Appendix B

Cost Estimation, Project Evaluation and Scoring

Cost Estimation Methodologies

Estimating project costs for *Resilience 2050* was a joint effort that included the assistance of state agencies, local jurisdictions and transportation consultants. MDOT SHA provided cost estimates for all roadway projects, regardless of whether the facility was a state or locally maintained roadway. Local jurisdictions provided necessary information to MDOT SHA for projects on local roadways. MDOT MTA developed capital cost estimates for the transit projects it would operate. MDOT MTA, through an existing contract with a consultant, provided cost estimates for locally sponsored transit projects. Project cost estimates were provided in current dollars.

For planning and budgeting purposes, agencies need to be able to program funds for projects from planning to construction. High level cost estimates at the planning stage help project sponsors develop a budget and determine if the project is financially viable. Often, understanding the construction cost helps program the design and engineering fees as well. The issue becomes producing a high-level cost for a project when work on the project has not begun. The following are a few examples of why estimating a construction cost very early in the process can be difficult:

1. The scope of the project is not clearly defined early on
2. The proposed project being estimated is a concept and no actual design work has yet taken place
3. Visual inspection of the corridor or site in which the project is proposed has not been investigated
4. Projects are ever evolving. What may be initially proposed could radically change throughout the design process or after information is known and could render the initial cost estimate obsolete.

In practical terms, there are at least two rounds of cost development. The first estimate, expressed in year of expenditure (YOE) dollars, is less intensive. This first-round estimate is developed for use in documents such as *Resilience 2050*. The second, more detailed, estimate is developed as the project moves to project planning and is reviewed at least once a year to reflect updates to fields in the cost estimating program. When developing cost estimates, however, there are some basic principles and factors that can and should be identified early in the process to minimize errors throughout the design process. Some of these considerations are:

- Identifying all potential impacts before a project gets initial funding and providing reasonable costs with contingencies to cover those impacts
- Making sure that all specifications clearly define the scope of work
- Using standard pay items from the category code book whenever possible.

Estimating Roadway Project Costs

For projects not included in the CTP, MDOT SHA utilized the all-inclusive (cost categories 1 – 8) cost per mile (CPM) from the 2022 MDOT SHA Cost Estimating Manual. The MDOT SHA staff have reviewed each project's characteristics and have utilized the following methodology and estimation assumptions:

- Cost of new lanes are estimated assuming the project can add new lanes without the need of reconstructing existing lanes. The cost of resurfacing, at a rate of $0.12 million per lane-mile, is included for all existing lanes.
- If no lanes are being added to an existing roadway, reconstruction of all existing lanes are still assumed. If only a segment of a roadway needs a lane addition, the engineer would review the project and determine the length of additional lane-mile needed.
- The lead engineer is provided flexibility to determine which CPM rate to apply for new lane-miles: low, median or high. Given the existing project areas, a low CPM rate per lane-mile was used for all estimations.
- All interchanges within the project limit were reviewed to determine if the proposed improvements would require interchange reconstruction. The guide provides two interchanges costs, dependent on the roadway classification of both roadways: $110 million / full interchange for freeway-to-freeway interchanges or $45 million / full interchange otherwise. The total interchange cost is determined by the cost per full interchange and the number of interchange quarters potentially impacted by the roadway improvement.
- The cost of Project Planning (PP) varies by project size as follows: for a construction cost under $50 million, PP is calculated at 6.0 percent; for a construction cost of between $50 and $99.9 million, PP is calculated at 2.5 percent; and for a construction cost greater than $100 million, PP is calculated at 1.5 percent.
- The cost of Preliminary Engineering (PE) varies by project size as follows: for a construction cost under $50 million, PE is calculated at 15 percent; for a construction cost of between $50 and $99.9 million, PE is calculated at 10 percent; and for a construction cost greater than $100 million, PE is calculated at 8.5 percent.
- A contingency rate of 40 percent of the construction cost is added to calculate the neat construction cost.
- An overhead cost, an estimate of related administrative and incidental costs, is added to the cost of each project phase.
- The Right-of-Way (ROW) area needs are based on three factors: the existing MDOT SHA ROW area, the anticipated typical section width of the new roadway and the length of the project. The anticipated typical section width is determined by the functional classification of the roadway, the project area terrain and the speed limit of the roadway. Each project was reviewed to ensure these assumptions were appropriate and changes to the typical section width

were made to reflect what could be feasibly done within the confines of the project area.

- The per acre ROW cost is based on annual average County cost, as provided by the MDOT SHA Office of Real Estate, taking into account roadway functional classification. The ROW costs used did not factor in current market forces, which were assumed to be temporary and not impactful to long range planning costs.

Estimating Locally Sponsored Transit Project Costs

The Association for the Advancement of Cost Engineering International (AACE) set forth guidelines and classifications for estimating projects at different design levels. These levels range from a Class 1 estimate - detailed unit costs, schedule and design ranging from 65 to 100 percent, to a Class 5 estimate – conceptual design, 0 to 2 percent design.

Class 5 estimates were selected for all locally sponsored transit projects in *Resilience 2050* due to the project information, stage of design and contract drawings provided.

