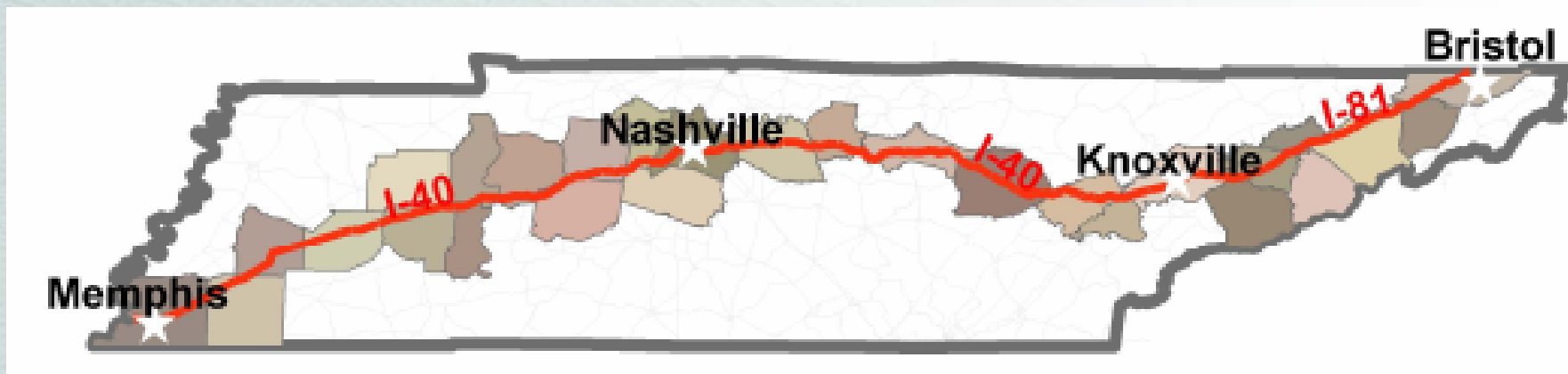


I-40/I-81 Study Update

Nashville



April 3, 2008

Agenda

- I-40/I-81 – Tennessee’s Major Artery
- Study Overview
- Process for Evaluating Potential Solutions
- Preliminary Study Results
- Remaining Steps

Study Corridor

- Bristol to Memphis, 550 Miles
- Includes 9 of State's 12 RPOs
- Crosses 8 of State's 11 MPOs/TPOs



Corridor Importance

- A Corridor in the Strategic Investment Plan
- 55% of State's population live along the corridor (28 counties)
- Truck volumes along corridor are estimated to double by 2030; trucks carry 74% of freight in State
- Rail freight volumes projected to increase over 50% by 2030

Corridor Importance

- Major commuting route in urban areas
- Serves as a jurisdiction's "Main Street" and provides local access if parallel roads are congested or don't exist
- Demand along corridor is very different from original system function of facilitating interstate travel

Study Purpose

- Identify & address I-40/I-81 deficiencies
- Identify low-cost operational improvements along corridor
- Consider effectiveness of truck/rail diversion
- Consider multi-modal solutions

Identify, Evaluate & Prioritize Solutions That Address:

- Congestion & capacity
- Operations & maintenance
- Safety & security
- Freight movement & diversion
- Economic access
- Commuter patterns
- Inter-modal facilities (freight and/or passenger)

Study Outcomes

- Projects & strategies for consideration by TDOT, MPOs/TPOs & RPOs
- Short, mid & long-range solutions and cost estimates

Previous Nashville Public Meeting

- Held on September 4, 2007
- Provided background on I-40/I-81 study
- Asked if there were deficiencies in the corridor beyond what we had identified
- Requested input into range of potential solutions to be considered

Other Regional Stakeholder Meetings

- Memphis March 31
- Jackson April 1
- Knoxville April 7
- Tri-Cities April 8
- Cookeville April 10

