

Incorporating Resilience into SMART SCALE

Background:

SMART SCALE is the Commonwealth of Virginia’s method for prioritizing transportation projects for state funding. Created by the General Assembly and administered by the Commonwealth Transportation Board (CTB), SMART SCALE uses a set of objective criteria to score and rank candidate projects. §33.2-214.1 of the Code of Virginia, which covers SMART SCALE, sets the minimum criteria for scoring projects, which include congestion mitigation, economic development, accessibility, safety, and environmental quality. The CTB has also adopted land use as a factor for quantifying project benefits. The sum of the project benefits is compared with the project’s SMART SCALE cost to determine its final score. Specific measures currently included in the SMART SCALE scoring include:

Table 1: SMART SCALE Factors

Factor Area	Measure Name
Safety	Equivalent property damage only (EPDO) of Fatal and Injury Crashes
	EPDO Rate of Fatal and Injury Crashes
Congestion mitigation	Person Throughput
	Person Hours of Delay
Accessibility	Access to jobs
	Access to jobs for disadvantaged persons
	Access to multimodal choices
Environmental quality	Air quality and environmental effect
	Impact to natural and cultural resources
Economic development	Project support for economic development
	Intermodal access and efficiency
	Travel time reliability
Land use	Transportation-efficient land use
	Increase in transportation-efficient land use

Planning, designing, and building for resiliency is a major challenge for communities across Virginia. In coastal areas, sea level rise and changing precipitation patterns are causing more frequent flooding. Similar impacts are also being felt in communities with riverine flooding. It is critical that future climatic conditions be accounted for in the design and construction of new transportation projects.

Addressing these impacts through more resilient project designs increases the costs of transportation projects – they are built higher, have more stormwater capacity, stronger materials, etc. Under the current SMART SCALE system, a project without resilient features would score higher because it has a lower cost. The same project with resilient features would be penalized for the higher cost but would not see any benefit in the scoring for being resilient. Resiliency could be incorporated into SMART SCALE using metrics such as elevation compared to base flood elevations and future sea levels, stormwater management capacity, tolerance for extreme heat or cold, etc.



The CTB has created a system of four weighting frameworks for different areas of the Commonwealth based on their needs and character. The weighting framework categories for FY22 are listed below.

Table 2: FY22 SMART SCALE Weighting Frameworks

Factor	Congestion Mitigation	Economic Development	Accessibility	Safety	Environmental Quality	Land Use
Category A	45%	5%	15%	5%	10%	20%
Category B	15%	20%	25%	20%	10%	10%
Category C	15%	25%	25%	25%	10%	
Category D	15%	35%	15%	30%	10%	

A resiliency factor could be applied in the same way depending on the needs of a given region.

Recommendations:

§33.2-214.1 should be amended to include resiliency in SMART SCALE. Specifically:

- 1) §33.2-214.1(A) should be amended to read “The General Assembly declares it to be in the public interest that a prioritization process for projects funded by the Commonwealth Transportation Board be developed and implemented to improve the efficiency and effectiveness of the state's transportation system, transportation safety, transportation accessibility for people and freight, *current and future transportation resiliency*, environmental quality, and economic development in the Commonwealth”
- 2) §33.2-214.1(B)(1) should be amended to read ““The prioritization process shall be based on an objective and quantifiable analysis that considers, at a minimum, the following factors relative to the cost of the project or strategy: congestion mitigation, economic development, accessibility, safety, and environmental quality, *and resiliency.*”

The CTB and the Virginia Department of Transportation should adopt the following definition of resiliency: *“The ability to anticipate, prepare for, or adapt to conditions; or withstand, respond to, or recover rapidly from disruptions; including the impacts of sea level rise, extreme weather events, flooding, or other natural disasters.”*

