



Commonwealth of Massachusetts
Executive Office for
Administration and Finance

Debt Affordability Committee (DAC)

Fiscal 2025 Bond Cap Recommendation Final Report

December 15, 2023





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1. INTRODUCTION



Introduction | Committee Overview and Charge

	<i>Committee was created in 2012 to review existing Massachusetts debt and advise on the issuance of new debt.</i>
Statutory Charge	Capital Debt Affordability Committee (DAC) was established for the purposes of reviewing the amount and condition of the state’s tax-supported debt, as well as the debt of certain state authorities. DAC was created by Chapter 165 of the Acts of 2012, and codified in M.G.L. Ch. 29, Sec. 60B.
Responsibilities	DAC is responsible for providing an estimate of the total amount of new general obligation debt that can prudently be issued by Massachusetts for the next fiscal year, considering certain criteria. • The estimate is reported by DAC to the Governor and Legislature on or before December 15. • Estimates are advisory and not binding on the Governor or the Legislature.
Committee Membership	Committee consists of seven voting members, including the Secretary of Administration and Finance (who chairs), the State Treasurer, the Comptroller, the Secretary of Transportation, one appointee of the Governor and two appointees of the State Treasurer. Committee also includes nonvoting members, including the House and Senate chairs and the ranking minority members of the Committees on Bonding, Capital Expenditures and State Assets, and the Committees on Ways and Means.



Debt Affordability Committee | Statutory & Administrative Debt Limits

To inform its recommendation, the DAC considers statutory debt limits, policies adopted by A&F and the Committee, as well as other considerations.

Massachusetts has a legally binding statutory outstanding Debt Limit

Statutory Debt Limit

The amount of outstanding principal of Commonwealth “direct” debt is capped at **105%** of the previous fiscal year’s limit

- FY21 Limit: \$26.5 billion
- FY22 Limit: \$27.8 billion
- FY23 Limit: \$29.2 billion
- FY24 Limit: \$30.7 billion
- FY25 Limit: \$32.2 billion

DAC has traditionally followed additional policies adopted by A&F and the Committee:

Administrative Policies

Annual Borrowing Limit: Annual Debt Service Payments < 8% of budgeted revenues

- FY21 Limit: \$4.4 billion
- FY22 Limit: \$4.8 billion
- FY23 Limit: \$4.9 billion
- FY24 Limit: \$4.9 billion

Growth Limit: Annual growth in the bond cap ≤ **\$125 million**.

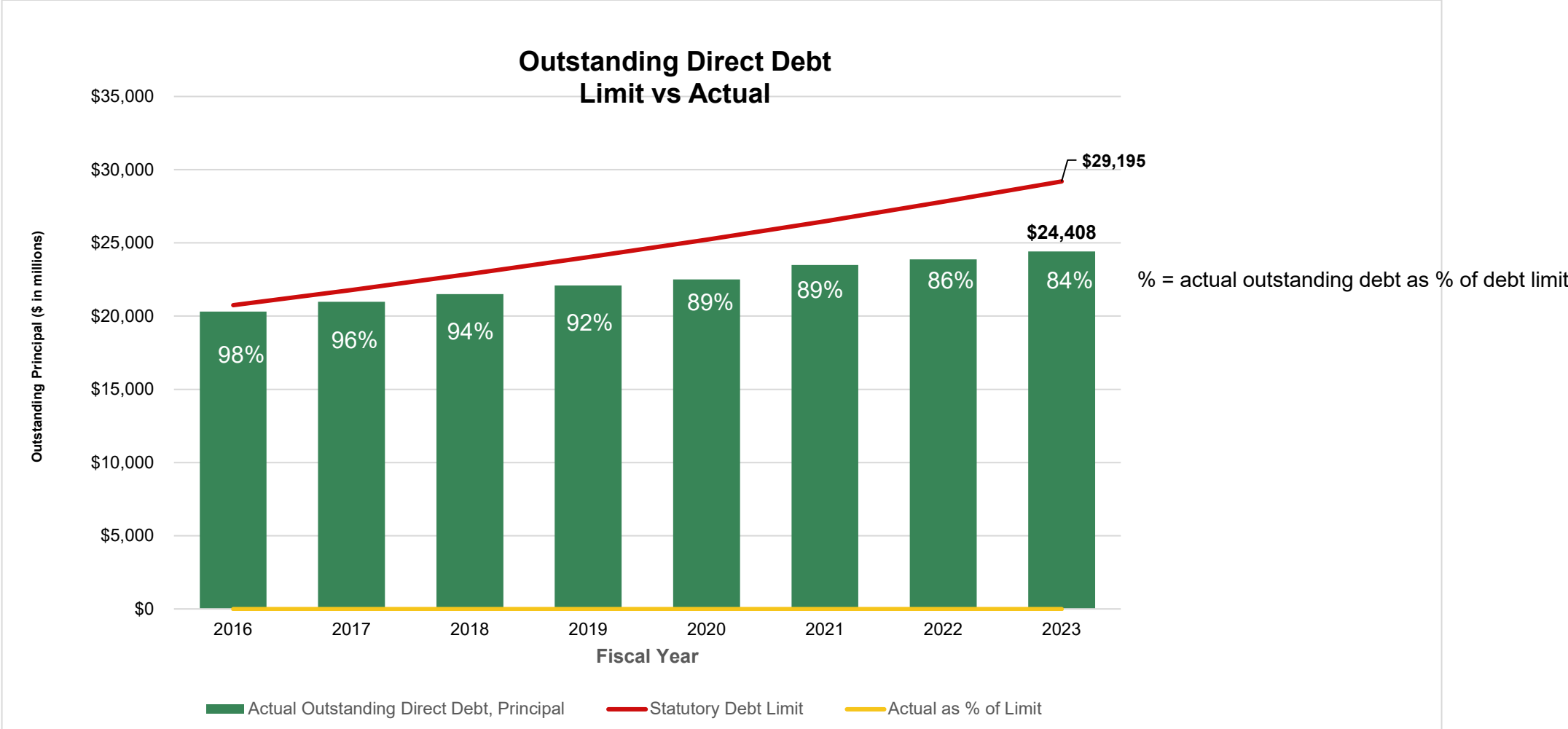
Other DAC Considerations

- Capital Plan Spending
- Credit Ratings
- Debt ratio analysis
- Comparison to other states
- Type of debt outstanding (fixed, variable, hedged debt)
- Other Commonwealth tax supported debt
- Financial and construction market conditions



Debt Affordability Committee | Historical Debt Limit vs. Actual Debt

Buffer between statutory debt limit and actual debt has increased in recent years, although that buffer is expected to decrease over the next decade.





Debt Affordability Committee | DAC Recommendation Work Plan

Meeting	Discussion Topics
Oct 27	• <i>DAC Overview</i> • <i>MA Debt Portfolio Overview</i> • <i>Capital Investment Plan (CIP) Update</i>
Nov 3	• <i>Credit Factors Review</i> • <i>Debt Affordability Policy Review</i>
Nov 20	• <i>Revenue Update</i> • <i>Debt Affordability Modeling Input Assumptions</i>
Dec 1 (1pm)	• <i>Debt Affordability Analysis & Discussion</i>
Dec 8 (1pm)	• Debt Affordability Analysis & Discussion (cont.)
Dec 13 (11am)	• Debt Affordability Analysis & Discussion (cont.)
Dec 15 (1pm)	• Debt Affordability Analysis & Discussion (cont.) • FY25 Recommendation Approval



Debt Affordability Committee | Key Findings

Construction Escalation

- The Commonwealth has experienced significant construction cost escalation over the past 24 months, with recent estimates ranging from 18 – 20% for public construction projects.
- Agencies and institutions across the state have had to update their spending and capital plans to adjust for the historic increases.

CIP Growth

- Annual growth has been \$125 M or less since DAC creation, on average bond cap has grown ~3.5% annually in recent years.
- Both tax revenue growth and construction escalation have outpaced CIP growth.

Credit Factors

- Rating agencies consistently give Commonwealth high marks across all credit factors, except existing long-term liabilities.

Outstanding Direct Debt

- Buffer between statutory debt limit and actual debt has increased in recent years, although the gap is projected to begin closing going forward.
- FY23: \$24.4 B (84% of debt limit)
- FY24 (projected): \$26.4 B (86%)

Revenues

- Average annual revenue growth over past decade: 6.4%
- Annual revenue growth has outpaced annual debt service growth.

Annual Debt Service

- Debt service as % of revenues has remained well below the 8% policy target, representing 4.0 % of total expenditures in FY 2023.
- Decrease in debt service is offset by increases in pension and OPEB payments. As debt service as a % of expenditures decreased, pension funding as a % of expenditures increased. Combined, the cost of the management of these long-term liabilities has remained relatively flat.

Interest Rates

- Economic forecasts show rates peaking in 2024 and remaining relatively flat over the next 5 years, with some talk of decreases..



2. FY 2025 Advisory Bond Cap Recommendation



Debt Affordability Committee | DAC Fiscal Year 2025 Recommendation

Fiscal Year 2025 DAC recommended bond cap: \$3.117 billion.

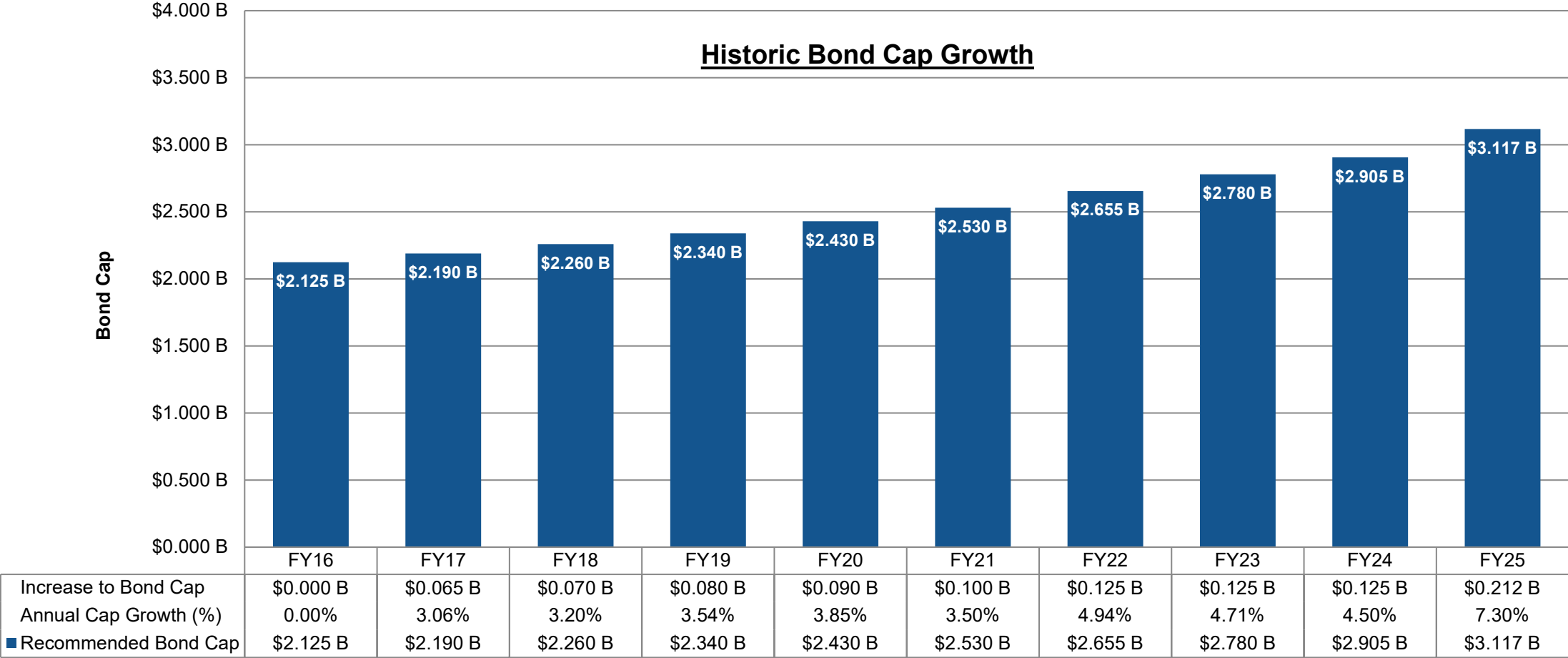
Voted December 15, 2023:

To recommend to the Governor a bond cap increase of \$212.2 million for fiscal year 2025, resulting in a recommended bond cap amount of \$3.117 billion for fiscal year 2025, and to make the modeling and slide deck report publicly available online.



Debt Affordability Committee | DAC Fiscal Year (FY) 2025 Recommendation

FY 2025 Bond Cap Recommendation: \$3.117 B – which includes a \$125 million bond cap increase, plus an \$87.2 million adjustment to account for significantly higher than anticipated construction escalation.





Debt Affordability Modeling | Model Overview

DAC uses a model it developed to project debt service payments under various scenarios and assess overall affordability. Below is an overview of key model inputs.

		Model Input	Description
Held Constant Across Scenarios	[	Debt Service on Existing Debt	Projected debt service schedules for existing debt; based on DBC reports
		Contract assistance payments	Projected payment schedules for existing contract assistance agreements
		Issuance maturity terms for new debt	- Assumed bond maturity distribution across future issuances - Maturity Terms: 1 -10 yrs; 11 – 20 yrs; & 21 – 30yrs)
		Future Bond Cap Growth	Assumed rate at which the bond cap will grow annually
Adjusted Across Scenarios	[	Revenue Growth	Assumed rate of growth for tax revenue
		Interest rates for new debt	Assumed interest rates for future debt issuances by maturity term
		FY25 Projected Bond Cap	Projected new direct debt issued in FY25



Debt Affordability Committee | FY 2025 Recommendation Modeling

A summary of key affordability modeling outcomes for the FY 2025 recommendation are displayed below and on the following slides.

FY25 Recommendation	
FY 2025 Bond Cap Increase (\$)	\$125.0 M
Construction Escalation Adjustment (\$) <i>see slides 18- 21 for info on need for and calculation of the adjustment.</i>	\$87.2 M
FY 2025 Recommended Bond Cap	\$3.117 B

Model Input	Scenario A	Scenario B	Scenario C	Stress Test
Assume Interest Rates	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant	3.63% - 4.78% Based on Moody's forecast	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant
Revenue Growth	4.5% Average 10-yr tax CAGR	3.2% Lowest 20-yr tax CAGR	3.2% Lowest 20-yr tax CAGR	1.6% Lowest 10-yr tax CAGR
Future Bond Cap Growth	+\$125 M/yr			
Debt Service Targets	Scenario A Target Met?	Scenario B Target Met?	Scenario C Target Met?	Stress Test Target Met?
10-Year Outlook Annual Debt Service < 8% of Revenues	✓	✓	✓	✓
10-Year Outlook Annual Debt Service < 7% of Revenues	✓	✓	✓	✓
30-Year Outlook Annual Debt Service < 8% of Revenues	✓	✓	✓	X (2038 and on)

