



## Chapter 6

# Financial Plan

**The core of *Resilience 2050* is a list of planned federally funded major capital expansion projects. *Resilience 2050* also includes large-scale system preservation projects. But how do we determine which projects are included in *Resilience 2050*? How do we determine how many projects can be included, and why can't all projects submitted be included?**

In short, only some projects can be included because *Resilience 2050* is not a wish list. Federal law requires that plans must be financially constrained by the amount of revenue anticipated to be available to a region within the timeframe of the plan. This means that the anticipated costs of transportation projects and programs in *Resilience 2050* cannot exceed anticipated revenues.

Each metropolitan transportation plan must include a financial plan. This financial plan demonstrates consistency between (1) revenues reasonably expected to be available and (2) the

estimated costs of implementing proposed transportation system improvements. This consistency is referred to as “fiscal constraint.” To satisfy this requirement, we worked with the Maryland Department of Transportation (MDOT) and local members to forecast the amount of federal, state and local revenues the region anticipates will be available.

The financial forecast extends from 2028 through 2050. The planning horizon for *Resilience 2050* begins immediately after the final year for the short-range Transportation Improvement Program (TIP). The TIP includes all projects anticipated to use federal funds over the next four fiscal years. We will consider the 2024-2027 TIP in conjunction with *Resilience 2050*. As a result, the planning horizon for *Resilience 2050* begins in 2028 and covers the 20+ years from 2028 through 2050.

The financial forecast includes anticipated revenues and costs associated with operating the transportation system and system preservation through 2050. The remaining funds will be available to fund expansion projects such as new or expanded transit service or roadway capacity. This chapter provides details on the financial forecast and the methodology used to produce it.

**The anticipated costs of transportation projects and programs in *Resilience 2050* cannot exceed anticipated revenues.**

## Definitions

The financial forecast covers three main categories of spending. These include expenditures for operating the transportation system, system preservation and expanding the transportation system. These definitions differ slightly for transit and roadway projects:

### Operating

- > **Roadways:** Covers the salaries and wages of personnel who maintain and operate roadway systems and vehicles.
- > **Transit:** Covers routine maintenance, employee wages, spare parts and consumables. Note that while routine maintenance is considered a function of system operations, some maintenance activities may be paid for with federal capital funds.

### System Preservation

- > **Roadways:** Covers capital costs for routine asset management and maintenance activities. These activities include repaving roadways, repairing bridges, clearing snow and ice and maintaining roadside lighting, guardrails and signs.
- > **Transit:** Covers planning, design, acquisition/construction and major asset rehabilitation activities necessary to keep the existing transit system in a state of good repair.

### Expansion

- > Examples include major new or expanded transit service and new or widened roadways.

## State and Federal Forecast

MDOT forecast state and federal revenues anticipated to be available for the 23-year period from 2028-2050. MDOT begins by calculating total program revenues for operating and capital. Program expenditures rely on projecting historical state and federal revenues forward based on historical annual average growth rates. In the most recent forecast, 2028 to 2050 projections of state funds use an historical annual average growth rate of 5.0%. Federal fund projections are based on an average growth rate of 3.0% for roadway and 2.33% for transit program funds. Federal funding in the forecast comes from either the Federal Highway Administration or the Federal Transit Administration.

MDOT then calculates anticipated needs for operating and system preservation for the period extending from 2028 to 2050. Operating budget projections for 2022 to 2027 are drawn from the FY 2022-2027 financial plan of the Transportation Trust Fund (TTF). Projections for operating expenditures from 2028 to 2050 were derived by inflating the previous year with an estimate for the percentage change in the Consumer Price Index for All Urban Consumers (CPI-U) plus 2%. The CPI-U is a generally accepted measure of inflation. The projected annual change in index figure is based on information from two econometric forecasting firms. Two percent



is added to this index to account for the additional operating costs associated with new capital expansions.

System preservation budget projections for 2022 to 2027 were drawn from the final FY 2022-2027 MDOT Consolidated Transportation Program. Projections for system preservation expenditures from 2028 through 2050 assumed an annual average growth rate of 2.5%.

Expenditures for expansion were derived by subtracting both operating and system preservation expenditures from the total program expenditures for each year. In other words, the amount available for expansion is determined by what is left over from total revenues after accounting for anticipated needs for system operations and system preservation. Table 1 depicts anticipated statewide revenue forecasts for operating, system preservation and expansion from 2028 to 2050.

