

2034 LRTP Table of Contents

| | |
|--|------|
| List of Tables | v |
| List of Figures | vi |
| List of Maps | ix |
| Executive Summary | ES-1 |
| Section 1 – Overview | |
| Chapter 1: Introduction | 1-1 |
| Chapter 2: State of Transportation in the Region | 2-1 |
| Section 2 – Shapes and Patterns | |
| Chapter 3: Regional Demographics | 3-1 |
| Chapter 4: Environmental Justice | 4-1 |
| Section 3 – Framing the LRTP | |
| Chapter 5: Public Involvement | 5-1 |
| Chapter 6: Vision and Goals | 6-1 |
| Section 4 – Transportation Challenges | |
| Chapter 7: Mobility and Accessibility Challenges | 7-1 |
| Chapter 8: Reliability Challenges | 8-1 |
| Chapter 9: Environmental Challenges | 9-1 |

| | |
|---|------|
| Chapter 10: Financial Challenges | 10-1 |
| Section 5 – Transportation Strategies | |
| Chapter 11: Mobility and Accessibility Strategies | 11-1 |
| Chapter 12: Reliability Strategies | 12-1 |
| Chapter 13: Environmental Strategies | 13-1 |
| Chapter 14: Financial Strategies | 14-1 |
| Chapter 15: Project Prioritization Tool | 15-1 |
| Section 6 – The Regional Transportation Plan | |
| Chapter 16: The Financial Plan | 16-1 |
| Chapter 17: Selecting Projects | 17-1 |
| Chapter 18: The 2034 LRTP Projects | 18-1 |
| Chapter 19: Plan Performance | 19-1 |
| Section 7 – Looking Ahead | |
| Chapter 20: Implementation and Monitoring | 20-1 |
| Chapter 21: Beyond the Horizon | 21-1 |

Section 8 – References

| | |
|--|------|
| Glossary of Acronyms and Abbreviations | R-1 |
| Glossary of Terms | R-7 |
| Supporting Documentation | R-15 |
| Bibliography | R-17 |
| Photo Credits | R-21 |

List of Tables

| | |
|---|-------|
| Table ES.1 - 2034 LRTP Goals | ES-2 |
| Table ES.2 - Summary of the 2034 LRTP Candidate Transportation Projects | ES-6 |
| Table ES.3 - Fiscal Constraint Summary FY 2012-2034 | ES-7 |
| Table 1.1 - Stakeholders in the Development of the 2034 LRTP | 1-3 |
| Table 4.1 - 2000 and 2010 Low-Income Households | 4-3 |
| Table 5.1 - Summary of Public Comments | 5-14 |
| Table 5.2 - Summary of Public Questions | 5-16 |
| Table 6.1 - Federal, State, and 2034 LRTP Goals Relationship | 6-4 |
| Table 6.2 - 2034 LRTP Goals and Approach Strategy | 6-6 |
| Table 7.1 - Percentage of Hampton Roads 65+ Population, 1990-2010 | 7-2 |
| Table 7.2 - Non-Drivers in Hampton Roads. 2000 | 7-4 |
| Table 7.3 - Percentage of Hampton Roads Youth Population, 1990-2010 | 7-6 |
| Table 7.4 - Safe Routes to School Program Recipients, 2008-2010 | 7-7 |
| Table 7.5 - Half-Mile Transit Stop Coverage | 7-11 |
| Table 7.6 - Hampton Roads Road / Pedestrian Crashes, 2008-2010 | 7-14 |
| Table 7.7 - Hampton Roads Road / Cyclist Crashes, 2008-2010 | 7-14 |
| Table 7.8 - Hampton Roads Road / Rail Crashes, 2008-2010 | 7-15 |
| Table 8.1 - Structurally Deficient Bridges in Hampton Roads | 8-5 |
| Table 11.1 - Congestion Mitigation Strategy "Toolbox" | 11-10 |
| Table 13.1 - Summary of Environmental Mitigation Responses | 13-5 |
| Table 15.1 - Relationship of SAFETEA-LU Planning Factors to Prioritization Criteria | 15-5 |
| Table 16.1 - Non-Traditional Revenue Streams | 16-2 |
| Table 17.1 - Summary of the 2034 LRTP Candidate Transportation Projects | 17-1 |
| Table 17.2 - Fiscal Constraint Summary FY 2012-2034 | 17-5 |
| Table 18.1 - Committed Projects in the 2034 LRTP | 18-2 |
| Table 18.2 - Regionally Funded Construction Projects in the 2034 LRTP | 18-3 |
| Table 18.3 - Locally Funded Construction Projects in the 2034 LRTP | 18-5 |
| Table 18.4 - Source of Project Funds - FY 2012-2034 | 18-8 |
| Table 18.5 - Source of Public-Private Partnership Project Funds - FY 2012-2034 | 18-11 |
| Table 19.1 - Summary of Federal and State LRTP Conformity Requirements | 19-5 |
| Table 19.2 - Four Step EJ Evaluation Demonstrated in the 2034 LRTP | 19-10 |
| Table 21.1 - Unfunded Projects Recommended for Future Consideration | 21-2 |

