North Carolina
DEPARTMENT OF TRANSPORTATION

Transportation Planning in North Carolina

Dan Thomas, PE

January 29, 2014

Transportation Process

Long Range Planning
Determining the Need

Project Prioritization
Ranking the Projects

Project Development
Funding the Projects

Project Planning
Minimizing the Impacts

Project Design
Design and ROW

Construction and Maintenance
Building & Maintaining the System

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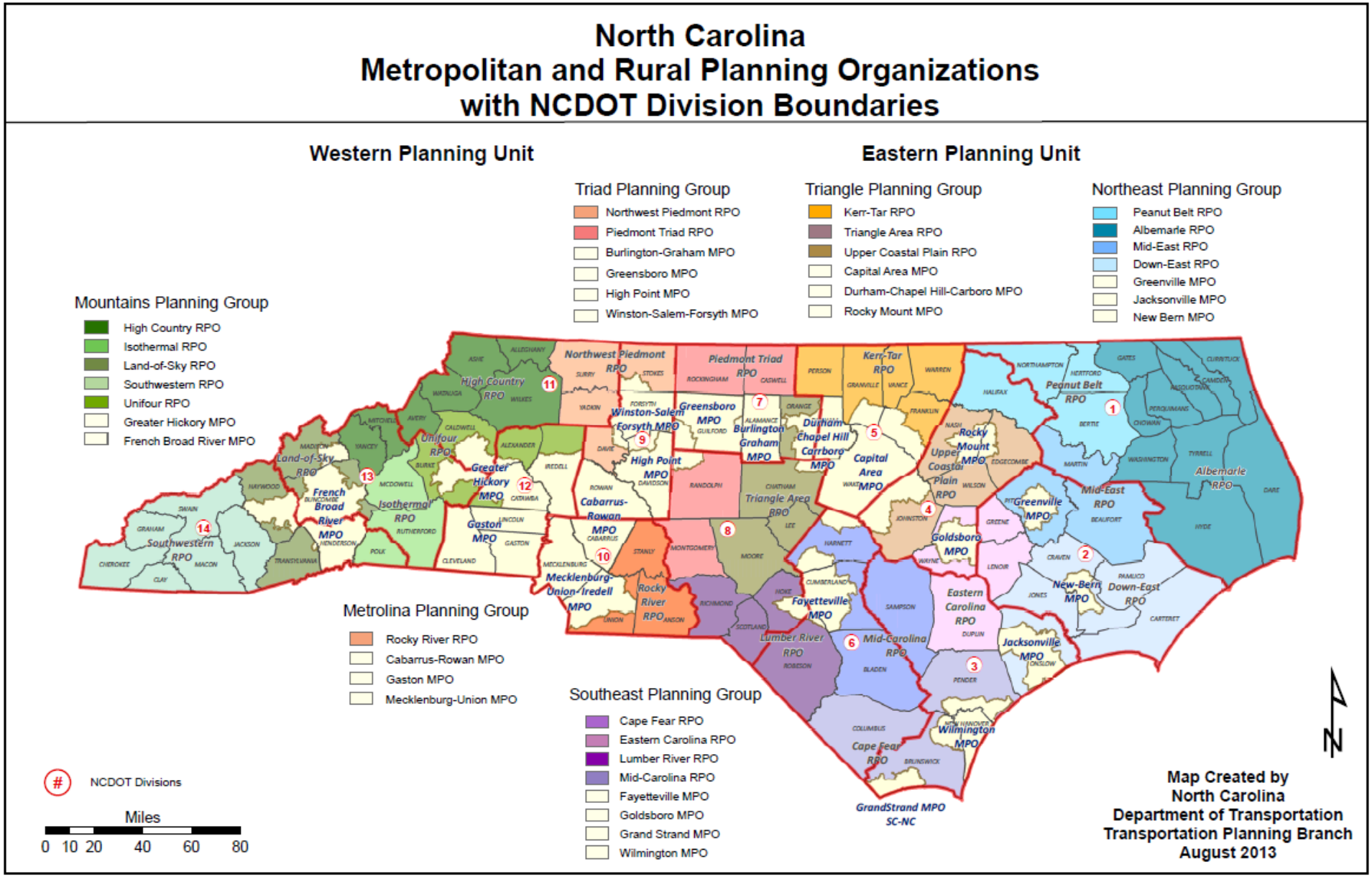
Transportation Planning Branch

North Carolina
Metropolitan and Rural Planning Organizations with NCDOT Division Boundaries



Transportation Planning Branch Business Units

Western Planning Unit

Mountains Group
Metrolina Group
Triad Group

Traffic Forecasting Group

Eastern Planning Unit

Triangle Group
Southeast Group
Northeast Group

Traffic Forecasting Group

Technical Services Unit

Model Research & Development Group

Systems Planning Group

Traffic Survey Group

MPOs & RPOs

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Comprehensive Transportation Plans

Transportation Process – Past

Land Use Planning and Community Vision

Transportation Planning

Project Planning (NEPA)

What does the community want to look like in the future?