Preparing cost estimates for a Class 1-4 designation is fairly straightforward since plans, details and schedules are available. This enables estimators to perform quantity take-offs and develop appropriate unit prices. Preparing high-level Class 5 cost estimates requires estimators to use more judgement and less statistical data to prepare the estimate. Estimators will typically need to make additional assumptions, use construction and engineering judgement and rely more on past experience and similar project historical data.

For a Class 5 estimate, high-level unit costs were developed to be used for a wide spectrum of projects including Bus Rapid Transit (BRT), express bus routes, bus stop improvements and site work. Using past and current transit projects within the region as a baseline, composite items were developed to be used within the cost estimates. Composite items may be as simple as a cost per mile for new sidewalk (generally consisting of performing earthwork, pouring concrete and laying graded aggregate base) or as complicated as a lump sum cost for reconstruction of a Park-&-Ride. In either case, the process is the same:

1. Establish an area/length/volume to be used as unit of measure (such as lane mile of roadway)
2. Identify major items to be included in the composite item (such as pavement, earthwork, sidewalk)
3. Apply unit costs.

In general, composite unit costs were established in three ways:

1. Using detailed estimates from at least two different past projects, with similar scope as the project being estimated, and taking an average cost. Where unit costs were derived using data not in the current base year, a 4 percent escalation factor per year was added based on regional inflation rates.

2. Manufacturer and/or supplier quotes.
3. Historical data including contractor bid tabs and published Client data.

Though projects may be similar in nature, by the time detail design takes place two projects with a similar purpose and need may end up being vastly different based on the defined project scope.

For example, designing a bus stop can be straightforward; lay new sidewalk, perform earthwork and grade around the site and add a bus shelter. However, depending on the scope of the project and the Project Sponsor's desires, a sidewalk could be standard concrete or brick pavers, a basic 'off-the-shelf' shelter could be selected or it could be custom designed, real-time bus arrival may be integrated into the stop or there could be only static messaging. With so many variables possible, it is important to establish general unit costs and list out all assumptions being used.

With high level estimates, since the projects are limited in design, many assumptions will need to be made. It is important to be consistent in the assumptions between projects when limited details are available.

Example:

One example of this is new roadway construction.

- In a Class 5 estimate, proposed pavement depth will not be known so establishing this pavement box and using it throughout will allow consistency between estimates.
- Another item that is often overlooked but could drastically change project costs is ROW impacts. With no design at a Class 5 estimate, ROW impacts can still be estimated as follows.
  - With no existing ROW information, estimators could conservatively assume that the existing ROW is located directly next to the existing roadway edge or behind the existing sidewalk and ROW will need to be purchased for the amount of widening taking place (road is being widened by one lane, assume this is a 12-ft lane and 12-ft of ROW is needed for the duration of the project).
- Document all assumptions being made to offer transparency with the estimate.

After development of unit costs and the list of assumptions, there are several other 'big ticket' items that can be difficult to estimate, including: utility impacts, stormwater management costs and maintenance of traffic. MDOT SHA has developed a Highway Cost Estimating Manual, dated February 2020, that helps engineers and estimators develop costs for a range of elements on a project, including items that cannot be estimated until the design phase of a project. For a Class 5 estimate, the estimating manual uses percentages for these categories, which are based on cost of improvements and vary depending on the type of project and setting. Ranges of these percentages were used throughout depending on the type of project, location and examination of the corridor through Google Maps.

Lastly, an overall contingency needs to be added to the estimates. Contingency factors used are based on the level of design and risk associated with the project. A 40 percent contingency is established for Class 5 estimates. Industry standards have been developed by agencies as guidelines including MDOT SHA, FTA and FHWA. It is important to remember that contingency should decrease throughout design as risk decreases and detailed design identifies all payment items.

Estimating MDOT MTA Transit Project Costs

MDOT MTA cost estimates were drawn from pre-existing estimates from a variety of sources including Cornerstone plans for Light Rail and MARC, the Capital Needs Inventory, and the Regional Transit Plan for Central Maryland. Cost estimates for the East-West (now known as the Red Line) and North-South transit corridor projects were based on an average per mile cost across all alternatives for the East-West transit corridor. All transit hubs were assumed to cost $5 million (Current $) unless otherwise noted as project planning has not yet begun for these hubs. These cost estimates are subject to change upon further study.

Project Evaluation and Scoring

The local jurisdictions, in consultation with MDOT SHA, submitted projects for consideration for *Resilience 2050*. MDOT MTA also submitted projects. We scored each project for technical merit, based on consistency with regional goals and strategies. The technical scoring methodology differs for highway and transit projects in some cases since the tools for evaluating highway projects may not be appropriate for transit projects and vice versa. Each submitting jurisdiction and agency also provided a policy score, depending on priority and demonstrated financial support.

The combined technical and policy score for each project represents that project's total score. This is one tool we used to determine which projects to adopt in the preferred alternative. The maximum total score (technical + policy score) is 90 points for roadway projects and 95 points for transit projects. Transit projects are eligible for 5 more technical scoring points in an effort to respond to public comments recommending improving transit accessibility, reliability and frequency. Tables 1 and 2 provide details on the policy and technical scoring methodology.

