



## State of Good Repair Prioritization

April 19, 2016

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# STATE OF GOOD REPAIR as of July 1, 2015

**9** VDOT Districts



**86** Localities maintain system roadways



## Bridges

National Bridge Inventory

**13,467**

**889** VDOT Structurally Deficient National Bridge Inventory

*amount of needs* **\$3.1 Billion**

**141** Locally-Owned Structurally Deficient National Bridge Inventory

*amount of needs* **\$609 Million**

## Pavements

VDOT maintained lane miles (All Systems)

*over*

**127,000**

**27,100**

VDOT maintained deteriorated Interstate and Primary lane miles

VDOT maintained deteriorated Interstate

*amount of needs*

**\$270 Million**

VDOT maintained deteriorated Primary

*amount of needs*

**\$756 Million**

*over*

**30,000**

Locally maintained lane miles



**3,610**

Locally maintained deteriorated primary extension lanes miles

*amount of needs* **\$409 Million**

## State of Good Repair Prioritization Process Schedule

Description	Date
Prepare Draft Prioritization Process Internally	7/2015 to present
Provide Draft Prioritization Process to Local Stakeholder Group for Feedback and Comment	3/25/2016
Provide Draft Prioritization Process to CTB	4/19/2016
CTB Action	5/18/2016
Prioritization Effective	7/1/2016
Continued Outreach on Approved Prioritization	7/1/2016



## State of Good Repair Requirements § 33.2-369(B) and (C)

Description	Pavement	Bridge
Purpose	Reconstruction/Rehabilitation (Deteriorated)	Reconstruction/Replacement (Structurally Deficient)
System	Interstate/Primary/Primary Extensions	All Systems (VDOT and Locally Maintained)
Priority Consideration*	Mileage, Condition, Costs	Number, Condition, Costs
Distribution	All nine construction districts Based on needs Min 5.5% and Max 17.5% per year	
Waivers	Key Project - extraordinary circumstances only – cap can be waived	
	20% - Secondary Pavements (if VDOT secondary target not met)	N/A

\*More priority items are considered and explained later



## State of Good Repair Definition VDOT's Internal

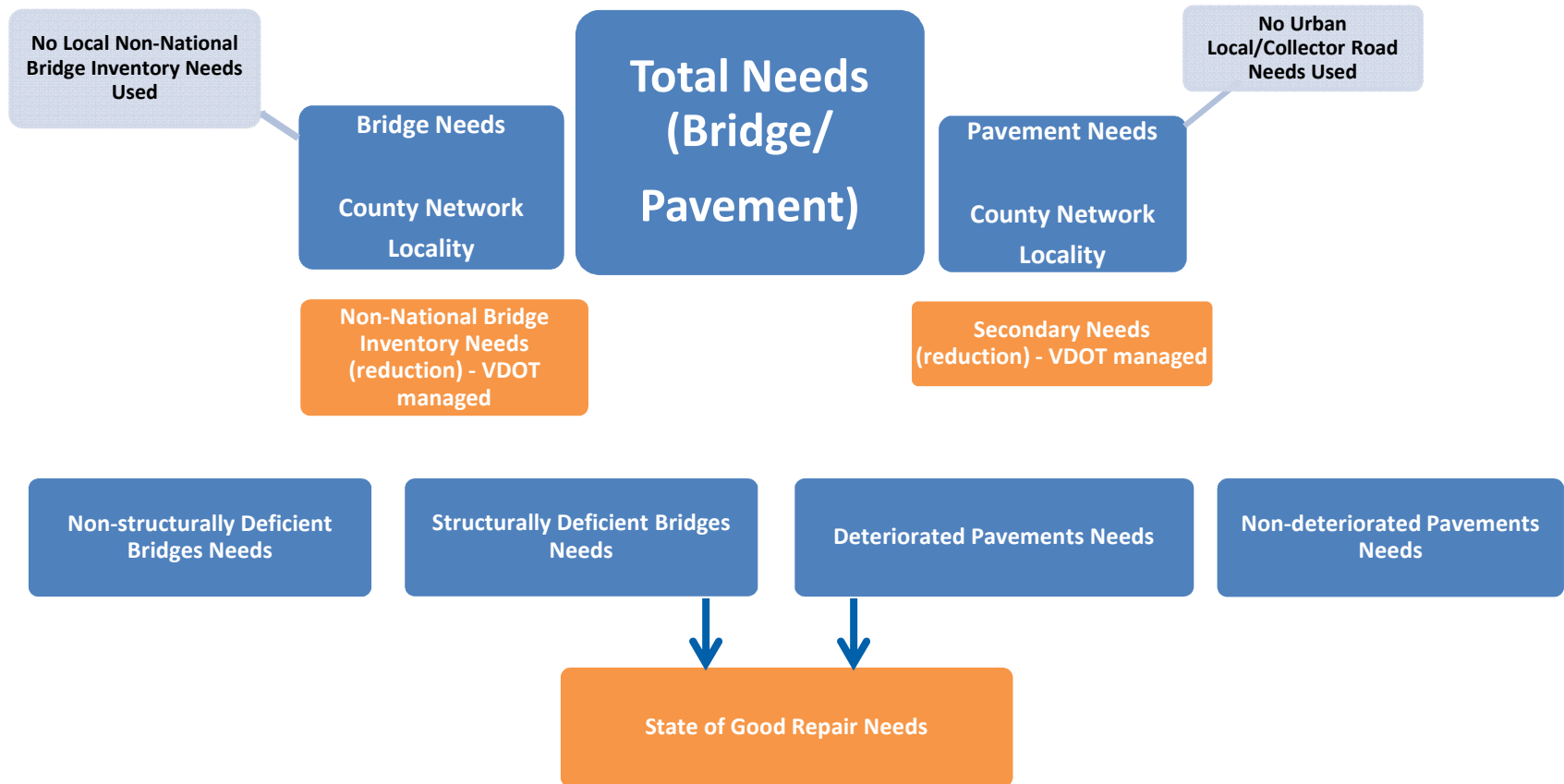
For a project to receive State of Good Repair funds, all three tests need to be met

