Outline

A. Bike/Pedestrian Planning Grant Initiative
B. Regional Bicycle Planning Program
C. Design Guidance
D. Data - PBIN, Crash, Counts
E. Bike/Pedestrian Facility Cost Tool
F. Survey for Bike/Pedestrian Plan Implementation
Since 2004, 173 plans have been funded (109 pedestrian, 44 bicycle, 20 joint plans) – received probably 450+ applications

$4M+ awarded to date

Covers approximately 40% of state population

Fund approximately 10 per year

Types of Plans - bike, pedestrian, bike/pedestrian, county, area/corridor

Plan administration – locally administered or on-call firm

Next Call – August 2016
Content Standards for NCDOT Bicycle and Pedestrian Plans

a) Executive Summary (standalone document)
b) Introduction (Vision/Goals and Benefits)
c) Current Conditions
d) Recommended Bicycle and/or Pedestrian System Plan – Projects
e) Recommended Programs and Policies
f) Implementation Plan

http://www.walkbikenc.com/
B. Regional Bicycle Planning Program

Regional Bicycle Planning Program

- 11 Funded Plans Awarded (60+ counties)
- Administration
- Primary plan content
- Plan focus – regional connections, intracity connections (on and off road)
- Connections - natural resource, municipalities, other points of interest

• **Purpose**: economic/tourism, recreational (route delineation), transportation

• **Outcomes**: regional coordination, signage, map products, resurfacing, incidental

https://connect.ncdot.gov/municipalities/PlanningGrant/Pages/Regional-Bicycle-Plans.aspx
Regional Bicycle Plans – Regional Route Focus

Lake Norman Bicycle Route

UWHARRIE LOOPS

Central Park NC Regional Bike Map
Regional Bicycle Plans – Intracity/Regional Focus

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Mileage</th>
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<td>Stripe</td>
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<td>Buffered Bike Lane</td>
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<tr>
<td>New</td>
<td>14</td>
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<tr>
<td>Stripe</td>
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<td>Greenway</td>
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<td>Corridor Improvements</td>
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<tr>
<td>All Facilities</td>
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Design Guidance in Bicycle and Pedestrian Plans

Which bike and ped plans should address design guidance?

Local or regional bike and pedestrian plans:
- that are prepared using NCDOT sponsorship through the Planning Grant program
- or that are prepared independently by cities and towns, consultants, MPO/RPO staff, or others

DBPT intention: To provide clear guidance so that all bike and pedestrian plans prepared in the state are implementable and useful
What is design guidance?

Design guidance = Recommended standards and specifications for bicycle and pedestrian facilities, **by type**

• Bike lane, multi-use path, sidewalk, curb ramps, signage, pavement markings, intersection improvements, crossing elements, and so on
  • Each is a distinct type of facility

• Where to find descriptions of facility types:
  • WalkBikeNC plan, p. 6-12 through 6-32
  • [http://www.walkbikenc.com/](http://www.walkbikenc.com/)
  • Pedestrian-Bicycle Infrastructure Network (PBIN) Glossary:
Typical sources of design guidance

- Published as engineering handbook (AASHTO Bike Guide & AASHTO Ped Guide)
- Promulgated by a professional group (NACTO)
- Federal guidelines (ADA, PROWAG – US Access Board)
- State official standards (NCDOT Roadway Design Manual)
- Federal standards issued by FHWA (MUTCD; particular topics)
How to include design guidance in bike and pedestrian plans

Bike-Ped Division has eliminated the requirement that plans include a section on general design guidance

Instead:

• Use our website to find current sources of design guidance
• Determine which guidance is appropriate to use for proposed improvements
• Localize the guidance: Apply and adapt it to specific plan recommendations
  • To specific corridors, intersections, and conditions
  • Through project cut sheets, project descriptions, cross-sections, recommendations for signage or pavement markings at key locations, conceptual plans

Bike-Ped Division website on design guidance:

Statewide Bike-Ped Statewise Strategic Plan:
www.walkbikenc.com
<table>
<thead>
<tr>
<th>Don’t</th>
<th>✓ Do</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regurgitate pages of general design guidance for facilities</td>
<td>Tailor designs to local needs (such as topography, right-of-way constraints, community context, types of users, key issues, and facility types)</td>
</tr>
</tbody>
</table>
| Provide generic diagrams or cross-sections of facility types*       | Provide cutsheets that adapt and apply the standards to the specifics of a particular context in the community  
  * If plan users need to know what a facility generally looks like, can include photo or sketch of an example |
| Reprint in every plan identical versions of how a facility should be designed | Take general standards for a facility, and show how they would be applied to priority projects that are recommended in the plan |
| Create a general design guidance reference manual                   | Refer to the NCDOT Bike-Ped website for the sources of guidance that should be consulted in facility design |
| Refer to facilities by unique, invented, or proprietary terminology, or colloquial terms (“bike path”) | Use the PBIN Glossary to apply consistent, common vocabulary to facilities |
| Disregard local issues and needs (varying or constrained right-of-way or pavement width, built pattern, transitions between facility types) | Go into more detail where specially relevant to the community or to plan goals |
**Example**

*Project Cutsheet 7:*

**MIDLAND ROAD**

**TO/FROM:** Knoll Rd Greenway / Knoll Road

**DISTANCE (FEET):** 1,900

**FACILITY TYPE:** Sidewalks

**CONSTRUCTION METHOD:** New Construction:
1. Extend the 10' greenway trail through the pines to join the southeast corner of the intersection of Midland/Dr. Neal Rd.
2. Stripe a high-visibility crosswalk on the east side of Dr. Neal Rd at Midland, crossing Midland Rd.
3. The now the landscaped (but not raised) median does not go far enough west to meet the location of where the crosswalk will be striped so part of this recommendation is to extend the median so that vehicles turning left will not interact with pedestrians in the crosswalk.
4. Install advance warning signs (pedestrian crossing ahead) in both directions for motorists on Midland Rd.
5. Install warning sign for northbound motorists on Dr. Neal Rd. (entering the Mid-Pines South neighborhood) “Right Turn Yield to Pedestrians”
6. Build 10’ sidewalk along the north side of Midland Rd.

**TRAP GENERATOR:** Knoll Rd Greenway and Pinelane High School to the south, park and schools to the north.

**DEVELOPMENT/FUNDING MECHANISMS:** Secure an easement from the Mid-Pines South homeowners association and an easement agreement with NCDOT. Construction funding unidentified.

**ROAD/LAND OWNERSHIP:** NCDOT / 3 private parcels.

**EXISTING LANE CONFIGURATION:** 2 lanes each way, divided 60’ w/ 15’ Median:
321111115 M 11111

**PROPOSED LANE CONFIGURATION:** Same

**CONSTRAINTS:** ROW needs to be reidentified, easement from nearby properties may be necessary. Midblock crossing sidewalks are also needed.

**NOTES/COMMENTS:** People are already crossing at this location; in fact, there is a worn asphalt slab in the median where the greenway currently meets Midland.
Pedestrian & Bicycle Infrastructure Network

The Pedestrian and Bicycle Infrastructure Network (PBIN) is a statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking facilities in North Carolina.

- Data Solicitation – counties, regional planning agencies, municipalities w/ 5,000+ population, CTPs, Planning Grant Initiative, etc.
- Data Integration

To date, approximately 300 datasets have been added and converted into the PBIN Geodatabase.

Common Facility Data Collected
- Bicycle Facility Data – bike lane, paved shoulder, cycle tracks, bike route, shared lane markings, bicycle boulevard, bike parking, signage
- Pedestrian Facility Data – sidewalk, footpath, crosswalk, mid-block crossing, rectangular rapid flashing beacon, signage
- Shared Use Facility Data – shared use path, sidepath, unimproved trail, trailhead, signage

https://connect.ncdot.gov/projects/BikePed/Pages/PBIN.aspx
## PBIN Coverage

<table>
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<tr>
<th>Facility</th>
<th>Existing Length (Miles)</th>
<th>Proposed Length (Miles)</th>
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<tbody>
<tr>
<td>Bike Lane</td>
<td>287</td>
<td>1,401</td>
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<tr>
<td>Paved Shoulder</td>
<td>266</td>
<td>2,034</td>
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<td>Bike Route</td>
<td>8,459</td>
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<td>Sidewalk</td>
<td>10,119</td>
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<tr>
<td>Footpath</td>
<td>2,769</td>
<td>13</td>
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<tr>
<td>Shared Use Path</td>
<td>1,958</td>
<td>6,367</td>
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<tr>
<td>Sidepath</td>
<td>133</td>
<td>293</td>
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Pedestrian and Bicycle Infrastructure Network (PBIN)
A statewide Geographic Information System (GIS) inventory of existing and planned bicycling and walking facilities in North Carolina

About the PBIN
The Pedestrian and Bicycle Infrastructure Network (PBIN) is a geodatabase that includes data on existing and proposed bicycle and pedestrian facilities throughout North Carolina. The initial data was collected by NCDOT partners at the North Carolina State University-Institute for Transportation Research and Education (ITRE). The PBIN data is not comprehensive, however, and updates to the geodatabase are ongoing. Municipalities are encouraged to submit their data, in a standardized format compatible with NCDOT’s existing geodatabase.