Table 1 - Policy Score

Criteria	Methodology
Project Priority	• High Priority – Five projects maximum: 30 points each • Medium Priority – Four projects maximum: 20 points each • Low Priority – Unlimited number of projects: 10 points each
Demonstrated Financial Support	• 10 additional points
Maximum Policy Score	**40 points**

Table 2 - Technical Score

Mode and Criteria	Points	Methodology
GOAL: Safety		
Highway Safety	**10 points maximum**	• Identifies SHSP emphasis area(s)/strategy(s) addressed = 2 points • Project includes countermeasures anticipated to benefit Environmental Justice (EJ) areas = 2 points • Project identifies countermeasures addressing the following SHSP emphasis areas (6 points maximum; not additive across emphasis areas): > Non-motorist safety = 6 points > Speeding = 4 points > Lane Departure for Impaired or Distracted Drivers = 2 points
Transit Safety and Security	**10 points maximum**	• Degree to which the project improves Transit Safety (5 points): > Project designed to specifically improve system safety for all users and/or addresses an existing safety deficiency, and occurs within an EJ area = 5 points > Project designed to specifically improve system safety for all users and/or addresses an existing safety deficiency = 4 points > Project will generally result in a safety improvement for users, and occurs within an EJ area = 3 points > Project will generally result in a safety improvement for users = 2 points > Project will have no discernible positive effect on system safety = 0 points • Degree to which the project improves Transit Security (5 points): > Project designed specifically to deter crime and/or enhance system security for all users and/or staff = 5 points > Project will generally result in a security improvement for users and/or staff = 3 points > Project will have no discernible positive effect on system security = 0 points

Mode and Criteria	Points	Methodology
GOAL: Accessibility		
Highway and Transit: Complete Streets	**5 points maximum**	• Degree to which project supports complete streets (delivers safety/accessibility benefits for all modes) (4 points): > Significant features = 4 points. Over half of project includes features > Moderate features = 2 points. Up to half of project includes features > No features = 0 points • Proximity to EJ areas as determined by 1/2 mile buffer (1 point): > Over half of project in EJ area = 1 point > Up to half of project in EJ area = 1/2 points > Not in EJ area = 0 points
Highway: Access to Jobs	**5 points maximum**	• Degree to which the project improves access to jobs for workers within a 30 minute travel time (4 points): > Top 1/3 = 4 points; Middle 1/3 = 2 points; Bottom 1/3 = 0 points • Degree to which the project improves access to jobs for EJ workers within a 30 minute travel time (1 point): > Top 1/2 = 1 point; Bottom 1/2 = 0 points
Transit: Access to Jobs	**10 points maximum**	• Degree to which the project improves access to jobs for workers within a 45 minute travel time (8 points): > Top 1/3 = 8 points; Middle 1/3 = 4 points; Bottom 1/3 = 0 points • Degree to which the project improves access to jobs for EJ workers within a 45 minute travel time (2 points): > Top 1/2 = 2 points; Bottom 1/2 = 0 points

Mode and Criteria	Points	Methodology
GOAL: Mobility		
Highway	**10 points maximum**	2050 Vehicle Hours of Delay (VHOD) per VMT (with Existing plus Committed Projects) for three vehicle classes: • Passenger VHOD at AM/PM peak hours (4 points): > Top 1/3 = 4 points; Middle 1/3 = 3 points; Bottom 1/3 = 2 points • Commercial VHOD Mid-Day (3 points): > Top 1/3 = 3 points; Middle 1/3 = 2 points; Bottom 1/3 = 1 point • Truck VHOD at Overnight Peak (3 points): > Top 1/3 = 3 points; Middle 1/3 = 2 points; Bottom 1/3 = 1 point
Transit	**10 points maximum**	• Transit Options: Degree to which the project increases the number of workers with high quality (<45 minutes) transit options based on their usual place of work (3 points): > Top 1/3 = 3 points; Middle 1/3 = 2 points; Bottom 1/3 = 1 point • Transit Ridership: Degree to which the project supports transit ridership via walk access and drive access (5 points): > Walk Access: Top 1/3 = 3 points; Middle 1/3 = 2 points; Bottom 1/3 = 1 point > Drive Access: Top 1/2 = 2 points; Bottom 1/2 = 1 point • Transit Connectivity: Degree to which the project contributes to transit connectivity as measured by the reduction in the average number of transfers required for transit trips (2 points): > Top half of reductions = 2 points; Bottom half of reductions = 1 point

Mode and Criteria	Points	Methodology
GOAL: Environmental Conservation		
Highway and Transit: Effects on ecologically sensitive lands and culturally significant resources	**5 points maximum**	• Degree to which project is located near ecologically sensitive lands and culturally significant properties and resources via GIS buffer analysis: > Project neither intersects nor is adjacent to any data = 5 points > Project is only adjacent to any data = 3 points > Project intersects data = 1 point • Anticipated impacts to nearby EJ populations (buffer of 200 feet: distance derived from approximated distances used in NEPA analysis) > Project anticipated to benefit EJ area = +1 point (within 5 point max) > Neutral or unclear anticipated EJ impacts = 0 points > Project has anticipated negative EJ impacts = -1 point
Highway and Transit: Potential for Greenhouse Gas Emissions Reductions	**5 points maximum**	• Degree to which the project includes components that reduce GHG emissions: > Only emissions reducing components = 5 points > A majority of emission reducing components but also includes emissions inducing components = 4 points > Neutral mix = 3 points > A majority of emissions inducing components but also involves bike/ped/transit improvements improving connectivity to existing facilities = 2 points > A majority of emissions inducing components = 1 point > No emissions reducing components = 0 points