The statewide forecasts in Table 1 form the basis of forecasts for the Baltimore region. Table 2 details the calculation of the expansion revenue forecast for the

**The Transportation Trust Fund (TTF) was created in 1971 to establish a dedicated fund to support the Maryland Department of Transportation. Revenue sources for the TTF include motor fuel taxes, vehicle excise (titling) taxes, motor vehicle fees (registrations, licenses and other fees), a portion of the State's tax on corporate income, a portion of the State's sales and use taxes on short-term vehicle rentals, operating revenues and bond proceeds.**

**Table 1 - MDOT Statewide Operating, System Preservation and Expansion Revenue Forecast: 2028-2050 (Millions of Dollars)**

Year	Operating	System Preservation	Expansion	Statewide Total
2028	\$2,734	\$1,637	\$701	\$5,072
2029	\$2,849	\$1,715	\$735	\$5,299
2030	\$2,968	\$1,799	\$771	\$5,538
2031	\$3,091	\$1,890	\$810	\$5,791
2032	\$3,217	\$1,985	\$851	\$6,053
2033	\$3,350	\$2,084	\$893	\$6,327
2034	\$3,488	\$2,188	\$938	\$6,614
2035	\$3,633	\$2,297	\$985	\$6,915
2036	\$3,787	\$2,357	\$1,087	\$7,231
2037	\$3,946	\$2,416	\$1,200	\$7,562
2038	\$4,112	\$2,476	\$1,320	\$7,908
2039	\$4,286	\$2,538	\$1,446	\$8,270
2040	\$4,467	\$2,601	\$1,581	\$8,649
2041	\$4,656	\$2,666	\$1,725	\$9,047
2042	\$4,853	\$2,733	\$1,877	\$9,463
2043	\$5,060	\$2,801	\$2,039	\$9,900
2044	\$5,275	\$2,871	\$2,212	\$10,358
2045	\$5,500	\$2,943	\$2,392	\$10,835
2046	\$5,735	\$3,017	\$2,585	\$11,337
2047	\$5,981	\$3,092	\$2,789	\$11,862
2048	\$6,238	\$3,169	\$3,006	\$12,413
2049	\$6,504	\$3,249	\$3,237	\$12,990
2050	\$6,783	\$3,330	\$3,483	\$13,596
<b>Total 2028 – 2050</b>	<b>\$102,513</b>	<b>\$57,854</b>	<b>\$38,663</b>	<b>\$199,030</b>



**Table 2 - Baltimore Region Expansion Revenue Forecast: 2028-2050 (Millions of Dollars)**

**Percent of Statewide Expansion Funds for Surface Expansion, 1981-2021: 84.9%**



**Percent of Statewide Surface Expansion Funds for the Baltimore region, 1981-2021: 36.1%**

Year	Statewide Expansion Funds	Statewide Surface Percentage (84.9%)	Statewide Private Funds	Total Statewide Surface Expansion Funds	Baltimore Region Expansion Funds (36.1%)
2028	\$701	\$595	\$24	\$619	\$224
2029	\$735	\$624	\$24	\$648	\$234
2030	\$771	\$655	\$24	\$679	\$245
2031	\$810	\$688	\$25	\$713	\$257
2032	\$851	\$722	\$25	\$747	\$270
2033	\$893	\$758	\$25	\$783	\$283
2034	\$938	\$796	\$25	\$821	\$297
2035	\$985	\$836	\$25	\$861	\$311
2036	\$1,087	\$923	\$25	\$948	\$342
2037	\$1,200	\$1,019	\$25	\$1,044	\$377
2038	\$1,320	\$1,121	\$25	\$1,146	\$414
2039	\$1,446	\$1,228	\$25	\$1,253	\$452
2040	\$1,581	\$1,342	\$25	\$1,367	\$494
2041	\$1,725	\$1,464	\$25	\$1,489	\$538
2042	\$1,877	\$1,593	\$25	\$1,618	\$585
2043	\$2,039	\$1,731	\$25	\$1,756	\$634
2044	\$2,212	\$1,878	\$25	\$1,903	\$687
2045	\$2,392	\$2,031	\$25	\$2,056	\$742
2046	\$2,585	\$2,194	\$25	\$2,219	\$802
2047	\$2,789	\$2,368	\$25	\$2,393	\$864
2048	\$3,006	\$2,552	\$25	\$2,577	\$931
2049	\$3,237	\$2,748	\$25	\$2,773	\$1,002
2050	\$3,483	\$2,957	\$25	\$2,982	\$1,077
<b>Total 2028-2050</b>	<b>\$38,663</b>	<b>\$32,823</b>	<b>\$572</b>	<b>\$33,395</b>	<b>\$12,062</b>

Baltimore region. Table 3 details the full state and federal financial forecast for operating, system preservation and expansion for the Baltimore region.