Initial Screening Process

- Five “packages” of multimodal solutions for corridor analysis for 2030
 - Existing + Committed Improvements
 - Roadway Capacity
 - Corridor Capacity
 - Operational Solutions
 - Rail-Focused Solutions
- Developed performance measures from statewide and urban area models
- Off-model analysis for selected measures

Purpose of Evaluation Process

- Identify solutions/projects with highest benefit/cost (B/C) ratios, recognizing that this measure represents only one factor in project assessment
- Identify solutions/projects that will provide benefits in short- and mid-term periods

Evaluation Process

- B/C ratios estimated for projects from those “packages” found to be significant
- Benefits for each project **monetized** to allow consistent measurement across evaluation criteria
- Roadway cost estimates consistent with TDOT methodology
- Projects evaluated for multiple planning horizons
- Benefits estimated **only** for I-40 & I-81

Evaluation Components

- Auto hours of recurrent delay
- Truck hours of recurrent delay
- Auto hours of non-recurrent (incident) delay
- Truck hours of non-recurrent (incident) delay
- Number of accidents
- Number of fatalities

Identified I-40 Widening Projects

- **Widen to 6 Lanes between Exit 226 (Mt. Juliet Rd) and Exit 235 (SR-840)**
 - 2030 B/C ratio of 3.2 for widening 8-mile segment at an estimated total cost of \$54 million
 - Modeling analysis shows need for these improvements by 2011

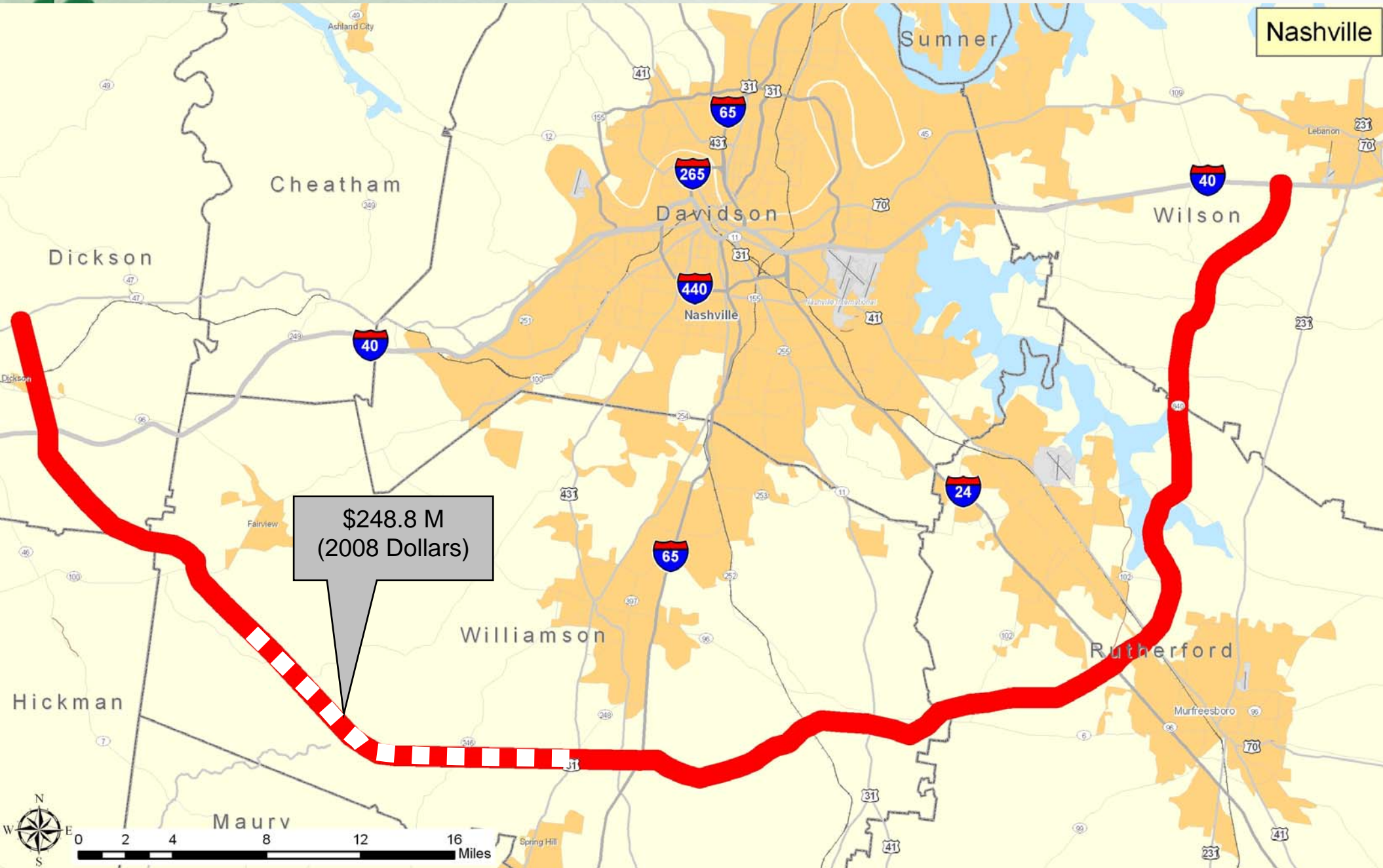
Six-Lane Widening Between Exit 226 and Exit 235