Develop CTP Vision → Conduct Needs Assessment → Analyze Alternatives → Develop Final Plan → Adopt Final Plan

Collect data and determine problems

Develop CTP Vision → **Conduct Needs Assessment** → Analyze Alternatives → Develop Final Plan → Adopt Final Plan

Balance meeting transportation need with impacts to the human and natural environment

Develop CTP Vision → Conduct Needs Assessment → **Analyze Alternatives** → Develop Final Plan → Adopt Final Plan

Put together final plan and documentation

Develop CTP Vision → Conduct Needs Assessment → Analyze Alternatives → **Develop Final Plan** → Adopt Final Plan

RPO Endorsement;
Local and State adoption

Develop CTP Vision → Conduct Needs Assessment → Analyze Alternatives → Develop Final Plan → Adopt Final Plan

Adopted by:

Town of Mocksville
Date: December, 7 2010

NCDOT
Date: January 6, 2011

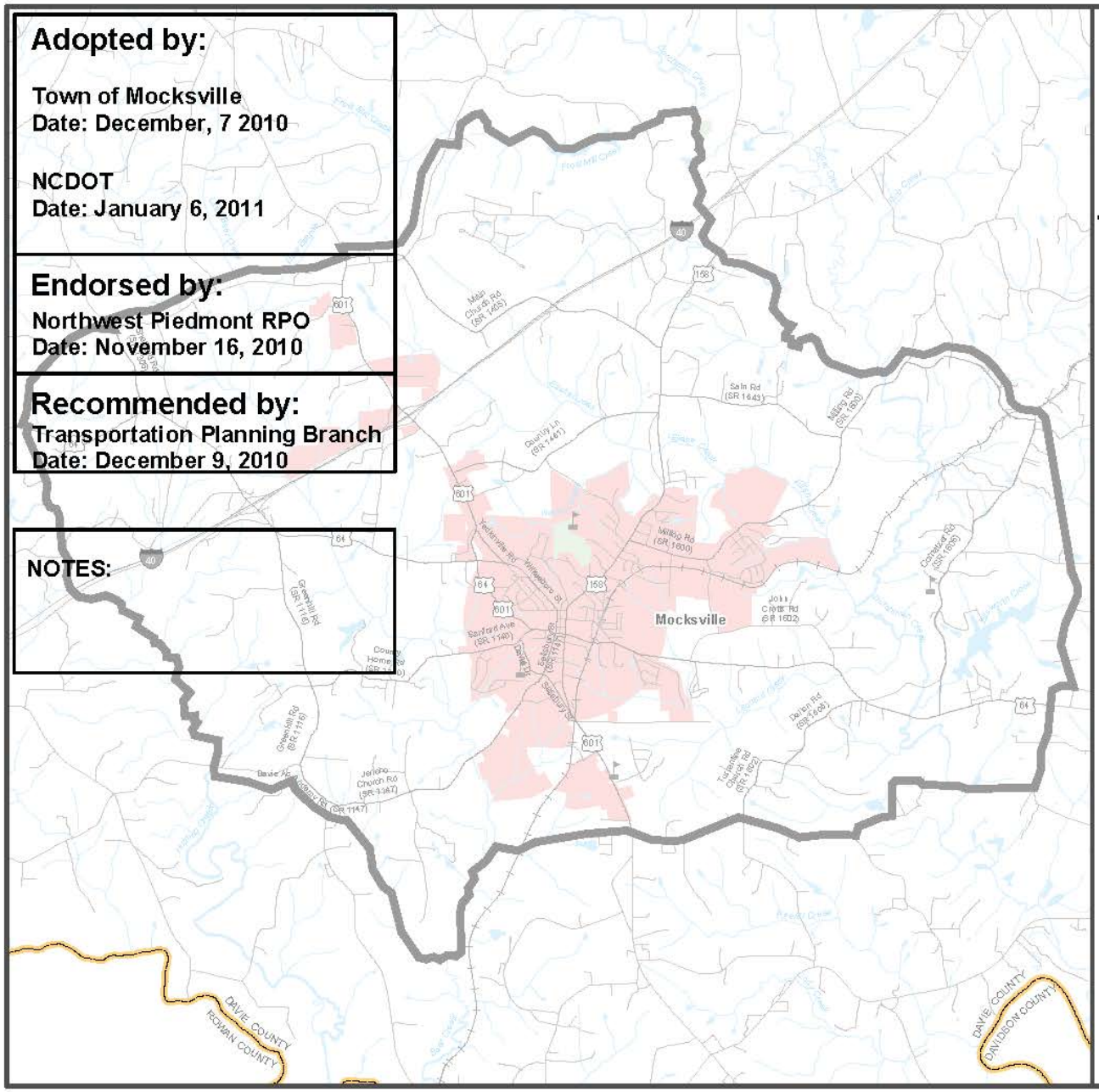
Endorsed by:

Northwest Piedmont RPO
Date: November 16, 2010

Recommended by:

Transportation Planning Branch
Date: December 9, 2010

NOTES:



Town of Mocksville

Davie County
North Carolina

Comprehensive Transportation Plan

Plan date: November 18, 2010

Sheet 1	**Adoption Sheet**
Sheet 2	**Highway Map**
Sheet 3	**Public Transportation and Rail Map**
Sheet 4	**Bicycle Map**
Sheet 5	**Pedestrian Map**