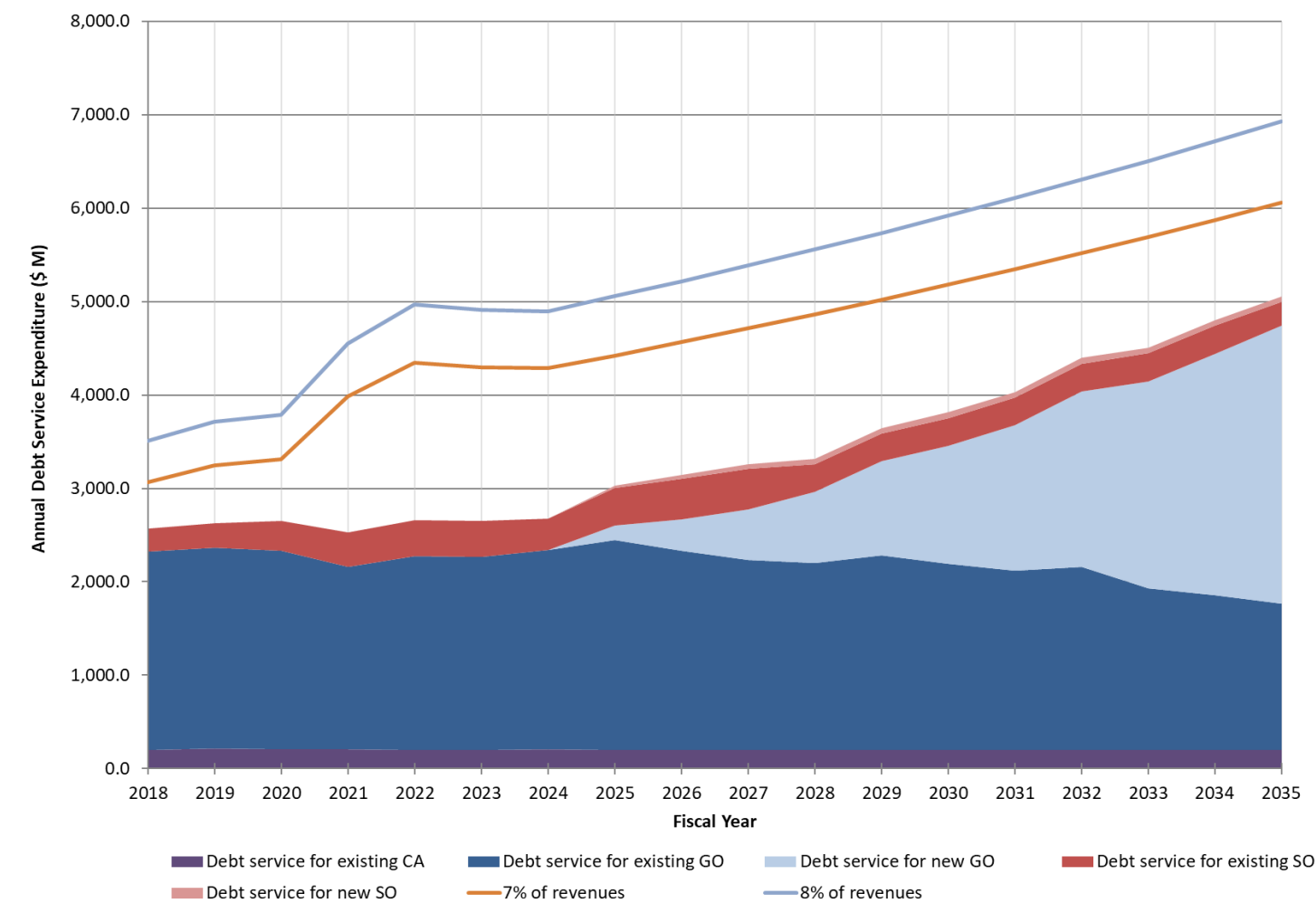


Debt Affordability Committee | Scenario C Modeling Charts

FY 2025 Bond Cap Recommendation: \$3.117 B

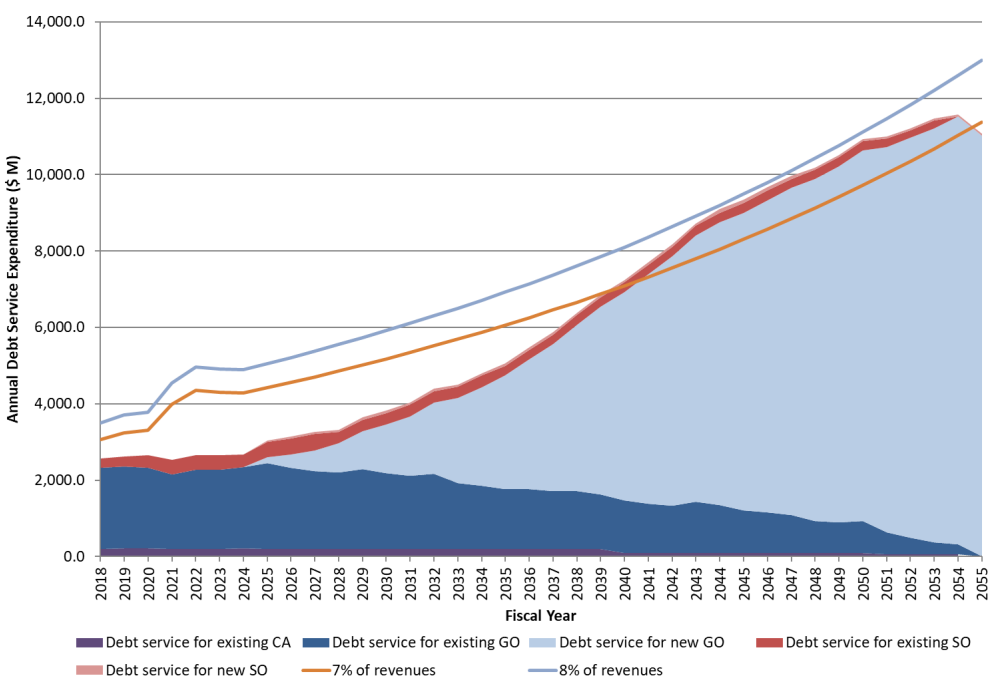
Modeling Scenario C: high interest rates, moderate revenue growth (3.2%), bond cap grows at +\$125M/yr

Take Away: Debt service stays well below 7% of revenues over the next decade and 8% of revenues over next 30 years



Scenario B Modeling Assumptions

- Interest rates based on Moody’s forecast escalated by +40bps/yr over five years: 4.03% - 6.78%
- Annual Revenue Growth based on Avg 10-CAGR: 3.2%
- Bond cap continues to increase by +\$125 M annually through 2055





3. Additional Modeling

To inform its recommendation, the Committee as in past years, conducted extensive modeling on a number of different bond cap growth options. A comparative summary of the outcomes of that additional modeling can be found on the following slides.



Debt Affordability Committee | Modeling Outcomes Overview

Modeling outcomes assuming FY 2025 Bond cap growth at : +\$100 M vs +\$125 M vs +\$175 M vs +200 M vs **+\$212 M**

Recommendation

Model Input	Scenario A	Scenario B	Scenario C	Stress Test
Assume Interest Rates	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant	3.63% - 4.78% Based on Moody's forecast	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant	4.03% - 6.78% Increased Moody's forecast by 40 bps annually over the next 5 years, then held constant
Revenue Growth	4.5% Average 10-yr tax CAGR	3.2% Lowest 20-yr tax CAGR	3.2% Lowest 20-yr tax CAGR	1.6% Lowest 10-yr tax CAGR
Future Bond Cap Growth	+\$125 M/yr			
Debt Service Targets	Scenario A Target Met?	Scenario B Target Met?	Scenario C Target Met?	Stress Test Target Met?
10-Year Outlook Annual Debt Service < 8% of Revenues	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓
10-Year Outlook Annual Debt Service < 7% of Revenues	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓
30-Year Outlook Annual Debt Service < 8% of Revenues	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: ✓ \$125 M: ✓ \$175 M: ✓ \$200 M: ✓ \$212 M: ✓	\$100 M: X (2038 and on) \$125 M: X (2038 and on) \$175 M: X (2038 and on) \$200 M: X (2038 and on) \$212 M: X (2038 and on)



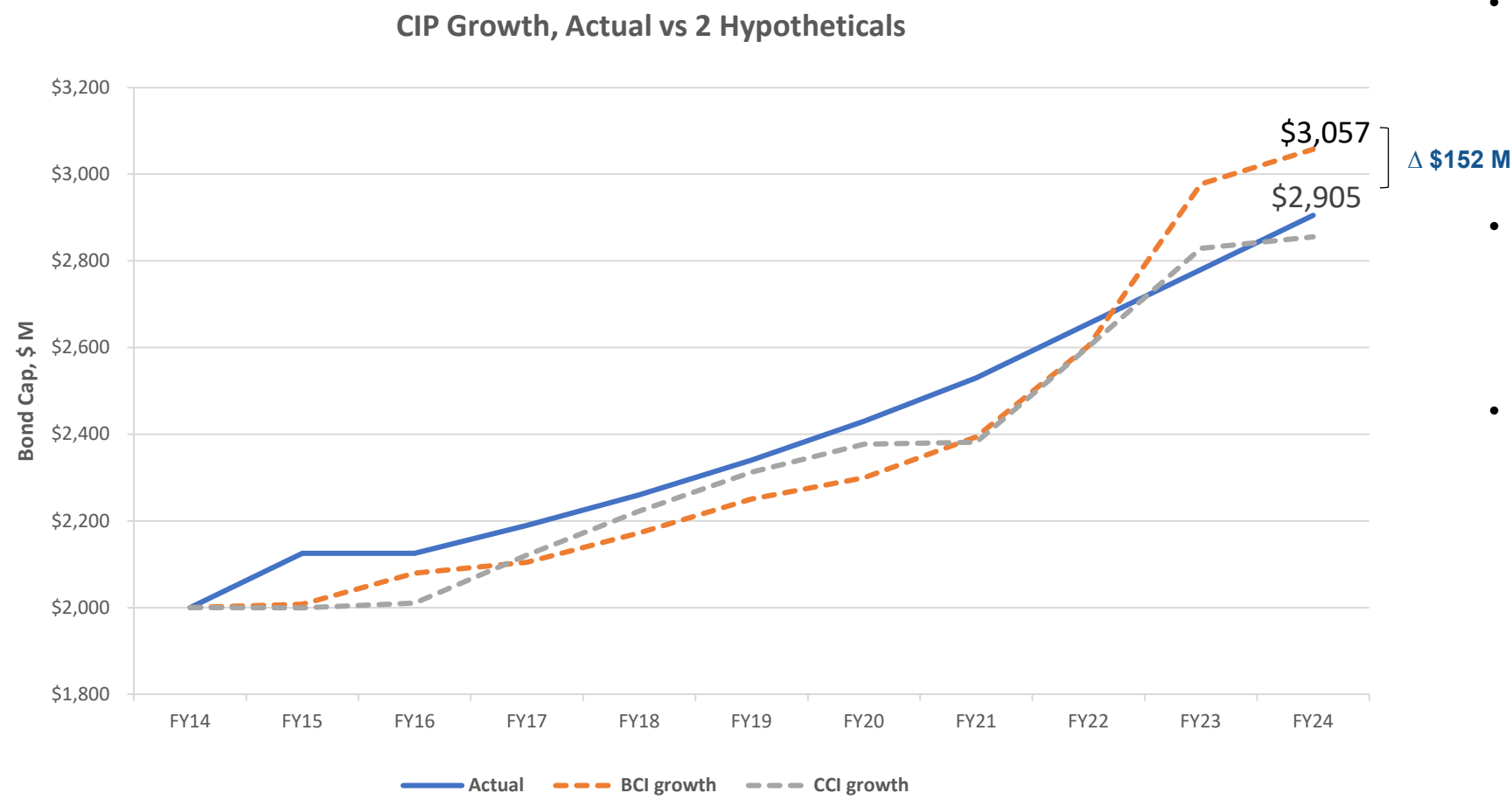
4. Construction Escalation Adjustment



Debt Affordability Committee | Key Trends

Construction escalation has outpaced CIP growth in recent years

- Had CIP been indexed to **BCI** increases since FY14, it would have been larger in FY24 than it **actually** was; **CCI** is slightly lower



- BCI & CCI likely to provide a closer proxy for capital investment cost increases than Consumer Price Index–Urban (CPI-U)
- Building Cost Index (BCI): average construction escalation w/ skilled labor
- Construction Cost Index (CCI): average construction escalation w/ common labor



Debt Affordability Committee | Construction Escalation Review

- National construction industry, in general, has experienced high rates of cost escalation in recent years.
- Engineering News Record (ENR) construction cost indices – which maintains construction cost indices based on average price increases across 20 US cities – show annual construction escalation over the past 3 years ranging from 3% - 14%.
- Construction escalation in MA has been particularly high, with agencies reporting construction cost increases coming in higher than 3rd party cost estimators and national averages.
- Throughout the Commonwealth, agencies (e.g. DCAMM, MSBA, Clean Water Trust, etc...) and institutions (e.g. Northeastern University) have had to adjust their capital plans to accommodate extreme escalation.
- In response, DCAMM commissioned a report to review construction escalation for MA and public projects, in particular, which was released in the Spring 2023.
- DCAMM report show MA has experienced unprecedented escalation over the past 2 years driving by a numbers of factors. Key takeaways from that report include:
 - Costs have increased for public projects in Massachusetts **18 - 20%** in the last 24 months. This is slightly higher than national increases.
 - Cost increases have been higher for smaller and less attractive projects (as much as 25% and perhaps higher).
 - Very large increases in multiple construction commodities have been the most significant driver of costs.
 - Unprecedented raw commodity increases and severe product shortages have led to substantial price increases for manufactured products, such as: emergency generators, switchgear, roofing, drywall, steel products.
 - User requests and building/energy code changes have added to increased costs especially for new construction.
 - Demand for construction contractors has been high – many projects competing for small subcontractor pool. Market conditions have added 5-10% to construction costs.



Debt Affordability Committee | Bond Cap Adjustment

The DAC approved an adjustment of \$87.2 million to the fiscal year bond cap base to account for the unprecedentedly high levels of construction escalation public projects in Massachusetts have experienced over the past two years.

FY24 Bond Cap: \$2.905 B

5 Yr Construction Escalation

YEAR	ENR Building Cost Index	Annualized Building Cost Increase
2023	10109.61	3%
2022	9845.05	14%
2021	8609.48	9%
2020	7915.45	4%
2019	7604.43	2%

Source: Engineering News Record (ENR) Cost Indices

Bond Cap Inflation Adjustment Factor: 3% based on 2023 construction escalation

Adjusted Bond Cap Base: $\$2.905\text{ B} \times .03 = \87.2 M

Total Bond Cap Increase: $\$87.2\text{ M} + \$125\text{ M} = \$212.2\text{ M}$ (+7.4%)

- assumes policy cap of +\$125 M is affordable, see modeling on following slides for supporting analysis

Fiscal Year 2025 Bond Cap: $\$2.905\text{ B} + \$212.2\text{M} = \$3.117\text{ B}$

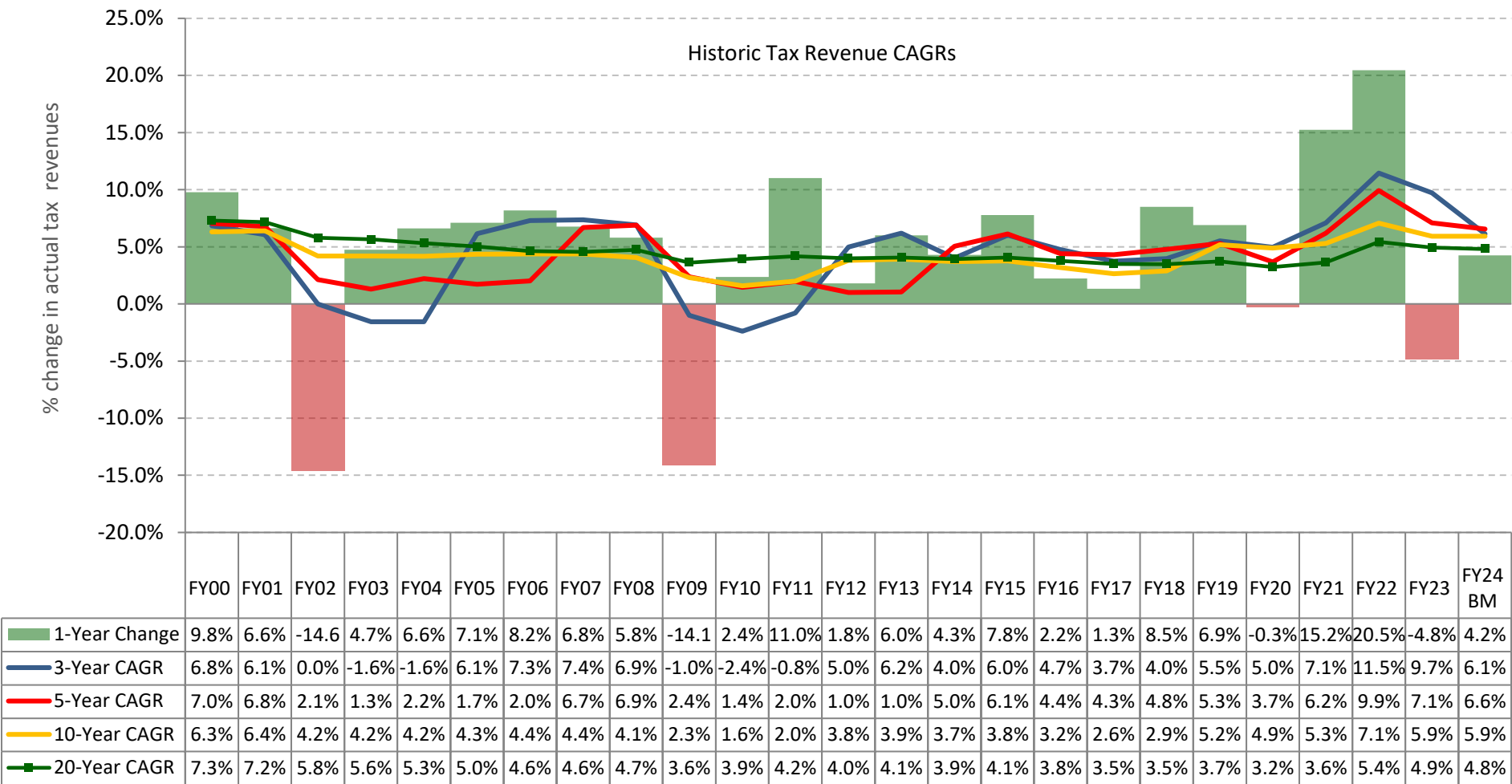


5. Revenue Trends



Debt Affordability Modeling | Long Term Tax Revenue CAGR

The CAGR (Compound Annual Growth Rate) is the geometric average annual growth over a given period. It is generally accepted as an accurate way to compare growth rates over different timelines and has been historically used by the DAC for revenue projecting.