I-40 Corridor Capacity Projects

- **Completion of remaining segments of SR-840**
 - 2030 B/C ratio of 5.7 for completing this roadway at estimated cost of \$248.8 million
 - Provides alternative route for I-40 through traffic and motorists going to I-65 South and I-24 South

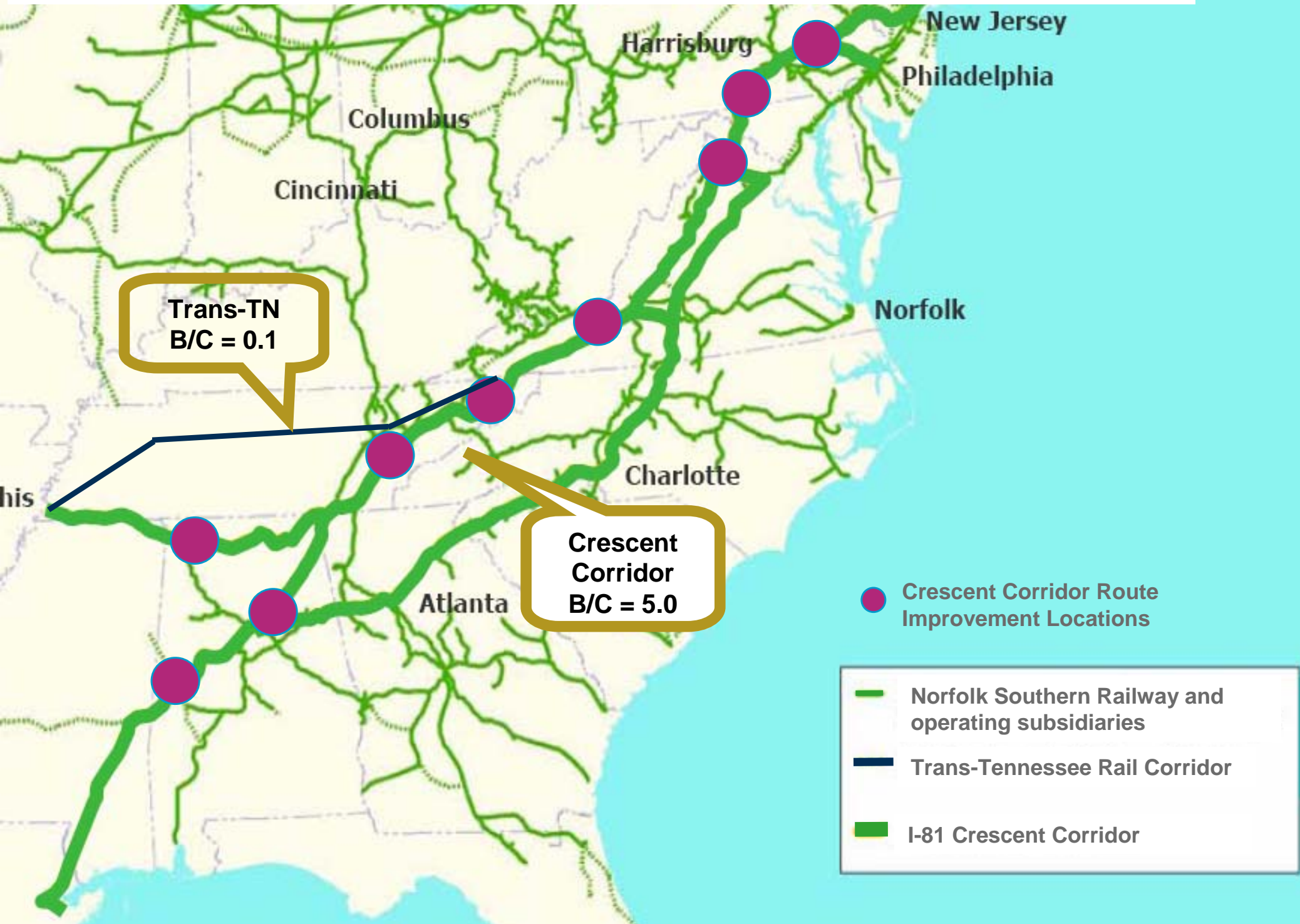
SR-840 Corridor Capacity Project



Truck/Rail Diversion

- **Truck trips are divertible to rail if**
 - Trip distances are long (greater than 500 – 750 miles)
 - Commodities can be handled easily by rail
 - Bulk goods
 - Non-perishable goods
 - Goods easily packaged and shipped using intermodal containers
 - Rail network matches desired trip origin and destination

I-40/I-81 Rail Improvement Alternatives



Trans-Tennessee Rail Corridor

- Re-development of rail connection between Crossville and Cookeville
- Provides rail connection across state
- Direct rail service between Nashville and Knoxville
- Estimated cost of improvements is \$1.2 billion

Crescent Corridor

- NS estimates over 1 million divertible truckloads along the Crescent Corridor
- Plans forecast 28 new trains per day
- NS seeking public-private partnerships to improve the rail network at an estimated cost of \$2 billion
- Corridor investments will begin this year with roll-out of improved services in 2009
- Entire network to be complete by 2013

Cooperation with Virginia

- Regular meetings on rail corridor planning between DOT officials from both states
- Cambridge Systematics also is assisting Virginia in analyzing benefits of truck-rail diversion
- Virginia shared results of I-81 truck origin-destination surveys with TDOT to assist in calibration of truck-rail diversion model