List of Figures

| | |
|---|------|
| Figure ES.1 - Growth in VMT | ES-1 |
| Figure ES.2- Sources of Estimated Revenues (2012-2034) | ES-5 |
| Figure ES.3 - 2009 and 2034 Congested Lane-Miles | ES-7 |
| Figure 1.1 - LRTP Development Overview | 1-4 |
| Figure 1.2 - Funding Framework | 1-5 |
| Figure 1.3 - Steps for Integrating CMP into the Planning Process | 1-6 |
| Figure 2.1 - Lane-Miles of Roadways in Hampton Roads, 2000-2009 | 2-2 |
| Figure 2.2 - Growth in VMT | 2-5 |
| Figure 2.3 - Peak Hour Congestion Levels in Hampton Roads (2009) | 2-6 |
| Figure 2.4 - Commuting Methods in Hampton Roads, 1990, 2000, and 2009 | 2-9 |
| Figure 2.5 - Percent of Hampton Roads Commuters that Work in a Different Locality than Their Residence, 1970-2009 | 2-10 |
| Figure 2.6 - Mean Travel Time to Work in Minutes in Hampton Roads, 1990, 2000, and 2009 | 2-10 |
| Figure 2.7 - HOV Network | 2-11 |
| Figure 3.1 - Percent Growth in Population by Jurisdiction, 1990-2010 | 3-1 |
| Figure 3.2 - Hampton Roads Current and Anticipated Population Profile | 3-2 |
| Figure 3.3 - Hampton Roads Employment, 1990-2009 | 3-3 |
| Figure 3.4 - Hampton Roads Population, Registered Vehicles, and Licensed Drivers, 1998-2010 | 3-3 |
| Figure 3.5 - Hampton Roads Current and Anticipated Employment Profile | 3-4 |
| Figure 4.1 - 2000 Hampton Roads Racial Profile | 4-2 |
| Figure 4.2 - 2010 Hampton Roads Racial Profile | 4-2 |
| Figure 4.3 - Traditional Population Pyramid | 4-4 |
| Figure 4.4 - 2000 and 2010 Regional Population Pyramid | 4-5 |
| Figure 5.1 - HRTPO Visualization Tool | 5-2 |
| Figure 5.2 - 2034 LRTP Public Outreach Phases | 5-5 |
| Figure 6.1 - Examples of Survey Responses | 6-2 |
| Figure 7.1 - Percent of Non-Driver Population vs. Percent of Driver Population | 7-3 |
| Figure 7.2 - Safe Routes to School Program | 7-6 |
| Figure 7.3 - Top 20 US Metro Areas by Military Employment, 2008 | 7-7 |
| Figure 7.4 - Projected Growth in Virginia Freight Tonnage, 2004 to 2035 | 7-9 |
| Figure 8.1 - Pavement Condition in Hampton Roads, 2000-2008 | 8-2 |
| Figure 8.2 - Bridges in Hampton Roads by Year Built | 8-3 |
| Figure 8.3 - Deficient Bridges in Hampton Roads | 8-4 |

| | |
|---|-------|
| Figure 8.4 - Critical Hazard Risk Assessment in Hampton Roads | 8-7 |
| Figure 9.1 - Land Use and Transportation Impacts in Hampton Roads | 9-4 |
| Figure 10.1 - Sources of Transportation Revenues in Virginia | 10-2 |
| Figure 10.2 - Maintenance Deficit | 10-3 |
| Figure 10.3 - 2010 Performance Report Summary - Virginia's Highway System | 10-3 |
| Figure 10.4 - Comparing Producer Price Index to National Highway Construction Cost Index | 10-4 |
| Figure 11.1 - HRTPO CMP Strategies | 11-9 |
| Figure 11.2 - Completed HRTPO Studies since 2007 | 11-12 |
| Figure 11.3 - Commonwealth Rail Mainline Relocation | 11-19 |
| Figure 11.4 - US Definitions of High-Speed and Intercity Passenger Rail Corridors | 11-20 |
| Figure 12.1 - Traffic Crashes in Hampton Roads | 12-3 |
| Figure 12.2 - Traffic Crash Fatalities in Hampton Roads | 12-3 |
| Figure 12.3 - TRAFFIX Performance Measures, 2005-Present | 12-6 |
| Figure 12.4 - Participants in TRAFFIX Programs from 2005-Present | 12-7 |
| Figure 13.1 - Additional Agencies Consulted in the Development of the 2034 LRTP | 13-3 |
| Figure 13.2 - Environmental Agencies Consulted in the Development of the 2034 LRTP | 13-4 |
| Figure 14.1 - Governor's Omnibus Transportation Funding Bill: Funding Mechanisms | 14-1 |
| Figure 14.2 - Statewide Highway Funding, Maintenance vs. Construction | 14-2 |
| Figure 14.3 - Downtown Tunnel/Midtown Tunnel/MLK Extension Transportation Package | 14-4 |
| Figure 15.1 - Components of Prioritization | 15-1 |
| Figure 15.2 - Prioritization Project Categories | 15-2 |
| Figure 15.3 - Project Prioritization Components | 15-2 |
| Figure 15.4 - Relationship of Project Prioritization Criteria and SAFETEA-LU Planning Factors | 15-4 |
| Figure 16.1 - Traditional Funding Allocation of Construction and Maintenance in the 2034 LRTP | 16-1 |
| Figure 16.2 - Traditional Revenue Streams | 16-2 |
| Figure 16.3 - Total Anticipated Revenue Stream for the 2034 LRTP | 16-3 |
| Figure 17.1 - Process for developing the 2034 Fiscally-Constrained List of Projects and Studies | 17-1 |
| Figure 17.2 - Project Prioritization 'Bridge and Tunnel' Weighting Factors | 17-2 |
| Figure 17.3 - 2034 LRTP Project Funding Summary | 17-5 |
| Figure 17.4 - Traditional Funding Allocation Summary | 17-6 |
| Figure 17.5 - Non-Traditional Funding Allocation Summary | 17-7 |
| Figure 17.6 - Travel Demand Model incorporation into the LRTP | 17-8 |
| Figure 18.1 - 2034 LRTP Ongoing Transportation Studies | 18-1 |
| Figure 19.1 - 2009 and 2034 Congested Lane-Miles | 19-1 |
| Figure 19.2 - Air Quality Designations | 19-4 |
| Figure 19.3 - Emission Results for 2034 LRTP Air Quality Conformity Analysis | 19-7 |

