
VDOT

Asset Management Program Status: Budgeting for Maintenance & Operations

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VDOT-Maintained Network

- 123,960 lane miles
  - Average of 500 lane miles (200 miles) added yearly with 80% coming from Secondary system
  - 17% of Primary and Interstate pavements are deficient
  - 28% of Secondary hard-surfaced pavements are deficient
- 11,688 bridges
  - 80% are 25 years or older, 39% are 50 years or older
  - 39% are deficient – structures are rusting, piers are decaying, or cracking in decks causing weight restrictions, detours, temporary supports
- 82 cities and 2 counties maintain their systems

Ongoing Challenges

- Aging infrastructure
  - Interstates reached life spans (50th anniversary in 2006)
  - 4,567 Bridges over 50 years old
  - Deterioration occurring at quicker pace due to heavier traffic and loads

Ongoing Challenges

- Funding Challenge
  - From FY 94 – FY 03, cost of maintenance growing faster than gas tax:
    - Maintenance cost grew at 2.7% per year on average due to inflation, and an additional 1% due to increased size of VDOT-maintained system
    - Gas tax revenues grew by 2.0% per year on average
  - Maintenance cost anticipated to continue to grow faster than gas tax revenues over next six years

Business Goals and Objectives

- Manage VDOT's assets using a life-cycle approach
- Operate the system 24/7
- Identify and prioritize statewide maintenance and operations needs
- Design effective budget-based processes to plan, implement, and monitor work efforts

Refocused Asset Management

- In 2002, VDOT cancelled earlier development effort with contractor
- Developed the Asset Management System using VDOT staff
- System consists of six modules:
  - Random Condition Assessment
  - Needs Based Budget
  - Planning
  - Work Accomplishments & Monitoring
  - Inventory
  - Analysis Tools

Data Collected

- Pavements
  - 100% windshield assessment of Interstate and Primary flexible pavements
  - 10% windshield assessment of Secondary plant mix pavements per county
  - 100% automated data collection of Interstate flexible pavements and rigid pavements on all systems
- Bridges
  - Every bridge is inspected at least once every 2 years

Data Collected

- Traffic signal inventory (100% of signals)
- Random Condition Assessment Assets
  - Inventory and condition data collected in randomly-generated 1/10-mile sections of Interstate, Primary, and Secondary roads in each district
  - Assets collected include traffic signs; guardrail; pavement markings; unpaved shoulders; paved and unpaved ditches; pipes and culverts

Data Interpretation and Analysis

- Pavements
  - Severe alligator cracking indicates structural issues; needs more structure
  - Bleeding (shiny surface) indicates an asphalt mix issue; needs new traveling surface
  - Minor transverse cracking may indicate weather-related issue; needs to be sealed to prevent water intrusion
- Bridges
  - Deck joint failed; needs to be replaced to prevent water and debris intrusion
  - Painted steel beam end rusting; needs to have rust removed, reseal joints above, and paint to protect

Data Interpretation and Analysis

- Modeled assets
  - Pavement markings damaged or worn; need to be replaced to guide motorists
  - Guardrail damaged or at improper height; needs to be repaired or replaced to be fully functional
  - Pipes and ditches blocked; need to be cleaned to move water away from pavements
  - Dirt road surface wash-boarded; needs to be machined and stone added to restore proper drainage and improve rideability
- Other assets and programs
  - Historical information used

Deficient Pavements (Lane Miles)

District	Interstate	Primary	Secondary
Bristol	69	580	2,444
Salem	68	590	2,988
Lynchburg	-	192	2,786
Richmond	230	471	4,956
Hampton Roads	81	295	3,339
Fredericksburg	60	368	2,109
Culpeper	18	293	1,730
Staunton	202	547	958
Northern Virginia	169	327	372
Total Lane Miles	897	3,663	21,692
Total Needs	$160 million	$314 million	$566 million