Table 2 contains details on the calculation of expansion funds for the Baltimore region. This calculation starts with statewide expansion funds, the second column of Table 2. Note that this column is identical to the expansion column of Table 1. MDOT spends expansion funds on both surface and non-surface transportation. Surface transportation includes roadway and transit expenditures, while non-surface includes expenditures on ports, aviation and the Motor Vehicle Administration. *Resilience 2050* includes roadway and transit projects, and thus is only concerned with the portion of funds dedicated to surface transportation.

MDOT analyzed historical expenditure data to produce an estimate of the percentage of Maryland expansion funds associated with surface transportation from 2028 to 2050. For this financial forecast, MDOT estimated that approximately 84.9% of statewide expansion funds from 1981 to 2021 were spent on surface expansion. In Table 2, this percentage was multiplied by statewide expansion funds

**Table 3 - Baltimore Region State and Federal Operating, System Preservation and Expansion Revenue Forecast: 2028-2050 (Millions of Dollars)**

Year	Operating	System Preservation	Expansion	Totals
2028	\$987	\$591	\$224	\$1,802
2029	\$1,028	\$619	\$234	\$1,881
2030	\$1,071	\$649	\$245	\$1,965
2031	\$1,116	\$682	\$257	\$2,055
2032	\$1,161	\$717	\$270	\$2,148
2033	\$1,209	\$752	\$283	\$2,244
2034	\$1,259	\$790	\$297	\$2,346
2035	\$1,312	\$829	\$311	\$2,452
2036	\$1,367	\$851	\$342	\$2,560
2037	\$1,425	\$872	\$377	\$2,674
2038	\$1,484	\$894	\$414	\$2,792
2039	\$1,547	\$916	\$452	\$2,915
2040	\$1,613	\$939	\$494	\$3,046
2041	\$1,681	\$962	\$538	\$3,181
2042	\$1,752	\$987	\$585	\$3,324
2043	\$1,827	\$1,011	\$634	\$3,472
2044	\$1,904	\$1,036	\$687	\$3,627
2045	\$1,986	\$1,062	\$742	\$3,790
2046	\$2,070	\$1,089	\$802	\$3,961
2047	\$2,159	\$1,116	\$864	\$4,139
2048	\$2,252	\$1,144	\$931	\$4,327
2049	\$2,348	\$1,173	\$1,002	\$4,523
2050	\$2,449	\$1,202	\$1,077	\$4,728
<b>Total 2028-2050</b>	<b>\$37,007</b>	<b>\$20,883</b>	<b>\$12,062</b>	<b>\$69,952</b>



(column 2) to reach the statewide surface percentage (column 3). Statewide private funds are listed in column 4. Private funds are generally from public-private partnerships, with funding spread out as opposed to picking one year that it would arrive. Private funds could also be from a private entity contributing to a project, such as Ports America Chesapeake contributing to a Maryland Port Administration project or a developer contributing to an adjacent roadway project. Statewide private funds were added to the statewide surface percentage to yield total statewide surface expansion funds (column 5). MDOT then used historical expenditure data to derive the Baltimore region's share of statewide expansion funds from 1981 to 2021 (36.1%). Baltimore region expansion funds (column 6) were calculated by multiplying total statewide surface expansion funds by 36.1%. This yields a total of \$12.062 billion available for expansion projects in the Baltimore region from 2028 to 2050.

Table 3 adds the operating and system preservation components of the Baltimore region financial forecast. These are calculated by multiplying the statewide totals for operating and system preservation from Table 1 by 36.1%.

