION 2020

In the spring of 2014, several hundred people gathered on a Friday night to talk about the future of public education in Wake County. That discussion was followed by an online survey that attracted 11,000 participants, a town hall meeting of more than 750 people and months of debate among parents, teachers, students, community leaders and educators. The result was a strategic plan built around a core belief that **every student deserves to be challenged in meaningful learning each day.**

SRTS efforts and benefits described in chapter one can be tied to several objectives and strategies developed in the strategic Plan, such as:

- » **Learning and Teaching.** *Progressive Learning Environments:* Design progressive learning environments that strategically integrate digital and physical resources, and emerging technologies, to support innovative learning regardless of location or age of facility.
- » **Achievement.** *Increase Educational Opportunities:* Increase learning opportunities for low-income students, students of color, English Language Learners, and students with disabilities equity.
- » **Learning and Teaching.** *Dynamic Learning Experiences:* Provide learning experiences that are active, engaging, and responsive to unique student needs, honor failure as a part of learning, and adaptive to the ever-changing world.
- » **Community Engagement.** *Parent Engagement:* Strengthen parent engagement and related programs by offering them in multiple languages, venues and channels.



WCPSS's Strategic Plan Vision 2020 was the result of an extensive public outreach process. The full plan and outreach materials can be found here: www.wcpss.net



Existing SRTS Programs

NORTHWOODS ELEMENTARY SRTS EFFORTS

Thanks to an active PTA and support from Principal Wahl and her staff, Northwoods Elementary have already implemented several SRTS programs over the past several years. The following list summarizes their efforts:

- » International Walk to School Day Celebrations since 2011.
- » National Bike to school Day Celebrations since 2013.
- » Monthly “Walking Wednesdays” that start from Godbold Park.
- » Finalist in State Farm’s *Neighborhood Assist Program* to construct a wheelchair and bicycle facility that would connect the school to the Northwoods Greenway Trail.
- » A designated SRTS Coordinator position on the Northwoods PTA board.



Northwoods students enjoy celebrating International Walk to School Day (top photo) and National Bike to School Day (bottom photo).





NORTH CAROLINA ACTIVE ROUTES TO SCHOOL PROGRAM

Active Routes to School is a North Carolina Safe Routes to School program, supported by the NC Division of Public Health (Community and Clinical Connections for Prevention and Health Branch) and the NC Department of Transportation (Bicycle and Pedestrian Division). The Active Routes to School project is federally funded until June of 2019, and it focuses on:

- » **Encouraging the provision of a safe, appealing environment for walking and biking,**
- » **Improving the quality of our children’s lives, and**
- » **Supporting state and national health objectives by increasing physical activity, reducing traffic, fuel consumption, and air pollution in the vicinity of schools.**

The ten Active Routes to School regional coordinators* work with partners in communities across their regions to:

**The Region 5 Active Routes to School coordinator is a resource for Northwoods.*

- 1 Increase awareness about the importance of SRTS (for example, promoting and encouraging Walk to School and Bike to School days).
- 2 Increase the number of programs that encourage walking and biking to or at school (for example, monthly walking programs).
- 3 Increase the number of trainings on how to implement SRTS (for example, the Let’s Go NC! Pedestrian and Bicycle Safety Skills Program for Healthy, Active Children).
- 4 Increase the number of policies that support walking and biking to and at school (such as early arrival and departure for walkers and bikers).
- 5 Identify safety features near schools such as sidewalks, crosswalks, and other infrastructure that may need constructing or improvement.
- 6 Identify opportunities for shared/open use of facilities for public physical activity and play, and promotion of Complete Streets policies to improve access to physical activity across the state.





School Layout and Circulation

School Site Description

Northwoods Elementary School is located northwest of downtown Cary in a residential setting. The school has two entrances off of Chapel Hill Road, a two-lane thoroughfare that carries about 15,000 vehicles per day. The posted speed limit on Chapel Hill Road is 35 mph.

The Northwoods Greenway Trail, a spur off of the Black Creek Greenway Trail, runs to the east of the school site from Chapel Hill Road to Robert V. Godbold Park. Additional pedestrian access is provided on the east side of the school via a staircase connected to the Northwoods Greenway Trail and to Boundary Street. A fenced, mulch path from the school entrance to the stairway keeps students from darting in and out of the carpool line.

Crossing Guard

A crossing guard directs traffic at the intersection of Chapel Hill Road and the main school entrance in the morning and afternoon. Many students cross Chapel Hill Road here to access the neighborhoods on the southern side. The crossing guard is often directing traffic at this uncontrolled intersection.



The Town of Cary Police Department provides a crossing guard to help students cross Chapel Hill Rd at the school entrance.



Walkers that are headed towards Boundary St use the fenced mulch path to avoid conflicting with the carpool lines.



Loading Zones

The school entrance from Chapel Hill Road on the east side of campus serves as the primary student drop-off and pick-up location. Some parents were observed dropping-off and picking-up students on Boundary Street and Johnson Street. In the afternoon, a teacher directs a group of students down the mulch path to the crosswalk on Boundary Street.

Bus pick-up and drop-off is directly in front of the school. The buses enter the school at the main entrance on the east side of campus and exit out of a one-way driveway onto Chapel Hill Road on the west side of campus.

Pedestrian traffic flows from multiple access points. The majority of students come from Boundary Street and use the stairway to the mulch path. There are also some students that cross Chapel Hill Road and either walk eastward or use the stairway connection to Taylors Pond Dr.

Figure 2.1: School Circulation





Northwoods Elementary

Existing Conditions Map

This map displays existing pedestrian related infrastructure that provides pedestrian access to Northwoods Elementary School for children and adults. Existing sidewalks, shared use paths, pavement markings and signage are shown on the map, with additional detail below.

Map Key

- Marked High Visibility Crosswalk
- Marked Crosswalk
- Accessible Curb Ramps
- School Signage
- Pedestrian Signage
- Rectangular Rapid Flashing Beacon

Existing Infrastructure

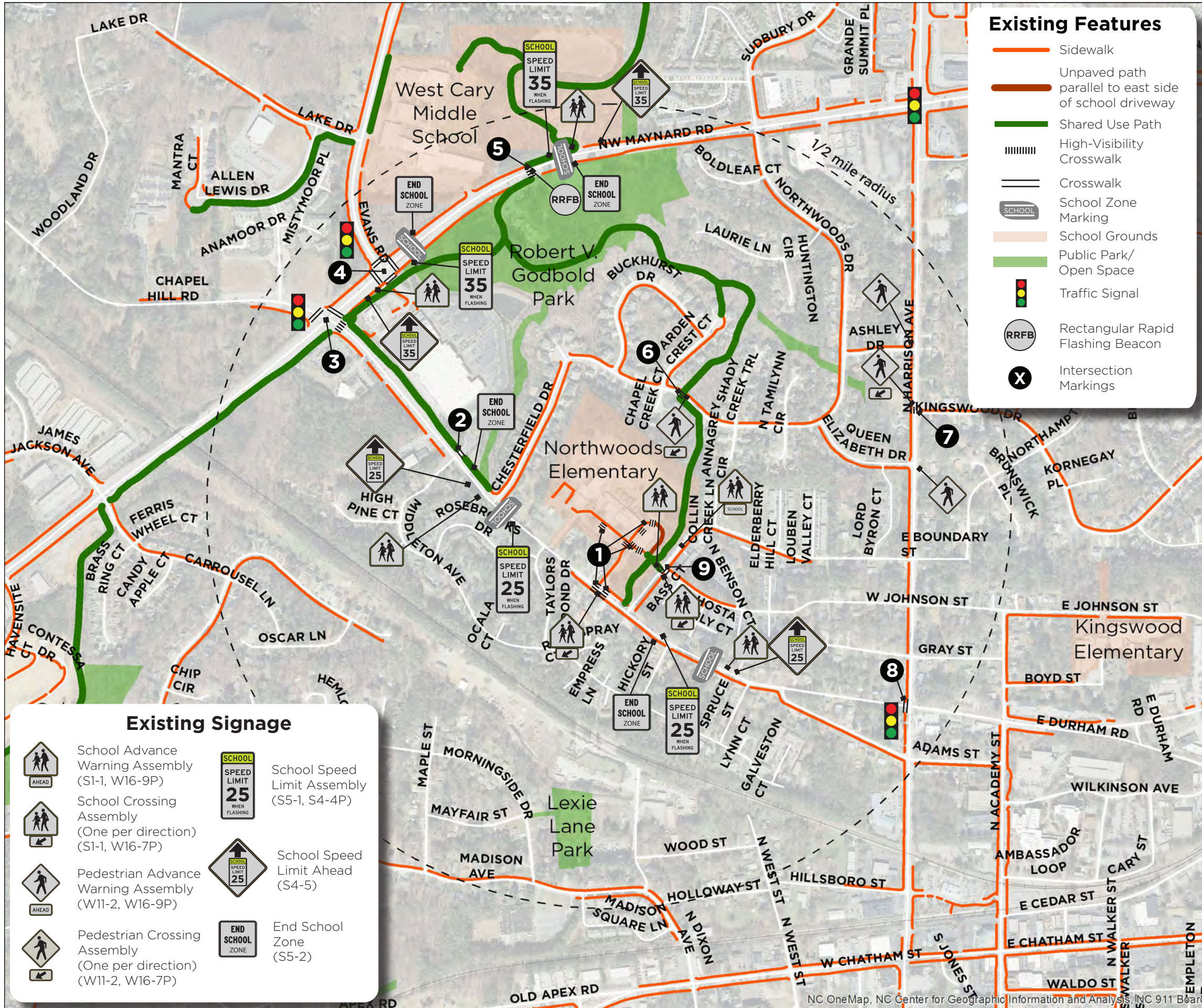
- 1** Existing: Several high visibility crosswalks through the school parking lot as well as two crossing Chapel Road on both sides of driveway. Curb ramps are present at each crossing and school signage exists at the Chapel Hill Road crosswalks.
- 2** Existing: Marked crosswalk and curb ramps across shopping center driveway.
- 3** Existing: Marked crosswalks and pedestrian activated signals are provided at three out of four sides of intersection. Curb ramps exist at all four corners.
- 4** Existing: Marked crosswalks, curb ramps and pedestrian activated signals are provided at all four sides/corners of intersection.
- 5** Existing: High visibility crosswalk, curb ramps and Rectangular Rapid Flashing Beacon infrastructure for Maynard Road crossing.
- 6** Existing: High visibility crosswalk, curb ramps and pedestrian signage for greenway crossing of Northwoods Drive.
- 7** Existing: High visibility crosswalk, curb ramps and pedestrian signage for Harrison Road crossing.
- 8** Existing: Marked crosswalk, curb ramps and pedestrian activated signal provided for the crossing on the west side of the intersection.
- 9** Existing: Marked crosswalk and curb ramps are provided for east and south side of intersection. Curb ramp incomplete on southeast corner. School signage provided for W. Boundary Street crossing.