Deficient Bridges

District	Interstate	Primary	Secondary
Bristol	106	277	783
Salem	83	173	457
Lynchburg	-	88	292
Richmond	111	139	251
Hampton Roads	88	66	106
Fredericksburg	7	57	88
Culpeper	17	78	236
Staunton	87	208	609
Northern Virginia	47	51	65
Total Bridges	546	1,137	2,887
Total Needs	$160 million	$394 million	$265 million

Operations Needs/Issues

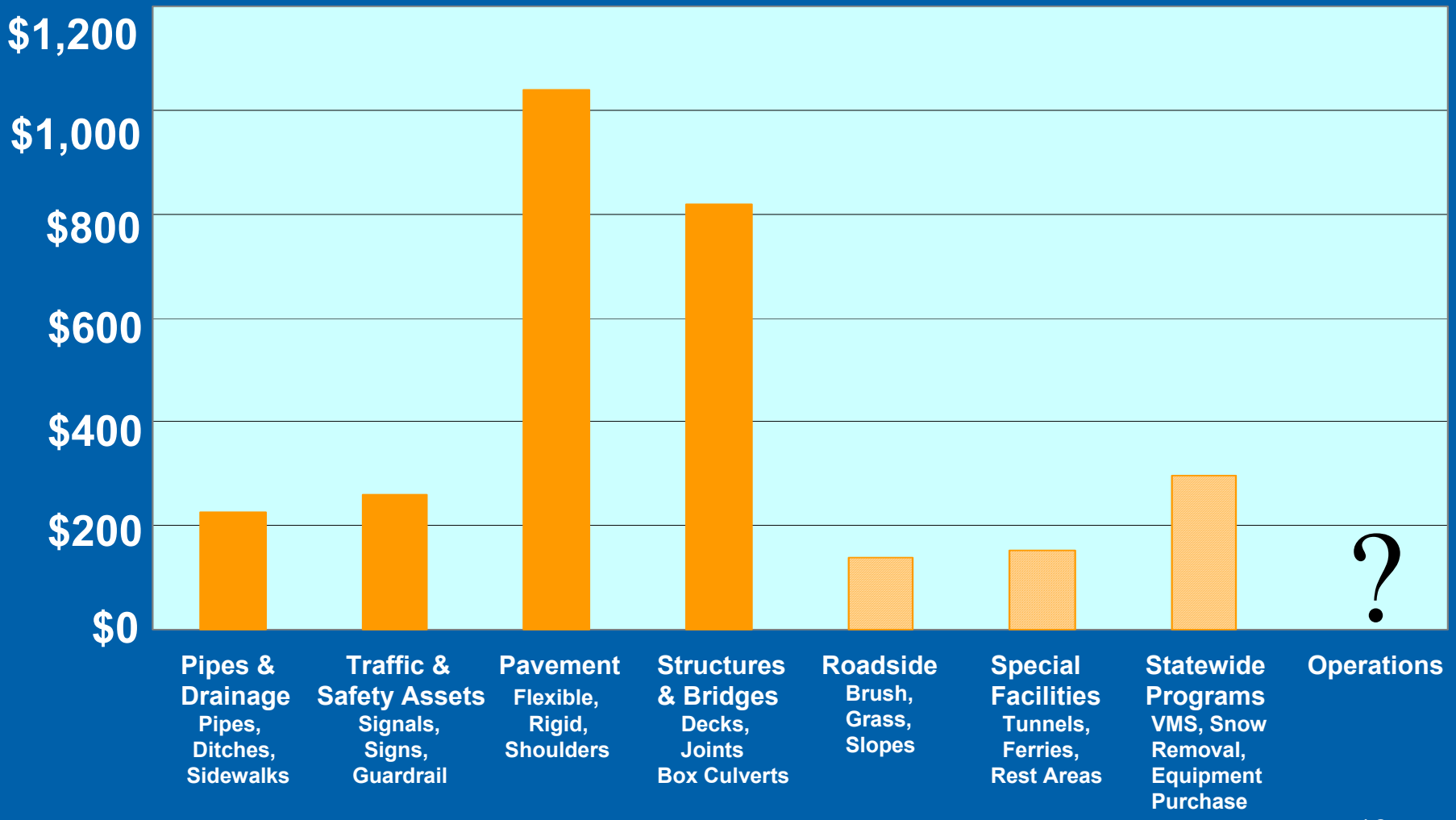
- Some of the following costs are not included in needs assessments:
  - Replacement of technologically obsolete equipment (e.g., variable message signs and cameras)
  - Replace Sonet ring communication networks with Ethernet networks
  - Increase camera coverage for incident detection and traffic management
  - Upgrade software at Northern Virginia District smart traffic center
  - Expansion of safety service patrols

