



I-40/81

Multimodal Corridor Study



Executive Summary

February 2022





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I-40/81 Multimodal Corridor Study

Purpose

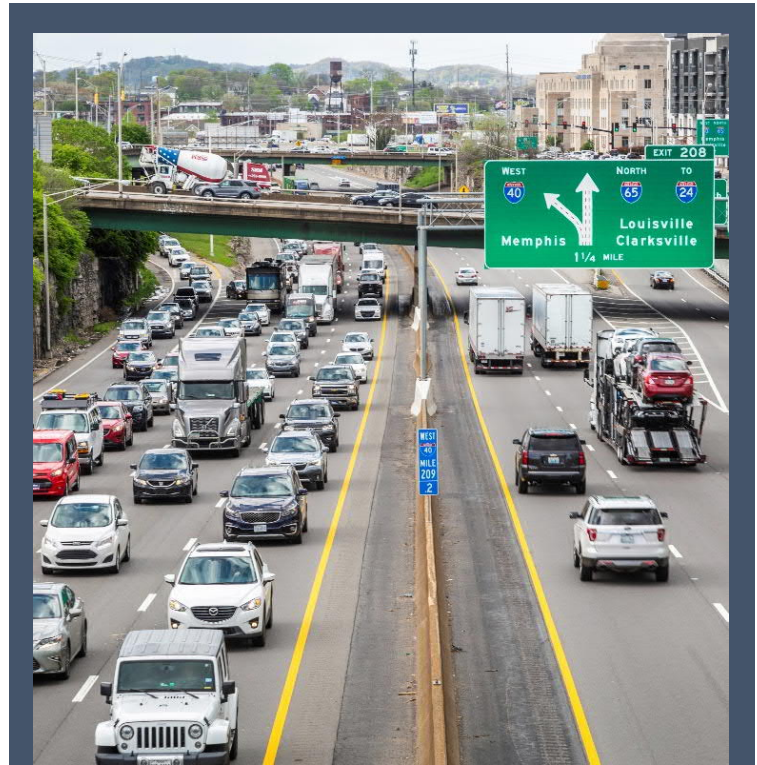
The I-40/81 corridor stretches more than 530 miles across the entire length of Tennessee, from Memphis to Bristol. It connects three of the state's largest metropolitan areas and carries more than 200,000 vehicles per day at its busiest point in Knoxville. Freight movement along the corridor is essential to Tennessee's economy, serving key supply chains related to the automotive, chemical, advanced manufacturing, and agricultural sectors.

TDOT has a number of projects planned to improve mobility on I-40/81, including some funded by the IMPROVE Act that was passed by the General Assembly in 2017 to help address a backlog of transportation needs across the state. However, even with these projects, average travel times between key cities along the corridor are expected to increase by as much as 25 percent.

This corridor study identifies locations where further improvements will be needed to maintain mobility and safety along the I-40/81 corridor, and recommends improvements that can be categorized into the following categories:

- Highway Capacity/Expansion
- Transportation System Management & Operations (TSMO)
- Safety
- Multimodal Freight
- Transit
- Economic Access

The development and suggested prioritization of improvements have been guided by the corridor goals and objectives shown in Figure 1.



Nearly 3.7 million of Tennessee's residents live in the 28 counties through which I-40/81 runs. According to TDOT's Long Range Plan, the population of the corridor will grow by almost 16 percent between now and 2040, adding to the through passenger and truck traffic that uses the interstate corridor to travel through Tennessee to and from adjoining states.



Figure 1. I-40/81 Corridor Goals and Objectives



Expanding the Universe of Solutions

Meeting current and future transportation needs will likely involve addition of new lanes in some areas of the I-40/81 corridor; however, additional strategies will be needed to maintain mobility, especially in the fastest-growing sections of the corridor. Modifications to ramps and interchanges can improve traffic operations and safety at some locations, as can the installation of truck climbing lanes in areas with steep grades by providing space to separate heavy, slower-moving vehicles from other traffic.

One of the most promising near-term opportunities to improve mobility in the I-40/81 corridor is the use of Transportation Systems Management & Operations (TSMO), an approach to managing the existing transportation system more efficiently. Examples of TSMO strategies include real-time traveler information, which TDOT already provides through the Smartway system, as well as managed lanes, ramp metering, and integrated corridor management. These and other TSMO strategies are described in detail in the Multimodal Solutions Technical Memorandum. Many of these are consistent with the state's goal of maximizing its existing investments in interstate capacity and should also be applied to preserve mobility in areas where TDOT adds new highway capacity.

Improving safety on I-40/81 has obvious benefits in terms of reducing the number of traffic-related deaths and serious injuries, but even a crash that does not result in injury can create lengthy delays for others using the corridor. Improvements that help to reduce the number of crashes, as well as programs that help to clear incidents quickly when they do occur – such as TDOT's existing HELP program and the proposed "HELP Lite" service to expand incident management throughout the corridor – help significantly with the state's goal to maintain efficient statewide mobility for both people and freight.

Managing travel demand and encouraging the use of transit are other strategies that can help address the future growth in travel along the I-40/81 corridor. The Memphis, Nashville and Knoxville



Climbing lanes are recommended in several locations along the corridor where trucks are slowed by steep terrain.



TDOT's HELP patrol assists motorists and law enforcement to clear travel lanes quickly when incidents occur in major urban areas. Extending some version of this service to the entire corridor would improve traveler safety, both for motorists who are affected directly and for those traveling around them.



I-40/81 Multimodal Corridor Study

metropolitan areas each have travel demand management programs geared to the promotion of ridesharing, transit, walking and biking, telecommuting, flexible work schedules, and other ways to reduce the number of people driving in single-occupant vehicles. Although much of the operational effectiveness of local transit service is impacted by development patterns, which are largely outside TDOT’s sphere of influence, there are a number of ways in which TDOT can support commuter service and intercity transit service through direct investments in the I-40/81 corridor and partnerships with transit agencies.

Recommended Projects and Programs

The following section presents recommended projects and program investments for the I-40/81 corridor. Recommendations have been grouped into tables and maps for each TDOT region for the Highway Capacity/Expansion, TSMO and Safety investment categories. Following that, recommended investments for Multimodal Freight, Transit, and Economic Access are presented in statewide tables and maps.

Each of the recommended improvements has been evaluated in terms of its benefits (ability to help achieve the corridor goals and objectives) and the estimated cost of implementation.

This ranking is intended to inform future state planning and programming activities, but should not be viewed as a recommendation to implement projects solely in order of ranking. TDOT’s ongoing project selection decisions must also consider a variety of other factors, most importantly the availability of near-term funding since Tennessee does not borrow funds to support its transportation program. When selecting projects, TDOT must also consider its responsibility to carry out the projects included in the IMPROVE Act as well as the geographic equity of investments made. There may also be reasons to initiate a project earlier than planned because of an opportunity to leverage other improvements, such as starting a proposed interchange expansion because it involves a bridge that is already in need of replacement.



By 2045, the amount of freight tonnage moved throughout the I-40/81 corridor is projected to increase by more than 70 percent. That trend is driven partly by growth in e-commerce, but also by the needs of key supply chains in Tennessee’s economy, including automotive, agriculture, chemicals and advanced manufacturing.

Recommended Project and Program Investments by TDOT Region





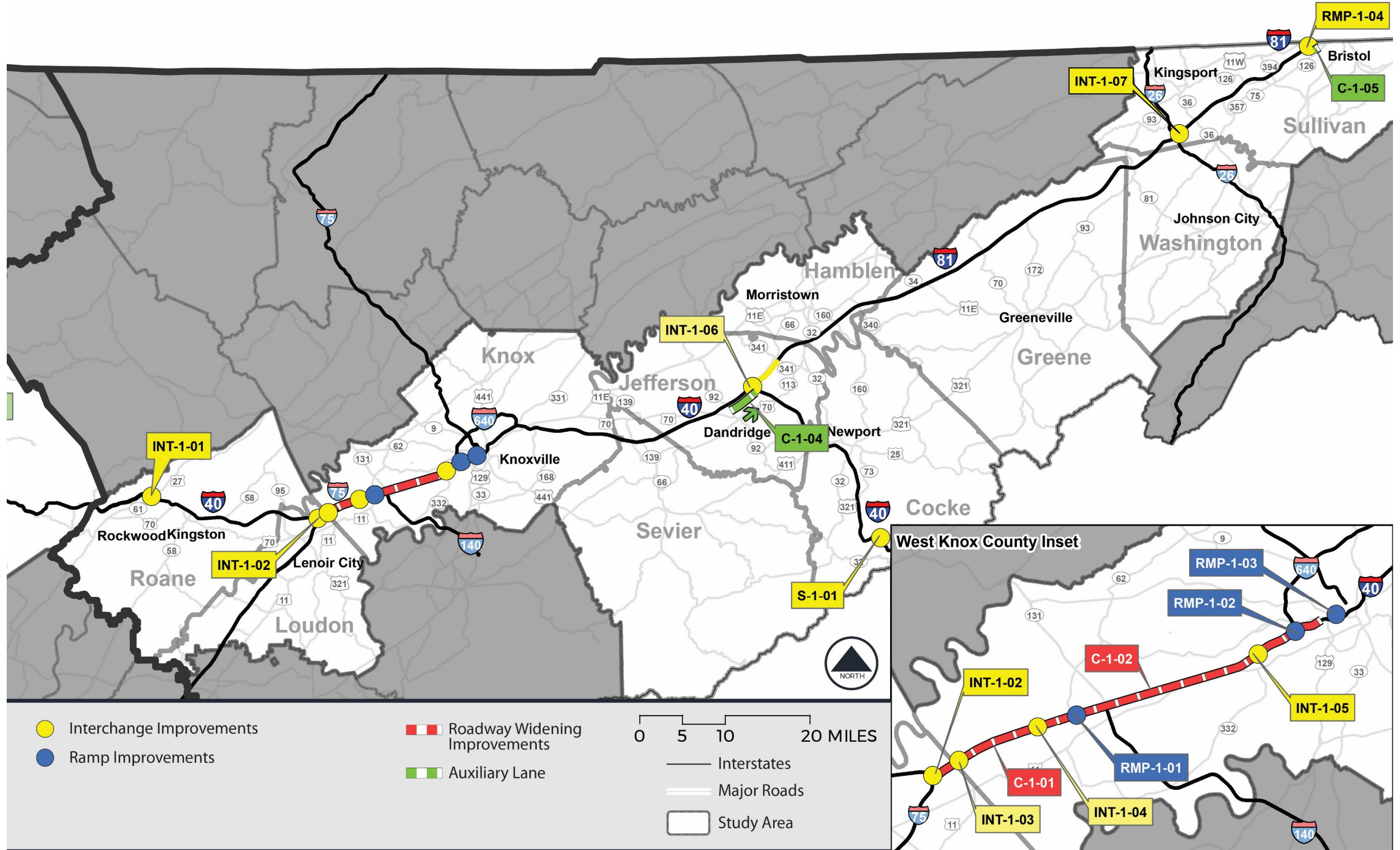
Table 1. Region 1 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety)