Mode and Criteria	Points	Methodology
GOAL: Security		
Highway and Transit	**5 points maximum**	• Degree to which the project enhances the multimodal evacuation mobility of vulnerable populations. Evacuation routes are defined in the Evacuation Traffic Management Support document: > Project falls on existing evacuation route or improves a critical link to an existing evacuation route in an area with a Vulnerable Population Index (VPI) of 6 or higher = 5 points > Project falls on existing evacuation route or improves a critical link to an existing evacuation route in an area with a VPI of 4 or 5 = 3 points > Project falls on existing evacuation route or improves a critical link to an existing evacuation route in an area with a VPI of 2 or 3 = 1 point
GOAL: Economic Prosperity		
Highway and Transit	**5 points maximum**	• The project leverages or otherwise supports existing assets and programs available from the State to revitalize and improve existing and planned communities in the region: > An Opportunity Zone that is within a Sustainable Community and Priority Funding Area (PFA) = 5 points > A Sustainable Community or PFA = 3 points > Outside these areas/zones = 0 points

Project Scores

Table 3 on the following pages shows how each candidate project submitted by local jurisdictions and MDOT MTA scored according to the evaluation criteria. The table shows the scoring breakdown for every criteria for the policy and technical scores, the total policy and technical score and the total project score consisting of the sum of the policy and technical scores.

Table 3 also shows other project information, including whether each project was categorized as an expansion or system preservation project (which in turn determined the financial forecast funding source for fiscal constraint purposes), project type, submitting jurisdiction, project name, limits, YOE costs and anticipated implementation time period. Projects highlighted in green at the end were submitted but not included in the preferred alternative.

The total score was used to prioritize projects for inclusion in *Resilience 2050*. We discussed the results of the project scoring with our advisory Technical Committee along with other agency and jurisdictional considerations and priorities. At the end of this process, we had agreed on a preferred alternative.

Table 3 - *Resilience 2050* Candidate Project Scoring

Project Category	Project Type	Submitting Jurisdiction	Name	Limits / Length	Estimated Cost (YOE)	Time Period	POLICY SCORE			TECHNICAL SCORE									
							Priority (High = 30; Mid = 20; Low = 10)	MDOT Financial Support (Yes = 10; No = 0)	Total Policy Score	Safety	Complete Streets	Accessibility	Mobility	Environment Effects	Emissions / GHG	Evacuation	Economic Prosperity	Total Technical Score	TOTAL SCORE
System Preservation	Roadway	Baltimore City	US 40 Highway Deconstruction	Smallwood Street to Greene Street (1.5 miles)	$157,000,000	2028-2039	30	10	40	10	5	2	4	2	5	5	5	38	**78**
Expansion	Roadway	Howard	US 1	Baltimore County Line to MD 175 (5.5 miles)	$205,000,000	2040-2050	30	10	40	10	3	5	9	2	2	3	3	37	**77**
Expansion	Roadway	Anne Arundel	MD 198	MD 295 to MD 32 (2.7 miles)	$275,000,000	2028-2039	30	10	40	10	4.5	5	10	1	2	1	3	36.5	**76.5**
Expansion	Transit	MDOT MTA	Bayview Medical Center Transit Hub	Baltimore City	$9,000,000	2040-2050	20	10	30	10	5	6	5	5	5	5	5	46	**76**
Expansion	Roadway	Baltimore Co	MD 140	Painters Mill Road to Owings Mills Boulevard (0.4 miles)	$33,000,000	2028-2039	30	10	40	10	5	5	4	2	1	3	5	35	**75**
Expansion	Transit	Howard	US 29 Bus Rapid Transit	US 40 to MD 198 (16.0 miles)	$20,000,000	2028-2039	30	10	40	6	5	6	5	2	5	3	3	35	**75**
Expansion	Transit	MDOT MTA	East-West Transit Corridor (project now known as the Red Line)	Ellicott City to Essex (17.0 miles)	$1,829,000,000	2028-2039	30	10	40	6	5	0	7	2	5	5	5	35	**75**
Expansion	Transit	MDOT MTA	North-South Transit Corridor	Towson to Downtown Baltimore (Potentially Lutherville to Port Covington) (14.0 miles)	$2,025,000,000	2040-2050	30	10	40	6	5	0	7	2	5	5	5	35	**75**
Expansion	Roadway	Anne Arundel	MD 2	US 50 to MD 100 (10.0 miles)	$205,000,000	2040-2050	30	10	40	10	2.5	5	10	0	2	1	3	33.5	**73.5**
Expansion	Transit	MDOT MTA	Penn Station Transit Hub	Baltimore City	$19,000,000	2028-2039	20	10	30	10	5	6	5	2	5	5	5	43	**73**
Expansion	Roadway	Anne Arundel	MD 3	MD 450 to MD 32 (6.2 miles)	$95,000,000	2028-2039	30	10	40	10	2.5	2	10	0	2	3	3	32.5	**72.5**
System Preservation	Roadway	Baltimore City	Druid Park Lake Drive Complete Streets	Greenspring Avenue in the northeast to I-83 in the southeast along Druid Hill Park (2.2 miles)	$43,000,000	2028-2039	30	0	30	10	5	0	10	2	5	5	5	42	**72**
Expansion	Roadway	Howard	I-95	MD 32 to MD 100 (6.0 miles)	$45,000,000	2028-2039	30	10	40	8	0	5	10	1	0	3	5	32	**72**
Expansion	Roadway	Carroll	MD 32	Howard County Line to MD 26 (3.4 miles)	$66,000,000	2040-2050	30	10	40	8	4	5	7	1	2	1	3	31	**71**
Expansion	Roadway	Howard	US 29	Patuxent River Bridge to Seneca Drive (1.7 miles)	$103,000,000	2028-2039	30	10	40	10	3	5	7	1	1	1	3	31	**71**
Expansion	Roadway	Carroll	MD 26	MD 32 to the Liberty Reservoir (2.5 miles)	$120,000,000	2040-2050	30	10	40	8	4	5	6	1	2	1	3	30	**70**
System Preservation	Roadway	Carroll	MD 31 Corridor Improvements	MD 31 from Church Street to High Street and High Street from Main Street to Coe Drive (0.7 miles)	$16,000,000	2028-2039	30	10	40	10	5	0	4	2	5	0	3	29	**69**
Expansion	Roadway	Howard	MD 175 / MD 108 Interchange	0.25 miles in all directions from the current intersection and a direct connection of MD 108 to Columbia Gateway Drive (0.25 miles)	$102,000,000	2028-2039	20	10	30	10	3	5	10	2	2	3	3	38	**68**
Expansion	Transit	MDOT MTA	Mondawmin Transit Hub	Baltimore City	$7,000,000	2028-2039	30	0	30	10	5	0	4	4	5	5	5	38	**68**
System Preservation	Roadway	Baltimore City	Vietnam Veterans Memorial Bridge and Hanover / Potee Street Corridor Improvements	Patapsco Avenue to Wells Street (2.2 miles)	$339,000,000	2028-2039	30	0	30	10	5	0	10	1	1	5	5	37	**67**

