I-95 Corridor Improvement Plan - Progress to Date

- Problem identification

- Identification of potential solutions for each problem area and operations plan

- Prioritization of operations strategies
The Secretary of Transportation and the Commonwealth Transportation Board requested that the study area for the Plan include all 179 miles of I-95 in Virginia.
Corridor Significance

Critical North-South Corridor

Multimodal Corridor
- Highway
- Metrorail
- VRE
- Vanpool
- Carpooling
- Slugging
- Commuter/Express Bus
- Park and Ride Lots
- Amtrak

9.0 Million
Trucks Per Year

> 3,700 Incidents Per Year
(With Average Clearance Times Almost 2 Hours)

~ 21,000
Crashes Over 4 Years

$195 Billion
in Goods Per Year
Crash Frequency and Severity Summary
One-Mile Segments

[Bar chart showing crash frequency and severity across different districts with a highlighted Top 25%.]
Persons Moved on Northbound I-95 in AM

1. Beltway between Exits 173 and 174 (East of Van Dorn Street) - 50% Non-SOV
2. Between Exits 166 and 169 (South of Springfield) - 61% Non-SOV
3. Between Exits 160 and 161 (Occoquan River) - 61% Non-SOV
4. Between Exits 140 and 143 (South of Express Lanes S. Terminus) - 36% Non-SOV
5. Between Exits 118 and 126 (North of Thornburg) - 24% Non-SOV
6. Between Exits 84 and 86 (North of I-295) - 15% Non-SOV
7. Between Exits 54 and 58 (North of Petersburg) - 13% Non-SOV
8. Between Exits 4 and 8 (North of North Carolina border) - 14% Non-SOV

Total Persons Moved = SOV + Intercity Rail (Amtrak), Commuter Rail (VRE), Metrorail, Commuter Bus, Vanpool, Slugging and Carpool

Office of the Secretary of Transportation
October Meetings Public Feedback and Survey Results: Strategy Rating

Participants were asked to rate strategies on a scale of 1 to 5, with 5 being the highest.
Suite of Improvements

Focus Areas

<table>
<thead>
<tr>
<th>OPERATIONS ON I-95</th>
</tr>
</thead>
<tbody>
<tr>
<td>PARALLEL FACILITIES (Routes 1 and 301)</td>
</tr>
<tr>
<td>MULTIMODAL (rail, bus, carpool, park and ride)</td>
</tr>
<tr>
<td>CAPITAL PROJECTS ON I-95</td>
</tr>
</tbody>
</table>

Data-driven approach incorporating performance measures

**GOALS**

To provide faster, safer, and more reliable travel along the I-95 corridor
Corridor-wide Improvements
Planning Level Cost Estimates

Estimated FY20 Capital Cost Ranges

- Freeway operations upgrades: $48 - $53 M
- Arterial operations upgrades: $12 - $15 M
- Multimodal improvements: $215 - $260 M
- Highway capital improvements: $1.3 - 1.8 B

TOTAL: $1.6 - $2.1 B
Potential Capital Improvements

- 54 projects (highway, rail, bus, park & ride) with estimated cost between $1.5 - $2.1B
- 35 locations requiring additional study
- Challenge: Needs far exceed available annual revenues
Potential Sources of Revenue
Dedicated Interstate Funding Estimates

By FY2022 -

• ~$40M per year: I-95 south of Northern Virginia District (CTB)

• ~$20M per year: all Northern Virginia District interstates and supporting facilities (NVTA)

• ~$44M per year: At the discretion of CTB for any interstate
Potential Sources of Revenue

Other Sources

- SMART SCALE
- Regional funding – NVTA
- Regional Surface Transportation Block Grant Program (Northern Virginia, Fredericksburg, Richmond and Tri-Cities MPO regions)
- Innovative Transportation Technology Fund
- I-395 Commuter Choice
- Rail and transit funding programs
Recommendations

• Operational improvements offer highest ROI and fastest implementation

• $60-$68 M cost will require first 3 years of available funding

• Proceed with allocation of funding for operational and parallel facilities upgrades

• Conduct further study on items identified
  • Bi-directional HOT Lanes, Woodrow Wilson Bridge HOT Lanes, multiple interchange improvements
Recommendations