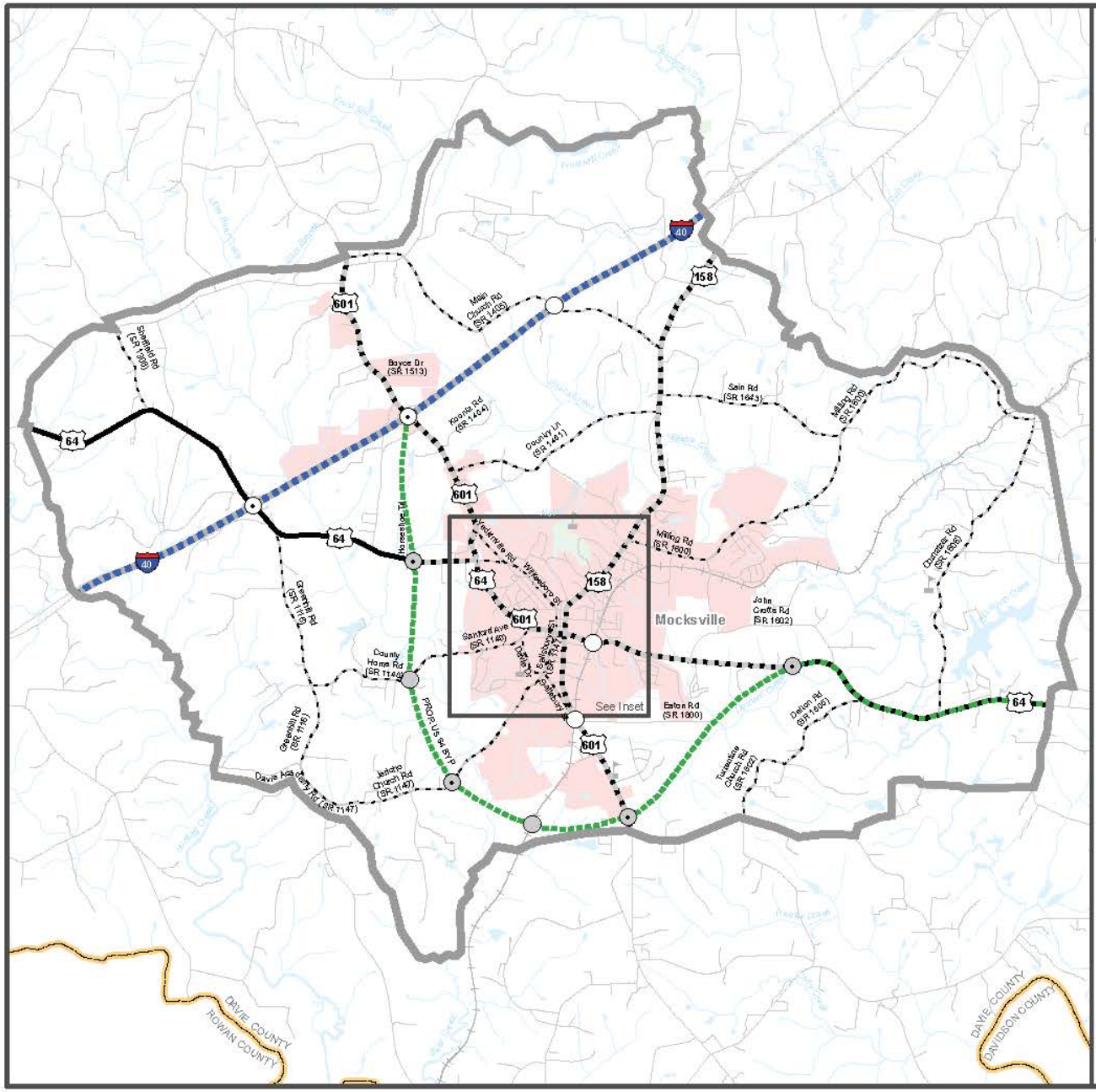
Legend

- Schools
- Roads
- Railroads
- Rivers
- Parks
- Lakes
- Municipal Boundary
- Planning Boundary
- County Boundary

0 0.5 1 1.5 Miles

Sheet 1 of 5

Base map date: June 20, 2008
Refer to CTP document for more details



Highway Map

Incorporated 1839

Town of Mocksville

Comprehensive Transportation Plan

Plan date: November 18, 2010

Freeways
- Existing
- Needs Improvement
- Recommended

Expressways
- Existing
- Needs Improvement
- Recommended

Boulevards
- Existing
- Needs Improvement
- Recommended

Other Major Thoroughfares
- Existing
- Needs Improvement
- Recommended

Minor Thoroughfares
- Existing
- Needs Improvement
- Recommended

- Existing Interchange
- Proposed Interchange
- Existing Grade Separation
- Proposed Grade Separation