FY23 Tax Revenue CAGR

- 1-yr change:- 4.8%
- 3-yr: 9.7%
- 5-Yr: 7.1%
- 10-Yr: 5.9%
- 20-Yr: 4.9%

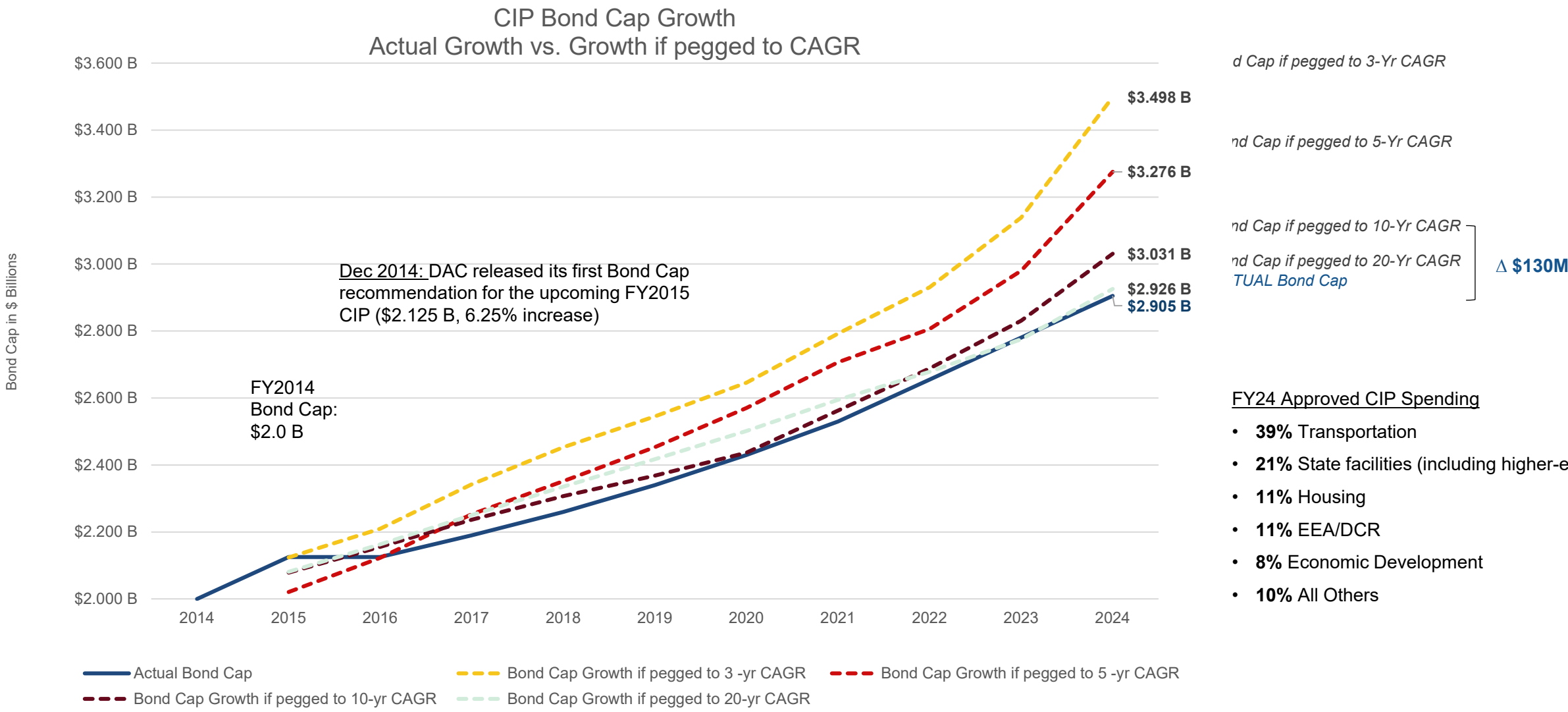
2000 – 2023 Lowest CAGRs

- 10-Year: 1.6% (FY10)
- 20-Year: 3.2% (FY20)

For modeling purposes recommend maintaining DAC’s conservative past approach to use the 10 & 20-yr CAGR lows for assumed future revenue growth.



Debt Affordability Modeling | Tax Revenue Growth vs CIP Bond Cap Recap



Debt Affordability Modeling | FY 2023 Tax Revenue Performance



June 2023 Tax Collections Summary (in \$ millions)

Preliminary as of August 11, 2023

	Month of June					FY23 YTD as of June				
	06/23 Actual Collections	06/23 v. 06/22 \$ Fav/(Unfav)	06/23 v. 06/22 % Fav/(Unfav)	06/23 Actual vs Benchmark \$ Fav/(Unfav)	06/23 Actual vs Benchmark % Fav/(Unfav)	06/23 YTD Actual Collections	06/23 YTD v. 06/22 YTD \$ Fav/(Unfav)	06/23 YTD v. 06/22 YTD % Fav/(Unfav)	06/23 YTD Actual vs Benchmark \$ Fav/(Unfav)	06/23 YTD Actual vs Benchmark % Fav/(Unfav)
Income										
Income Withholding	1,377	140	+11.3%	54	+4.1%	16,654	739	+4.6%	26	+0.2%
Income Est. Payments	699	(108)	-13.3%	244	+53.5%	3,759	(829)	-18.1%	345	+10.1%
Income Returns/Bills	109	(6)	-5.6%	15	+15.7%	3,924	(1,800)	-31.4%	(1,447)	-26.9%
Income Refunds Net (outflow)	(78)	27	+25.6%	38	+32.9%	(2,558)	(667)	-35.3%	3	+0.1%
Subtotal Non-withheld Income	731	(87)	-10.7%	297	+68.3%	5,125	(3,297)	-39.1%	(1,099)	-17.7%
Subtotal Income	2,108	53	+2.6%	350	+19.9%	21,779	(2,557)	-10.5%	(1,073)	-4.7%
Sales & Use										
Sales - Regular	592	36	+6.5%	31	+5.6%	6,708	391	+6.2%	52	+0.8%
Sales - Meals	137	5	+3.8%	5	+3.9%	1,495	160	+12.0%	46	+3.2%
Sales - Motor Vehicles	130	7	+5.3%	14	+11.7%	1,198	85	+7.6%	34	+3.0%
Subtotal Sales & Use	859	48	+5.9%	50	+6.2%	9,401	635	+7.2%	133	+1.4%
Corporate & Business - Total	895	(111)	-11.0%	(33)	-3.5%	5,062	(7)	-0.1%	216	+4.5%
All Other	276	5	+1.7%	26	+10.6%	2,922	(12)	-0.4%	120	+4.3%
Total Tax Collections	4,137	(6)	-0.1%	394	+10.5%	39,164	(1,941)	-4.7%	(605)	-1.5%

Note: The figures above exclude Tax-Related Settlements & Judgments exceeding \$10 million each. The total for these was \$0.00 million in June 2023 and \$43.04 million in FY23 year-to-date.



Debt Affordability Modeling | FY 2023 Tax Revenue Performance

- **Totaled \$39.164 billion^(*):**
 - down \$1.941 billion, or 4.7% over FY22
 - \$605 million, or 1.5% below benchmark
- **Notable outcomes:**
 - a decrease in capital gains tax collections relative to FY22's unprecedented collections,
 - an increase in pass-through entity (PTE) members applying credits to reduce their tax payments, (partially offset by)
 - increases in withholding and sales and use tax, which were driven by strong labor market conditions and strength in retail sales
- **Major tax categories:**
 - non-withheld income tax, \$1.099B below benchmark
 - withholding, \$26M above benchmark
 - corporate tax, \$216M above benchmark
 - sales tax, \$133M above benchmark
 - all other, \$120M above benchmark
- **Capital gains:**
 - totaled \$2.237B^(**), \$834M above the FY23 threshold of \$1.404B
 - Excess amount was transferred to Commonwealth Stabilization Fund, State Retiree Benefits trust Fund, and Commonwealth Pension Liability Fund

(*) Excluding "tax-related" settlements of \$43.04 million

(**) This total does not include an estimated \$104 million in capital gains tax revenue collected from the 4% income surtax.

Debt Affordability Modeling | FY 2024 Tax Revenue Performance



October 2023 Tax Collections Summary (in \$ millions)

Preliminary as of November 3, 2023

	Month of October					FY24 YTD as of October				
	10/23 Actual Collections	10/23 v. 10/22 \$ Fav/(Unfav)	10/23 v. 10/22 % Fav/(Unfav)	10/23 Actual vs Benchmark \$ Fav/(Unfav)	10/23 Actual vs Benchmark % Fav/(Unfav)	10/23 YTD Actual Collections	10/23 YTD v. 10/22 YTD \$ Fav/(Unfav)	10/23 YTD v. 10/22 YTD % Fav/(Unfav)	10/23 YTD Actual vs Benchmark \$ Fav/(Unfav)	10/23 YTD Actual vs Benchmark % Fav/(Unfav)
Income										
Income Withholding	1,326	(36)	-2.7%	(133)	-9.1%	5,398	221	+4.3%	(79)	-1.4%
Income Est. Payments	78	1	+1.9%	(5)	-5.6%	1,032	(24)	-2.3%	(28)	-2.7%
Income Returns/Bills	233	(66)	-22.2%	(105)	-31.0%	530	(98)	-15.6%	(137)	-20.6%
Income Refunds Net (outflow)	(182)	326	+64.2%	168	+48.0%	(357)	349	+49.4%	160	+30.9%
Subtotal Non-withheld Income	129	262	+197.0%	59	+84.0%	1,206	226	+23.1%	(6)	-0.5%
Subtotal Income	1,455	225	+18.3%	(74)	-4.8%	6,604	447	+7.3%	(85)	-1.3%
Sales & Use										
Sales - Regular	573	(9)	-1.5%	(50)	-8.0%	2,171	(58)	-2.6%	(97)	-4.3%
Sales - Meals	155	24	+18.6%	5	+3.4%	563	34	+6.5%	5	+0.9%
Sales - Motor Vehicles	108	12	+11.9%	2	+1.9%	404	19	+4.9%	(1)	-0.3%
Subtotal Sales & Use	836	27	+3.3%	(43)	-4.9%	3,138	(5)	-0.2%	(93)	-2.9%
Corporate & Business - Total	59	(9)	-12.5%	(17)	-21.8%	1,169	(71)	-5.7%	(90)	-7.1%
All Other	208	(48)	-18.6%	(52)	-20.1%	932	(95)	-9.3%	(87)	-8.6%
Total Tax Collections	2,558	196	+8.3%	(186)	-6.8%	11,843	276	+2.4%	(355)	-2.9%

Debt Affordability Modeling | FY 2024 Recent Tax Revenue Performance



- **Negative performances versus benchmark in:**
 - withholding tax
 - non-withholding income tax
 - sales tax, corporate & business tax, and
 - “All Other” taxes

- **Year-to-date total \$11.843 billion:**
 - \$276 million, or 2.4% more than the same period in fiscal 2023
 - \$355 million, or 2.9% below year-to date benchmark



Year to date notable trends:

- Withholding: \$5.398B, +\$221M, +4.3% actual, and \$79M or 1.4% below benchmark
- Non-withholding: \$1.206B, +\$226M or +23.1% actual, and \$6M or -0.5% below benchmark
- Sales & use tax collections: \$3.138B, -\$5M or -0.2% actual, and \$93M or 2.9% below benchmark
- Corporate and business tax collections: \$1.169B, -\$71M or -5.7% actual, and \$90M or 7.1% below benchmark
- All Other taxes: \$932M, -\$95M or -9.3% actual, and \$87M or 8.6% below benchmark.



Debt Affordability Modeling | FY 2024 Revenue Outlook

Third party vendor general economic outlook is fairly positive.

	Optimistic				Baseline				Pessimistic (Moody's Sc #3)			
	Moody's		IHS		Moody's		IHS		Moody's		IHS	
	FY24	FY25	FY24	FY25	FY24	FY25	FY24	FY25	FY24	FY25	FY24	FY25
S&P 500	5.3%	14.5%	3.2%	-2.1%	4.0%	8.3%	2.7%	-7.4%	0.3%	-27.8%	2.3%	-12.0%
Real Gross State Product	3.2%	2.7%	3.4%	1.8%	2.1%	1.2%	2.9%	1.2%	0.8%	-0.7%	2.5%	0.7%
Wages & Salaries	6.2%	5.2%	7.0%	5.7%	5.8%	4.4%	6.4%	4.9%	4.0%	1.6%	5.7%	3.1%
Personal Income	4.7%	4.5%	5.7%	6.3%	4.6%	3.8%	5.1%	5.5%	3.0%	0.9%	4.9%	4.3%
Disposable Personal Income	5.9%	4.3%	7.1%	6.1%	5.8%	3.8%	6.6%	5.6%	4.6%	1.6%	6.4%	4.7%
Employment	1.8%	0.7%	2.2%	0.2%	1.5%	0.2%	1.9%	0.1%	-0.8%	-2.0%	1.2%	-1.2%
Retail Sales	4.3%	5.5%	2.6%	1.7%	2.1%	3.1%	2.2%	0.7%	-2.6%	-1.5%	1.8%	0.0%
Unemployment Rate	2.5%	2.9%	2.6%	3.1%	2.9%	3.5%	2.8%	3.3%	4.2%	5.8%	3.3%	4.6%
New Vehicle Registration	6.6%	9.8%	6.6%	9.8%	5.5%	5.6%	5.5%	5.6%	1.0%	3.6%	1.0%	3.6%

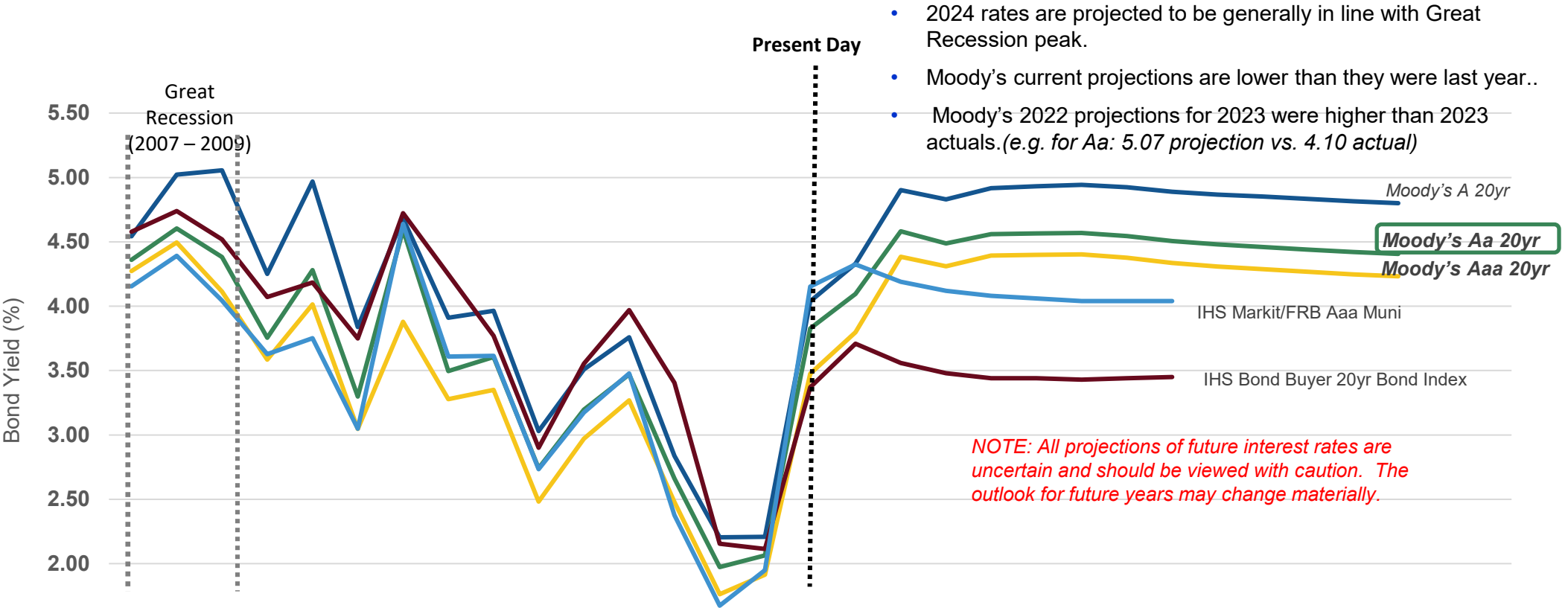


6. Interest Rate Trends



Debt Affordability Modeling | Interest Rate Baseline Assumptions

For modeling future debt issuances, recommend using Moody's projections for 20yr Aa muni as baseline. Represents conservative approach given MA actuals typically fall between Aaa and Aa.



