

VDOT's Investment in Research:

Virginia Transportation Research Council Overview

December 10, 2019

History

- Research Section – 1944
- Research Council – 1948
 - Cooperative effort between VDOT and UVA
 - Department provided funds, staff
 - UVA provided space
- Ultimate Purpose: Bring Innovation to Transportation by Serving as the Research Division of VDOT



Core Functions

- Conduct applied, practical research that supports VDOT mission
- Serve as expert consultant to VDOT and Transportation Secretary
- Provide post-research implementation support
- Educate future professionals



Research Staffing

- 45 full-time positions
- 25 hourly/student employees
- University collaborations
- Graduate research assistants



Advisory Committees

- Traffic and Safety
- Environmental
- Pavements
- Bridge
- System Operations
- Transportation Planning
- Concrete



Implementation

- Begin with the end in mind
- Look for champions
- Commit to an implementation plan
- Provide funding
- Document

Moving Research Into Practice



Program Characteristics and Metrics

- Closely tied to VDOT business plan
- 125-140 active projects in pipeline
- Complete 80-95 projects each year
- 24 grants for FY 2019
- 64 active university contracts
- Flexibility to provide on-call consulting to VDOT and Office of the Secretary



Safety, Operations, and Traffic Engineering

- Connected and automated vehicles
- Intelligent transportation systems
- Highway safety
- Performance measurement and data analytics
- Arterial and freeway operations
- Traffic control devices and human factors
- Traffic signal operations
- Emergency response and incident management

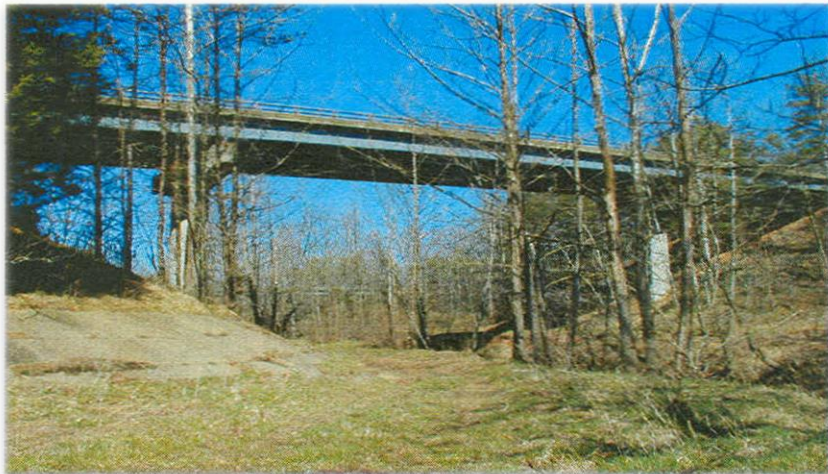




Environment, Planning, and Economics

Environment

- Stormwater management
- Climate change-related design considerations
- Animal-vehicle collisions mitigation
- Identification and management of VDOT's cultural resources



Planning

- Trip generation methods
- Transportation and land use
- Socioeconomic forecasts
- Bicycle and pedestrian
- Transit

Economics

- ROI and benefit-cost analyses for VTRC engineering research projects
- Transportation finance studies





Pavements

- Performance-based materials
- End-result construction specs
 - Incentivizing quality
- Rapid (& relevant) evaluation
- Deep stiffness & strength
- Towards a more sustainable system



Structures

- Evaluation of bridge elements and structures
- Use of innovative materials for the construction and preservation of structures
- Design and performance characteristics
- Addressing geotechnical issues as applied to the construction and preservation





Commonwealth Transportation Board Environmental Task Force

Start Date: August 2019

Mission: Develop recommendations for the CTB on goals and policies to mitigate i) the impacts of the transportation system on the environment, and ii) the impacts of climate change on transportation infrastructure.

Focus Areas: Green House Gas emissions reduction
Sea Level Rise / Sustainability

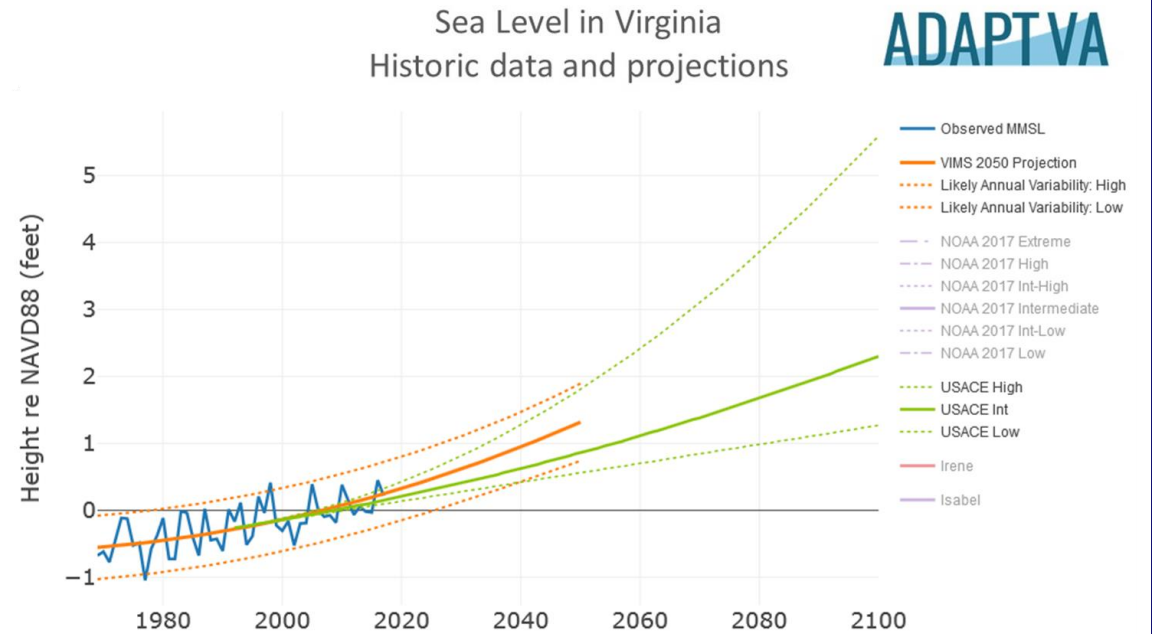
Members: Steve Johnsen, CTB
Grant Sparks, DRPT
Angel Deem, VDOT
Amy Wight, Secretary's Office

Scott Kasprovicz, CTB
Rick Walton, VDOT
Branco Vlacich, VDOT
Mike Fitch, VDOT

Impacts of recurrent flooding and sea level rise on road accessibility

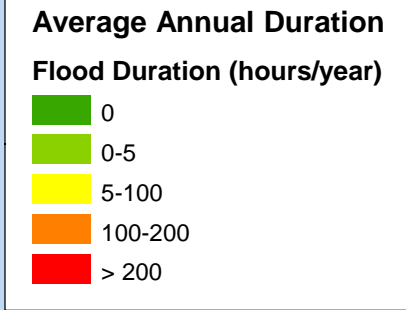


+ Sea Level Rise





Traditional analysis



Average Annual Flooding: 2050

Questions?