Tests	Pavement	Bridge
1	Improves to fair or better status	Removes from structurally deficient status
2	Meets definition of pavement rehabilitation and reconstruction in Federal Highway Administration's memo dated 9/12/2005 (see link below)	Meets definition of bridge rehabilitation and replacement in Federal Highway Administration's Bridge Preservation Guide dated August 2011 (see link below)
3	Adds or restores strength	
FHWA Memo Links	<a href="#">FHWA's Memo – September 12, 2005 - Pavement Preservation Definitions</a> <a href="#">FHWA's Memo - February 25, 2016 - Pavement Preservation</a>	<a href="#">FHWA's Bridge Preservation Guide – August 2011 – Maintaining a State of Good Repair Using Cost Effective Investment Strategies</a>

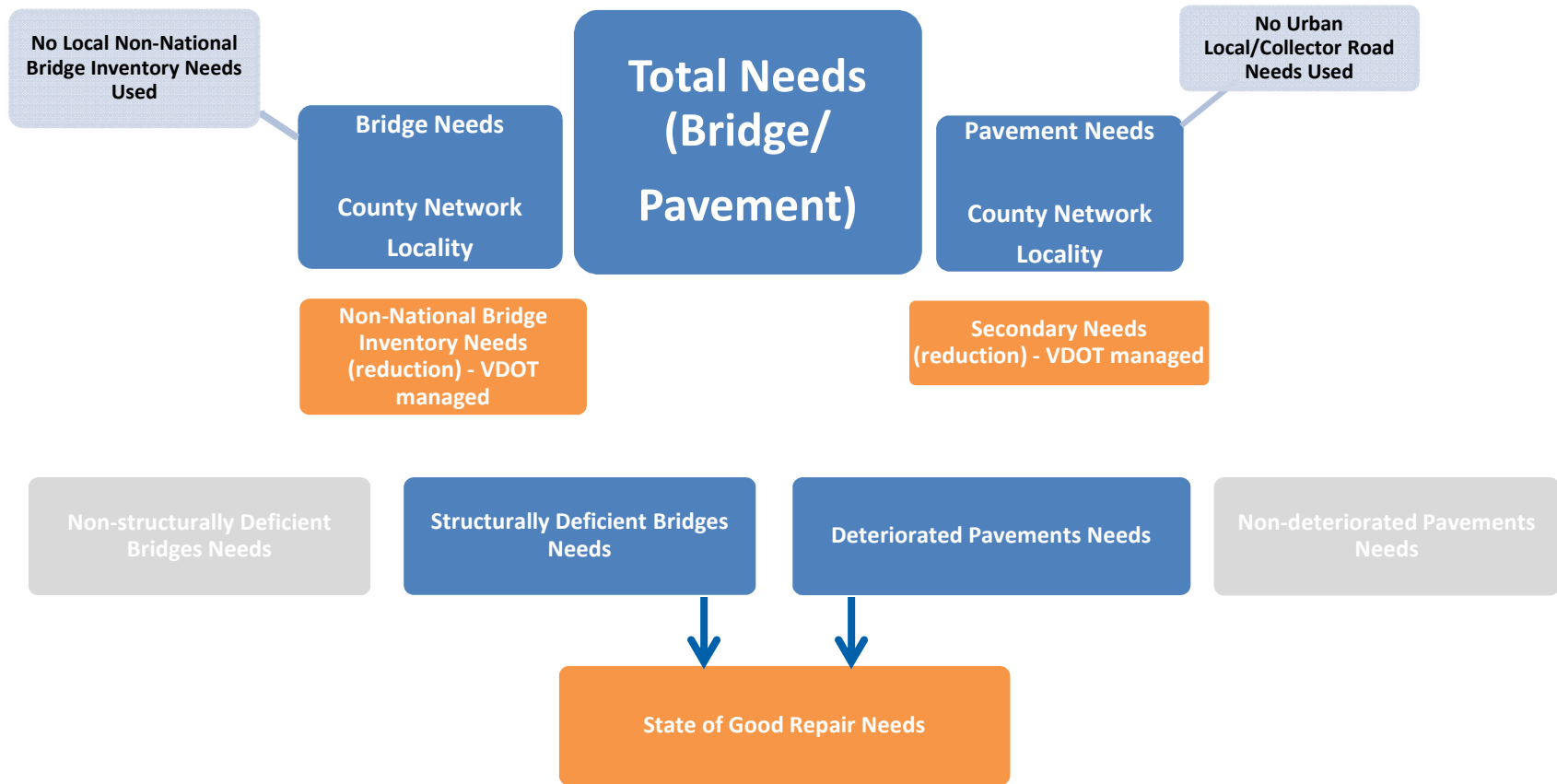
## State of Good Repair – Prioritization