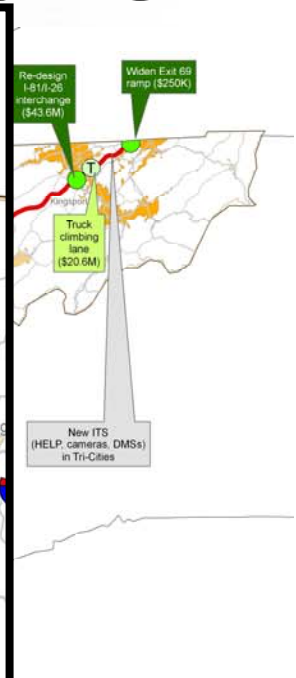
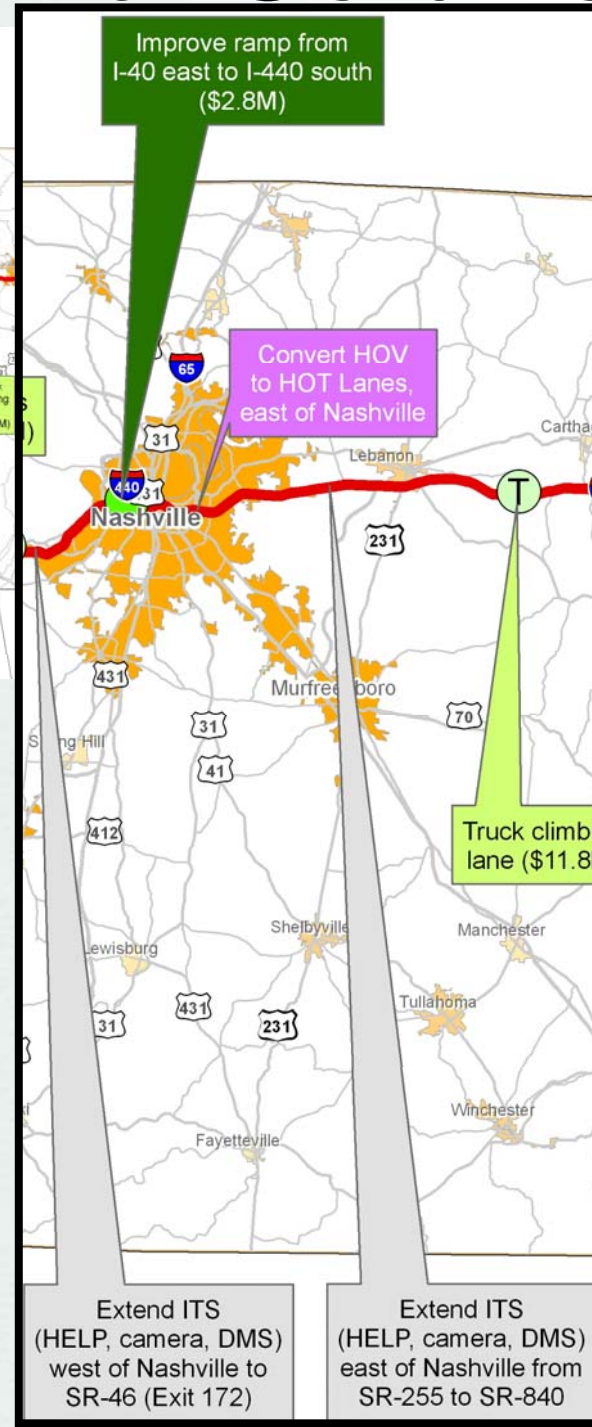