Viewing and Downloading Data
The geodatabase includes current and proposed bicycle and pedestrian facilities, arranged in six separate layer classes: pedestrian facilities, bicycle facilities, and shared use path facilities in both polyline and point formats. This data is updated on a quarterly basis.

In order to download, analyze, and/or manipulate the data, ArcGIS is required. The Data Catalog provides detailed attribute information. The Geospatial Standards for Planning Grant Communities document outlines specific requirements of data developed for bicycle and/or pedestrian plans awarded through NCDOT’s Planning Grant Initiative Program.

- PBIN Geodatabase (December 2015)
- PBIN Data Catalog (December 2015)
- Geospatial Standards for Planning Grant Communities (January 2016)

Related Links
Planning Grant Program
NCDOT Statewide Pedestrian and Bicycle Plan
NCDOT Division of Bicycle and Pedestrian Transportation Public Site

Key Downloads
North Carolina Terminology for Active Travel
PBIN Geodatabase (December 2015)
Blank Geodatabase Template (January 2016)

To upload data, please use the following contact form below.

https://connect.ncdot.gov/projects/BikePed/Pages/PBIN.aspx
Bicycle & Pedestrian Crash Data

North Carolina Pedestrian and Bicycle Crash Data Tool

Use our online database to learn about these North Carolina police reported bicycle and pedestrian crashes. Information for almost 40,000 bicycle and pedestrian crashes with motor vehicles in North Carolina has been compiled to create an interactive database. You can look for standard data tables for certain years or geographic areas, or create your own using our online query tool. Select bicycle data or pedestrian data below to begin.

Resources

- NC Pedestrian Crash Types Summary Report – 2008-2012
- NC Bicycle Crash Types Summary Report – 2008-2012

http://www.pedbikeinfo.org/pbcat_nc/
Bicycle & Pedestrian Crash Data

http://www.arcgis.com/home/item.html?id=b4fcdc266d054a1ca075b60715f88aef
Non-Motorized Traffic Monitoring Program
(Pedestrian and Bicycle Counts)

Pilot Region:
Divisions 7 & 9

Current Region:
Divisions 4, 5, 8 and 10

https://itre.ncsu.edu/focus/bike-ped/non-motorized-volume-data-monitoring/
**Bike/Pedestrian Facility Cost Tool**

- Tool capable of providing bike/pedestrian infrastructure cost estimates based on project info inputs provided by user

- Facility types: sidewalk, bicycle lane, shared use path, mid-block crosswalk, paved shoulder, pedestrian intersection treatments, shared lane markings, bicycle/pedestrian bridge

- Sample project cost data obtained from locals, NCDOT, consultants

- Potential use in strategic prioritization, planning documents, etc.

- Usability of tool is strongly dependent on the input of additional datasets
### Bike/Pedestrian Facility Cost Tool

#### Shared-Use Facilities / Greenway Cost Estimation

<table>
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<th>Name of Project:</th>
<th>Date:</th>
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<tbody>
<tr>
<td>Location/Description:</td>
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#### Enter the Following Information for Cost Estimate

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<th>Description</th>
<th>Value</th>
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<td>Length of Shared-Use Path/Greenway (Feet)</td>
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<tr>
<td>Width of Shared-Use Path/Greenway (Feet)</td>
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<tr>
<td>Required Length of Curb &amp; Gutter (Feet)</td>
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<td>No. of Intersections</td>
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<td>No. of Signals</td>
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<tr>
<td>No. of Driveways</td>
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<tr>
<td>Terrain</td>
<td>Level</td>
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<tr>
<td>Crosswalk Thermoplastic Lines Length (Feet)</td>
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<td>No. of Crosswalks</td>
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<td>Include Design Cost</td>
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<tr>
<td>Include Right of Way Cost</td>
<td>YES, Select 'NO' if these costs are internal</td>
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<tr>
<td>Include Construction Engineering &amp; Inspection Cost</td>
<td>YES</td>
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</table>
## Bike/Pedestrian Facility Cost Tool