Existing Features

- Sidewalk
- Unpaved path parallel to east side of school driveway
- Shared Use Path
- High-Visibility Crosswalk
- Crosswalk
- School Zone Marking
- School Grounds
- Public Park/Open Space
- Traffic Signal
- Rectangular Rapid Flashing Beacon
- Intersection Markings

Existing Signage

- School Advance Warning Assembly (S1-1, W16-9P)
- School Crossing Assembly (S1-1, W16-7P)
- Pedestrian Advance Warning Assembly (W11-2, W16-9P)
- Pedestrian Crossing Assembly (W11-2, W16-7P)
- School Speed Limit Assembly (S5-1, S4-4P)
- School Speed Limit Ahead (S4-5)
- End School Zone (S5-2)

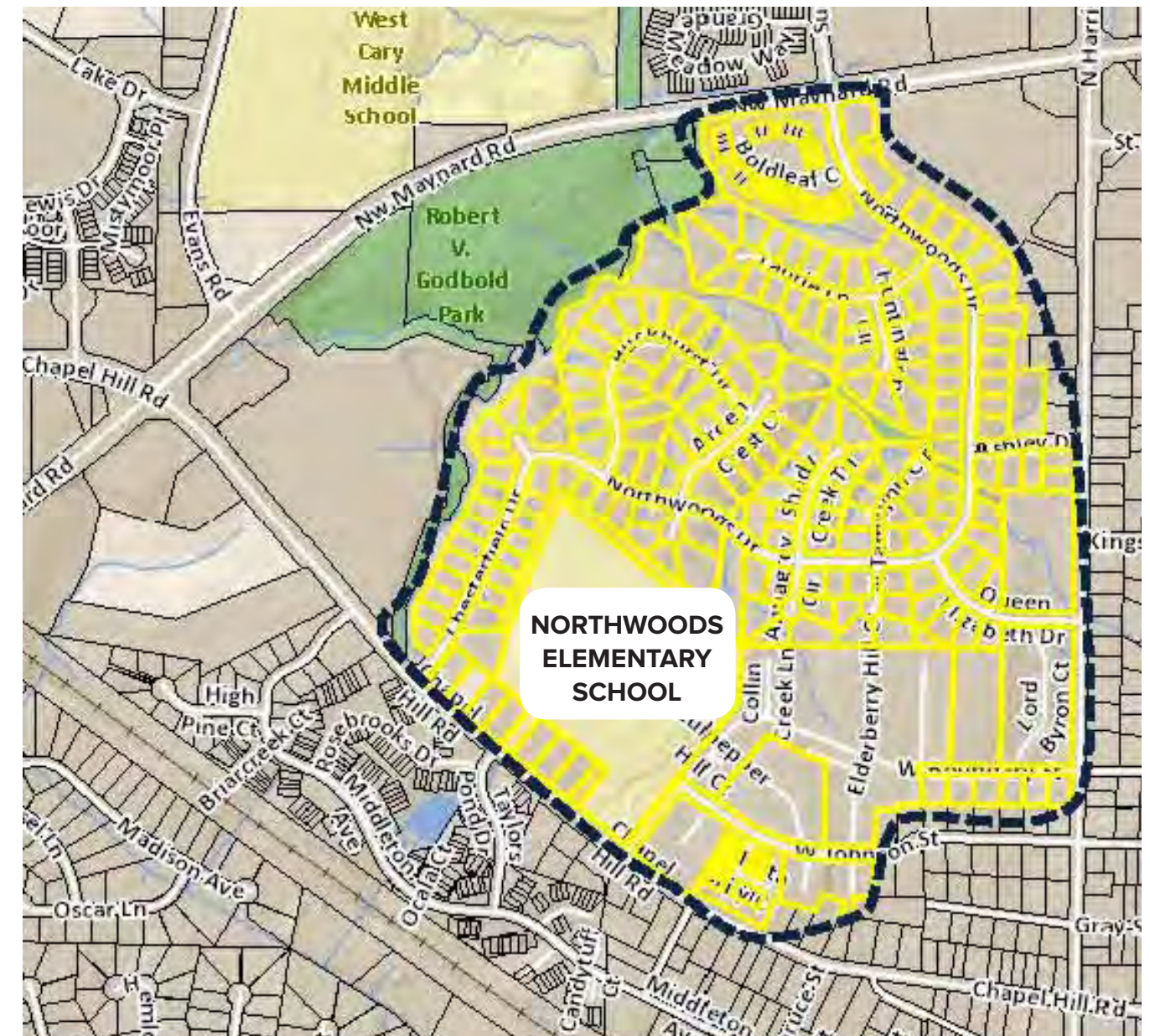


No Transport Zone

Figure 2.2 shows the Northwoods Elementary “No Transport - Walk Zone.” Generally, the zone includes the area between Maynard Road, Chapel Hill Road, and Harrison Avenue. A small section to the east of Harrison Avenue, south of Johnson Street, and north of Chapel Hill Road is excluded from the zone.

Currently, there are 79 students that live within this zone that are not offered bus service. There are several neighborhoods within the half mile buffer of the school that are currently receiving bus service because of the lack of pedestrian infrastructure or the high volume nature of the roadways.

Figure 2.2: No Transport Zone



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Parent Survey and Student Tally Overall Results

In October 2015, a survey was sent out to the parents of Northwoods Elementary school children; this was combined with a student travel tally recorded by their teachers in order to get a better understanding of the children’s current travel modes. The student travel tally, from the National Center for Safe Routes to School, was done for three consecutive days by 20 classrooms with a school enrollment of 540 students. The parent survey, from the National Center for Safe Routes to School, was distributed to 400 households, and 218 were returned and analyzed for this report.

Of the parents surveyed, most children live more than 2 miles away (36%). However, 20% of those surveyed live less than ¼ mile and 27% within 1 mile to 2 miles away. 41% of children are driven to school, 37% take the school bus, and 14%-19% walk, depending on the time of day.

For parents whose children don’t currently walk or bike to school, the four primary reasons for not walking were: distance, traffic along route, safety of intersections and crossings, and speed of traffic. For existing walkers, the main difficulty identified was lack of sidewalks and pathways. Additional comments reported the age of the child and parent’s work schedule as barriers to walking to school. Parents identified the following intersections and corridors as unsafe:

- » Maynard Rd and Chapel Hill Rd Intersection - Large intersection and lack of crosswalks and pedestrian signals at all crossings.
- » Maynard Rd and Evans Rd - Long crossing distances and motorists failing to yield the right-of-way to pedestrians.
- » Chapel Hill Rd - Lack of sidewalks on the south side between Middleton Ave and Taylors Pond Dr.
- » Middleton Ave. - Lack of sidewalks to make this an accessible alternative to Chapel Hill Rd.

Student Tally Results

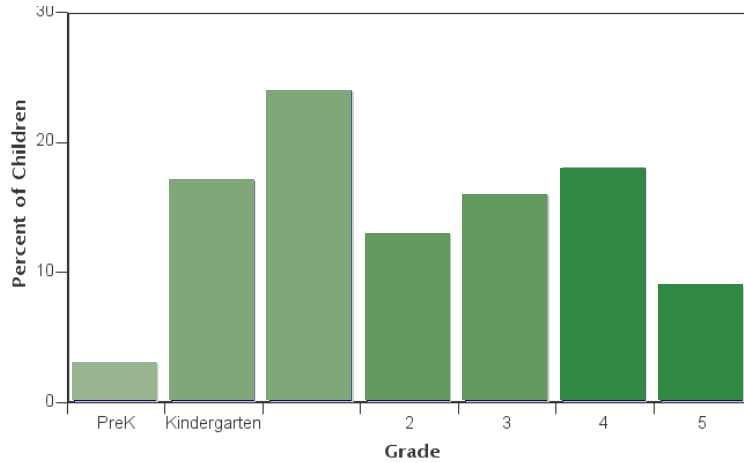
	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Tuesday AM	353	16%	0%	35%	43%	1%	3%	1%
Tuesday PM	331	18%	0%	38%	36%	1%	4%	4%
Wednesday AM	373	16%	0.3%	34%	44%	2%	3%	1%
Wednesday PM	372	19%	0.5%	34%	38%	1%	3%	3%
Thursday AM	157	17%	0.6%	32%	42%	3%	5%	0%
Thursday PM	131	20%	0.8%	34%	37%	3%	6%	0%

Percentages may not total 100% due to rounding.



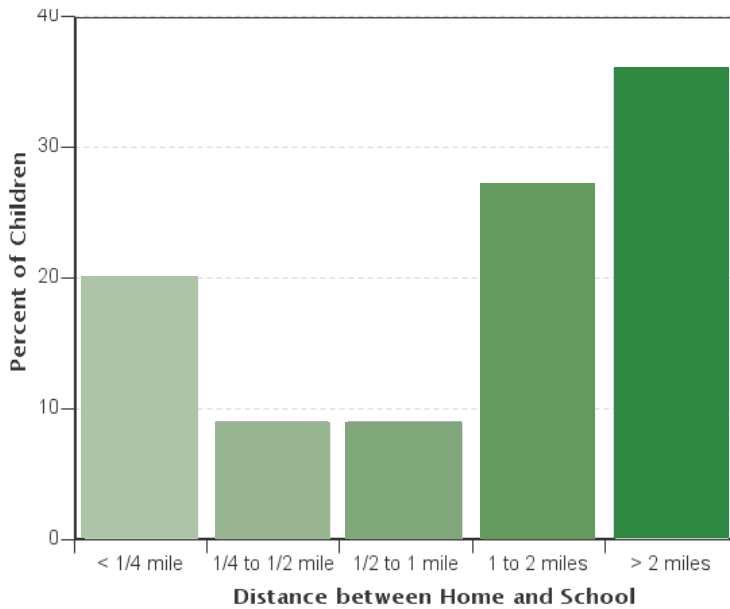
Parent Survey Report

Grade Levels of Children Represented in Survey



Grade in School	Responses per grade	
	Number	Percent
PreK	6	3%
Kindergarten	36	17%
1	51	24%
2	27	13%
3	35	16%
4	39	18%
5	19	9%