Requirement	Statute Reference	Pavement	Bridge
Implementation Date	Chapter 684 Enactment 2	July 1, 2016	
State Statute	§ 33.2-369(B)	Mileage	Number
		Condition	Condition
		Cost	Cost
Federal Statute	MAP-21/FAST ACT	Asset Management Plan	
VDOT Practice		Traffic Volumes	Importance to Users
		Condition	Structure Capacity

# State of Good Repair Needs Based Funding Distribution



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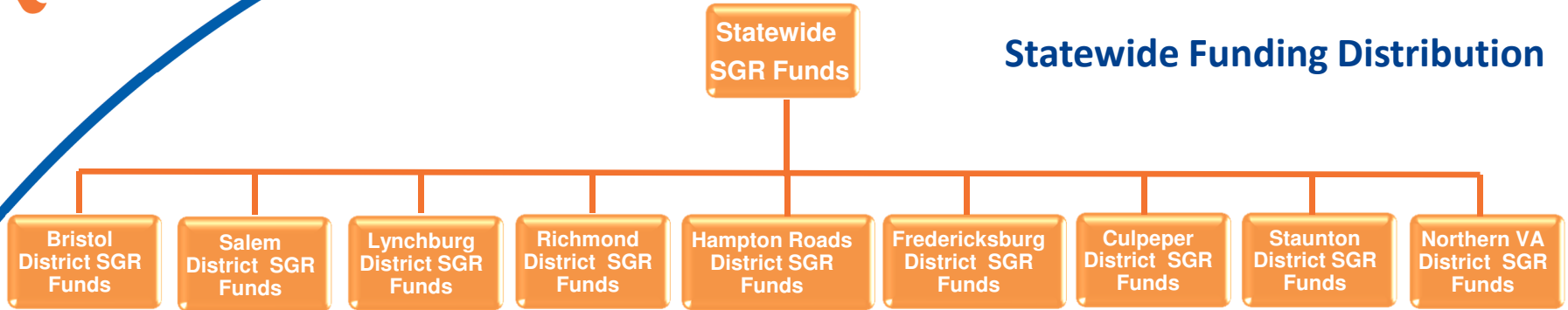