| | |
|---|------|
| Figure 19.4 - Criteria of EJ Benefits Analysis | 19-9 |
| Figure 20.1 - Topics in the 2011 State of Transportation Report | 20-4 |
| Figure 21.1 - Process for Developing 2034 Regional Transportation Vision Plan | 21-2 |

List of Maps

| | |
|---|-------|
| Map 1.1 - Hampton Roads | 1-1 |
| Map 2.1 - Major Transportation Projects Completed in Hampton Roads on the Peninsula 2000-2011 | 2-3 |
| Map 2.2 - Major Transportation Projects Completed in Hampton Roads on the Southside 2000-2011 | 2-4 |
| Map 2.3 - PM Peak Hour Congestion Levels in Hampton Roads on the Peninsula (2009) | 2-7 |
| Map 2.4 - PM Peak Hour Congestion Levels in Southside Hampton Roads (2009) | 2-8 |
| Map 2.5 - The Tide Light Rail System Map | 2-12 |
| Map 2.6 - Existing Bicycle Facilities in Hampton Roads (2007) | 2-14 |
| Map 6.1 - Survey Responses by Zipcode | 6-1 |
| Map 7.1 - Zero Vehicle Non-Drivers in Hampton Roads, 2001 | 7-5 |
| Map 7.2 - Major Chokepoints | 7-10 |
| Map 7.3 - Half-Mile Transit Stop Coverage, 2009 | 7-12 |
| Map 7.4 - Virginia State Rail Map, Hampton Roads Inset | 7-15 |
| Map 9.1 - Sea Level Rise Vulnerability in Hampton Roads | 9-3 |
| Map 11.1 - Encouraging Multimodal Activity | 11-2 |
| Map 11.2 - Encouraging Multimodal Affordable Housing | 11-2 |
| Map 11.3 - STRAHNET and Supporting Non-STRAHNET Network | 11-4 |
| Map 11.4 - Freight Bottlenecks During the Afternoon Peak Period, 2005 | 11-7 |
| Map 11.5 - Hampton Roads Regional Transit Vision Plan | 11-14 |
| Map 11.6 - East Coast Greenway | 11-16 |
| Map 11.7 - South Hampton Roads Regional Trail | 11-17 |
| Map 11.8 - Southeast High Speed Rail | 11-22 |
| Map 12.1 - Strategic Highway Network | 12-11 |
| Map 12.2 - Hurricane Evacuation Routes | 12-14 |
| Map 18.1 - 2034 LRTP Projects | 18-7 |
| Map 19.1 - 2034 PM Peak Hour Congestion Levels in Hampton Roads – Peninsula | 19-2 |
| Map 19.2 - 2034 PM Peak Hour Congestion Levels in Southside - Hampton Roads | 19-3 |
| Map 19.3 - Minority Households above Regional Average | 19-11 |
| Map 19.4 - Households with Income Below Poverty above Regional Average | 19-11 |
| Map 19.5 - Population with Disability above Regional Average | 19-12 |
| Map 19.6 - Population Age 65 or Older above Regional Average | 19-12 |
| Map 19.7 - Households with Limited English Proficiency above Regional Average | 19-13 |
| Map 19.8 - Households that Receive Public Assistance above Regional Average | 19-13 |

| | |
|---|-------|
| Map 19.9 - Households with Zero Vehicles above Regional Average | 19-14 |
| Map 19.10 - Target Groups above Regional Average | 19-14 |
| Map 19.11 - Target Areas in Hampton Roads | 19-15 |
| Map 19.12 - Target Areas and 2034 LRTP Construction Projects | 19-15 |
| Map 19.13 - 2034 LRTP Benefit Criteria Analysis | 19-16 |
| Map 19.14 - Target Areas and Regional Transit Routes | 19-16 |