Parent Estimate of Distance from Child's Home to School

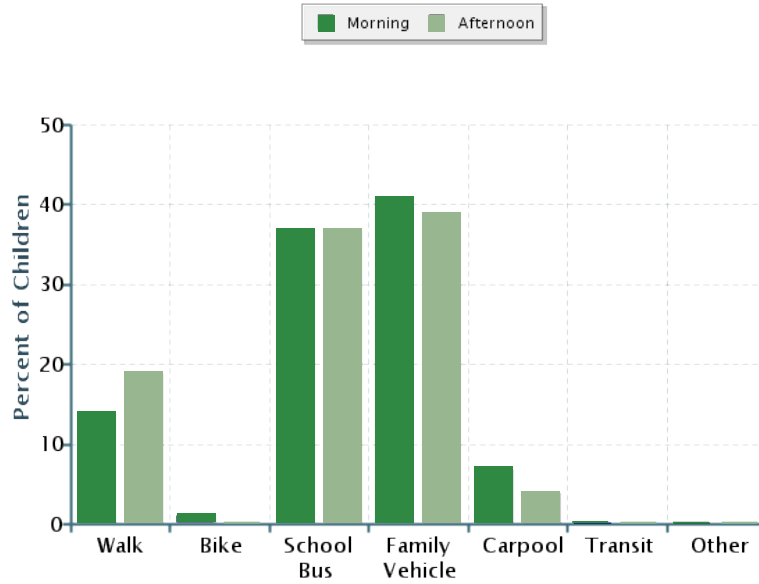


Distance between home and school	Number of children	Percent
Less than 1/4 mile	40	20%
1/4 mile up to 1/2 mile	19	9%
1/2 mile up to 1 mile	18	9%
1 mile up to 2 miles	55	27%
More than 2 miles	73	36%

Don't know or No response: 13
 Percentages may not total 100% due to rounding.



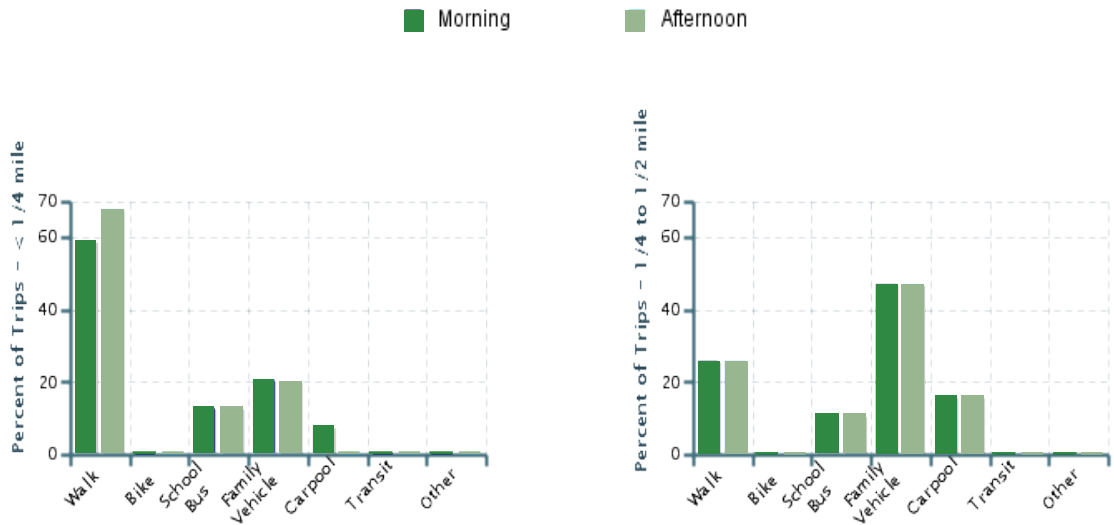
Typical Mode of Arrival at and Departure from School

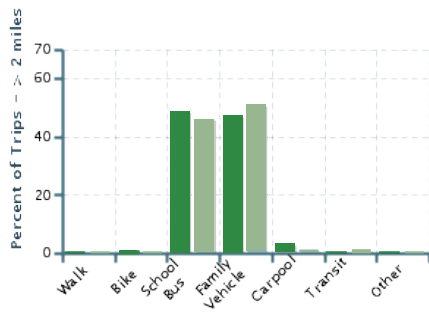
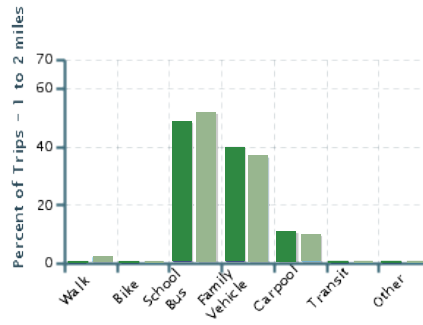
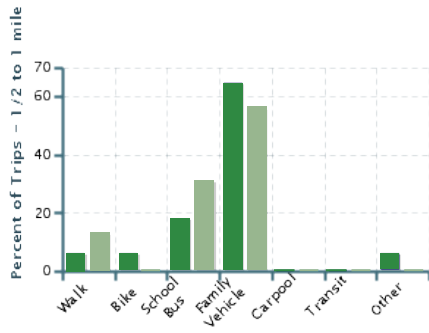


Time of Trip	Number of Trips	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Morning	214	14%	0.9%	37%	41%	7%	0%	0.5%
Afternoon	205	19%	0%	37%	39%	4%	0.5%	0%

No Response Morning: 4
 No Response Afternoon: 13
 Percentages may not total 100% due to rounding.

Typical Modes of School Arrival and Departure by Distance Child Lives from School





School Arrival

Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	39	59%	0%	13%	21%	8%	0%	0%
1/4 mile up to 1/2 mile	19	26%	0%	11%	47%	16%	0%	0%
1/2 mile up to 1 mile	17	6%	6%	18%	65%	0%	0%	6%
1 mile up to 2 miles	55	0%	0%	49%	40%	11%	0%	0%
More than 2 miles	72	0%	1%	49%	47%	3%	0%	0%

Don't know or No response: 16

Percentages may not total 100% due to rounding.

School Departure

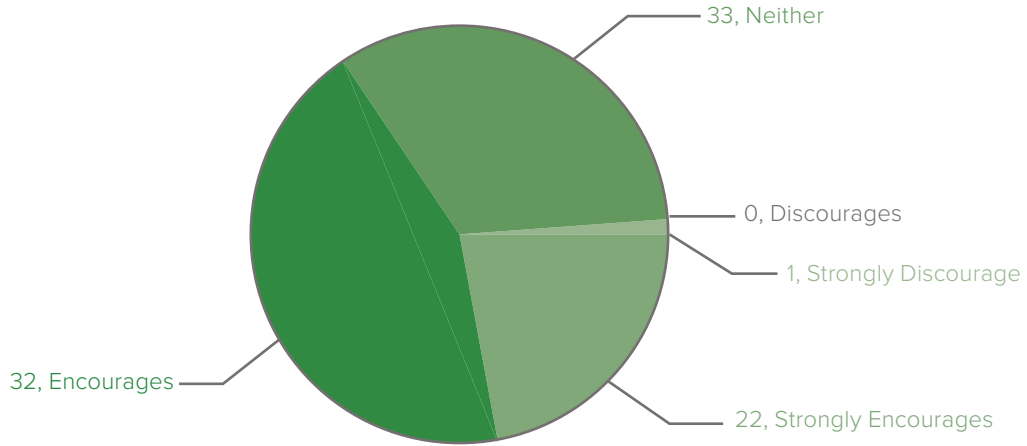
Distance	Number within Distance	Walk	Bike	School Bus	Family Vehicle	Carpool	Transit	Other
Less than 1/4 mile	40	68%	0%	13%	20%	0%	0%	0%
1/4 mile up to 1/2 mile	19	26%	0%	11%	47%	16%	0%	0%
1/2 mile up to 1 mile	16	13%	0%	31%	56%	0%	0%	0%
1 mile up to 2 miles	52	2%	0%	52%	37%	10%	0%	0%
More than 2 miles	68	0%	0%	46%	51%	1%	1%	0%

Don't know or No response: 23

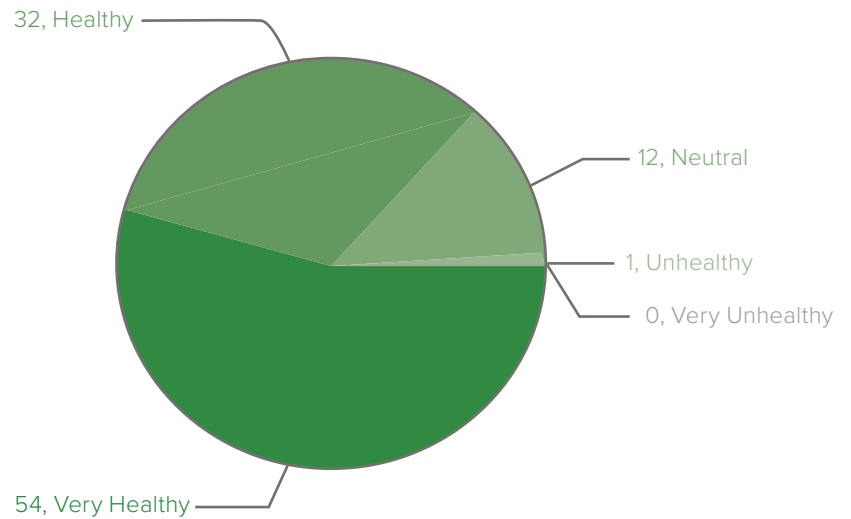
Percentages may not total 100% due to rounding.