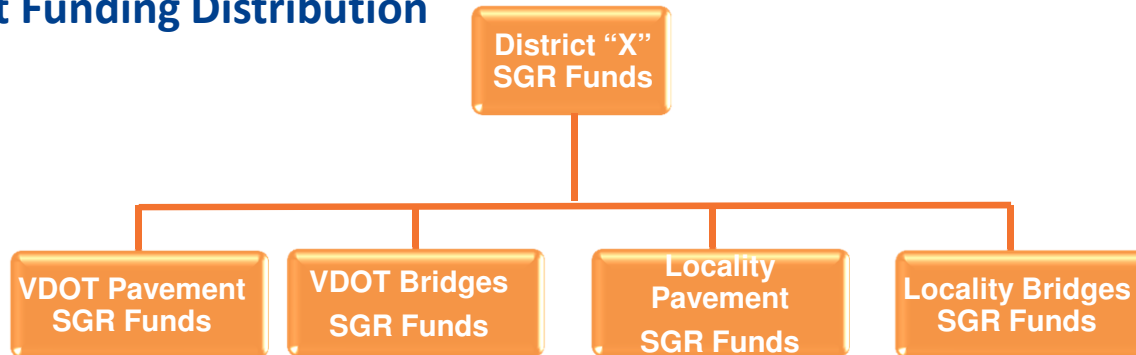


# State of Good Repair - Needs Based Funding Distribution

## Statewide Funding Distribution



## Typical District Funding Distribution



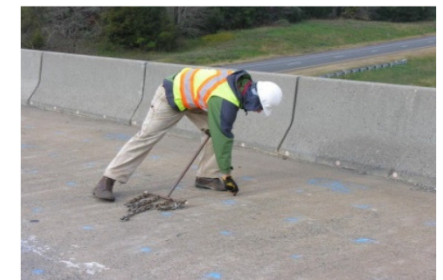
# Pavement Prioritization

- **Data Used**
  - Pavement Distresses and Roughness
  - Average Annual Daily Traffic, Truck Traffic Volume
  - Strength of Pavement Layers and Subgrade
  - Last Maintenance Type and History
- **Distribution based on costs**
- **Eligible lane miles will be determined based on needs through a multi-constraint optimization process**
- **Decision matrices are used to generate recommended treatments**
- **VDOT - publish target lane miles by district and system**
- **Localities – similar to primary extension process**
- **November 2016, § 33.2-232 – Annual Report item 5 requires a prioritized list of needs for pavement and bridges.**



# Bridge Prioritization

Bridge Prioritization		
Factor	Factor Weight	Data Used
Condition	25%	Bridge Safety Inspections
Importance of Bridge to Users	30%	Traffic, Truck Traffic, Detour, Highway System, Proximity to Critical Facilities
Cost Effectiveness	20%	Bridge Management System
Risk	15%	Fracture Critical, Scour, Fatigue Prone Details and Seismic Vulnerability
Structure Capacity	10%	Posting and Clearances



## Prioritization Process – How Does It Work?

- **Pavements**
  - **VDOT - Lane Miles**
  - **Localities – similar to primary extension process**
- **Bridges**
  - **Two prioritized lists per district for structurally deficient bridges**
    - VDOT
    - Locality
- **May skip structures in list? Why?**
  - **Lots of reasons**
  - **Examples**
    - Cost of work
      - 1<sup>st</sup> ranked - \$2B
      - 2<sup>nd</sup> ranked - \$20M
    - Economy of Scale
      - Maybe the contract prices are better for two structures such as 1<sup>st</sup> rank structure and 6<sup>th</sup> rank structure are cheaper to contract together
    - Maintenance of Traffic
      - Interstate 95 bridges
    - Deficiency addressed with maintenance funds or other funds

## State of Good Repair Proposed Process

### Funding

- Needs Based
- VDOT Pavements
- Local Primary Extensions
- VDOT Bridges
- Local Bridges

### Prioritization

- Deteriorated Pavements
- Structurally Deficient Bridges
- Must follow VDOT Best Practices

### Ranking

- Location
- Treatment
- Estimate
- Fund Request

### Selection

- Condition
- Traffic Volume
- On National Highway System



## State of Good Repair – Preliminary Percentage by District

District	FY 2017 (Based on previously proposed distribution)	VDOT			Localities		
		Pavement	Bridge	Total	Pavement	Bridge	Total
Bristol	11.7%	21%	64%	<b>85%</b>	2%	13%	<b>15%</b>
Culpeper	6.0%	25%	45%	<b>70%</b>	3%	27%	<b>30%</b>
Fredericksburg	12.1%	18%	77%	<b>95%</b>	2%	3%	<b>5%</b>
Hampton Roads	14.8%	7%	38%	<b>45%</b>	25%	30%	<b>55%</b>
Lynchburg	7.6%	29%	63%	<b>92%</b>	5%	3%	<b>8%</b>
Northern Virginia	10.6%	27%	61%	<b>88%</b>	11%	1%	<b>12%</b>
Richmond	17.4%	25%	65%	<b>90%</b>	4%	6%	<b>10%</b>
Salem	12.1%	21%	67%	<b>88%</b>	3%	9%	<b>12%</b>
Staunton	7.9%	13%	76%	<b>89%</b>	4%	7%	<b>11%</b>