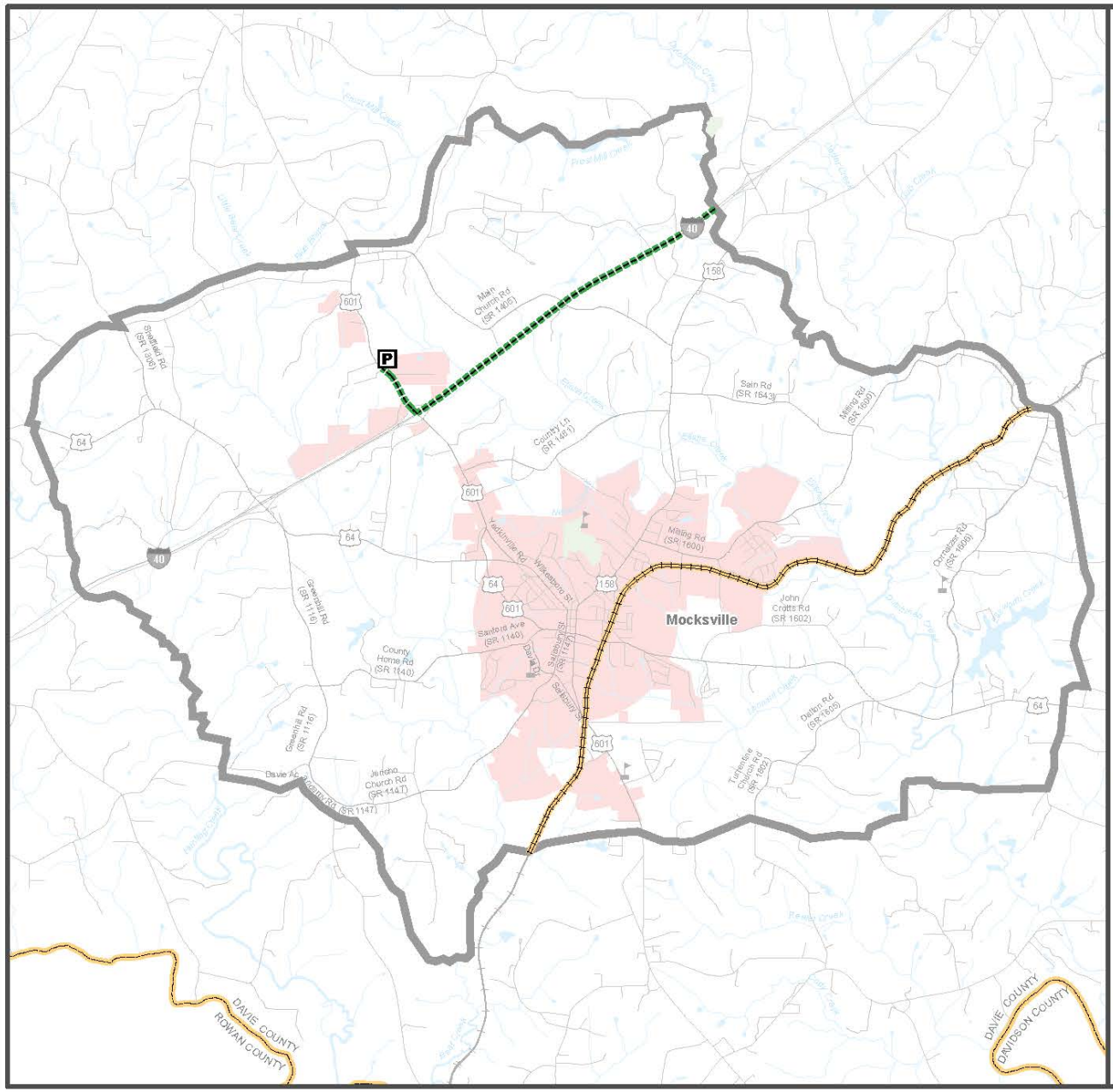
0 0.5 1 1.5 Miles

Sheet 2 of 5

N W E S

Base map date: June 20, 2008

Refer to CTP document for more details



Public Transportation and Rail Map

Town of Mocksville

Comprehensive Transportation Plan

Plan date: November 18, 2010

Bus Routes
- Existing
- Needs Improvement
- Recommended

Fixed Guideway
- Existing
- Needs Improvement
- Recommended

Operational Strategies
- Existing
- Needs Improvement
- Recommended

Rail Corridor
- Active
- Inactive
- Recommended

High Speed Rail Corridor
- Existing
- Recommended

Rail Stops
- Existing
- Recommended

Intermodal Connector
- Existing
- Recommended

Park and Ride Lot
- Existing
- Recommended

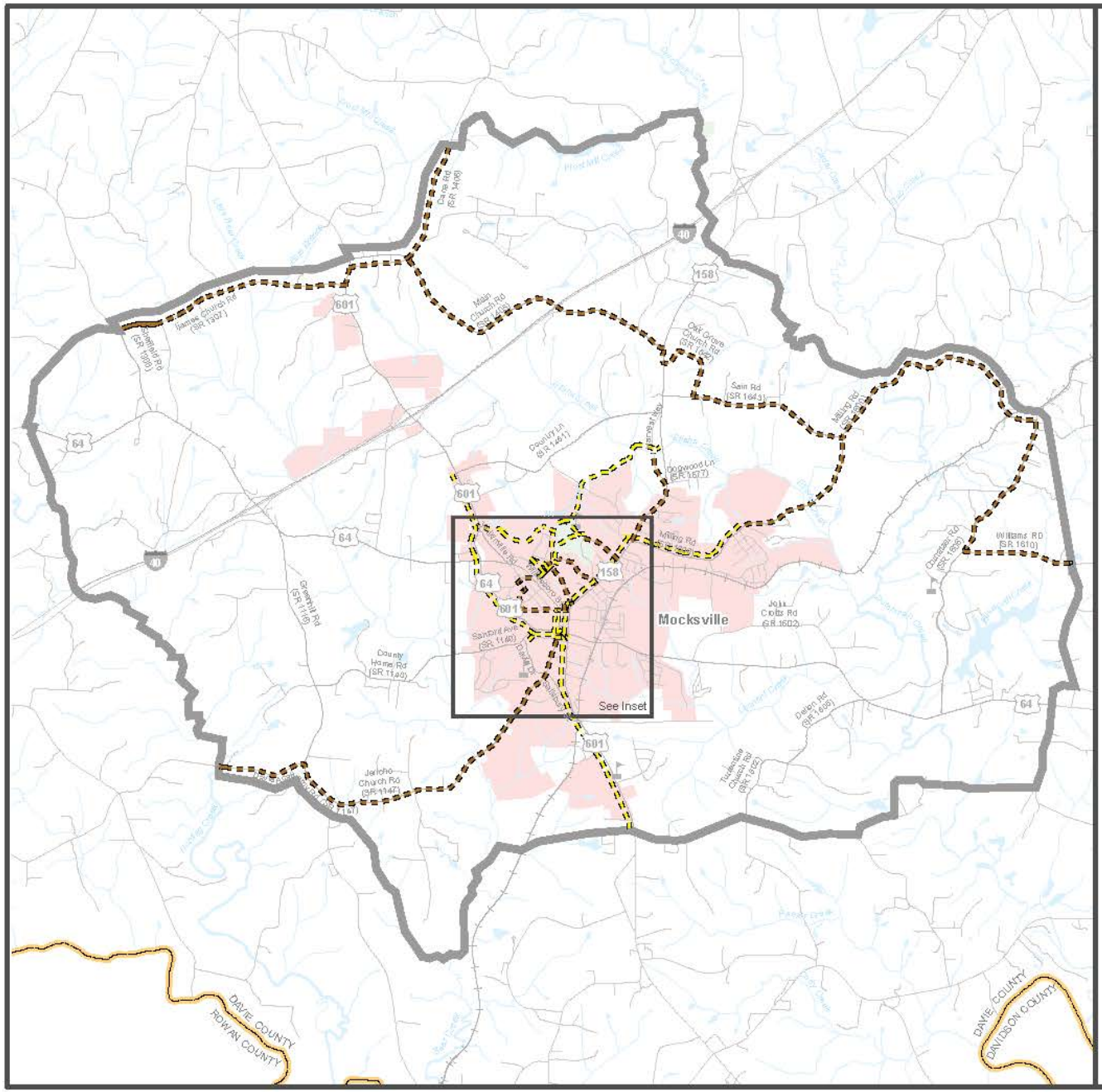
0 0.5 1 1.5 Miles

Sheet 3 of 5

Base map date: June 20, 2008

Refer to CTP document for more details

N W E S



Bicycle Map

Incorporated 1839

Town of Mocksville

Comprehensive Transportation Plan