Project Category	Project Type	Submitting Jurisdiction	Name	Limits / Length	Estimated Cost (YOE)	Time Period	POLICY SCORE			TECHNICAL SCORE									TOTAL SCORE
							Priority (High = 30; Mid = 20; Low = 10)	MDOT Financial Support (Yes = 10; No = 0)	Total Policy Score	Safety	Complete Streets	Accessibility	Mobility	Environment Effects	Emissions / GHG	Evacuation	Economic Prosperity	Total Technical Score	
Expansion	Transit	MDOT MTA	Charles Center Transit Hub	Baltimore City	$14,000,000	2028-2039	20	0	20	10	5	10	5	4	5	3	5	47	**67**
System Preservation	Roadway	Baltimore City	Russell Street Complete Streets Improvements	Annapolis Road to South Greene & South Paca Streets (1.0 miles)	$54,000,000	2028-2039	30	0	30	10	5	0	4	2	5	5	5	36	**66**
Expansion	Transit	Harford	Aberdeen MARC Station	US 40 at MD 132 (Bel Air Ave)	$126,000,000	2040-2050	30	0	30	10	5	0	4	4	5	3	5	36	**66**
System Preservation	Transit	MDOT MTA	Eastern Bus Division		$464,000,000	2028-2039	30	10	40	6	3	0	0	2	5	5	5	26	**66**
System Preservation	Roadway	Baltimore City	Keith Avenue / Broening Highway Improvements	Clinton Street to the Baltimore City Line Southeast of Ralls Avenue (2.5 miles)	$84,000,000	2028-2039	30	0	30	10	4.5	0	4	2	5	5	5	35.5	**65.5**
System Preservation	Roadway	Carroll	MD 851 Urban Reconstruction	Cooper Drive to South Branch of the Patapsco River (1.0 miles)	$16,000,000	2028-2039	30	10	40	8	4	0	4	1	5	0	3	25	**65**
System Preservation	Transit	MDOT MTA	Zero-Emission Bus Transition Phase 1	MDOT MTA's core service area in the Baltimore region	$1,594,000,000	2028-2039	30	10	40	3	2	0	0	5	5	5	5	25	**65**
System Preservation	Transit	MDOT MTA	Zero-Emission Bus Transition Phase 2	MDOT MTA's core service area in the Baltimore region	$2,228,000,000	2040-2050	30	10	40	3	2	0	0	5	5	5	5	25	**65**
Expansion	Roadway	Carroll	MD 97	Bachmans Valley Road to MD 140 in Westminster (2.4 miles)	$202,000,000	2028-2039	30	0	30	10	4.5	2	9	2	1	1	5	34.5	**64.5**
Expansion	Roadway	Carroll	MD 140	Market Street to Sullivan Road (2.5 miles)	$474,000,000	2040-2050	20	10	30	10	4.5	0	9	3	2	1	5	34.5	**64.5**
Expansion	Roadway	Harford	MD 22	MD 543 to I-95 (7.9 miles)	$221,000,000	2040-2050	30	0	30	10	4.5	2	10	1	1	1	3	32.5	**62.5**
Expansion	Roadway	Harford	MD 24	US 1 Bypass to south of Singer Road (5.0 miles)	$128,000,000	2040-2050	30	0	30	10	2.5	3	9	0	1	3	3	31.5	**61.5**
Expansion	Roadway	Baltimore Co	I-695 at Broening Highway Interchange		$147,000,000	2028-2039	30	10	40	6	0	0	4	0	0	5	5	20	**60**
Expansion	Roadway	Baltimore Co	I-795	Owings Mills Boulevard to Franklin Boulevard (2.6 miles)	$155,000,000	2028-2039	30	10	40	2	0	3	5	2	0	3	5	20	**60**
Expansion	Roadway	Harford	MD 543	MD 136 to I-95 (1.9 miles)	$140,000,000	2028-2039	30	0	30	10	5	3	7	0	1	1	3	30	**60**
Expansion	Transit	MDOT MTA	State / Cultural Center Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	10	5	5	5	5	5	50	**60**
Expansion	Transit	MDOT MTA	Patapsco Transit Hub	Baltimore County	$9,000,000	2040-2050	10	0	10	10	5	10	5	5	5	5	5	50	**60**
Expansion	Roadway	Anne Arundel	MD 214	MD 424 to Shoreham Beach Road (7.5 miles)	$236,000,000	2040-2050	30	0	30	8	4	3	7	1	2	1	3	29	**59**
Expansion	Roadway	Howard	US 1 Revitalization Breakout Projects	MD 175 to Whiskey Bottom Road (4.5 miles)	$166,000,000	2040-2050	10	10	20	10	5	5	10	1	2	3	3	39	**59**
System Preservation	Transit	MDOT MTA	Fleet Replacement with Low-Floor Light Rail Vehicles		$757,000,000	2040-2050	20	10	30	5	4	0	0	5	5	5	5	29	**59**
Expansion	Roadway	Harford	US 1	MD 152 to MD 147 / US 1 Business (1.3 miles)	$212,000,000	2040-2050	20	10	30	8	4	3	6	3	1	0	3	28	**58**
Expansion	Roadway	Queen Anne's	MD 8 / US 50/301 Interchange and Service Roads	Skip Jack Parkway south to Davidson Drive; east to Thompson Creek service road (2.0 miles)	$90,000,000	2028-2039	30	0	30	8	4	0	9	1	2	1	3	28	**58**