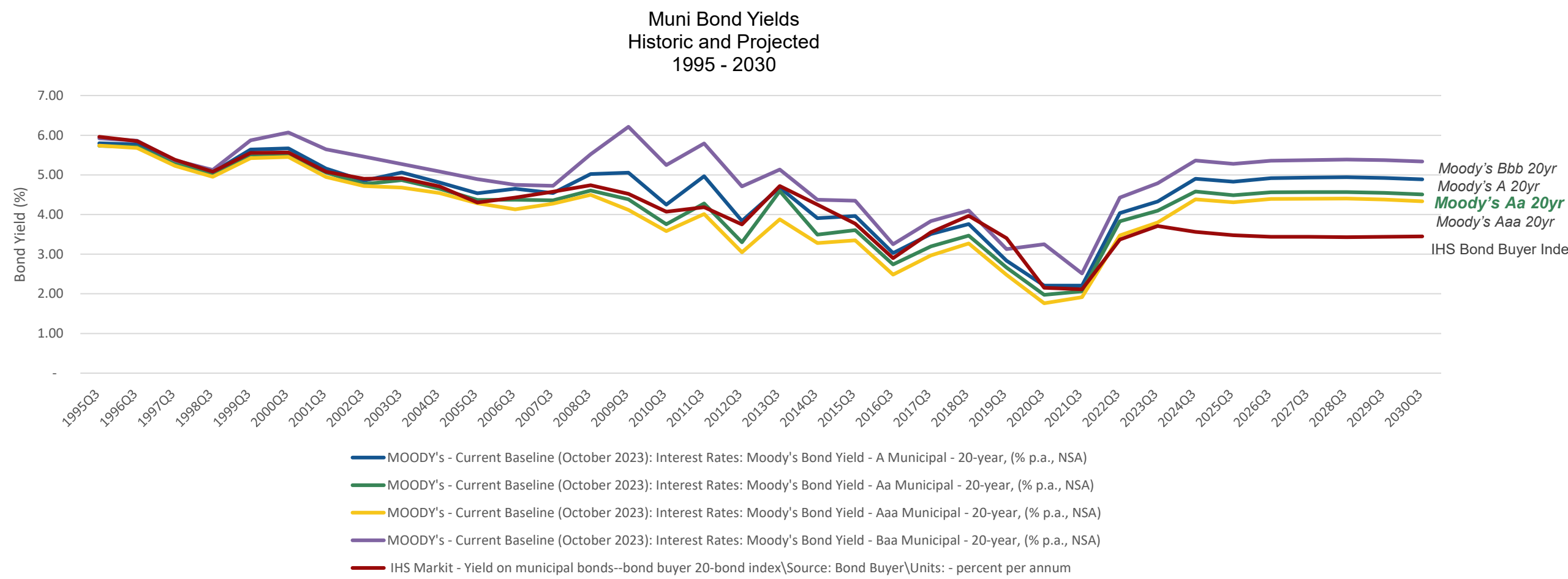
- 2024 rates are projected to be generally in line with Great Recession peak.
- Moody's current projections are lower than they were last year..
- Moody's 2022 projections for 2023 were higher than 2023 actuals.(e.g. for Aa: 5.07 projection vs. 4.10 actual)

NOTE: All projections of future interest rates are uncertain and should be viewed with caution. The outlook for future years may change materially.

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035		
Moody's A 20yr Muni	4.54	5.02	5.05	4.25	4.97	3.84	4.68	3.91	3.96	3.03	3.51	3.76	2.84	2.21	2.21	4.04	4.33	4.90	4.83	4.92	4.93	4.94	4.92	4.89	4.87	4.85	4.83	4.81	4.80		
Moody's Aa 20yr Muni	4.36	4.60	4.38	3.76	4.28	3.30	4.59	3.50	3.61	2.74	3.20	3.47	2.66	1.97	2.06	3.83	4.10	4.58	4.49	4.56	4.56	4.57	4.54	4.51	4.48	4.46	4.44	4.42	4.41		
Moody's Aaa 20yr Muni	4.27	4.50	4.11	3.58	4.01	3.05	3.88	3.28	3.35	2.48	2.97	3.27	2.48	1.76	1.91	3.48	3.80	4.38	4.31	4.39	4.40	4.40	4.38	4.34	4.31	4.29	4.27	4.25	4.23		
IHS Markit/Bond Buyer 20yr Index	4.58	4.74	4.52	4.07	4.18	3.75	4.72	4.25	3.77	2.90	3.55	3.97	3.41	2.15	2.11	3.37	3.71	3.56	3.48	3.44	3.44	3.43	3.44	3.45							
IHS Aaa Muni Index	4.15	4.39	4.04	3.63	3.75	3.05	4.64	3.61	3.62	2.73	3.17	3.48	2.38	1.67	1.95	4.15	4.32	4.19	4.12	4.08	4.06	4.04	4.04	4.04							



Debt Affordability Modeling | Historic Yield Curve (Baa – Aaa) for reference





Debt Affordability Modeling | FMS Current Yield Spreads

AAA Rated Muni Bonds

Issue	Maturity	Current Rate (11/13)	Last Week's Rate	2022 Last Year	2021
National	10 Year	3.35	3.60	3.40	1.20
National	20 Year	4.10	4.35	3.80	1.50
National	30 Year	4.30	4.55	4.00	1.70

AA Rated Muni Bonds

Issue	Maturity	Current Rate (11/13)	Last Week's Rate	2022 Last Year	2021
National	10 Year	3.45	3.70	3.60	1.30
National	20 Year	4.40	4.65	4.20	1.70
National	30 Year	4.60	4.85	4.40	1.90

A Rated Muni Bonds

Issue	Maturity	Current Rate (11/13)	Last Week's Rate	2022 Last Year	2021
National	10 Year	3.65	3.90	3.75	1.30
National	20 Year	4.65	4.90	4.40	1.70
National	30 Year	4.85	5.10	4.60	1.90

The tables and charts provide yield rates for AAA, AA, and A rated municipal bonds in 10, 20 and 30 year maturity ranges. Rates reflect the approximate yield to maturity that an investor can earn in today's tax-free bond market.

Historically MA GO bonds trade in the range between Aaa and Aa.

- Current MA GO Ratings: Aa1/AA+/AA+

Key "Snapshot" Observations

- No major swings in yields; 2023 relatively close to 2022.
- Short end of current yield curve is lower (5 – 15 bps) relative to 2022
- Mid and long end of current curve is slightly higher (20 – 35 bps)

For modeling purposes applied current spreads to Moody's 20-yr projections to

Baseline Rates – Moderate scenario based on Moody's Current Projections, which holds rates relatively flat

	2024	2025	2026	2027	2028	2029
MA 10 yr baseline	3.63	3.63	3.63	3.63	3.63	3.63
MA 20 yr baseline	4.58	4.58	4.58	4.58	4.58	4.58
MA 30 yr baseline	4.78	4.78	4.78	4.78	4.78	4.78

Conservative Rates - baseline escalated by 40 bps annually

	2024	2025	2026	2027	2028	2029
MA 10 yr baseline	3.63	4.03	4.43	4.83	5.23	5.63
MA 20 yr baseline	4.58	4.98	5.38	5.78	6.18	6.58
MA 30 yr baseline	4.78	5.08	5.48	5.88	6.28	6.68



7. Commonwealth Debt



Debt Affordability Committee | Current Outstanding Debt

DAC considers all outstanding debt & contingent liabilities in its affordability analysis.

Commonwealth Debt	FY23 Outstanding Debt* (\$ in millions)
General Obligation (GO)	\$25,268.7
Special Obligation (SO)	3,862.5
Federal Grant Anticipation Notes (GANS)	<u>389.6</u>
Total	\$29.520.9

** Unaudited, subject to change*

Outstanding GO Debt

- Fixed Rate Debt: \$24.3B (96%)
- Variable Rate Debt: \$967.3M (4%)

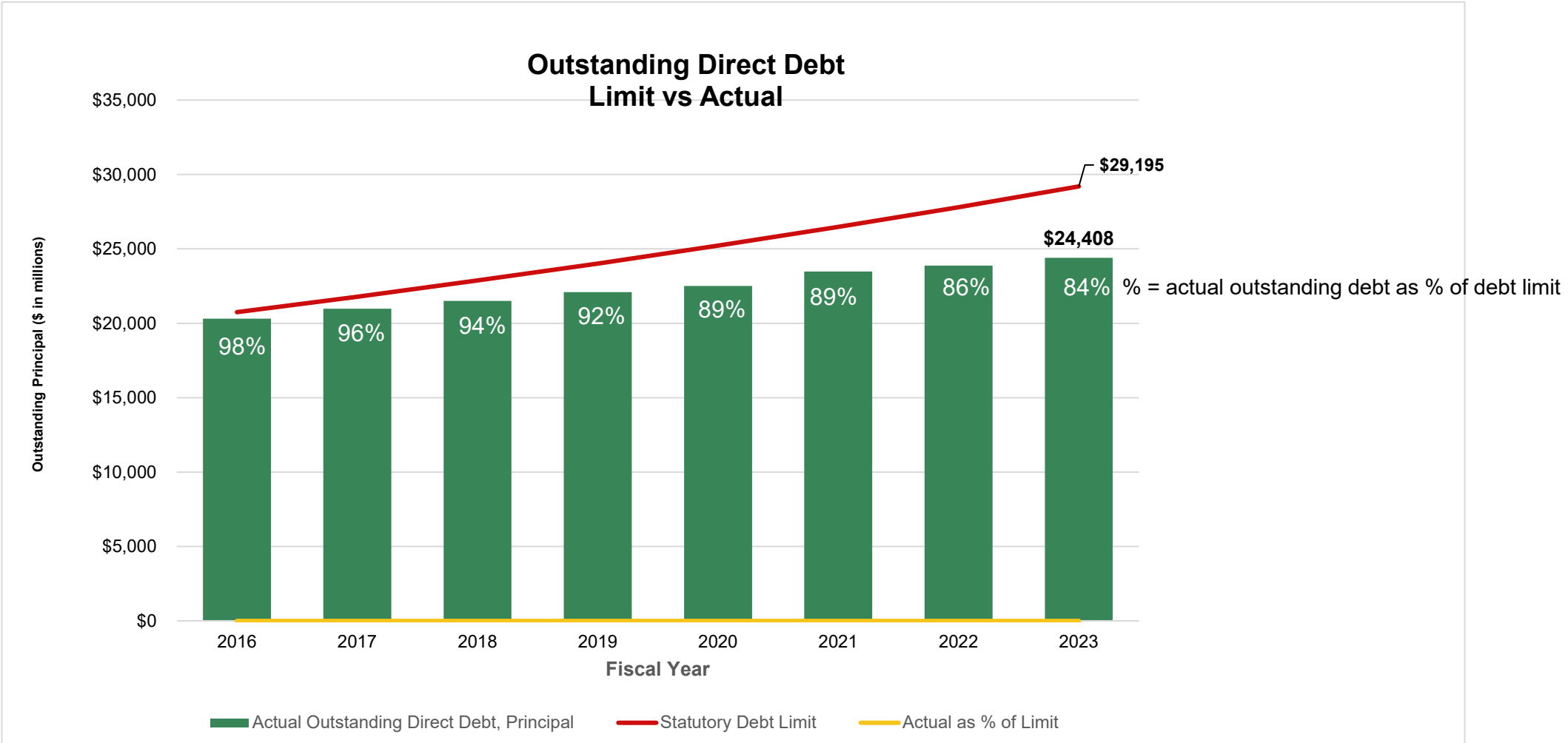
Commonwealth Contract Assistance	Contract Assistance End Date	FY24 Payment (\$ in millions)
MassDOT (1)	2050	\$125.0
MA Clean Water Trust	2051	63.4
MassDevelopment	2050	10.6
Social Innovation Financing Trust	2024	<u>11.0</u>
Total		<u>\$210.0</u>

Commonwealth Contingent Liabilities	Outstanding Debt (\$ in millions)
Mass. Bay Transportation Authority (MBTA)	\$99.5
UMass Building Authority (UMBA)	-
Regional Transit Authorities (RTAs)	n/a
Steamship Authority	\$91.2
MassDevelopment	-



Debt Affordability Committee | Key Trends

Buffer between statutory debt limit and actual debt has increased in recent years





8. Credit Factors



Credit Factors | Rating Agency Scale Overview

All three credit rating agencies long-term ratings for the Commonwealth are aligned at high investment grade.

Class	Moody's	S&P	Fitch	Kroll
Prime	Aaa	AAA	AAA	AAA
High Investment Grade	Aa1	AA+	AA+	AA+
	Aa2	AA	AA	AA
	Aa3	AA-	AA-	AA-
Upper Medium Grade	A1	A+	A+	A+
	A2	A	A	A
	A3	A-	A-	A-
Lower Medium Grade	Baa1	BBB+	BBB+	BBB+
	Baa2	BBB	BBB	BBB
	Baa3	BBB-	BBB-	BBB-



Credit Factors | Commonwealth Credit Profile Overview

Rating agencies have consistently given Commonwealth high marks across all credit factors, except existing long-term liabilities (debt & pension/OPEB).

Key Takeaways

- While the 3 agencies take nuanced approaches to assigning ratings, all methodologies align around 5 key credit factors
 - Governance
 - Economy
 - Financial position
 - Budgetary performance
 - Long term liabilities
- The Commonwealth scores high in all areas, except long term liabilities.
 - MA's investment in local entities – typically funded at the local level in other states – is a driver of relatively elevated debt levels.