Plan date: November 18, 2010

On-road
- Existing
- Needs Improvement
- Recommended

Off-road
- Existing
- Needs Improvement
- Recommended

Multi-Use Paths
- Existing
- Needs Improvement
- Recommended

- Existing Grade Separation
- Proposed Grade Separation

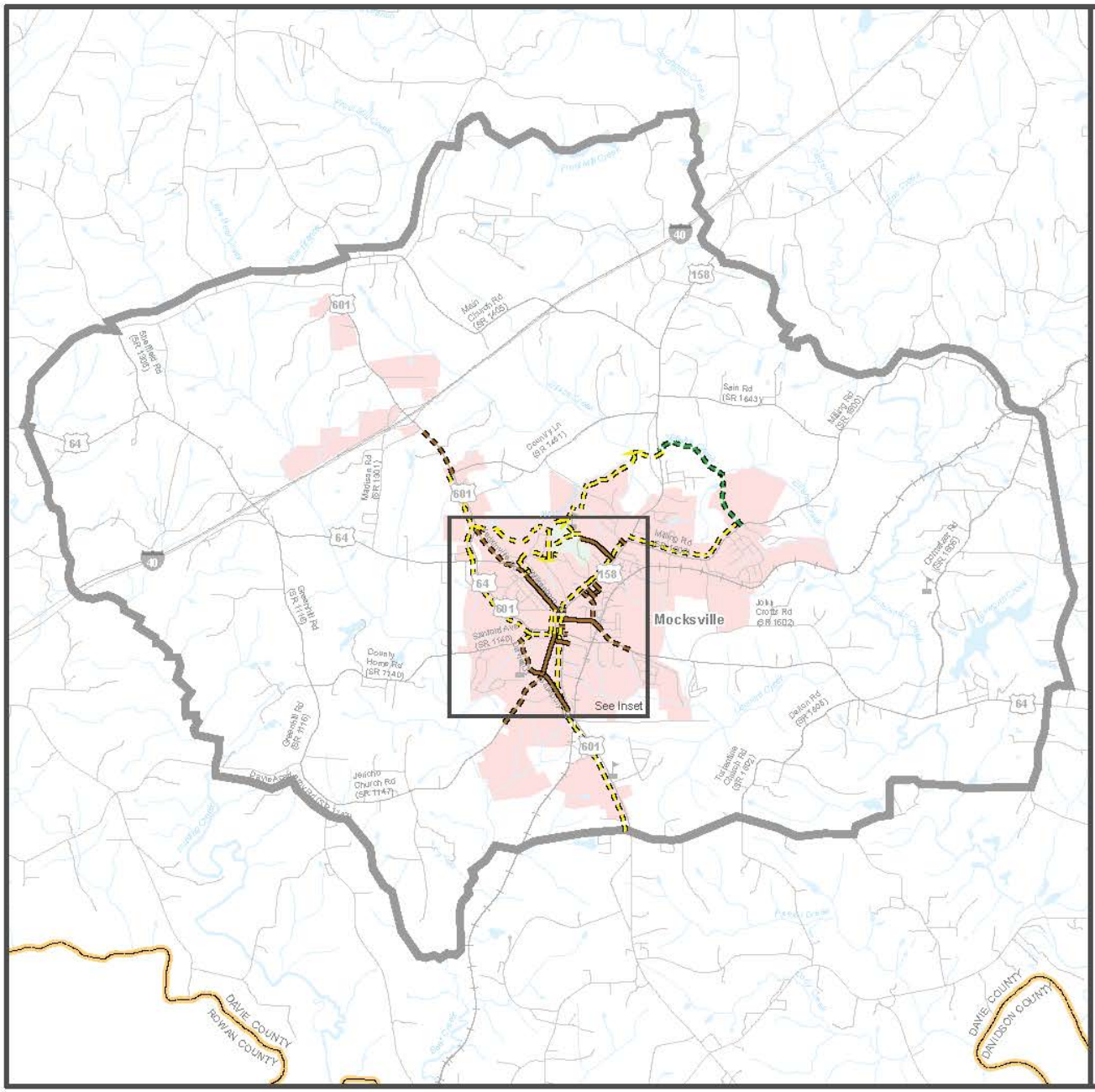
Miles
0 0.5 1 1.5

N W E S

Sheet 4 of 5

Base map date: June 20, 2008

Refer to CTP document for more details



Pedestrian Map

Incorporated 1839

Town of Mocksville

Comprehensive Transportation Plan

Plan date: November 18, 2010

Sidewalk
- Existing
- Needs Improvement
- Recommended

Off-road
- Existing
- Needs Improvement
- Recommended

Multi-Use Paths
- Existing
- Needs Improvement
- Recommended

- Existing Grade Separation
- Proposed Grade Separation

0 0.5 1 1.5 Miles

N W E S

Sheet 5 of 5

Base map date: June 20, 2008

Refer to CTP document for more details

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CTP Analysis Tools

Analysis Tools