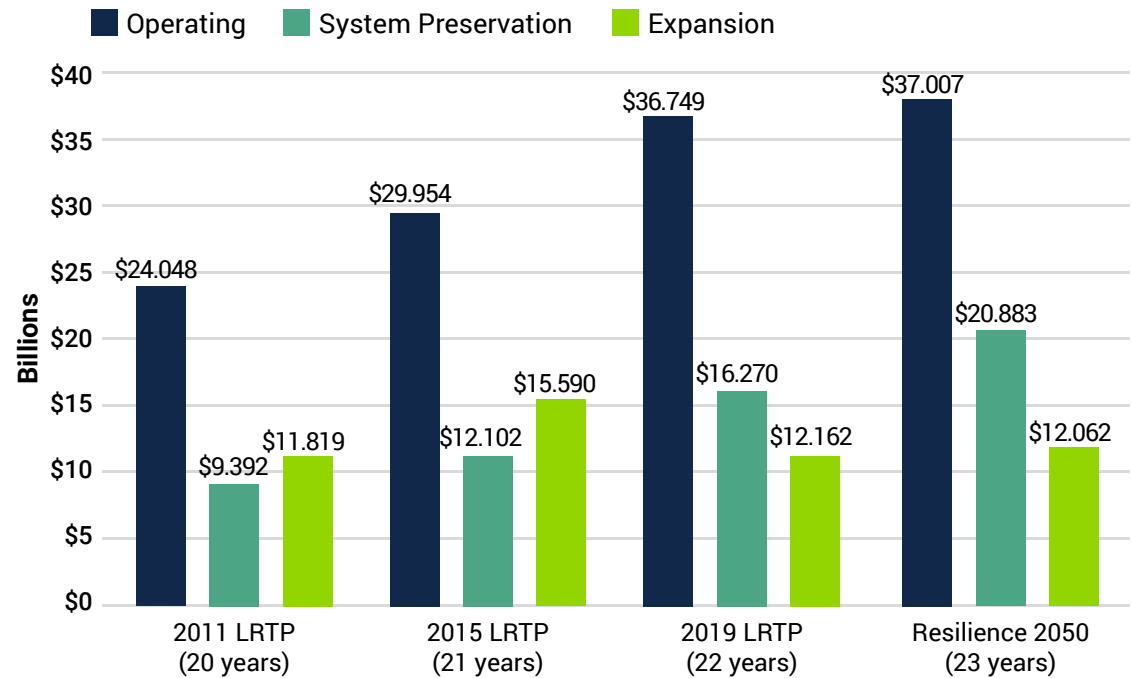
The financial forecast includes a total of \$69.952 billion in state and federal revenue available for operating, system preservation and expansion in the Baltimore region from 2028 to 2050. Individual totals for operating, system preservation and expansion are \$37.007 billion, \$20.883 billion and



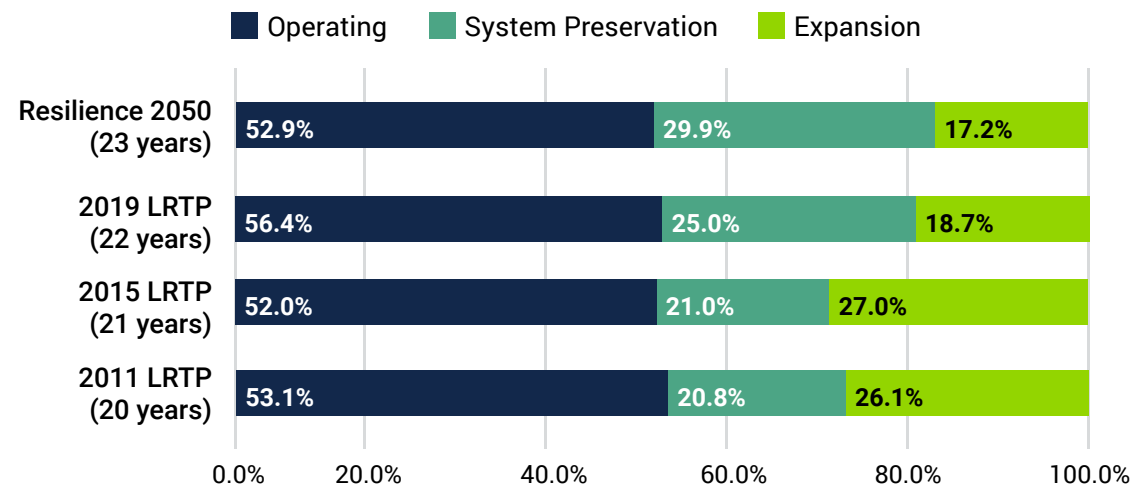
\$12.062 billion, respectively. Figures 1 and 2 provide a comparison of the financial forecast for *Resilience 2050* to those for the three previous BRTB long-range transportation plans (LRTPs). Figure 1 shows that anticipated revenues have increased from one LRTP to the next. However, it is important to note that each subsequent LRTP after 2011 included one additional year in its planning horizon. Funding within categories has also increased from one LRTP to the next. The lone exception is the decrease in expansion funding from the 2015 LRTP to the 2019 LRTP and *Resilience 2050*. There was also a large jump in system preservation funding from the 2019 LRTP to *Resilience 2050*.

Economic circumstances at the time of each forecast influence the amount available. In addition, part of the reason for these shifts is a change in methodology at MDOT. Prior financial forecasts were based on a different categorization of projects. Candidate projects for the LRTP were previously “major capital” projects, which could include large-scale projects that didn’t expand roadway or transit capacity. Examples include major overhauls of transit vehicles or large roadway reconstruction or interchange projects that

**Figure 1 - LRTP State and Federal Financial Forecast Comparison: Funds by Category**



**Figure 2 - LRTP State and Federal Financial Forecast Comparison: Share of Funds by Category**





The financial forecast for *Resilience 2050* includes a total of \$69.952 billion in state and federal revenue for operating, system preservation, and expansion in the Baltimore region from 2028 to 2050.

don't add lanes. Starting with the *Resilience 2050* financial forecast, the major capital category is now considered to be exclusively expansion. This means that projects that MDOT had previously categorized as major capital that don't include additional capacity are now categorized as system preservation. This results in an increase in system preservation funds in the financial forecast (and an associated decrease in expansion funds).