• Complete evaluation of I-64 corridor
• Identify operational improvements for other Interstate corridors
• Establish CTB policy on allocation of dedicated interstate revenues
• Evaluate all potential projects to determine best allocation of dedicated and discretionary Interstate funds
Recommended Operational and Parallel Facilities Improvements

Recommended operational improvements
- Tied to top 25% locations for incident-related delay on I-95 mainline
- Incorporate both freeway and parallel arterial improvements

Over $200M of operations and parallel facilities improvements initially identified
- Prioritized to reflect countermeasures with greatest return on investment
- Will be prioritized on a segment level by district

Total recommended freeway and arterial operations investments: $60 - $68 M
Partial List of Operational Improvements

**CCTV Cameras**
Detect incidents and provide situational awareness of incidents

**Changeable Message Signs**
Informs drivers of conditions ahead

**Safety Service Patrols**
Provide incident scene support and help stranded motorists

**Towing Programs**
Contract towing services that are activated as incidents are detected

**Variable Speed Limits**
Adjustable speed limits that change to reduce traffic congestion
Parallel Facilities Improvements

Improvements considered for traffic incident management

- Message signs
- Traffic control personnel
- Communications upgrades
- Traffic signal operations
- Intersection improvements
- Sign improvements

Limited widening for auxiliary lane (1 to 95)
Operational Improvements
Potential Benefits

**Towing Program**
Incident clearance times reduced by up to 27 minutes per incident

**Safety Service Patrols**
Incident duration reduced by 17% when SSP is on-site

**Variable Speed Limits**
Reduce crashes by 8% and increase vehicle throughput by 5%

**Ramp Metering**
22% reduction in travel times on I-95
Recommended Operational and Parallel Facilities Improvements

Example ROI Analysis

Safety Service Patrols (SSP)

• Safety
  • Average percent reduction of secondary crashes is 40%
  • 20% of crashes are secondary crashes

• Mobility
  • SSP reduces incident duration by 17%
**Recommended Operational and Parallel Facilities Improvements**

Safety Service Patrol ROI Metrics

- **Mobility**
  - Incident delay
  - % reduction in incident delay
  - Travel time savings

- **Safety**
  - PDO crashes
  - Injury crashes
  - Fatality crashes

- **Energy & Environment**
  - Travel time savings
  - Fuel consumption
  - Fuel costs
  - Emissions benefits
## Recommended Operational and Parallel Facilities Improvements

### Safety Service Patrol ROI

- **Capital Cost** = $3.3-3.6 M
- **O&M cost over 10 yrs.** = $25 M
- **Benefit over 10 yrs.** = $80.1 M
- **ROI** = 3.1
## Recommended Operational and Parallel Facilities Improvements – ROI Summary

<table>
<thead>
<tr>
<th>Proposed Operational Improvement</th>
<th>Estimated Implementation Cost (millions $)</th>
<th>Estimated Annual O&amp;M Cost (thousands $)</th>
<th>Benefit [10 Years] (millions $)</th>
<th>ROI [10 Years]</th>
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</thead>
<tbody>
<tr>
<td>CCTV Cameras</td>
<td>$14.7 - 16.2</td>
<td>$800 - 1.0</td>
<td>$134.6</td>
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<td>Changeable Message Signs</td>
<td>$3.0 - 3.3</td>
<td>$80 - 90</td>
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<td>Safety Service Patrols</td>
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<td>TRIP Towing Program</td>
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<td>Towing Program</td>
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<td>Variable Speed Limits</td>
<td>$13.4 - 14.8</td>
<td>$2.9 - 3.2</td>
<td>$117.5</td>
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<td>Ramp Metering</td>
<td>$5.4 - 5.9</td>
<td>$410 - 510</td>
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<td>Geofenced Emergency Notifications</td>
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<td>$100 - 130</td>
<td>$1.4</td>
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<td>Advanced Work Zone Technology</td>
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<td>$450 - 570</td>
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<td>Misc. Low-Cost Improvements</td>
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<td>Critical Arterial Signal Improvements</td>
<td>$12.1 - 15.1</td>
<td>$330 - 420</td>
<td>TBD</td>
<td>TBD</td>
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</table>

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Next Steps

• Approve corridor-wide operations and arterial upgrades in January

• I-95 Report Executive Summary to CTB in January 2020

• Final Report to CTB and General Assembly in January 2020

• Prioritize remaining projects after completion of the I-64 corridor plan