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							Priority (High = 30; Mid = 20; Low = 10)	MDOT Financial Support (Yes = 10; No = 0)	Total Policy Score	Safety	Complete Streets	Accessibility	Mobility	Environment Effects	Emissions / GHG	Evacuation	Economic Prosperity	Total Technical Score	
Expansion	Roadway	Anne Arundel	MD 170	Norcross Lane to Wieker Road (0.8 miles)	$23,000,000	2028-2039	20	10	30	8	4.5	0	7	3	1	1	3	27.5	**57.5**
Expansion	Roadway	Howard	Broken Land Parkway at Snowden River Parkway	Broken Land Parkway from south of MD 32 to north of Snowden River Parkway; Snowden River Parkway from east of Minstrel Way to Patuxent Woods Drive (0.25 miles)	$63,000,000	2028-2039	10	10	20	10	5	5	6	5	0	3	3	37	**57**
Expansion	Transit	MDOT MTA	Johns Hopkins Hospital Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	10	5	2	5	5	5	47	**57**
Expansion	Transit	MDOT MTA	Penn-North Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	10	5	2	5	5	5	47	**57**
Expansion	Roadway	Queen Anne's	MD 18	Kent Narrows to Bay Bridge – MD 18 and MD 835 on east side of Kent Narrows to MD 18 (5.0 miles)	$114,000,000	2028-2039	30	0	30	10	4.5	0	5	1	2	1	3	26.5	**56.5**
Expansion	Transit	MDOT MTA	Owings Mills Transit Hub	Baltimore County	$9,000,000	2040-2050	10	0	10	10	5	10	5	5	5	1	5	46	**56**
Expansion	Roadway	Harford	US 1 Bypass	MD 147 / US 1 Business to Hickory Bypass (4.6 miles)	$354,000,000	2040-2050	30	10	40	2	0	2	8	0	0	0	3	15	**55**
Expansion	Transit	Howard	Bus Rapid Transit to BWI	Dorsey MARC Station to BWI Light Rail Station (9.7 miles)	$240,000,000	2040-2050	20	0	20	6	4.5	4	5	2	5	5	3	34.5	**54.5**
Expansion	Transit	MDOT MTA	Glen Burnie Transit Hub	Anne Arundel	$9,000,000	2040-2050	10	0	10	10	4.5	10	4	5	5	3	3	44.5	**54.5**
Expansion	Transit	Howard	US 1 Corridor Bus Rapid Transit	Dorsey MARC Station to College Park Purple Line Station (19.5 miles)	$281,000,000	2040-2050	20	0	20	6	5	4	5	2	5	3	3	33	**53**
Expansion	Roadway	Howard	US 1 at MD 175 Interchange	0.5 miles	$184,000,000	2040-2050	10	10	20	6	5	5	8	3	0	3	3	33	**53**
Expansion	Transit	MDOT MTA	UM Medical Center Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	10	5	4	5	1	3	43	**53**
Expansion	Roadway	Anne Arundel	MD 175	Reece Road to MD 170 (2.7 miles)	$277,000,000	2040-2050	10	10	20	10	5	0	10	1	2	1	3	32	**52**
Expansion	Roadway	Harford	US 40 at MD 22 Interchange		$48,000,000	2040-2050	20	0	20	10	3	0	4	5	2	5	3	32	**52**
Expansion	Transit	MDOT MTA	Camden Station Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	10	4	2	5	3	3	42	**52**
Expansion	Transit	Anne Arundel	Anne Arundel Countywide Microtransit	Countywide	$3,000,000	2028-2039	20	0	20	3	4	0	4	5	5	5	5	31	**51**
Expansion	Roadway	Carroll	MD 27 Corridor Improvements	Carroll County line to Leishear Road (3.2 miles)	$78,000,000	2040-2050	20	0	20	10	4.5	3	6	1	2	1	3	30.5	**50.5**
Expansion	Roadway	Howard	TSMO System 1	I-70 from I-695 to MD 32 (11.0 miles) US 29 from MD 99 to MD 100 (4.0 miles) US 40 from I-695 to I-70 (10.0 miles)*	$48,000,000	2028-2039	20	10	30	8	0	0	6	0	0	3	3	20	**50**
Expansion	Roadway	Howard	MD 175	Oceano Avenue to Anne Arundel County Line (0.5 miles)	$24,000,000	2040-2050	10	10	20	10	5	0	5	3	1	3	3	30	**50**
Expansion	Transit	MDOT MTA	BWI Airport Transit Hub	Anne Arundel	$9,000,000	2040-2050	10	0	10	9	4	10	4	5	5	0	3	40	**50**