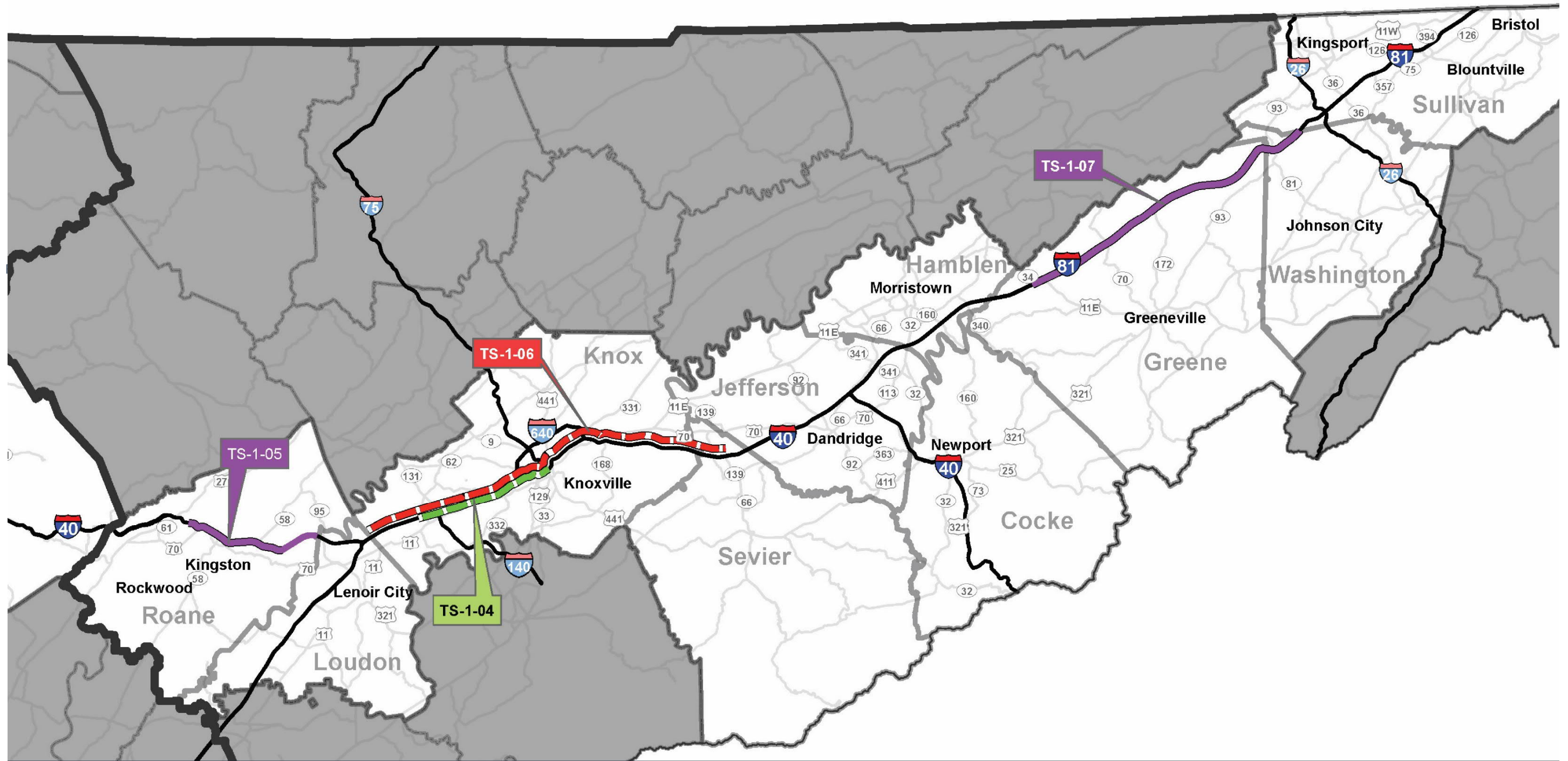
| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|--------------|-------------|---------------------------------------|----------------------------|---|--|---------------|---------------------------|--------------|------|--------------|
| I-40 | TS-1-01 | Knox, Loudon, Roane | "HELP Lite" Service | Implement "HELP Lite" service | From Roane/Cumberland county line to Exit 369 | 12 | 22.0 | \$190,000 | 63.2 | 2,778.9 |
| I-40 | TS-1-02 | Cocke, Jefferson, Knox, Sevier | "HELP Lite" Service | Implement "HELP Lite" service | East of Knoxville from Exit 398 to North Carolina state line | 10 | 53.0 | \$450,000 | 22.2 | 2,355.6 |
| I-81 | TS-1-03 | Greene, Hamblen, Sullivan, Washington | "HELP Lite" Service | Implement "HELP Lite" service | From I-40 junction to Virginia state line | 10 | 73.0 | \$620,000 | 16.1 | 2,354.8 |
| I-40 | TS-1-04 | Knox | Ramp Metering | Implement ramp metering | Between Exit 374 (SR 131, Lovell Road) and downtown Knoxville near Broadway (US 441) | 16 | 13.0 | \$4,130,000 | 3.9 | 100.7 |
| I-40 | TS-1-06 | Knox, Sevier | ICM | Implement Integrated Corridor Management | Between Exit 369 (Watt Road) and Exit 407 (SR 66) | 15 | 32.9 | \$10,720,000 | 1.4 | 92.1 |
| SR 1 (US 70) | SD-1-01 | Roane | Safety on Detour Routes | Safety improvements | From Cumberland/Roane county line to SR 29 (US 27, Spring City Highway) | 6 | 2.7 | \$400,000 | 15.0 | 40.5 |
| I-40 | TS-1-05 | Roane | SmartWay Expansion | SmartWay Expansion | Between existing SmartWay deployments | 11 | 14.0 | \$7,980,000 | 1.4 | 38.6 |
| I-81 | TS-1-07 | Greene, Washington | SmartWay Expansion | SmartWay Expansion | I-81 in Greene and Washington counties | 11 | 30.7 | \$17,499,000 | 0.6 | 38.6 |
| SR 1 (US 70) | SD-1-02 | Loudon, Roane | Safety on Detour Routes | Safety improvements | From SR 326 to SR 73 (US 321) | 6 | 10.6 | \$1,700,000 | 3.5 | 37.4 |
| I-81 | RMP-1-04 | Sullivan | Ramp/Terminal Improvements | Ramp improvements to NB entrance ramp from SR 1 (US 11W, State Street) to provide operational and safety improvements | Exit 74 (SR 1 [US 11W, State Street]) | 7 | 4.8 | \$2,700,000 | 2.6 | 12.4 |
| I-40 | INT-1-01 | Roane | Interchange Improvements | Reconfigure interchange to provide operational and safety improvements | Exit 347 (SR 61 [US 27, South Roane Street]) | 9 | 8.9 | \$26,200,000 | 0.3 | 3.1 |
| I-40 | RMP-1-01 | Knox | Ramp/Terminal Improvements | Realign ramp terminal and right-turn lane channelization to improve operations at signalized intersection | Exit 374 (SR 131 [Lovell Road]) eastbound off-ramp | 12 | 0.5 | \$2,700,000 | 4.4 | 2.2 |
| I-40 | RMP-1-02 | Knox | Ramp/Terminal Improvements | Ramp improvements to increase capacity and improve vertical/ horizontal alignment for trucks | Exit 385 (Interstates 75/640) eastbound off-ramp | 12 | 0.5 | \$2,700,000 | 4.4 | 2.2 |
| I-40 | TL-1-01 | Roane | Truck Climbing Lanes | Add truck climbing lane | Westbound from Exit 340 (Airport Road) to Exit 347 (SR 61 [US 27, South Roane Street]) | 13 | 7.0 | \$44,300,000 | 0.3 | 2.1 |
| I-40 | TL-1-02 | Roane | Truck Climbing Lanes | Add truck climbing lane | Eastbound from Exit 347 (SR 61 [US 27, South Roane Street]) to Exit 350 (SR 29) | 13 | 2.5 | \$16,800,000 | 0.8 | 1.9 |
| I-40 | C-1-01 | Knox and Loudon | Expansion | Widen from 6 to 8 lanes | Exit 368 (I-75) to Exit 374 (SR 131 [Lovell Road]) | 11 | 6.5 | \$68,400,000 | 0.2 | 1.9 |
| I-81 | C-1-05 | Sullivan | Expansion | Add southbound auxiliary lane between Welcome Center and exit ramp | Mile marker 75.3 (Welcome Center in Sullivan County) to Exit 74B (SR 1 [US 11W, State Street]) | 11 | 0.5 | \$3,100,000 | 3.5 | 1.8 |






Table 1. Region 1 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety) - Continued

| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|-------|-------------|--------------------|----------------------------|---|--|---------------|---------------------------|---------------|-----|--------------|
| I-81 | TL-1-04 | Greene, Washington | Truck Climbing Lanes | Add truck climbing lane through Exit 50 (SR 93) interchange | Northbound from MM 48 (Moody Road) to MM 51 (Link Road) | 11 | 3.3 | \$21,300,000 | 0.5 | 1.7 |
| I-81 | TL-1-03 | Greene, Hamblen | Truck Climbing Lanes | Add truck climbing lane | Northbound from Exit 15 (SR 340 [Fish Hatchery Road]) to Exit 23 (SR 34 [US 11E, West Andrew Johnson Highway]) | 11 | 7.8 | \$56,700,000 | 0.2 | 1.5 |
| I-40 | C-1-02 | Knox | Expansion | Widen from 8 to 10 lanes | Exit 374 (SR 131 [Lovell Road]) to Exit 385 [Interstates 75/640]) | 13 | 10.6 | \$255,000,000 | 0.1 | 1.1 |
| I-40 | INT-1-03 | Knox and Loudon | Interchange Improvements | Reconfigure interchange to reduce weaving movements and capacity issues | Exit 369 (Watt Road) | 8 | 3.0 | \$48,900,000 | 0.2 | 1.1 |
| I-40 | C-1-04 | Jefferson | Expansion | Add one auxiliary lane in the eastbound direction between interchanges and rest area | Exit 417 (SR 92) to Exit 421 (I-81) | 11 | 2.7 | \$27,600,000 | 0.4 | 1.1 |
| I-81 | INT-1-07 | Sullivan | Interchange Improvements | Reconfigure interchange to provide operational and safety improvements | Exit 57 (Junction with I-26 [US 23]) | 8 | 2.6 | \$19,700,000 | 0.4 | 1.1 |
| I-40 | INT-1-04 | Knox | Interchange Improvements | Reconfigure interchange to provide operational and capacity improvements | Exit 373 (Campbell Station Road) | 8 | 3.6 | \$58,800,000 | 0.2 | 1.0 |
| I-40 | INT-1-05 | Knox | Interchange Improvements | Separation of eastbound traffic to avoid weaving traffic between Exit 383 and Exit 385 (Interstates 75/640) | Exit 383 (SR 332 [Papermill Drive]) | 6 | 1.5 | \$10,400,000 | 0.6 | 0.9 |
| I-40 | INT-1-06 | Jefferson | Interchange Improvements | Geometric and operational improvements to the interchange | Exit 421 (Junction with I-81) | 7 | 9.0 | \$82,500,000 | 0.1 | 0.8 |
| I-40 | S-1-02 | Cocke | Safety | Realign interstate in order to remove 45 MPH horizontal curves | Exit 443 (SR 339 [Foothills Parkway]) to Exit 451 | 4 | 7.4 | \$93,000,000 | 0.0 | 0.6 |
| I-40 | S-1-01 | Cocke | Safety | Interchange improvements to lengthen deceleration/acceleration lanes | Exit 447 (Hartford Road) | 5 | 0.5 | \$5,400,000 | 0.9 | 0.5 |
| I-40 | S-1-03 | Roane | Runaway Truck Ramps | Add runaway truck ramp(s) | Eastbound from Exit 340 (Airport Road) to Exit 347 (SR 61 [US 27, South Roane Street]) | 3 | 7.2 | \$56,700,000 | 0.1 | 0.4 |
| I-40 | C-1-03 | Knox | Expansion | Extend the two existing lanes from the US 129 entrance ramp to WB mainline such that one lane exits to I-640 and one lane continues through on I-40 mainline. | Interstates 75/640 to US 129 | 11 | 1.5 | \$61,200,000 | 0.2 | 0.3 |
| I-40 | INT-1-02 | Loudon | Interchange Improvements | Reconfigure interchange to provide operational and safety improvements | Exit 368 (Junction with I-75) | 7 | 4.2 | \$146,300,000 | 0.0 | 0.2 |
| I-40 | RMP-1-03 | Knox | Ramp/Terminal Improvements | Braid the I-275 entrance to I-40 WB with the Western Ave and US 129 exit ramps | Exit 387 (SR 62 [Western Avenue]) westbound off-ramp | 12 | 0.5 | \$63,600,000 | 0.2 | 0.1 |