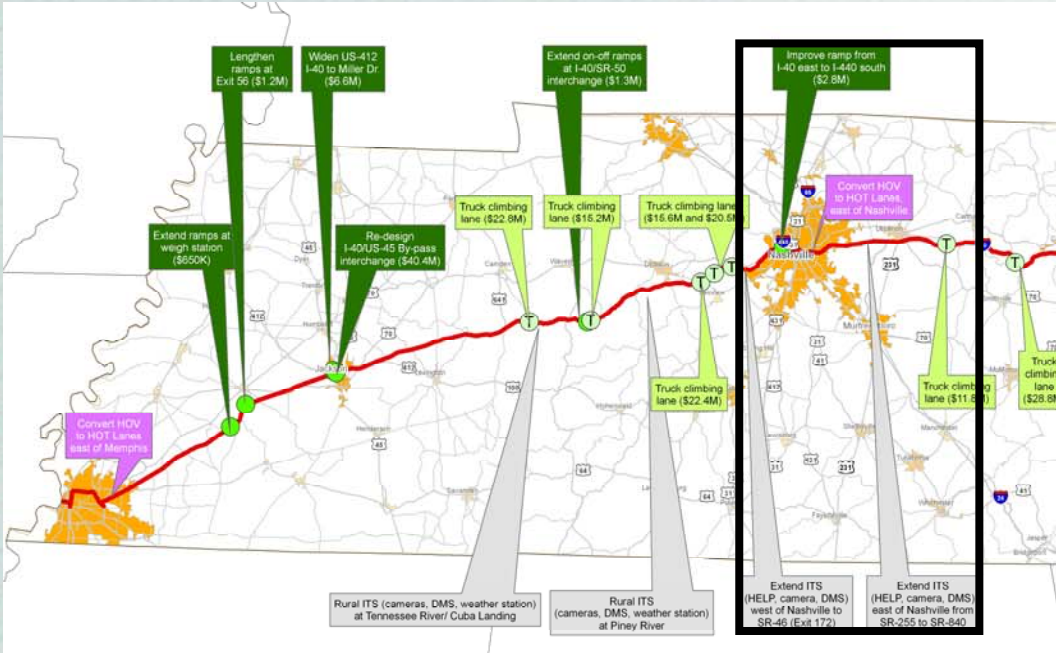
I-40 Rail-Focused Improvements