Agency	Rating Factors Framework	Commonwealth Scoring
S&P Scoring 1 = strongest 4 =weakest	Government Framework	Score: 1.5 <i>(indicative of AAA)</i>
	Financial Management	Score: 1.0 <i>(indicative of AAA)</i>
	Economy	Score: 1.4 <i>(indicative of AAA)</i>
	Budget Performance	Score: 1.7 <i>(indicative of AA+)</i>
	Debt & Liability Profile	Score: 3.5 <i>(indicative of BBB)</i>
Moody's	Economy (30%)	Score: Aaa
	Financial Performance (20%)	Scores: Aaa
	Governance (20%)	Score: Aa
	Leverage (30%)	Score: A
	ESG Consideration	Score: CIS-2 Neutral to low
Fitch	Economic Base	Score: Strong
	Revenue Framework	Score: aaa
	Expenditure Framework	Score: aaa
	Long Term Liability Burden	Score: aa
	Operating Performance	Score: aaa

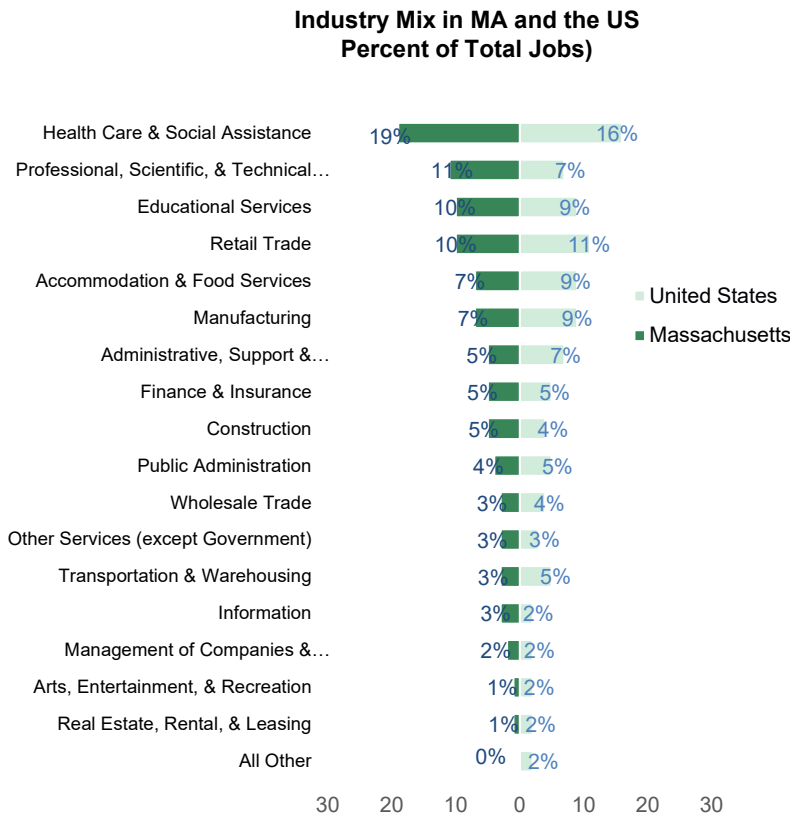


Credit Factors | Strong, Diverse and Resilient Economy

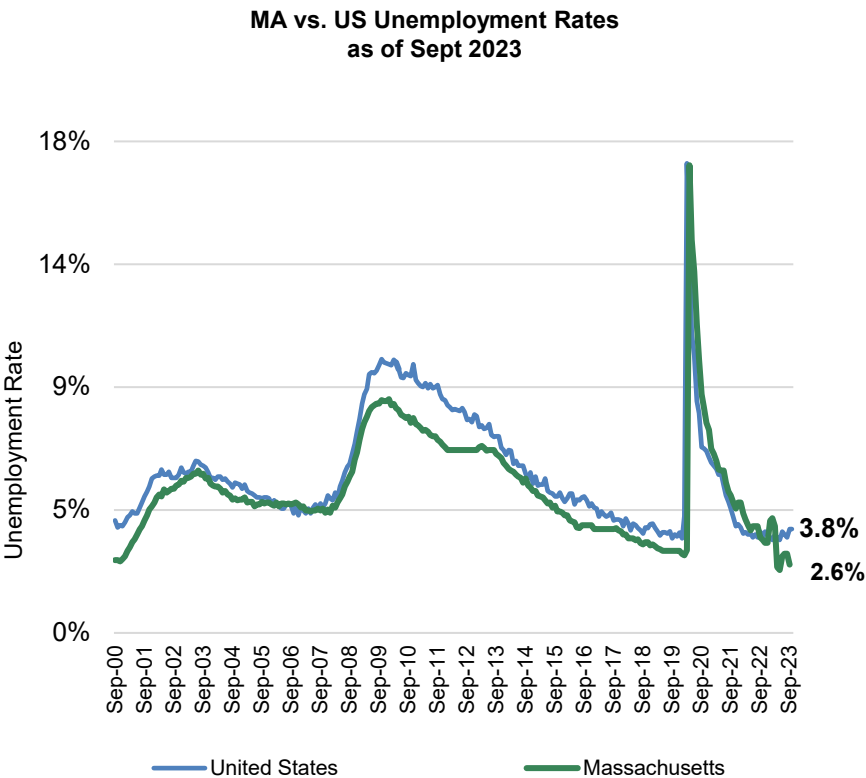
The Commonwealth has a deep and diverse economy, largely focused on knowledge sectors that pay above average wages.

Key Takeaways

- The Massachusetts economy has generally performed better than the U.S.
- The top 6 industries make up 64% of the Massachusetts labor force as compared to 61% of the United States labor force.
- Two of the three largest sectors in Massachusetts (Health Care & Social Assistance and Educational Services) are considered recession proof industries.
- Growth in high-paying professional, scientific and technical services jobs suffered less in the recent recession and were more conducive to telecommuting.
- Through Sept 2023, 64.8% of Massachusetts working-age residents were included in the workforce, consistent with pre-pandemic levels of 66.3% in January 2020.



Notes: All Other Includes: Utilities; Agriculture, Forestry, Fishing, & Hunting; and Mining, Quarrying, and Oil & Gas Extraction

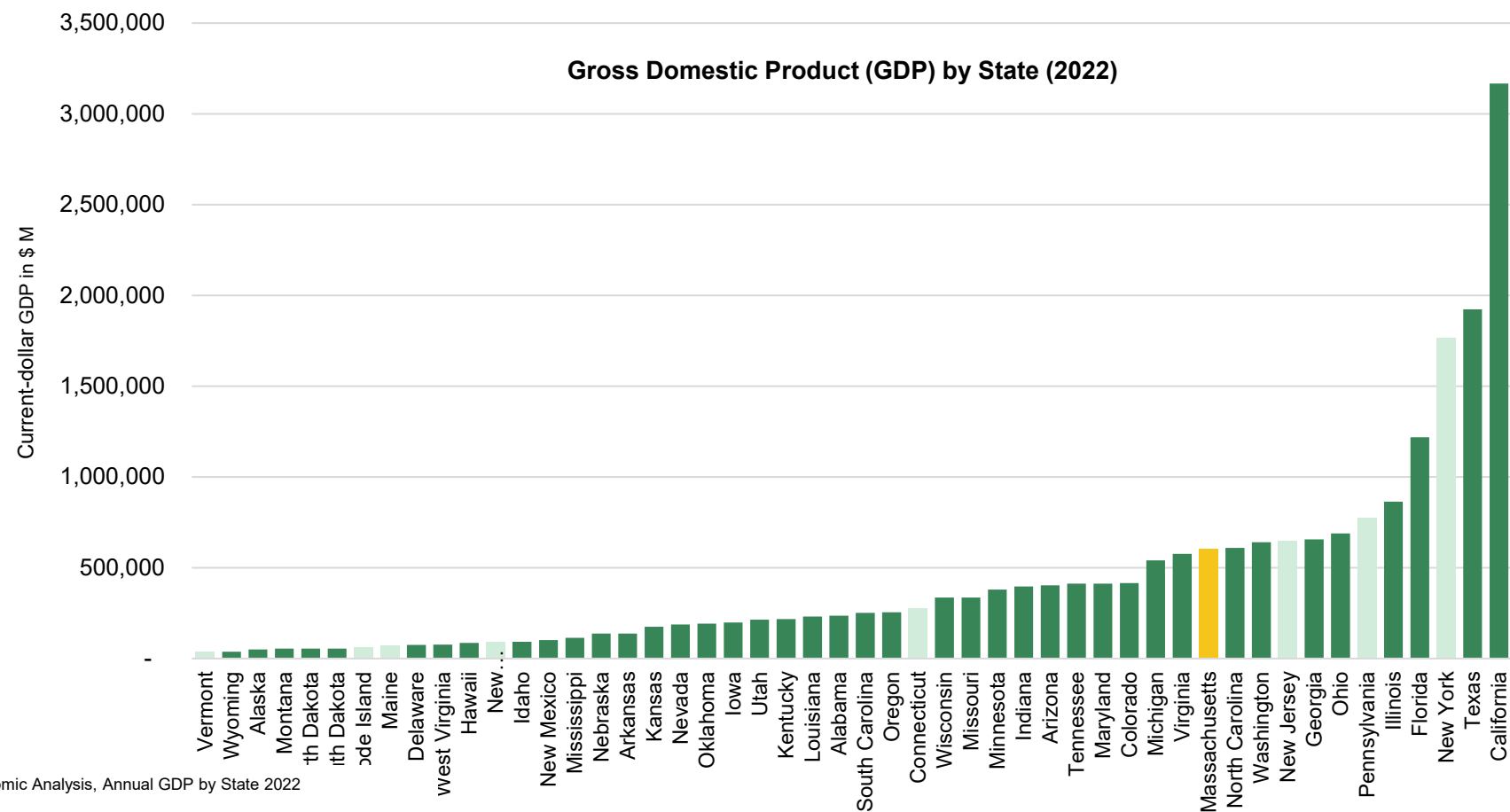


Sources: U.S. Bureau of Labor Statistics, Quarterly Census of Employment and Wages (QCEW), UMDI Analysis, Commonwealth of Massachusetts Information Statement, September 11, 2023, as supplemented.



Credit Factors | Strong, Diverse and Resilient Economy (cont.)

MA GDP ranked 12th among states in 2022 and 15th in state population. S&P Market Intelligence forecasts that MA will experience stronger GDP growth than the nation overall through 2026 at 7.14%, compared with the nation’s growth of 6.75%.



Source: U.S. Bureau of Economic Analysis, Annual GDP by State 2022

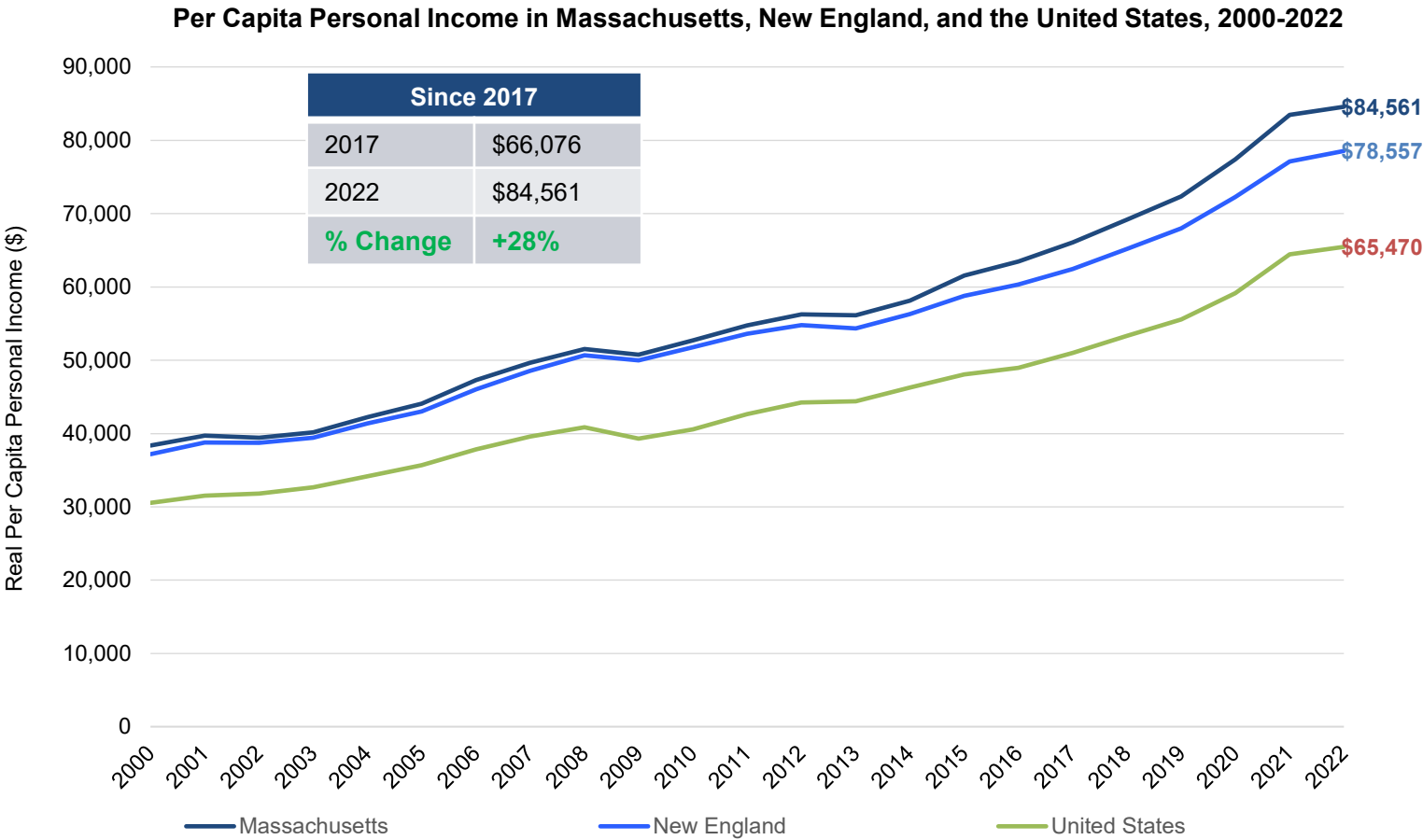


Credit Factors | Consistent per Capita Income, Outpacing the Country

A strong economic base supports high income levels, with per capita income being one of the highest in the nation. Strong income levels have contributed to the Commonwealth's robust revenue growth in recent years.

Key Takeaways

- Massachusetts has consistently been near the top of the nation in resident income
- The Commonwealth's per capita personal income was approximately \$84,561 in 2022, **the highest in the United States.**
- Strong income levels help support relatively high debt levels.**

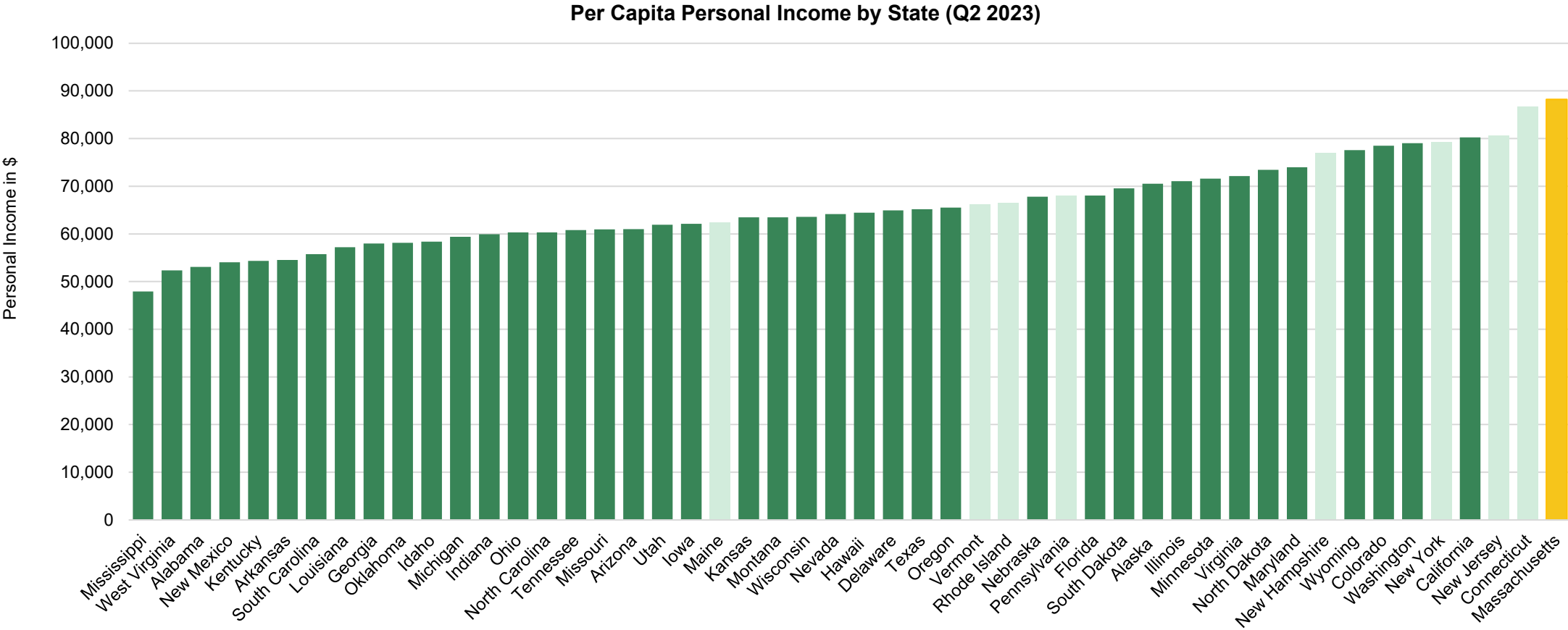


Sources: Bureau of Economic Analysis, Per Capita Income by State 2022

Credit Factors | Consistent per Capita Income, Outpacing the Country (cont.)



The Commonwealth’s personal income levels have consistently ranked at the top of the nation. Per capita income in 2022 was roughly 128% of the national level.