-  Integrated Corridor Management
-  Complete Smartway System Gap
-  Future Ramp Metering

-  Study Area
-  Interstates
-  Major Roads

0 5 10 20 MILES



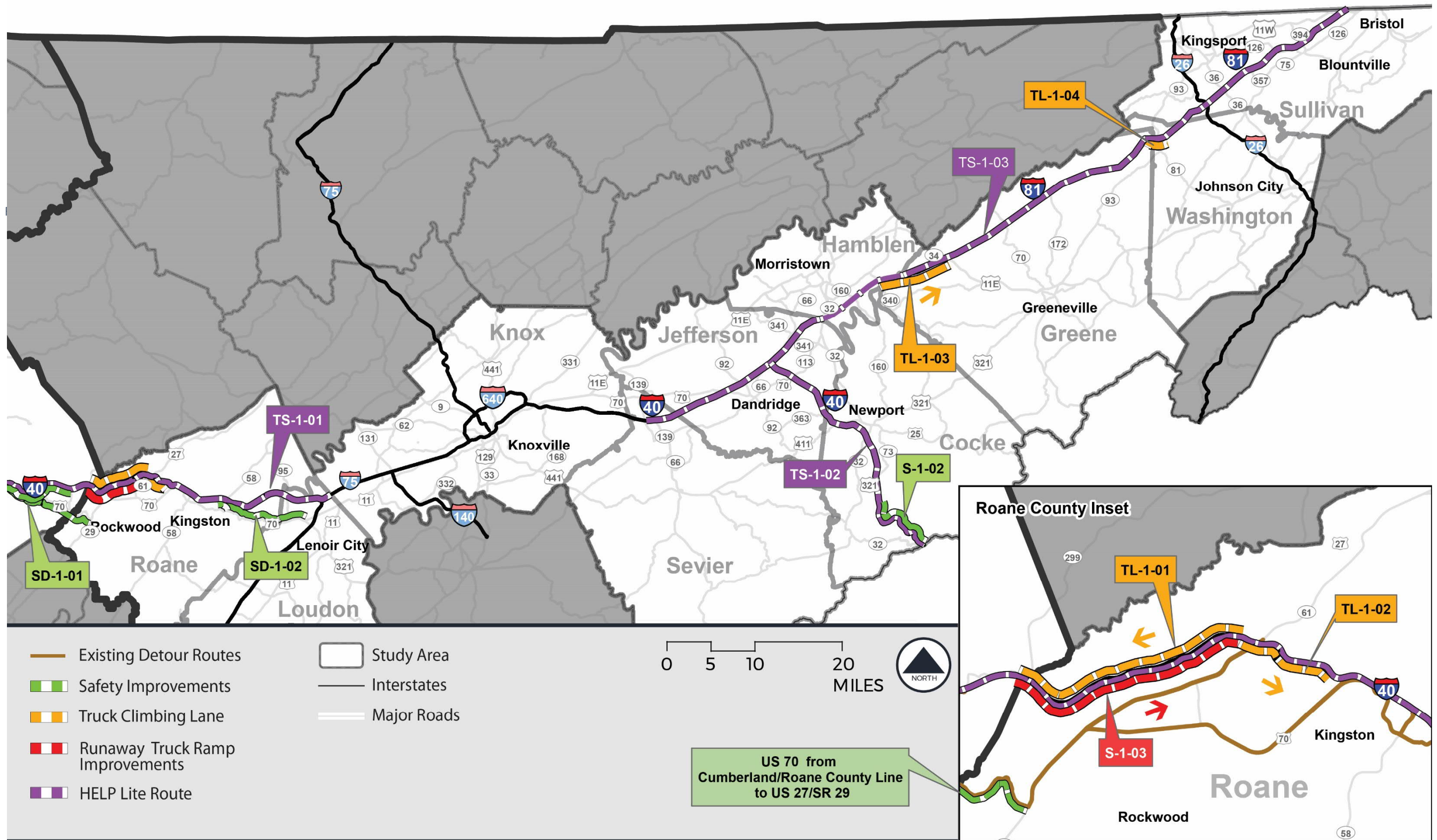
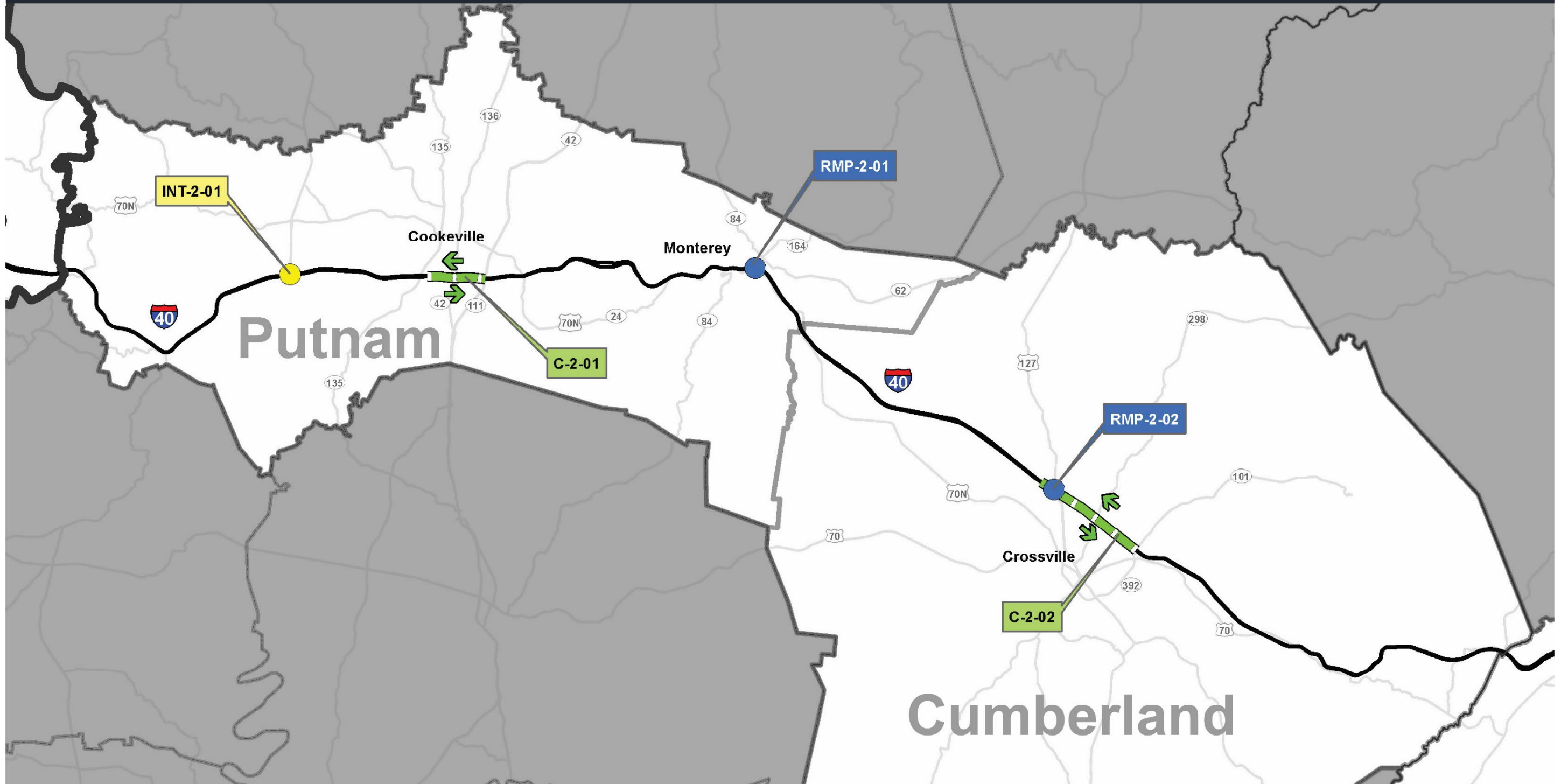


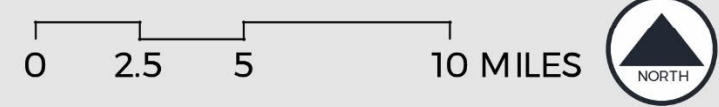


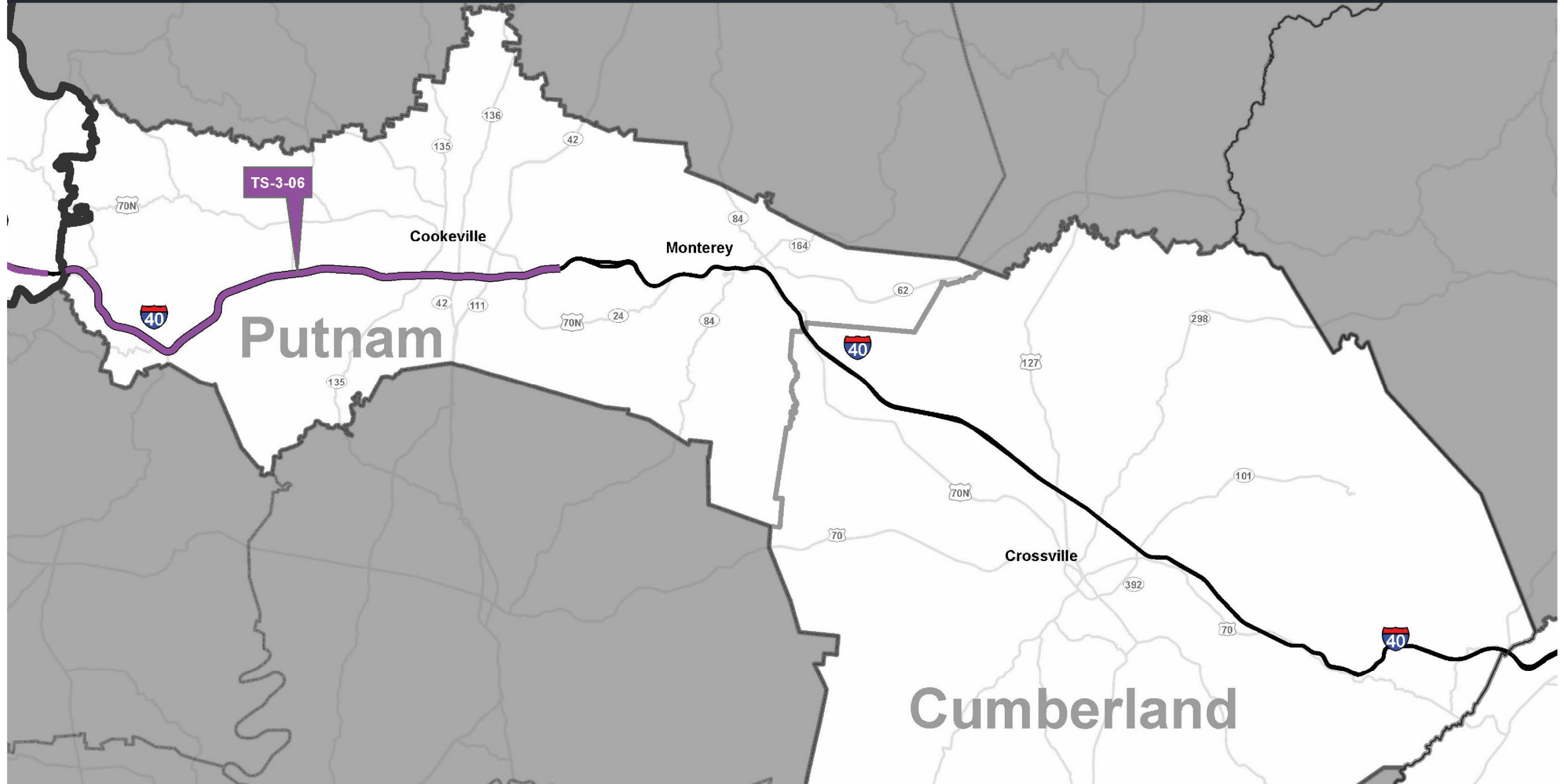
Table 2. Region 2 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety)


| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|--|-------------|--------------------|----------------------------|--|---|---------------|---------------------------|--------------|------|--------------|
| I-40 | TS-2-01 | Cumberland, Putnam | "HELP Lite" Service | Implement "HELP Lite" service | Throughout Putnam and Cumberland counties | 12 | 72.5 | \$810,000 | 14.8 | 2,148.1 |
| I-40 | S-2-01 | Putnam | Safety | Infrastructure-oriented safety treatments | Exit 276 (Old Baxter Road) to Exit 280 (SR 56) | 7 | 4.0 | \$320,000 | 21.9 | 175.0 |
| I-40 | S-2-03 | Cumberland | Safety | Infrastructure-oriented safety treatments | Exit 329 (Market Street) to Exit 338 (SR 299 [Westel Road]) | 7 | 9.0 | \$860,000 | 8.1 | 146.5 |
| I-40 | S-2-02 | Cumberland | Safety | Addition of median cable barrier system | Exit 317 (SR 28 [US 127]) to Exit 322 (SR 101 [Peavine Road]) | 6 | 4.4 | \$670,000 | 9.0 | 78.8 |
| SR 1 (US 70) | SD-2-03 | Cumberland | Safety on Detour Routes | Safety improvements | From Market Street to Cumberland/Roane county line | 6 | 9.4 | \$900,000 | 6.7 | 62.7 |
| SR 24 (US 70) | SD-2-02 | Putnam | Safety on Detour Routes | Safety improvements | From I- 40 (Exit 290) to SR 84 | 6 | 11.9 | \$1,140,000 | 5.3 | 62.6 |
| Old Baxter Road/ Main Street/ Ward Mill Road | SD-2-01 | Putnam | Safety on Detour Routes | Safety improvements | From I-40 (Exit 276) to SR 56 | 6 | 5.8 | \$600,000 | 10.0 | 58.0 |
| I-40 | RMP-2-01 | Putnam | Ramp/Terminal Improvements | Add deceleration lane | Exit 301 (SR 24 [US 70N]) westbound off-ramp | 10 | 0.5 | \$1,100,000 | 9.1 | 4.5 |
| I-40 | INT-2-01 | Putnam | Interchange Improvements | Widen SR 56 and ramps through interchange to provide operational and safety improvements | Exit 280 (SR 56 [Baxter Road]) | 10 | 6.0 | \$14,200,000 | 0.7 | 4.2 |
| I-40 | C-2-02 | Cumberland | Expansion | Add auxiliary lanes between interchanges. Add deceleration lanes to off-ramps. | Exit 317 (SR 28 [US 127]) to Exit 322 (SR 101 [Peavine Road]) | 11 | 3.7 | \$41,900,000 | 0.3 | 1.9 |
| I-40 | RMP-2-02 | Cumberland | Ramp/Terminal Improvements | Ramp improvements to remove islands at exit ramps (both eastbound and westbound) | Exit 317 (SR 28 [US 127]) | 10 | 0.5 | \$2,700,000 | 3.7 | 1.9 |
| I-40 | TL-2-01 | Putnam | Truck Climbing Lanes | Add truck climbing lane | Eastbound from Exit 268 (SR 96 [Buffalo Valley Road]) to east of Exit 273 (SR 56) | 11 | 6.0 | \$35,900,000 | 0.3 | 1.8 |
| I-40 | TL-2-02 | Putnam | Truck Climbing Lanes | Add truck climbing lane | Eastbound from Exit 290 (SR 24 [US 70N]) to Exit 300 (SR 24 [US 70N]) | 13 | 10.0 | \$98,000,000 | 0.1 | 1.3 |
| I-40 | C-2-01 | Putnam | Expansion | Add auxiliary lanes between interchanges and ramp improvements | Exit 286 (SR 135 [South Willow Avenue]) to Exit 288 (SR 111) | 11 | 2.1 | \$19,500,000 | 0.6 | 1.2 |
| I-40 | S-2-04 | Putnam | Runaway Truck Ramps | Add runaway truck ramp(s) | Westbound from Exit 290 (SR 24 [US 70N]) to Exit 300 (SR 24 [US 70N]) | 3 | 10.6 | \$98,200,000 | 0.0 | 0.3 |





- Interchange Improvements
- Ramp Improvements
- Auxiliary Lane
- Study Area
- Interstates
- Major Roads







 Complete Smartway System Gap

 Study Area

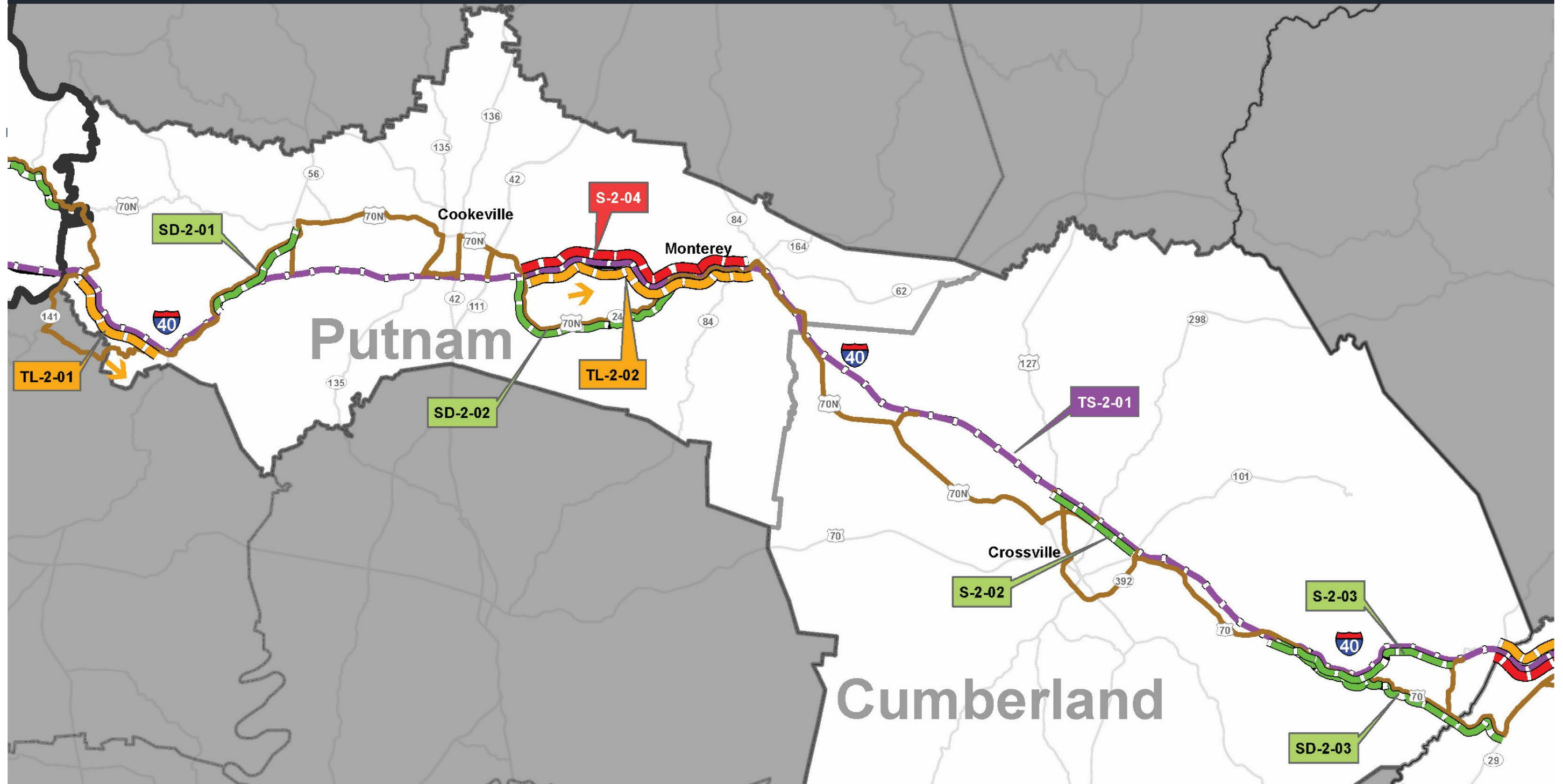
 Interstates

 Major Roads

0 2.5 5 10 MILES

 NORTH

Region 2 Safety Improvements



Existing Detour Routes
Safety Improvements

Truck Climbing Lane
Runaway Truck Ramp Improvements
HELP Lite Route

Study Area
Interstates
Major Roads

0 2.5 5 10 MILES





Table 3. Region 3 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety)