- **Norfolk Southern Crescent Corridor**
 - 2030 B/C ratio of 5.0 warranting further analysis of planned improvements in and out of the state
- **Trans-Tennessee Rail Corridor**
 - 2030 B/C ratio of 0.1, but includes benefits for I-40/I-81 Corridor & economic benefits identified in *An Evaluation of Tennessee Rail Plan's Treatment of a Trans-Tennessee Rail Routing* **only**

I-40/I-81 Operational Solutions

- High occupancy vehicle (HOV) or high occupancy toll (HOT) lane expansion or conversion
- Intelligent Transportation System (ITS) improvements
- Interchange, rest area & weigh station ramp improvements
- Truck climbing lanes

I-40/I-81 Operational Solutions



I-40 HOT Lanes in Nashville

- Low volume of HOVs in 2005 with high number of violators
- HOT lanes would permit single-occupant vehicles to pay to use lane and reduce violators
- Would require change in state law to allow pricing on existing interstates
- Could provide dedicated funding for enforcement, but would not likely generate significant revenue

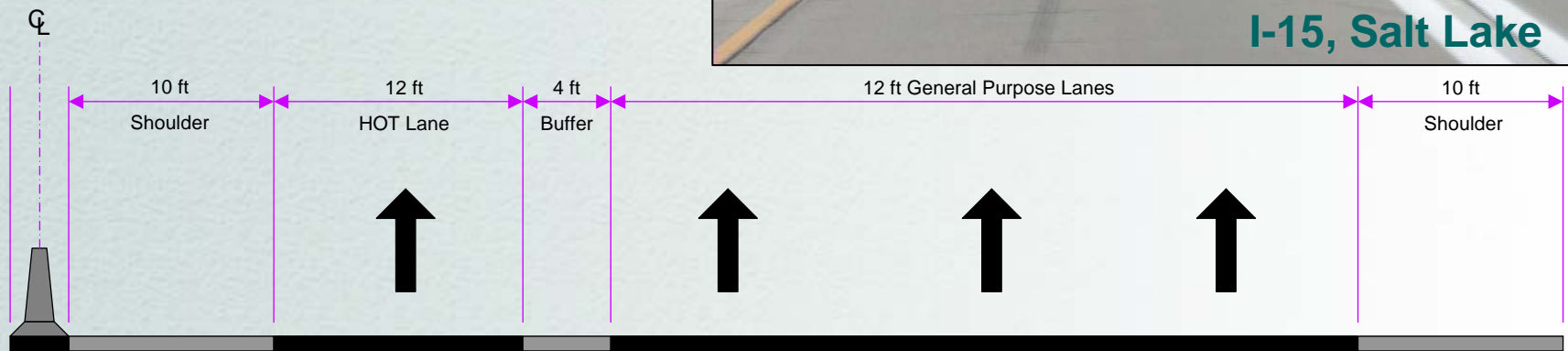
I-40 / I-81 CORRIDOR FEASIBILITY STUDY



I-394, Minneapolis

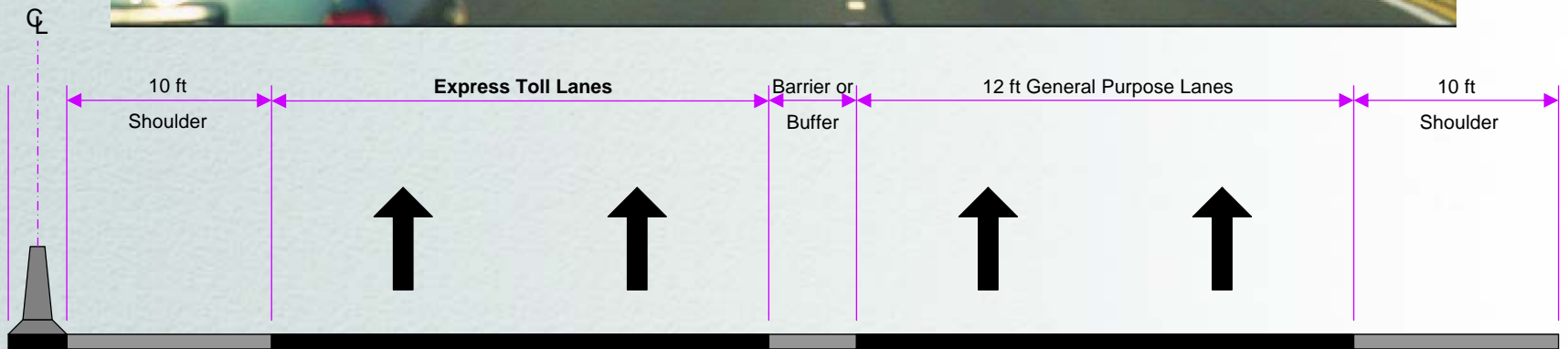


I-15, Salt Lake