## State of Good Repair – Scoring Process – Pavement (Locality)

- Applications accepted along with the Primary Extension Paving Program
- Accept applications on an annual basis to support pavement overlay, rehabilitation, or reconstruction projects
  - Maximum request of \$1M per locality, per year
  - Roadway must have Critical Condition Index rating of 60 or less
  - Projects must be advertised within 6 months of allocation. Projects that are selected and do not meet this criteria may be subject to deallocation.
  - Maintenance of Effort Certification – funding supplements, not replaces, the current level of funding/level of effort on the part of the locality
- Prioritize projects for funding based on technical score that considers pavement condition, traffic volume, and prior expenditures
  - Pavement Condition (CCI) – 45%
  - On the National Highway System (NHS) – 10%
  - Traffic Volume – 30%
  - Prior Expenditures – 15%
- Requires regular collection of pavement condition data on the locally maintained primary extensions.

## State of Good Repair – Scoring Process Bridges (Localities)

- **Annual basis for selection of bridge rehabilitation, or reconstruction projects**
  - Bridge must be structurally deficient
  - National Bridge Inventory Only
  - Proposed work must take bridge out of structurally deficient status
  - Localities must be current on bridge inspections
  - Projects receiving funding under this program must initiate the Preliminary Engineering or the Construction Phase within 24 months of award of funding or become subject to deallocation
- **Selection of projects for funding considers bridge prioritization and cost effectiveness**





# Locality Bridge Ranking Example

State of Good Repair - Locality Bridge Ranking Example															
Bridge #	Variables					System-Level Values				Final Values After Scoring					
	0.30	0.25	0.15	0.10	0.20	Initial Score	Initial Rank	System Level Recommended Scope	Estimate for Recommended Scope	Estimated Total Replacement Cost	Funding Request	0.20	Final Scope	Final Score	Final Rank
	IF	CF	RF	SCF	CEF							Cost-Effectiveness Factor			
18399	0.99	0.82	0.10	0.85	0.00	0.60	1	Replace Superstructure	\$6,675,231	\$13,014,024	\$5,526,000	0.45	Replace Superstructure	0.69	1
16020	0.95	0.90	0.10	0.55	0.00	0.58	2	Major Rehabilitation	\$1,652,651	\$15,034,241	\$13,542,000	0.00	Bridge Replacement w/o Added Capacity	0.58	6
2466	0.95	0.98	0.00	0.29	0.00	0.56	3	Rehabilitate Culvert	\$378,938	\$769,496	\$769,496	0.00	Replace Culvert	0.56	7
17087	0.77	0.83	0.00	0.36	0.00	0.47	4	Replace Superstructure	\$308,190	\$1,040,226	\$312,524	0.70	Replace Superstructure	0.61	4
5275	0.87	0.54	0.00	0.64	0.00	0.46	5	Replace Superstructure	\$257,366	\$924,388	\$423,888	0.38	Replace Superstructure	0.54	8
8204	0.85	0.82	0.00	0.00	0.00	0.46	6	Major Rehabilitation	\$280,579	\$3,435,758	\$3,435,758	0.00	Bridge Replacement w/o Added Capacity	0.46	10
18419	0.98	0.60	0.10	0.00	0.00	0.46	7	Replace Deck	\$1,949,697	\$8,663,145	\$2,056,240	0.83	Replace Deck	0.62	3
16384	0.30	0.97	0.75	0.00	0.00	0.45	8	Major Rehabilitation	\$67,619	\$837,123	\$112,000	1.00	Major Rehabilitation	0.65	2
18724	0.89	0.55	0.00	0.19	0.00	0.42	9	Replace Bridge	\$4,957,098	\$4,957,098	\$4,957,098	0.00	Bridge Rehab w/o Added Capacity	0.42	11
2439	0.79	0.48	0.00	0.59	0.00	0.42	10	Replace Bridge	\$2,179,301	\$2,179,301	\$2,179,301	0.00	Bridge Replacement w/o Added Capacity	0.42	12
10335	0.60	0.70	0.00	0.52	0.00	0.41	11	Replace Bridge	\$335,158	\$335,158	\$123,248	0.56	Replace Superstructure	0.52	9
17878	0.52	0.98	0.00	0.00	0.00	0.40	12	Major Repair	\$363,855	\$3,678,246	\$429,036	1.00	Repair and Preserve Structure	0.60	5



## State of Good Repair Prioritization

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