Maintenance Needs

$3 billion in today's dollars

- $1 billion to maintain state system in current condition
- $2 billion backlog of unmet needs
- Begin to reduce backlog in FY 06

Maintenance Needs as of 2004 ($ millions)



Maintenance First

- In the law
- CTB directed the VDOT to place major emphasis on the maintenance program
- In 2005, General Assembly allocated an additional $97M to maintenance and operations; a direct result of the Asset Management System
- Section 33.1-41.1 requires localities to report annually the cost for maintaining their city streets

Additional Funding

- $1.08 billion in VDOT maintenance and operations budget for FY 06 includes $97 million in federal funds
- *Increase in VDOT maintenance budget of 10% will reduce maintenance backlog by 22% over next 6 years*
- Increases to $1.36 billion when maintenance payments to localities included
- Federal maintenance allocation projected to grow an average of 4% annually

Addressing the Needs

- $97 million in new federal dollars will go to
  - $60 million – pavements
  - $10 million – structures and bridges
  - $20 million – traffic safety & operations
  - $ 7 million – drainage and special facilities
- 4% annual increase in funding that includes – 3% for inflation and 1% for growth in the size of the road network

Federal Funds

- Policy implications of using federal funds for maintenance:
  - Leverage state funds to ensure all federal funds are matched
  - Requires VDOT to meet federal standards (projects require federal approval)
  - Have to pay Davis-Bacon wages
  - Delays when Virginia can no longer match federal dollars

Maintenance Needs as of 2004 ($ millions)

District	Needs	% of Needs
Bristol	351.7	12.0
Salem	348.5	11.9
Lynchburg	199.5	6.8
Richmond	531.0	18.1
Hampton Roads	408.1	13.9
Fredericksburg	203.4	6.9
Culpeper	175.9	6.0
Staunton	280.4	9.6
Northern Virginia	296.0	10.1
Statewide Program	139.1	4.7
Total	2,933.6	100.0

FY 05 and FY 06 Preliminary Distribution of Funds ($ millions)

District	FY 05	FY 06
Bristol	87.4	103.9
Salem	101.2	108.0
Lynchburg	70.6	74.9
Richmond	105.9	128.7
Hampton Roads	122.5	127.5
Fredericksburg	63.0	64.4
Culpeper	68.0	71.5
Staunton	103.6	104.1
Northern Virginia	148.5	156.4
Statewide Program	123.1	140.7
Total	993.8	1,080.0

Asset Management Approach

- To equitably distribute funds based on needs:
  - Gradually adjusted district budgets to reduce large shifts
- Assessment of needs will be completed annually; next assessment - November 2005
- VDOT will adjust FY 07 preliminary budgets and future projections based on latest assessment

Future Considerations

- Address issues of:
  - Bridge replacement versus bridge maintenance
  - Pavement reconstruction versus pavement maintenance
- Long-term costs of operations
- Technological obsolescence of equipment
- Infancy of congestion management
- Expansion of detection systems
- 24/7 operation of safety service patrols
  - Expansion to other parts of Interstate system and major Primary corridors

Future Considerations

- Long-term devolution of maintenance for Secondary roads
- Board approval of maintenance and operations allocation for Interstate system
- VDOT will present updated needs assessment to Board at December meeting