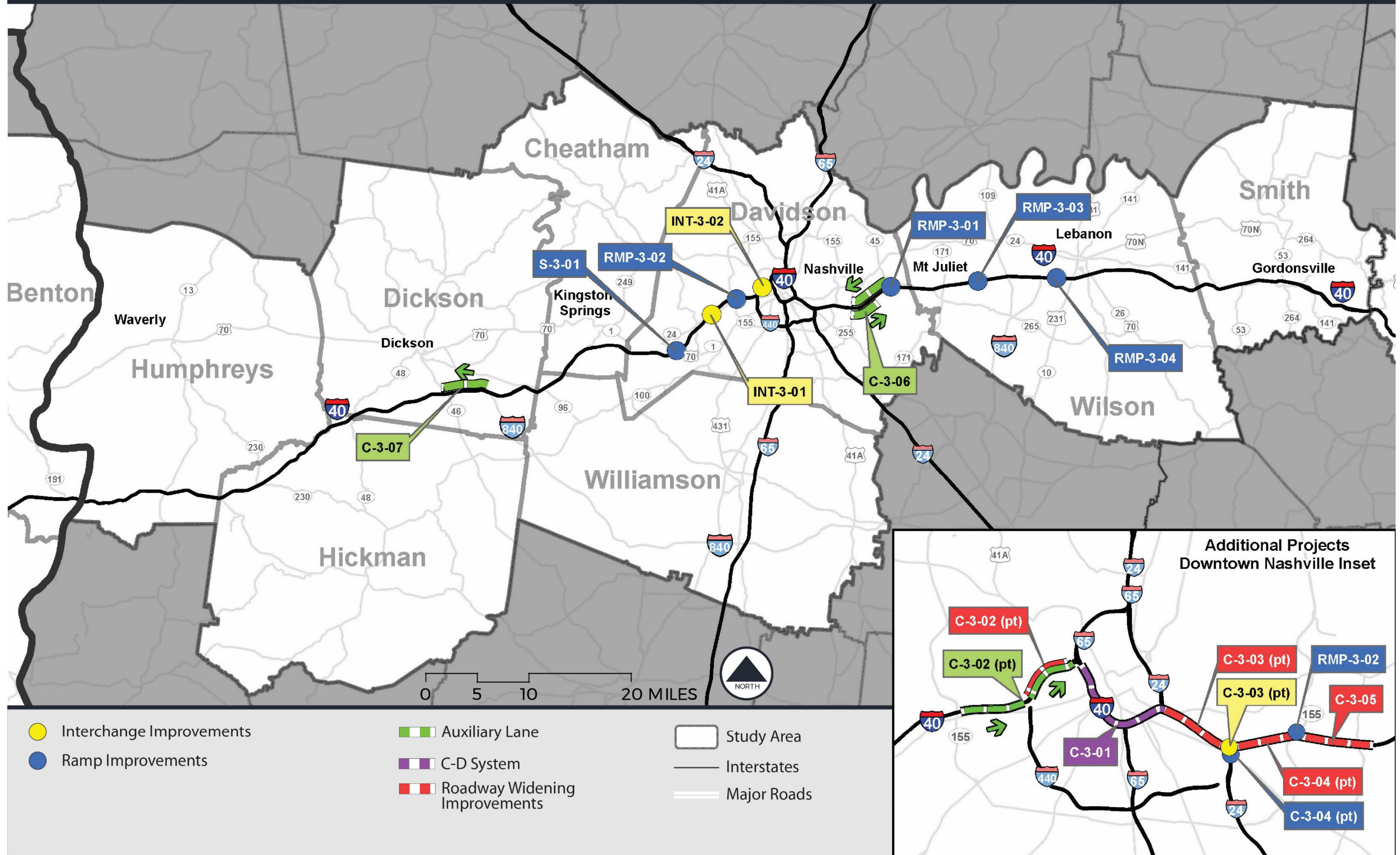
| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|-----------------------|-------------|---|----------------------------|---|---|---------------|---------------------------|--------------|------|--------------|
| I-40 | TS-3-01 | Davidson, Smith, Wilson | "HELP Lite" Service | Implement "HELP Lite" service | From Exit 219 to Smith/Putnam county line | 12 | 49.0 | \$490,000 | 24.5 | 2,400.0 |
| I-40 | TS-3-02 | Cheatham, Davidson, Dickson, Hickman, Humphreys | "HELP Lite" Service | Implement "HELP Lite" service | From Exit 201 to the Tennessee River | 12 | 58.0 | \$580,000 | 20.7 | 2,400.0 |
| I-40 | TS-3-03 | Davidson | Ramp Metering | Implement ramp metering | Exit 192 at Bellevue (US 70S) to Exit 221 | 16 | 28.0 | \$5,850,000 | 2.7 | 153.2 |
| I-40 | TS-3-04 | Davidson | ICM | Implement Integrated Corridor Management | From Exit 192 (McCrorry Lane) to Exit 221 (SR 45, Old Hickory Boulevard) | 15 | 27.4 | \$8,450,000 | 1.8 | 97.3 |
| SR 24 (US 70) | SD-3-04 | Smith | Safety on Detour Routes | Safety improvements | From SR 264 to Putnam/Smith county line | 6 | 6.1 | \$583,000 | 10.3 | 62.8 |
| SR 230 | SD-3-01 | Hickman, Humphreys | Safety on Detour Routes | Safety improvements | From SR 48 to SR 13 | 6 | 25.2 | \$2,421,000 | 2.5 | 62.5 |
| SR 265 (Central Pike) | SD-3-02 | Wilson | Safety on Detour Routes | Safety improvements | From SR 171 (Mount Juliet Road) to SR 109 | 6 | 6.9 | \$664,000 | 9.0 | 62.3 |
| SR 141 | SD-3-03 | Smith, Wilson | Safety on Detour Routes | Safety improvements | From SR 26 (US 70) to Wilson/Smith county line | 5 | 10.5 | \$1,012,000 | 4.9 | 51.9 |
| I-40 | TS-3-06 | Wilson, Smith, Putnam | SmartWay Expansion | SmartWay Expansion | I-40 in Regions 2 and 3 (east of existing SmartWay deployment in Wilson County) through Smith and western Putnam counties | 13 | 40.7 | \$23,199,000 | 0.6 | 45.6 |
| I-40 | TS-3-05 | Davidson, Wilson | HOV Conversion to HOT lane | Convert existing HOV lanes on I-40 on the east side of Nashville, both directions, from Exit 216 (Briley Parkway) to Exit 232 (SR 109). | Exit 216 (Briley Parkway) to Exit 232 (SR 109) | 10 | 17.0 | \$11,000,000 | 0.9 | 30.9 |
| I-40 | S-3-02 | Davidson | Safety | Infrastructure-oriented safety treatments | Exit 204 (SR 155 [Briley Parkway / White Bridge Road]) to Exit 206 (I-440) | 6 | 12.4 | \$7,000,000 | 0.9 | 21.3 |
| I-40 | RMP-3-01 | Davidson | Ramp/Terminal Improvements | Ramp improvements to enhance operations | Exit 221 (SR 45 [Old Hickory Boulevard]) | 12 | 0.5 | \$2,700,000 | 4.4 | 2.2 |
| I-40 | C-3-06 | Davidson | Expansion | Add one auxiliary lane in the eastbound direction between relocated Donelson Pike interchange entrance ramp and interchange | Exit 216 (SR 255 [Donelson Pike]) to Exit 219 (Stewarts Ferry Pike) | 11 | 1.5 | \$8,300,000 | 1.3 | 2.0 |
| I-40 | TL-3-01 | Cheatham | Truck Climbing Lanes | Add truck climbing lane | Westbound from MM 185 to Exit 188 (SR 249 [Luyben Hills Road]) | 13 | 3.0 | \$19,800,000 | 0.7 | 2.0 |
| I-40 | C-3-07 | Dickson | Expansion | Add one auxiliary lane in the westbound direction between interchange and interstate junction | Exit 172 (SR 46) to Exit 176 (I-840) | 11 | 2.8 | \$17,800,000 | 0.6 | 1.7 |
| I-40 | RMP-3-02 | Davidson | Ramp/Terminal Improvements | Extend acceleration lanes approximately 0.5 miles to improve merge operations | Exit 205 (SR 155 [Briley Parkway]) westbound on-ramp | 12 | 0.5 | \$3,800,000 | 3.2 | 1.6 |
| I-40 | S-3-01 | Davidson | Safety | Ramp improvements to WB off-ramp - add deceleration lane and widen ramp | Exit 196 (SR 1 [US 70S]) westbound off-ramp | 7 | 0.5 | \$2,700,000 | 2.6 | 1.3 |

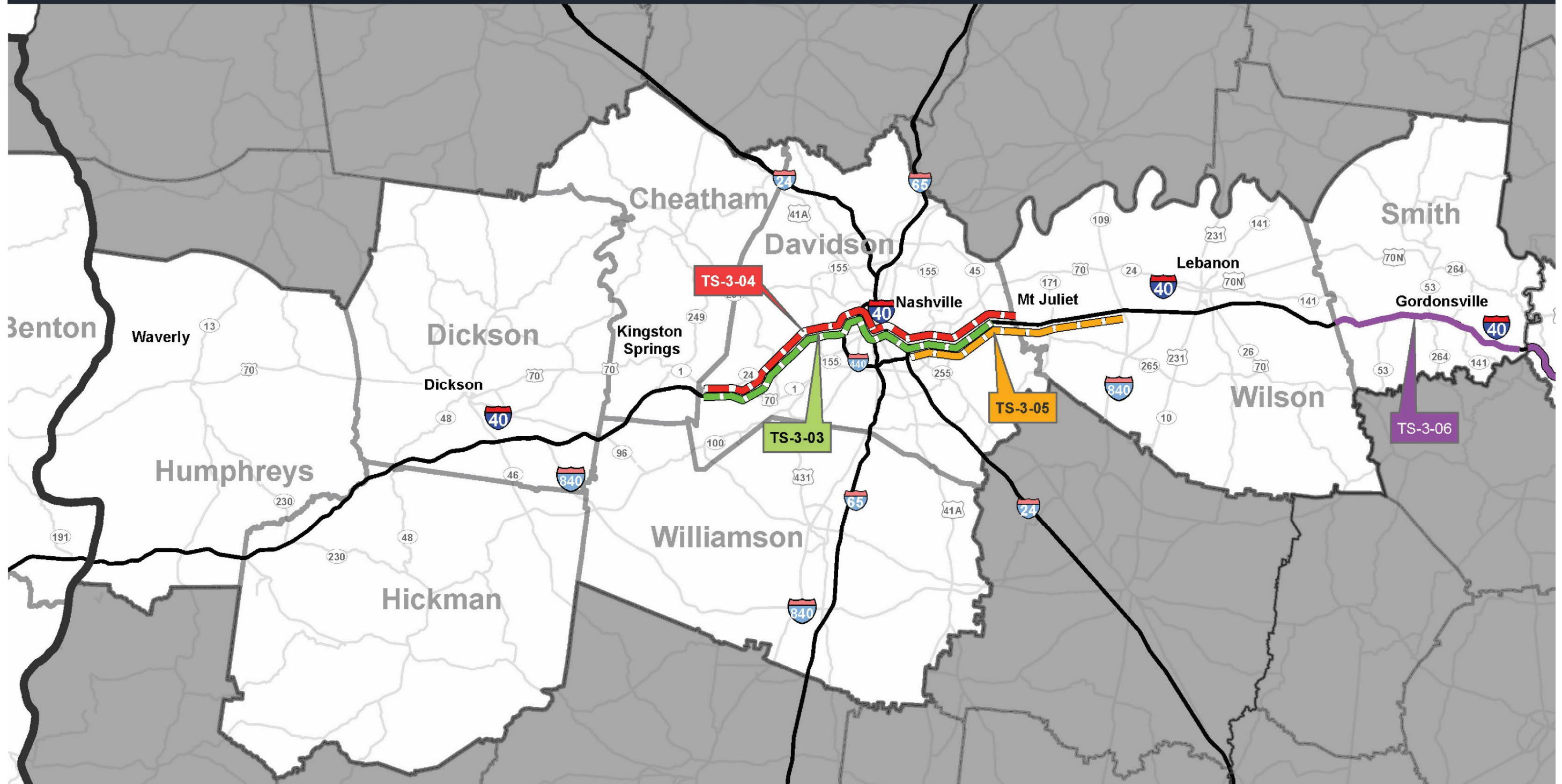


Table 3. Region 3 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety) - Continued

| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|-------|-------------|----------|----------------------------|---|--|---------------|---------------------------|---------------|-----|--------------|
| I-40 | C-3-04 | Davidson | Expansion | In eastbound direction: - Widen I-40 from 5 to 6 lanes from Exit 213A-B to newly constructed SR 255 (Donelson Pike) interchange. - Close slip ramp from SR 1 (Murfreesboro Pike) to eastbound I-40 entrance ramp. Create left-hand turn at SR 1 to loop ramp to provide access to NB I-24/I-440 to I-40 connection. In westbound direction: - Improve exit ramp to NB SR 155, evaluate ramp merge/weave on SR 155 between I-40 and Elm Hill Pike | Exit 213A-B (I-40/24/440 interchange) to Exit 215A-B (SR 155 [Briley Parkway]) | 13 | 1.8 | \$37,500,000 | 0.3 | 1.2 |
| I-40 | RMP-3-04 | Wilson | Ramp/Terminal Improvements | Widen to three lanes to provide operational improvements at signalized intersection | Exit 236 (Hartmann Drive) eastbound off-ramp | 10 | 0.5 | \$4,600,000 | 2.2 | 1.1 |
| I-40 | RMP-3-03 | Wilson | Ramp/Terminal Improvements | Eastbound and westbound ramp improvements to northbound Golden Bear Gateway | Exit 229 (Beckwith Road) | 10 | 0.5 | \$5,400,000 | 1.9 | 0.9 |
| I-40 | INT-3-01 | Davidson | Interchange Improvements | Reconfigure interchange to provide operational and safety improvements. | Exit 201 (SR 24 [US 70, Charlotte Pike]) | 7 | 3.7 | \$35,800,000 | 0.2 | 0.7 |
| I-40 | C-3-05 | Davidson | Expansion | Add one auxiliary lane in the westbound direction between relocated Donelson Pike interchange and interstate entrance ramp at westbound Old Hickory Blvd | Exit 216 (SR 255 [Donelson Pike]) to entrance ramp from Old Hickory Blvd (approximately MM 220) | 13 | 2.5 | \$49,200,000 | 0.3 | 0.7 |
| I-40 | C-3-02 | Davidson | Expansion | In eastbound direction, extend SR 155 entrance ramp as an auxiliary lane to Exit 206 (I-40/440). (This includes adjustment of 46th Avenue entrance ramp.) Add auxiliary lane from Exit I-440 on-ramp to I-65 off-ramp. In westbound direction, widen from 3 to 4 lanes from I-65 to I-440. Braid the Delaware Avenue ramp with the SR 155 exit off-ramp to eliminate weave. | Exit 204A-B (SR 155 [Briley Parkway], White Bridge Road) to Exit 208A-B (I-40/I-65 interchange) | 13 | 2.0 | \$86,600,000 | 0.2 | 0.6 |
| I-40 | C-3-03 | Davidson | Expansion | In eastbound direction: Merge proposed Inner Loop C-D system into the I-40 mainline, as well as merge the I-24 lanes. Widen I-40/24 mainline from 4 to 6 lanes, Shift I-40/24/440 junction westward for proper distance needed for ramp terminal spacing and lane balance requirements. In westbound direction: Widen from 4 to 6 lanes west of I-40/24/440 junction. Remove left-hand I-24 merge, add flyover bridge to create right-hand merge. Add barrier to separate I-24 lanes and restrict traffic entering from Fesslers and Hermitage Avenue to access I-24 only. At I-40/24 junction, transition proposed 6-lane section to accommodate ramp terminal spacing and lane balance requirements, both for I-24 and the proposed Inner Loop C-D system. | Exit 211A-B (I-40/24 interchange) to Exit 213A-B (I-40/24/440 interchange) | 13 | 1.8 | \$107,200,000 | 0.1 | 0.4 |
| I-40 | CD-3-01 | Davidson | C-D Roadway System | Develop a collector-distributor (C-D) system which separates downtown Nashville destination traffic from the interstate mainline through traffic | From Exit 208A-B (I-40/65 interchange on west side of Inner Loop) to Exit 211A-B (I-40/24 interchange) | 10 | 2.4 | \$122,200,000 | 0.1 | 0.4 |
| I-40 | INT-3-02 | Davidson | Interchange Improvements | Reconfigure interchange to eliminate weaving section in both directions | Exit 207 (Jefferson Street / 28th Avenue North) | 9 | 1.7 | \$44,800,000 | 0.2 | 0.3 |

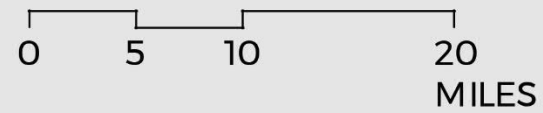
Region 3 Highway Capacity/Expansion Improvements

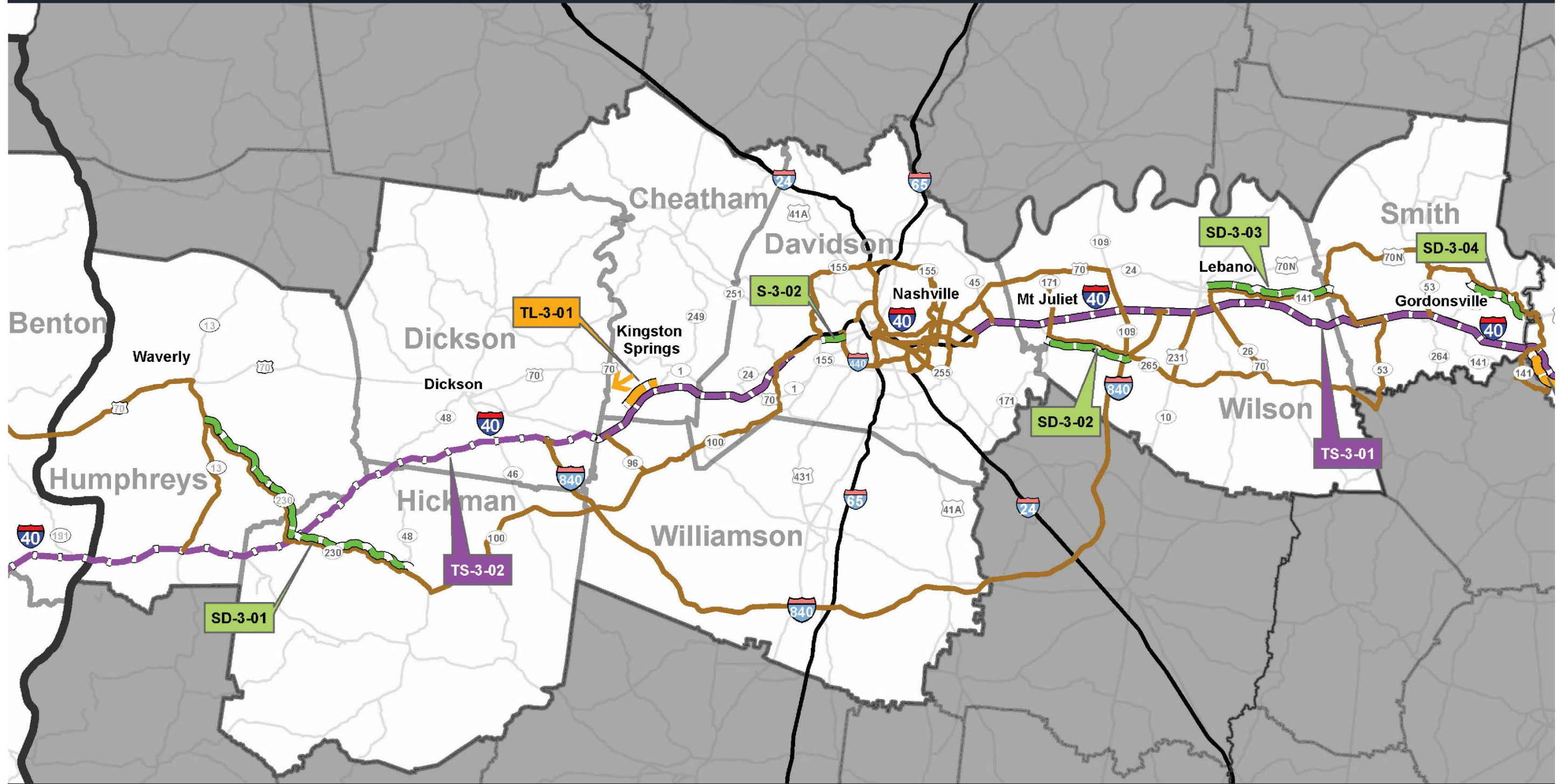




- Integrated Corridor Management
- Complete Smartway System Gap
- Future Ramp Metering
- HOV to HOT Conversion

- Study Area
- Interstates
- Major Roads





- Existing Detour Routes
- Safety Improvements
- Truck Climbing and Runaway Truck Ramp Improvements
- HELP Lite Route
- Study Area
- Interstates
- Major Roads

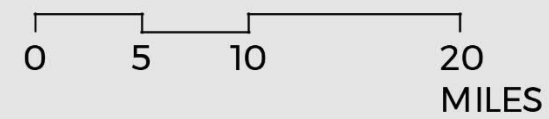
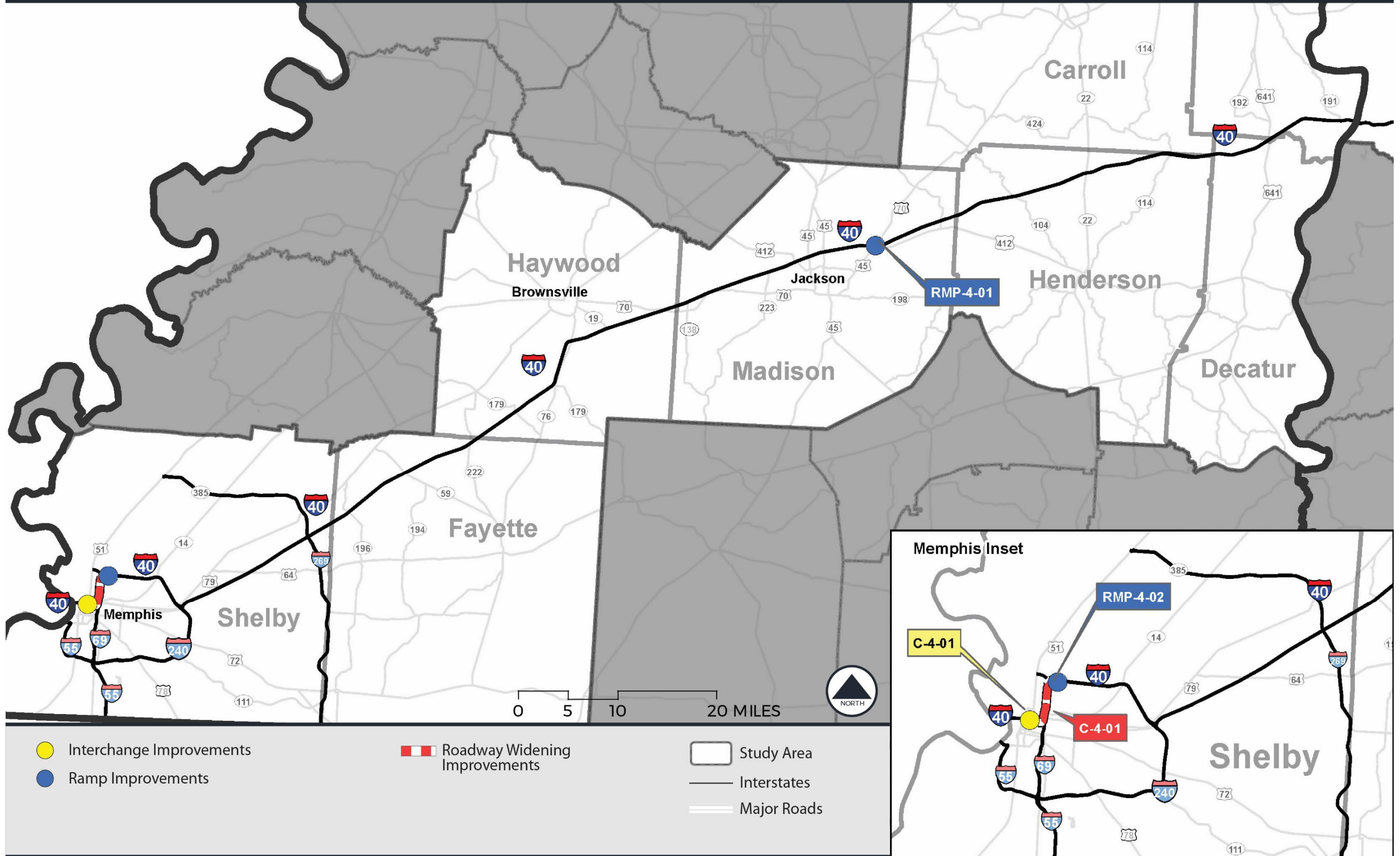
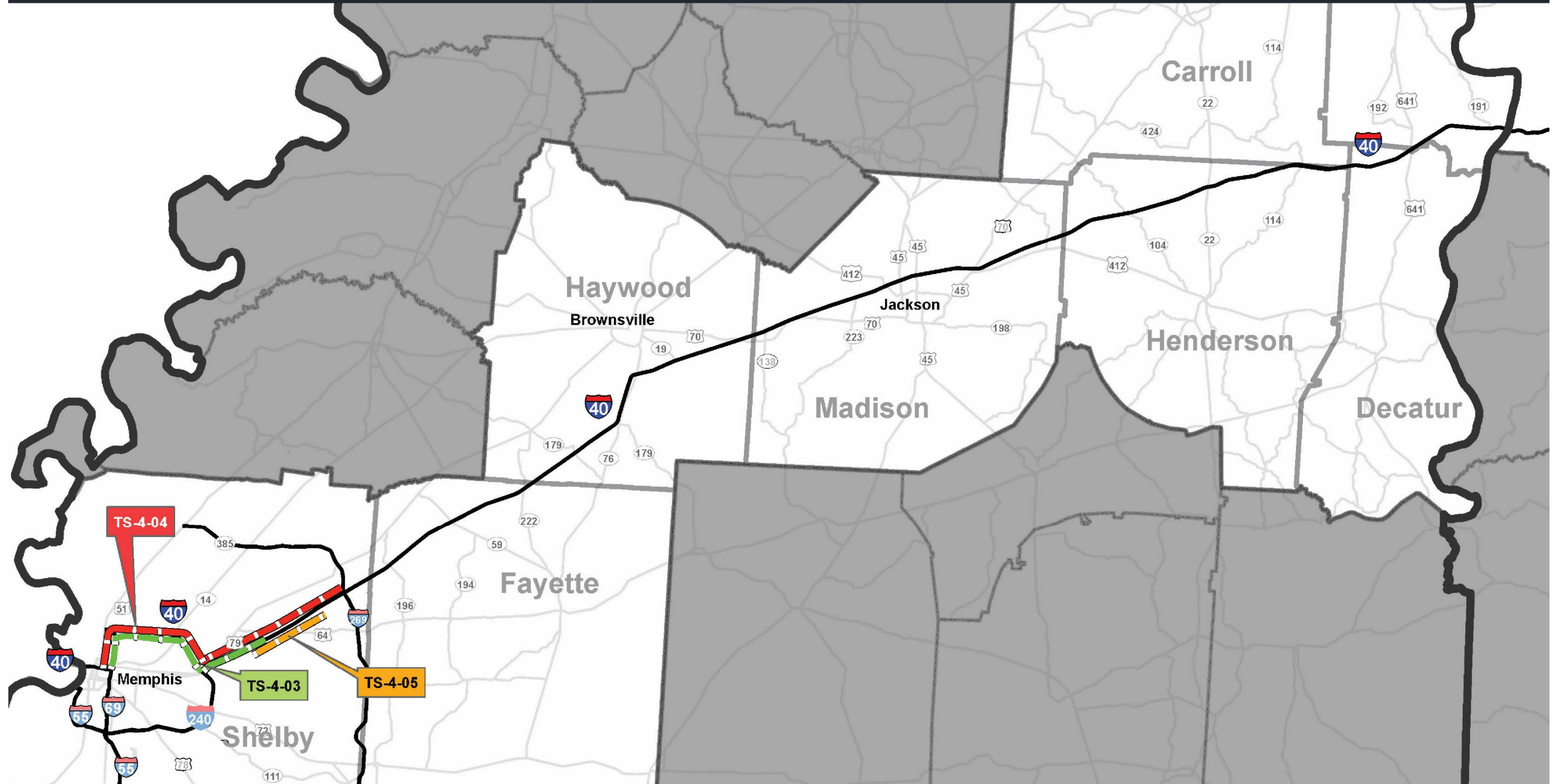