Parents' opinions about how much their child's school encourages or discourages walking and biking to/from school



Parents' opinions about how healthy walking and biking to/from school is for their child



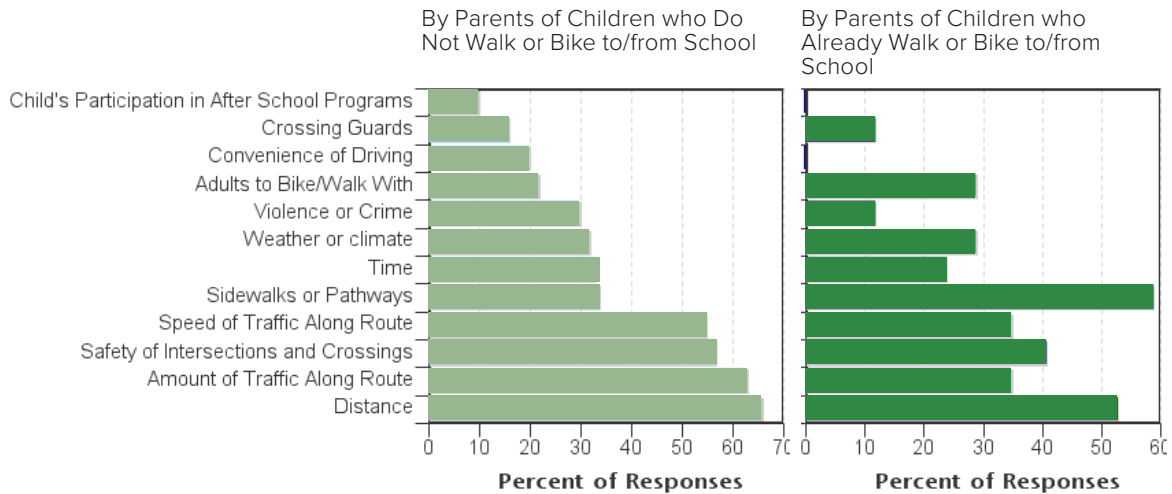
Percent of children who have asked for permission to walk or bike to/from school by distance they live from school

Asked Permission?	Number of Children	Less than 1/4 mile	1/4 mile up to 1/2 mile	1/2 mile up to 1 mile	1 mile up to 2 miles	More than 2 miles
Yes	68	62%	39%	41%	40%	13%
No	130	38%	61%	59%	60%	87%

Don't know or No response: 20
 Percentages may not total 100% due to rounding.



Issues Reported to Affect the Decision to not Allow a Child to Walk or Bike to/from School



Issue	Child does not walk/bike to school	Child walks/bikes to school
Distance	66%	53%
Amount of Traffic Along Route	63%	35%
Safety of Intersections and Crossings	57%	41%
Speed of Traffic Along Route	55%	35%
Sidewalks or Pathways	34%	59%
Time	33%	24%
Weather or climate	32%	29%
Violence or Crime	30%	12%
Adults to Bike/Walk With	22%	29%
Convenience of Driving	20%	0%
Crossing Guards	16%	12%
Child's Participation in After School Programs	10%	0%
Number of Respondents per Category	142	17

No response: 59

Note:

--Factors are listed from most to least influential for the 'Child does not walk/bike to school' group.

--Each column may sum to > 100% because respondent could select more than issue

--The calculation used to determine the percentage for each issue is based on the 'Number of Respondents per Category' within the respective columns (Child does not walk/bike to school and Child walks/bikes to school.) If comparing percentages between the two columns, please pay particular attention to each column's number of respondents because the two numbers can differ dramatically.



CHAPTER 3:

INFRASTRUCTURE

Chapter Contents:

Overview

*Infrastructure
Glossary*

*Infrastructure
Recommendations
Map*

*Overview of
Recommendations*

*Priority
Improvements*

Overview

This chapter presents recommendations for optimal circulation of pedestrians, bicyclists, and drivers in and around the school campus. The recommendations build upon existing planning efforts from the Town of Cary and Wake County Public School System. Improvements will be identified to clarify expected behaviors and will be organized into the following categories:

- » Recommended Improvement
- » Priority Improvement
- » Priority Project

The map on page 3-9 provides an overview of a comprehensive suite of improvements to improve bicycle and pedestrian access to Northwoods Elementary. More details on the four priority improvements can be found on page 3-8. The priority project is highlighted in Chapter 5, page 5-4.

Infrastructure Glossary

This glossary provides an introduction to the specific infrastructure improvements commonly used for Safe Routes to School. It is included directly in this plan as an easily available reference point for all parties using this plan. Not all treatments are appropriate at Northwoods Elementary and not all treatments are currently recommended in the infrastructure recommendations provided on page 3-8. However, a variety of measures that may be appropriate in other areas of the Town are also included to provide a comprehensive toolkit. In all cases, engineering judgment should be exercised when determining the best infrastructure solution.



School Area Specific Signing and Marking



School Sign (S1-1)

The School Sign (S1-1) is used to warn drivers that they are approaching a school area, or to identify the beginning of a designated school zone.



School Zone Speed Limit Assembly

A School Zone Speed Limit Assembly identifies a speed limit for use in a specific geographic area. Speed limits may apply over limited time frames or conditions as indicated on the sign. These signs should be placed no more than 600' from a designated school crossing.



School Crossing Assemblies

The School Sign may be combined with small plaques to indicate specific crossing locations. A school sign combined with an AHEAD plaque (W16-9p) creates a School Advance Crossing Assembly, used to warn road users that they are approaching a crossing where schoolchildren cross the roadway.

At specific crosswalks or crossing locations, a School Crossing Assembly indicates the location of the crossing point where schoolchildren are expected to cross. It includes a School sign (S1-1) and a diagonal downward arrow (W16-7p).



School Crossing Pavement Markings

As a supplement to a marked crosswalk, the SCHOOL word marking may provide additional warning to drivers about the potential presence of school children.



Crosswalk Treatments



Active Warning Beacon

Active warning beacons are user-actuated flashing lights that supplement warning signs at unsignalized intersections or mid-block crosswalks. Rectangular Rapid Flash Beacons (RRFBs), a type of active warning beacon, use an irregular flash pattern similar to emergency flashers on police vehicles.



In-street Yield to Pedestrian Sign

In-street pedestrian crossing signs reinforce the presence of crosswalks and remind motorists of their legal obligation to yield for pedestrians in marked or unmarked crosswalks. This signage is often placed at high-volume pedestrian crossings that are not signalized. On streets with multiple lanes in each direction, additional treatments such as median islands or active warning beacons may be more appropriate.



Standard Marked Crossings

The simplest form of marked crosswalk is two transverse lines, indicating the crossing area. A marked crosswalk signals to motorists that they must stop for pedestrians and encourages pedestrians to cross at designated locations. Installing crosswalks alone will not necessarily make crossings safer, especially on multi-lane roadways.



High Visibility Marked Crossings

A marked crossing typically consists of a marked crossing area, warning signs and other markings to slow or stop traffic. High visibility crosswalks increase driver awareness of pedestrian crossings and are generally appropriate at all unsignalized crossings as well as some signalized crossings.

When space is available, a median refuge island can improve user safety by providing pedestrians space to perform the safe crossing of one half of the street at a time.



Crosswalk Treatments (Continued)



Median Refuge Island

Median refuge islands are protected spaces placed in the center of the street to facilitate bicycle and pedestrian crossings. Crossings of two-way streets are simplified by allowing bicyclists and pedestrians to navigate only one direction of traffic at a time. This may also function as a traffic calming technique when configured to manage access to streets.



Pedestrian Hybrid Beacon

Pedestrian hybrid beacons are traffic control signals commonly used to stop traffic along a major street to permit safe crossing by pedestrians or bicyclists. The signals provide very high levels of compliance by using a red signal indication, while offering lower delay to motorized traffic than a conventional signal.



Raised Crosswalk

Raised crosswalks are crossings elevated to the same grade as the multi-use trail. Raised crosswalks may be designed as speed tables, and have a slowing effect on crossing traffic.

A raised crossing profile design known as a sinusoidal profile may be selected for compatibility with snow removal equipment.



Additional Tools



ADA Compliant Curb Ramps

Curb ramps allow all users to make the transition from the street to the sidewalk. A sidewalk without a curb ramp can be useless to someone in a wheelchair, forcing them back to a driveway and out into the street for access.

Although diagonal curb ramps might save money, they create potential safety and mobility problems for pedestrians, including reduced maneuverability and increased interaction with turning vehicles, particularly in areas with high traffic volumes.



Bike Lanes

Bicycle lanes designate an exclusive space for bicyclists with pavement markings and signage. The bicycle lane is located adjacent to motor vehicle travel lanes and bicyclists ride in the same direction as motor vehicle traffic. Bicycle lanes are typically on the right side of the street (on a two-way street), between the adjacent travel lane and curb, road edge or parking lane.



Advance Stop Bar

Advance stop bars increase pedestrian comfort and safety by stopping motor vehicles well in advance of marked crosswalks, allowing vehicle operators a better line of sight of pedestrians and giving inner lane motor vehicle traffic time to stop for pedestrians.



Buffered Bike Lanes

Buffered bicycle lanes are conventional bicycle lanes paired with a designated buffer space, separating the bicycle lane from the adjacent motor vehicle travel lane and/or parking lane.



Additional Tools (Continued)



Curb Extensions

Curb extensions are areas of the sidewalk extended into the roadway, most commonly where a parking lane is located. Curb extensions help position pedestrians closer to the street centerline to reduce crossing distances and improve visibility and encourage motorists to yield at crossings.



Minimize Corner Radii

The size of a curb's radius can have a significant impact on pedestrian comfort and safety. A smaller curb radius provides more pedestrian area at the corner, allows more flexibility in the placement of curb ramps, results in a shorter crossing distance and requires vehicles to slow more on the intersection approach. During the design phase, the chosen radius should be the smallest possible for the circumstances.



Shared Use Paths or Greenways

Shared Use paths or greenway trails may be used by pedestrians, skaters, wheelchair users, joggers and other non-motorized users. These facilities are frequently found in parks, along streams, or as neighborhood cut-throughs to shorten connections and offer an alternative to busy streets.



Traffic Calming

Reducing speeds or volumes along streets improves the pedestrian environment by limiting exposure, enhancing drivers' ability to see and react, and diminishing the severity of crashes if they occur. Common traffic calming techniques include speed humps, neighborhood traffic circles, chicanes, and pinch points.



Overview of Recommendations

For this plan, current conditions were assessed during a walking audit and observation of the arrival and departure process. Additionally, planning consultants met with school staff, Town staff and parents to discuss existing conditions and draft recommendations.

The infrastructure recommendations outlined on page 3-8 include a variety of improvements to address the issues identified by the project team. The project team, with help from Town staff and the steering committee, identified four priority improvements (see page 3-8) and one priority project (see page 5-4) that if constructed, could make a big impact on the ability for children to walk and bike to school safely.

Improvements include additional sidewalks, multi-use trail connections, bike lanes, marked high visibility crosswalks, accessible curb ramps, curb extensions, and pedestrian signal improvements. They do not address all pedestrian needs within the study area, but focus instead on the needs of students accessing the schools.

Recommendations are planning-level concepts and engineering judgment is needed to confirm the feasibility and final design of all improvements. While existing traffic controls may meet standards for average traffic volumes on the roadway, the presence of school-aged children should be considered a mitigating factor in selecting appropriate traffic control infrastructure. Crossings and key access points on school routes should be enhanced to provide increased legibility of desired travel patterns and behavior for all modes.