Figure 2 compares the share of funds by category for *Resilience 2050* and the three prior LRTPs. Operating revenues comprise the majority of the financial forecast, with the share remaining relatively consistent from one LRTP to the next. The share dedicated to system preservation has gradually increased while the share dedicated to expansion has decreased. This shows the increasing demands associated with maintaining the Baltimore region's transportation system in a state of good repair.

## Local Financial Forecast

While MDOT provides state and federal funding forecasts for the LRTP, federal regulations require a financial plan to identify "all necessary financial resources from public and private sources that are reasonably expected to be available," which includes forecasting of local sources of revenue. In 2022, we worked with a consultant and local jurisdiction staff to develop a local funding projection tool for use in *Resilience 2050*. This tool can also be adapted to generate local funding forecasts for future LRTPs.

The local financial forecast was based on baseline funding information for FY 2022. Baseline funding information was gathered through (1) the review of relevant funding documentation for each jurisdiction, and (2) interviews held with relevant representatives of each jurisdiction. Local funds come from a variety of sources including Highway User Revenues (HUR), general funds, bonds and other sources such as usage fees. HUR funds come from a portion of the gasoline tax.

Funding sources were allocated to either operating or capital sources based on the review of local documents and staff interviews. Capital was further divided into system preservation and expansion categories to mimic the state and federal financial forecast. Baseline funds for operating and capital were projected forward by source (HUR, general funds, bonds, etc.) using growth rates estimated from interviews with budget staff and reasonable economic principles.

Table 4 summarizes local revenues projected to be available to the Baltimore region from 2028 to 2050. These totals were calculated by summing the individual county-by-county values for operating, system preservation and expansion for each time period listed. We summarized the local financial forecast in 5-year bands due to methodological limitations since this is the first year we developed a region-wide local financial forecast for the LRTP. Future LRTPs will continue to refine and include a local financial forecast to provide a clearer picture of the resources available for transportation in the Baltimore region.

**Table 4 - Baltimore Region Local Operating, System Preservation and Expansion Revenue Forecast: 2028-2050 (Millions of Dollars)**

Time Period	Operating	System Preservation	Expansion	Total
2028-2032	\$2,829	\$1,223	\$185	\$4,237
2033-2037	\$3,193	\$1,304	\$199	\$4,696
2038-2042	\$3,614	\$1,397	\$215	\$5,226
2043-2047	\$4,104	\$1,506	\$233	\$5,843
2048-2050	\$2,731	\$963	\$150	\$3,844
<b>Total 2028-2050</b>	<b>\$16,471</b>	<b>\$6,393</b>	<b>\$982</b>	<b>\$23,846</b>

## Forecast Federal Revenues by Funding Program: 2028-2050

During the 2016 federal certification review, FHWA and FTA recommended including a breakdown of forecast federal revenues by funding program in the LRTP. To satisfy this requirement, we applied MDOT's FY 2022 apportionment shares for major FHWA and FTA federal funding programs, accounting for the *Resilience 2050* financial forecast and the estimated share of federal funds as documented in MDOT's CTP. These federal programs primarily provide capital funds for system preservation and expansion. Therefore, the federal funding program estimates are constrained by Baltimore region revenues for expansion and system preservation only. Table 5 shows the resulting estimate of how these federal revenues might break down from 2028-2050. There is no guarantee that these funding programs will be available in their present forms throughout

the next 25+ years. There also is no guarantee that these same percentages will apply in the future, or that MDOT will continue to provide the same level of state funding for projects. However, this approach was deemed the best way to provide a possible scenario for how federal funding might be apportioned within the region in the future.