- Trend Line
- Hand Allocation
- Travel Demand Model
  - Small urban models
  - MPO models
  - Regional model
  - Statewide model

What's a Model?

Dictionary De

- Small objec enting another object
- Descriptior accounts fo rties & is used fo aracteristics

Nope!!

What is a Travel Demand Model?

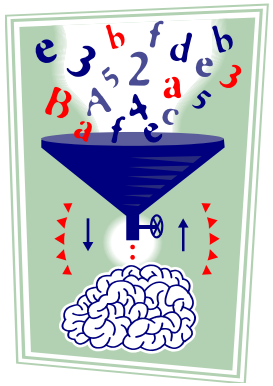
- A series of mathematical equations that represent how choices are made when people travel
- Basically…where people are coming & going and how they get there

How are Model Used?

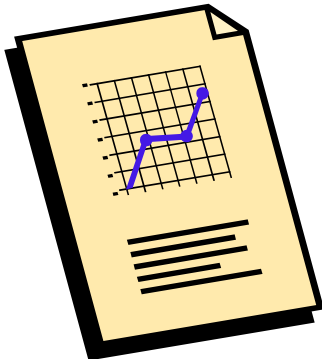
- Determine transportation needs & solutions for MTP/CTPs
- Evaluate air quality impacts
- Analyze proposed land use changes
- Design multi-million dollar transportation projects

What Data goes into Models?

- Housing data
- Employment data
- Census data
- Travel behavior data



- Roadway data
- Transit inventory
- Traffic counts
- Speed study data



How are Models Built?