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Construction Cost Elements</th>
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<tbody>
<tr>
<td>Sidewalk</td>
<td>Cleaning and Grubbing, Crosswalk, Curb and Gutter, Drainage (Per Ft), Earthwork (grading) (CY/Ft), Erosion Control (AC/Ft), Pavement Marking, Sidewalk Concrete, Signalization (EA), Signing, Traffic Control, Utilities and Wheelchair Ramp</td>
</tr>
<tr>
<td>Bicycle Lane</td>
<td>Cleaning and Grubbing, Crosswalk, Curb and Gutter, Drainage (Per Ft), Earthwork (grading) (CY/Ft), Erosion Control (AC/Ft), Pavement Marking, Signalization (EA), Signing, Traffic Control, Utilities, Pavement Widening and Wheelchair Ramp</td>
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<tr>
<td>Shared Use Path</td>
<td>Cleaning and Grubbing, Concrete Barrier, Crosswalk, Crosswalk Stripes, Curb and Gutter, Drainage (Per Ft), Earthwork (grading) (CY/Ft), Erosion Control (AC/Ft), Pavement Marking, Asphalt Surface for Greenway, Signalization (EA), Signing, Traffic Control, Utilities, and Wheelchair Ramp</td>
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<table>
<thead>
<tr>
<th>COST CATEGORIES</th>
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<th>Maximum Cost</th>
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<td>Preliminary Engineering / Design Cost</td>
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<td>Right-of-Way Cost</td>
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<td>Construction Cost</td>
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<td>NCDOT Review Costs ($5000 or 5% whichever is greater)</td>
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Survey for Bike/Pedestrian Plan Implementation

- Purpose of survey
- 61 responses from cities/towns of various sizes
- Median population size – 8,000
- Types of plans adopted by survey responders: pedestrian plan (41), bicycle plan (21), joint bicycle/pedestrian plan (11)
- Average/median year of adoption 2010/2011
Bike/Ped Facilities Constructed

- Sidewalk: 39
- Crosswalk: 31
- Other (please specify): 15
- Bike Parking/Racks: 15
- Pedestrian Signal Head: 15
- Shared Use Path: 15
- Wayfinding Signage: 13
- Bike Lane: 13
- Shared Lane Marking / Sharrow: 12
- Road Diet: 11
- Mid-Block Crossing: 9
- Paved Shoulder: 7
- Rectangular Rapid Flashing Beacon (RRFB): 2
- Bike Boulevard: 1
- Separated Bike Lane / Cycle Track: 0
Common Partners/Funding Sources – Shared Use Paths

- Local general fund/budget/CIP
- STP-DA
- NCDOT (cost share)
- ARRA (Stimulus funding)
- NCDOT (other)
- CMAQ
- Private Donation
- FHWA
- NCDEQ
- Visitor's Bureau
- Management Trust Fund
- Blue Cross Blue Shield Grant
- Clean Water Management Trust Fund
- Visitor's Bureau
- Other grants
- PARTF
- Other

31 count
**Common Partners/Funding Sources – Other Facilities**

**On-Road Bicycle Facilities (12 count)**
- NCDOT (cost share)
- NCDOT (resurfacing)
- Powell Bill
- NCDOT (other)
- CMAQ
- Local general fund/budget/CIP

**Intersection Improvements (8 count)**
- NCDOT (other)
- Local bond
- NCDOT Division Discretionary Funds
- Local general fund/budget/CIP

- **Wayfinding** (3) - Local general fund/budget/CIP, Downtown Special Tax District funds, Non-profit
- **Bike Racks** (2) - Local general fund/budget/CIP
- **Bike Boulevard** (1) - Blue Cross Blue Shield Grant
Projects Not Implemented

- 41 projects (19 shared use paths / 15 sidewalks)
- Funding was the overwhelming constraint – either a very expensive project or limited local funds combined with limited state funds and grant opportunities
- 34 of 41 projects had good local support
- About ½ of project had right-of-way limitations
- Almost ½ had utility relocation issues (primarily sidewalk projects)
Programs Implemented

- **Walk/Bike to School Day**: 10
- **Bicycle Rodeo**: 8
- **Watch For Me NC**: 4
- **Community Awareness/Activity Events**: 4
- **Walking/Bicycling Maps**: 2
- **Open Streets**: 1
- **Bike/Ped Count Program**: 1
- **Bicycle Patrol Officers**: 1

**Primary Partners for Implementation**
- Municipal staff
- BPAC
- Schools
- Police Dept.
- Parents
- Active Routes to School Coordinators
- Health organizations
Policies Implemented

Also, 10 communities indicated that a bicycle and/or pedestrian advisory committee was created after adoption of the bike and/or pedestrian plan.