**Table 5 - Resilience 2050 Regional Revenue Forecasts by Federal Funding Program (Millions of Dollars)**

	FHWA - Highways*							FTA - Transit*			Totals		Baltimore Region Expansion and System Preservation Revenues
	NHPP	STBG	HSIP	CMAQ	NHFP	CRP	PROTECT	S5307	S5337	S5339	Highways	Transit	
2028	\$203	\$99	\$22	\$28	\$10	\$9	\$10	\$89	\$38	\$6	\$381	\$133	\$815
2029	\$212	\$103	\$23	\$30	\$11	\$9	\$10	\$94	\$40	\$6	\$398	\$140	\$853
2030	\$223	\$108	\$24	\$31	\$11	\$10	\$11	\$98	\$42	\$6	\$418	\$146	\$894
2031	\$234	\$114	\$25	\$33	\$12	\$10	\$12	\$103	\$44	\$7	\$440	\$154	\$939
2032	\$246	\$120	\$26	\$34	\$12	\$11	\$12	\$108	\$46	\$7	\$461	\$161	\$987
2033	\$258	\$125	\$28	\$36	\$13	\$11	\$13	\$114	\$49	\$7	\$484	\$170	\$1,035
2034	\$271	\$132	\$29	\$38	\$13	\$12	\$13	\$119	\$51	\$8	\$508	\$178	\$1,087
2035	\$284	\$138	\$30	\$40	\$14	\$12	\$14	\$125	\$53	\$8	\$532	\$186	\$1,140
2036	\$297	\$145	\$32	\$42	\$15	\$13	\$15	\$131	\$56	\$8	\$559	\$195	\$1,193
2037	\$311	\$151	\$33	\$44	\$16	\$13	\$15	\$137	\$59	\$9	\$583	\$205	\$1,249
2038	\$326	\$159	\$35	\$46	\$16	\$14	\$16	\$144	\$61	\$9	\$612	\$214	\$1,308
2039	\$341	\$166	\$37	\$48	\$17	\$15	\$17	\$150	\$64	\$10	\$641	\$224	\$1,368
2040	\$357	\$174	\$38	\$50	\$18	\$15	\$18	\$157	\$67	\$10	\$670	\$234	\$1,433
2041	\$374	\$182	\$40	\$52	\$19	\$16	\$18	\$165	\$70	\$11	\$701	\$246	\$1,500
2042	\$392	\$191	\$42	\$55	\$20	\$17	\$19	\$172	\$74	\$11	\$736	\$257	\$1,572
2043	\$410	\$199	\$44	\$57	\$20	\$18	\$20	\$180	\$77	\$12	\$768	\$269	\$1,645
2044	\$429	\$209	\$46	\$60	\$21	\$19	\$21	\$189	\$81	\$12	\$805	\$282	\$1,723
2045	\$449	\$219	\$48	\$63	\$22	\$19	\$22	\$198	\$85	\$13	\$842	\$296	\$1,804
2046	\$471	\$229	\$51	\$66	\$23	\$20	\$23	\$207	\$89	\$13	\$883	\$309	\$1,891
2047	\$493	\$240	\$53	\$69	\$25	\$21	\$24	\$217	\$93	\$14	\$925	\$324	\$1,980
2048	\$517	\$251	\$56	\$72	\$26	\$22	\$25	\$228	\$97	\$15	\$969	\$340	\$2,075
2049	\$542	\$264	\$58	\$76	\$27	\$24	\$27	\$239	\$102	\$15	\$1,018	\$356	\$2,175
2050	\$568	\$276	\$61	\$79	\$28	\$25	\$28	\$250	\$107	\$16	\$1,065	\$373	\$2,279
<b>Total 2028-2050</b>	<b>\$8,208</b>	<b>\$3,994</b>	<b>\$881</b>	<b>\$1,149</b>	<b>\$409</b>	<b>\$355</b>	<b>\$403</b>	<b>\$3,614</b>	<b>\$1,545</b>	<b>\$233</b>	<b>\$15,399</b>	<b>\$5,392</b>	<b>\$32,945</b>

\*see endnote for definitions of FHWA and FTA funding programs<sup>1</sup>

**FY 2028-2050 Estimated Federal Revenues \$20,791**



## Fiscal Constraint: Project Costs vs Forecast Revenues

This section compares forecast revenues with anticipated year of expenditure project costs, demonstrating that the region anticipates to have sufficient funds to pay for the projects included in *Resilience 2050*. See Chapter 7 for specific project details.

### LRTP Candidate Projects, Scoring and Cost Estimation

Before comparing forecast revenues with project costs, it is necessary to understand how the BRTB decides what projects to include in the LRTP. Local jurisdictions and state agencies submit candidate projects for consideration. There are always more projects submitted than the region can afford to include in the LRTP. Deciding which projects to include requires a method of prioritizing candidate projects. Projects are scored based on the approved scoring methodology for projects. The number of projects included also depends on estimated project costs and the financial forecast for the region. Projects are selected for the preferred alternative based on their project score until the sum of project costs is just below revenues anticipated to be available. A portion of funds is also set aside for programs anticipated to reduce emissions and improve air quality in the Baltimore region. See Chapter 7 for additional details on these set-aside funds.