Typical Unit Costs

Typical unit costs* for many of the recommended treatments is included below for planning level cost estimates. Costs shown do not include mobilization, traffic control, engineering, or contingency.

The following planning level cost estimates are based on the average per-mile cost of built projects:

**The source for typical unit costs utilize a combination of recently constructed bicycle and pedestrian projects in North Carolina and the 2013 report, 'Costs for Pedestrian and Bicyclist Infrastructure Improvements' by the UNC Highway Safety Research Center (HSRC), prepared for the Federal Highway Administration.*

- » Multi-Use Path/Sidepaths (10-12') \$600,000/mile
- » Sidewalk (5' minimum) \$264,000/mile

Per unit cost estimate for additional elements are as follows:

- » Rectangular Rapid Flashing Beacon \$22,250/each
- » Median Refuge Island \$13,520/each
- » High-visibility Crosswalk \$2,540/each
- » Curb Extensions \$13,000/each
- » Wayfinding Signage \$250/each



Priority Improvements

The following recommendations have been identified as priority improvements, and one priority project was selected for implementation immediately (see page 5-4). These projects were selected based on their opportunity to increase access to the school and encourage more walking:

A **What:** Re-stripe the existing high visibility crosswalk markings along Chapel Hill Road at the main entrance to the school.

Why: The existing crosswalk pavement markings are faded and hard to decipher. Re-stripping the high visibility markings will help cue drivers to expect pedestrian traffic, especially when it is dark.

B **What:** Replace the mulch path with a paved path that includes a direct connection to the greenway trail.

Why: The existing path is difficult to navigate during inclement weather and is not accessible to students or parents with disabilities. Providing an alternative to the stairway to the greenway will also increase the schools accessibility and bike friendliness.

D **What:** Add sidewalks along the southern side of Chapel Hill Road from Middleton Ave to Taylors Pond Dr.

Why: While this sidewalk project may be difficult to implement from a cost and impact perspective, it provides safe and accessible access to the students living south of Chapel Hill Road that are currently being bused due to the unsafe walking conditions.

F **What:** Evaluate warrants for a traffic signal with pedestrian crossing improvements at Sudbury Dr and Maynard Rd.

Why: This a key north-south connection for students living to the north of Maynard Rd but don't have direct access to the greenway trail. The existing light at Maynard Rd and Harrison Ave includes pedestrian signals, but is a very intimidating intersection due to traffic volumes.



An example of high visibility crosswalk markings recommended for the crossings of Chapel Hill Rd at the main entrance.



Most of the existing walkers use the mulch path to avoid conflicts with the carpool line. The path is currently connected to the greenway trail by a stairway.



This section of Chapel Hill Road does not have curb and gutter and what looks to be limited public right-of-way.



Northwoods Dr/Sudbury Dr at NW Maynard Rd is currently unsignalized with no pedestrian crossings.



Northwoods Elementary

Recommendations Map

This map displays recommended infrastructure to improve pedestrian access to Northwoods Elementary School. Recommended sidewalks, shared use paths, and signage are shown on the map. Specific improvements are identified on the map below.

The Town of Cary has several improvements planned within the school zone area. Refer to the Town's website for more information:
www.townofcary.org

Direct and formal connectivity to greenway needed from most housing developments west of Sudbury Drive and east of Evans Road

Existing Features

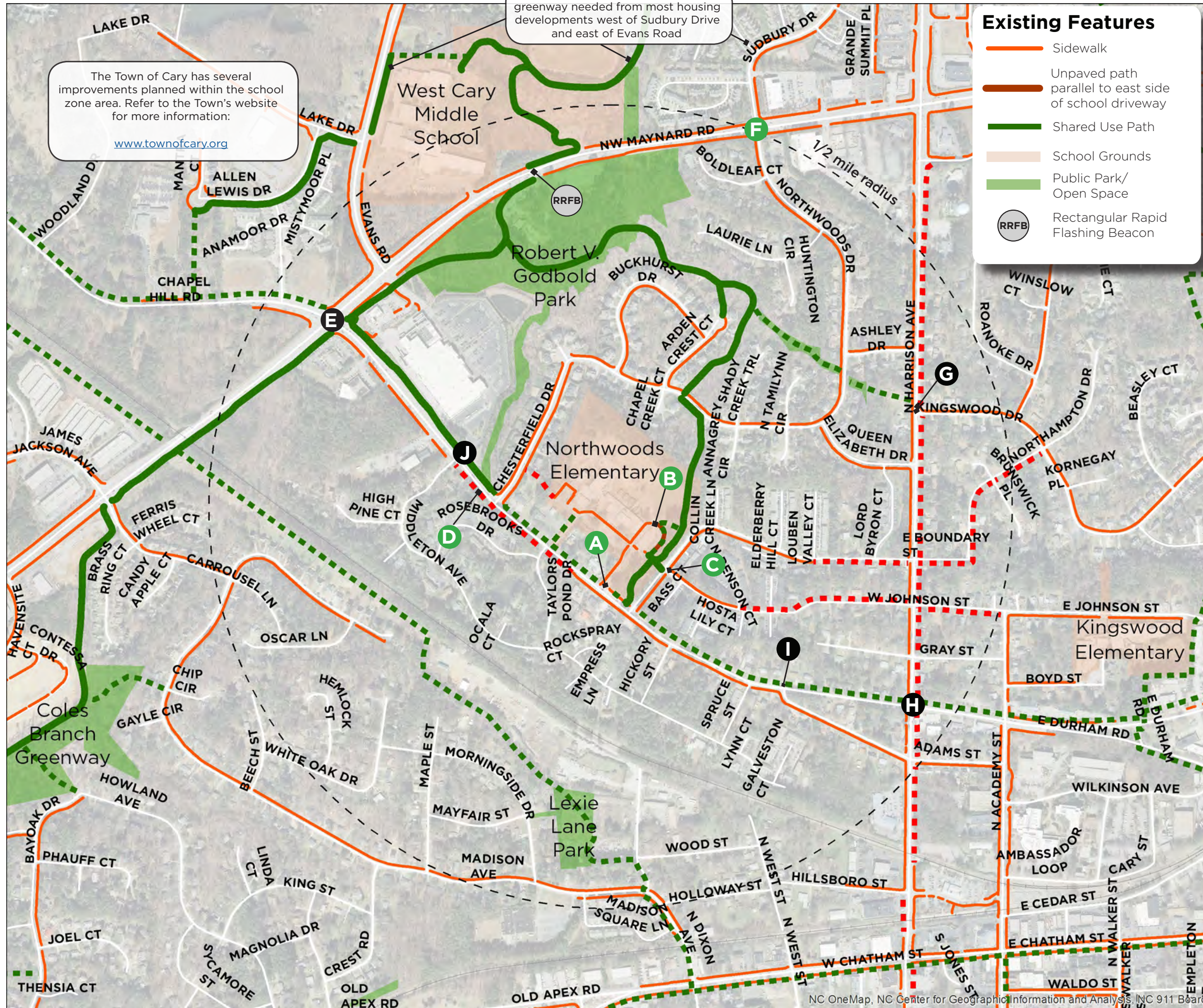
- Sidewalk
- Unpaved path parallel to east side of school driveway
- Shared Use Path
- School Grounds
- Public Park/Open Space
- Rectangular Rapid Flashing Beacon

Improvements Key

- Incorporate Marked High Visibility Crosswalk
- Install School Signage
- Install Accessible Curb Ramps
- Priority Improvement
- Recommended Improvement
- Install Traffic Light with Pedestrian Activated Signals
- Install Rectangular Rapid Flashing Beacon
- Sidewalk
- Shared Use Path

Priority & Recommended Improvements

- A** Replace existing crosswalks across Chapel Hill Rd at the school entrance with high visibility markings.
- B** Replace the mulch path with a paved path with a direct and accessible connection to the greenway trail.
- C** Add high visibility crosswalk markings and restrict on-street parking by adding curb extensions at the crosswalk across Boundary St and Johnson St.
- D** Add sidewalks on Chapel Hill Rd from Middleton Ave to Taylors Pond Dr.
- E** Add high visibility markings and updated curb ramps to three legs of the Chapel Hill Rd and Maynard Rd intersection.
- F** Evaluate warrants for a traffic signal at Sudbury Dr and Maynard Rd to facilitate a pedestrian crossing.
- G** Install Rectangular Rapid Flashing Beacon
- H** Add high visibility markings and updated curb ramps to three legs of the Chapel Hill Rd and Maynard Rd intersection.
- I** Shared Use Path
- J** Add high visibility markings and updated curb ramps to three legs of the Chapel Hill Rd and Maynard Rd intersection.



NC OneMap, NC Center for Geographic Information and Analysis, NC 911 Board



CHAPTER 4:

PROGRAMS

Chapter Contents:

Overview

Programs Toolkit

Suggested Route Map

Park & Walk Recommendations

Overview

Safe Routes to Schools programs directly benefit schoolchildren, parents and teachers by creating a safer travel environment near schools and by reducing motor vehicle congestion at school drop-off and pick-up zones. Students that choose to bike or walk to school are rewarded with the health benefits of a more active lifestyle, with the responsibility and independence that comes from being in charge of the way they travel, and learn at an early age that biking and walking can be safe, enjoyable and good for the environment.

This chapter provides an inventory of SRTS programs and activities as a toolkit for staff and the school community to develop implementable SRTS strategies. SRTS programs are made up of a variety of outreach, education, and other activities that further program goals and promote safety. They are organized according to four of the “Six E’s” (Education, Encouragement, Enforcement, and Evaluation). Equity will be addressed by ensuring that a range of programming is implemented that make safe routes accessible to all students.

