

# I-40/I-81 Study Update

## Cookeville



April 10, 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

# 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 Cookeville Public Meeting

- Held on September 24, 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
- Nashville April 3
- Knoxville April 7
- Tri-Cities April 8

# 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

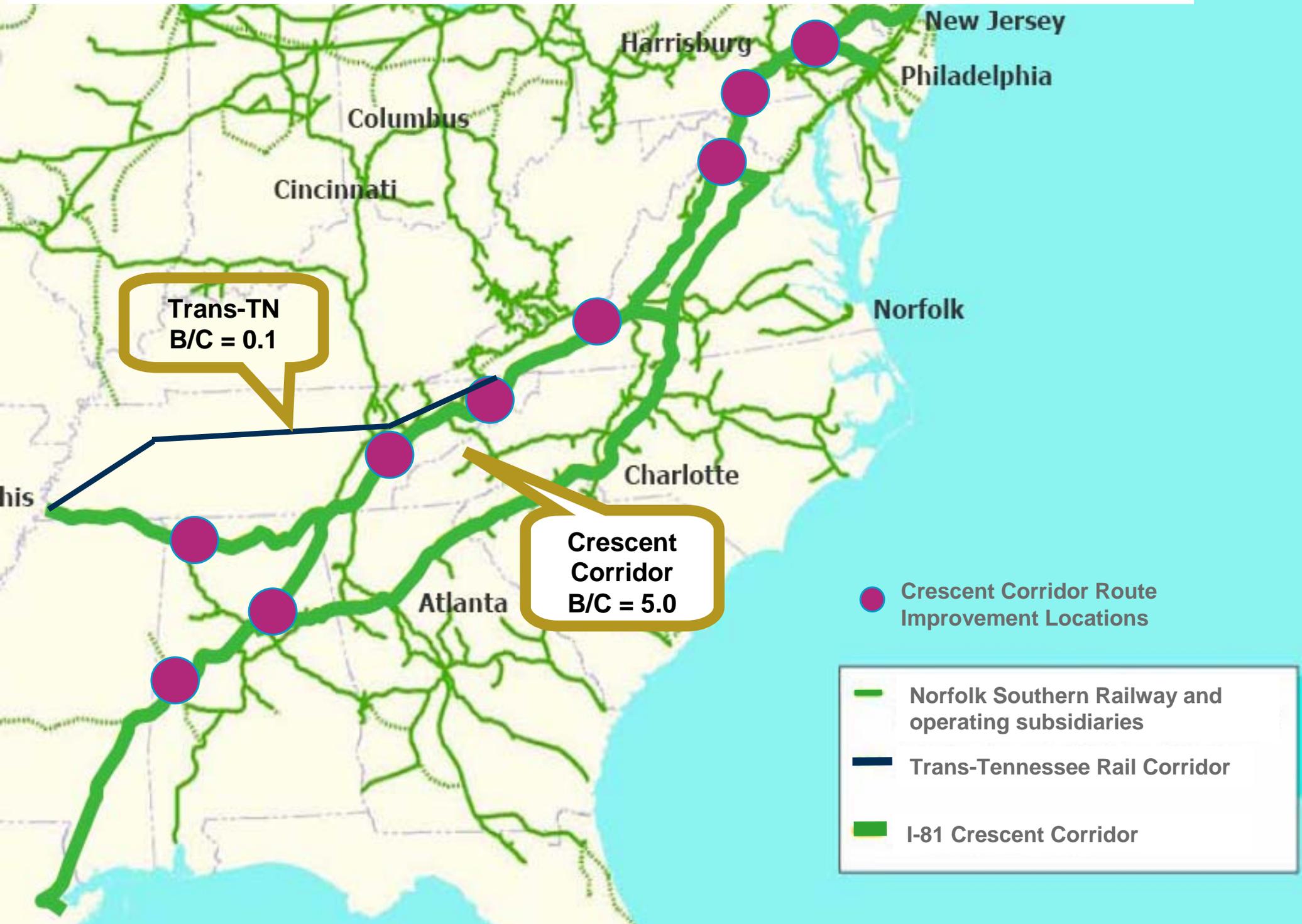
## **I-40 Widening to 6 Lanes**

- **Widen to 6 Lanes between Exit 235 (SR-840) in Wilson County and Exit 368 (I-75) in Loudon County**
  - 2030 B/C ratio of 0.3 for widening 132-mile segment at an estimated total cost of \$1.9 billion (about \$14 million per mile)
  - 132-mile corridor sub-divided into 21 sections maintaining uniform length and cross-section characteristics where possible
  - Assessed constructability by section