### Candidate Projects

The following jurisdictions and agencies submitted candidate projects during the call for projects, held from April through June of 2022:

- > City of Annapolis
- > Anne Arundel County
- > Baltimore City
- > Baltimore County
- > Carroll County
- > Harford County
- > Howard County
- > Queen Anne's County
- > MDOT Maryland Transit Administration

These jurisdictions and agencies, in consultation with MDOT MTA and MDOT SHA, submitted 98 projects for consideration for *Resilience 2050*. These included 36 transit and 62 roadway projects. Projects submitted for inclusion in *Resilience 2050* are major capital projects focused on expanding the transportation system. Examples of expansion projects include building new or widening existing roadways and expanding transit lines or building new transit stations. Eighty-five of the candidate projects fell into this expansion category. Thirteen of the projects submitted for *Resilience 2050* did not expand roadway or transit capacity and were classified as system preservation

projects. This is important as the financial forecast includes different categories of funding for expansion and system preservation projects.

## Project Scoring

Candidate projects are given both a policy and a technical score. The policy score is worth a maximum of 40 points. It is based on how high of a priority the project is for the submitting jurisdiction and if it has existing financial support. Technical scores are based on project consistency with criteria drawn directly from the regional goals and strategies. Table 6 lists the criteria along with the points devoted to each for transit and roadway projects.

*Resilience 2050* includes an enhanced focus on equity and environmental justice (EJ) in the project scoring methodology. Note that while equity is not a stand-alone criteria, a subset of the points for most criteria are devoted to the anticipated impacts of each project on EJ populations. EJ populations include low-income and minority persons in the Baltimore region. Embedding points for EJ populations within individual criteria allows us to consider the potential effects of candidate projects on EJ populations from multiple perspectives (safety, accessibility, environmental impacts, etc.). Criteria marked with an asterisk (\*) include points related to project impacts on EJ populations.

Both roadway and transit projects are scored for these criteria, though the methodology differs in some cases since the tools for evaluating roadway projects may not be appropriate

for transit projects and vice versa. For example, the types of features used to improve safety for transit riders on Light Rail and MARC may be different from the features used to improve safety along roadways for bicyclists, pedestrians and drivers. Transit projects are eligible for 5 more technical scoring points than roadway projects in an effort to respond to public comments recommending improving transit accessibility, reliability and frequency. This results in a slight advantage for transit projects in the technical scoring process.

**Table 6 - Technical Scoring Goals, Criteria, and Points**

Goal/Criteria	Technical Scoring Points: Transit Projects	Technical Scoring Points: Roadway Projects
Safety*	10	10
Accessibility – Complete Streets*	5	5
Accessibility – Access to Jobs*	10	5
Mobility	10	10
Environmental – Effects on ecologically sensitive lands and culturally significant resources*	5	5
Environmental – Potential for Greenhouse Gas Emissions Reductions	5	5
Security*	5	5
Economic Prosperity	5	5
<b>Total Technical Points</b>	<b>55</b>	<b>50</b>

\*includes points related to project impacts on EJ populations

Total scores were calculated by adding the policy and technical scores together for each project. Roadway projects were eligible for a maximum of 90 points (40 policy + 50 technical) and transit projects were eligible for a maximum of 95 points (40 policy + 55 technical). The total score was used to prioritize projects for inclusion in *Resilience 2050*. See Appendix B for a summary of the scoring methodology and the policy and technical scores for the projects included in *Resilience 2050*.

## Project Costs

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. See Appendix B for further details on cost estimation methodologies.

Project cost estimates were initially provided in current dollars, or today's dollars. However, the cost of constructing a project today is significantly less than the cost to construct that project in 10 or 20 years. An inflation adjustment is applied to projects selected for *Resilience 2050* due to the long-term planning horizon of the LRTP. This requires translating current dollar cost estimates into Year of

Expenditure (YOE) cost estimates using an inflation factor consistent with MDOT expectations and reasonable financial principles. In all cases, we applied a 2.5% annual inflation rate to account for capital cost escalation and to determine year of expenditure cost estimates as federally required. This rate is consistent with the rate that MDOT uses to determine system preservation funding needs through 2050.

## Financial Forecast

Not all funding in the financial forecast is considered to be available for candidate projects. Projects submitted for *Resilience 2050* represent federally funded major capital expenditures for expanding and preserving the transportation system. This chapter includes a forecast of federal, state and local funds anticipated to be available for surface transportation through 2050. However, projects submitted for *Resilience 2050* are federally funded projects anticipated to use the revenues identified in the state and federal forecast from MDOT. As a result, funds in the local financial forecast are not considered to be available for the expansion and system preservation projects submitted for *Resilience 2050*. This more conservative assumption helps to ensure that *Resilience 2050* remains fiscally constrained.