HOT Lane

I-40 / I-81 CORRIDOR FEASIBILITY STUDY

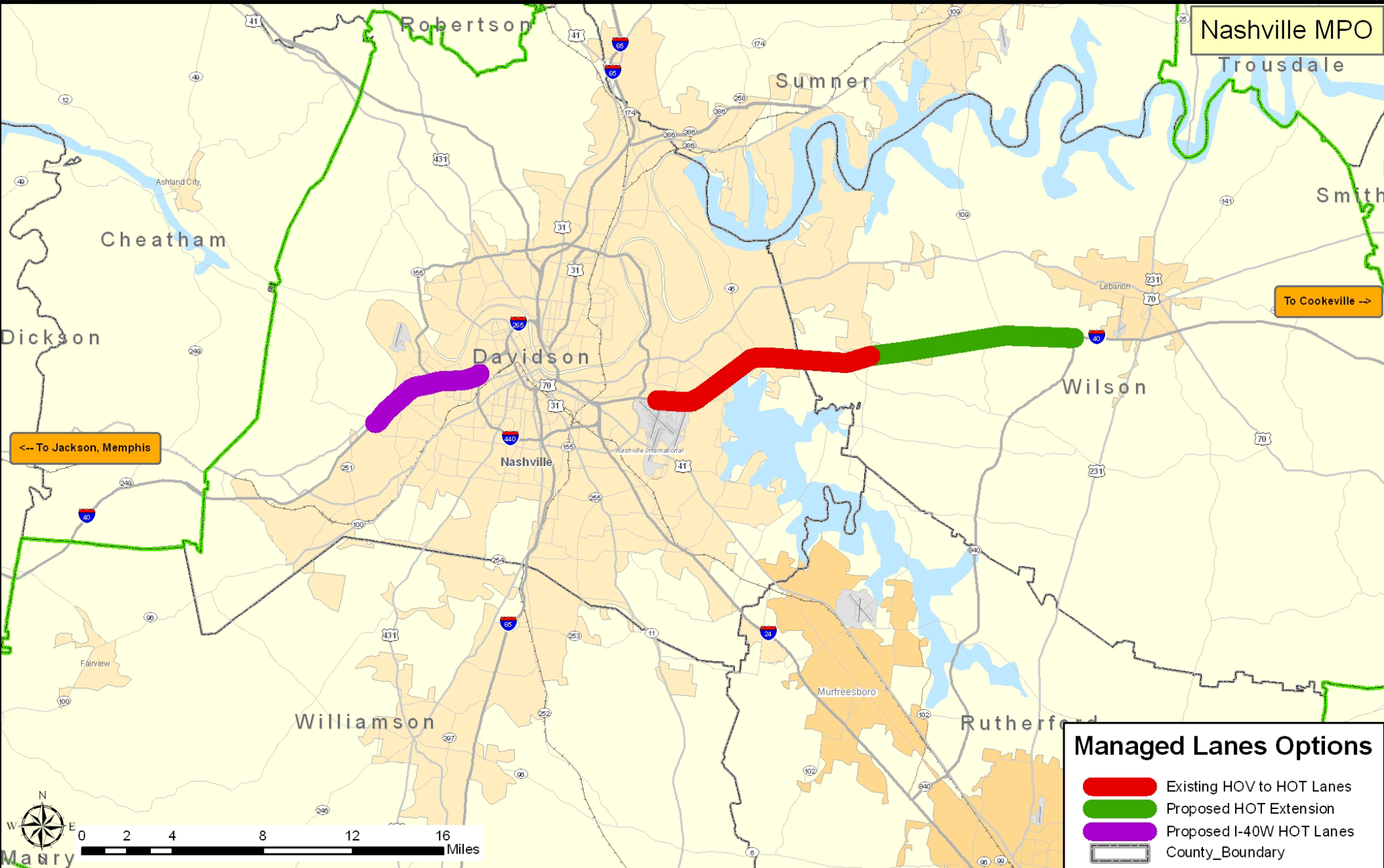


MANAGED EXPRESS / TRUCK TOLL Lanes

I-40 HOT Lanes in Nashville

- Mid-term potential for HOT lanes in median west of I-440
- Long-term potential for limited lane extensions & queue bypass treatments to improve access from HOT lanes to downtown
- Supplement with active traffic management
 - **Dynamic** merge control, speed controls, truck restrictions, etc.

I-40 HOT Lanes in Nashville



ITS Expansion along I-40

- Extend ITS west to SR-46 (Exit 172) & east between Donelson Pike and SR-840 (Exit 235)
- Equipment cost of \$4.3 million with annual operating/maintenance cost of \$445,000
- System includes:
 - Surveillance cameras
 - Speed detection at ½ mile intervals
 - Dynamic message signs
 - HELP service vehicles
 - 511 and Web traveler information
 - Real time weather sensors

I-40/I-440 Interchange Improvement

- Extend I-40 eastbound deceleration lane
- Lengthen ramp from I-40 eastbound to I-440
- Estimated cost of \$2.8 million
- Suggested during stakeholder interviews

Interchange Improvement at I-40/I-440



EXTEND I-40 EB
DECELERATION
LANE / I-440 EB RAMP

Truck Climbing Lane Dickson County

- Based on AASHTO standards for vehicular traffic, truck traffic & percent grade
- About 1.33 miles long, in eastbound direction
- Estimated cost of \$23 million (2008 Dollars)
- Maximum grade of 3.8%

Truck Climbing Lanes Cheatham County

- **Westbound Lane**
 - about 1.28 miles long
 - Estimated cost of \$21 million (2008 Dollars)
 - Maximum grade of 4%
- **Westbound Lane**
 - about half-mile long
 - Estimated cost of \$16 million (2008 Dollars)
 - Maximum grade of 5.3%

Truck Climbing Lane Smith County

- About half-mile long, in eastbound direction
- At western boundary of Smith County
- Estimated cost of \$12 million (2008 Dollars)
- Maximum grade of 5.4%

Project Programming

- Near-term, medium-term and long-term projects with highest B/C ratios identified for each region
- Projects divided into constructible segments
- Segments are programmed based on timing of impacts and availability of funds

Remaining Steps

Late April

Review public comments with
TDOT

Present draft corridor program to
Commissioner

May

Complete corridor program &
Final Report

For more information on the study, contact:

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