Table 4. Region 4 - Project Rankings by Per Mile BCI (Capacity/Expansion, TSMO and Safety)

| Route | Project No. | County | Investment Type | Description | Termini | Benefit Score | Centerline Length (miles) | Cost | BCI | Per Mile BCI |
|--------------|-------------|--|----------------------------|---|--|---------------|---------------------------|--------------|-------|--------------|
| I-40 | TS-4-01 | Benton, Carroll, Decatur, Henderson, Madison | "HELP Lite" Service | Implement "HELP Lite" service | From Madison/Haywood county line to the Tennessee River | 12 | 67.0 | \$660,000 | 18.2 | 2,436.4 |
| I-40 | TS-4-02 | Fayette, Haywood, Shelby | "HELP Lite" Service | Implement "HELP Lite" service | From Exit 25 to Haywood/Madison county line | 12 | 41.0 | \$410,000 | 29.3 | 2,400.0 |
| SR 1 (US 70) | SD-4-01 | Madison | Safety on Detour Routes | Safety improvements | From Huntersville-Denmark Road to Algie Neely Road | 6 | 1.0 | \$37,000 | 162.2 | 162.2 |
| I-40 | TS-4-03 | Shelby | Ramp Metering | Implement ramp metering | Between Exit 1 and Exit 16 (SR 177, Germantown Parkway) | 14 | 18.0 | \$4,990,000 | 2.8 | 101.0 |
| I-40 | TS-4-04 | Shelby | ICM | Implement Integrated Corridor Management | From I-269 through the Memphis city core | 13 | 25.8 | \$8,070,000 | 1.6 | 83.1 |
| I-40 | TS-4-05 | Shelby | HOV Conversion to HOT lane | Convert existing HOV lanes on I-40 eastbound from MM 15 (near Sycamore View Road interchange) to MM 22 (near US 64 interchange), and I-40 westbound from MM 22 to MM 16 | MM 15 (near the Sycamore View Road interchange) to MM 22 (near the US 64 interchange), and I-40 westbound from MM 22 to MM 16 (near the Sycamore View Road interchange). | 10 | 6.0 | \$6,500,000 | 1.5 | 18.5 |
| I-40 | S-4-01 | Henderson | Crossover Improvements | Add crossover to facilitate emergency services and detours | Between Mile Marker 115.5 and 118.8 (near Exit 116 [SR 114, Natchez Trace State Parkway]) | 4 | 3.3 | \$2,910,000 | 1.4 | 9.1 |
| I-40 | C-4-01 | Shelby | Expansion | Widen from 6 to 8 lanes | Exit 1E (I-240) to Exit 2A (SR 300) | 11 | 1.8 | \$40,500,000 | 0.3 | 1.0 |
| I-40 | RMP-4-01 | Madison | Ramp/Terminal Improvements | Ramp improvements to increase capacity | Exit 87 (SR 1 [US 70/US 412]) | 10 | 0.5 | \$5,400,000 | 1.9 | 0.9 |
| I-40 | RMP-4-02 | Shelby | Ramp/Terminal Improvements | Reconfigure ramps with intersection of North Watkins Street and Overton Crossing Street to improve traffic operations | Exit 3 (North Watkins Street) | 10 | 0.5 | \$5,400,000 | 1.9 | 0.9 |
| I-40 | CD-4-01 | Shelby | Interchange Improvements | Add collector-distributor road to reduce weaving movements for westbound exiting traffic to SR 1 (US 51, Danny Thomas Boulevard) and Second Street. | Exit 1 (SR 1 [US 51, Danny Thomas Boulevard]) | 7 | 1.7 | \$50,600,000 | 0.1 | 0.2 |



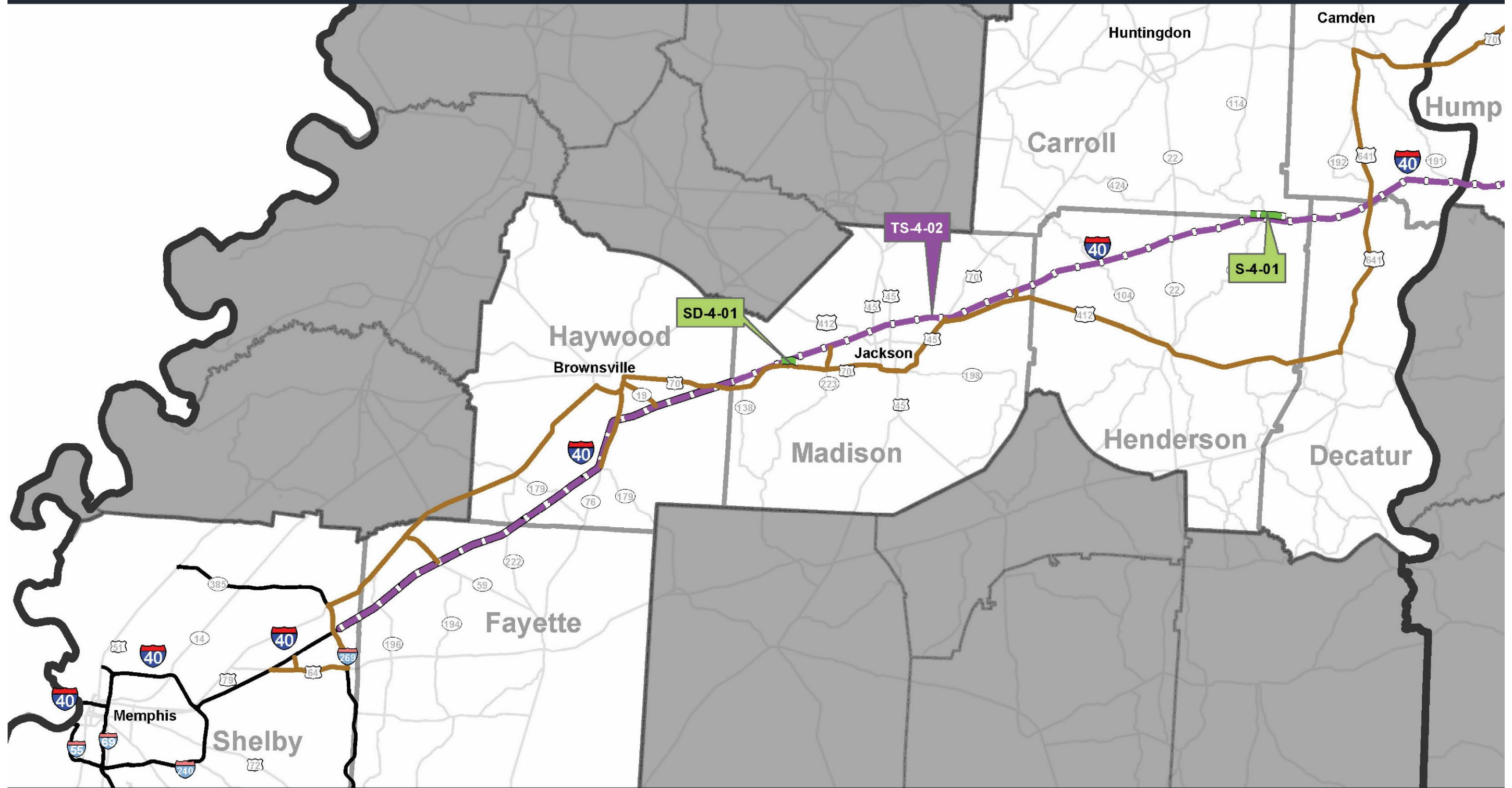


- Integrated Corridor Management
- Future Ramp Metering
- HOV to HOT Conversion

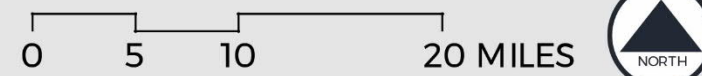
- Study Area
- Interstates
- Major Roads

0 5 10 20 MILES





- Existing Detour Routes
- Safety Improvements
- HELP Lite Route
- Study Area
- Interstates
- Major Roads