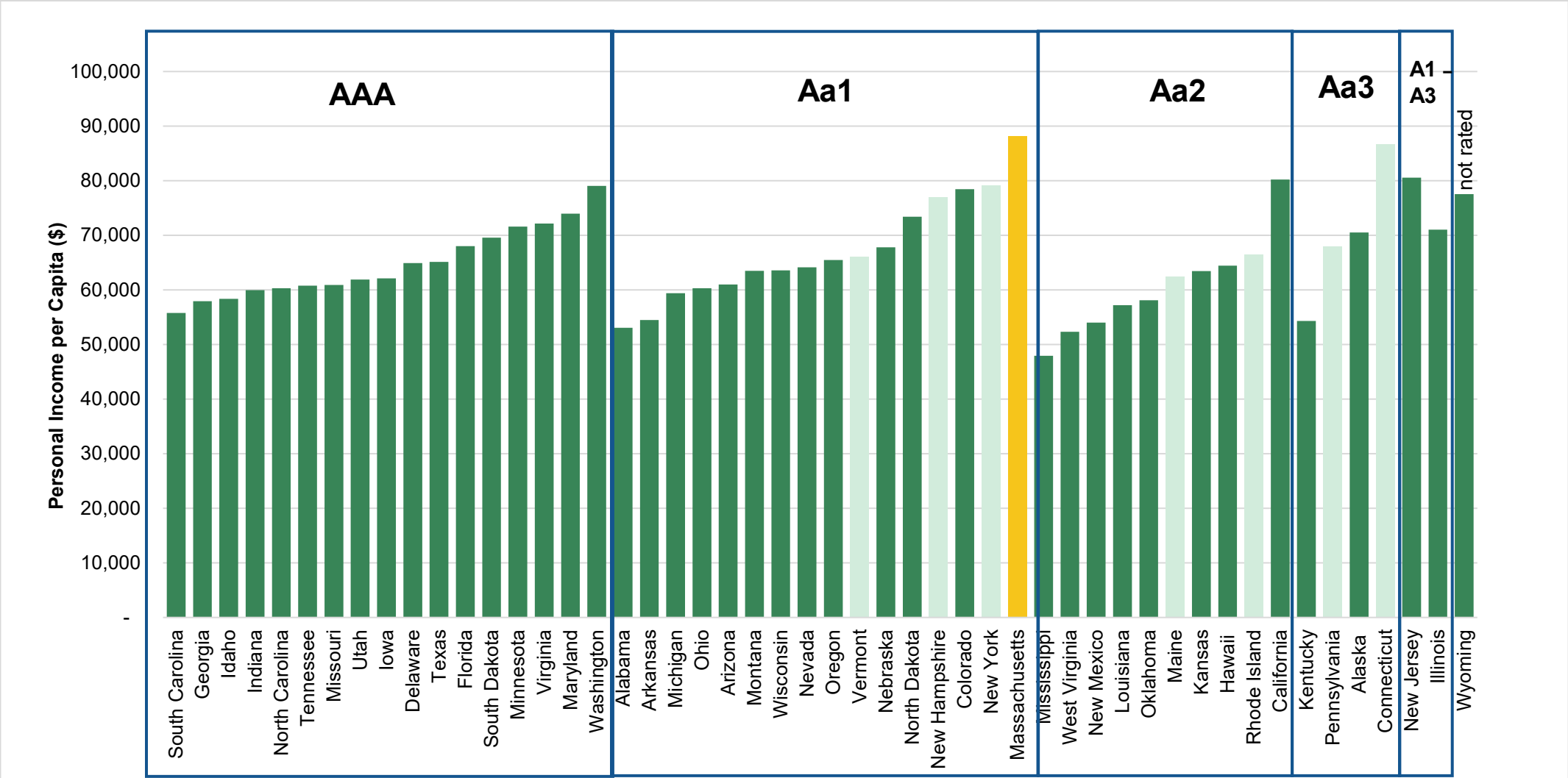


Source: U.S. Bureau of Economic Analysis



Credit Factors | Consistent per Capita Income, Outpacing the Country (cont.)

Per Capita Personal Income by State and Rating (Q2 2023)



Source: U.S. Bureau of Economic Analysis, Moody's Analytics

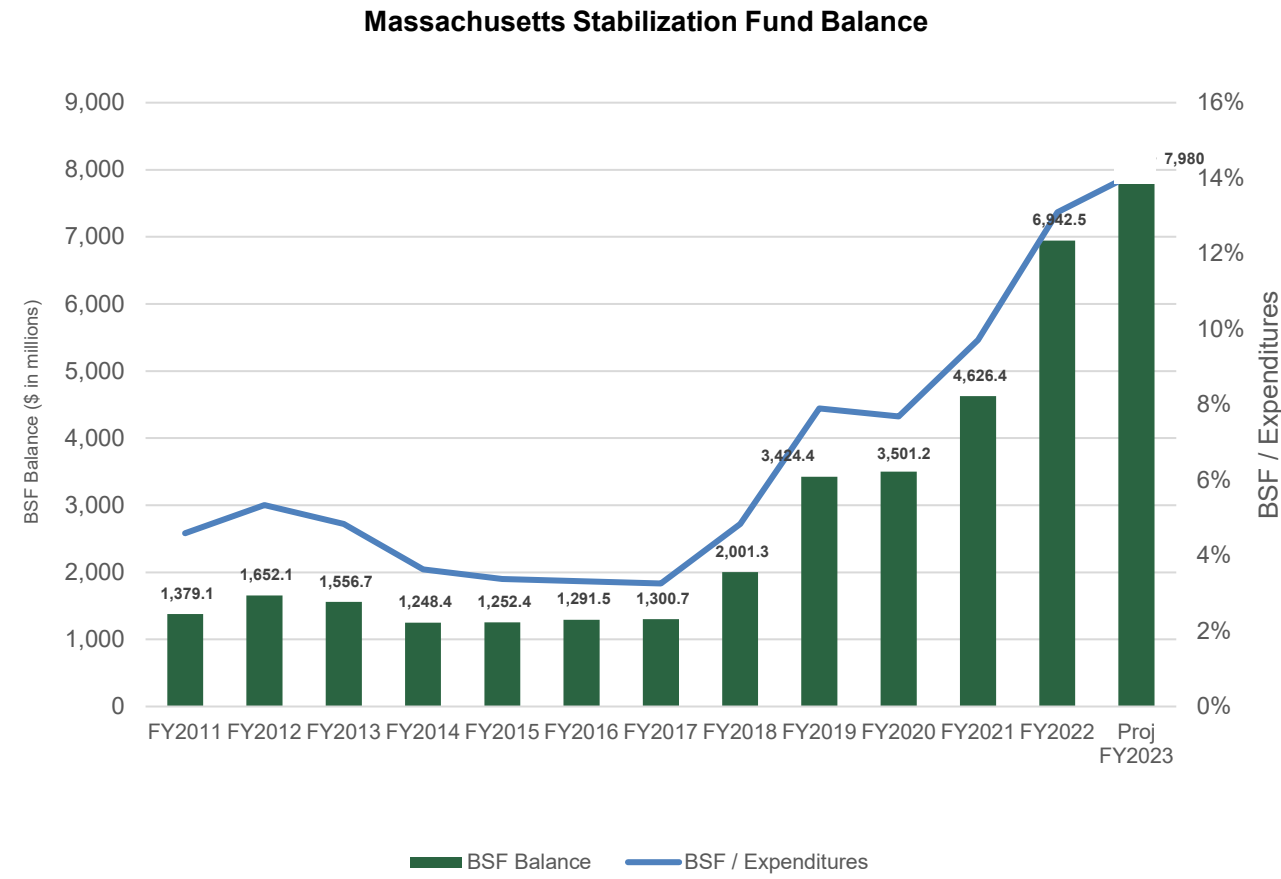


Credit Factors | Strong Reserves

Leveraging strong economic growth, MA has built strong reserves that serve as solid foundation for preserving future financial flexibility and managing economic headwinds.

Key Takeaways

- From FY 2017 to FY 2022, the BSF balance has increased by roughly 434% from \$1.3 to \$6.9 billion which represents roughly 12% of expenditures.
- Preliminary FY 2023 BSF balance is \$7.98 billion.
- The state has demonstrated its commitment build its reserves as stipulated through adherence to its fiscal policies.
 - State finance law requires that 90% of capital gains tax revenues collected exceeding a specific threshold be transferred to the BSF - these transfers accounted for \$4.6 billion of the increase from 2017 to 2022.

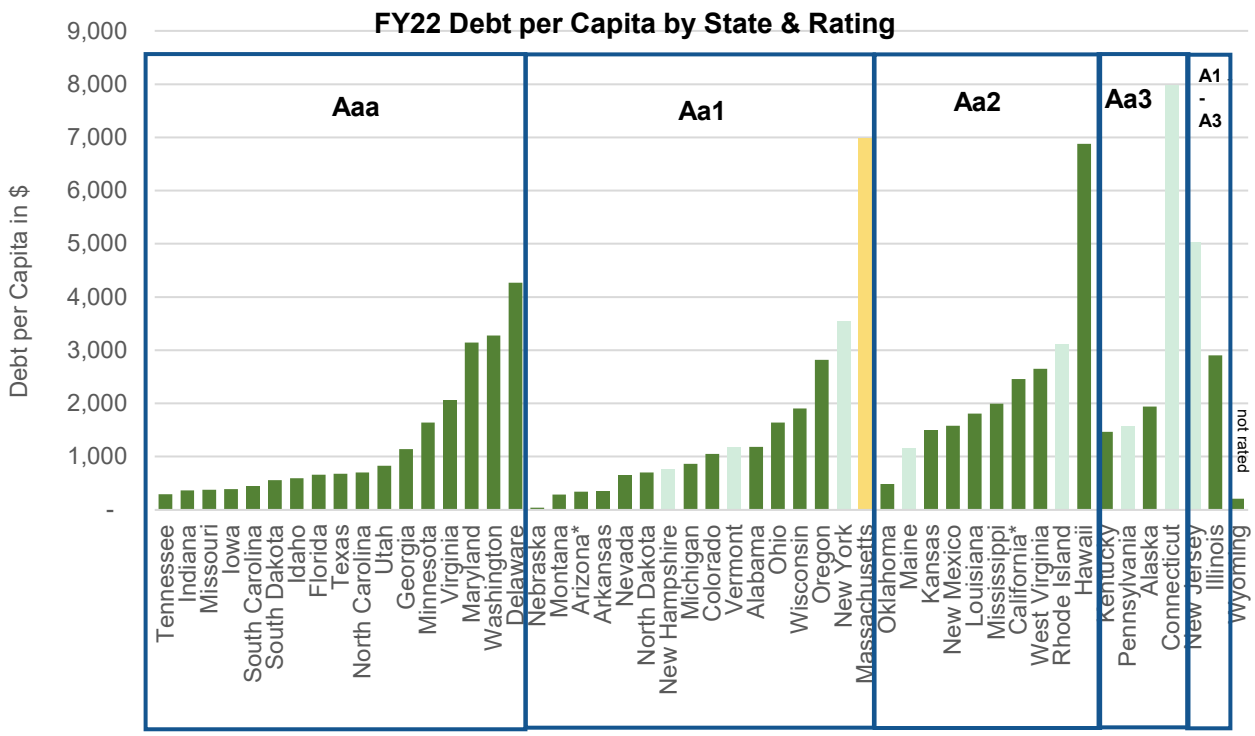
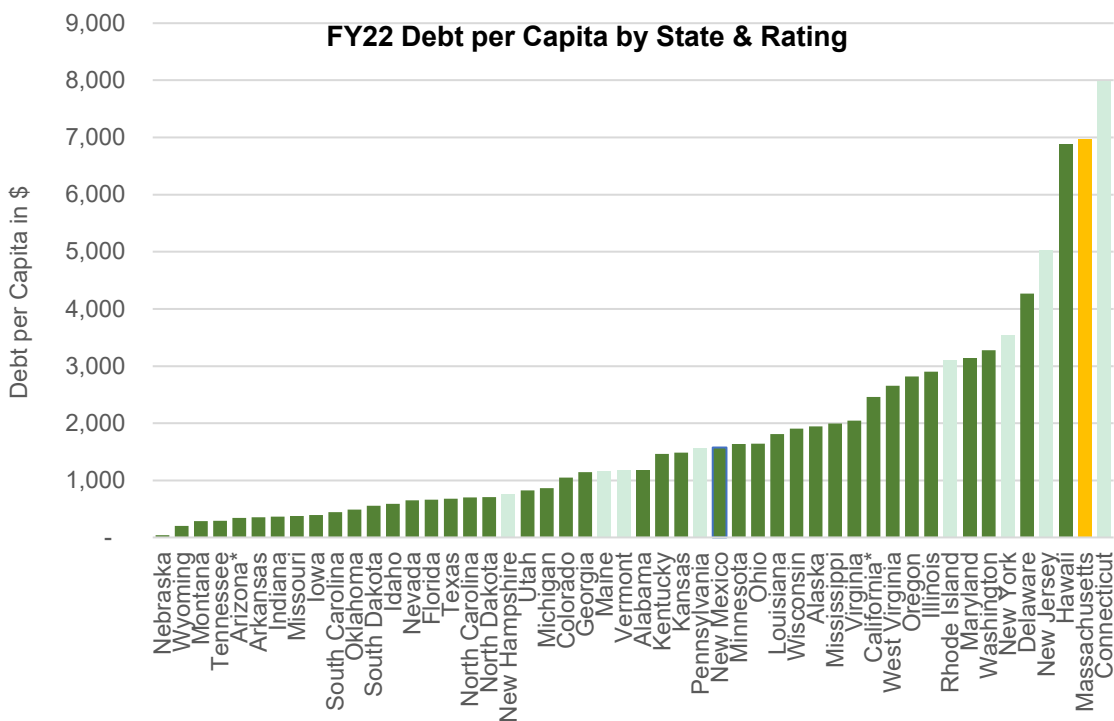


Source: Commonwealth of Massachusetts Information Statement, September 11, 2023, as supplemented.



Credit Factors | Long Term Liabilities - Debt per Capita

Massachusetts has elevated long term liabilities relative to its peers. Although unlike many other states, MA issues debt for both state-level and local purposes.



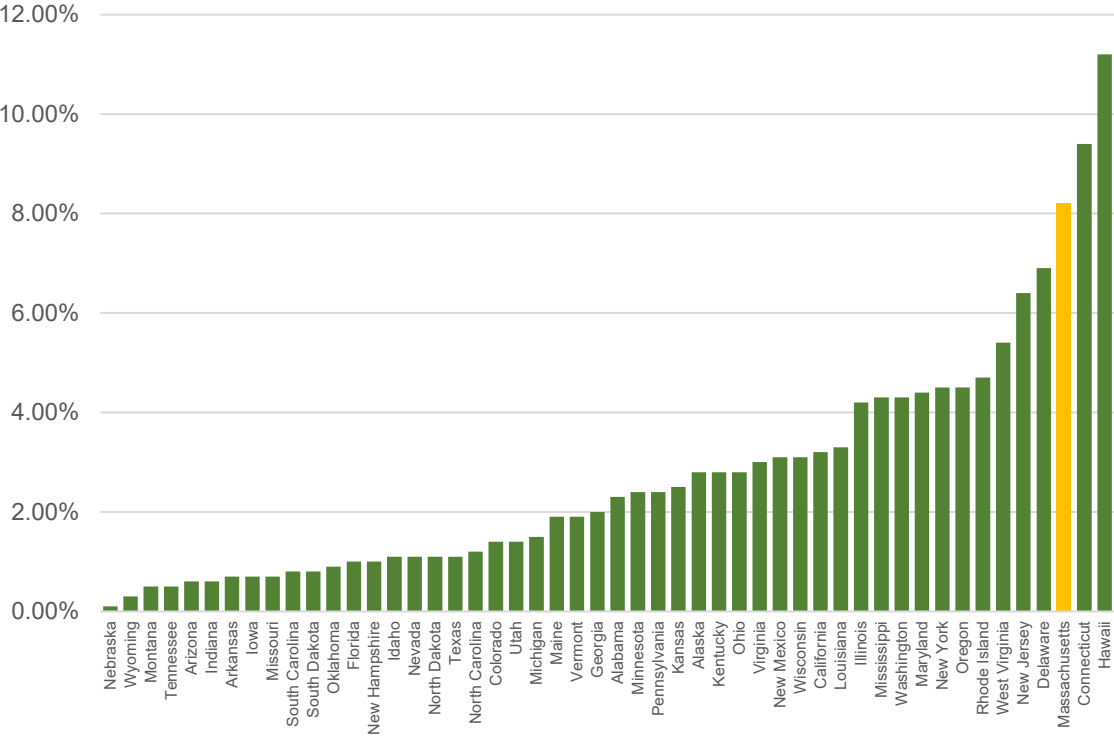
Source: U.S. Bureau of Economic Analysis, Moody's Analytics