Fiscal constraint is demonstrated by showing that the YOE costs of projects in *Resilience 2050* do not exceed the state and federal revenues anticipated to be available for expansion and system preservation. The financial forecast includes a total of \$12.062 billion and \$20.883 billion in

anticipated state and federal revenues for expansion and system preservation, respectively, in the Baltimore region.

### Fiscal Constraint for Expansion Projects

Most candidate projects are expansion projects that compete for the \$12.062 billion in state and federal expansion funds anticipated to be available from 2028 to 2050. Table 7 shows a breakdown of forecast revenues versus total estimated YOE costs for expansion projects in *Resilience 2050*. Included in this breakdown are set-aside funds for small programs intended to improve air quality and for Locally Operated Transit Systems (LOTS). See Chapter 7 for further details on these programs. This breakdown demonstrates that the region expects to have sufficient funds to pay for expansion projects in *Resilience 2050* in the time periods in which the region expects these projects to be implemented.

**Table 7 - Fiscal Constraint for Expansion Projects (Millions of Dollars)**

	Category	2028-2039	2040-2050	2028-2050
Estimated Expansion YOE Costs	Projects	\$3,607	\$8,084	\$11,691
	Small Program Set-Asides	\$45	\$205	\$250
	LOTS	\$30		\$30
	<b>Total</b>	<b>\$3,682</b>	<b>\$8,289</b>	<b>\$11,971</b>
<b>Forecast Expansion Revenues</b>		<b>\$3,706</b>	<b>\$8,356</b>	<b>\$12,062</b>

### Fiscal Constraint for System Preservation Projects

*Resilience 2050* also details several large-scale system preservation projects along with an estimated breakdown of future system preservation expenditures by category provided by MDOT MTA and MDOT SHA. Including further details on anticipated system preservation needs in *Resilience 2050* reflects the increasing importance of system preservation at the national, state and regional level. As our transportation infrastructure ages, system preservation expenditures comprise an increasing share of transportation budgets. System preservation becomes even more important in light of a changing climate, as detailed in Chapter 3 and in our [Climate Change and Resilience](#) white paper.

The financial forecast for *Resilience 2050* includes estimated revenues of \$20.883 billion in state and federal system preservation funds available from 2028 to 2050. Table 8 contains a breakdown of estimated YOE system preservation expenditures versus forecast revenues by project type. This breakdown includes YOE costs for 13 system preservation projects submitted for inclusion in *Resilience 2050*. A full project list is available in Chapter 7.



**Table 8 - Fiscal Constraint for System Preservation Projects**  
(Millions of Dollars)

		2028-2039	2040-2050	2028-2050
Roadway Estimated System Preservation YOE Costs	Transportation Alternatives	\$127	\$155	\$282
	Environmental	\$453	\$552	\$1,005
	Congestion Management	\$457	\$557	\$1,014
	Bridge Replacement and Rehabilitation	\$1,525	\$1,444	\$2,969
	Resurfacing and Rehabilitation	\$1,758	\$2,139	\$3,897
	Safety and Spot	\$1,043	\$1,270	\$2,313
	Urban Reconstruction	\$429	\$72	\$501
	<b>Roadway Subtotal</b>	<b>\$5,792</b>	<b>\$6,189</b>	<b>\$11,981</b>
Transit Estimated System Preservation YOE Costs	Guideway	\$296	\$541	\$837
	Facilities	\$464	\$102	\$566
	Systems	\$291	\$501	\$792
	Stations	\$515	\$833	\$1,348
	Vehicles	\$1,804	\$3,555	\$5,359
	<b>Transit Subtotal</b>	<b>\$3,370</b>	<b>\$5,532</b>	<b>\$8,902</b>
<b>Total Estimated System Preservation YOE Costs</b>		<b>\$9,162</b>	<b>\$11,721</b>	<b>\$20,883</b>
<b>Forecast System Preservation Revenues</b>		<b>\$9,162</b>	<b>\$11,721</b>	<b>\$20,883</b>

## Endnotes

1 Definitions of Major Federal Funding Programs from Table 5

### FHWA - Highways

- NHPP: National Highway Performance Program
- STBG: Surface Transportation Block Grant Program
- HSIP: Highway Safety Improvement Program
- CMAQ: Congestion Mitigation and Air Quality Improvement Program
- NHFP: National Highway Freight Program

- CRP: Carbon Reduction Program
- PROTECT: Promoting Resilient Operations for Transformative, Efficient, and Cost-Saving Transportation

### FTA - Transit

- S5307: Section 5307 Urbanized Area Formula Grants
- S5337: Section 5337 State of Good Repair Grants
- S5339: Section 5339 Bus and Bus Facilities Grants