Programs Toolkit

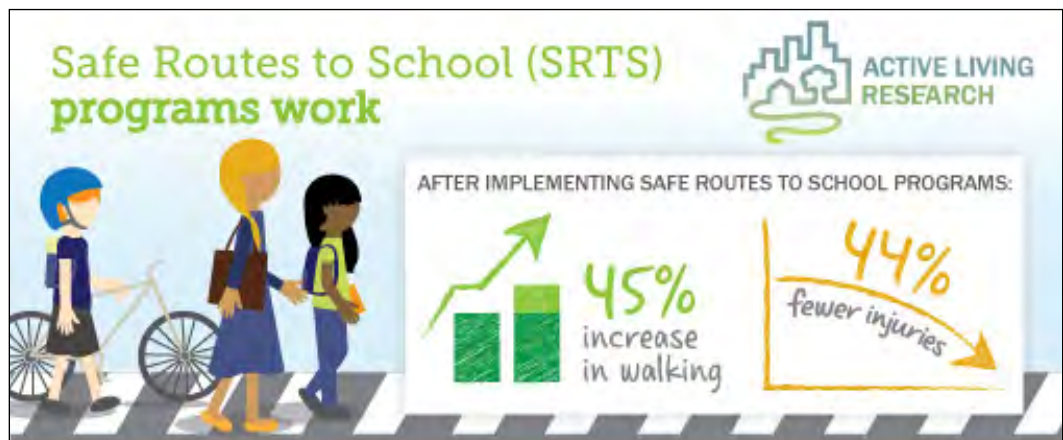
The SRTS Programs Toolkit details specific SRTS programs that have been successful in a variety of jurisdictions and that can be adapted for local use. Northwoods Elementary and WCPSS, in coordination with the Town of Cary, may be interested in considering these for implementation in the future. Cost estimates are low, medium, and high based on anticipated level of effort, staff/volunteer time, and other resources needed.

**Cost Estimates on the following pages correspond to the numbers below:*

\$ = \$500-\$2,500

\$\$ = \$2,500-\$5,000

\$\$\$ = \$5,000 +



This infographic features evidence on positive impacts of SRTS programs on physical activity levels and safety. Findings are related to an Active Living Research review, available at: activelivingresearch.org/SRTSreview



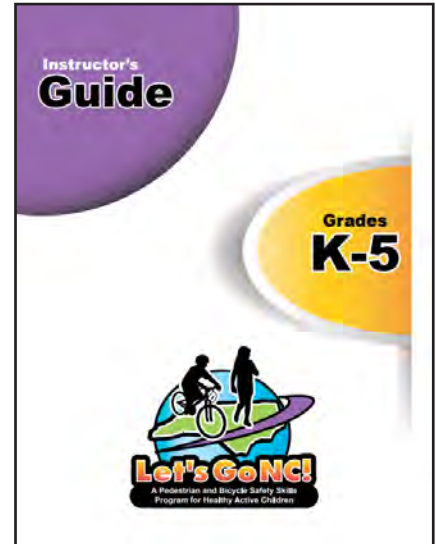
EDUCATION

LET'S GO NC IMPLEMENTATION

Let's Go NC is an education program about safe walking and biking for elementary age children available through the North Carolina Department of Transportation. This education program teaches elementary age children how to walk and bike safely, giving them the essential skills that they need to enjoy a healthy and active lifestyle.

Let's Go Walking! and Let's Go Biking! may be taught independently of each other, but are designed to teach concepts and skills in 5 lessons for developmentally appropriate teaching levels: kindergarten and first grade, second and third grade, and fourth and fifth grade. Each lesson builds upon the skills learned in the previous lesson within the teaching level. The content is customized based on needs and concerns from North Carolina teachers and stakeholders. Teaching both lesson sets will give children the skills to be safe, healthy, and active in their daily lives.

This program is designed so that it can be used by teachers, community leaders, educators, police, or others who work with children with different levels of experience and can be adapted to meet the needs of children throughout North Carolina.



Best Practice Programs and Resources:

- » **Wilson County, NC** has implemented the Let's Go NC curriculum in two schools.
- » **Bicycle safety instruction** in Wake Forest, NC, has been added to the 4th grade curriculum.
- » The **Region 5 Active Routes to School Coordinator** can provide more information regarding the curriculum and implementation ideas and guidance.

Suggested Lead Agency:

- » WCPSS Healthy Living

Cost: \$-\$\$



Lesson Concepts	K-1	2-3	4-5	Review
Walking Safely Near Traffic				
Crossing Streets Safely				
Crossing Intersections Safely				
School Bus Safety				
Parking Lot Safety				



EDUCATION, CONTINUED

BICYCLE SAFETY AND SKILLS COURSE

Students practice riding in a safe, controlled, hands-on environment. Students learn the rules of the road, have their helmet properly checked, and practice riding their bike in a supervised bicycle course. Could be incorporated into recess time or Healthy Living programming.

Best Practice Programs:

- » **Let's Go NC** is an education program about safe walking and biking for elementary age children available through the North Carolina Department of Transportation.
- » League of American Bicyclists' **Ride Smart Program** offers on-street bicycling classes taught by certified instructors.
- » The National Highway Traffic Safety Administration has developed the **Cycling Skills Clinic: Guide** to help organizations plan bike safety skills events.



Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$\$

FAMILY BICYCLE WORKSHOPS

Family bicycle workshops engage parents and children in bicycle drills, games and a neighborhood ride. Parents and students learn and ride together to get comfortable riding for everyday trips. This would take place after school operating hours, either after school or during the weekend.

Best Practice Programs:

- Santa Monica, CA, hosted a **Family Bike Fest** in December 2012, with a bike swap, assistance with organizing walking school buses and bike trains, and a youth bike skills course.
- **Kidical Mass** rides, such as the events in Carrboro, NC are fun, family-oriented events aimed at getting kids out riding bikes.



Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$\$



EDUCATION, CONTINUED

SAFETY CAMPAIGN

A media campaign can publicize traffic safety issues around schools and promote safe walking, biking, and driving for students, parents, and others use school zones. The Town of Cary actively participates in the Watch for Me, NC campaign and could target school zones throughout town.



Best Practice Programs:

- » **Let's Go NC** is an education program about safe walking and biking for elementary age children available through the North Carolina Department of Transportation.
- » **Watch for Me NC** encourages drivers, cyclists, and pedestrians to get smarter about traffic safety.
- » Bikes Belong has a fantastic **Review of Bicycle Safety Campaigns** with examples from throughout the US.
- » Pasadena, CA, launched a **Safe School Zones** bilingual campaign encouraging drivers to slow down.



Suggested Lead Agency:

- » Town of Cary Police Department

Cost: \$\$\$

PARENT EDUCATION

Parents are the most important role models for their children. The following resources can help teach parents safe pedestrian and bicycling behavior that they can then model for their children. Parent education events could be hosted by the PTA to help expand SRTS awareness and education.

Best Practice Resources:

- » NCDOT has a number of **Parental Education** materials available.
- » **Let's Go NC** provides parent and caregiver tip sheets.
- » The National Center for SRTS has additional resources for parental education- **Handouts and web links** on safe walking & bicycling behaviors.
- » **Back-to-school night** could be a perfect opportunity to provide parent education and awareness about SRTS efforts at Northwoods Elementary.



Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$-\$\$



ENCOURAGEMENT

WALKING SCHOOL BUS / BIKE TRAINS

Walking School Buses and Bike Trains let students walk or bicycle to school as a group, often with an adult volunteer. They may be daily, weekly, or monthly events.

Best Practice Programs:

- » Pinehurst Elementary School in Pinehurst, NC, created a **Walking School Bus** that resulted in a 22% reduction in traffic.
- » **Michigan's SRTS** program developed Walking School Bus volunteer resources, sample parent letters, and resources to help develop a route.
- » Santa Clarita, CA, SRTS developed a **Walking School Bus Training Guidebook** to help parents form walking school buses.
- » Tampa Bay, FL; Washington, DC; Denver, CO; and Portland, OR, participated in a **Bike Train Webinar**.



Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$-\$\$

WALK-AT-SCHOOL PROGRAMS

Through this program, children are given the opportunity and are encouraged to increase how much they walk during school hours through competitions, prizes, goal setting, and other activities. This type of program is especially important for schools that don't have good walking or biking routes, or if students live too far to walk or ride bikes.

Best Practice Programs:

- » **Tigers on the Prowl** is a popular walking program at Davidson Elementary School in Davidson, NC.
- » The **Creative Walking** website provides resources and materials to create school walking wellness programs.
- » **Taking the First Step Toolkit** also provides examples and resources for implementing walk-at-school programs.



Suggested Lead Agency:

- » Northwoods Elementary Staff

Cost: \$



ENCOURAGEMENT, CONTINUED

WALK AND BIKE TO SCHOOL DAY(S)

Students and their families are encouraged to use alternative modes to get to/from school. Individual students and classrooms receive incentive prizes. Northwoods should continue to participate in National Walk/Bike to School Day and make it a goal to increase participation each year. See page 4-5 for ideas of how to involve kids who can't walk or bike to school in the celebration.



Best Practice Programs:

- » Northwoods "Walking Wednesday" efforts is a model for other schools in Wake County to follow.
- » Schools in Davidson, NC celebrate "Walking and Wheeling Day" every Friday.
- » Asheville, NC, celebrates monthly "Walking and Wheeling" or "Strive Not to Drive" events.

Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$

CHALLENGES & COMPETITIONS

Active transportation challenges create awareness and excitement about walking and bicycling. Students accumulate points for walking/biking to school, or who are dropped off and walk part way.

Best Practice Programs:

- » Pinehurst, NC, has a classroom walking competition that awards a tree to plant along the route to school.
- » Alameda County, CA, SRTS has the Golden Sneaker Contest where classrooms track their walking, bicycling, carpooling and bus trips.
- » Oregon's Walk + Bike Challenge is a month-long bike & walk challenge each May.
- » Marin County, CA's Pollution Punchcard Guidebook has tips on how to organize fun contests emphasizing environmental impacts.



Suggested Lead Agency:

- » Northwoods Elementary Staff

Cost: \$-\$\$\$



ENCOURAGEMENT, CONTINUED

PROMOTIONAL COMPETITIONS

Student art competitions showcase local talent while teaching traffic safety principles. Students compete to have their artwork featured in a campaign. Competitions can include poster or video contests as well as social media campaigns and competitions.



Best Practice Programs:

- » Davis, CA, holds an annual **Traffic Safety Poster Contest** with an art opening to celebrate.
- » San Ramon Valley, CA's **StreetSmarts** has an annual "Be Reel" video contest for middle school students.
- » Tacoma, WA, planners partnered with school artists on a **"35 Ways to Safer Neighborhood Streets"** book.

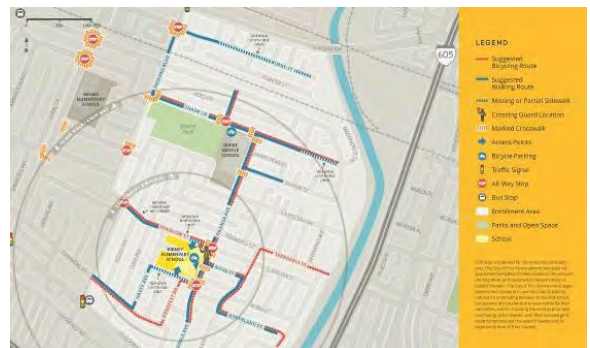
Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$

SUGGESTED ROUTE TO SCHOOL MAPS

Suggested route maps show existing sidewalks, trails, bikeways, crossing guards, and traffic control to help parents find the best walking and biking routes to school. An example and template for Northwoods can be found on page 4-16. Involving students in the development of personal maps is recommended.