Multimodal Freight Investments

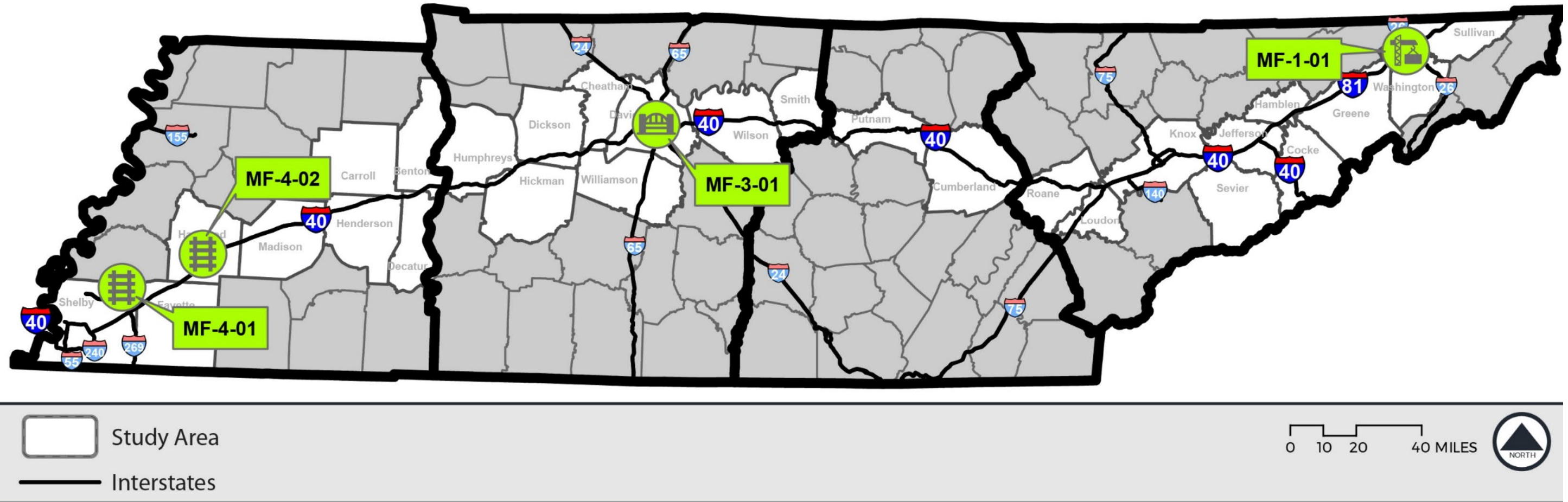


Table 5. Multimodal Freight Investments

| Corridor | Project No. | TDOT Region(s) | County | Description | Benefit Score | Cost | BCI |
|----------|-------------|----------------|-----------------|--|---------------|---------------|------|
| I-40 | MF-4-01 | 4 | Shelby, Tipton | Construct a CN rail spur from Memphis 18 miles east to CN Fulton Subdivision and Memphis Regional Megasite | 12 | \$41,700,000 | 0.29 |
| I-40 | MF-3-01 | 3 | Davidson | Increase clearance at CSX bridge in downtown Nashville for larger barges to pass | 12 | \$53,600,000 | 0.22 |
| I-40 | MF-4-02 | 4 | Shelby, Haywood | Construct a CSX rail spur from Memphis to I-40 Advantage Industrial Park in Brownsville | 12 | \$93,700,000 | 0.13 |
| I-81 | MF-1-01 | 1 | Sullivan | Redevelop Kingsport Intermodal yard so it is being used by truck & rail | 12 | \$206,000,000 | 0.06 |

Transit Investments

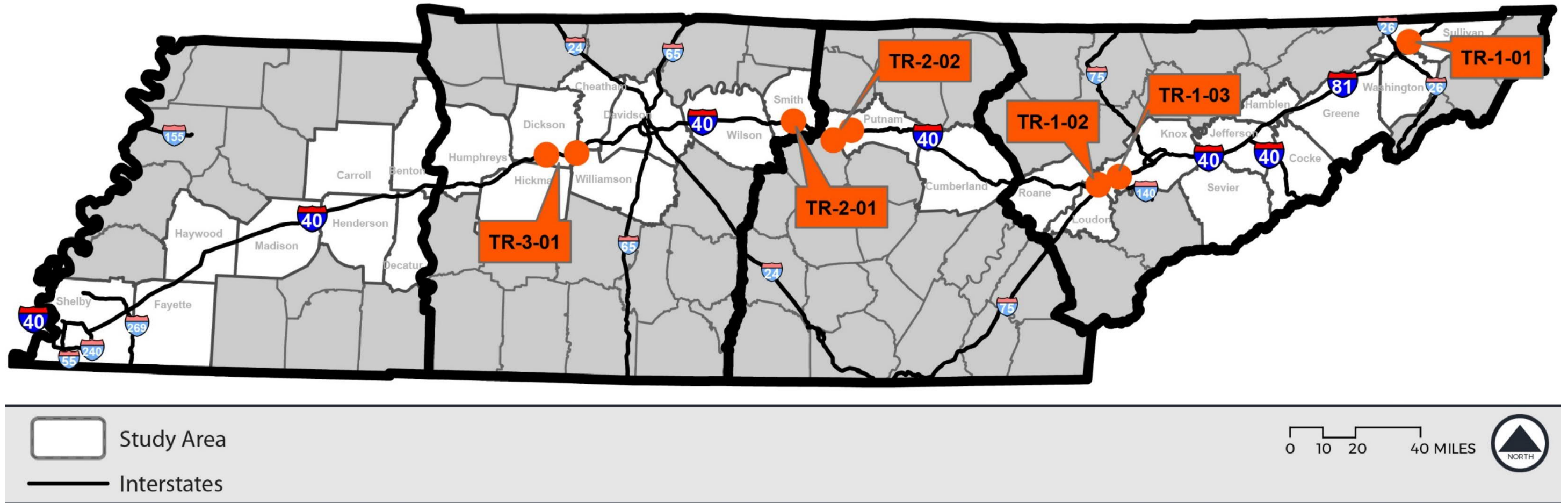


Table 6. Transit Investments

| Corridor | Project No. | TDOT Region(s) | County | Description | Benefit Score | Cost | BCI |
|----------|-------------|----------------|------------|--|---------------|-------------|------|
| I-40 | TR-2-02 | 2 | Putnam | Expand or replace park & ride lot at Exit 280 | 13 | \$1,200,000 | 10.8 |
| I-81 | TR-1-01 | 1 | Sullivan | New park & ride lots, Exits 56 to 66 | 12 | \$3,000,000 | 4.0 |
| I-40 | TR-2-01 | 2 | Smith | New park & ride lots, Exits 258 and 273 | 12 | \$3,000,000 | 4.0 |
| I-40 | TR-3-01 | 3 | Williamson | New park & ride lots at Exit 172 and/or Exit 182 | 12 | \$3,000,000 | 4.0 |
| I-40 | TR-1-02 | 1 | Knox | New park & ride lots at Exits 369, 373 and 374 | 12 | \$4,500,000 | 2.7 |
| I-40 | TR-1-03 | 1 | Knox | New park & ride lots at Exits 376, 378 and 379 | 12 | \$4,500,000 | 2.7 |

Economic Access Investments

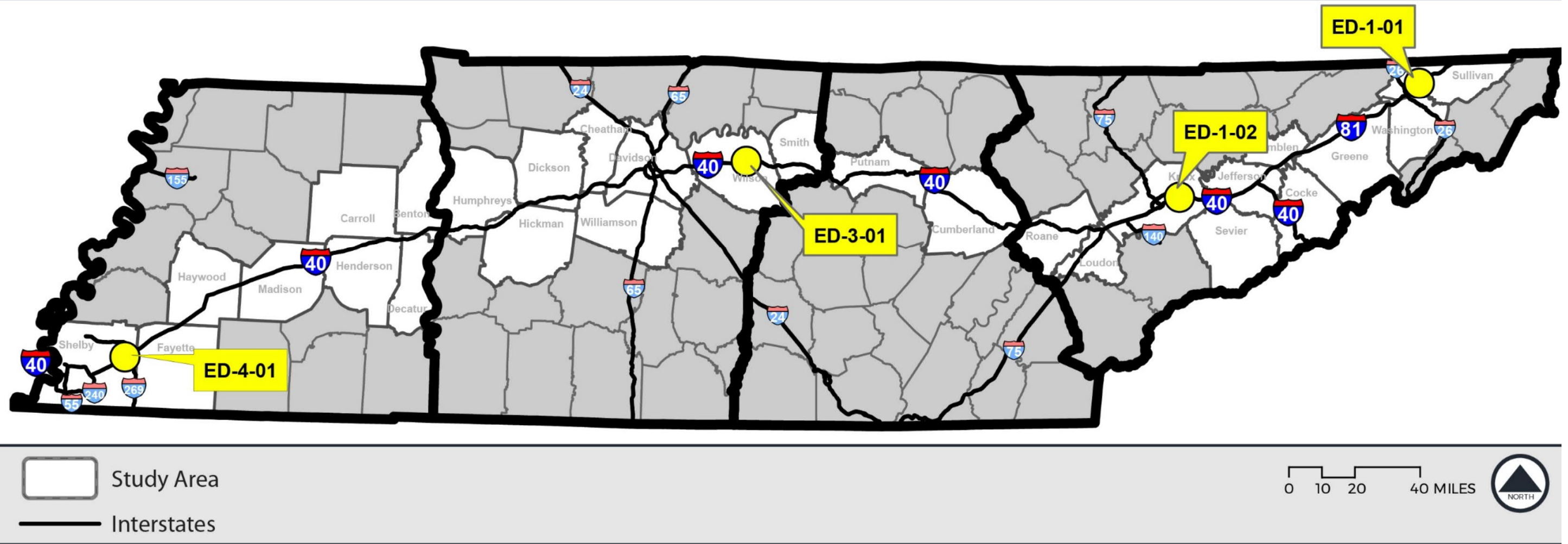


Table 7. Economic Access Investments






| Corridor | Project No. | TDOT Region(s) | County | Description | Benefit Score | Cost | BCI |
|----------|-------------|----------------|----------|---|---------------|--------------|-----|
| I-81 | ED-1-01 | 1 | Sullivan | New interchange at Buttermilk Road | 5 | \$16,000,000 | 0.3 |
| I-40 | ED-3-01 | 3 | Wilson | New interchange at Peyton Road | 5 | \$16,000,000 | 0.3 |
| I-40 | ED-4-01 | 4 | Shelby | New interchange at Chambers Chapel Road | 5 | \$41,300,000 | 0.1 |
| I-40 | ED-1-02 | 1 | Knox | New interchange at Gov. John Sevier Highway | 5 | \$51,700,000 | 0.1 |



Initial Steps For Implementation

In addition to specific capital and programmatic investments, there are a number of studies that TDOT and its partners can perform in the near term to help implement “low-hanging fruit” in the I-40/81 corridor. This list of studies, shown in Table 8, is based on reviewing recommended projects that have particularly high Benefit Cost Index values while also reflecting diversity across the different solution categories that the I-40/81 Multimodal Corridor Plan considered.

Table 8. Recommended Studies

| Description | Category | BCI for Associated Project(s) |
|--|-----------------------|-------------------------------|
|  <p>Work with transit providers to meet park & ride needs where there is existing commuter service along I-40:</p> <ul style="list-style-type: none"> Assist Mid-Cumberland HRA in identifying adjacent or larger site nearby to allow expansion of park & ride lot at Exit 280 Assist Regional Transportation Authority of Middle Tennessee in identifying site for new park & ride lot(s) at Exit 172 and/or Exit 182 | Transit | 4.0 to 10.8 |
|  <p>Prioritize candidate locations for additional truck parking along the I-40/81 corridor identified through current TDOT research (RES2019-16).</p> | Freight | N/A |
|  <p>Develop detailed implementation plan for a HELP Lite service pilot in Region 4.</p> | Safety/ Congestion | 18.2 |
|  <p>Conduct detailed implementation study for coordinated, adaptive ramp metering on I-40 in the Nashville area</p> | TSMO | 153.2 |
|  <p>Work with TVA and other partners to identify sites for electric vehicle infrastructure on I-81, on I-40 between Memphis and Nashville, and on I-40 between I-81 and the North Carolina state line. These segments are not yet "Corridor Ready" based on USDOT guidelines. Include feasibility of adding truck charging stations at public truck parking facilities.</p> | Economy | N/A |