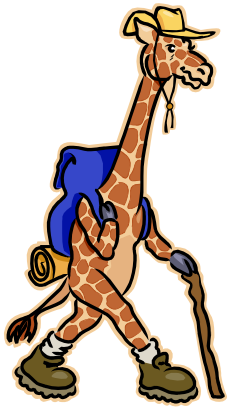
4 Step Model Process

- Trip Generation
- Trip Distribution
- Mode Choice
- Traffic Assignment

Step 1: Trip Generation

Number and types of trips in the area…

Non-Resident Trips



Shopping Trips

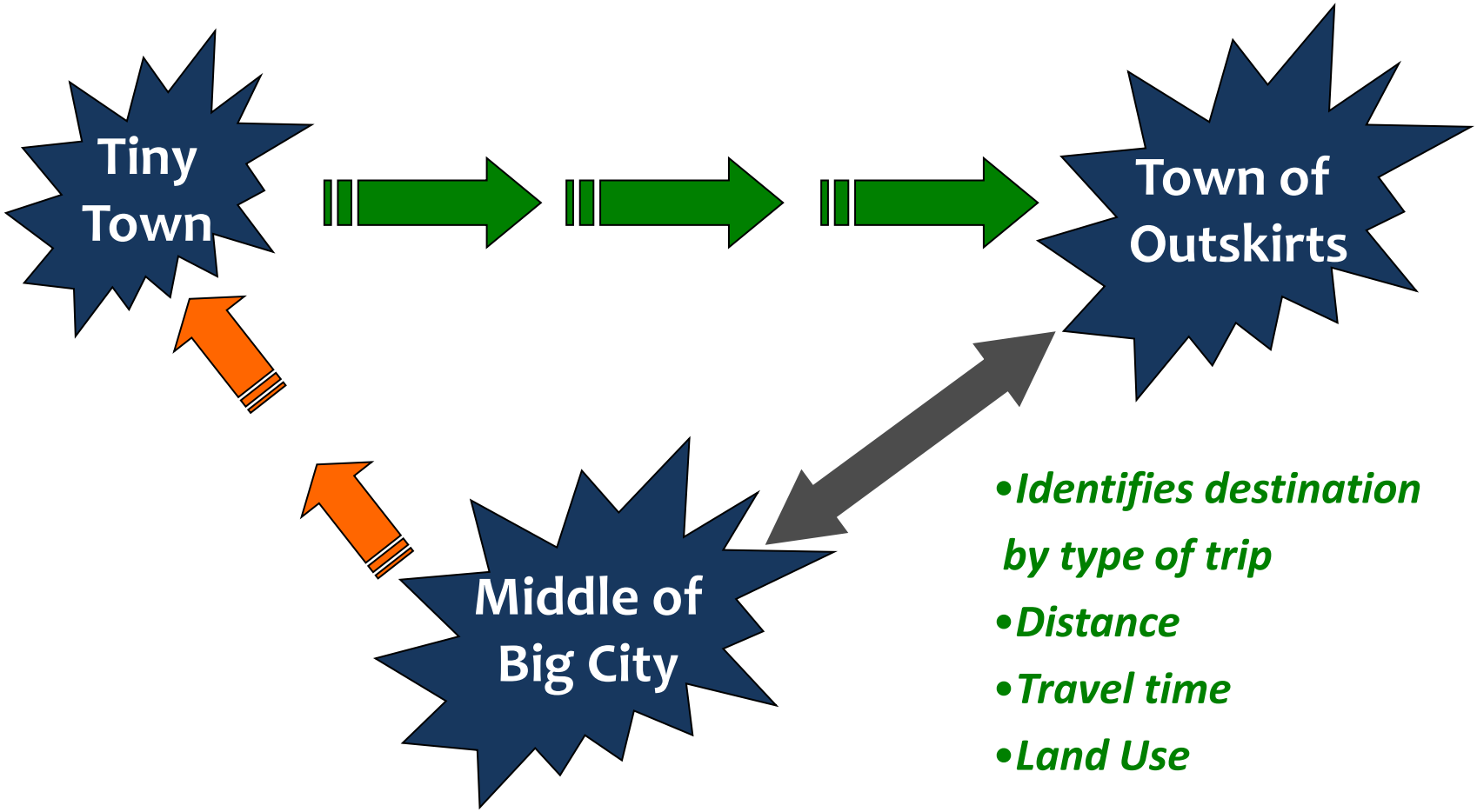
School Trips

Commercial Vehicle Trips

Work Trips
& more

Step 2: Trip Distribution

Where the trips are going…



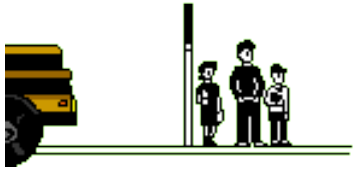
- *Identifies destination by type of trip*
- *Distance*
- *Travel time*
- *Land Use*