Project Category	Project Type	Submitting Jurisdiction	Name	Limits / Length	Estimated Cost (YOE)	Time Period	POLICY SCORE			TECHNICAL SCORE									TOTAL SCORE
							Priority (High = 30; Mid = 20; Low = 10)	MDOT Financial Support (Yes = 10; No = 0)	Total Policy Score	Safety	Complete Streets	Accessibility	Mobility	Environment Effects	Emissions / GHG	Evacuation	Economic Prosperity	Total Technical Score	
Expansion	Transit	MDOT MTA	Rogers Avenue Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	4	4	4	5	5	3	40	**50**
System Preservation	Transit	MDOT MTA	Light Rail Fleet Mid-life Overhaul	Hunt Valley to BWI/Glen Burnie	$210,000,000	2028-2039	10	10	20	8	2	0	0	5	5	5	5	30	**50**
Expansion	Roadway	Howard	Snowden River Parkway Widening	Broken Land Parkway to Oakland Mills Road (1.1 miles)	$21,000,000	2028-2039	10	0	10	10	5	5	9	5	2	0	3	39	**49**
Expansion	Roadway	Howard	MD 175 at I-95 Interchange	1.0 miles	$196,000,000	2040-2050	10	10	20	6	0	5	8	4	0	3	3	29	**49**
Expansion	Transit	Anne Arundel	Annapolis to Fort Meade to Columbia Transit	Annapolis / Parole to Fort Meade to Columbia (25.0 miles)	$45,000,000	2028-2039	10	0	10	3	4.5	10	6	2	5	3	5	38.5	**48.5**
Expansion	Roadway	Baltimore Co	MD 7 at MD 43 Interchange		$82,000,000	2040-2050	30	0	30	4	0	2	4	5	0	0	3	18	**48**
Expansion	Transit	Harford	MDOT MTA Commuter Service	Harford County to Downtown Baltimore and Harbor East	$2,000,000	2028-2039	20	0	20	3	5	0	3	2	5	5	5	28	**48**
Expansion	Roadway	Harford	MD 152	US 1 to I-95 (4.3 miles)	$103,000,000	2040-2050	10	0	10	10	4.5	3	9	2	1	5	3	37.5	**47.5**
Expansion	Transit	MDOT MTA	White Marsh Transit Hub	Baltimore County	$9,000,000	2040-2050	10	0	10	10	4.5	6	4	5	5	0	3	37.5	**47.5**
Expansion	Roadway	Howard	MD 100 Widening	I-95 to Anne Arundel County Line (2.0 miles)	$47,000,000	2040-2050	10	10	20	10	0	5	6	0	0	3	3	27	**47**
Expansion	Roadway	Howard	MD 108	Trotter Road to Guilford Road (1.7 miles)	$64,000,000	2040-2050	10	10	20	10	3	0	6	2	2	1	3	27	**47**
Expansion	Transit	MDOT MTA	Lexington Market Transit Hub	Baltimore City	$9,000,000	2040-2050	10	0	10	10	5	4	3	2	5	3	5	37	**47**
Expansion	Transit	MDOT MTA	Essex Transit Hub	Baltimore County	$9,000,000	2040-2050	10	0	10	10	5	4	5	2	5	3	3	37	**47**
Expansion	Transit	Anne Arundel	Glen Burnie to Annapolis Transit	Cromwell / Glen Burnie to Annapolis / Parole (16.0 miles)	$7,000,000	2028-2039	20	0	20	3	4.5	0	4	2	5	5	3	26.5	**46.5**
Expansion	Roadway	Anne Arundel	MD 295	MD 100 to I-195 (3.3 miles)	$393,000,000	2040-2050	10	10	20	8	2.5	0	10	0	2	0	3	25.5	**45.5**
Expansion	Roadway	Howard	MD 32	North of I-70 to Carroll County Line (4.0 miles)	$79,000,000	2040-2050	10	10	20	8	4.5	0	10	1	1	1	0	25.5	**45.5**
Expansion	Roadway	Anne Arundel	I-97	MD 32 to US 50/301 (6.5 miles)	$450,000,000	2040-2050	30	0	30	4	0	0	5	0	0	3	3	15	**45**
Expansion	Transit	Anne Arundel	Annapolis to New Carrollton Transit	New Carrollton to Parole (21.0 miles)	$3,000,000	2028-2039	20	0	20	3	4.5	0	4	2	5	1	3	22.5	**42.5**
Expansion	Roadway	Anne Arundel	MD 713	MD 175 to MD 176 (2.6 miles)	$68,000,000	2040-2050	10	0	10	10	5	0	10	1	2	1	3	32	**42**
Expansion	Roadway	Harford	MD 24 (Rock Spring Road)	US 1 Bypass to MD 23 (1.8 miles)	$44,000,000	2040-2050	10	0	10	10	4	5	6	1	2	0	3	31	**41**
Expansion	Roadway	Harford	US 40	MD 543 to Loflin Road (1.7 miles)	$93,000,000	2040-2050	10	0	10	10	5	2	6	0	1	3	3	30	**40**
Expansion	Roadway	Harford	Abingdon Road	MD 924 to US 40 (3.0 miles)	$87,000,000	2040-2050	10	0	10	10	4.5	2	4	2	3	1	3	29.5	**39.5**
Expansion	Roadway	Harford	Thomas Run Road	MD 22 to West Medical Hall Road (0.8 miles)	$21,000,000	2040-2050	10	0	10	10	2.5	0	4	4	5	1	3	29.5	**39.5**
Expansion	Roadway	Anne Arundel	MD 177	MD 2 to Lake Shore Drive (6.1 miles)	$223,000,000	2040-2050	10	0	10	10	4.5	0	7	1	2	1	3	28.5	**38.5**