# 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

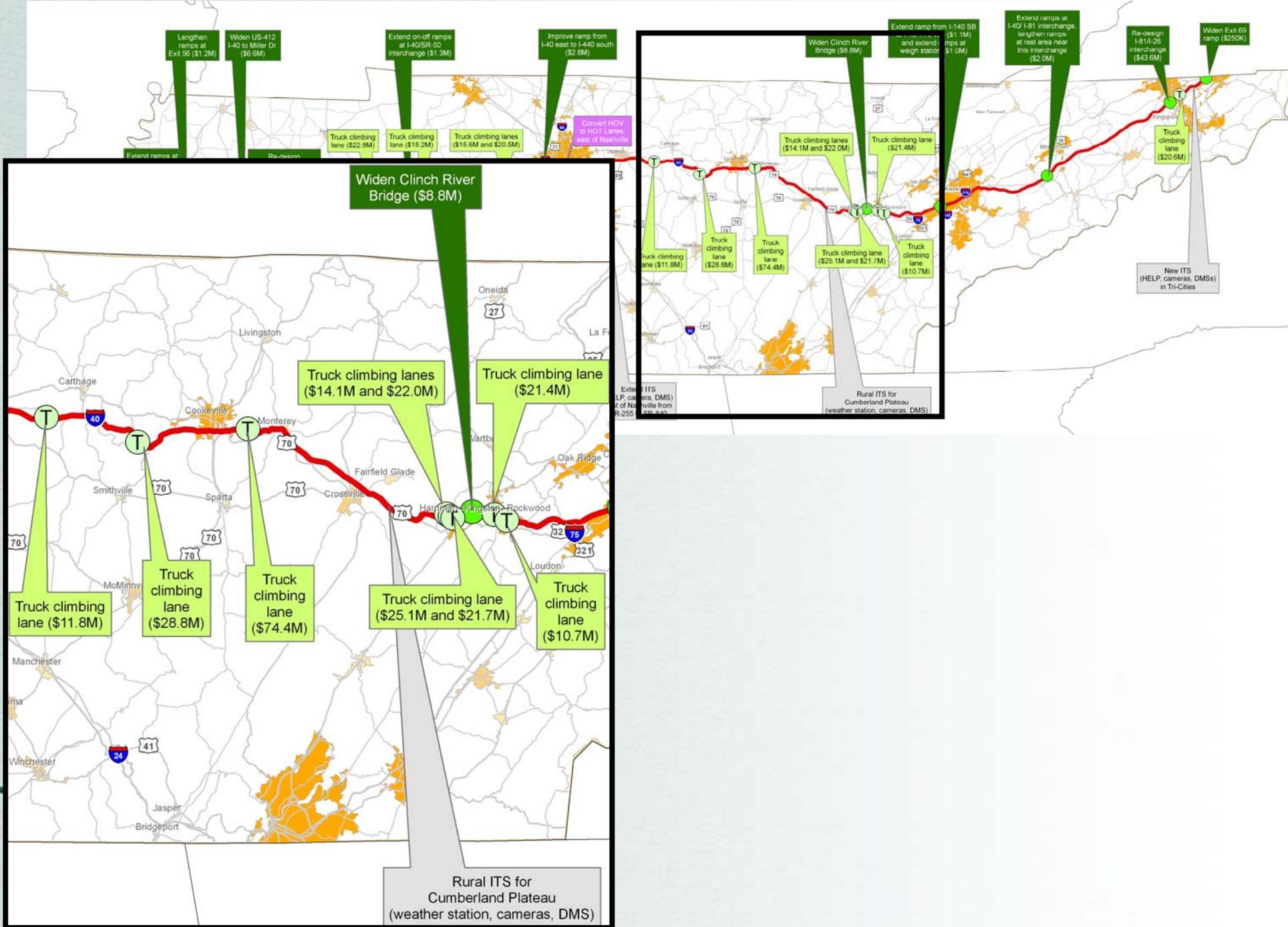
## I-40/I-81 Rail-Focused Improvements

- **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 **only** 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*

# **I-40/I-81 Operational Solutions**

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

# I-40/I-81 Operational Solutions



# **ITS Implementation along I-40**

- Rural ITS for Cumberland Plateau
- From Exit 290 (E. Spring St) to Exit 338 (SR-299, Westel Rd), about 47 miles
- Equipment cost of \$2.8 million with annual operating/maintenance cost of \$275,000
- System includes:
  - Weather station near bridge
  - Surveillance cameras
  - Dynamic message signs at each end

# **Widening of Clinch River Bridge**

- Widen bridge to provide full shoulders
- Represents preliminary design concept for addressing deficiencies at this location
- Estimated cost of \$8.8 million
- Need for improvements suggested during stakeholder interviews

# Truck Climbing Lanes

<u>County</u>	<u>Direction</u>	<u>Miles</u>	<u>Est. Cost</u>
Smith	Eastbound	0.56	\$11.8M
Putnam	Eastbound	1.71	\$28.8M
Putnam	Eastbound	4.00	\$74.4M
Cumberland	Westbound	1.02	\$14.1M
Cumberland	Eastbound	1.30	\$22.0M
Roane	Westbound	1.15	\$25.1M
Roane	Westbound	1.11	\$21.7M
Roane	Westbound	1.04	\$21.4M
Roane	<u>Westbound</u>	0.76	<u>\$10.7M</u>
			<b>\$230M</b>

# **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

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