Step 3: Mode Choice

Getting from here to there…

Walk

Transit



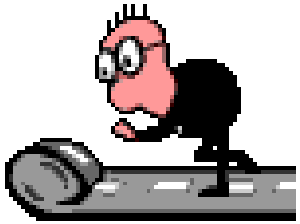
Bike

Auto

Step 4: Trip Assignment

The path to your destination…

Highway or Transit

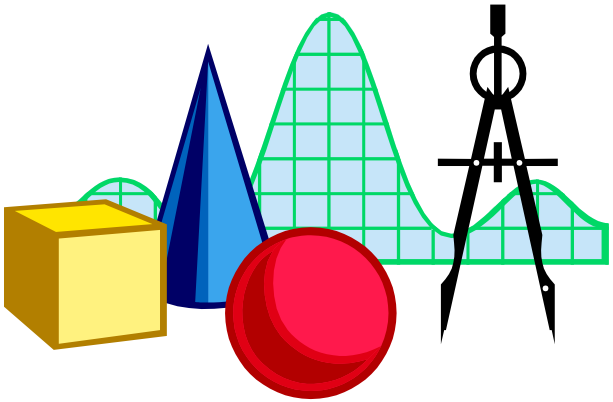


- *Minimum Path*
  - *Probability*
  - *Congestion*

After the 4 Step Process

- Calibrate the model
- Validate the model
- Forecast future year data

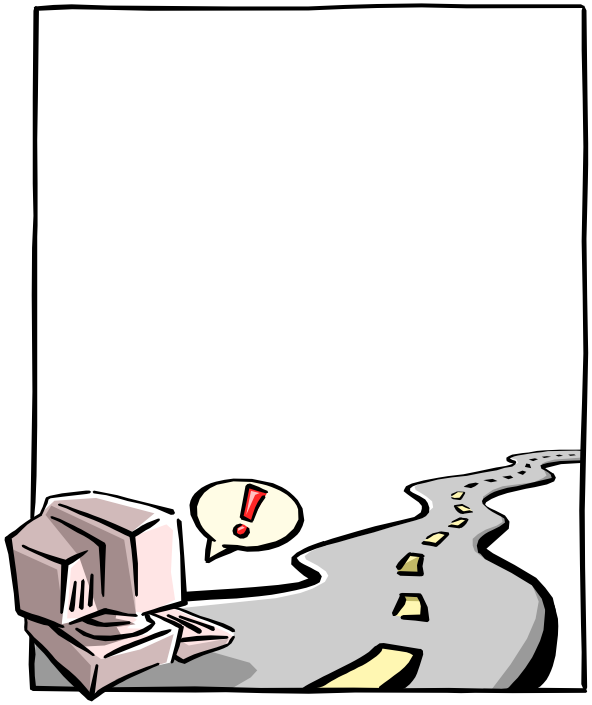
USE THE MODEL!!



Final Modeling Thoughts

Travel models: a means of predicting the unpredictable

- No model can perfectly replicate or predict reality
- Does provide valuable information
- Helps support the decision making process



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Integration

Integration Linkages

CTP		Project Development
Problem Statement	→	Purpose & Need
Alternatives Analysis	→	Alternatives Analysis
Unreasonable Solutions	→	Alternatives Selected for Detailed Study
Multi-modal Analysis	→	Multi-modal Alternatives
Community Impact Assessment	→	Community Impact Analysis
Land Use	→	Indirect & Cumulative Effects
Public Involvement	→	Public Involvement
Mitigation Opportunities	⇄	Mitigation Needs & Opportunities

Status: Indirect & Cumulative Effects

4 products in long range transportation planning:

- Assessment of existing conditions
- Future growth potential
- Alternatives ICE Screening
- Best management practices toolkit

Status: Alternatives & Scenario Analysis

- Draft procedures have been developed
- 3 categories for results of Alternatives Analysis
    - CTP Project Proposal (recommended)
    - Other Potential Alternatives Studied
    - Unreasonable Solutions/ Alternatives
- Next step is to develop documentation standards for transportation planning

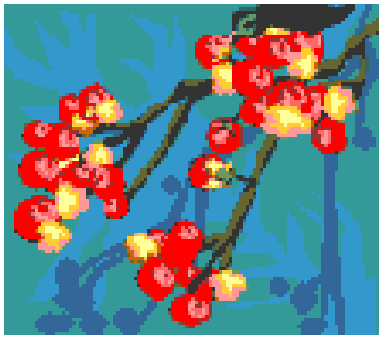
Status: Community Impact Analysis

Products have been developed

- Community Understanding Report (including data sources)
- Suggested stakeholders for public involvement

Interagency Coordination Protocol

- NCDENR
  - Division of Coastal Management
  - Division of Marine Fisheries
  - Division of Water Quality
- State Parks Environmental Specialist
- State Archaeology Office
- NC Agriculture
  - NC Forest Service
- USACE
- National Park Service
- Coast Guard
- Department of Commerce
- DHHS
- NOAA



Public Engagement Toolkit (PET)

On-line tool that provides practical information to help transportation professionals better engage the public as part of our planning, project development or study process

Rollout in late spring – summer 2014

Public Engagement Toolkit

- Technique descriptions
- Search and filter functions for techniques
- How-to’s and how others have used techniques
- Sample documents
- Overall and cost-effectiveness user ratings
- Resource descriptions and links

Streamlining

- Effort to examine the Merger process to determine how it can be more efficient
- Relies upon products from long range transportation planning
    - Traffic data
    - Problem Statement
    - General information about area

Streamlining Concepts

- Uses existing data where possible (GIS)
- Improve Scoping: involve agencies and long range planners
- Reduce surveys and design level detail
- Strategize the level of effort

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Questions