Project Category	Project Type	Submitting Jurisdiction	Name	Limits / Length	Estimated Cost (YOE)	Time Period	POLICY SCORE			TECHNICAL SCORE									TOTAL SCORE
							Priority (High = 30; Mid = 20; Low = 10)	MDOT Financial Support (Yes = 10; No = 0)	Total Policy Score	Safety	Complete Streets	Accessibility	Mobility	Environment Effects	Emissions / GHG	Evacuation	Economic Prosperity	Total Technical Score	
Expansion	Roadway	Harford	US 1	Baltimore County Line to MD 152 (1.4 miles)	$35,000,000	2040-2050	10	0	10	10	4.5	2	7	0	1	1	3	28.5	**38.5**
Expansion	Roadway	Harford	MD 24 at Singer Road Interchange		$182,000,000	2040-2050	20	0	20	4	0	3	4	3	0	1	3	18	**38**
System Preservation	Transit	MDOT MTA	MARC Rolling Stock Overhauls and Replacements	Penn, Camden and Brunswick MARC Lines	$570,000,000	2040-2050	10	0	10	6	2	0	0	5	5	5	5	28	**38**
Expansion	Transit	Anne Arundel	Chesapeake Bay Ferry Service		$59,000,000	2040-2050	10	0	10	2	4	0	4	2	5	5	5	27	**37**
Expansion	Roadway	Harford	Perryman Access - Mitchell Lane	US 40 in the vicinity of Mitchell Lane to Canning House Road (2.0 miles)	$62,000,000	2040-2050	10	0	10	10	2.5	0	4	2	2	3	3	26.5	**36.5**
Expansion	Transit	Harford	Transit Signal Priority	"MD 22 corridor from MD 543 to Long Drive / Technology Drive (7.4 miles) MD 924 corridor from MacPhail Road to Woodsdale Road (4.7 miles)"	$2,000,000	2028-2039	10	0	10	3	4.5	0	4	2	5	3	3	24.5	**34.5**
Expansion	Roadway	Howard	MD 32	Cedar Lane to Anne Arundel County (8.0 miles)	$1,153,000,000	2040-2050	10	10	20	6	3	3	5	0	0	1	3	21	**41**
Expansion	Roadway	Howard	US 29 Widening	MD 100 to I-70 (3.2 miles)	$771,000,000	2040-2050	10	0	10	8	0	0	7	2	3	3	3	26	**36**
Expansion	Roadway	Anne Arundel	US 50	I-97 to MD 2 (5.5 miles)	$368,000,000	2040-2050	10	0	10	4	0	5	10	0	1	1	3	24	**34**
Expansion	Roadway	Anne Arundel	MD 32	I-97 to Howard County Line (11.0 miles)	$524,000,000	2040-2050	10	0	10	4	2.5	5	4	0	2	3	3	23.5	**33.5**
Expansion	Roadway	Anne Arundel	MD 100	Howard County Line to I-97 (6.5 miles)	$299,000,000	2040-2050	10	0	10	4	0	5	6	0	0	1	3	19	**29**
Expansion	Roadway	Harford	MD 24 at Wheel Road Interchange		$182,000,000	2040-2050	10	0	10	4	0	3	4	5	0	0	3	19	**29**

Note: projects highlighted in green are not included in the preferred alternative.