Best Practice Programs:

- » The **Institute of Transportation Engineers (ITE)** has a white paper on School Route Maps.
- » Washington State **requires school districts** to develop suggested route maps for all elementary schools.
- » Davis, CA, developed user-friendly **Suggested Route Maps** that include walking times and bicycle parking.

Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$-\$\$



ENCOURAGEMENT, CONTINUED

EARTH DAY ACTIVITIES

Earth Day is celebrated on April 22 as a demonstration of support for environmental protection. Walking and biking to school are encouraged on this day as both are emissions-free modes of transportation!

Best Practice Programs:

- » The Town of Cary already hosts an annual **Earth Day celebration** during Spring Daze in Bond Park. Participants enjoy family friendly games, giveaways, and activities with Town experts regarding a wide variety of environmentally focused programs and initiatives.
- » The annual **Rock to Rock Earth Day Ride** is a popular Earth Day celebration in New Haven, CT, that offers planned routes of varying distances riders of all ages and abilities.

Cost: \$-\$\$



Suggested Lead Agency:

- » Northwoods SRTS Task Force

EARLY/LATE DISMISSAL POLICIES

Early dismissal for walkers and bikers can serve as an incentive for more participation, while at the same time increasing safety by reducing or eliminating the interaction between pedestrians & bikers with carpool lines and buses. Conversely, late dismissal policies for walkers and bikers discourage active transport modes and should thus be reviewed and revised where possible.

Best Practice Programs:

- » A report from the **National Center for SRTS** shows that supportive school policies, like early dismissal for walkers & bikers, is a key element to successful SRTS programs.
- » A 5-minute early dismissal for walkers, like the one in Lawrence, KS, provides **safe passage** past carpool and bus lines.

Cost: \$-\$\$\$



Suggested Lead Agency:

- » Northwoods Elementary Staff



ENCOURAGEMENT, CONTINUED

PARENTAL ENCOURAGEMENT

Parental encouragement comes in many forms and generally consists of resources and materials that help to reinforce the messages students are receiving through the school programming, as well as to offer opportunities for parents to model safe, active transportation, both to school and elsewhere.

Best Practice Resources:

- » The **Northwoods PTA SRTS Coordinator position** shows a commitment to SRTS efforts and can help provide communication between parents, PTA members, Town of Cary staff and WCPSS staff.
- » **Newsletters** keep parents informed about program updates and activities.
- » **Walking School Bus Training** programs are available through the National Center for SRTS.
- » Family **Bike Safety Festivals** get the whole family involved.

Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$





ENFORCEMENT

CROSSING GUARD PROGRAM

Providing adult crossing guards can often be the deciding factor in parents feeling comfortable enough to let their child walk or bicycle to school. Implementation of this program will vary by jurisdiction. The Town of Cary Police Department is responsible for the crossing guard program.

Best Practice Programs:

- » NCDOT produced a **video tutorial** for conducting school crossing guard trainings.
- » The National Center for Safe Routes to School presented a webinar on **Lessons from Florida's Crossing Guard Program** which, has been long-running and highly-regarded.
- » The National Center for SRTS created a brief: **Helping North Carolina Students Cross the Street**. It provides guidance for how to determine if a crossing guard is needed, and, if so, how to go about getting one, including examples of how communities around North Carolina run their programs."



Suggested Lead Agency:

- » Town of Cary

Cost: \$-\$\$

SPEED FEEDBACK SIGNS

A speed feedback sign can be used to display the approaching vehicle speeds and the posted speed limits on roadways. Newer speed feedback signs record speed data which jurisdictions can use to evaluate roadway conditions.

Best Practice Programs:

- » A University of Iowa Study evaluated the effectiveness of **"radar dynamic speed signs"** specifically in a rural setting.
- » Many districts will place **speed feedback trailers** on school frontages during Walk to School Month. Police Departments commonly partner in these efforts.



Suggested Lead Agency:

- » Town of Cary

Cost: \$-\$\$



ENFORCEMENT, CONTINUED

ENFORCEMENT CAMPAIGNS

These can cover a wide range of focuses including crosswalk stings, speeding, distracted driving, and distracted walking/bicycling. Increasing the presence/enforcement at back-to-school times and/or daylight savings is also advised.

Best Practice Programs:

- » Greenville, NC, participated in a **distracted driving research project**, neighborhood speed watch program, installed speed feedback signs, and increased law enforcement before and after school.
- » Volunteers in Arizona conducted a **Neighborhood Speed Watch** routine detection event which assisted law enforcement efforts, putting serial speeders on notice and bringing down average speeds.
- » One of the key elements of the **Watch for Me NC program** involves enforcement efforts by area police to crack down on some of the violations of traffic safety laws.



Suggested Lead Agency:

- » Town of Cary

Cost: \$-\$\$

OTHER ENFORCEMENT PROGRAMS

Enforcement programs can take many forms. The following are examples of programs that support enforcement of safe walking and biking behaviors

Best Practice Programs:

- » **Safety letters** remind parents of ways to keep their children safe.
- » **Helmet fitting and bicycle light/reflector giveaways**, like the one done in Columbus, GA, get the proper equipment to the hands of the children.



Suggested Lead Agency:

- » WCPSS and Town of Cary

Cost: \$-\$\$



EVALUATION

SEMI-ANNUAL STUDENT HAND TALLIES

Students are asked how they got to and from school over a 2-3 day period. Students raise their hand when the mode they took is called out, and the teacher or a volunteer records this. Hand tallies are generally required of state and federal SRTS grant recipients. Results from the 2016 tally efforts are summarized in Chapter 2. The Northwoods SRTS task force, in partnership with Northwoods Elementary Staff, should strive to make this an action item in the annual work plans.



Best Practice Programs:

- » The **National Center for SRTS** provides forms, data collection guidelines, data center, and automatically-generated reports.

Suggested Lead Agency:

- » Northwoods Elementary Staff

Cost: \$

BICYCLE AND PEDESTRIAN TRAFFIC COUNTS

Automatic counters or manual counts provide an estimate of walking and/or bicycling activity. Counts can track change over time and indicate program effectiveness or need. Manual counts can be more expensive, but can also collect information about gender, bicyclist age, helmet use, and turning movements. The Town of Cary can use count information to help secure grant funds to implement infrastructure projects outlined in Chapter 3.



Best Practice Programs:

- » Los Angeles County's Bicycle and Pedestrian Counts are **annual volunteer manual counts at 120 locations**.
- » The City of Portland's **Bicycle Count Program** conducts annual volunteer manual counts as well as automatic counts.
- » U. C. Berkeley's **Safe Transportation Research and Education Center (SAFETREC)** is evaluating SRTS programs in CA.

Suggested Lead Agency:

- » Northwoods SRTS Task Force and Town of Cary

Cost: \$-\$\$



EVALUATION, CONTINUED

PARENT SURVEYS

Parents are asked how their children got to/from school via a paper or online survey. Parent surveys also ask questions about the barriers to walking or biking to/from school, health information, or perception of crime and other social behaviors. Results of the 2016 parent survey effort are summarized in Chapter 2.



Best Practice Programs:

- » The National Center for SRTS provides forms, data collection guidelines, and data center. The parent survey, **available in English and Spanish**, asks for information about what factors affect whether parents allow their children to walk or bike to school, the presence of key safety-related conditions along routes to school, and related background information.
- » The Portland, OR, SRTS program shares their **robust parent survey evaluation and post survey** results online.

Suggested Lead Agency:

- » Northwoods Elementary Staff

Cost: \$-\$

SRTS REPORT CARD / EVALUATION REPORT

Evaluation reports and report cards track progress, call out success stories and highlight lessons learned and areas for improvement.

Best Practice Programs:

- » Marin County, CA's **10-Year SRTS Program Evaluation Report** analyzes improvements at each school and compares them to local/nearby/district schools similar to their school.
- » Alameda County, CA, releases an **annual report** on their SRTS Program, which evaluates activities and highlights successes.

SAFE ROUTES TO SCHOOLS REPORT CARD

Name of School: _____
 Year Starting: _____
 Principal: _____
 Champion: _____
 School Year: _____

Measures of Success

Year joined the Safe Routes program: _____ Contest results in current year: _____
 Baseline Green Trips: _____ Green Trips: _____
 Fall Green Trips: _____ Co. Journals: _____
 Spring Green Trips: _____

CHECKLIST:

<p>Educational Activities +2% for 2 or more</p> <ul style="list-style-type: none"> <input type="checkbox"/> Participates in SRTS Traffic Safety Classes <input type="checkbox"/> Stop Look and Listen (3rd grade) <input type="checkbox"/> Walk Around the Block (3rd grade) <input type="checkbox"/> Bicycle Safety (4th grade) <input type="checkbox"/> Traffic Safety (4th grade) <input type="checkbox"/> Bicycle Rules (4th grade) <input type="checkbox"/> Drive That Bike (4th grade) <input type="checkbox"/> Overlook Bike Drill (6th grade) <input type="checkbox"/> Participates in other SRTS off-road classes 	<p>Promotional Activities +2% for 3 or more</p> <ul style="list-style-type: none"> <input type="checkbox"/> Holds International Walk to School Day event <input type="checkbox"/> Holds Bike 2 School Day events <input type="checkbox"/> Holds monthly Walk and Roll to School or Teen's Go Green Days <input type="checkbox"/> Holds weekly Walk and Roll to School or Teen's Go Green Days <input type="checkbox"/> Organizes Neighborhood SchoolRools <input type="checkbox"/> Principal sends out regular notices promoting Green Ways to School <input type="checkbox"/> School Newsletter includes articles promoting Green Ways to School <input type="checkbox"/> Displays banners and flyers promoting Green Ways to School 	<p>Task Force Participation & Efforts +2% for 2 or more</p> <ul style="list-style-type: none"> <input type="checkbox"/> Participates in Task Force <input type="checkbox"/> Parent Team Leader participates <input type="checkbox"/> School or district staff participates <input type="checkbox"/> School Board Member participates <input type="checkbox"/> Provides suggested routes maps <input type="checkbox"/> School policies that promote Safe Routes to Schools <input type="checkbox"/> Conducts fall and spring student tally surveys
--	--	---

Scoring & Comments

Ranking: _____
 Education: _____
 Promotional: _____
 Task Force: _____
 Total Ranking: _____

Green Ways to School Champions

The following rankings will be applied to schools that attain these levels of Green Trips (percentage of students walking, biking, taking carpool or bus to school)

	Total Green Trips	
	Regular	School with Bus Service
Green School	50%	60%
Parent Green	55%	65%
Deep Green	60%	70%
Emerald Green	65%	75%

Suggested Lead Agency:

- » Northwoods SRTS Task Force

Cost: \$\$



EVALUATION, CONTINUED

OTHER COUNTS & EVALUATIONS

Tracking the number of participants as well as activity levels during various bike/pedestrian events and activities is also an important element of gauging active transport levels.