Credit Factors | Long Term Liabilities - Debt as % of Income

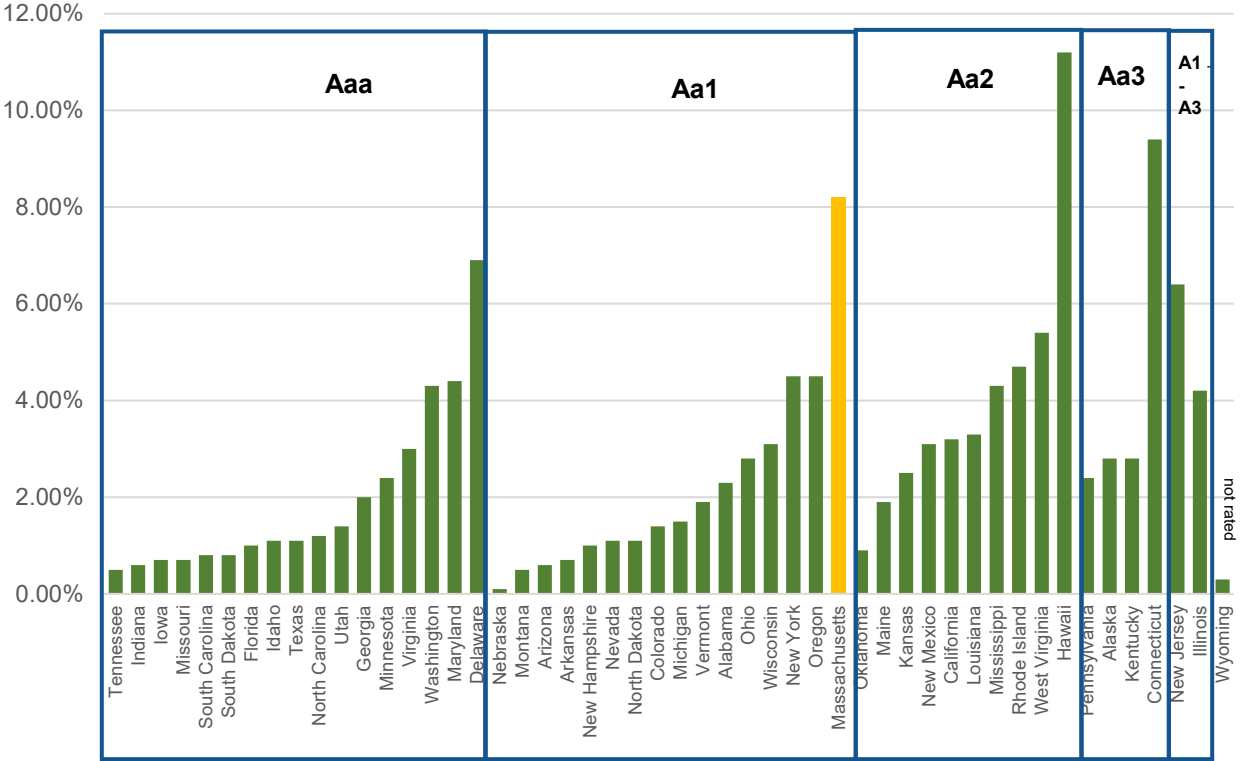


Debt as a % of Personal Income by State and Rating (2022)

FY22 Debt as % of Personal Income by State



FY22 Debt as % of Personal Income by State & Rating



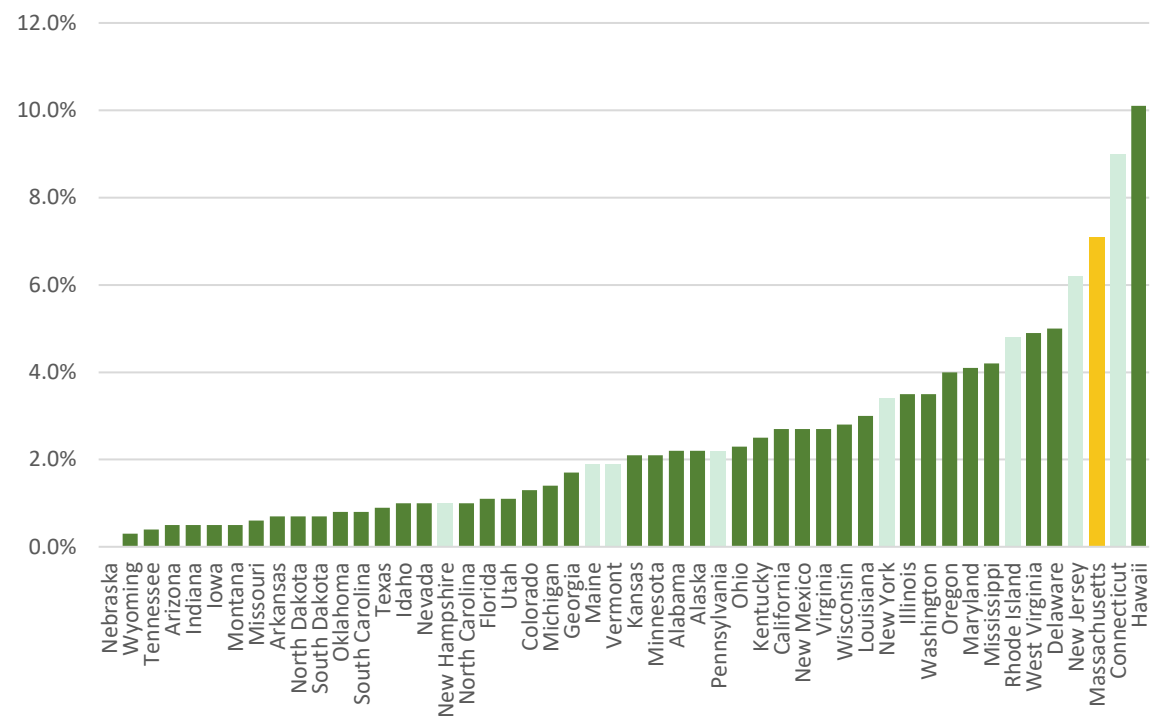
Source: U.S. Bureau of Economic Analysis, Moody's Analytics

Credit Factors | Long Term Liabilities - Debt as % of GDP

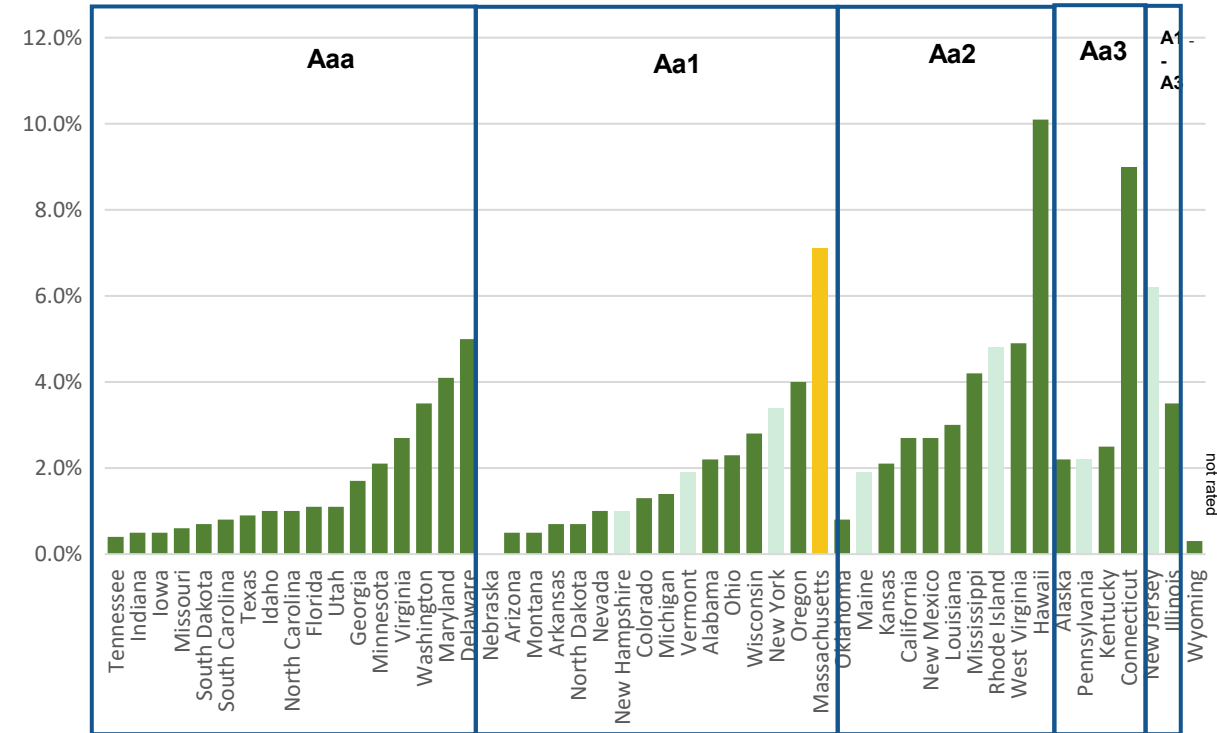


Debt as a % of GDP by State and Rating (2022)

FY22 Debt as % of GDP by State



FY22 Debt as % of GDP by State & Rating



Source: U.S. Bureau of Economic Analysis, Moody's Analytics

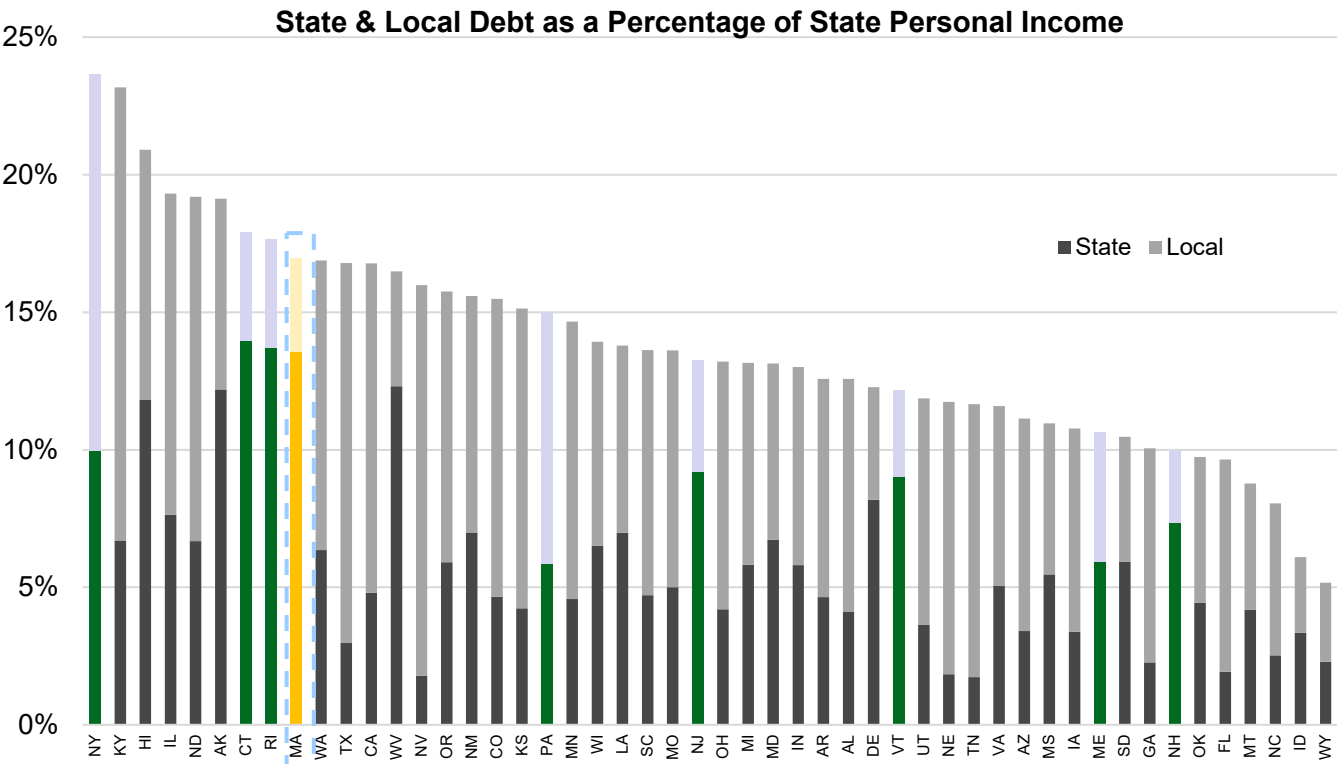


Credit Factors | Long Term Liabilities – State vs Local Investment

The Commonwealth makes substantial payments to cities, towns, and school districts to mitigate the impact of local property tax limits on local programs and services – as a result, 100% of rated municipalities carry a “A” rating or better, 98% carry a “A+” rating or better, and 90% are rated “AA” or better.

Key Takeaways

- Unlike many other state GO credits, Massachusetts issues debt for state-level and local level purposes
- However, the Commonwealth is the 4th lowest in the nation for local debt as a percentage of personal income
- **State investments in local communities a driver of elevated debt levels relative to other states**

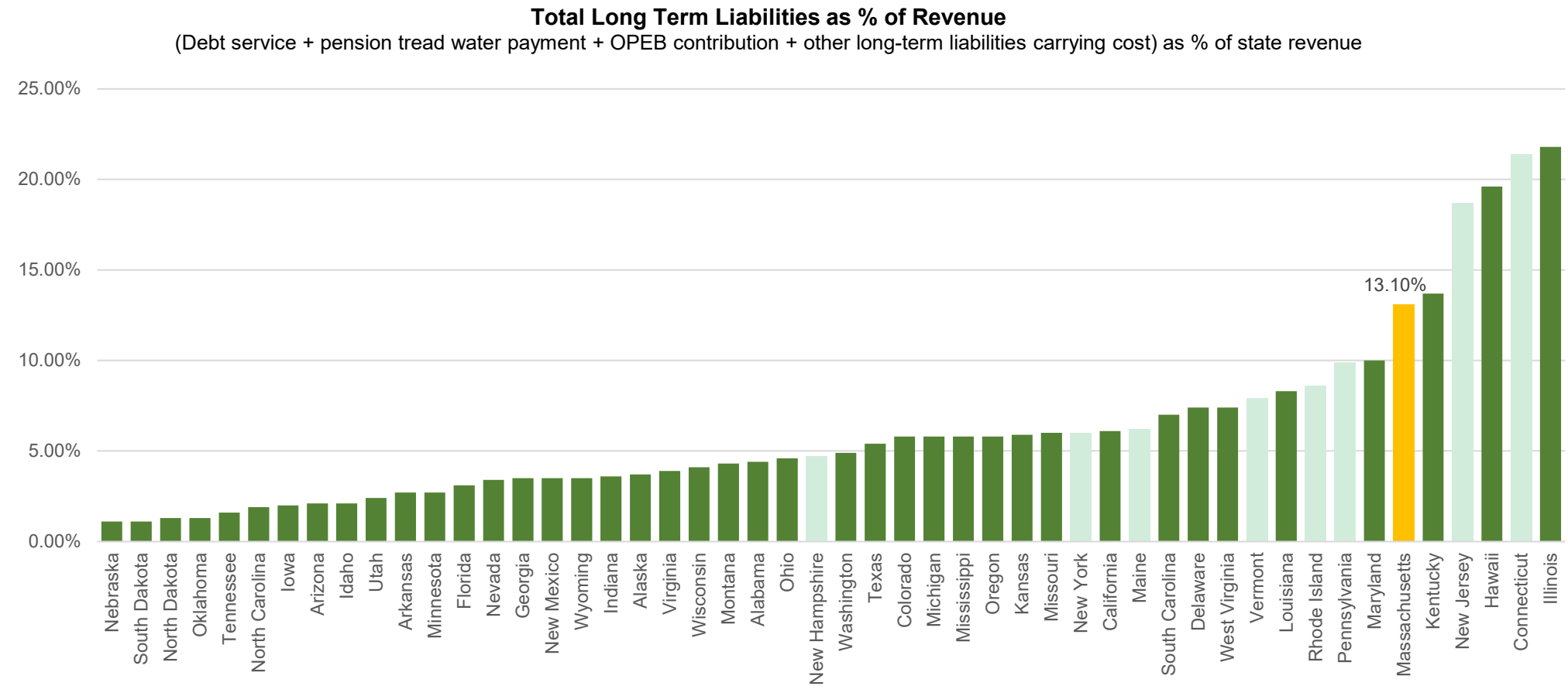


Note: Personal income data as of 2018
SOURCE: State & Local Debt from U.S. Census 2017 data



Credit Factors | Long Term Liabilities – Fixed Costs as a % of Revenue

When factoring other long-term liabilities, MA’s fixed costs as a % of revenues is somewhat moderated relative to peers.