Best Practice Programs:

- » **Evaluation of activity during bike/pedestrian events** and activities can give an important measure of physical activity achieved by participants.
- » Tracking participation numbers can give a **measure of how many students are benefiting** from specific programs and activities.
- » **Tracking demographic** information of participants can also help monitor the equity of program efforts for all students.



Suggested Lead Agency:

- » Northwoods Elementary Staff

Cost: \$



Suggested Route Map

The following Suggested Route Maps on page 4-16 identify the best routes for walking or biking to school based on current conditions. These maps do not identify every single roadway segment a student may take to access the schools, but rather highlight the key roadways forming currently available routes. The maps also identify future routes that may become available if some of the infrastructure recommendations provided in chapter 3 are implemented.

Suggested route maps also show locations of crossing guards, stop signs, crosswalks, signals, trails, and bike parking. These maps can be shared with parents at school orientation and in advance of events such as Walking Wednesday's.

Park & Walk Recommendations

The route maps recommend one key location for a formal "Park and Walk" at Robert V. Godbold Park. The park is a central location to many neighborhoods and has direct access to the Northwoods Greenway and the Black Creek Greenway.

A "Park and Walk" is an alternative location where parents could drop students to reduce congestion around the school and give students who do not live within walking distance an opportunity to walk part of the way to school. Successful "Park and Walks" require coordination with school staff to provide supervision and support for walking to and from this location. The school could designate this location and distribute information on them in back-to-school packets, flyers, and other parent communication. This location is already being used as the main starting point of Northwoods "Walking Wednesday" efforts.



There is plenty of parking capacity during school drop off and pick up times at Godbold Park for parents that want to walk or bike with their kids to school.



Figure 4.1: Suggested Routes to Northwoods Elementary





CHAPTER 5:

NEXT STEPS

Chapter Contents:

Overview

*Grant Funded
Implementation*

How to Use This Plan

Action Step Matrix

*Priority Project
Cutsheet*

*Priority Program
Worksheet*

Overview

This section outlines a series of next steps for managing the implementation of the Northwoods Safe Routes to School Action Plan. Implementing the recommendations within this plan will require leadership and dedication to safe routes to school programming and infrastructure development on the part of a variety of agencies. Equally critical, and perhaps more challenging, will be meeting the need for a recurring source of revenue once the John Rex Endowment (JRE) project is complete. Even small amounts of local funding could be very useful and beneficial when matched with outside sources. Most importantly, no one needs to accomplish the recommendations of this plan by acting alone; success will be realized through collaboration with government agencies, the private sector, and non-profit organizations. Refer to the “How to Use this Plan” diagram on page 5-2 for more details on implementation partners. Northwoods is already one step ahead by initiating a safe routes to school task before this plan is even adopted.

Given the present day economic challenges faced by local governments (as well as their state, federal, and private sector partners), it is difficult to know what financial resources will be available at different time frames during the implementation of this plan. However, there are still important actions to take in advance of major investments, including key organizational steps, the initiation of education and safety programs, and the development of strategic, lower-cost sidewalk and crossing facilities (see Table 5.1 on page 5-3).

Grant Funded Implementation

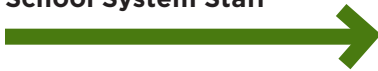
The project funded by JRE was structured in a way to not only focus on planning and policy change, but also on implementation. A budget was developed to implement the top priority project and program activity over the next two years. The project and program were selected through significant outreach with the Northwoods SRTS task force, WCPSS staff, Town of Cary staff, and the project planning team. UNC-HSRC will work closely with these partners to distribute funding and support implementation. The priority project cut sheet can be found on page 5-4 and the programs worksheet on page 5-6.



How to Use This Plan

At the heart of every successful SRTS program is a coordinated effort by parent volunteers, school staff, teachers, school district officials, local government staff, law enforcement and other partners to support safe travel on foot or by bike. Everyone has a key role to play in implementing this plan:

Wake County Public School System Staff



WCPSS staff should use this report to establish programs and policies that educate and encourage school staff and families and prioritize infrastructure investments proposed on school and Town property. Programmatic concepts can be utilized for classroom learning modules, contests, and after-school enrichment.

Town of Cary Staff



Town staff can use this report to document school travel behaviors, existing roadway design deficiencies and specific improvement opportunities. Coordination with NCDOT will be key to implementing several recommendations.

Parents



Parents can use this report to understand and confirm the conditions at their children’s school and to become familiar with the ways in which they can support program goals. In many cases, education and encouragement programs require dedicated parent volunteers. An active SRTS Task Force will be key for plan implementation.

Cary Police Department Staff



Cary Police can use this report to target enforcement efforts on identified school routes and at problem areas, and to complement potential education and encouragement campaigns. Police department input can also help improve the recommended programs aimed at addressing safety issues and promoting active travel.

Northwoods SRTS Task Force



The SRTS Task Force can use this report as a framework for coordinating the development of the policies and programs recommended for Northwoods Elementary. They can also use the infrastructure glossary, programs toolkit, and action step matrix to advocate for improvements in and around Northwoods Elementary.



TABLE 5.1: Implementation Action Steps

TASK	LEAD AGENCY	SUPPORT	DETAILS	PHASE
Present Plan to Cary Town Council	Town of Cary Staff	Northwoods SRTS Task Force	Brief staff update about SRTS program at Northwoods	Short-term (2016)
Develop a detailed work plan for the SRTS Task Force	Northwoods SRTS Task Force	HSRC	Develop a detailed list of action items for both the short term, grant funded priorities and the long term, action plan implementation. Use the Action Step matrix as a guide.	Short-term (2016)
Continue to promote and participate in Walk/Bike to School events	All partners		Promote the events to all parents and students. Consider organizing walk-at-school event for those students who can't walk to school. Provide safety incentives, such as reflective zipper tags or bike lights.	Short-term (2016)/Ongoing
Implement a walking school bus program	Northwoods SRTS Task Force	Northwoods PTA, Town of Cary, Police Department	Organize volunteers to initiate a walking school bus program. Consider Boundary Village as the first stop, with future expansion to stops along the greenway trail. Use Watch for Me NC materials to provide safety materials and education to participants.	Short-term (2016)
Develop a Northwoods SRTS website	Northwoods SRTS Task Force	Northwoods PTA, WCPSS	Develop a website to share resources, news, and education. Partner with the popular PTA website and WCPSS social media.	Short-term (2016)
Implement the priority project improvements on Boundary Street	HSRC, contractor TBD, Town of Cary		Town of Cary will be the liaison to HSRC and a TBD contractor to implement the infrastructure improvements along Boundary Street using JRE grand funds (pg 5-4 to 5-6).	Short-term (2016)
Organize and implement the priority program	Northwoods SRTS Task Force	Northwoods Elementary Staff, Northwoods PTA, Parents, Students, Town of Cary PD	Implement priority programs to encourage more walking and biking to school. Program ideas include Walking Wednesdays, student news channel segment on bike/ped safety, and parent outreach.	Mid-term/Ongoing (Beginning 2017)
Conduct student tallies and parent surveys semi-annually	Northwoods Elementary Staff	HSRC, Northwoods SRTS Task Force	Conduct parent surveys and student tallies every spring and fall in order to track your SRTS efforts.	Ongoing
Consider high visibility crosswalk markings as the standard within a defined school zone	WCPSS	NCDOT, Town of Cary	WPCSS to coordinate with public agencies to explore the use of high-visibility crosswalks within a defined school zone.	Short-term (2016)
Implement Let's Go NC!	WCPSS, Northwoods Elementary Staff	NCDOT, HSRC	Assign a teacher from each grade to receive training on the curriculum and identify implementation strategies unique to Northwoods.	Mid-term/Ongoing (Beginning Fall of 2016)



BOUNDARY STREET CROSSING IMPROVEMENTS

Project at a Glance:

- » Boundary Street is a key corridor that connects the school campus to several neighborhoods and apartment complexes via the greenway trail.
- » All students who walk to and from school are released through the mulch path connecting to the greenway trail (stairway connection) that terminates at Boundary Street.
- » Crossing Boundary Street is often described as “chaotic” by parents and teachers due to the number of students crossing and the un-official pick-up line of parents who park on Boundary St to pick-up their children who are released as walkers.



The majority of students that walk leave the school property and use this crossing at Boundary Street.

Opportunities & Constraints

Add curb extensions to reduce the pedestrian crossing distance (time in traffic), slow Boundary St through traffic, and deter on-street parking. Using flexible bollards would provide a low cost, interim treatment until funds were raised to design and construct the actual curb extensions.

Add high visibility crosswalk markings to enhance the uncontrolled pedestrian crossing of Boundary Street at Johnson Street.

Install “No Parking” signs to restrict on-street parking along Boundary Street, especially important during student drop off/pick up times.

Existing curb ramps need improved to meet current ADA standards.





Right: ***Existing photo*** of Boundary Street at Johnson Street.



Below: ***Photo Simulation*** of the interim, low-cost option for Boundary Street at Johnson Street.



Adding color to the space protected by the flexible bollards provides a visual “no parking” cue while also incorporating school colors in a fun, attractive way.



Right: ***Existing photo*** of Boundary Street at Johnson Street.



Below: ***Photo Simulation*** of the long-term, ultimate vision for Boundary Street at Johnson Street.





Program Worksheet

Program: _____

Custom name (Optional): _____

Target Audience: _____

Target Behavior/Issue: _____

What are your goals? _____

Lead Group/Person: _____

Potential Partners

	Have Support	Can Get Support	Support Difficult	Comments
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

Supplies Needed

	Have Them	Can Get Them	Difficult To Get	Comments
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

People Resources (Staff/Volunteers)

	Have Them	Can Get Them	Difficult To Get	Comments
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____
_____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	_____

How often will you do this program? _____

Outreach (Parents, Students, Staff): _____

How will you measure success? _____