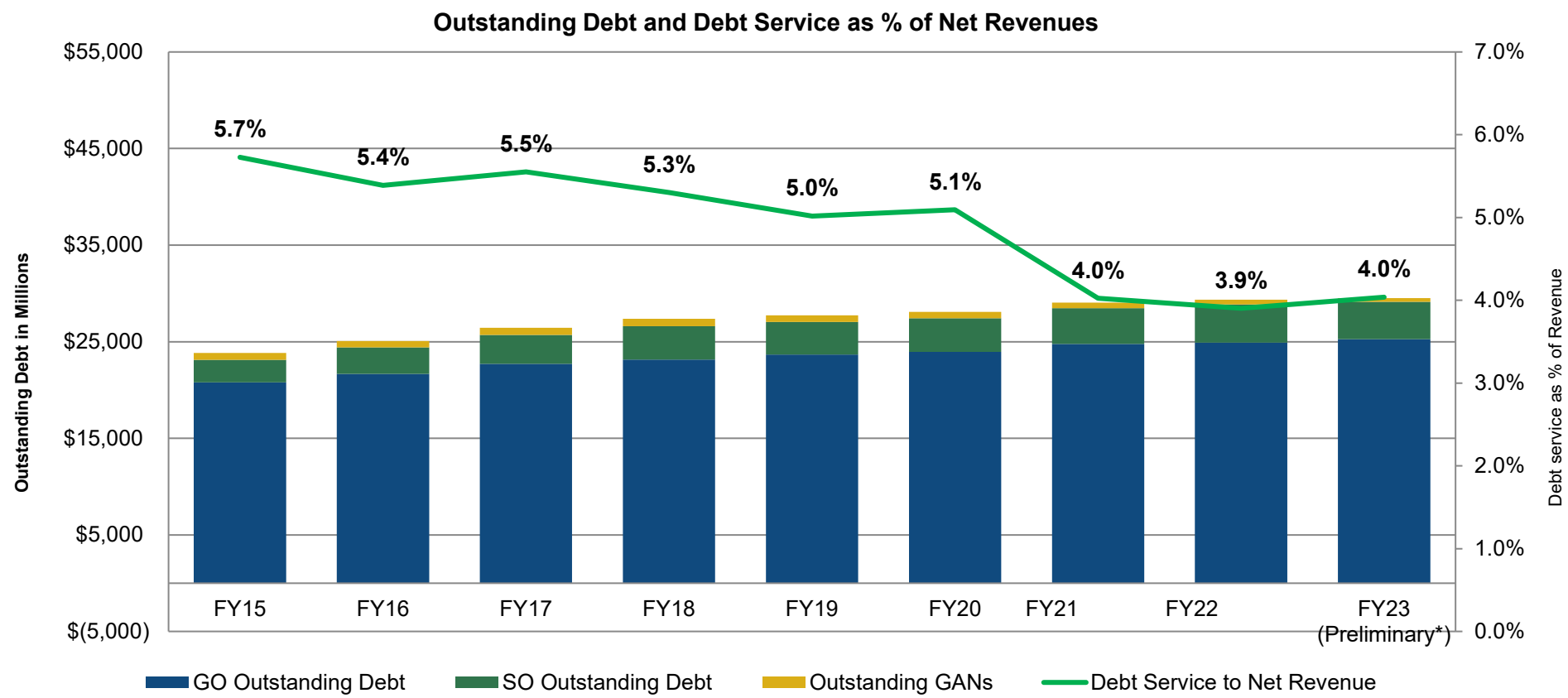


Source: Moody's Analytics



Credit Factors| Debt Service as % of Revenues

Annual revenue growth has outpaced annual debt service. Debt service as % of revenues has remained well below the 8% policy target.

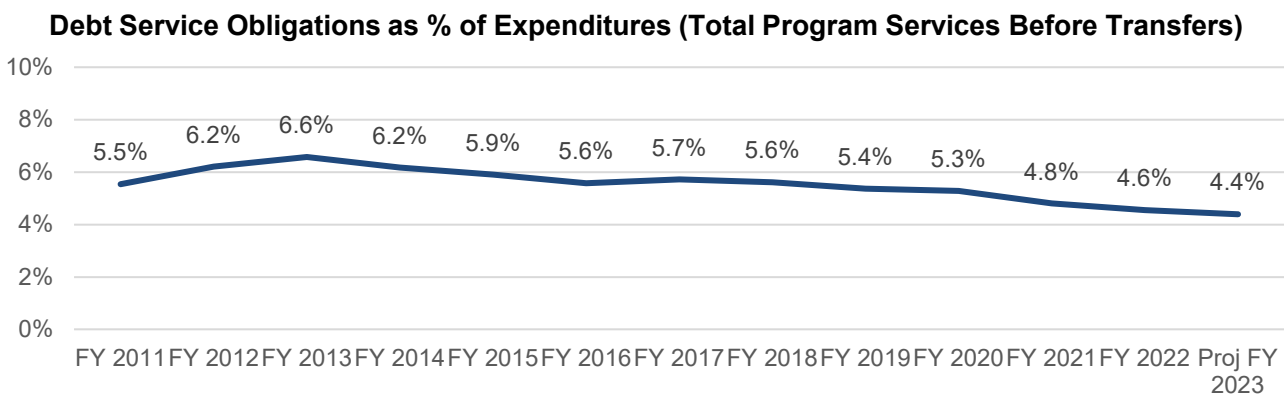


Sources: Commonwealth of Massachusetts, Commonwealth of Massachusetts Information Statement, September 11, 2023, as supplemented.

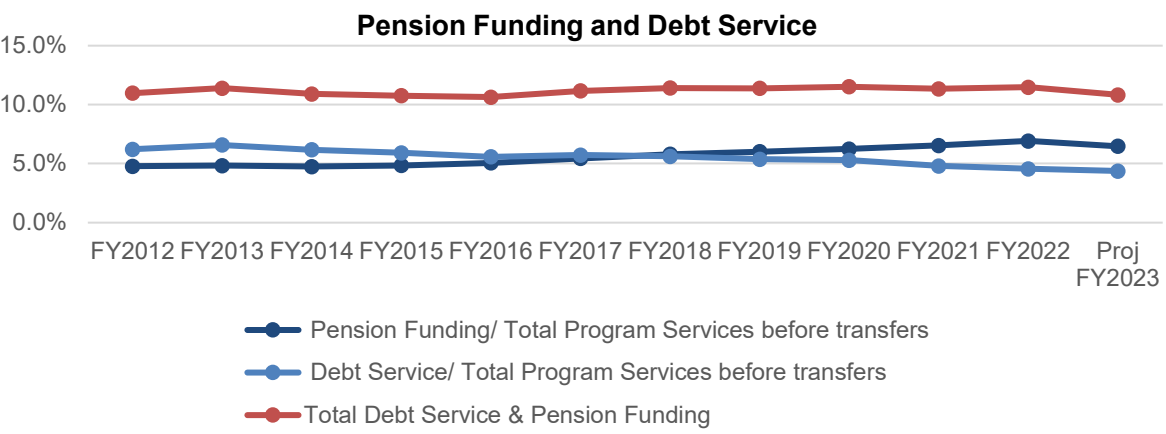


Long Term Liabilities | Debt Service and Pension Contributions

The Commonwealth's debt service obligations represent 4.6% of total expenditures in FY 2022. This is an improvement from a high of 6.6% in FY 2013.



As debt service as a % of expenditures decreased, pension funding as a % of expenditures increased. Combined, the cost of the management of these long-term liabilities has remained relatively flat.



Source: Commonwealth of Massachusetts Information Statement

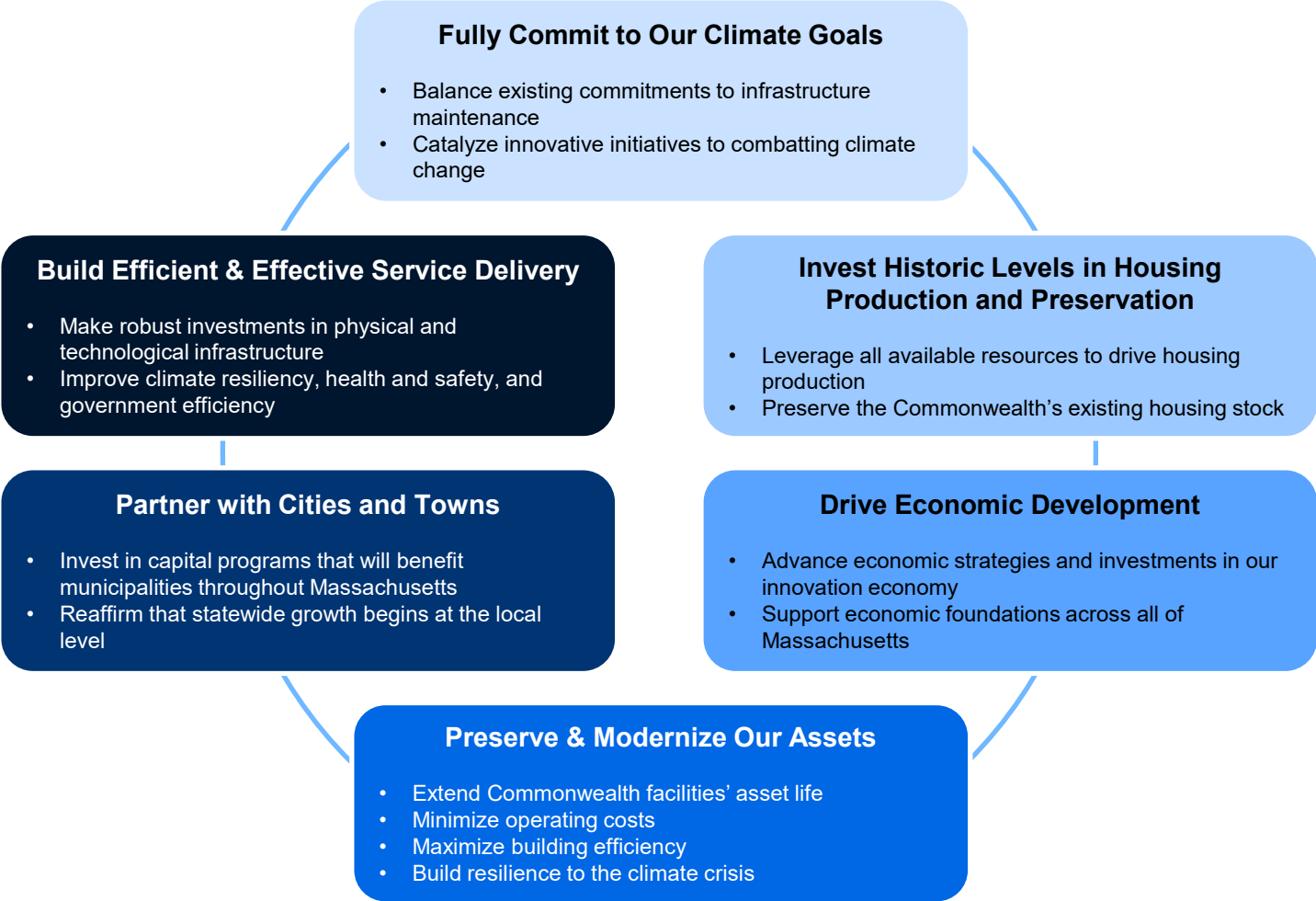


9. Capital Spending



Debt Affordability Committee | FY24 Capital Investment Plan (CIP) Introduction

The first Healey-Driscoll CIP, published June 2023, focused on purposeful investments geared towards improving affordability, economic competitiveness, and equity for all people.

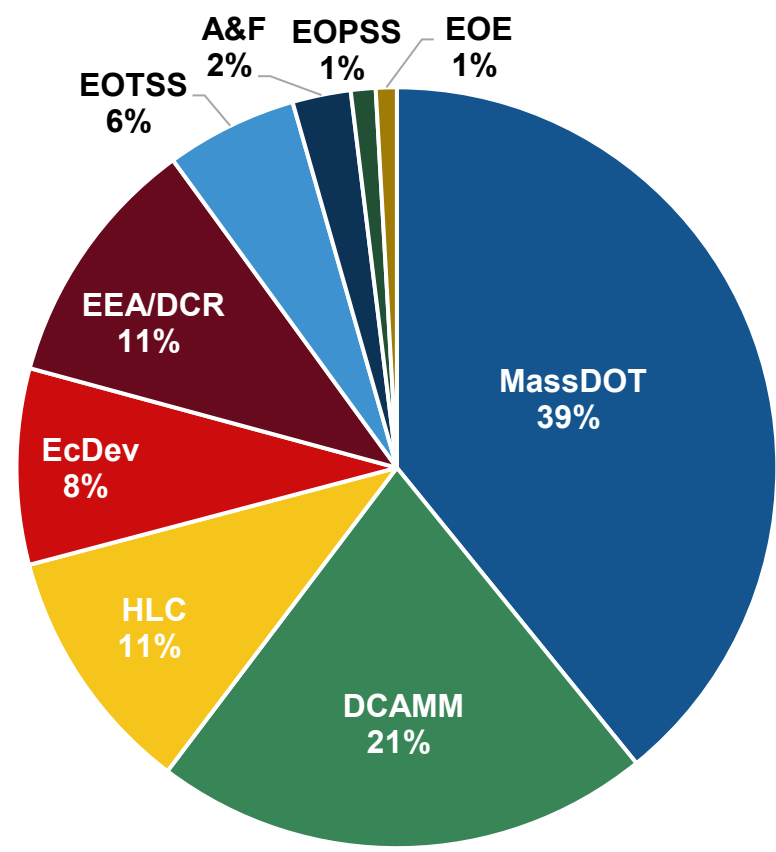




Debt Affordability Committee | FY24 CIP Budget Summary

FY24 CIP bond cap budget (\$2.9B) aligns with DAC recommendation.

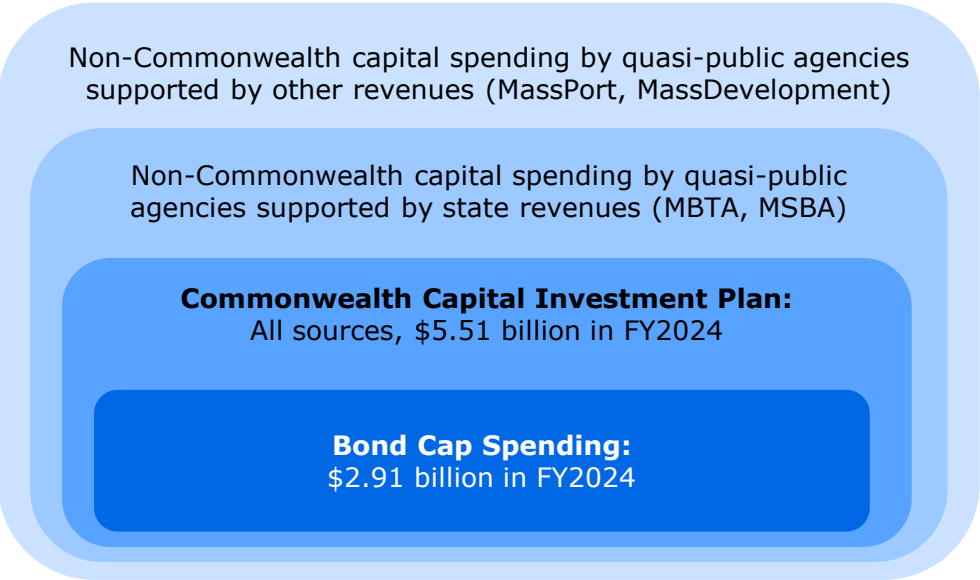
- The biggest piece of the Commonwealth’s capital plan is for Transportation (MassDOT)
- Together with Facilities (DCAMM), Housing (HLC), Economic Development, and Energy & Environmental (EEA), these top four categories compose **nearly 90% of bond cap spending**



■ MassDOT ■ DCAMM ■ HLC ■ EcDev ■ EEA/DCR ■ EOTSS ■ A&F ■ EOPSS ■ EOE



Debt Affordability Committee | FY24 CIP Budget Summary (cont.)



Source	FY24 (\$M)
General Obligation Bonds (bond cap)	\$2,905
Federal Funds	\$1,515
Special Obligation (REP and ABP) Bonds	\$390
Other contributions (match, private, etc.)	\$229
Pay-as-you go (PAYGO)	\$345
Project / Self-Funded	<u>\$130</u>
Capital Investment Plan Total ALL SOURCES	\$5,513

Bond Authorization vs. Bond Cap Spending

- Bond Bills: the vehicle by which authorization to spend bond cap is granted; require 2/3rds roll-call vote in formal legislative session
- Authorizations allow but do not require borrowing
- All spending financed by bond bills is at discretion of Governor per Massachusetts Constitution
- The Governor-approved CIP provides the budget for actual bond cap spending
- DAC recommendation plays a key role in assessing how much bond cap Massachusetts can afford